



PROFESSOR ELIAHU SWIRSKI  
*Recipient of the 1994 Israel Prize in Agriculture*

Professor Eliahu Swirski, to whom we dedicated Volume XXV-XXVI of the *Israel Journal of Entomology* on the occasion of his seventieth birthday, has been awarded the prestigious 1994 Israel Prize in Agriculture, established by the Ministry of Science and Arts. Prof. Swirski has generously donated this prize to be distributed equally between the Rachel & Eliahu Swirski Student Fund of the Department of Entomology of the Volcani Center and the Rachel & Eliahu Swirski Fund for publication of the *Israel Journal of Entomology*.

On behalf of all the members of the Entomological Society of Israel, we congratulate Prof. Swirski, thank him for the donation, and wish him continued good health and many more years of fruitful research activities.

Manes Wysoki  
 President

## PUBLICATION OF THE ISRAEL JOURNAL OF ENTOMOLOGY

IS SUPPORTED BY

THE H. BYTINSKI-SALZ ENDOWMENT FUND

THE SHOSHANA YATHOM ENDOWMENT FUND

AND

THE RACHEL AND ELIAHU SWIRSKI ENDOWMENT FUND

Israel Journal of Entomology  
 Vol. XXVIII (1994) pp. 1-100

## THE FUNGUS GNATS OF ISRAEL (DIPTERA: SCIAROIDEA, EXCLUDING SCIARIDAE)

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### ABSTRACT

The Mycetophilidae, Keroplatidae and Diadocidiidae of Israel are revised and the species total increased to 88 species (64, 23 and 1 in each family, respectively), of which 5 are represented only by females and not identifiable to species. Three other species, one of them in the Bolitophilidae, are included but require confirmation of literature records. Keys are provided to the 36 genera and to all species recorded from Israel. Twenty-six new species are described (including one from Egypt: Sinai), 3 of them also found elsewhere. The newly described taxa are: Diadocidiidae: *Diadocidia furnacea*; Keroplatidae: *Macrocera aquabellissima*, *M. hermonophila*, *M. levantina*, *M. sinaitica*, *Macrorrhyncha ardea*, *M. guichardi*, *Neoplatyura karmelita*, *Orfelina excelsa*, *Pyratula oracula*, *Truplaya fini*, *Urytalpa nussbaumi*, *Xenoplatyura aurantina*, *X. aurora*, *X. autumnata*, *X. freidbergi*; Mycetophilidae: *Acnemia stellamicans*, *Docosia helveola*, *D. incolamontis*, *D. inspicata*, *D. juxtamontana*, *D. lastovkai*, *Mycomya (M.) galeapectinata*, *M. (M.) montforti*, *Mycomya (Mycomyopsis) coeles*, *Sciophila eryngii*. Three new synonymies are proposed: *Fungivora pseudoquadra* Bukowski and *Mycetophila pseudoquadroides* Matile = *Mycetophila strigatoides* Landrock, and *Sceptonia curvisetosa* Caspers = *Sceptonia intestata* Plassmann and Schacht. With one previously described species, there are 23 species known only from Israel, 13 found elsewhere in the Mediterranean and the remainder are more widespread in the Palaearctic region. Two genera, *Xenoplatyura* Malloch and *Truplaya* Edwards, are new to the Palaearctic region. Biological notes where available and distribution notes are provided for all identified species. Genitalia are figured for 29 species; references are cited to published figures for all other species.

KEY WORDS: Diptera, Bolitophilidae, Diadocidiidae, Keroplatidae, Mycetophilidae, Israel, Mediterranean.

### INTRODUCTION

The Mycetophilidae and allied families of Israel have been little studied previously. Freidberg (1988) summarised knowledge of the Diptera of Israel; he stated that 30 species of this group had been determined by Loïc Matile but suggested a total fauna of about 100 species. He commented on the distribution of the group in Israel, noting that most species had been collected in the north, fewer in central areas and there were few desert species. This suggested a northern origin for the fauna. This is true of most genera but at least the species of *Xenoplatyura* Malloch and *Truplaya* Edwards have Afrotropical and Oriental affinities. These

two genera are new to the Palaearctic region; however, a *Truplaya* from Italy and a *Xenoplatyura* from Oman, neither of them closely related to the Israeli species, are being described elsewhere.

The present paper takes into account the material examined by Loïc Matile which was passed to me during a visit to Paris (MNHN) in 1989, excepting specimens of *Docosia* Winnertz which had been passed by him to Petr Laštovka. The remaining material available to Tel Aviv University (TAU) was sent to me by Amnon Freidberg as a result of discussions in Bratislava in 1990. A few specimens from Israel in the collections of the Natural History Museum, London (NHML) were also examined.

The opportunity to examine this large material, comprising 1470 specimens, has provided an excellent basis for assessing this fauna, which proved of remarkable interest. Eighty-nine species (including one only from Egypt: Sinai) have been identified, of which 26 are previously undescribed, although 3 of these had also been recognised in other Mediterranean material examined by me. Some of this material has been previously published; Väisänen (1984c) recorded 4 of the 8 *Mycomya* Rondani species, while Matile (1974b) described *Asindulum theodori* as new and included it in his revision of the genus (1975).

Of the 89 species examined, 5 are represented only by females and have not been identified to species. These five include the sole representatives of *Allodia* Winnertz sensu stricto, *Exechiopsis* Tuomikoski sensu stricto and *Megophthalmidia* Dziedzicki, the last probably being conspecific with an undescribed Mediterranean species; also a possibly undescribed species of *Trichonta* Winnertz and a *Zygomyia* Winnertz of the *Z. humeralis* (Wiedemann) group.

One earlier paper also mentions fungus gnats from Israel, i.e. Bodenheimer (1937), who gave a bare list of 8 species. The provenance and location of his material is not known. The species listed by him require some comment. They were:

*Bolitophila fusca* (Meigen, 1818) (Bolitophilidae). This is a synonym of *hybrida* (Meigen, 1804); no Bolitophilidae were present in the material examined here.

*Macrocera fasciata* Meigen, 1804 (Keroplatidae). Confirmed here.

*M. nana* Macquart, 1826 (Keroplatidae). Recently considered a senior synonym of *M. pusilla* Meigen, 1830, under which name the species is confirmed here.

*M. vittata* Meigen, 1830 (Keroplatidae). Absent from present material; none of the species examined are close to it.

*Sciophila flava* Winnertz, 1863. A synonym of *Mycomya affinis* (Staeger, 1840) (Mycetophilidae). Confirmed here.

*S. ornata* Meigen, 1830. Recognised by Edwards (1941) to comprise several species; one of these, *Mycomya prominens* (Lundström, 1913), occurs in Israel.

*Boletina trivittata* (Meigen, 1818) (Mycetophilidae). Not in present material.

*Mycetophila lineola* Meigen, 1818. This was the name used for all species of the *M. ruficollis* Meigen group; one species of this group, *M. britannica* Laštovka and Kidd, 1990 (Mycetophilidae) occurs in Israel.

Thus five of Bodenheimer's species probably correspond to species confirmed here. The other three, *Bolitophila hybrida*, *Macrocera vittata* and *Boletina trivittata*, could not be confused with any of the species in the present material, so are included in the keys in case they were correctly identified.

Genera are dealt with in the text in the same order in which they appear in the generic keys.

Species are treated in alphabetical order within each genus. All genera found in Israel are keyed but generic diagnoses have not been provided and only new species are fully described and diagnosed.

#### BIOLOGY AND ECONOMIC IMPORTANCE

Most members of the group develop in the fruiting bodies of fungi or sometimes in rotten wood or other substrates containing fungal mycelium. The larvae of some genera form webs on the surface of fungal fruiting bodies and feed principally on the spores, but the larvae of Keroplatidae may spin webs on other substrates as well as rotten wood and fungi, and are considered to be primarily carnivorous on other organisms caught in the webs.

The adults are mostly found in humid situations in forests and wooded areas, where fungi are more prolific but some species are associated with fungi growing in grassland, dunes or wetlands.

Few members of the group can be said to have economic importance. Although several species of Sciaridae are pests of cultivated mushrooms, no member of the families dealt with here has been recorded as having this habit. Many species do, however, develop as larvae in other edible fungi.

One species occurring in Israel, *Leia arsona* Hutson, has evidently become established widely in areas of Mediterranean or subtropical cultivation. The rearing records by Hutson (1978) and the Israeli rearing from a bromeliad cited here are inconclusive as to its precise role and it is unclear whether it has any economic significance.

#### COMPOSITION OF THE ISRAELI FAUNA

The composition of the fauna is interesting, especially as it represents the first major collection of this group from the eastern Mediterranean region, although collections from Turkey and Cyprus have been examined and are cited in the distribution notes under relevant species. Twenty-five species (1 Diadocidiidae; 14 Keroplatidae and 10 Mycetophilidae) are presently known only from Israel but this must be due in part to the lack of knowledge of the fauna of other parts of this region. These apparently endemic species can thus be considered together with 3 species of Keroplatidae and 10 species of Mycetophilidae, which are known from elsewhere in the Mediterranean region (in the broad sense, i.e. including the whole of the Iberian peninsula) but not outside. There are in addition two species (*Cordyla styliforceps* Bukowski and *Exechia fulva* Santos Abreu) found only in this region and in the Atlantic islands (Canaries, Madeira, Azores) and a more widespread species of uncertain origin (*Leia arsona* Hutson), which is associated with Mediterranean and subtropical cultivation. Thus 41 species (including 2 unidentified in the genera *Megophthalmidia* and *Trichonta*) can be said to belong to the localised Mediterranean fauna while the remaining 45 identified species are more widespread in the Palaearctic region, especially in Europe (the other 3 unidentified species probably belong to this category). Twenty-two of the 36 genera (and also *Bolitophila* Meigen) and 20 species are also found in the Atlantic islands, 17 of these species being among the more widespread group.

The distribution may be summarised as follows (Table 1) by family and subfamily (for the 89 species examined):

TABLE 1  
Distribution of Israeli Sciaroidea

	Israel only	Mediterranean region	Other parts of Palaearctic
Diadocidiidae	1		
Keroplatidae		1	5
Macrocerinae	4	2	2
Keroplatinae	10		
Mycetophilidae		2	1
Sciophilinae	2	1	3
Gnoristinae		2 (+1)	4
Leiinae	4	1	4
Mycomyinae	3		
Mycetophilinae		2	15 (+2)
Exechiini		1	14 (+1)
Mycetophilini	(1)		48 (+3)
Totals	24 (+1)	13 (+1)	

(The additional figures of Mycetophilinae, indicated in parentheses, relate to unnamed species).

As with the Mediterranean fauna in general, the majority of local or endemic species is found in the Keroplatinae, Sciophilinae, Leiinae and Mycomyinae, while most Macrocerinae and Mycetophilinae are more widespread, *Rymosia* Winnertz being the genus with the most Mediterranean species in the latter subfamily.

In the Macrocerinae there is an endemic eastern Mediterranean element, including several other species found elsewhere in the eastern Mediterranean region, but widespread species predominate. The Keroplatinae are unusual in that all species belong to the tribe Orfeliini although Keroplatini are represented in other parts of the Mediterranean region. Also within the Orfeliini, the group characterised by a large strongly sclerotised aedeagus (as shown in Figs. 18 and 20) predominates (*Asindulum* Latreille, *Macrorrhyncha* Winnertz, *Neoplatyura* Malloch, *Urytalpa* Edwards, *Xenoplatyura* Malloch and *Truplaya* Edwards). As already stated, the two last mentioned genera are well represented in the tropics, and the Israeli species may be of Afrotropical origin.

Two other genera of Keroplatinae (*Orfelia* Costa and *Pyratula* Edwards) are represented by species each belonging to groups comprising several closely allied Mediterranean species, possibly resulting from recent speciation. Similarly in Sciophilinae, the species of *Sciophila* Meigen belongs to the *S. lutea* Meigen group with a number of closely allied species in the Mediterranean region and localised to other parts of the Holarctic region. In each of these three cases, specific characters have been found in the distal margin of the gonocoxites and (especially in *Pyratula*) the aedeagus, while the more obvious characters of tergite 9 and the gonostylus differ little in form.

## LOCALITIES

The names of localities have kindly been checked and revised by Amnon Freidberg, as the presently accepted nomenclature often differs from the locality names or spelling given on the labels. I am grateful to him for providing a copy of the "List of Settlements and Antiquity Sites and Road Distances" (Survey of Israel, 1987) and also of the Israel Touring Map. These have been invaluable in assessing distribution within Israel.

Under each species localities are listed in order of grid square from north to south and west to east.

## TERMINOLOGY

The terminology essentially follows that adopted in the Manual of Nearctic Diptera (McAlpine et al., 1981) and used by J.R. Vockeroth (1981) in the chapter on Mycetophilidae in that work, except in respect of some details of the wing venation. The terminology used here is illustrated by the accompanying wing figures, which represent the families Bolitophilidae (Fig. A), Keroplatidae (Fig. B) and Mycetophilidae (Fig. C).

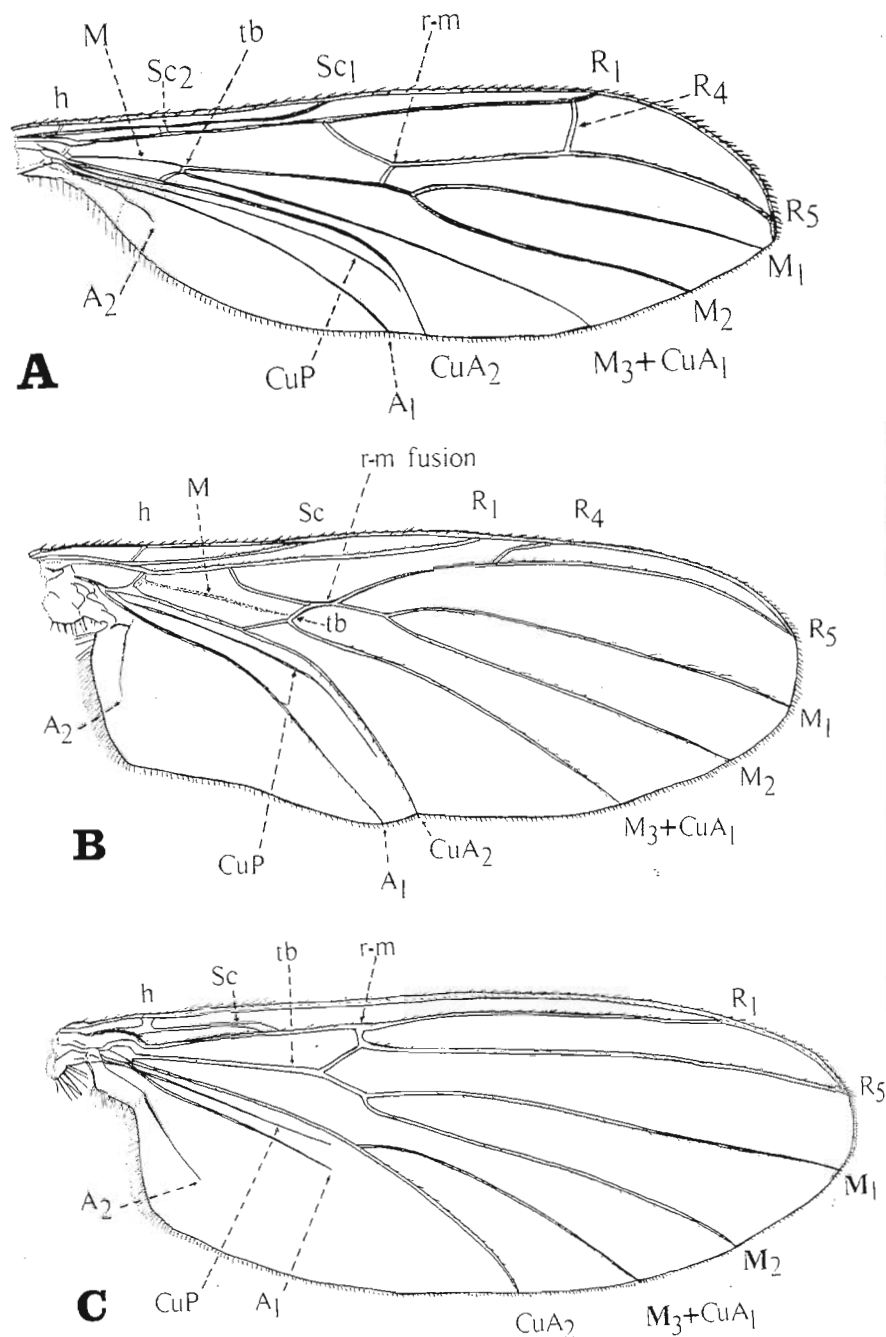
Following most authors on Sciaroidea, the anterior branch from vein  $R_5$  in Bolitophilidae, most Keroplatidae and some Mycetophilidae is considered to be vein  $R_4$  and not vein  $R_{2+3}$  as proposed by Vockeroth (1981). I consider that the absence of vein  $R_{2+3}$  is a groundplan character of the Sciaroidea.

Vockeroth (1981) also considered the basal part of vein M to be present in the Mycetophilidae, following Edwards (1925) and other earlier authors in identifying the strong longitudinal vein extending from crossvein r-m towards the wing base as vein M. Where the basal part of vein M is present in some of the other families of Sciaroidea (including Bolitophilidae and some Keroplatidae), it is weak and there is strong evidence that this part of vein M has been lost and functionally replaced in the Mycetophilidae and Sciaridae by the extension basad of the crossvein called bm-cu by McAlpine et al. (1981) and corresponding to crossvein m-cu of Edwards (1925). This crossvein is here termed tb following the works of Hennig and Matile (e.g. Matile, 1990) because their view that the posterior branch of the median sector (vein  $M_{3+4}$ ) has become fused with the anterior branch of vein  $CuA_1$  is accepted here. Matile (1990) called this fused vein (here termed  $M_3+CuA_1$ ) vein  $M_4$  and thus identified the basal part of vein  $CuA_1$  as crossvein bm-cu. Vein  $M_4$  was not considered by McAlpine et al. (1981) to be present in the groundplan of the Diptera and the correct terminology for this vein requires further study.

The other points of difference from McAlpine et al. (1981) also correspond to the views of Matile (1990) except where he adopted different notation for the veins of the posterior fork (thus  $CuA$  and  $CuP$  are used following McAlpine et al., 1981). The use of  $Sc_2$  agrees both with Matile (1990) and McAlpine et al. (1981), while Vockeroth (1981) used sc-r for this vein.

The terminology for parts of the genitalia differs from that of McAlpine et al. (1981) only in the genus *Mycomya* Rondani, where the terms used by Väisänen (1984) for the parts are used to conform to his monograph of the genus. The term "processus" was applied by him to a median process (where present) of tergite 9, which also may have "tergal lateral appendages". The fused gonocoxites were termed the "sternal synsclerite", which may have "sternal submedian appendages".

KEY TO GENERA OF SCIAROIDEA IN ISRAEL  
(excluding Sciaridae)



Figs. A-C. Wings: A. Bolitophilidae, *Bolitophila* sp.; B. Keroplataidae, *Macrocera* sp.; C. Mycetophilidae, *Trichonta* sp.

1. A crossvein (tb = the "m-cu" of Edwards) linking stem of median fork (vein  $M_{1+2}$ ) with anterior branch of posterior fork (vein  $M_3+CuA_1$ ) (or these veins fused for a short distance in some *Bolitophila*) (Figs. A, B) . . . . . 2
- This crossvein absent as crossvein tb is longitudinal, meeting base of stem of posterior fork, replacing vein M functionally (i.e. = vein "M before r-m" of Edwards) (Fig. C) . . . . . 13
2. Crossvein r-m distinct . . . . . 3
- Crossvein r-m obliterated by a short radio-medial fusion (Keroplataidae) . . . . . 4
3. Crossvein tb well before crossvein r-m; basal part of vein M distinct. Vein  $R_4$  present (ending in costa or vein  $R_1$ ) (Bolitophilidae) . . . . . *Bolitophila* Meigen
- Crossveins r-m and tb in line; basal part of vein M absent. Vein  $R_4$  absent (Diadocidiidae) . . . . . *Diadocidia* Ruthe
4. Veins of posterior fork a little convergent near base, then divergent. Tibial setulae irregular, and strong tibial setae absent. Fore tibia with an apical comb; combs absent on posterior tibiae (Macrocerinae) . . . . . *Macrocera* Meigen
- Veins of posterior fork divergent from base. Tibial setulae sometimes in regular rows; stronger tibial setae present. Fore tibia without apical comb, at least one on posterior tibiae (Keroplatainae) . . . . . 5
5. Mouthparts at least as long as eye height (male) or half eye height (female) (head extended below eyes). Thorax with bare stripes between bristle rows . . . . . 6
- Mouthparts much shorter than eye and head not extended below eyes. Thorax uniformly bristled or with bare stripes . . . . . 7
6. Anterior thoracic spiracle without posterior setae. Vein  $A_1$  distinct almost to wing margin . . . . . *Asindulum* Latreille
- Anterior thoracic spiracle with short erect black setae on posterior margin. Vein  $A_1$  fading well before wing margin . . . . . *Macrorrhyncha* Winnertz
7. Anterior thoracic spiracle with posterior setae . . . . . 8
- These postspiracular setae absent . . . . . 9
8. Mesoscutum uniformly setulose. Mediotergite (= postnotum) with a few setae apically. Tibial setulae in regular rows. Vein  $A_1$  almost reaching margin . . . . . *Rutylapa* Edwards
- Mesoscutum with bare areas. Mediotergite bare. Tibial setulae irregular, but tending to form regular rows apically. Vein  $A_1$  reaching margin . . . . . *Neoplatyura* Malloch
9. Mesoscutum with setulae separated into pluriserial rows by bare areas. Tibial setulae irregular. Costa produced well beyond vein  $R_5$ . Fork veins setulose . . . . . 10
- Mesoscutum with setulae uniformly distributed without bare stripes. Tibial setulae in rows at least apically. Fork veins with or without setulae . . . . . 11
10. All long veins reaching wing margin. Mediotergite bare . . . . . *Urytalpa* Edwards
- Vein  $A_1$  abbreviated. Mediotergite bare or with a few apical setae . . . . . *Pyratula* Edwards

- 8
11. Mediotergite setose. About 6 rows of tibial setulae more close-set than others, appearing as conspicuous black lines. Vein  $A_1$  not reaching margin . . . . . *Orfelia* Costa
  - Mediotergite bare. Tibial setulae not so differentiated. Vein  $A_1$  reaching margin but veins of posterior fork often abbreviated or faint apically . . . . . 12
  12. Costa produced well beyond tip of vein  $R_5$ . A few short black frontal setae close to bases of antennae. (Israeli species are predominantly yellow) . . . . . *Xenoplatyura* Malloch
  - Costa ending at tip of vein  $R_5$ . Such frontal setae absent. (Israeli species black with silver dusting) . . . . . *Truplaya* Edwards
  13. Eyes nearly or quite touching above antennae in the form of a dorsal "bridge". Base of vein  $R_s$  short and transverse; crossvein  $r-m$  long and in line with vein  $R_s$  . . . . .
  - Eyes rounded or emarginate but without such a "bridge". Base of vein  $R_s$  and crossvein  $r-m$  usually more or less oblique (Mycetophilidae) . . . . . 14
  14. Tibial setulae irregularly distributed, not in rows. Microtrichia of wings irregularly arranged, macrotrichia sometimes present (only macrotrichia present in some *Sciophila* species) . . . . . 15
  - Tibial setulae arranged in regular longitudinal rows. Microtrichia of wings in regular rows (except *Mycomya*), macrotrichia always absent . . . . . 25
  15. Wing membrane with obvious macrotrichia (Sciophilinae) . . . . . 16
  - Wing membrane with microtrichia only (except *Megophthalmidia* which has some macrotrichia on anal lobe) . . . . . 19
  16. Vein  $Sc$  short, ending free. Vein  $M$  unbranched, faint basally (median fork absent). Vein  $M_3+CuA_1$  represented only by weak apical portion, basally free. Vein  $R_4$  absent . . . . . *Azana* Walker
  - Vein  $Sc$  long, ending in costa. Median fork complete. Veins  $M$  and  $M_3+CuA_1$  not fading basally. Vein  $R_4$  present or absent . . . . . 17
  17. Vein  $CuA$  unbranched, so posterior fork absent. Vein  $R_4$  absent . . . . . *Acnemia* Winnertz
  - Vein  $CuA$  forked. Vein  $R_4$  present or absent . . . . . 18
  18. Vein  $R_4$  absent. Vein  $R_{4+5}$  strongly sinuous. Base of vein  $M_1$  interrupted. Anepisternum bare . . . . . *Neuratelia* Rondani
  - Vein  $R_4$  present, ending in vein  $R_1$  to form narrow small cell. Vein  $R_{4+5}$  not sinuous. Base of vein  $M_1$  complete. Anepisternum setose above . . . . . *Sciophila* Meigen
  19. Last section of vein  $R_1$  several times as long as crossvein  $r-m$  which is more or less oblique or transverse. Median fork always much longer than its stem. Vein  $Sc$  long, ending in costa (Gnoristinae) . . . . . 20
  - Last section of vein  $R_1$  usually little if any longer than crossvein  $r-m$ , which is long and nearly longitudinal (if vein  $R_1$  longer as in some *Docosia*, vein  $Sc$  ends in vein  $R$ ). Median fork may be much longer than its stem but often shorter. Vein  $Sc$  long or short, ending in costa, in vein  $R$  or free (Leiinae) . . . . . 22

20. Base of posterior fork distinctly beyond that of the median fork . . . . . *Coelosia* Winnertz
- Base of posterior fork before or close to level of base of median fork . . . . . 21
21. Vein  $Sc_2$  well beyond middle of vein  $Sc$  . . . . . *Grzegorzekia* Edwards
- Vein  $Sc_2$  near middle of vein  $Sc$  or absent . . . . . *Boletina* Staeger
22. Vein  $Sc$  long, ending in costa, vein  $Sc_2$  present. Lateral ocelli nearly touching eye margins. Posterior fork with anterior branch often detached at base . . . . . *Leia* Meigen
- Vein  $Sc$  shorter, ending free or in vein  $R$ , vein  $Sc_2$  may be absent. Lateral ocelli near eye margins or remote from them. Posterior fork usually complete at base . . . . . 23
23. Vein  $R_1$  very short; crossvein  $r-m$  at least twice as long as vein  $R_1$ . Lateral ocelli near eye margins . . . . . *Novakia* Strobl
- Vein  $R_1$  not shorter than crossvein  $r-m$ . Lateral ocelli touching eye margins or remote from them . . . . . 24
24. Lateral ocelli touching eye margins. Vein  $R_1$  distinctly longer and stem of median fork shorter than crossvein  $r-m$ . Hind tibial comb absent . . . . . *Docosia* Winnertz
- Lateral ocelli remote from eye margins. Vein  $R_1$  and crossvein  $r-m$  subequal, stem of median fork much longer. Hind tibial comb present . . . . . *Megophthalmidia* Dziedzicki
25. Only two ocelli placed close together. Microtrichia of wings irregularly arranged. Vein  $R_4$  present, ending in vein  $R_1$  to form a rectangular small cell (Mycomyinae) . . . . .
- Three ocelli present, the lateral ocelli touching eye margins. Microtrichia of wings in more or less regular rows. Vein  $R_4$  absent (Mycetophilinae) . . . . . *Mycomya* Rondani
26. Palpus with antepenultimate segment enlarged (especially in male). Antenna short with reduced number of flagellar segments (especially in female). Anepisternum setose (stronger setae on posterior margin) . . . . . *Cordyla* Meigen
- Palpus normally developed. Antenna with 2 + 14 segments. Anepisternum with or without strong setae . . . . . 27
27. Anepisternum with at most fine hairs, no strong setae. Hind coxa with fairly strong dark seta near base. Tibial setae short and weak (Exechiini) . . . . . 28
- Anepisternum with strong setae near posterior margin. If a strong seta on hind coxa (some *Trichonta*) it is pale. Tibial setae either weak or strong . . . . . 36
28. Base of posterior fork beyond that of the median fork . . . . . 29
- Base of median fork well before or close to level of that of the median fork . . . . . 32
29. Mesoscutum without discal setae. Clypeus ovate. Stem of median fork usually subequal to crossvein  $r-m$ . (Pale abdominal markings when present broadest on hind margins of tergites) . . . . . *Pseudexechia* Tuomikoski
- Mesoscutum with discal setae usually well developed, in dorsocentral rows. Clypeus shorter, more rounded. Stem of median fork varying in length relative to crossvein  $r-m$ . (Pale abdominal markings when present may be on fore or hind margins of tergites) . . . . . 30

30. Vein  $R_{4+5}$  nearly straight, divergent from vein  $M_1$  on apical half. Vein Sc ending free. Crossvein r-m twice or more as long as stem of median fork. (Pale abdominal markings when present broadest on bases of tergites) . . . . . *Exechia* Winnertz
- Vein  $R_{4+5}$  downturned apically, not divergent from vein  $M_1$  on apical half. Vein Sc more or less distinctly ending in vein R. Crossvein r-m at most twice as long as stem of median fork. (Pale abdominal markings broadest on hind margins of tergites) . . . . . *(Exechiopsis Tuomikoski)* 31
31. Hind tibia dorsally split at tip, with posterior apical margin distinctly oblique. Vein  $R_5$  more strongly downturned and convergent with vein  $M_1$  apically. (Female cercus one segmented) . . . . . *Exechiopsis* sensu stricto
- Hind tibia with dorsal split not developed and posterior apical margin not distinctly oblique. Vein  $R_5$  less strongly downturned, often subparallel with vein  $M_1$  apically. (Female cercus two segmented) . . . . . subgenus *Xenexechia* Tuomikoski
32. Vein Sc ending free. Vein  $A_1$  long and distinct. Vein tb bare. Discal setae of mesoscutum in two dorsocentral stripes. (Pale abdominal markings when present towards bases of tergites. Male genitalia ventrally closed without deep excavation containing sternal process. Female cercus one segmented) . . . . . *Rymosia* Winnertz
- Vein Sc ending in vein R. Vein  $A_1$  varying in strength. Vein tb bare or setose. Discal setae of mesoscutum in two stripes, irregularly distributed or absent. (Pale abdominal markings when present varying in distribution. Male genitalia with deep sternal excavation containing sternal process. Female cercus two segmented) . . . . . 33
33. Vein  $A_1$  long and distinct, well exceeding level of base of posterior fork. Crossvein r-m and vein tb bear setulae. Hind tibia with several close set curved posterior setae arranged irregularly near tip. Anepisternum hairy . . . . . *Tarnania* Tuomikoski
- Vein  $A_1$  weakly developed and faint, not reaching beyond level of base of posterior fork. Crossvein r-m and vein tb bare. Hind tibia with posterior setae in a single row or absent. Anepisternum bare . . . . . 34
34. Discal setae of mesoscutum decumbent, irregularly distributed. Hind tibia with posterior setae towards tip. Three or more proepisternal setae. (Female antennal flagellum often swollen at base) . . . . . *Brevicornu* Marshall
- Discal setae in dorsocentral stripes or absent. Hind tibia without posterior setae. Two proepisternals. (Antennal flagellum simple in both sexes) . . . . . *(Allodia Winnertz)* 35
35. Discal setae of mesoscutum absent. Base of posterior fork level with or beyond base of stem of median fork. (Abdominal markings when present broadest towards hind margins of tergites) . . . . . *Allodia* sensu stricto
- Discal setae of mesoscutum distinct. Base of posterior fork usually before level of base of stem of median fork. (Abdominal markings when present vary in extent) . . . . . subgenus *Brachycampa* Winnertz
36. Mesepimeron without setae. Tibial setae small and weak, at most a little longer than tibial diameter . . . . . 37
- Mesepimeron with setae. Tibial setae long and strong . . . . . 38

37. Base of posterior fork below or before that of the median fork. Vein Sc rather long and usually ending in vein R (ending free in *T. vitta*) . . . . . *Trichonta* Winnertz
- Base of posterior fork beyond that of the median fork. Vein Sc ending free . . . . . *Phronia* Winnertz
38. Posterior fork present, its anterior branch a little divergent from vein  $M_2$  apically but parallel to or slightly convergent with posterior branch . . . . . *Mycetophila* Meigen
- Posterior fork absent, its anterior branch lost . . . . . 39
39. Vein CuA divergent from vein  $M_2$ . Laterotergite projecting. Mid tibia with 1 or more ventral setae . . . . . *Zygomyia* Winnertz
- Vein CuA parallel to or convergent with vein  $M_2$ . Laterotergite not projecting. Mid tibia without ventral setae . . . . . *Sceptonia* Winnertz

## Bolitophilidae

### *Bolitophila* Meigen, 1818

*Bolitophila* Meigen, 1818:220.

Type species: *Bolitophila cinerea* Meigen, 1818:221 (designation by Westwood, 1840:122).

This is a large mainly Holarctic genus, including all extant Bolitophilidae, but only the common European species *B. saundersi* (Curtis) has been found in N. Africa and the Atlantic Islands (Chandler and Ribeiro, in press). As indicated above, the record of *B. fusca* Meigen (= *B. hybrida* (Meigen)) in Israel by Bodenheimer (1937) requires confirmation.

### *Bolitophila hybrida* (Meigen, 1804)

*Macrocera hybrida* Meigen, 1804:47.

*Bolitophila fusca* Meigen, 1818:221.

DISCUSSION. *B. hybrida* is superficially similar to some other European species. Its genitalia have been figured in most detail by Hutson, Ackland and Kidd (1980).

BIOLOGY. Larvae develop in soft terrestrial agaric fungi.

DISTRIBUTION. This is a widespread species in Europe and is also found in East Siberia and the Caucasus, so its occurrence in Israel would not be altogether surprising.

## Diadocidiidae

### *Diadocidia* Ruthe, 1831

*Diadocidia* Ruthe, 1831:1210; Laštovka and Matile, 1972:216.

Type species: *Diadocidia flavicans* Ruthe, 1831:1211 [= *D. ferruginosa* (Meigen, 1830)] (original designation).



This is the only genus currently recognised in the Diadocidiidae and has a mainly Holarctic distribution, with one Australian and one South American species known. Laštovka and Matile (1972) revised the known Holarctic species, recognising two subgenera and 3 European species, 3 from North America and 1 from Japan. Saigusa (1973), however, mentioned that there were 6 Japanese species. The new species described here from Israel resembles the common European species *D. ferruginosa* (Meigen) but differs principally in details of the genital structure.

*Diadocidia furnacea* n. sp.

(Figs. 1-2)

DESCRIPTION. **Male.** Length of wing 4.0 mm.

**Head:** Brown, grey dusted; lateral ocelli close to eye margins; eyes not produced dorsally; antenna dark brown, with long setae on short basal segments; flagellum long, slender, with segments 3 times as long as broad.

**Thorax:** Shining dark brown, with grey dusting on acrostichal and dorsocentral rows (which are in 1 or 2 series, with bare stripes between these series and between the dorsocentrals and the long lateral bristling; scutellum with 2 pairs long setae among series of short marginals; pleura and mediotergite bare. **Legs:** Yellow, with long dark setae on coxae and short irregular setulae on all parts; mid tibia with 2 short posterior setae; hind tibia with series of short strong setae: 2 anterior, 3 dorsal and 4 posterior on apical half; tibial spurs more than twice apical tibial width. **Wing:** Yellowish with brown veins; mostly covered with both microtrichia and macrotrichia; vein Sc ends in costa; vein Sc<sub>2</sub> before middle of vein Sc and well before base of vein Rs; vein R<sub>1</sub> ends at nearly two thirds of wing length; vein R<sub>4</sub> absent; vein R<sub>5</sub> downturned apically; costa extends 0.4 distance from tip of vein R<sub>5</sub> to that of vein M<sub>1</sub>; crossvein r-m, vein tb and base of vein CuA<sub>1</sub> form irregular line just beyond basal third of wing; vein CuP ends near base of posterior fork; vein A<sub>1</sub> reaches wing margin. **Haltere:** Brownish yellow.

**Abdomen:** Shining dark brown; sclerites of pregenital segments all well developed; T8 more than half as long as T7, its sternite longer; T9 short, blunt apically; gonostylus bifid apically.

**Female.** Unknown.

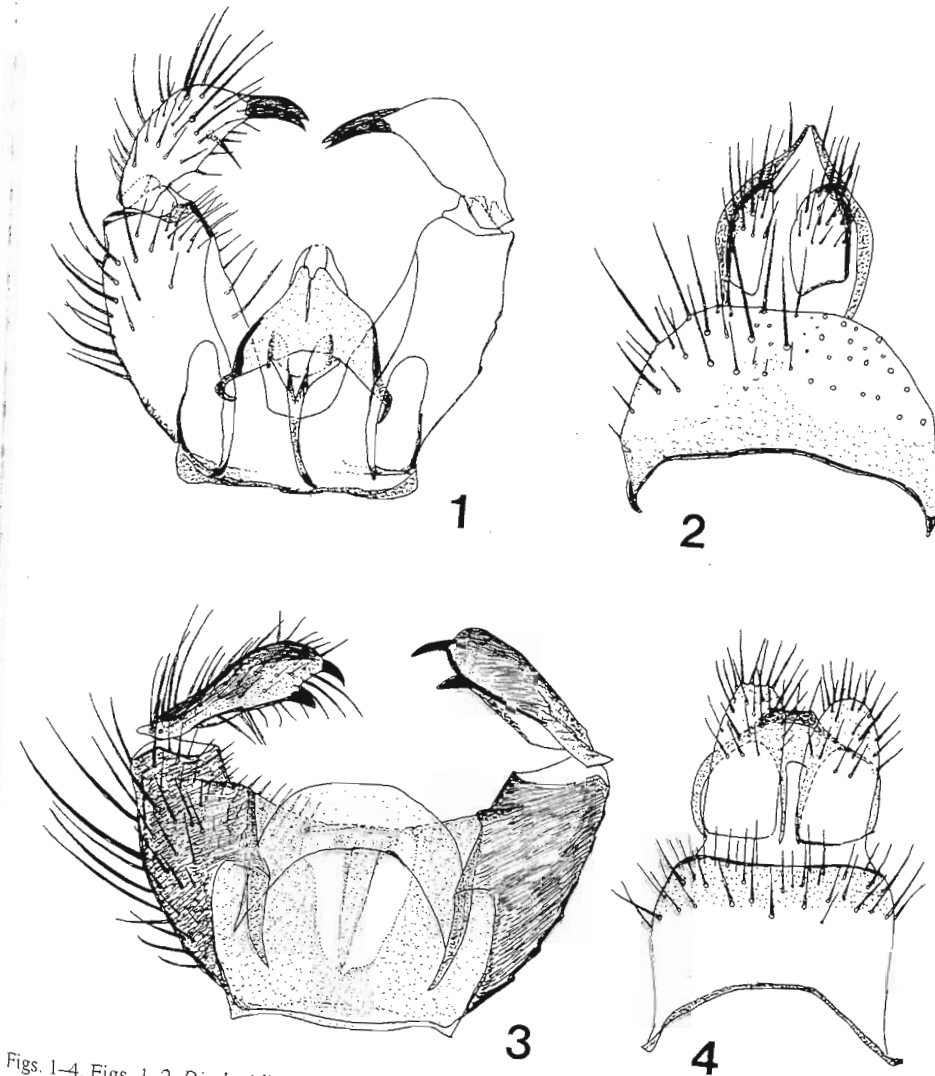
**MATERIAL EXAMINED.** Holotype ♂, ISRAEL: Montfort, 14.iii.1985, A. Freidberg (TAU).

**ETYMOLOGY.** The name refers to the darker brown body coloration of the species as compared to the other Palaearctic species.

**DISCUSSION.** The male genitalia most closely resemble *D. ferruginosa* of the species figured by Laštovka and Matile (1972). However, T9 has a more rounded apical margin and the aedeagal structure differs in detail.

**BIOLOGY.** Unknown. *D. ferruginosa* develops in rotten wood, probably in association with fungal mycelium; it forms a tough silk cocoon within the substrate.

**DISTRIBUTION.** Israel.



Figs. 1-4. Figs. 1-2. *Diadocidia furnacea* n. sp., ♂ genitalia: 1. Dorsal view without T9 and cerci. 2. T9 and cerci. Figs. 3-4. *Macropera parcehirsuta* Becker, ♂ genitalia: 3. Dorsal view without T9 and cerci. 4. T9 and cerci.

## Keroplastidae

## Macrocerinae

*Macrocera* Meigen, 1803

*Macrocera* Meigen, 1803:261.

Type species: *Macrocera lutea* Meigen, 1804:46 (designation by Curtis, 1837:637).

This is a large genus found in all zoogeographic regions. Ten species occur in the studied material and as mentioned in the introduction, a further species *M. vittata* Meigen has been recorded by Bodenheimer (1937).

Most species have male genitalia of rather simple structure with T9 and cerci small, aedeagus and parameres weakly sclerotised or unsclerotised, and gonostyli of simple form. The gonostylus usually bears two broad internal teeth as figured here for *M. parcehirsuta* Becker (this also applies to *M. fasciata* Meigen, *M. crassicornis* Winnertz, *M. phalerata* Meigen and *M. vittata* Meigen of the species dealt with here). A few species (including in Israel *M. pusilla* Meigen) have three teeth in this position, while others (including *M. nigricoxa* Winnertz) have a blunt gonostylus without teeth.

There is a group of species in the eastern Mediterranean region, which have rather more complex genital structure, with a greater diversity in the form of the gonostylus and often a more sclerotised aedeagus and accessory structures; T9 may be larger and the cerci are more elongate and tapered apically. This group includes *M. gemagea* Bechev (1991) from Bulgaria, an undescribed species from Greece and 4 species newly described here. All are similar in external characters, having unmarked wings with macrotrichia on the membrane and vein R<sub>1</sub> not thickened apically. Their tibial spurs are at least 1.5 times as long as the apical tibial width. These characters are found in some other species of the genus and no other structural characters distinguishing them from other species of *Macrocera* have been detected; their relationship to other species of the genus is thus uncertain.

KEY TO SPECIES OF *MACROCERA* IN ISRAEL

1. Macrotrichia absent from wing membrane ..... 2  
— Macrotrichia present on wing membrane ..... 6
2. Vein Sc ending before tip of basal cell (i.e. before base of radiomedial fusion). Vein R<sub>1</sub> not thickened apically. Male gonostylus with three internal teeth . . . *M. pusilla* Meigen  
— Vein Sc ending at level of tip of basal cell and base of radiomedial fusion. Vein R<sub>1</sub> with or without apical thickening. Male gonostylus with no more than two internal teeth . . . 3
3. Vein R<sub>1</sub> thickened apically. Male gonostylus with two internal teeth . . . *M. vittata* Meigen  
— Vein R<sub>1</sub> not thickened apically. Male gonostylus with or without teeth . . . 4
4. Small dark patch between veins of posterior fork where they are convergent. Male gonostylus blunt without internal teeth . . . *M. nigricoxa* Winnertz  
— This marking absent. Male gonostylus with two internal teeth . . . 5

5. Antenna unicolorous brown . . . . . *M. fasciata* Meigen  
— Antenna with flagellar segments yellow at base and tip, with a broad dark median band . . . . . *M. crassicornis* Winnertz
6. Wing strongly marked: a large central brown spot from radiomedial fusion to include constriction in posterior fork; a patch near tip of vein R<sub>1</sub>; more faintly darkened wing tip. Vein R<sub>1</sub> swollen apically . . . . . 7  
— Wing unmarked. Vein R<sub>1</sub> not enlarged apically . . . . . 8
7. Male antenna little more than 1.5 times as long as body (female a little shorter). Macrotrichia on wing membrane more widespread. Vein R<sub>4</sub> absent (or if present usually short and not setose). Mesoscutum with three more or less distinct stripes. Abdomen mostly brown with obscure yellow bands basally on T2–T4 . . . *M. parcehirsuta* Becker  
— Male antenna more than 3 times as long as body (not more than 1.5 times as long as body in female). Macrotrichia mainly on apical third of wing (more widespread in posterior fork in female). Vein R<sub>4</sub> present and setose. Mesoscutum mainly yellow with large brown posthumeral spot on each side. Abdomen mainly yellow with lateral posterior brown spots on T2–T6 . . . . . *M. phalerata* Meigen
8. Vein Sc ends near level of tip of basal cell. Vein Rs and base of vein M bear macrotrichia . . . . . *M. aquabellissima* n. sp.  
— Vein Sc ends well before level of tip of basal cell. Vein Rs and base of vein M bare . . . . . 9
9. Vein R<sub>5</sub> straight apically. Costa barely extending beyond vein R<sub>5</sub> . . . . . *M. hermonophila* n. sp.  
— Vein R<sub>5</sub> downturned apically. Costa extends about a third distance from vein R<sub>5</sub> to vein M<sub>1</sub> . . . . . 10
10. Vein R<sub>4</sub> indistinct. Gonostylus with one apical and one internal tooth . . . . . *M. sinaitica* n. sp.  
— Vein R<sub>4</sub> complete and distinct. Gonostylus broad with ventral toothed process . . . . . *M. levantina* n. sp.

*Macrocera aquabellissima* n. sp.

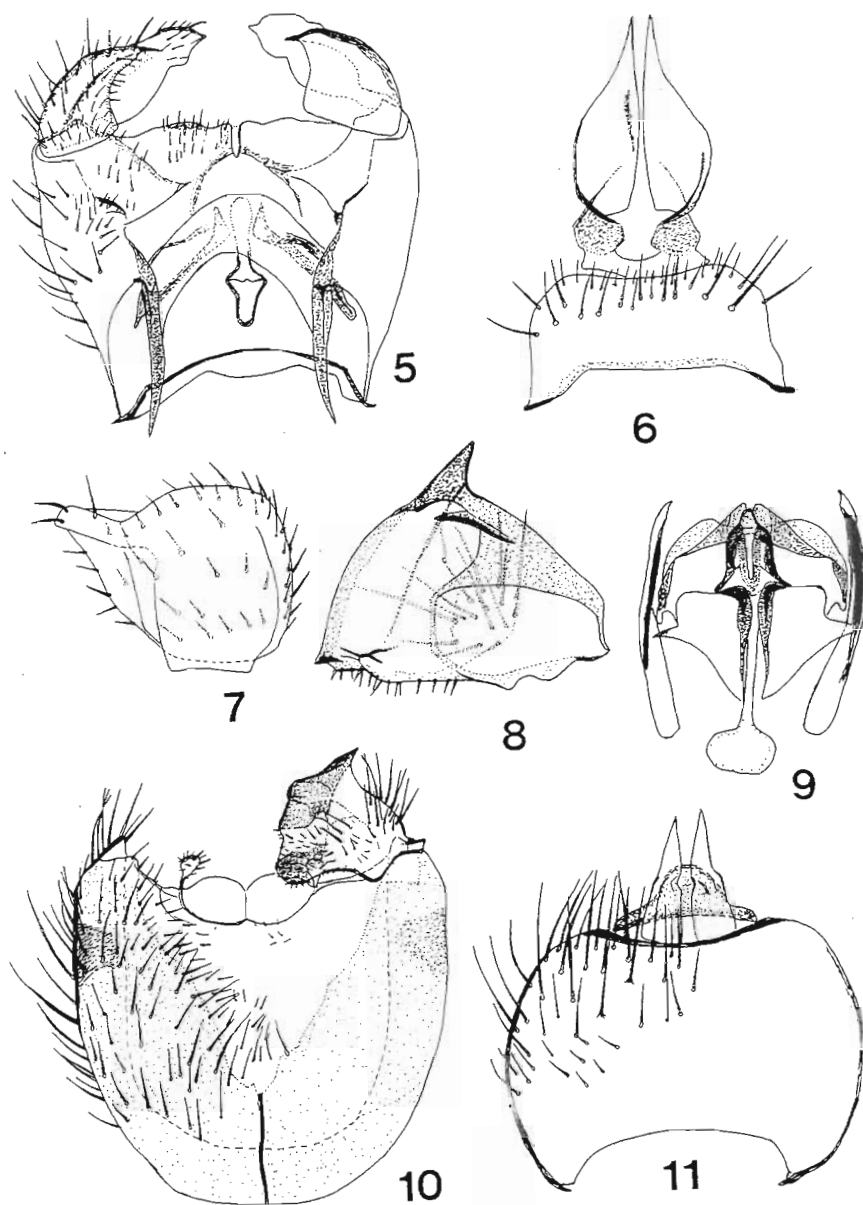
(Figs. 8–11)

DESCRIPTION. **Male.** Length of wing 4.1 mm.

**Head:** Shining dark brown; antenna brownish yellow, with pedicel a little paler apically; basal flagellar segment six times as long as broad, succeeding segments shorter; antenna shorter than body; palpus yellow.

**Thorax:** Mesoscutum brownish yellow, with three shining dark brown stripes, separated by uniseriate dorsocentrals; long dark setae on side margins; scutellum, pleura and mediotergite shining brown; prothorax yellow; several setae near top of anepisternum; pleura otherwise and mediotergite bare. Legs: Yellow including coxae (mid and hind coxae a little brownish), with short dark setulae; tibial spurs brown, about 1.5 times as long as apical tibial width; fore metatarsus 0.7 length of its tibia. Wing: Clear with macrotrichia over most of membrane (absent from costal and subcostal cells); all veins setose including Sc, Rs, R<sub>4</sub> and base of M;





Figs. 5-11. Figs. 5-7. *Macrocera levantina* n. sp., ♂ genitalia: 5. Dorsal view without T9 and cerci. 6. T9 and cerci. 7. Internal view of left gonostylus. Figs. 8-11. *Macrocera aquabellissima* n. sp., ♂ genitalia: 8. Internal view of right gonostylus. 9. Dorsal view of aedeagus and parameres. 10. Ventral view of gonocoxite and gonostylus. 11. Dorsal view of T9 and cerci.

rather few setae in front of veins  $tb$  and  $R_5$ ; vein  $Sc$  ends well beyond level of base of vein  $R_s$  and practically level with tip of basal cell; vein  $R_s$  downturned apically; costa extends a third distance from vein  $R_s$  to vein  $M_1$ ; vein  $R_1$  not enlarged apically; vein  $M_3+CuA_1$  weak, unpigmented at base; vein  $A_1$  ends in wing margin. Haltere: Yellow.

**Abdomen:** All dark brown; T9 broad, emarginate apically; cercus small, tapered to point apically; gonostylus broad, with strong dorsal spine; aedeagus strongly sclerotised.

**Female.** Unknown.

**MATERIAL EXAMINED.** Holotype ♂, ISRAEL: 'En Hemed (labelled: "Israel, Aquabella, Jerusalem"), 25.iii.1955, O. Theodor (TAU). The type locality is not in Yerushalayim (= Jerusalem).

**ETYMOLOGY.** From the name applied to the type locality.

**DISCUSSION.** This species is most distinct among the four new species described here in having an enlarged T9 and strongly sclerotised aedeagus. It is, however, similar to the other three species in most external characters.

**BIOLOGY.** Unknown.

**DISTRIBUTION.** Israel.

#### *Macrocera crassicornis* Winnertz, 1863

*Macrocera crassicornis* Winnertz, 1863:678.

**MATERIAL EXAMINED.** (7♂, 5♀), ISRAEL: Mount Hermon, 1600 m and 1650 m; Panyas; Bar'am; Bet haKerem; Yerushalayim (= Jerusalem). Specimens collected in ii, iv-vii and x-xi (TAU).

**DISCUSSION.** This species is similar to *M. fasciata* Meigen but easily recognised by the antennal character. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

**BIOLOGY.** Unknown. In Europe this species occurs in more open habitats (scrub, woodland edge and wetland) than does *M. fasciata*.

**DISTRIBUTION.** Widespread in Europe, also recorded from Afghanistan and North Africa. There are unpublished records from Turkey and some Mediterranean islands (Mallorca, Crete, Euboa, Corfu and Cephalonia).

#### *Macrocera fasciata* Meigen, 1804

*Macrocera fasciata* Meigen, 1804:47.

*Macrocera hyalinimaculata* Santos Abreu, 1920:17.

**MATERIAL EXAMINED.** ISRAEL: Panyas, 24.iv.1982, A. Freidberg (1♂) (TAU).

**DISCUSSION.** The synonymy with *M. hyalinimaculata* from the Canary Islands was established by Báez and Santos Pinto (1981), who figured the male genitalia, which were also figured by Hutson, Ackland and Kidd (1980).

**BIOLOGY.** This species has been reared in Europe from larvae living in webs in caves and on

cellar walls, where they are considered to be carnivorous. It is common in woodland in Europe so other substrates must be utilised.

**DISTRIBUTION.** Widespread in Europe and as indicated by the synonymy found in the Canary Islands. There are unpublished records for Crete and Cyprus.

*Macrocera hermonophila* n. sp.

(Figs. 12–13)

**DESCRIPTION. Male.** Length of wing 3.2 mm.

**Head:** Dark brown; antenna brown, with basal segments yellowish; basal flagellar segment 4 times as long as broad (antennae of holotype defective, one has 10 flagellar segments, other only 4 but total antennal length would be shorter than body); palpus yellow.

**Thorax:** Almost uniformly shining dark brown, with narrow sides of mesoscutum, humeral flange, prothorax and spiracular area yellow; several setae near tip of anepisternum; pleura otherwise and mediotergite bare. Legs: Yellow, with mid and hind coxae shining brown; tibial spurs on mid leg slightly longer than apical tibial width, those on hind leg about 1.5 times as long; fore metatarsus 0.6 length of its tibia. Wing: Clear, with macrotrichia on most of membrane, sparse on basal third and absent from costal and subcostal cells; most veins setose including Sc and  $R_4$  but Rs bare as is basal part of vein M; vein Sc ends well beyond level of base of vein Rs, vein  $R_1$  not swollen apically; vein  $R_4$  short, ending in costa more than its length from vein  $R_1$ ; vein  $R_5$  straight apically, ending well before wing tip; costa extends only 0.1 distance from vein  $R_5$  to vein  $M_1$ ; vein  $M_3+CuA_1$  a little faint at base; vein  $A_1$  ends in wing margin. Haltere: Stern pale, brownish on knob.

**Abdomen:** Brown, with T6–T8 darker; T8 about half length of T7, its sternite longer, rounded apically; T9 small, cercus elongate, pointed at tip but not produced; gonostylus with 2 sclerotised apical teeth (more typical of genus than other hairy winged Israeli species); aedeagus not strongly sclerotised.

**Female.** Unknown.

**MATERIAL EXAMINED.** Holotype ♂, ISRAEL: Mount Hermon, 1600 m, 5.ix.1981, A. Freidberg (TAU).

**ETYMOLOGY.** From the type locality, Mount Hermon.

**DISCUSSION.** This species differs from allied species principally in the genital structure.

**BIOLOGY.** Unknown.

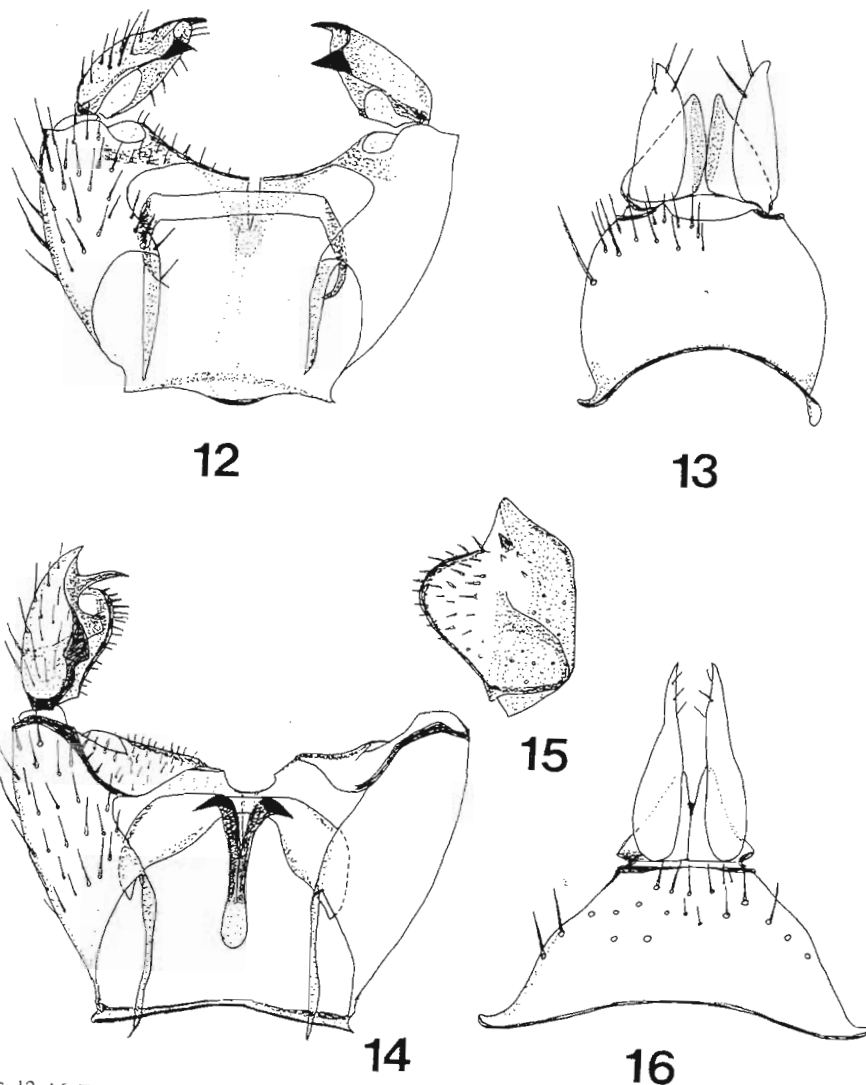
**DISTRIBUTION.** Israel.

*Macrocera levantina* n. sp.

(Figs. 5–7)

**DESCRIPTION. Male.** Length of wing 3.4–4.3 mm.

**Head:** Shining dark brown; antenna brown with pedicel a little paler apically; basal flagellar segment about 6 times as long as broad, segments 2–4 of similar length, remaining segments progressively shorter; antenna shorter than body length; proboscis and palpi brown.



Figs. 12–16. Figs. 12–13. *Macrocera hermonophila* n. sp., ♂ genitalia: 12. Dorsal view without T9 and cerci. 13. T9 and cerci. Figs. 14–16. *Macrocera sinaitica* n. sp., ♂ genitalia: 14. Dorsal view without T9 and cerci. 15. Internal view of left gonostylus. 16. T9 and cerci.

**Thorax:** Mesoscutum obscurely yellow on humeral area and sides, with 3 broad narrowly separated shining dark brown stripes on disc; prothorax brownish yellow; pleura, scutellum and mediotergite shining dark brown; several setae near top of anepisternum; pleura otherwise and mediotergite bare. Legs: Yellow, with mid coxa brownish basally, hind coxa brown externally; spurs on mid and hind tibiae about 1.5 times tibial width; fore metatarsus 0.7

length of its tibia. Wing: Clear, with macrotrichia on much of membrane, sparse on basal third, absent from costal and subcostal cells, basal cell, cells  $r_1$  and  $r_4$ ; veins setose including Sc and  $R_4$  but not  $R_s$  and base of M; vein Sc ends beyond base of vein  $R_s$  but well before tip of basal cell; vein  $R_1$  not thickened apically; vein  $R_4$  elongate, ending more than its length from tip of vein  $R_1$ ; vein  $R_s$  a little downturned apically; costa extends 0.3 distance from vein  $R_s$  to vein  $M_1$ ; vein  $M_3+CuA_1$  unpigmented at base. Haltere: Yellow.

**Abdomen:** Mainly shining dark brown, with T2–T5 narrowly yellow apically; T8 half length of T7, its sternite longer, rounded apically; T9 broad, short and half length of T8; cercus elongate, tapered to point at tip; gonostylus broad, with ventral toothed process; aedeagus weakly sclerotised.

**Female.** Similar to male, with antenna two thirds body length, shorter than in male; fore metatarsus only 0.5 length of its tibia; abdomen entirely dark brown; T4–7 distinctly broader than in male; ovipositor short with slender cercus.

**MATERIAL EXAMINED.** Holotype ♂, ISRAEL: Gal'ed, 19.iii.1983, A. Freidberg (TAU). Paratypes: ISRAEL: Bar'am, 18–20.xi.1977 (9♂); Rosh Pinna, 6.iii.1985 (1♂); Hefa, 20.ii.1978 (1♀); Herzliyya, 5.iii.1982, Malaise trap (1♂); Ashdod, 1.i.1975 (2♂) (all A. Freidberg); Sederot, 27.ii.1974, D. Furth and A. Freidberg (5♂, 1♀). Other material: ISRAEL: Bar'am, 11–14.xi.1977 (2♂); Bar'am, 18–20.xi.1977 (3 lacking abdomen); Ashdod, 1.i.1975 (1♂); Hulda, 6.ii.1975 (1 without abdomen); Qiryat Gat, 13.iv.1977 (1 without abdomen) (all A. Freidberg) (all material, TAU).

**ETYMOLOGY.** From the wide distribution within Israel, suggesting a wider distribution in the region.

**DISCUSSION.** This species is close to *M. sinaitica* n.sp. except in genital structure.

**BIOLOGY.** Unknown.

**DISTRIBUTION.** Israel.

### *Macrocera nigricoxa* Winnertz, 1863

*Macrocera nigricoxa* Winnertz, 1863:679.

*Macrocera tusca* Loew, 1869:17.

**MATERIAL EXAMINED.** (9♂, 3♀), ISRAEL: Panyas; Montfort; Bar'am; Meron; Karmel; Nahal Tirza; Etanim; Nahal Perat (all TAU). Collected in ii–vi, ix and x.

**DISCUSSION.** The synonymy was established by Bechev (1992a), who redescribed and figured the species. The genitalia were also figured by Hutson, Ackland and Kidd (1980). As discussed by Chandler and Ribeiro (in press) it resembles *M. diversimaculata* Santos Abreu from the Canary Islands in external characters and in lacking teeth on the gonostylus but the latter is otherwise of different form.

**BIOLOGY.** Unknown. It occurs in open as well as wooded habitats.

**DISTRIBUTION.** It is a widespread species in western and central Europe. The type of *M. tusca* was from Italy and there are unpublished records from mainland Greece and several of the eastern Mediterranean islands (Euboa, Lesbos, Samos, Corfu, Crete and Cyprus).

### *Macrocera parcehirsuta* Becker, 1908

(Figs. 3–4)

*Macrocera parcehirsuta* Becker, 1908a:232.

**MATERIAL EXAMINED.** (5♂, 10♀), ISRAEL: Bar'am; Montfort; Nahal Amud; Hefa; 'En haShofet; Gal'ed; Etanim (all TAU). Collected in i, iii–iv, vi and xi–xii.

**DISCUSSION.** *M. parcehirsuta* was described from Algeria. Edwards (1928) recorded it from Corsica, suggesting that it was a small dark form of *M. phalerata* Meigen. However, the holotype was examined and compared with *M. incompleta* Becker by Chandler and Ribeiro (in press) and it was concluded to be a good species, distinguished from *M. phalerata* by the characters given in the key. The male genitalia have not previously been figured and are illustrated here (Figs. 3–4).

**BIOLOGY.** Unknown.

**DISTRIBUTION.** Only Israel and Algeria can be confirmed. There are records of *M. parcehirsuta* from Iran (Matile, 1969) and the mainland of France (Var) (Matile, 1977) but examination of the specimens (in MNHN, Paris) on which these records were based has shown them to be *M. phalerata*. The same applies to Edwards' record from Corsica.

### *Macrocera phalerata* Meigen, 1818

*Macrocera phalerata* Meigen, 1818:223.

**MATERIAL EXAMINED.** (10♂, 4♀), ISRAEL: Panyas; Tel Dan; Bar'am (all TAU). Collected in iv–vi and xi.

**DISCUSSION.** Characters separating this species from *M. parcehirsuta*, to which it is evidently allied, are given in the key. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

**BIOLOGY.** Unknown. Edwards (1925) recorded this species as reared from soil under grass in parkland. It also occurs in woods.

**DISTRIBUTION.** A widespread and frequent species in Europe. As indicated above, Matile (1969) recorded it from Iran under the name *M. parcehirsuta* and there are unpublished records from Corsica, Sardinia, Sicily, Euboa and Tunisia.

### *Macrocera pusilla* Meigen, 1830

*Macrocera pusilla* Meigen, 1830:293.

**MATERIAL EXAMINED.** (19♂, 4♀), ISRAEL: Park HaYardén; Herzliyya; Bet Dagan; Gilgal; Shafir; 'Enot Qane (TAU). 1♀, labelled "Palestine: Jenin, 11.viii.1920, P.J. Barraud" (NHML). Specimens collected in ii–iii, vi, viii–xii.

**DISCUSSION.** This species resembles the European *M. anglica* Edwards and *M. azorica* Storå from the Azores, in the presence of three teeth on the gonostylus. Comparative characters are given by Chandler and Ribeiro (in press), who use the name *M. nana* Macquart, 1826 for the

species. It differs most obviously in the presence of black abdominal bands and thoracic markings. The male genitalia were figured by Hutson, Ackland and Kidd (1980). The synonymy with *nana* Macquart was first proposed by Macquart (1834) and the name *nana* has been adopted recently for this species (Matile, 1977; Chandler, 1990) but the type of *nana* is understood to be a species of *Bolitophila* Meigen (Matile, pers. comm.) so the usage of the name *pusilla* Meigen for the species is restored here.

**BIOLOGY.** Unknown. Found in scrub, woodland edge and wetlands.

**DISTRIBUTION.** Widespread but local in Europe. It was recorded from Egypt by Madwar (1935) under the name *M. anglica*. The Egyptian material and specimens from Iraq (Basra) are present in the NHML collection. Norbert Caspers has informed me of an unpublished record from Tunisia.

*Macrocera sinaitica* n. sp.  
(Figs. 14–16)

**DESCRIPTION. Male.** Length of wing approximately 4.5 mm.

**Head:** Shining dark brown; (antennae of holotype broken off); palpus dull brown.

**Thorax:** Mesoscutum narrowly yellow on humeral area and side margins but most of disc occupied by 3 fused shining dark brown stripes, scutellum shining dark brown, prothorax brownish yellow, pleura and mediotergite mostly shining dark brown; pleura bare except for 2 setae near top of anepisternum. Legs: Yellow, with mid and hind coxae brown externally; tibial spurs on mid legs not much longer than tibial width, those on hind tibia less than 1.5 times as long as tibial width; fore metatarsus 0.65 length of its tibia. Wing: Clear (tips broken off in holotype), with macrotrichia on most of membrane but absent from costal and subcostal cells; most veins setose including Sc but Rs and base of M bare; vein Sc ends distinctly beyond level of base of vein Rs but well before tip of basal cell; vein R<sub>4</sub> indistinct; vein R<sub>5</sub> downturned apically with costa extending beyond it (probably a third distance to tip of vein M<sub>1</sub>); vein R<sub>1</sub> not enlarged apically; vein M<sub>3</sub>+CuA<sub>1</sub> weak and unpigmented at base; vein A<sub>1</sub> ends in wing margin. Haltere: Yellow.

**Abdomen:** Dark brown, with T2–T4 narrowly yellow apically; T8 narrow, about half length of T7; T9 broad basally, narrowed to blunt apical margin; cercus narrow and tapered to a point; gonostylus broad with one apical and one internal tooth; aedeagus sclerotised.

**Female.** Unknown.

**MATERIAL EXAMINED.** Holotype ♂, EGYPT: labelled: "Sinai, W. Tlach, 7.iv.1974, D. Furch (TAU).

**ETYMOLOGY.** From the type locality which is in Sinai.

**DISCUSSION.** This species resembles *M. levantina* n. sp. closely except in the male genitalia which differ in the form of the gonostylus among other respects.

**DISTRIBUTION.** Egypt.

*Macrocera vittata* Meigen, 1830

*Macrocera vittata* Meigen, 1830:293.

**DISCUSSION.** This was recorded from Israel by Bodenheimer (1937) but its occurrence requires confirmation. It is a large mainly yellow species with more or less distinct dark thoracic stripes and clear wings with vein R<sub>1</sub> distinctly thickened apically. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

**DISTRIBUTION.** A common and widespread species in Europe. There are unpublished records for Corsica, Sardinia, Sicily, Naxos and mainland Greece.

Keroplatinae

Orfeliini

*Asindulum* Latreille, 1805

*Asindulum* Latreille, 1805:290; Matile, 1975:193.

Type species: *Asindulum nigrum* Latreille, 1805:290 (monotypy).

This is a small Holarctic genus. Matile (1974b) described *A. theodori* from an Israeli specimen. He later (Matile, 1975) revised the genus, separating from it *Macrorrhyncha* Winnertz (q.v.).

The similarities between *Asindulum* and *Urytalpa* Edwards on the one hand and between *Macrorrhyncha* Winnertz and *Neoplatyura* Malloch on the other hand were discussed by Matile (1975). *Urytalpa* and *Neoplatyura* differ from *Asindulum* and *Macrorrhyncha* in the mouthparts not being prolonged. They also show less uniformity in genital structure, and *Neoplatyura* particularly may not be monophyletic as presently constituted. A species from Israel referred here to *Urytalpa* on the presently recognised generic characters closely resembles *A. theodori* in both external appearance and genital structure and is compared with it in the descriptions given. Females, which do not have the head produced below the eyes, are concluded to belong to the *Urytalpa* species, although they have the proboscis longer than in the *Urytalpa* male; females certainly belonging to *A. theodori* have thus not been recognised.

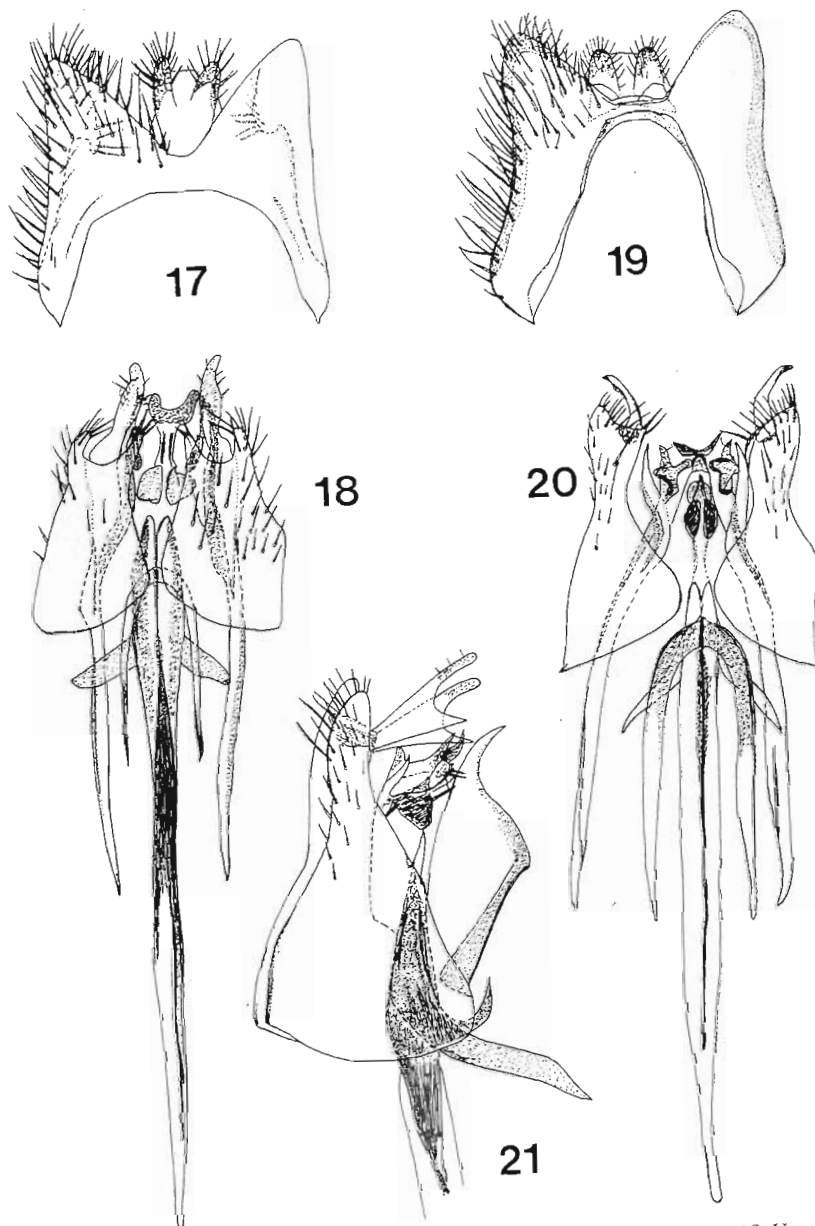
*Asindulum theodori* Matile, 1974b  
(Figs. 17–18)

*Asindulum theodori* Matile, 1974b:73; Matile, 1975:500.

**MATERIAL EXAMINED.** (7♂), ISRAEL: Karmel, 6.iii.1971 (Holotype ♂, labelled "Mount Carmel") (J. Kugler; TAU); Herzliyya, Malaise trap, 5.iii.1982 (2♂), 7.iii.1982 (2♂), 18.iv.1982 (1♂), 20.iv.1982 (1♂) (A. Freidberg; TAU).

**DISCUSSION.** Although described and figured by Matile (1974b, 1975) *A. theodori* is figured again here, from other aspects, including the aedeagus (not figured by Matile) for direct comparison with *Urytalpa nussbaumi* n. sp.

The males examined (length of wing 3.9–4.5 mm) resemble *U. nussbaumi* in general appearance, including the abdomen being elbowed from T5 onwards, and coloration. They



Figs. 17–21. Figs. 17–18. *Asindulum theodori* Matile, ♂ genitalia: 17. T9 and cerci. 18. Ventral view of gonocoxites, gonostyli and aedeagus. Figs. 19–21. *Urytalpa nussbaumi* n. sp., ♂ genitalia: 19. T9 and cerci. 20. Ventral view of gonocoxites, gonostyli and aedeagus. 21. Lateral view of gonocoxites and gonostyli, with posterior part of aedeagus.

differ from it in the longer mouthparts and the lower part of the head being produced below the eyes (Fig. 22) and in details of the genital structure (Figs. 17–18), e.g. the bifid gonostylus; flagellar segments a little longer (almost 3 times as long as broad); legs entirely pale yellow including coxae; costa only exceeding tip of vein  $R_5$  by 0.1 distance to tip of vein  $M_1$ ; abdomen more extensively yellow, especially T4 and T5 which may have a dark median stripe.

*A. theodori* differs, according to Matile (1975), from the European and North American species of *Asindulum* by T9 being longer than wide and lacking a long narrow setose ventral lobe, present on each side in these species.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

### *Macrorrhyncha* Winnertz, 1846

*Macrorrhyncha* Winnertz, 1846:16; Matile, 1975:501.

Type species: *Macrorrhyncha flava* Winnertz, 1846:17 (monotypy).

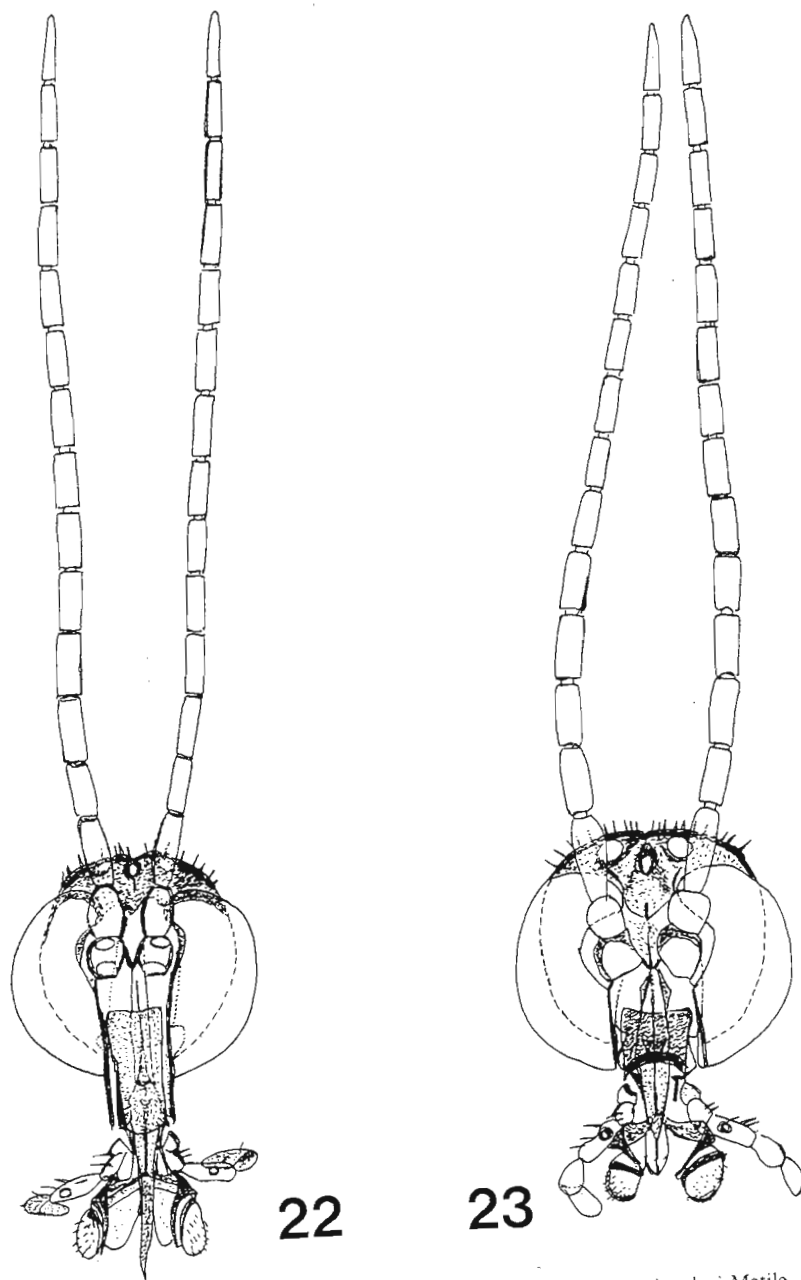
As defined by Matile (1975) this is a compact group characterised by the structure of the mouthparts and genitalia. It is well represented in the Mediterranean region with at least 3 undescribed species in addition to those recognised by Matile or described here.

Two species from Israel fall in this genus; one of them (*M. ardea* n. sp.) is a typical member of the genus, with the gonocoxites linked by a broad sclerotised ventral bridge and each gonocoxite bearing a process ending in a strong apical seta on its internal margin and having the lateral edge deeply emarginate to form a wide dorsal lobe; T9, although wide and more or less emarginate, is also not strongly constricted.

The other species, *M. guichardi* n. sp., with which material from Cyprus is considered conspecific, although differing in details of the gonostylar structure, is evidently nearly related to *M. veleka* Bechev, described from Bulgaria (Bechev, 1992b). Both species have the ventral bridge of the gonocoxites narrow and constricted medially, the setose internal process absent, the lateral margin entire (without the dorsal lobe) and T9 also narrow and constricted; the gonostylus in both species is strongly setose internally but lacks the distinct dorsal lobes found in most other species of the genus. Most specimens of *M. guichardi* from Israel also have the labella deflected forwards at an angle to the labrum but this is not so in the Cyprus material and may be an artefact due to recent feeding at the time of capture. No external characters to correlate with the genital differences have been found to suggest that *M. veleka* and *M. guichardi* should not be placed in *Macrorrhyncha*, although they are clearly not closely related to the other included species.

### KEY TO SPECIES OF *MACRORRHYNCHA* IN ISRAEL

1. Body entirely black (except obscurely yellow sternites). Proboscis longer than head. Vein  $R_4$  ends in costa distinctly more than twice its length beyond tip of vein  $R_1$  . . . . . *M. guichardi* n. sp.
- Sides of mesoscutum obscurely yellowish brown (male), mainly black with only humeral area paler (female). Proboscis about as long as head. Vein  $R_4$  ends less than twice its length beyond tip of vein  $R_1$  . . . . . *M. ardea* n. sp.



Figs. 22–23. Anterior view of macerated male heads. Fig. 22. *Asindulum theodori* Matile. Fig. 23. *Urytalpa nussbaumi* n. sp.

*Macrorrhyncha ardea* n. sp.

(Figs. 24, 26–29)

DESCRIPTION. **Male.** Length of wing 4.1–4.2 mm.

**Head** (Fig. 24): Black, thinly dusted; antenna dark brown, basal segments a little lighter, shorter than thorax with flagellar segments less than 1.5 times as long as broad; lower part of head produced to a third eye height, enclosing base of proboscis, which is as long as head; proboscis and palpus dark brown.

**Thorax:** Slightly shining with mesoscutum yellow laterally but with 3 almost fused darker stripes on disc, the central stripe black, the laterals dark reddish brown, extended to scutellum which is also dark reddish brown; pleura dark brown, not setose except for presence of posterior spiracular setae; mediotergite black, bare. Legs: Yellow, with coxae brownish on less than basal half; mid tibia with 2–4 anteroventral, 6 anterior, 5 posterior and 4–5 ventral setae; hind tibia with 4 anterior, 5 dorsal, 10 posterior setae. Wing: Clear greyish; vein Sc not setose, ending in costa just before level of base of vein Rs; vein R<sub>4</sub> curved up to costa more than its length beyond tip of vein R<sub>1</sub>; vein A<sub>1</sub> fading before margin; fork veins setulose. Haltere: Yellow.

**Abdomen:** Entirely slightly shining black; S1–S5 a little paler apically. Male genitalia, Figs. 26–28.

**Female.** Length of wing 3.5 mm; similar to male, although body all black without yellow sides to mesoscutum; antenna shorter and more slender, with flagellar segments nearly twice as long as broad; pedicel and base of first flagellar segment yellow; head produced below to two fifths eye height; proboscis shorter than in male but more than half head height and about equal to height of eye; proboscis and palpus dark, formed as in male; mesoscutum shining black, thinly grey dusted, with only small yellow patch in humeral suture, without distinct stripes; legs yellow, including all of coxae; pleura and abdomen all black; wing as male. Ovipositor, Fig. 29.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: HaMeshar, 16.iii.1988, A. Freidberg (TAU). Paratypes: ISRAEL: Arbél, 17.iv.1992, A. Freidberg (1 ♀); Nahal Perat (labelled “W. Kelt”), 25.iii.1975, A. Freidberg (1 ♂) (TAU).

ETYMOLOGY. From the elongate proboscis.

DISCUSSION. In the key by Matile (1975) *M. ardea* runs to couplet 4 but does not fit either alternative in the thoracic coloration of the male and the combination of black abdomen with yellow halteres.

BIOLOGY. Unknown. Adults are presumed to visit flowers.

DISTRIBUTION. Israel.

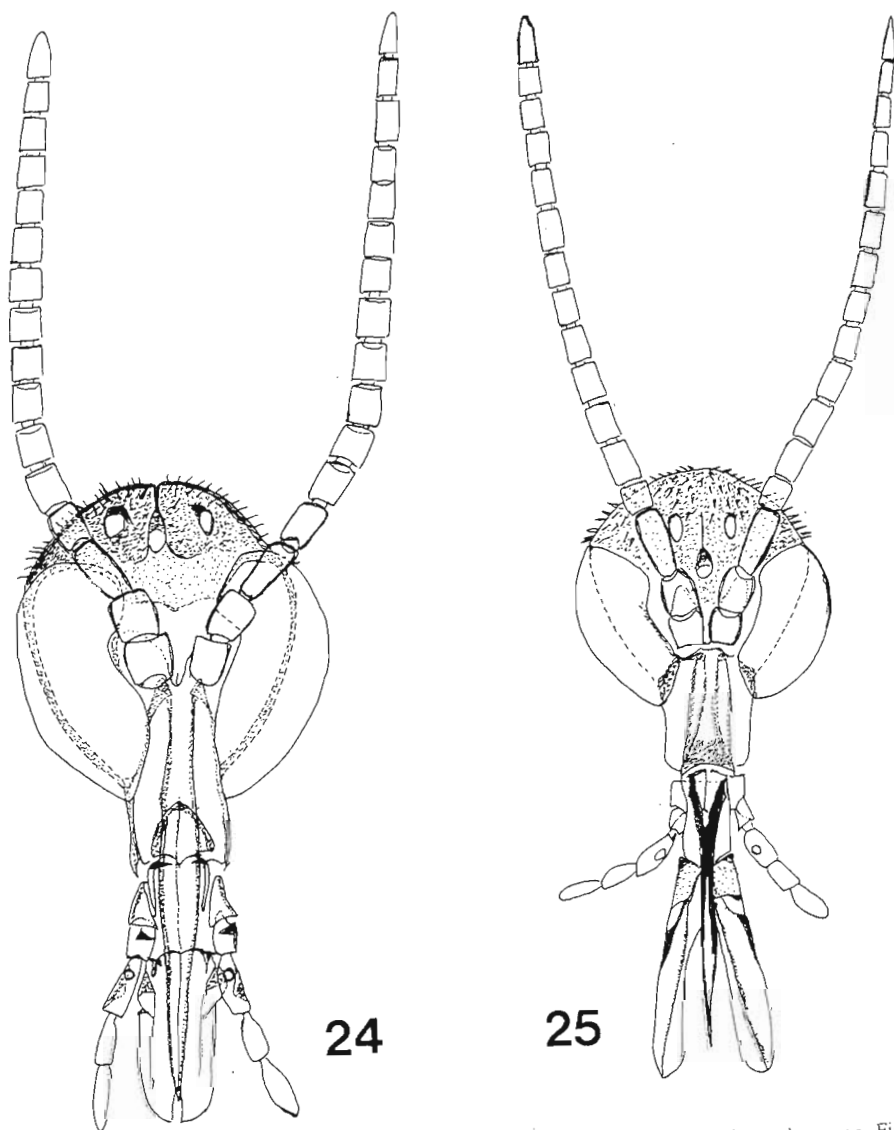
*Macrorrhyncha guichardi* n. sp.

(Figs. 25, 30–34)

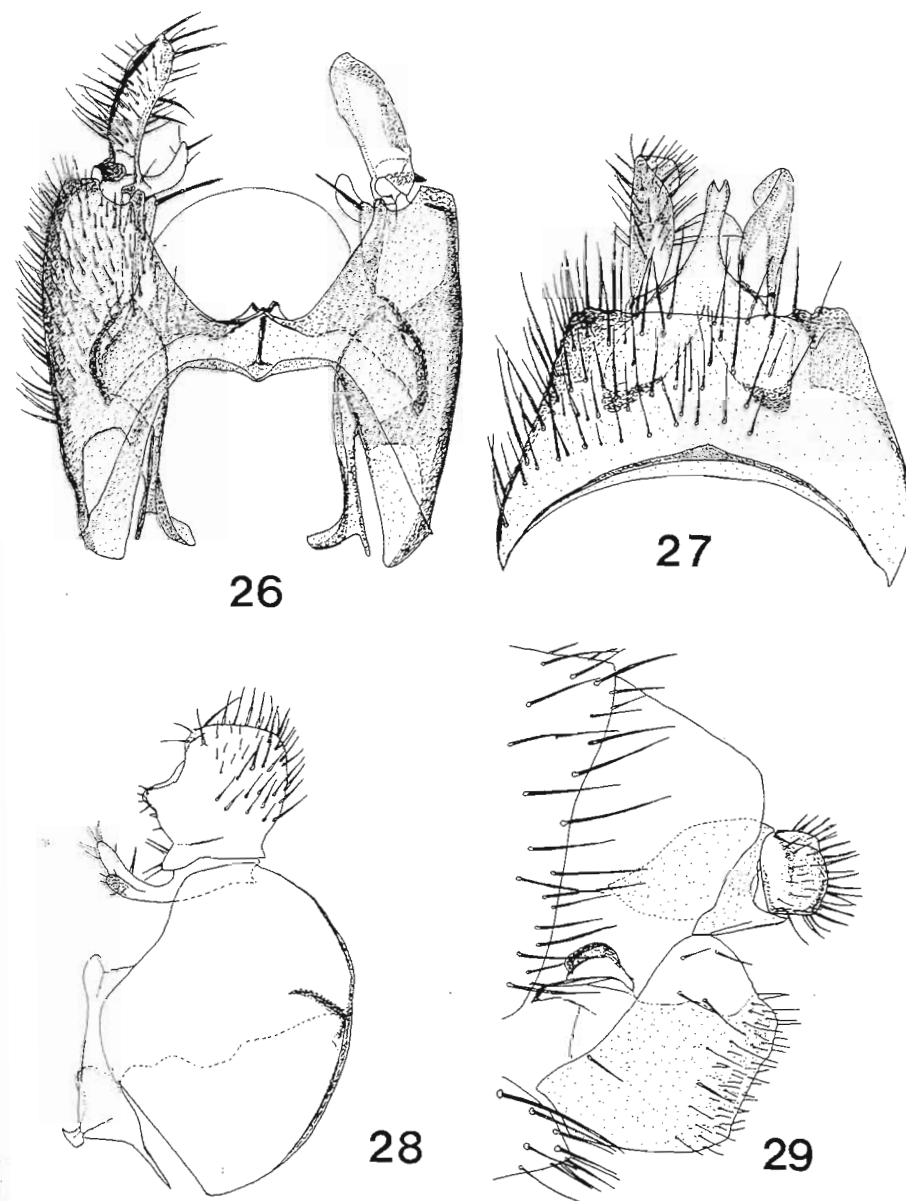
DESCRIPTION. **Male.** Length of wing 3.8 mm (holotype); 3.1–3.5 mm (Israel material).

**Head:** Entirely dark brown to black, including antenna, proboscis and palpus; antenna short, flagellar segments nearly twice as long as broad; proboscis longer than head, palpus





Figs. 24–25. Anterior view of macerated male heads. Fig. 24. *Macrorrhyncha ardea* n. sp. Fig. 25. *Macrorrhyncha guichardi* n. sp.



Figs. 26–29. *Macrorrhyncha ardea* n. sp., ♂ and ♀ genitalia: 26. Ventral view of ♂ gonocoxite and gonostyli. 27. Dorsal view of ♂ T9 and cerci. 28. Lateral view of ♂ left gonocoxite and gonostylus. 29. Lateral view of ♀ ovipositor.

about twice its length (labellae deflected forwards, exposing the long slender labrum in most Israeli material).

**Thorax:** Shining dark brown to black, darker on disc of mesoscutum; humeral flange and anterior spiracle pale yellow, prothorax yellowish brown; mesoscutum with irregularly triserial stripes of acrostichal and dorsocentral setae; a row of short scutellar marginals; posterior spiracular setae present, pleura and mediotergite otherwise bare. Legs: Pale yellow; fore metatarsus 0.7–0.75 length of its tibia (only fore legs present in types, but Israeli material has mid tibia with 4 anteroventral, 7 anterior, 5 dorsal, 9 posterior and 7 ventral setae; hind tibia with 3 anteroventral, 3 anterior, 8 dorsal, 13 posterior and 6 ventral setae). Wing: Greyish tinged, unmarked; vein Sc faintly reaches costa; vein  $R_4$  ending in costa 3–4 times its length from vein  $R_1$  (vein  $R_4$  absent from one wing of a Herzliyya specimen); costa extending only 0.2 distance from tip of vein  $R_5$  to vein  $M_1$ ; vein  $A_1$  fading before margin; radiomedial fusion setose ventrally. Haltere: Yellow.

**Abdomen:** Dark brown to black; sternites obscurely yellowish. Genitalia dark brown: Fig. 33, gonostylus of holotype; Figs. 30–32, Israeli example.

**Female** (described from Israeli material). Length of wing 3.1–3.4 mm. Antenna shorter than in male; flagellar segments from second onwards not much longer than broad; proboscis similar to male. Humeral flange brownish. Legs a little darker than in male, coxae may be brownish; fore metatarsus 0.6 length of its tibia; mid tibia with 3 anteroventral, 6 anterior, 2 dorsal, 5 posterior and 3 ventral setae; hind tibia with 2 anteroventral, 3 anterior, 4 dorsal, 6–9 posterior and 5–6 ventral setae. Abdomen broad, entirely slightly shining dark brown to black.

**MATERIAL EXAMINED.** Holotype ♂, CYPRUS: Dhavios, 10.iv.1971, K. Guichard (NHML). Paratype: CYPRUS: same data as holotype (1♂) (NHML). Other material: ISRAEL: Yehudiyya, 20.iii.1984, I. Nussbaum (1♂); Herzliyya, iv–v.1982, Malaise trap, A. Freidberg (15♂, 4♀) (all TAU).

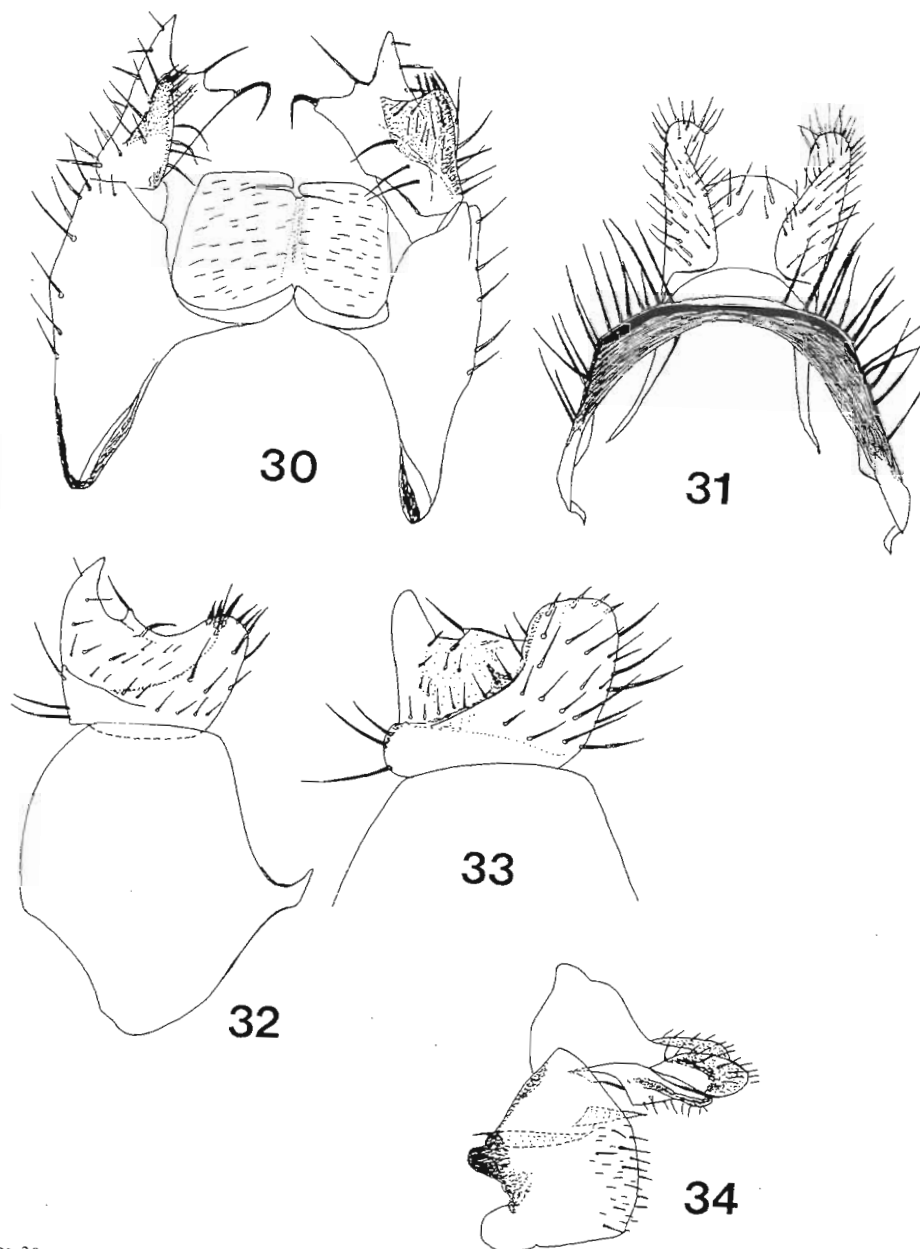
**ETYMOLOGY.** Named for Kenneth Guichard, who collected the type material.

**DISCUSSION.** This species was first recognised from the Cyprus specimens, from which the Israeli specimens differ in details of the gonostylar structure (Figs. 32–33). Because of the resemblance to *M. veleka* Bechev (1992b), photographs of the male genitalia of the holotype (only known specimen) of *M. veleka* were kindly forwarded by Dimitar Bechev; these were found to agree well with his figures and confirm that the gonostylus differs in form, especially in lateral view from *M. guichardi* and is regarded as distinct pending the examination of other material from intervening regions.

Both *M. veleka* and *M. guichardi* run to *M. geranias* Loew in Matile's key (1975), all having the body entirely black and mediotergite bare. Bechev (1992b) examined and figured the type of *M. geranias*, which is a typical member of the genus in respect of its genital structure; it has only been recorded from Rhodes but I have seen a number of specimens from Milos. *M. guichardi* differs from *M. veleka* and *M. geranias* in the entirely yellow halteres, these being black knobbed in the other species.

**BIOLOGY.** Unknown. Adults are presumed to visit flowers.

**DISTRIBUTION.** Cyprus and Israel.



Figs. 30–34. *Macrorrhyncha guichardi* n. sp., ♂ and ♀ genitalia: 30. Ventral view of ♂ gonocoxites and gonostyli. 31. Dorsal view of ♂ T9 and cerci. 32. Lateral view of ♂ left gonocoxite and gonostylus (Israel). 33. Lateral view of left gonocoxite and gonostylus (Cyprus holotype). 34. Lateral view of ♀ ovipositor.

*Rutylapa* Edwards, 1929

*Rutylapa* Edwards, 1929:171 (as subgenus of *Platyura* Meigen, 1803).

Type species: *Platyura ruficornis* Zetterstedt, 1851:4081 (original designation).

This genus has a mainly tropical distribution but there is a single Palearctic species, which has been found in Israel.

*Rutylapa ruficornis* (Zetterstedt, 1851)

*Platyura ruficornis* Zetterstedt, 1851:4081.

*Rutylapa ruficornis* (Zetterstedt); Edwards, 1929:171.

MATERIAL EXAMINED. ISRAEL: Panyas, 1.vii.1986, A. Freidberg (1♂, 1♀); Park HaYardén, 18.vi.1982, Malaise trap, A. Freidberg (1♂) (TAU).

DISCUSSION. The specimens from Israel agree well with European specimens. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

BIOLOGY. Unknown. In Britain it occurs in wetland habitats, especially wooded and open fens.

DISTRIBUTION. A local species, recorded from Britain, Germany, Sweden and European Russia. There is an unpublished record from mainland Greece.

*Neoplatyura* Malloch, 1928

*Neoplatyura* Malloch, 1928:601; Edwards, 1929:167 (as subgenus of *Platyura* Meigen, 1803).

Type species: *Platyura setiger* Johannsen, 1910:252 (original designation).

This genus is represented in most zoogeographic regions but has a wide range of genital structure and is probably not monophyletic as presently constituted. Some species are close to *Macrorrhyncha* and probably belong in that group, but those found in Israel belong to other species groups. Two species occur in Israel, one of them also found in Europe, the other newly described here.

KEY TO SPECIES OF *NEOPLATYURA* IN ISRAEL

1. Abdomen entirely black in both sexes . . . . . *N. karmelita* n. sp.
- T1–T5 yellow, T6–T7 black (male) or yellow with dark apical markings on tergites (female) . . . . . *N. nigricauda* (Strobl)

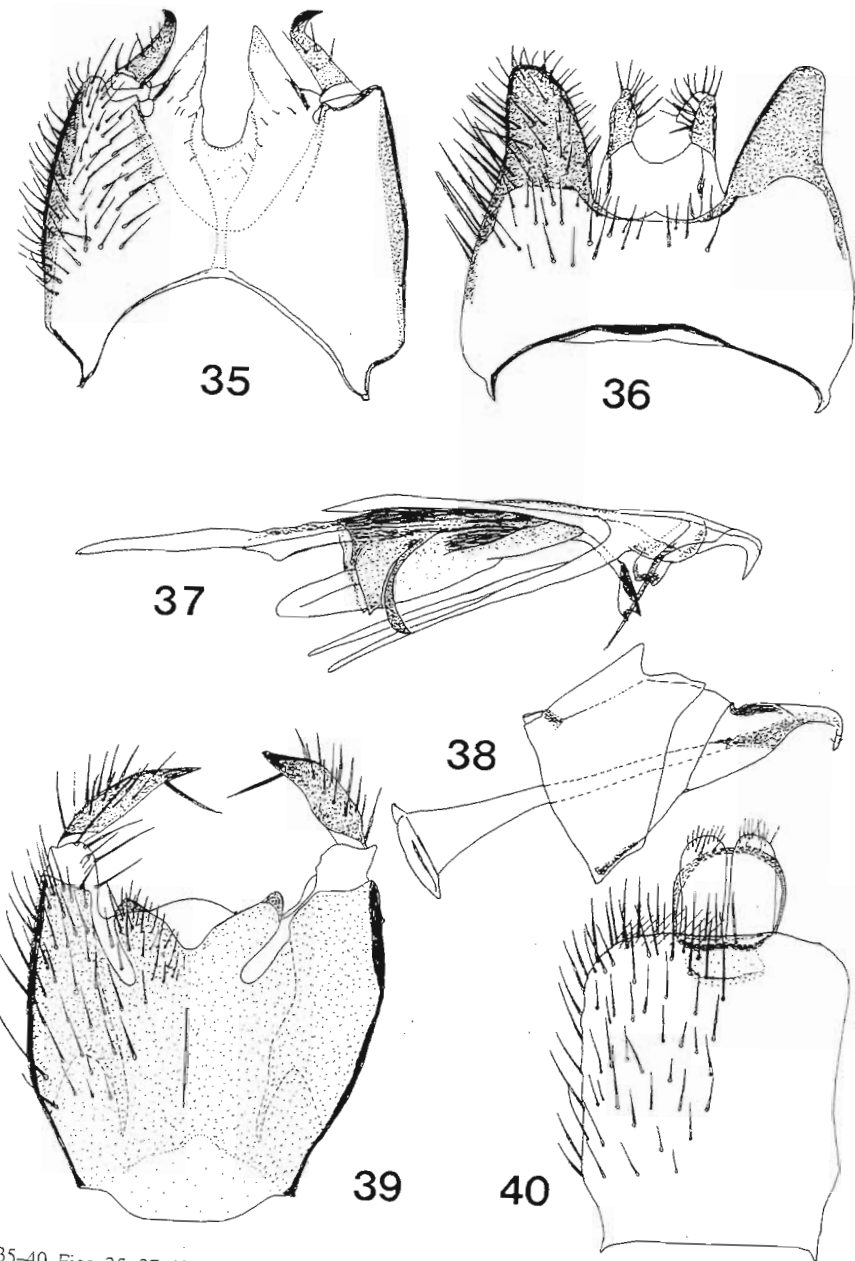
*Neoplatyura karmelita* n. sp.

(Figs. 35–37)

DESCRIPTION. **Male.** Length of wing 3.0–3.7 mm.

**Head:** Shining dark brown; face, short proboscis, palpus and basal antennal segments brownish yellow; antennal flagellum dark brown, most flagellar segments less than twice as long as broad; antenna about as long as head and thorax.

**Thorax:** Brownish yellow with three more or less distinct darker shining brown stripes on



Figs. 35–40. Figs. 35–37. *Neoplatyura karmelita* n. sp., ♂ genitalia: 35. Ventral view of gonocoxites and gonostyli. 36. T9 and cerci. 37. Lateral view of aedeagus. Figs. 38–40. *Pyratula oracula* n. sp., ♂ genitalia: 38. Lateral view of aedeagus. 39. Ventral view of gonocoxites and gonostyli. 40. T9 and cerci.

disc of mesoscutum, median stripe extended onto disc of scutellum; a series of close set scutellar marginal setae; postspiracular setae present; pleura and mediotergite otherwise bare. Legs: Entirely yellow; fore metatarsus 0.7 length of its tibia; mid tibia with 2-3 anteroventral, 5-6 anterior, 5-6 dorsal, 4 posterodorsal, 3-4 posterior and 2-4 ventral setae; hind tibia with 1-2 anteroventral, 5-6 anterior, 4 dorsal, 4 posterior and 2-4 ventral setae. Wing: Slightly brownish tinged on apical third, especially in radial sector and with brown veins; vein Sc ends about level with base of vein  $R_s$ ; vein  $R_4$  ends in costa 1-2 times its length from tip of vein  $R_1$ ; costa extended a third distance from vein  $R_s$  to vein  $M_1$ ; vein  $A_1$  almost reaching margin; radiomedial fusion setose beneath. Haltere: Yellow, brownish on knob.

*Abdomen*: Entirely shining dark brown to black; S2-S5 narrowly pale on apical margins; setae dark. Genitalia dark, Figs. 35-37.

**Female**. Length of wing 3.7-4.7 mm. Antenna shorter than in male, shorter than the thorax with the intermediate flagellar segments about 1.5 times as long as broad. Abdomen entirely shining dark brown.

**MATERIAL EXAMINED**. Holotype ♂, ISRAEL: Karmel (labelled "Carmel"), 1.x.1978, A. Freidberg (TAU). Paratypes: ISRAEL: Har Meron (labelled "Mt Meiron"), 30.ix.1976 (1♂); Har Meron, 18.ix.1976 (1♀); data as holotype (9♂); Karmel, 30.ix.1981 (2♂, 2♀); Karmel, 4.x.1979 (1♀) (all A. Freidberg, TAU).

**ETYMOLOGY**. From the type locality.

**DISCUSSION**. This species is very distinct in coloration and genital structure from the other Palaearctic species.

**BIOLOGY**. Unknown.

**DISTRIBUTION**. Israel.

### *Neoplatyura nigricauda* (Strobl, 1893)

*Platyura nigricauda* Strobl, 1893:164.

*Neoplatyura nigricauda* (Strobl); Edwards, 1929:167.

**MATERIAL EXAMINED**. ISRAEL: Tarqumiya, 23.x.1976 (1♂); Karmel, 30.ix.1981 (1♂) (both A. Freidberg; TAU).

**DISCUSSION**. The male is very distinct in coloration from other known species. The female is less easily separated from other European species, but the structure of the ovipositor (figured by Chandler, 1977a) is distinct. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

**BIOLOGY**. Unknown. Adults are found in woodland edge, scrub and grassland habitats in Europe; pairs *in-copula* are found on the wing more often than most other "fungus gnats".

**DISTRIBUTION**. Widespread in western and central Europe. There are unpublished records from mainland Spain, Mallorca, Sicily and Tunisia.

### *Urytalpa* Edwards, 1929

*Urytalpa* Edwards, 1929:169 (as subgenus of *Platyura* Meigen, 1803).

Type species: *Platyura ochracea* Meigen, 1818:240 (original designation).

As discussed under *Asindulum*, the single Israeli species described here as new closely resembles *A. theodori* and the latter has therefore been compared with it above.

### *Urytalpa nussbaumi* n. sp.

(Figs. 19-21, 23)

**DESCRIPTION**. **Male**. Length of wing 4.5-4.9 mm.

*Head*: Dark brown; lateral ocelli their diameter from eye margins; antenna mainly dark brown with pedicel and base of first flagellar segment pale yellow; flagellar segments more than twice as long as broad; proboscis and palpus dark brown; proboscis longer than in typical *Urytalpa*, a little more than half eye height but head not produced below eyes.

*Thorax*: Mesoscutum yellow to brown laterally and on humeral flanges, with three fused shining dark brown to blackish stripes occupying disc; scutellum mainly brown, yellowish laterally; pleura dark brown, bare; mediotergite brown, yellowish laterally, bare. Legs: Entirely yellow, coxae a little darker; mid tibia with 5-6 anteroventral, 3 anterior, 4-5 dorsal and 6 posterior setae; hind tibia with 4-7 anteroventral, 6-7 anterior, 2 anterodorsal, 9 dorsal, 5-7 posterior and 17-18 ventral setae. Wing: Clear, with brown veins; vein Sc bare, ending in costa before or at level of base of vein  $R_s$ ; vein  $R_4$  gently curved, ending its length or more beyond vein  $R_1$ ; vein  $A_1$  reaching margin; costa exceeds vein  $R_s$  by only a third distance to vein  $M_1$ . Haltere: Yellow.

*Abdomen*: Laterally compressed, elbowed from segment 5 onwards; tergites mainly dark brown, with yellow hind margins (especially T3-T5 yellow on up to apical third); sternites mainly yellow. Genitalia yellow, Figs. 19-21.

**Female**. Length of wing 4.5-5.1 mm. Head brown, grey dusted; lower part of face a little more projecting than in male but not extended below level of eyes; proboscis and palpus brown, about equal to half head height; antenna coloured as male but a little shorter; flagellar segments not more than twice as long as broad. Thorax as male, with stripes on disc sometimes narrowly separated; mid tibia has 6 anteroventral, 6 anterior, 5 dorsal, 5 posterior on apical half and 5 ventral setae; hind tibia has 2 anteroventral, 5 anterior, 4 anterodorsal, 8 dorsal, 4 posterior and 8-9 ventral setae. Costa exceeds vein  $R_s$  by only about 0.2 distance to vein  $M_1$ . Abdomen mainly dark brown, but segments 2-6 with both tergites and sternites yellow on up to apical quarter; T7 mainly yellow dorsally with dark area at base widened laterally; S7 entirely yellow (S6 may also be mainly yellow) and ovipositor yellow.

**MATERIAL EXAMINED**. Holotype ♂, ISRAEL: Nahal Amud (labelled "N. Amud"), 31.i.1982, I. Nussbaum (TAU). Paratypes: ISRAEL: Hefa (labelled "Haifa"), 12.iii.1924, O. Theodor (1♂ TAU and 1♂ NHML). Female material: ISRAEL: Tel Dan, 13.iv.1983, A. Freidberg; Golan, 5 km s. of Quneitra, 15.iv.1982, F. Kaplan; Nahal Amud, 21.iii.1982, I. Nussbaum; Biq'at Bet Zayda, 24.iii.1973, M. Kaplan; Qiryat Tiv'on, 2.iv.1975, F. Kaplan; Nahal Yoqne'am, 21.iii.1974, D. Furth; Yarith, 24.iii.1983, A. Freidberg; Ma'alé haHamisha, 31.iii.1974, F. Nachbar (1♀ in each case) (TAU).

ETYMOLOGY. Named for the collector of the holotype.

DISCUSSION. As indicated above, *U. nussbaumi* shows resemblance in external and genital characters to *Asindulum theodori*. It differs from other species of the genus in these characters.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

### *Pyratula* Edwards, 1929

*Pyratula* Edwards, 1929:167 (as subgenus of *Platyura* Meigen, 1803).

Type species: *Platyura zonata* Zetterstedt, 1855:4906 (original designation).

This is a small Palaearctic genus but is possibly congeneric with a southern hemisphere genus *Rypatula* Edwards. As discussed by Chandler and Ribeiro (in press), who describe a new Canarian species, there are several species closely allied to *P. perpusilla* Edwards in the Mediterranean region; one of them has a setose mediotergite, the distinguishing character of *Rypatula*. The species of this group described here was first recognised from Greek material and is evidently widespread in the eastern Mediterranean region. Further species from Greece and Spain remain to be described elsewhere.

### *Pyratula oracula* n. sp. (Figs. 38–40)

DESCRIPTION. **Male.** Length of wing 2.6–3.2 mm.

**Head:** Black, grey dusted with black setae on frons and face; antenna with basal segments and base of first flagellar segment brown (yellow in Israeli specimens), rest darker and grey dusted; flagellar segments about 1.5–2 times as long as broad; antenna longer than head and thorax; proboscis and palpus brownish yellow with black setae.

**Thorax:** Brown, grey dusted, with humeral area brownish yellow; black setae on meso-scutum, which bears biserial acrostichals and dorsocentrals and strong marginal setae; prothorax with black setae; a group of small black setae on anterior part of anepisternum; pleura and mediotergite otherwise bare; scutellum brown with fringe of strong marginal setae. **Legs:** Yellow, with dark bristling; fore metatarsus two thirds length of tibia; mid and hind tibiae with irregular setulae and irregular series of setae about half tibial diameter in length. **Wing:** Clear yellowish grey; vein Sc ends in costa near base of vein Rs; vein R<sub>1</sub> ends at 0.6 wing length; vein R<sub>4</sub> short, ends 3 times its length from vein R<sub>1</sub>; apical part of vein R<sub>5</sub> close to costa, which extends beyond it 0.5–0.6 distance to vein M<sub>1</sub>; vein CuA<sub>2</sub> only gently divergent from anterior branch of posterior fork; vein A<sub>1</sub> abbreviated; fork veins setulose; veins Sc, Rs, R<sub>4</sub>, stalk of median fork and A<sub>1</sub> bare. Haltere: Yellow.

**Abdomen:** T1 shining dark brown; T2–T5 yellow basally, dark on apical third to half (tergites darker and more obscurely yellow basally in some Israeli specimens); T6–T7 all dark brown; S1–S5 mainly yellow, vaguely brown on apical third; S6–S7 all brown, grey dusted. Genitalia brownish yellow, Figs. 38–40.

**Female.** (Only seen from Israel). Length of wing 2.7 mm. Similar to male: abdomen mainly brown; T3–T5 yellow on basal third; ovipositor short and blunt.

MATERIAL EXAMINED. Holotype ♂, GREECE: Fokis, Delphi, 5.v.1979, A.E. Stubbs (NHML). Paratypes: GREECE: Corfu (= Kerkira), dry gorge half km north of Palaeocastritsa, 5.v.1980, I.F.G. McLean (1♂); GREECE: Crete, north of Rodopou, 13.v.1982, I.F.G. McLean (2♂); GREECE: Milos, Malaise trap in *Citrus* orchard, 8–14.iv.1985, D.J. de C. Henshaw (1♂); CYPRUS: Agios Therapon, roadside and scrub, 16.v.1983, I.F.G. McLean (1♂) (these in author's collection). Other material: (7♂, 1♀), ISRAEL: Mount Hermon, 1650 m, 9.vi.1975, A. Freidberg (1♂); Tel Dan, 8.xi.1984, A. Freidberg (1♂); Majdal Shams, 14.x.1982, A. Freidberg (1♂); Nahal Bezet, 23.ix.1986 (1♂), 23.x.1986 (1♂), A. Freidberg; [Karmel] Nahal Kelah, 18.v.1982, I. Nussbaum (1♀); Upper Nahal Tirza, 28.iii.1976, M. Kaplan (1♂); Latrun, 24.vii.1974, A. Freidberg (1♂) (all TAU).

ETYMOLOGY. Appertaining to the type locality, Delphi, the site of the Oracle.

DISCUSSION. This species is superficially similar to *P. perpusilla* Edwards and other related species, all of which have a simple elongate gonostylus, bearing a single internal spinose preapical seta. They differ in details of the distal margin of the gonocoxites and in the form of the aedeagus. *P. perpusilla* also has shorter antennae, not longer than the thorax, with flagellar segments not much longer than broad. All species of the group appear to be variable in coloration.

BIOLOGY. Unknown. *P. perpusilla* and its allies occur mainly in scrub and grassland habitats.

DISTRIBUTION. Greece, including some islands (Corfu, Crete, Milos), Cyprus and Israel.

### *Orfelia* Costa, 1857

*Orfelia* Costa, 1857:448.

Type species: *Platyura fasciata* Meigen, 1804:101 (designation by Hardy, 1960:200).

This genus has a good number of species in the Holarctic region but is poorly known from other regions. The new species described here from Israel belongs to a group with several closely allied species in the Mediterranean region, among them *O. persimilis* Caspers (1991), described from Sardinia and compared with *O. subdiscoloria* Matile (1969), described from Iran. The other material from Corsica and Tunisia listed by Caspers had not been examined by him and was erroneously determined by me as *O. persimilis* from superficial comparison with his figures. I have now realised that these represent two further species of the group which will be described as new elsewhere. They differ in details of the form of the gonostylus and in the distal margin of the gonocoxites.

### *Orfelia excelsa* n. sp. (Figs. 41–45)

DESCRIPTION. **Male.** Length of wing 2.9–4.2 mm.

**Head:** Brownish yellow, darker brown dorsally from antennae, around ocelli, dark area narrowed behind; antenna short, thick, dark brown; flagellar segments quadrate; proboscis and palpus short, dark brown.

**Thorax:** Brownish yellow; mesoscutum uniformly setulose with three dark brown stripes (distinctly separated in a Mount Hermon example) to more or less fused with disc almost

entirely black (in most examples); pleura and mediotergite with dark shade; mediotergite with strong black setae over disc. Legs: Yellow, with tibial setulae in well marked rows; longer setae weakly developed; fore metatarsus 0.75–0.8 tibial length. Wing: Narrow, yellowish with brown shades, especially near costa on apical third; vein Sc ends just before or level with base of vein Rs; vein  $R_4$  short, vertical, several times its length from tip of vein  $R_1$ ; vein  $R_5$  straight, ending well short of wing tip; costa extends a quarter distance from tip of vein  $R_5$  to vein  $M_1$ ; veins Sc, Rs and  $R_4$  bare; radiomedial fusion long (1.5–2 times as long as vein Rs) and setose below; fork veins without setulae. Haltere: Dark on knob.

**Abdomen:** Entirely black including genitalia and all setae. Genitalia, Figs. 41–45.

**Female.** Wing length 3.8–4.1 mm (2 examples). Coloration of two examples differs: one with mesoscutum all shining black, pleura lighter; the other with sides of mesoscutum obscurely yellow. Abdomen broad, depressed, all black but protruding cercus (tapered to a point) is dull yellowish.

**MATERIAL EXAMINED.** Holotype ♂, ISRAEL: Mount Hermon, 1600 m, 5.ix.1981, A. Freidberg (TAU). Paratypes: ISRAEL: Mount Hermon, same data as holotype (6♂); Mount Hermon, 1600 m, 8.ix.1981 (2♂, 1♀), 9.ix.1981 (1♂), 10.ix.1981 (1♂); Mount Hermon, 1900 m, 28.vii.1971 (1♂); Mount Hermon, 2000 m, 16.viii.1976 (1♂), 3.ix.1981 (1♂, 1♀) (all A. Freidberg; TAU). Other material (lacking abdomen): ISRAEL: Har Dov, 8.vii.1987, A. Freidberg; Mount Hermon, 2000 m, 6.viii.1986, A. Freidberg; Mount Hermon, 13.viii.1973, D. Furth; Mount Hermon, 11.viii.1977, M. Kaplan (all TAU); Rehovot (labelled "Rehoboth bei Jaffa"), 21.iv.1935, J. Aharoni (NHML).

**ETYMOLOGY.** From the high ground on which most specimens were collected; those on Mount Hermon were in the upper part of the wooded zone and on open ground above.

**DISCUSSION.** This species has genital structure similar to that of *O. persimilis* Caspers and allied species. *O. excelsa* has simple dorsal flanges of the gonocoxites above the base of each gonostylus, while a triangular projection is present in this position in *O. persimilis*. The latter and *O. subdiscoloria* Matile (1969) from Iran differ from *O. excelsa* in predominantly yellow body colour. The undescribed Tunisian species is entirely black as indicated by Caspers, but has a long process on the dorsal flange of the gonocoxite.

**BIOLOGY.** Unknown.

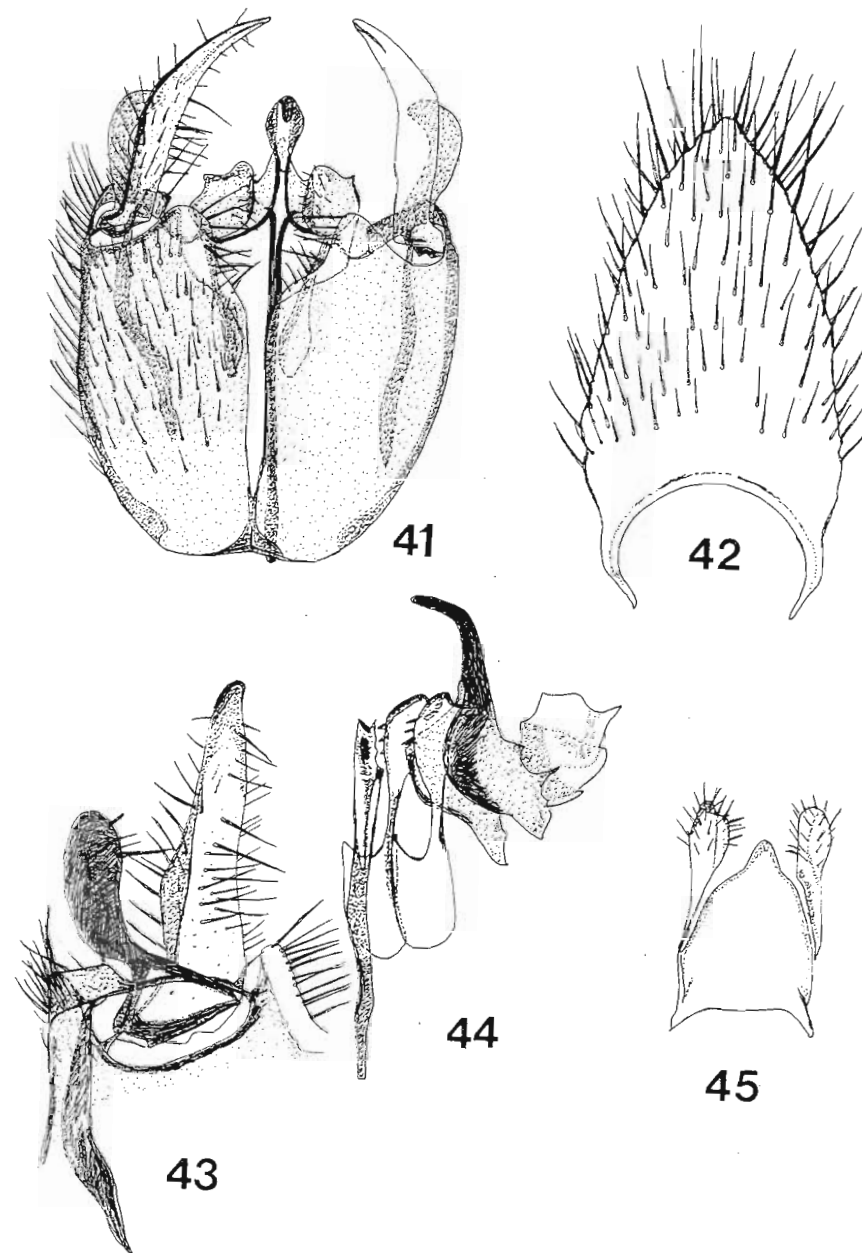
**DISTRIBUTION.** Israel.

#### *Xenoplatyura* Malloch, 1928

*Xenoplatyura* Malloch, 1928:601; Edwards, 1929:169.

Type species: *Platyura conformis* Skuse, 1888:1175 (original designation).

This is a large group in the Afrotropical and Oriental regions, which is close to *Truplayura* Edwards. It has not been recorded from the Palaearctic region before but another new species from Oman is being described elsewhere; it differs obviously from the four species seen from Israel in T9 being distinctly longer, as well as other details of the genital structure and generally darker coloration.



Figs. 41–45. *Orfelia excelsa* n. sp., ♂ genitalia: 41. Ventral view of gonocoxites and gonostyli. 42. T9. 43. Internal view of right gonostylus. 44. Ventrolateral view of aedeagus and parameres. 45. Cerci.



KEY TO SPECIES OF *XENOPLATYURA* IN ISRAEL

1. All fork veins of wing reaching margin. Fork veins bare. Male T9 shorter than T8 . . . . . *X. aurora* n. sp.
- At least some veins abbreviated. Fork veins setose. Male T9 either longer or shorter than T8 . . . . . 2
2. Veins  $M_2$  and  $CuA_1$  abbreviated, vein  $CuA_2$  reaching margin. Vein  $R_4$  more than twice its length beyond vein  $R_1$ . Male T9 1.5 times as long as T8 . . . . . *X. aurantina* n. sp.
- Vein  $M_2$  and both veins of posterior fork abbreviated. Vein  $R_4$  varying in length relative to vein  $R_1$ . Male T9 shorter than T8 . . . . . 3
3. Vein  $R_4$  3 times its length beyond vein  $R_1$ . Wing slightly brownish on apical third . . . . . *X. autumnna* n. sp.
- Vein  $R_4$  twice its length beyond vein  $R_1$ . Wing unmarked . . . . . *X. freidbergi* n. sp.

*Xenoplatyura aurantina* n. sp.  
(Figs. 48–49)

DESCRIPTION. **Male.** Length of wing 2.8–3.4 mm.

**Head:** Dark brown; antenna brown, shorter than thorax with flagellar segments little longer than broad; palpus yellow with apical segment long and slender.

**Thorax:** Slightly shining brownish yellow, a little darker on disc of mesoscutum; three strong and one weaker proepisternals; a few short setae in front of anterior spiracle, pleura and mediotergite otherwise bare; mesoscutum with setae irregularly distributed. Legs: Yellow; fore metatarsus 0.75 length of its tibia; fore and mid tibiae with setulae in rows on apical half, hind tibia with them in rows on apical quarter. Wing: Faintly yellowish, unmarked: vein Sc ends distinctly beyond base of vein Rs; vein  $R_4$  more than twice its length beyond tip of vein  $R_1$ ; costa exceeding tip of vein  $R_5$  by third distance to vein  $M_1$ ; veins  $M_2$  and  $M_3+CuA_1$  not reaching margin; vein  $A_1$  reaching margin. Haltere: Yellow.

**Abdomen:** Brownish yellow, darker brown dorsally on T6–T8 and T9; strongly elbowed and compressed from segment 5 onwards; T8 a little longer than T7, T9 1.5 times as long as T8. Genitalia, Figs. 48–49.

**Female.** Unknown.

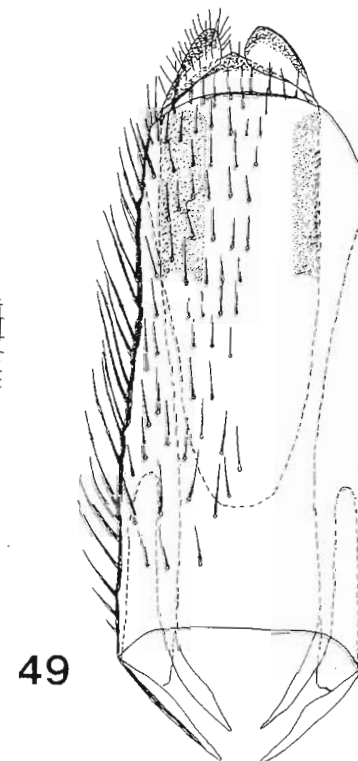
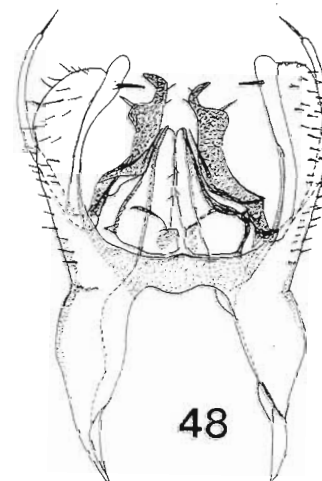
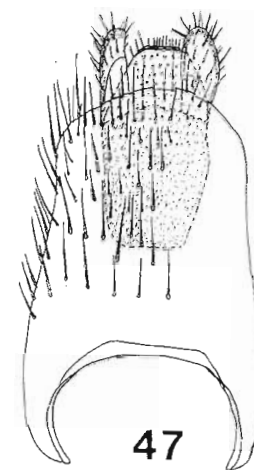
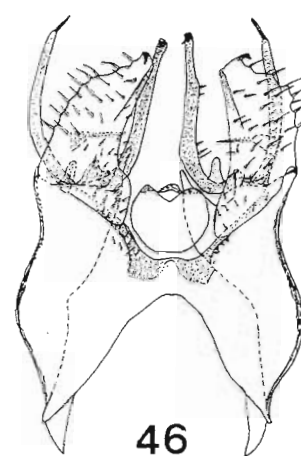
MATERIAL EXAMINED. Holotype ♂, ISRAEL: Rosh Zukim, 24.iii.1986, A. Freidberg (TAU). Paratypes: ISRAEL: Ein Hajla, 11.v.1974 (1♂); Mizpé Shalém, 24.iii.1986 (1♂); 'En Boqeq, 20.ix.1971 (1♂); 'En Gidron, 21.iv.1981 (1♂) (all A. Freidberg; TAU).

ETYMOLOGY. From the predominantly brownish yellow coloration.

DISCUSSION. This species differs from the other Israeli species in the relatively long T9, which is still distinctly shorter than in the Oman species and in some Afrotropical species which have this tergite very long.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.



Figs. 46–49. Figs. 46–47. *Xenoplatyura freidbergi* n. sp., ♂ genitalia: 46. Ventral view of gonocoxites and gonostyli. 47. T9 and cerci. Figs. 48–49. *Xenoplatyura aurantina* n. sp., ♂ genitalia: 48. Ventral view of gonocoxites and gonostyli. 49. T9 and cerci.

*Xenoplatyura aurora* n. sp.

(Figs. 53–54)

DESCRIPTION. **Male.** Length of wing 3.3 mm.

**Head:** Brownish yellow, darker between ocelli; antenna yellow on basal segments and base of first flagellar segment, rest of flagellum brown; antenna as long as head and thorax with most flagellar segments almost twice as long as broad; face and palpus yellow.

**Thorax:** Brownish yellow, with three fused shining dark brown stripes on mesoscutum; chaetotaxy as other species. Legs: Yellow; fore and mid tibiae with setulae in rows on apical half, hind tibia on apical third. Wing: Clear; vein Sc ends just beyond base of vein Rs; vein  $R_4$  about twice its length beyond vein  $R_1$ ; costa extends a third distance from vein  $R_5$  to vein  $M_1$ ; all fork veins reaching margin; vein  $A_1$  almost reaching margin; veins Sc,  $R_4$ ,  $R_5$  and radiomedial fusion bare; fork veins bearing a few setulae on apical part. Haltere: Yellow.

**Abdomen:** Mainly brownish yellow; T6–T9 darker brown on disc.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Ein Arus, 5.iv.1963, Margalit (TAU).

ETYMOLOGY. Named for the predominant coloration of this genus.

DISCUSSION. This species differs from most *Xenoplatyura* in having the fork veins reaching the margin but agrees in most other respects with the generic diagnosis.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

*Xenoplatyura autumn* n. sp.

(Figs. 50–51)

DESCRIPTION. **Male.** Length of wing 3.2 mm.

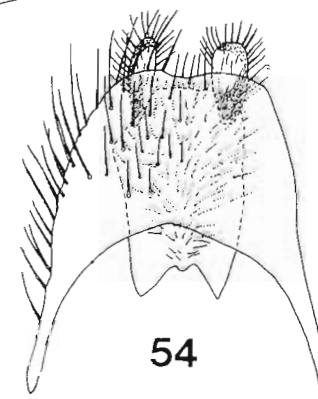
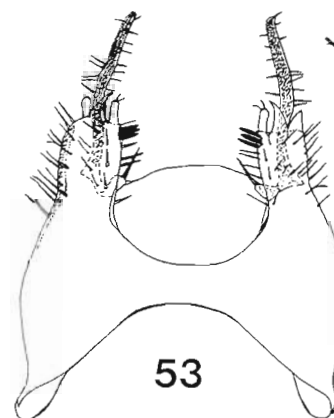
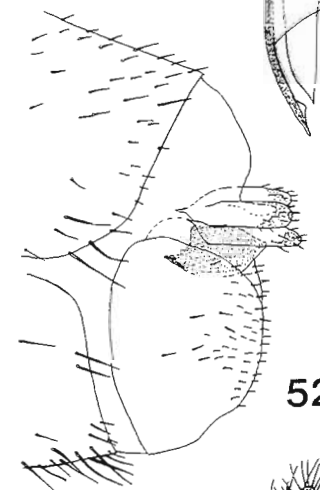
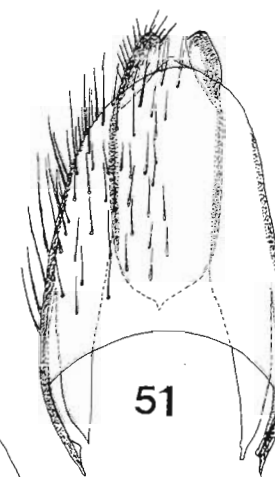
**Head:** Brownish yellow, darker between ocelli; antenna yellow on basal segments and base of first flagellar segment; flagellar segments except first and last two shorter than broad to quadrate; proboscis and palpus yellow, last palpal segment long and slender.

**Thorax:** Entirely brownish yellow; chaetotaxy as other species, but with some longer setae in dorsocentral rows and near side margins of mesoscutum. Legs: Yellow; fore and mid tibiae with setulae in rows on apical half, hind tibia on apical third. Wing: Clear, slightly brownish on apical third; vein Sc ends just beyond base of vein Rs; vein  $R_4$  about 3 times its length beyond vein  $R_1$ ; costa extends 0.3 distance to vein  $M_1$ ; vein  $M_2$  and both veins of posterior fork abbreviated from margin; vein  $A_1$  reaches margin; veins Sc, Rs,  $R_4$  and radiomedial fusion bare; fork veins with setulae on apical half. Halteres: Brownish on knob.

**Abdomen:** Orange yellow on all sternites; tergites all dark brown, T1–T2 a little lighter, T6–T8 darker. Genitalia, Figs. 50–51.

**Female.** Length of wing 3.7 mm. Antenna a little shorter than in male; otherwise similar.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Mount Hermon, 1600 m, Malaise trap, 9.ix.1981, A. Freidberg (TAU). Paratype: ISRAEL: Mount Hermon, 10.ix.1981, A. Freidberg (1 ♀) (TAU).



Figs. 50–54. Figs. 50–51. *Xenoplatyura autumn* n. sp., ♂ genitalia: 50. Ventral view of gonocoxites and gonostyli. 51. T9 and cerci. Fig. 52. *Xenoplatyura freidbergi* n. sp., ♀ genitalia: lateral view of ovipositor. Figs. 53–54. *Xenoplatyura aurora* n. sp., ♂ genitalia: 53. Ventral view of gonocoxites and gonostyli. 54. T9 and cerci.

ETYMOLOGY. Reflecting the autumnal occurrence of the type material.

DISCUSSION. Closely similar to *X. freidbergi* n. sp. in external characters but quite distinct in genital characters.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

*Xenoplatyura freidbergi* n. sp.  
(Figs. 46–47, 52)

DESCRIPTION. **Male.** Length of wing 2.6–3.4 mm.

**Head:** Dark brown; antenna short, dark brown; flagellar segments from 4 onwards practically quadrate; palpus light brown.

**Thorax:** Brownish yellow with three dark brown stripes on disc of mesoscutum (or in some examples entirely brownish to clear yellow); pleura and mediotergite brown; chaetotaxy as other species. Legs: Yellow, coxae a little more brownish, with setulae arranged as *X. aurantina*. Wing: Unmarked; veins faint other than costa and radial sector; vein Sc ends just beyond base of vein Rs (just before in Nahal Qetura example); vein  $R_4$  twice its length beyond vein  $R_1$ ; costa extends beyond vein  $R_5$  by less than third distance to vein  $M_1$ ; vein  $M_2$  and both veins of posterior fork abbreviated from margin; vein  $A_1$  faintly reaching margin. Haltere: Yellow.

**Abdomen:** Brownish yellow, darker brown on T6–T9; T8 a little longer than T7; T9 a little shorter than T8. Genitalia, Figs. 46–47.

**Female.** Length of wing 3.2 mm. Head dark brown; antenna brownish yellow basally, flagellum dark brown; antenna shorter than in male with quadrate flagellar segments; proboscis and palpus light brown. Thorax brownish yellow, with 3 indistinct darker stripes on disc of mesoscutum. Wing clear; vein Sc ends before base of vein Rs (as in male from same locality). Abdomen all yellow. Ovipositor, Fig. 52.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Lower Nahal Tirza (labelled "Low. W. Faria"), 28.iv.1976, F. Kaplan (TAU). Paratypes: ISRAEL: Rosh Zukim, 24.iii.1986, A. Freidberg (3♂); Nahal Qetura, 2.v.1986, A. Freidberg (1♂, 1♀) (all TAU).

ETYMOLOGY. Named for the collector of the paratypes.

DISCUSSION. The key characters and genital structure distinguish this species from others of the genus. The female is considered conspecific on external characters and collection at the same time as a male of *X. freidbergi*.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

*Truplaya* Edwards, 1929

*Truplaya* Edwards, 1929:170.

Type species: *Platyura venusta* Walker, 1856b:421 (original designation).

As with *Xenoplatyura* there are many Afrotropical species (Matile, 1978); the Oriental species have been less well studied, only the three species assigned here by Edwards (1929) having been described. The species described here from Israel is close to *T. calogastra* Speiser, to which it runs in Matile's key (1978) to the Afrotropical species, but differs in details of its genital structure. Both species and also some Oriental species (of which only females have been examined) are predominantly black with silvery dusting and silver abdominal bands on T2 and T4. There are no previously described Palaearctic species but a single male from Italy belongs to an undescribed *Truplaya*, not closely related to this group of the genus.

*Truplaya fini* n. sp.  
(Figs. 55–57)

DESCRIPTION. **Male.** Length of wing 6.4 mm.

**Head:** Black, grey dusted, with black setae; ocellar triangle broad, outer ocelli twice diameter from eye margin; face orange, clypeus black with dark setae; proboscis and palpus orange brown, two apical palpal segments covered in white hairs; antenna dark brown, equal to head and thorax in length; flagellar segments 2–4 quadrate, successive segments progressively longer.

**Thorax:** Black, mostly silvery grey dusted; mesoscutum with three shining black stripes, all stopping short of scutellum; mesoscutum uniformly covered with black setae, longer setae in dense patch laterally in front of wing; scutellum with row of equal setae on margin; prothorax with many setae, densest on lower part of proepisternum; humeral flange and prothoracic spiracle orange; pleura bare; laterotergite and mediotergite strongly projecting. Legs: Brownish yellow with all bristling black, coxae darker, with blackish/grey dusting on fore and hind coxae; hind femur dark on basal half; fore metatarsus two thirds length of its tibia. Wing: Narrow, clear, brownish on apical third; veins, especially radial sector, dark; vein Sc long, ends just beyond base of vein Rs; vein  $R_4$  short, twice its length from tip of vein  $R_1$ ; vein  $R_5$  shorter than vein  $R_{4+5}$  and ending well short of wing tip and costa not produced beyond it; veins  $M_2$  and  $M_3+CuA_1$  abbreviated from margin; vein  $A_1$  reaches margin and is straight so vein  $CuA_2$  convergent with it apically; veins of posterior fork and vein  $A_1$  setose. Haltere: Yellow, brownish on knob.

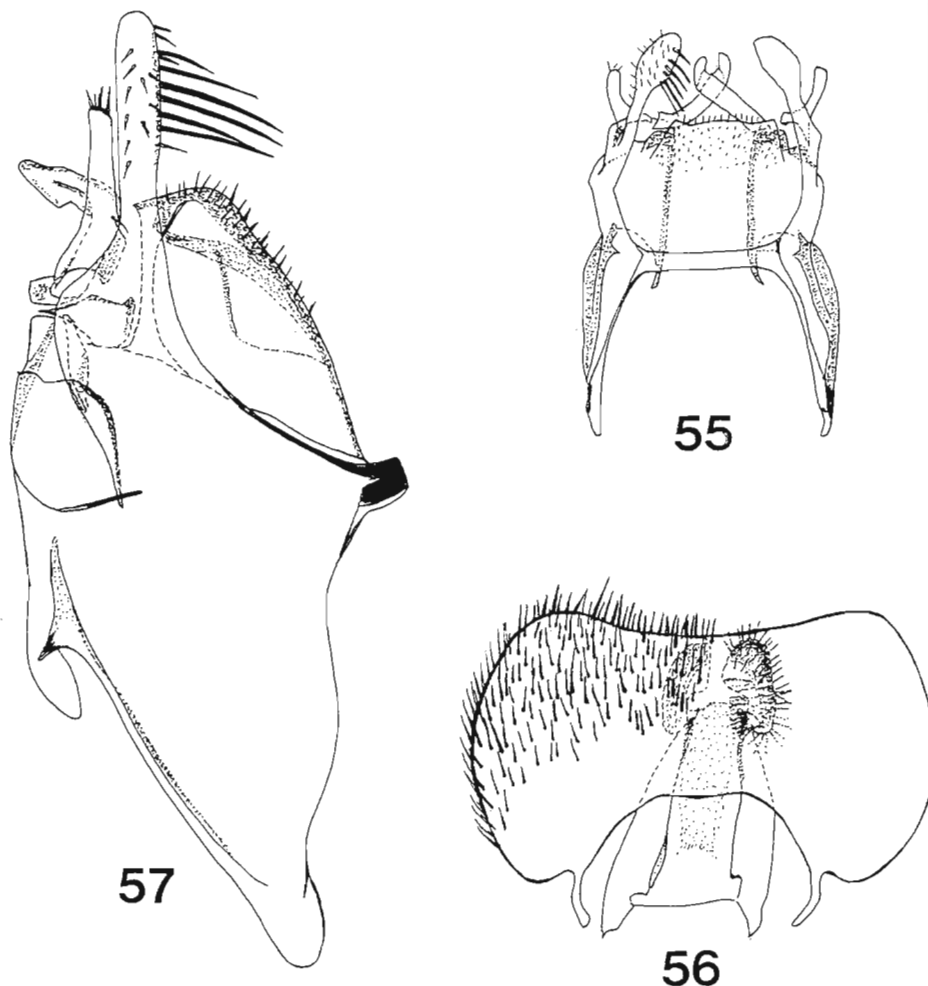
**Abdomen:** Mainly black, T2 and T4 with apical quarter silvery white and bare, otherwise covered with black setae; elbowed beyond segment 4; T9 broad, truncate, enclosing genitalia. Genitalia, Figs. 55–57.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Mount Hermon, 1700 m, 7.vii.1987, F. Kaplan (TAU).

ETYMOLOGY. Named for Mrs. Fini Kaplan, the collector of this as well as several other interesting species; to be treated as a noun in apposition.

DISCUSSION. This species is externally very similar to some African and Oriental species as discussed above. The allied species *T. calogastra* is according to Matile (1978) the most widespread Afrotropical species, occurring in all forest regions except Madagascar. Similar



Figs. 55–57. *Truplaya fini* n. sp., ♂ genitalia: 55. Ventral view of gonocoxites and gonostyli. 56. T9 and cerci. 57. Lateral view of left gonocoxite and gonostylus (larger scale).

Oriental females examined have the sternites predominantly dark, but comparison with males of these species would be useful.

BIOLOGY. Unknown. The single specimen was collected at the upper limit of the wooded zone on Mount Hermon.

DISTRIBUTION. Israel.

## Mycetophilidae

### Sciophilinae

*Azana* Walker, 1856

*Azana* Walker, 1856a:26.

Type species: *Azana scatopsoides* Walker, 1856a:26 (monotypy) [= *Mycetophila anomala* Staeger, 1840].

This genus has a small number of species in the Holarctic and Oriental regions. Until recently there has been some doubt as to the identity of several names in the literature, both because of the lack of figures for species described by Strobl (1898, 1909) and Santos Abreu (1920), and the loss of genitalia from Strobl's types. This is fully discussed by Chandler and Ribeiro (in press) where *A. palmensis* Santos Abreu is established to be a good species, and Strobl's species, *A. nigricoxa* (1898:600) and *A. flavohalterata* (1909:129) are also concluded to represent species quite distinct in genital structure from the more widespread European species *A. anomala* (Staeger). The material from Israel belongs to the species we have identified as *A. flavohalterata*.

#### *Azana flavohalterata* Strobl, 1909

*Azana flavohalterata* Strobl, 1909:129 (as variety of *A. anomala* (Staeger, 1840:238)).

MATERIAL EXAMINED. ISRAEL: Herzliya, 26.xii.1981 (1♂, 1♀), 31.xii.1981 (1♂), A. Freidberg; Sederot, 27.ii.1974 (1♂), A. Freidberg (TAU).

DISCUSSION. The male genitalia are figured by Chandler (in preparation) together with those of *A. nigricoxa* and *A. anomala*, which has local forms in Algeria and Cyprus.

BIOLOGY. Unknown.

DISTRIBUTION. The type was Spanish; recent Spanish material and specimens from Crete and Cyprus have also been examined.

#### *Acnemia* Winnertz, 1863

*Acnemia* Winnertz, 1863:798.

Type species: *Leia nitidicollis* Meigen, 1818:255 (designation by Johannsen, 1909:63).

A mainly Holarctic genus, recently revised by Zaitzev (1982b, 1982c). There are two species in Israel, which belong to different groups of the genus, one of them described here as new.

#### KEY TO SPECIES OF *ACNEMIA* IN ISRAEL

1. Body almost entirely yellow . . . . . *A. amoena* Winnertz
- Body mainly black except yellowish humeral area of mesoscutum and yellowish genitalia . . . . . *A. stellamicans* n. sp.

*Acnemia amoena* Winnertz, 1863

*Acnemia amoena* Winnertz, 1863:800.

MATERIAL EXAMINED. ISRAEL: Panyas, 13.vi.1982, A. Freidberg (1♂, 1♀); Park HaYarden, 4.iv.1983, A. Freidberg (1♂); Biq'at Bet Zayda, 16.xi.1982, F. Kaplan (1♀) (all TAU).

DISCUSSION. This is a distinctive species of which the genitalia were figured by Hutson, Ackland and Kidd (1980) and by Zaitzev (1982b).

BIOLOGY. Found around rotten wood in which the larvae probably develop; in northern Europe it is localised to ancient woodlands.

DISTRIBUTION. Widespread but scarce in northern and central Europe, also recorded from Japan and there is an unpublished record from Mediterranean Spain (Gerona).

*Acnemia stellamicans* n. sp.

(Figs. 58–60)

DESCRIPTION. **Male.** Length of wing 3.3–3.7 mm.

**Head:** Black, shining, thinly dusted, with yellow bristling; antenna almost entirely dark brown; flagellar segments up to 3 times as long as broad; palpus yellow, slender.

**Thorax:** Shining dark brown, yellow on humeral area, with all bristling yellow; meso-scutum strongly setose; scutellum with series of marginal setae; prothorax, laterotergite and mediotergite with long setae. **Legs:** Yellow, except brown trochanters; series of short tibial setae; fore tibia with 2 anterior, 4 posterior, 3 posteroventral setae; mid tibia with 4 anterior, 5 dorsal and 4 posterior setae; hind tibia with 7 anterior, 7 dorsal and 4 posterior setae. **Wing:** Yellowish, with radial veins darker; membrane bears uniform microtrichia and macrotrichia; vein Sc ends in costa, vein Sc<sub>2</sub> beyond middle, before base of Rs; crossvein r-m diagonal, twice as long as vein Rs; costa extends only 0.2 distance from tip of vein R<sub>5</sub> to that of vein M<sub>1</sub>; stem of median fork short; vein CuA simple; vein A<sub>1</sub> abbreviated. **Haltere:** Yellow.

**Abdomen:** Shining dark brown, with long pale bristling, becoming darker on apical half; T7 narrowed medially, less than half length of T6; T8 narrow with long marginal setae; S8 broad, rounded laterally; genitalia dark brown, with T9 rounded laterally, blunt with two processes apically; gonostylus simple, tapered, sclerotised and bifid apically.

**Female.** Unknown.

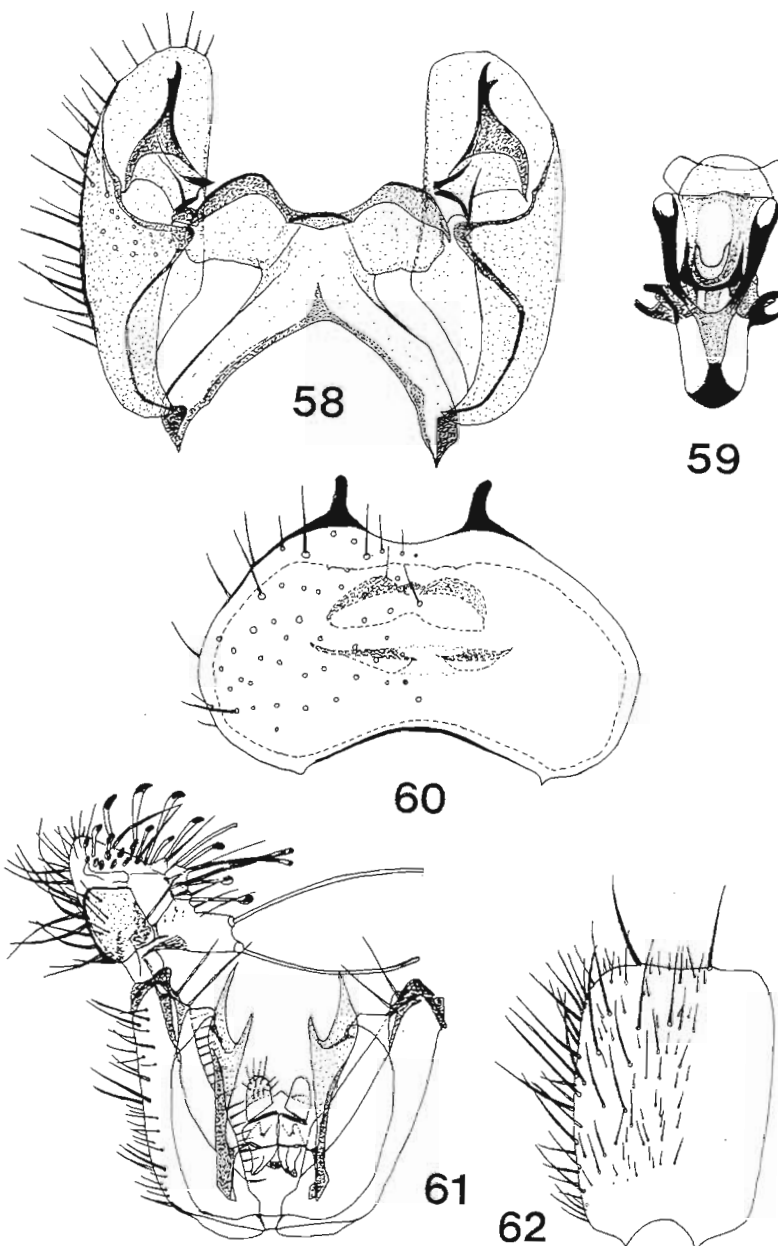
MATERIAL EXAMINED. Holotype ♂, ISRAEL: Panyas (labelled as "Baniass"), 12.iv.1983, A. Freidberg (TAU). Paratypes: ISRAEL: Central Nahal Tirza (labelled as "C. W. Faria"), 20.ii.1974, A. Freidberg (25♂). Other material: same data as paratypes (5 without abdomen). Lower Nahal Tirza (labelled as "Lower W. Faria"), 19.xi.1974, D. Furth (1♂) (all TAU).

ETYMOLOGY. Referring to the shining appearance of this species and the distinctive form of its genitalia.

DISCUSSION. This species does not appear to be closely related to any of the species figured by Zaitzev and should be easily recognised by the genital structure.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.



Figs. 58–62. Figs. 58–60. *Acnemia stellamicans* n. sp., ♂ genitalia: 58. Dorsal view with T9 and cerci removed. 59. Aedeagus. 60. T9 and cerci. Figs. 61–62. *Sciophila eryngii* n. sp., ♂ genitalia: 61. Dorsal view with T9 removed. 62. T9.

*Neuratelia* Rondani, 1856

*Neuratelia* Rondani, 1856:196.

Type species: *Mycetophila nemoralis* Meigen, 1818:265 (original designation).

*Anaclinia* Winnertz, 1863:770.

Type species: *Mycetophila nemoralis* Meigen, 1818:265 (monotypy).

Matile (1974a) recognised four European species of *Neuratelia*, of which *N. spinosa* Matile (Corsica) and *N. minor* (Lundström) are southern in distribution.

*Neuratelia minor* (Lundström, 1912)

*Anaclinia minor* Lundström, 1912b:517.

MATERIAL EXAMINED. ISRAEL: Montfort, 4.iii.1976 (1♂), 5.iii.1978 (2♂); Sasa, 18.iv.1981 (1♀); Har Meron, 4.iv.1977 (2♂); Hefa, 20.ii.1976 (1♂) (all A. Freidberg; TAU).

DISCUSSION. The genitalia were figured by Matile (1974a), who indicated distinctions from other species of the genus.

BIOLOGY. Unknown.

DISTRIBUTION. Widespread in southern Europe. There are unpublished records from Corsica, Cephalonia and Cyprus.

*Sciophila* Meigen, 1818

*Sciophila* Meigen, 1818:245.

Type species: *Sciophila hirta* Meigen, 1818:251 (designation by Curtis, 1837:641).

This is a large mainly Holarctic genus with few specific distinctions other than in the male genitalia. Zaitzev (1982a) revised the genus and recognised that there is a group of closely related species allied to *S. lutea* Macquart (1826:100). These are predominantly yellow with the genitalia also very similar; the differences are in the parameres and associated distal margin of the gonocoxites. Zaitzev (1982a) described a new species *S. kashmirensis* from Kashmir and several North American species of this group. Caspers (1991) identified and figured a specimen from Crete as this species. However, examination of further specimens from Crete has suggested that the small differences from *S. kashmirensis* apparent from Caspers' figures are constant and indicative that it is not conspecific with it. The Israeli material of this genus is closest to the Cretan form but is considered to be yet another distinct species. Three further species of this group have been detected in material from the western Mediterranean, confirming these conclusions, and are to be described elsewhere. *S. lutea* itself is the common north European representative of the group, occurring at least as far south as Croatia.

*Sciophila eryngii* n. sp.

(Figs. 61–62)

DESCRIPTION. **Male.** Length of wing 3.2–4.1 mm.

**Head:** Dark brown; antenna yellow to second or fourth flagellar segment, rest brown; flagellar segments about 3 times as long as broad; palpus brownish yellow.

**Thorax:** Usually entirely yellow, with three mesoscutal stripes paler yellow or scarcely indicated, but one male from Yerushalayim (= Jerusalem) mainly black; setae all yellow, including hairs on anepisternum, laterotergite and mediotergite. Legs: Yellow, with all setulae yellow; mid tibia with 3 anterior, 2 posterodorsal, 1–3 posterior and 3–5 posteroventral setae; hind tibia with 5–7 anterior, 4–5 (antero)dorsal, 5–6 posterodorsal and 2–5 posterior (mainly on apical half) setae. Wing: Clear with both macrotrichia and microtrichia irregularly distributed on membrane; vein Sc<sub>2</sub> near base of radial cell; costa reaches 0.2 distance from vein R<sub>5</sub> to vein M<sub>1</sub>. Haltere: Yellow.

**Abdomen:** Shining brown with pale hairs. Genitalia brownish yellow, Figs. 61–62.

**Female.** Length of wing 3.5–4.1 mm. Sometimes all yellow including abdomen; abdomen may be darker and one female from Herzliyya has body all black. Antenna smaller and shorter than in male, with flagellar segments not more than twice as long as broad.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Hulda, reared on 21.ii.1976 from *Pleurotus eryngii* collected on 4.ii.1976, M. Kaplan (TAU). Paratypes: ISRAEL: same data as holotype (5♂, 2♀); Panyas, 9.vi.1976 (1♂), 4.v.1977 (1♂), A. Freidberg; Panyas, 10.vi.1983, I. Nussbaum (1♀); Haspin, 16.i.1989, I. Nussbaum (1♂); Hefa, 15.v.1971, J. Kugler (2♀); Karmel, 5.v.1976, A. Freidberg (1♂, 1♀); Yizre'el, 27.iii.1973, M. Kaplan (1♀); 'Olesh, 25.iv.1981, A. Freidberg (1♂); Nahal Poleg, 14.i.1975, A. Freidberg (1♂, 2♀); Herzliyya, 6.vi.1981 (1♂), 7.vi.1981 (2♂), 22.vi.1981 (1♀), 23.vi.1981 (1♂, 1♀), 13.xii.1981 (1♀), 18.i.1982 (1♀), 21.i.1982 (1♀), 26.i.1982 (1♂), 27.i.1982 (1♀), 25.ii.1982 (1♀), 12.iv.1982 (1♂), 13.iv.1982 (3♂, 1♀), 14.iv.1982 (1♂, 1♀), 15.iv.1982 (2♂), 17.iv.1982 (4♂), 18.iv.1982 (7♂, 2♀), 19.iv.1982 (1♂), 20.iv.1982 (1♂), 21.iv.1982 (1♂), 26.iv.1982 (3♂), 27.iv.1982 (1♂), 29.iv.1982 (5♂, 1♀), 30.iv.1982 (2♂), 5.v.1982 (1♂), 9.v.1982 (1♂), 11.v.1982 (1♂), 21.v.1982 (1♂), 31.v.1982 (2♂), 5.vi.1982 (1♂), A. Freidberg (Malaise trap); Rehovot, 24.iii.1933 (2♀), 14.iii.1934 (1♂), 9.iv.1934 (1♀), 18.ix.1935 (1♀), J. Aharoni; Bet haKerem, no other data (1♂, 4♀); Yerushalayim (= Jerusalem), 22.i.1940 (E. Rivnay, 1♂), 22.v.1943 (Margalit, 2♀); Bet Guvrin, 27.iii.1976, A. Freidberg (1♀); Lahav, 27.ii.1974, A. Freidberg (1♂); "Jayne", 24.ii.1973, A. Freidberg (1♂) (all TAU except Rehovot, NHML). Other material (without abdomen): Herzliyya (5 ex Malaise trap); Ashdod, 1.i.1975, A. Freidberg (TAU).

ETYMOLOGY. From the only known food plant.

DISCUSSION. The form of the parameres is closest to the Cretan species and to *S. kashmirensis* as discussed above. *S. lutea* (figured by Zaitzev, 1982a) has a pair of short broad teeth on the paramere and a similar pair on the adjacent gonocoxal margin. The other undescribed species mentioned also differ in details of these structures.

BIOLOGY. The type material was reared from the fungus *Pleurotus eryngii* which grows on the perennial umbelliferous plant *Eryngium*. *S. lutea* has a wide range of fungus food plants including soft terrestrial and lignicolous fungi, while some other species of *Sciophila* (outside this group) are apparently more specific to particular fungus species. Larvae live in webs on the surface of the fungus and are spore feeders.

DISTRIBUTION. Israel.



## Gnoristinae

*Coelosia* Winnertz, 1863

*Coelosia* Winnertz, 1863:796.

Type species: *Boletina flava* Staeger, 1840:237 (designation by Johannsen, 1909:86).

There are several European species but only *C. silvatica* Landrock occurs widely in the Mediterranean region and is found in Israel.

*Coelosia silvatica* Landrock, 1918

*Coelosia silvatica* Landrock, 1918:109.

MATERIAL EXAMINED. (7♂, 9♀), ISRAEL: Montfort; Avivim; Bar'am; 'Ein Sinyā; Har Meron; Bet haKerem; Yerushalayim (= Jerusalem); Har HaZofim (= Mount Scopus; labelled as "Scopus bei Jerusalem") (TAU except Har HaZofim, NHML) (collected in ii–iv, xi).

DISCUSSION. This species is readily distinguished from other species by both external and genital characters. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

BIOLOGY. *C. silvatica* has been reared from *Cortinarius*, *Omphalotus* and *Lepiota* species by Ribeiro (1990).

DISTRIBUTION. Local in western and central Europe. There are recent records from the Canary Islands (Chandler and Ribeiro, in press) and unpublished records from mainland Greece, Corfu and Cyprus.

*Grzegorzekia* Edwards, 1941

*Grzegorzekia* Edwards, 1941:68.

Type species: *Sciophila collaris* Meigen, 1818:250 (original designation).

The species found in Israel was described from Tunisian types (Väisänen, 1984b) and recorded from Israel at the same time. It is very distinct from the other Palaearctic species *G. collaris* (Meigen), which is found in northern Europe.

*Grzegorzekia phoenix* Väisänen, 1984b

*Grzegorzekia phoenix* Väisänen, 1984b:55.

MATERIAL EXAMINED. ISRAEL: Herzliyya, Malaise trap, 23.xii.1981 (1♂), 7.iii.1982 (1♂, 1♀); Tel Aviv, 18.xii.1972 (1♀) (all A. Freidberg; TAU).

DISCUSSION. The genitalia were figured by Väisänen (1984b).

BIOLOGY. Unknown. It was collected in a coastal locality with date palms in Tunisia. *G. collaris* develops in rotten wood (Hutson, Ackland and Kidd, 1980; Chandler, 1993).

DISTRIBUTION. Tunisia and Israel.

*Boletina* Staeger, 1840

*Boletina* Staeger, 1840:233.

Type species: *Leia trivittata* Meigen, 1818:258 (designation by Johannsen, 1909:73).

This is a large Holarctic genus including many boreal and montane species. Larval associations with liverworts have been recorded for one European species but little else is known of their biology. Two species are definitely known from Israel and a third was recorded by Bodenheimer (1937) and is included here as it may have been correctly named. All three species have the laterotergite (which is setose in many species of the genus) bare.

KEY TO SPECIES OF *BOLETINA* IN ISRAEL

1. Costa ends at tip of vein R<sub>5</sub>. Flagellum all dark. Wing clear. Coxae all yellow . . . . . *B. trivittata* (Meigen)
- Costa extends beyond tip of vein R<sub>5</sub>. Flagellum variable in colour. Wing clear or brown marked. Coxae partly darkened . . . . . 2
2. Antenna with flagellum dark. Wing clear. Hind femur all yellow. Hind coxa dark on basal half . . . . . *B. gripha* Dziedzicki
- Basal flagellar segment yellow, rest dark. Wing brownish on costal margin near tip. Hind femur narrowly dark at tip. Hind coxa dark at extreme base . . . . . *B. anderschi* Stannius

*Boletina anderschi* (Stannius, 1831)

*Mycetophila anderschi* Stannius, 1831:20.

MATERIAL EXAMINED. ISRAEL: Mount Hermon, 2000 m, 23.iv.1982, A. Freidberg (2♂, 2♀) (TAU).

DISCUSSION. The genitalia of this distinctive species were figured by Lundström (1911).

BIOLOGY. Unknown.

DISTRIBUTION. Published records are all from central Europe but material from Cyprus has been examined.

*Boletina gripha* Dziedzicki, 1885

*Boletina gripha* Dziedzicki, 1885:9.

MATERIAL EXAMINED. LEBANON: Qou Zah, 12.ii.1987, I. Nussbaum (1♀). ISRAEL: Mount Hermon, 2000 m, 29.iii.1974 (1♂); Montfort, 9.iii.1982 (1♂) (both A. Freidberg, TAU).

DISCUSSION. The male genitalia were figured by Hutson, Ackland and Kidd (1980).

BIOLOGY. Unknown. This species is found in open montane and wetland habitats as well as in forests.

DISTRIBUTION. Very common throughout the Palaearctic region; recorded from the Atlantic islands (Chandler and Ribeiro, in press), Corsica (Edwards, 1928) and there are unpublished records from Corfu, Cephalonia and Cyprus.

*Boletina trivittata* (Meigen, 1818)

*Leia trivittata* Meigen, 1818:258.

DISCUSSION. This is included here as Bodenheimer (1937) recorded it from Israel but no material has been examined. The male genitalia were figured by Hutson, Ackland and Kidd (1980) and it is a distinctive species; however, an allied species with narrower wings and strongly marked wing veins has been discovered recently in Spain and is being described elsewhere, so confirmation of its occurrence is required.

BIOLOGY. Unknown. Found mainly in humid situations in woodland.

DISTRIBUTION. Common and widely distributed in the Palaearctic; found in the Mediterranean part of Europe and in the Caucasus but no records from the Mediterranean islands.

## Leiinae

*Leia* Meigen, 1818

*Leia* Meigen, 1818:258.

Type species: *Leia fascipennis* Meigen, 1818:255 (designation by Curtis, 1837:645).

This is a large genus found in all the zoogeographic regions and well represented in the Mediterranean region. Of the three species found in Israel, one is previously known only from this region; a second is found more widely in the Palaearctic, while the third appears to be associated with Mediterranean and subtropical cultivation and its origin is unclear.

KEY TO SPECIES OF *LEIA* IN ISRAEL

1. Halteres dark on knob. Thorax yellow; abdomen yellow with black apical bands on tergites, T5-T6 more extensively dark (dark markings broader in middle in female). Preapical wing band and shades over crossvein r-m and behind vein CuA<sub>2</sub> . . . . . *L. arsona* Hutson
- Halteres pale. Thorax yellow or partly darkened; abdomen banded or entirely dark. Wing clear or faintly marked . . . . . 2
2. Wing clear or with faint preapical shade from costa across vein R<sub>5</sub>. Thorax yellow to more or less extensively black (three fused black stripes). Abdomen with coloration varying from pattern as *L. arsona* to almost entirely dark above *L. bimaculata* (Meigen)
- Wing strongly marked, preapical band continuous along vein M<sub>2</sub> with large patch over crossvein r-m and less distinctly with brown marking behind vein CuA<sub>2</sub>. Thorax yellow with 3 shining black stripes. Abdomen all black above . . . . . *L. subtrifasciata* Strobl

*Leia arsona* Hutson, 1978

*Leia fasciata* Storå, 1937:10 (junior primary homonym of *Neoglaphyoptera fasciata* Kertész, 1902:574).

*Leia arsona* Hutson, 1978:123.

MATERIAL EXAMINED. (40♂, 9♀), ISRAEL: Herzliyya, frequent in Malaise trap, i, iv, vi-vii, xi-xii, A. Freidberg; Tel Aviv, 10.vi.1986, A. Shlagman, larvae in damp funnel of *Neoregelia carolinae* (Bromeliaceae) (TAU).

DISCUSSION. Chandler and Ribeiro (in press) established the synonymy of the above names. This has proved to be a widespread species of Mediterranean and subtropical cultivation. It is readily separated from other Palaearctic species by the dark knobbed halteres. The male genitalia were figured by Hutson, Ackland and Kidd (1980) and by Chandler and Ribeiro (in press).

BIOLOGY. Hutson (1978) described *L. arsona* from reared specimens obtained from Brazilian root ginger in a London warehouse, which had been used for bananas previously. The rearing record from Israel is thus of great interest, but it remains unclear as to what are the larval food requirements and the mode by which the species has spread over its present range.

DISTRIBUTION. Hutson (1978) recorded *L. arsona* from South Africa, Kenya and St. Helena. Väisänen (1984b) added a record from Tunisia. Chandler and Ribeiro (in press) showed that it was frequent in the Atlantic islands (Canaries, Madeira and the Azores) (where it had previously been recorded under the name *L. fasciata* Storå); they also gave records for Malta, the Cape Verde Islands and the Channel Islands (Jersey).

*Leia bimaculata* (Meigen, 1804)

*Mycetophila bimaculata* Meigen, 1804:92.

MATERIAL EXAMINED. (179♂, 69♀), ISRAEL: Mount Hermon; Nahal Senir; Mezudat Nimrod; Panyas; Gonén; Nahal Bezet; Montfort; Sasa; Avivim; Bar'am; Hula Reserve; Qusbiya; Upper Nahal Amud; Park HaYardén; Haspin; Hefa; El Al Reserve; Yagur; Qiryat Tiv'on; Allonim; Ramat Dawid; Karmel; Ma'agan Mikha'el; Ara; Nurit; 'Olesh; Nahal Poleg; Herzliyya (frequent in Malaise trap); Bet Berl; Tel Aviv; Abu Kabir (Tel Aviv); Savyon; Migdal Aféq; Miqwé Yisr'el; Bet Oved; Rehovot; Ashdod; Hulda; Latrun; Bet haKerem; Nahal Perat; Sederot; Nahal Arugot; Lahav (all TAU except 6♂, 3♀ from Rehovot in NHML) (collected in i-vii, ix-xii).

DISCUSSION. The male genitalia were figured by Hutson, Ackland and Kidd (1980), who emphasised the colour variation of this species (a phenomenon found to a lesser extent in other *Leia* species).

BIOLOGY. This species develops chiefly in species of *Russula* but also other genera of agarics and *Calocera* have been recorded.

DISTRIBUTION. A common species throughout Europe, including the Mediterranean region. Recorded from Algeria (Burghel-Balacesco, 1972), Corsica (Edwards, 1928), Cyprus (Georgiou, 1977) and there are unpublished records from Morocco, Corfu, Cephalonia, Lesbos, Paros, Rhodes, Crete, Cyprus and Turkey.

*Leia subtrifasciata* Strobl, 1906

*Neoglaphyoptera subtrifasciata* Strobl, 1906:393.

DESCRIPTION. **Male.** Not examined.

**Female.** Length of wing 3.2–3.4 mm.

**Head:** Black; antenna short but flagellar segments more than twice as long as broad.

**Thorax:** Mesoscutum shining dark yellow with three widely separated shining black stripes, the two laterals reaching almost to scutellum which has dark basal patch, otherwise yellow; pleura and mediotergite shining black. Legs: Dark yellowish, hind coxa dark at base and tip; hind femur dark on apical sixth and narrowly on dorsal margin of basal half. Wing: Grey with brown veins and irregular brown patches on membrane, including patch over crossveins  $tb$  and  $r-m$ , vein  $M_{1+2}$  and extending along vein  $M_2$  to become confluent with preapical band which meets costa just beyond tip of vein  $R_1$  and extends across fork veins to join dark patch behind vein  $CuA_2$ ; separate dark patch on axillary lobe; vein  $R_1$  about half length of crossvein  $r-m$ ; all veins and crossveins  $r-m$  and  $tb$  setulose above; dark spot on base of vein  $A_2$  not very distinct. Haltere: Yellow.

**Abdomen:** Mainly shining black, but  $T_2$ – $T_4$  narrowly obscure yellowish on basal margins.

MATERIAL EXAMINED. ISRAEL: Mizpé Ramon, 6–7.iv.1992, A. Freidberg (2 ♀) (TAU).

DISCUSSION. The male genitalia of *L. subtrifasciata* have not been figured and I have only examined females. The Israeli specimens are described here because they differ from other material in coloration. The type material from Spain (Algeciras) was described as having the thorax widely yellow on the sides and scutellum, and some specimens had distinct stripes as in the Israeli specimens. A Spanish female considered conspecific has the body entirely shining black but otherwise agrees well in wing and leg coloration. As mentioned under *L. bimaculata* this type of colour variation is common in *Leia* and this identification is made pending future examination of males.

BIOLOGY. Unknown.

DISTRIBUTION. Spain, Tunisia and Israel.

*Novakia* Strobl, 1893

*Novakia* Strobl, 1893:162.

Type species: *Novakia scatopsiformis* Strobl, 1893:162 (monotypy).

*Kertesztina* Enderlein, 1913:27.

Type species: *Kertesztina tunesica* Enderlein, 1913:27 (monotypy) [= *Novakia scatopsiformis* Strobl, 1893:162].

This genus comprises two species described from Europe by Strobl, which have been

insufficiently characterised. Probably because of the aberrant wing venation, this genus has sometimes incorrectly been referred to the Sciaridae and its relationships to other Leiinae are unclear.

*Novakia scatopsiformis* Strobl, 1893

*Novakia scatopsiformis* Strobl, 1893:162.

*Kertesztina tunesica* Enderlein, 1913:27.

MATERIAL EXAMINED. ISRAEL: Golan, 5 km south of Quneitra, 25.iv.1982, I. Yarom (1 ♂); Huqoq, 17.vi.1981, A. Freidberg (1 ♀); Bet Alfa, 29.iii.1935, J. Aharoni (1 ♀); Yaqqir, 4.iv.1981, A. Freidberg (1 ♂, 1 ♀); Yerushalayim (= Jerusalem), 3.iv.1951, N.G. Grotz (1 ♂); Yerushalayim (= Jerusalem), 20.iv.1959, M. Winegish (1 ♀); Har HaZofim, O. Theodor (1 ♀) (TAU, except Bet Alfa, NHML).

DISCUSSION. The above material agrees well with the description of *N. scatopsiformis*, which was described from a Croatian type. A second species was described as *N. simillima* by Strobl (1910:45) from an Austrian type. These species were not distinguished by Landrock (1927) and subsequent authors. I have, however, seen material conforming to *N. simillima* from Spain; it is distinguished by the more elongate antennae as well as differences in the genitalia. The latter have not been figured for either species and both species of *Novakia* are being described and figured by Chandler (in preparation).

BIOLOGY. Unknown.

DISTRIBUTION. The types of the two synonyms cited above were from Croatia and Tunisia. Material has also been examined from Greece (Peloponnese, Corfu, Cephalonia) and Cyprus.

*Docosia* Winnertz, 1863

*Docosia* Winnertz, 1863:802.

Type species: *Mycetophila sciarina* Meigen, 1830:300 (designation by Johannsen, 1909:92).

This is a large Holarctic genus, of which many additional species were identified by Petr Laštovka in a Holarctic revision (unpublished) he was preparing some years ago. It is particularly well represented in the Mediterranean region. Six species were present in the Israeli material; *D. gilvipes* (Walker) is a widespread species belonging to a distinct group of the genus. The other five species, all apparently not previously described, belong to a group with similar external characters (bare laterotergite, pale setae of mesoscutum, legs mainly yellow) and are best distinguished by the male genitalia.

KEY TO SPECIES OF *DOCOSIA* IN ISRAEL

1. Laterotergite with long pale bristling. Vein Sc setose and ending free . . . . . *D. gilvipes* (Walker)
- Laterotergite bare. Vein Sc ends in vein R . . . . . 2

2. Veins behind radial sector completely colourless. Vein  $R_1$  2–3 times as long as crossvein r–m. Fore femur brown ventrally, mid femur on basal half. Basal half of mid and hind coxae dark. Costa extends a third distance from vein  $R_5$  to vein  $M_1$  . . . . . *D. helveola* n. sp.  
— Posterior veins slightly brownish. Vein  $M_1$  varying in length. Femora and coxae variously coloured. Costa extends a quarter or more distance from vein  $R_5$  to vein  $M_1$  . . . . . 3
3. Vein  $R_1$  2.5 or more times as long as crossvein r–m. Mid and hind coxae dark on basal half; fore femur strongly dark beneath, mid femur dark basally beneath. Costa extends a third distance from vein  $R_5$  to vein  $M_1$  . . . . . *D. juxtamontana* n. sp.  
— Vein  $R_1$  less than 2.5 times as long as crossvein r–m. Legs variously coloured. Costa extends a quarter or more distance from vein  $R_5$  to vein  $M_1$  . . . . . 4
4. Legs almost entirely yellow; mid and hind coxae only narrowly brown basally. Vein  $R_1$  distinctly less than twice as long as crossvein r–m. Costa extends 0.4–0.5 distance from vein  $R_5$  to vein  $M_1$  . . . . . *D. lastovkai* n. sp.  
— Legs mainly yellow, but mid and hind coxae dark on more than basal third; fore and mid femur dark below basally. Vein  $R_1$  twice or more as long as crossvein r–m. Costa extends 0.25 to 0.4 distance from vein  $R_5$  to vein  $M_1$  . . . . . 5
5. Thorax shining with very little dusting. Antenna with flagellar segments less than twice as long as broad. Costa extends 0.4 distance from vein  $R_5$  to vein  $M_1$ . Fore and mid femora dark basally beneath . . . . . *D. inspicata* n. sp.  
— Thorax more strongly dusted. Antenna with flagellar segments more than twice as long as broad. Costa extends less than 0.4 distance from vein  $R_5$  to vein  $M_1$ . Fore femur dark on basal half ventrally, other femora dark basally . . . . . *D. incolamontis* n. sp.

*Docosia gilvipes* (Walker, 1856)

*Leia gilvipes* Walker, 1856a:29.

MATERIAL EXAMINED. (13♂, 20♀), ISRAEL: Bar'am, reared 1–8.i.1978, ex fungus collected 25.xi.1977, ? collector (11♂, 16♀); Nahal Poleg, 14.i.1975, A. Freidberg (1♂, 2♀); Herzliyya, 18.iv.1982 (1♂), 6.xii.1981 (1♀), 14.iv.1982 (1♀), A. Freidberg (all TAU).

DISCUSSION. The male genitalia were figured by Hutson, Ackland and Kidd (1980); the structure differs markedly from the other species of the genus dealt with here.

BIOLOGY. *D. gilvipes* has been reared from a very wide range of fungi in Europe (including agarics, boleti, encrusting fungi, *Peziza* and *Scleroderma*) and is the only *Docosia* known to be fungivorous; one other species has been reared from a bird's nest but the larval biology of other species has not been reported.

DISTRIBUTION. Widespread in the Palaearctic, including records from Japan and Madeira. The only previous record from the Mediterranean region, however, is from mainland France (Matile, 1977).

*Docosia helveola* n. sp.

(Figs. 63–67)

DESCRIPTION. **Male.** Length of wing 2.5–3.2 mm.

**Head:** Black with white bristling; antenna black, flagellar segments little more than 2 to 3 times long as broad; palpus brownish.

**Thorax:** Black, grey dusted with long pale setae on mesoscutum, scutellum and proepisterna; pleura bare. Legs: Yellow, coxae dark on basal two fifths; fore femur dark on basal three quarters below; mid femur dark beneath on basal half; tarsi darkened from apical part of second segment onwards; mid tibia with 2–3 short anteroventral, 5–7 anterior and 5 dorsal setae; hind tibia with 12 anterior, 8–10 long dorsal (several shorter on apical half), on apical half a series of short posterodorsal and several (about 10) short weak posteroventral setae. Wing: Clear; costa and radial veins including crossvein r–m brown, other veins colourless and marked only by setulae (light grey to brown in other species); vein Sc ends in vein R a little more than halfway to base of vein Rs; vein  $R_1$  about 2.5 times as long as crossvein r–m; costa extends a third distance from vein  $R_5$  to vein  $M_1$ ; stalk of median fork subequal to a little longer than crossvein r–m. Haltere: Yellow.

**Abdomen:** Black, grey dusted with pale hairs. Genitalia, Figs. 63–67.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Hulda, 4.ii.1976, A. Freidberg (TAU). Paratypes: ISRAEL: Haspin, 31.i.1984 (1♂), 19.ii.1989 (1♂), I. Nussbaum; Nahal Perat, 25.iii.1975, A. Freidberg (1♂); Har HaZofim, 15.iii.1937, O. Theodor (2♂); Lahav, 27.ii.1974, A. Freidberg (4♂); Avedat, 31.iii.1961, A. Freidberg (1♂) (all TAU).

ETYMOLOGY. From the pale coloured posterior wing veins.

DISCUSSION. The genitalia are close in the form of the gonostylus to *D. muelleri* Plassmann (1986), from Sweden, but the description differs in some colour characters (yellow palpus, legs yellow except base of coxae, halteres pale greyish).

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

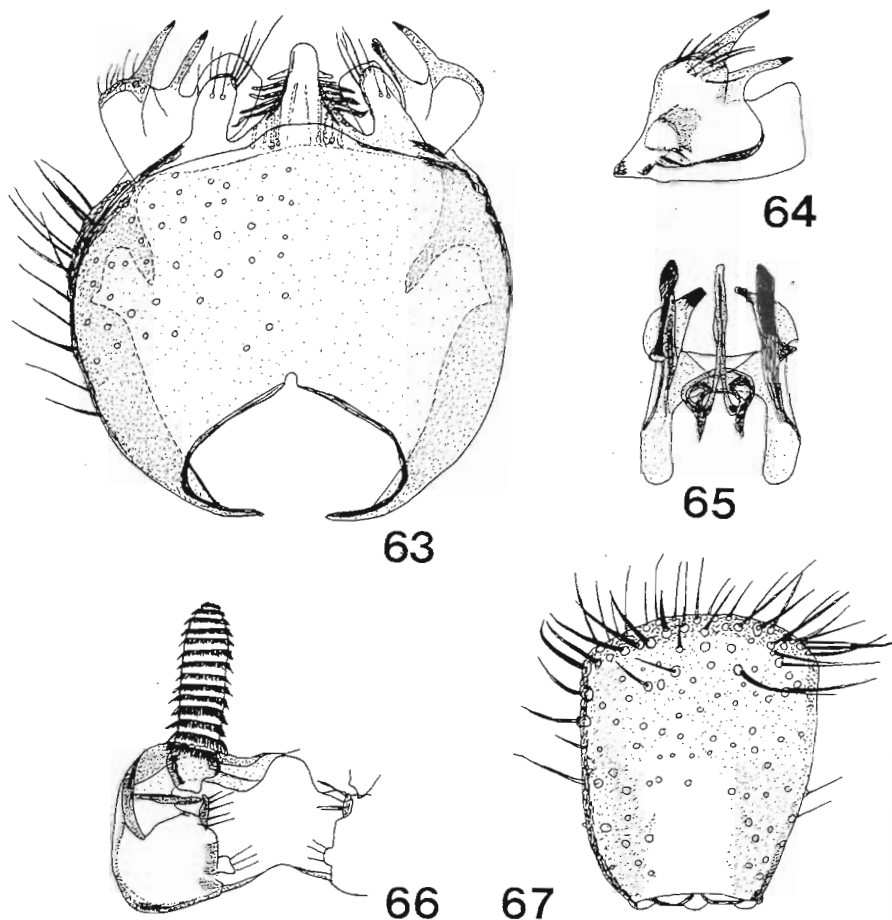
*Docosia incolamontis* n. sp.

(Figs. 68–72)

DESCRIPTION. **Male.** Length of wing 3.2–3.7 mm.

**Head:** Black with pale bristling; antenna black with flagellar segments about 2.5 times as long as broad; palpus brownish yellow.

**Thorax:** Shining black, thinly grey dusted; chaetotaxy as preceding species. Legs: Yellow except basal quarter to third of all coxae; fore femur brown beneath on more than basal half; tarsi darkened beyond metatarsus; mid tibia with 2–3 short anteroventral, 5–6 anterior and 5 dorsal setae; hind tibia with 10–11 anterior, 8 dorsal, several short posterodorsal near tip and 9–12 short posterior setae on apical half. Wing: Clear, faintly brownish on apical quarter; costa and radial veins including crossvein r–m dark brown, other veins light brown; all veins setulose except vein Sc, stalk of median fork and greater part of crossvein  $\gamma$  (few setulae apically); vein Sc ends in vein R just before halfway to base of vein Rs; vein  $R_1$  a little more



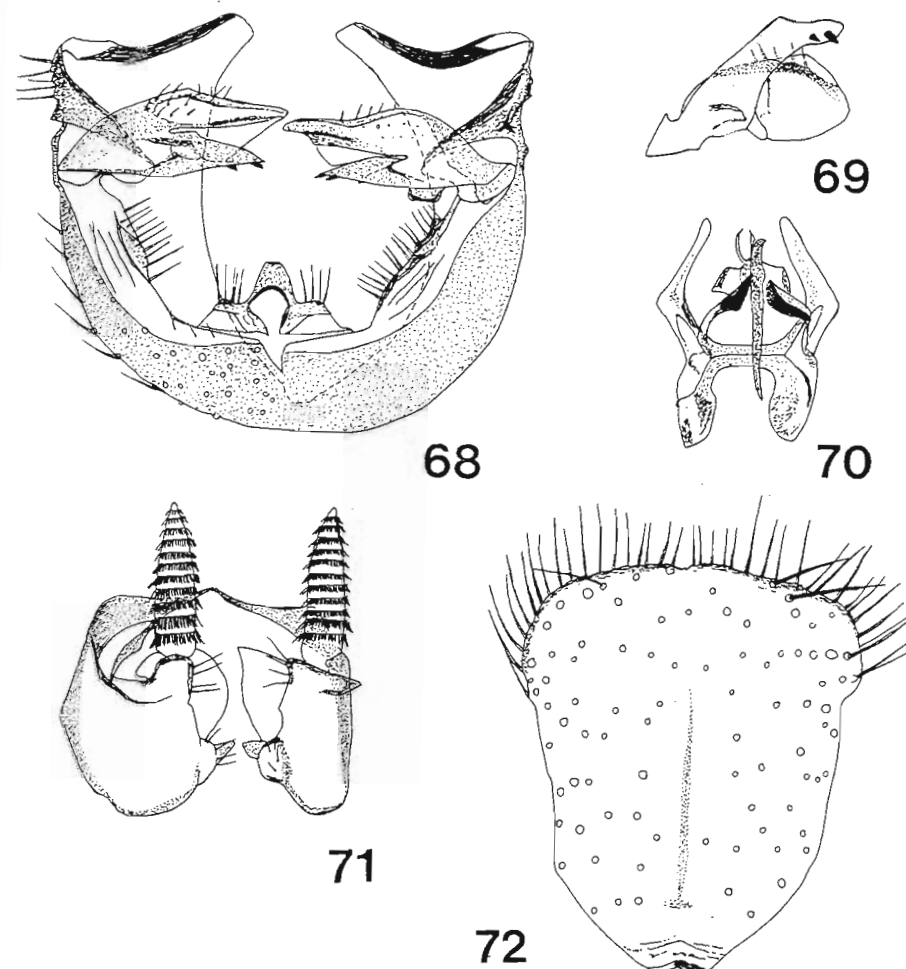
Figs. 63-67. *Docosia helveola* n. sp., ♂ genitalia: 63. Ventral view of gonocoxites and gonostyli. 64 Dorsal view of gonostylus. 65. Ventral view of aedeagus and parameres. 66. Cercus. 67. Dorsal view of T9.

than 2 to 2.9 (1 example) times as long as crossvein r-m; stalk of median fork a little shorter than crossvein r-m; posterior fork begins just before level of base of median fork; costa extends a third distance from vein  $R_5$  to vein  $M_1$ .

**Abdomen:** Black with whitish hairs. Genitalia, Figs. 68-72.

**Female.** Length of wing 4.3 mm. Antenna shorter than thorax but flagellar segments more than twice as long as broad. Fore and mid coxae dark at extreme base, hind coxa on basal third; fore femur dark brown beneath on basal half; hind tibia with posterior setae on apical two thirds. Vein Sc ends at 0.6 distance to base of vein  $R_5$ ; costa extends a quarter distance from vein  $R_5$  to vein  $M_1$ . Abdomen broadened with short pale hairs.

**MATERIAL EXAMINED.** Holotype ♂, ISRAEL: Mount Hermon, 2000 m, 23.iv.1982, A. Freid



Figs. 68-72. *Docosia incolamontis* n. sp., ♂ genitalia: 68. Posterior view of gonocoxites and gonostyli. 69. Dorsal view of gonostylus. 70. Ventral view of aedeagus and parameres. 71. Cerci. 72. Dorsal view of T9.

berg (TAU). Paratypes: ISRAEL: same data as holotype (3♂ and 1♀, the latter *in copula* with one of the males) (TAU).

**ETYMOLOGY.** From the mountainous habitat.

**DISCUSSION.** This species has genitalia resembling *D. lastovkai* n. sp. in the bifid form of the gonostylus but differs in the gonocoxal margin and other characters.

**BIOLOGY.** Unknown.

**DISTRIBUTION.** Israel.

*Docosia inspicata* n. sp.  
(Figs. 73–76)

DESCRIPTION. **Male.** Length of wing 3.1 mm.

**Head:** Shining black with pale bristling; antenna black, a little longer than head and thorax, with flagellar segments about twice as long as broad; palpus brownish yellow.

**Thorax:** Shining black with very thin dusting on mesoscutum; yellowish white setae distributed as preceding species. **Legs:** Yellow, mid coxae dark on basal two fifths, hind coxae on basal half; fore femur faintly dark beneath basal half; mid tibia with 2 short anteroventral, 5 anterior, 4–5 dorsal, 2–3 short posterior near tip and 2–4 short weak posteroventral setae; hind tibia with 14 anterior and 15 dorsal setae, posterior setae absent. **Wing:** Clear except faint brownish shade near tip; vein Sc ends in vein R at half distance to base of vein Rs; vein R<sub>1</sub> a little more than twice as long as crossvein r-m; crossvein r-m a little longer than stalk of median fork; posterior fork begins just before level of median fork; costa extends 0.4 distance from vein R<sub>5</sub> to vein M<sub>1</sub>; costa and radial veins including crossvein r-m dark brown, other veins pale; all veins setulose except vein Sc, crossvein tb and stalk of median fork. Haltere: Yellow.

**Abdomen:** Black, with whitish hairs. Genitalia, Figs. 73–76.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Montfort, 10.iii.1981, A. Freidberg (TAU).

ETYMOLOGY. From the three pointed lobes of the gonostylus.

DISCUSSION. The gonostylus is trifid as in *D. helveola* but is otherwise of distinctive form. One female (ISRAEL: Montfort, 10.iii.1981, T. Furman), collected with both sexes of *D. lastovka* but with the apical shade on the wing darker and coxae darker basally, is probably this species.

BIOLOGY. Unknown.

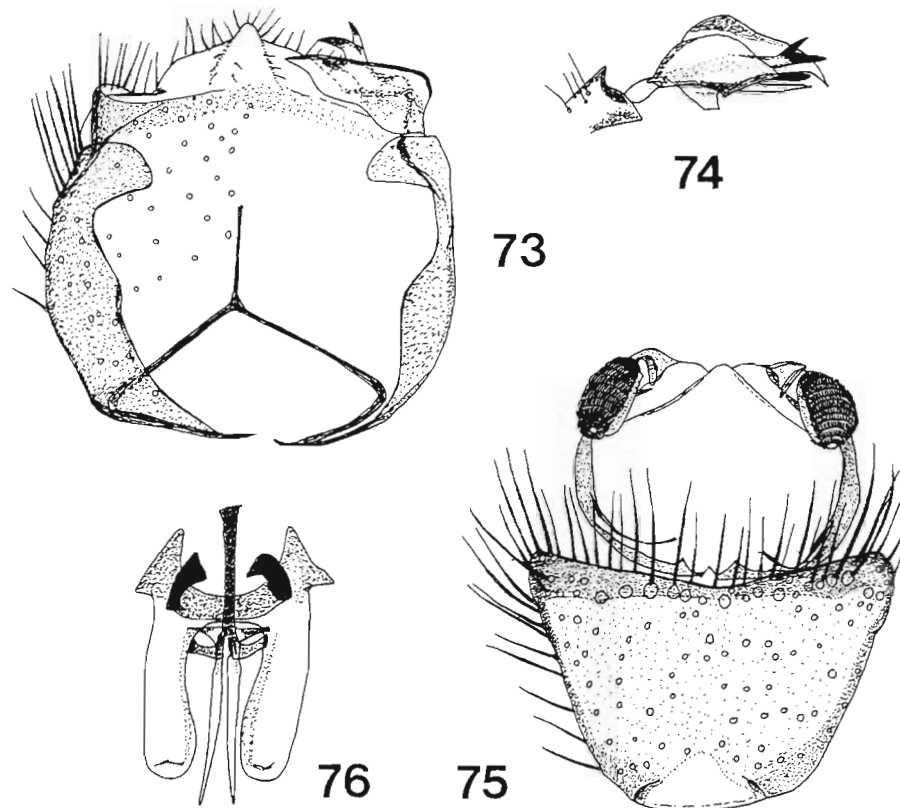
DISTRIBUTION. Israel.

*Docosia juxtamontana* n. sp.  
(Figs. 77–81)

DESCRIPTION. **Male.** Length of wing 3.4 mm.

**Head:** Shining black with pale bristling; antenna black, grey dusted, flagellar segments about twice as long as broad; palpus yellow.

**Thorax:** Shining black, with chaetotaxy as preceding species. **Legs:** Yellow, but all coxae dark basally, fore coxa on anterior part only, mid and hind coxae on basal half; fore femur brown beneath on more than basal half; mid and hind femur faintly brown beneath at base; mid tibia with 1 small anteroventral, 4 anterior and 4–5 dorsal setae; hind tibia with 10 anterior, 9 dorsal, several short posterodorsal close to the dorsals near the tip and 10 short posterior setae on apical two thirds. **Wing:** Clear, very faintly shaded near tip; vein Sc ends in vein R half distance to base of vein Rs; vein R<sub>1</sub> 2.5 times as long as crossvein r-m, which is subequal to stalk of median fork; posterior fork begins basal to median fork; costa extends a third distance from vein R<sub>5</sub> to vein M<sub>1</sub>; costa and radial veins including crossvein r-m



Figs. 73–76. *Docosia inspicata* n. sp., ♂ genitalia: 73. Dorsal view of gonocoxites and left gonostylus. 74. Dorsal view of right gonostylus. 75. Dorsal view of T9 and cerci. 76. Ventral view of aedeagus and parameres.

brown, other veins pale; all veins setulose except vein Sc, crossvein tb and stalk of median fork. Haltere: Yellow.

**Abdomen:** Black with whitish hairs. Genitalia, Figs. 77–81.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Mount Hermon, 1600 m, 23.iv.1982, I. Yarom (TAU).

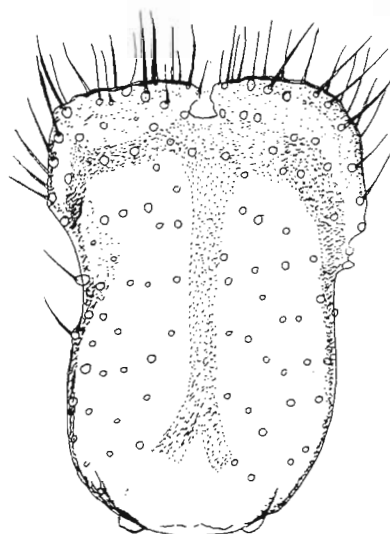
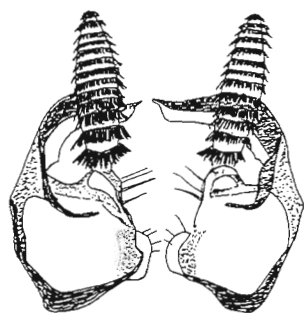
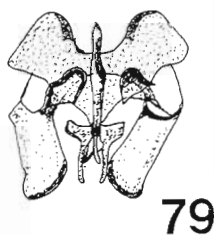
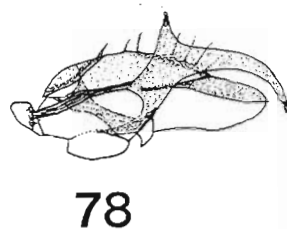
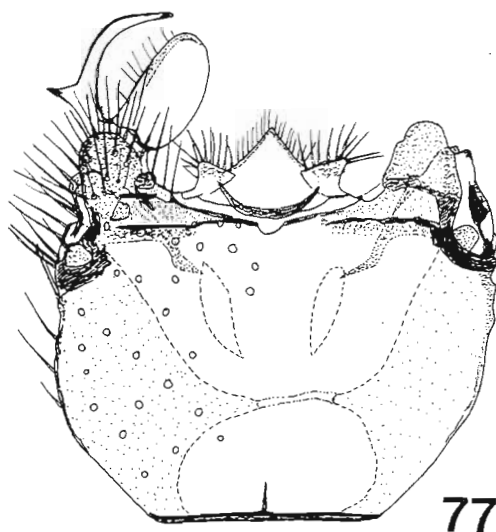
ETYMOLOGY. From the mountain habitat.

DISCUSSION. The long curved bifid outer branch of the gonostylus is distinctive among the Israeli species.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.





Figs. 77–81. *Docosia juxtamontana* n. sp., ♂ genitalia: 77. Ventral view of gonocoxites and left gonostylus. 78. Dorsal view of gonostylus. 79. Ventral view of aedeagus and parameres. 80. Cerci. 81. Dorsal view of gonostylus.

*Docosia lastovkai* n. sp.  
(Figs. 82–87)

DESCRIPTION. **Male.** Length of wing 2.3–2.8 mm.

**Head:** Shining black, grey dusted, with pale hairs; antenna with pedicel yellowish brown, rest black. longer than head and thorax with flagellar segments 2.5 times as long as broad; palpus yellow.

**Thorax:** Shining black, thinly grey dusted; chaetotaxy as preceding species. Legs: Yellow, mid and hind coxae only narrowly brownish basally; tarsi brownish, especially fore tarsus; mid tibia with 0 anteroventral, 5 anterior and 5 dorsal setae; hind tibia with 12 anterior, 10 dorsal, several short posterodorsal set close to them on apical half and a few scattered weak posteroventral setae, posterior setae absent. Wing: Clear, faintly brownish on apical part; costa and radial veins including crossvein r-m brown, other veins light brown; vein Sc ends in vein R at half distance to base of vein Rs; costa extends 0.4 distance from vein R<sub>s</sub> to vein M<sub>1</sub>; vein R<sub>1</sub> 1.6–2.0 times as long as crossvein r-m; other characters as preceding species. Haltere: Yellow.

**Abdomen:** Black, grey dusted with pale hairs. Genitalia, Figs. 82–87.

**Female.** Length of wing 2.5–3.2 mm. Antenna smaller than in male, shorter than thorax; pedicel brownish yellow. Legs yellow including coxae.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Hefa (labelled "Haifa"), 20.ii.1976, A. Freidberg (TAU). Paratypes: ISRAEL: Mount Hermon, 9.iv.1977, A. Freidberg (1 ♀); Montfort, 8.i.1975 (2 ♂), 4.iii.1976 (4 ♂), 5.iii.1978 (1 ♂, 3 ♀), 10.iii.1981 (1 ♂, 1 ♀), 1.iii.1982 (1 ♂), 9.iii.1982 (1 ♂), 17.iii.1983 (1 ♂), 2.iii.1987 (1 ♂), 4.iii.1993 (16 ♂, 18 ♀) (all A. Freidberg); 10.iii.1981, T. Furman (1 ♀), F. Kaplan (1 ♂); Upper Nahal Keziv, 3.v.1983, A. Freidberg (1 ♀); same data as holotype (6 ♂, 1 ♀); Karmel, 14.ii.1976, A. Freidberg (1 ♂); Nahal Poleg, 5.ii.1975, A. Freidberg (5 ♂, 1 ♀); Herzliyya, i–iii.1982, A. Freidberg (11 ♂, 1 ♀); Bet Berl, 1.iii.1983, I. Yarom (1 ♂); Bet haKerem, 29.iii.1952, O. Theodor (1 ♀); Nahal Perat (labelled "W. Kelt"), 25.iii.1979, A. Freidberg (1 ♀); Etanim, 8.iv.1985, I. Nussbaum (1 ♂) (all TAU).

ETYMOLOGY. To acknowledge the contribution made by Petr Laštovka to the study of this genus, especially his extensive unpublished work.

DISCUSSION. This species was recognised as new by Petr Laštovka from European material. It is easily distinguished by the pair of setose processes within the gonocoxal margin and bifid gonostylus.

BIOLOGY. Unknown.

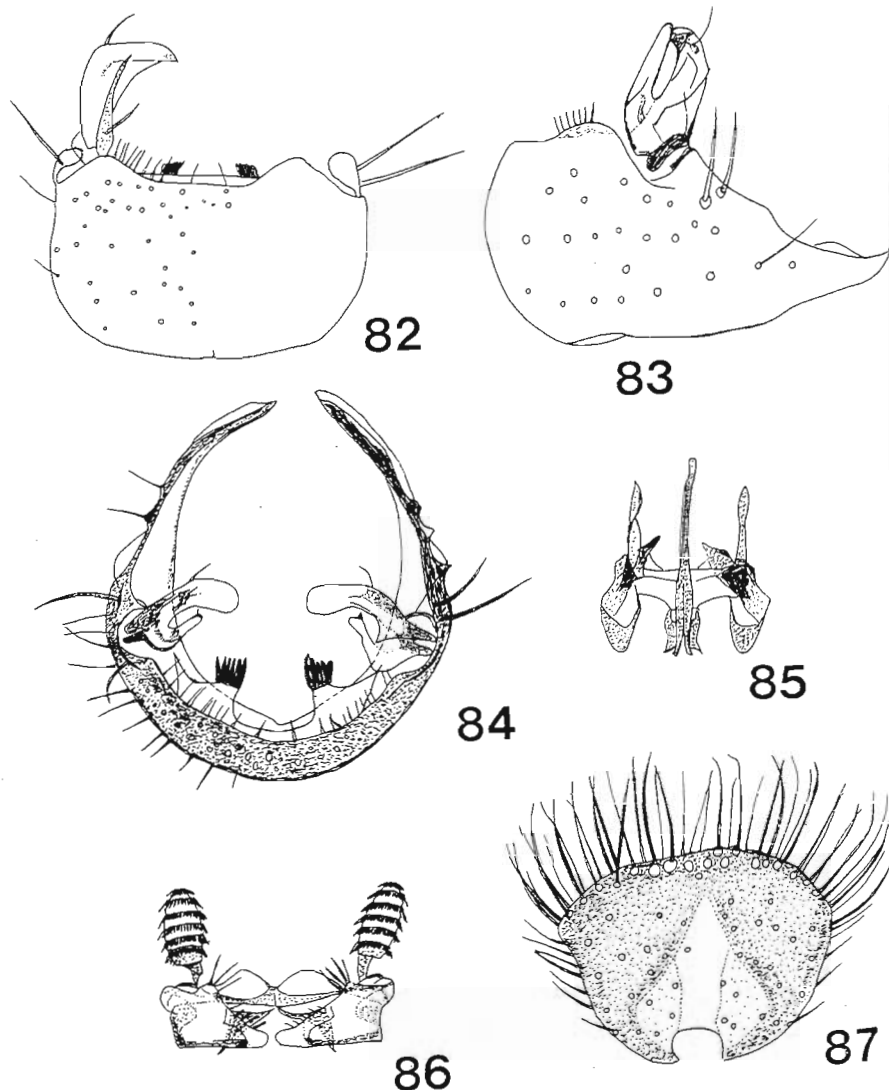
DISTRIBUTION. Israel and south-eastern Europe. Specimens have been examined from Crete, Rumania and Bulgaria.

*Megophthalmidia* Dziedzicki, 1889

*Megophthalmidia* Dziedzicki, 1889:525 (spelling in text, correctly spelt in title of paper).

Type species: *Megophthalmidia zugmayeriae* Dziedzicki, 1889:526 (monotypy) [= *Leia crassicornis* Curtis, 1837:645].

This is a small but widely distributed genus with several species in the Palearctic. As



Figs. 82-87. *Docosia lastovkai* n. sp., ♂ genitalia: 82. Ventral view of gonocoxites and left gonostylus; 83. Lateral view of right gonocoxite and gonostylus; 84. Posterior view of gonocoxites and gonostylus; 85. Ventral view of aedeagus and parameres; 86. Cerci; 87. Dorsal view of T9.

discussed by Chandler and Ribeiro (in press), there is a group of mainly dark coloured undescribed species in the Mediterranean region allied to *M. decora* (Santos Abreu) from the Canary Islands. The male of *M. decora* has not been examined but the ovipositor is distinct from the Mediterranean species which have previously been confused with it. There are two species in Greece, distinguished by both male and female genital characters. A single female from Israel appears to belong to the more widespread of these species, but is not described here pending the discovery of the male in Israel. The new species of this genus will be dealt with in a paper under preparation.

*Megophthalmidia* sp. indet.

MATERIAL EXAMINED. ISRAEL: Herzliyya, 6.i.1982, A. Freidberg (1 ♀) (TAU).

DISCUSSION. The ovipositor agrees in structure with an undescribed species as indicated above.

BIOLOGY. Unknown.

DISTRIBUTION. Israel; probably the same species in Greece (Corfu), Cyprus and Corsica.

Mycomyinae

*Mycomya* Rondani, 1856

*Mycomya* Rondani, 1856:194.

Type species: *Sciophila marginata* Meigen, 1818:249 (original designation).

This is a large genus, found in all zoogeographic regions, but especially well represented in the Holarctic of which the fauna was revised in the detailed work of Väisänen (1984a). He divided the genus into a series of subgenera characterised principally by structure of the genitalia. Eight species belonging to three of the subgenera have been found in Israel. Four of the species are widespread in the Palaearctic, 1 is known elsewhere in the Mediterranean region while 3 are newly described here. The terminology for the detailed structure of the male genitalia follows Väisänen (1984a).

KEY TO SUBGENERA OF MYCOMYA IN ISRAEL

1. Sternal synsclerite not deeply emarginate, with setose submedian appendages . . . . . *Mycomya* sensu stricto
- Sternal synsclerite deeply emarginate or divided into two parts; without setose submedian appendages . . . . . 2
2. Sternal synsclerite with long lateral appendages; T9 without lateral appendages, but a single medial comb of setae . . . . . *Cymomya* Väisänen
- Sternal synsclerite without long lateral appendages; T9 with lateral appendages and 2 submedian apical combs . . . . . *Mycomyopsis* Väisänen

KEY TO SPECIES OF *MYCOMYA* IN ISRAEL

1. Vein Sc ending in vein R, vein Sc<sub>1</sub> being absent (*Mycomyopsis*) . . . . . 2
- Vein Sc (including Sc<sub>1</sub>) ending in costa . . . . . 3
2. Fork veins of wing bearing setulae . . . . . *M. coeles* n. sp.
- Fork veins of wing bare . . . . . *M. affinis* (Staegen)
3. Male without mid coxal spur . . . . . 4
- Male with long anteriorly directed mid coxal spur . . . . . 6
4. Male fore coxa with patch of dense setae. Setae present on mediotergite. Thorax largely yellow with three dark stripes on disc . . . . . *M. prominens* (Lundström)
- Male fore coxa without dense setae. Setae present or absent on mediotergite. Thorax variously coloured . . . . . 5
5. A few setae on mediotergite. Thorax shining black, thinly grey dusted . . . . . *M. galeapectinata* n. sp.
- Mediotergite bare. Thorax with pale stripes on a darker ground . . . . . *M. circumdata* (Staegen)
6. Mediotergite with a few setae. Male T9 emarginate in middle, without processus; lateral appendages short, each bearing two long setae . . . . . *M. tenuis* (Walker)
- Mediotergite bare. Male T9 with a distinct medial processus and broad lateral appendages without long apical setae . . . . . 7
7. Thoracic stripes dusted, only slightly shining, less contrasted with background. Male with processus of T9 broad and blunt ended . . . . . *M. montforti* n. sp.
- Thoracic stripes a little more distinct, shining, less dusted than background. Male with processus of T9 broad, but bifid apically . . . . . *M. pygmalion* Väisänen

Subgenus *Mycomya* Rondani, 1856, sensu stricto

*Mycomya (Mycomya) galeapectinata* n. sp.  
(Figs. 92–94)

DESCRIPTION. **Male.** Length of wing 4.6 mm.

**Head:** Shining black, grey dusted; antenna with basal segments yellowish brown; flagellum brown, grey dusted, its segments more than twice as long as broad; palpus brown.

**Thorax:** Mesoscutum shining black on disc, thinly grey dusted, reddish brown on humeral areas and sides; scutellum brownish yellow, pleura and mediotergite dark brown; long black setae on mesoscutum and prothorax, pleura bare, two short upturned setae on mediotergite. Legs: Yellow, coxae a little brownish basally with dark bristling. Wing: Yellowish with veins brown; vein Sc ends in costa, vein Sc<sub>2</sub> near its tip, set on basal half of radial cell; base of posterior fork situated just before base of stem of median fork; vein Sc and fork veins setose. Haltere: Yellow.

**Abdomen:** Dark brown with apical margins of T1–T3 narrowly yellowish. Genitalia (Figs. 92–94; T9 with submedian groups of dark cones; gonostylus broad, rounded margin with two strong dorsal spines; sternal submedian process slender, enlarged apically; long lateral processes.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Gal'ed, 19.iii.1983, A. Freidberg (TAU).

ETYMOLOGY. From the form of T9.

DISCUSSION. This species is according to Rauno Väisänen allied to some undescribed species from Myanmar. It runs to *M. digitifera* Edwards in Väisänen's key (1984a) but has different genital structure.

*Mycomya (Mycomya) montforti* n. sp.  
(Figs. 90–91)

DESCRIPTION. **Male.** Length of wing 4.0 mm.

**Head:** Strongly grey dusted; antenna with basal segments and base of first flagellar segment yellow, rest of flagellum dark brown; flagellar segments 3 times as long as broad; palpus yellow.

**Thorax:** Grey dusted with three darker slightly shining (dusted) stripes on disc of mesoscutum; strong dark bristling on mesoscutum and prothorax; scutellum more brownish with 2 pairs of scutellars; pleura and mediotergite bare. Legs: Yellow, hind coxa grey dusted externally; mid coxa with long slender anterior spur. Wing: Clear with brown veins; vein Sc ends in costa, vein Sc<sub>2</sub> near its tip, just before middle of radial cell; posterior fork begins before level of base of median fork; vein Sc with a few setae, fork veins and stem of posterior fork setose. Haltere: Yellow.

**Abdomen:** Grey dusted, T2–T5 narrowly yellow apically. Genitalia (Figs. 90–91) brownish yellow; tergal lateral appendages elongate, broad apically, more strongly setose on apical half; processus broad, blunt ended; sternal submedian appendages short, broad, blunt ended; gonostylus deeply bifid.

**Female.** Not certainly recognised.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Montfort, 5.iii.1978, A. Freidberg (TAU). Paratypes: ISRAEL: same data as holotype (1♂); Montfort, 4.iii.1976 (1♂), 4.iii.1993 (1♂), A. Freidberg; Karmel, 4.iii.1975, F. Kaplan (1♂). Female material: ISRAEL: Montfort, 5.iii.1978 (2♀), 4.iii.1993 (3♀), A. Freidberg (all TAU).

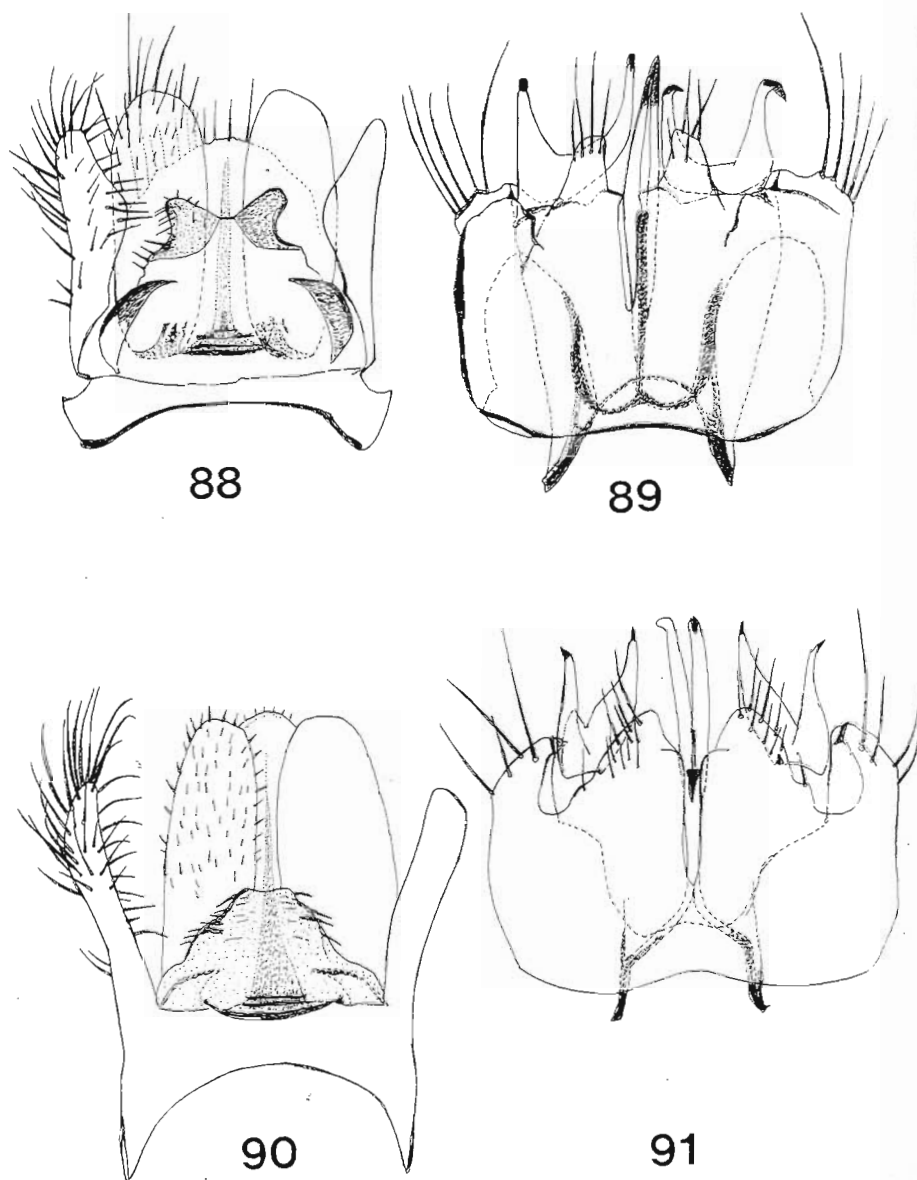
ETYMOLOGY. From the type locality.

DISCUSSION. This species is externally very similar to *M. pygmalion*; the latter has the thoracic stripes a little more distinct and shining, less dusted than the background. It runs to *M. pygmalion* or *M. ruficollis* (Zetterstedt) in Väisänen's key (1984a).

The genital differences from *M. pygmalion* are shown in the figures. The tergal lateral appendages are more strongly setose on the apical half and the median processus of T9 is broad and blunt ended (bifid apically in *M. pygmalion*). The form of the processus is closer to that of *M. ruficollis* but without such a distinctly stepped appearance and the lateral appendages are relatively longer; *M. ruficollis* is also predominantly yellow in coloration and has vein Sc generally ending in vein R<sub>1</sub>, with vein Sc<sub>1</sub> abbreviated or absent.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.



Figs. 88–91. Figs. 88–89. *Mycomya pygmalion* Väisänen, ♂ genitalia: 88. Dorsal view of T9 and cerci. 89. Ventral view of gonocoxites, gonostyli and parameres. Figs. 90–91. *Mycomya montforti* n. sp. ♂ genitalia: 90. Dorsal view of T9 and cerci. 91. Ventral view of gonocoxites, gonostyli and parameres.

*Mycomya (Mycomya) prominens* (Lundström, 1913)

*Sciophila ornata* auctt. nec Meigen, 1818:250.

*Sciophila prominens* Lundström, 1913:306.

MATERIAL EXAMINED. (68♂, 38♀), ISRAEL: Nahal Iyyon Reserve; Panyas; Gonén; Shelomi; Montfort; Bar'am; Hefa; Karmel; Qiryat Tiv'on; Allonim; Ramat Dawid; Pardés-Hanna; Nahal Poleg; Poleg; Herzliyya (frequent in Malaise trap); Tel Aviv; Tel Aféq; Ashdod; Hulda; Bet haKerem; Sederot; Karmel; Lahav (collection dates i–iv, xi–xii) (all TAU).

DISCUSSION. Väisänen (1984a) figured the male genitalia. This species is one of the most widespread species of the group with dense setae on the male fore coxae and was probably the basis for the record of *M. ornata* (Meigen) by Bodenheimer (1937). *M. ornata* was established to be a complex of species by Edwards (1941).

BIOLOGY. *M. prominens* has been reared from rotten wood and from encrusting fungi (*Thelephora* and *Corticium*) in Britain.

DISTRIBUTION. A common European species. It was recorded from Israel by Väisänen (1984c). There are unpublished records from Corfu, Cephalonia, Crete and Cyprus.

*Mycomya (Mycomya) pygmalion* Väisänen, 1984a  
(Figs. 88–89)

*Mycomya pygmalion* Väisänen, 1984a:163.

MATERIAL EXAMINED. LEBANON: Qou Zah, 19.ii.1981, I. Nussbaum (1♂, 1♀). ISRAEL: Mount Hermon, 1600 m, 23.iv.1987, I. Yarom (1♂); Nahal Amud, 21.iii.1982 (1♂, 1♀), I. Nussbaum; Hefa, 20.ii.1976, A. Freidberg (1♂); Karmel, 21.ii.1976, A. Freidberg (1♂, 1♀); Hulda, 6.ii.1975, A. Freidberg (5♂, 3♀); Latrun, 16.ii.1974, A. Freidberg (1♂) (all TAU).

DISCUSSION. This species was fully described and figured by Väisänen (1984a) but is figured again here for comparison with *M. montforti*.

BIOLOGY. Unknown.

DISTRIBUTION. This was described from a single male from Cyprus, but Väisänen (1984c) recorded it from Israel. Ribeiro (1991) recorded it from Portugal and there are unpublished records from Crete and Rhodes. It thus appears to be a widespread species in the Mediterranean region.

*Mycomya (Mycomya) tenuis* (Walker, 1856)

*Sciophila tenuis* Walker, 1856a:37.

MATERIAL EXAMINED. ISRAEL: Mount Hermon, 1000 m, 7.vii.1987, A. Freidberg (1♂); Mount Hermon, 1400–1600 m, 24.v.1985, A. Freidberg (1♀); Dafna, 12.vii.1962, J. Kugler (1♂); Bet Guvrin, 29.iii.1992, A. Freidberg (1♀) (all TAU).

DISCUSSION. This is the most widespread member of a group of allied species with similar genitalia (figured by Väisänen, 1984a) and the only one of its group to be found in Israel.

BIOLOGY. *M. tenuis* was recorded as reared from *Leccinum scabrum* by Väisänen (1984a).

DISTRIBUTION. Widespread and frequent in Europe. Recorded from Corsica by Edwards (1928); there are unpublished records from Sardinia, Corfu, Cephalonia, Lesbos and Crete.

Subgenus *Cymomya* Väisänen, 1984

*Cymomya* Väisänen, 1984a:271.

Type species: *Sciophila circumdata* Staeger, 1840:273 (original designation).

*Mycomya* (*Cymomya*) *circumdata* (Staeger, 1840)

*Sciophila circumdata* Staeger, 1840:273.

MATERIAL EXAMINED. ISRAEL: Har Meron, 28.iv.1974, D. Furth (1 ♀); Har Meron, 1100 m, 8.iv.1977, A. Freidberg (1 ♂); Har Meron, 30.iv.1981, F. Kaplan (1 ♀) (all TAU).

DISCUSSION. A very distinctive species both in external characters and male genitalia, which were figured by Väisänen (1984a).

BIOLOGY. *M. circumdata* was recorded as reared from *Leccinum scabrum* by Väisänen (1984a).

DISTRIBUTION. Widespread in Europe; it was recorded from Israel by Väisänen (1984c) and there is an unpublished record from Turkey.

Subgenus *Mycomyopsis* Väisänen, 1984

*Mycomyopsis* Väisänen, 1984a:295.

Type species: *Sciophila trilineata* Zetterstedt, 1838:859 (original designation).

*Mycomya* (*Mycomyopsis*) *affinis* (Staeger, 1840)

*Sciophila affinis* Staeger, 1840:274.

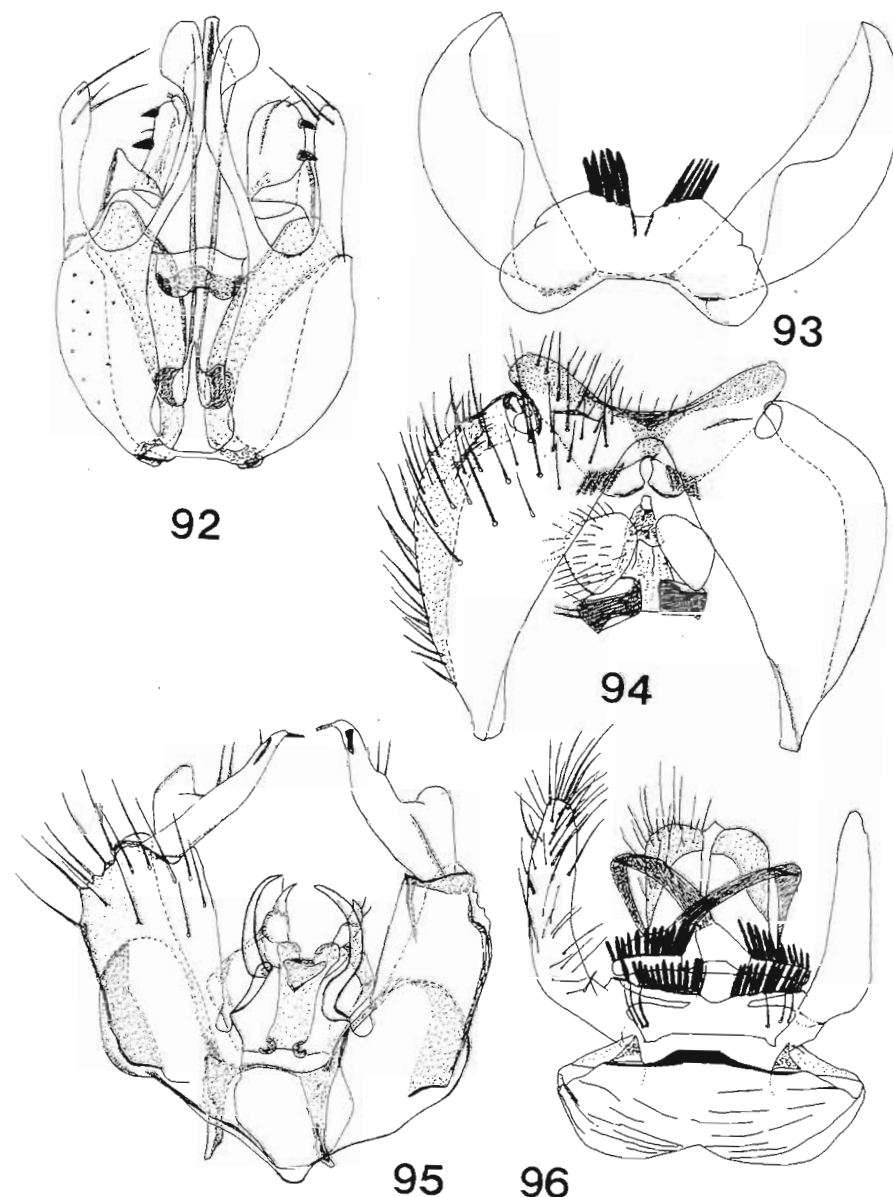
*Sciophila flava* Winnertz, 1863:734.

MATERIAL EXAMINED. (41 ♂, 47 ♀), LEBANON: Qou Zah, 19.ii.1987, I. Nussbaum (TAU). ISRAEL: Montfort; Hefa; Qiryat Tiv'on; Karmel; Upper Nahal Tirza; Bet Guvrin (collection dates ii–iii, vi) (all TAU).

DISCUSSION. The genitalia were figured by Väisänen (1984a), who recorded the species subsequently from Israel (1984c). The Israeli material is generally darker and more shining than most other material examined but the genitalia do not differ from European specimens.

BIOLOGY. Unknown.

DISTRIBUTION. Widespread in the Holarctic but there are no other records from the Mediterranean region, where several local species of *Mycomyopsis* occur, including *M. coeles* n. sp. described below, and some other undescribed species from Greece and Turkey.



Figs. 92–96. Figs. 92–94. *Mycomya galeapectinata* n. sp., ♂ genitalia: 92. Ventral view of gonocoxites, gonostyli and parameres. 93. Posterior view of T9. 94. Dorsal view of T9 and cerci. Figs. 95–96. *Mycomya coeles* n. sp., ♂ genitalia: 95. Ventral view of gonocoxites, gonostyli, aedeagus and parameres. 96. Dorsal view of T9 and cerci.

*Mycomya (Mycomyopsis) coeles* n. sp.  
(Figs. 95–96)

DESCRIPTION. **Male.** Length of wing 2.8 mm.

**Head:** Dark brown, grey dusted; antenna dark brown; flagellar segments more than 4 times as long as broad; palpus brown.

**Thorax:** Shining dark brown, with three indistinct darker stripes on disc of mesoscutum; strong dark bristling; 2 pairs of scutellars; pleura and mediotergite bare. Legs: Yellow, fore coxa greyish on basal half in front, mid and hind coxae all dark grey externally. Wing: Clear, with costa and radial veins a little brownish, other veins yellowish; vein Sc ends in vein R near middle of radial cell; vein Sc<sub>1</sub> absent; posterior fork begins well beyond level of base of stem of median fork; veins Sc, M<sub>1</sub>, M<sub>2</sub>, both stem and branches of posterior fork setose. Haltere: Yellow.

**Abdomen:** Entirely shining dark brown. Genitalia (Figs. 95–96) close to *M. maura* (Walker); tergal submedial combs with straight sided base similar to *M. permixta* Väisänen, expanded basally with setose lobe; tergal lateral appendages strongly setose apically and along dorsal edge; sternal submedial filaments present.

**Female.** Unknown.

MATERIAL EXAMINED. Holotype ♂, ISRAEL: Mount Hermon, 1300 m, 23.iv.1982, F. Kaplan (TAU).

ETYMOLOGY. Refers to the high ground on which this species was collected.

DISCUSSION. The male genitalia are close to those of *M. maura* (Walker) and *M. permixta* Väisänen, but the internal row of flattened setae found on the tergal lateral appendages of those species is absent although the appendages are strongly setose apically and along the dorsal edge. These appendages are also more slender than in *M. maura*, which occurs in other parts of the Mediterranean region.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

Mycetophilinae

Exechiini

*Cordyla* Meigen, 1803

*Cordyla* Meigen, 1803:263.

Type species: *Cordyla fusca* Meigen, 1804:93 (subsequent monotypy).

This is a mainly Holarctic genus. The two species found in Israel include one widespread in Europe, the other with a more southern and mainly Mediterranean distribution.

KEY TO SPECIES OF *CORDYLA* IN ISRAEL

1. Male antenna with 12 flagellar segments. Vein M<sub>2</sub> may be abbreviated . . . . . *C. styliforceps* (Bukowski)
- Male antenna with 11 flagellar segments. Both veins of median fork reach margin . . . . . *C. crassicornis* Meigen

*Cordyla crassicornis* Meigen, 1818

*Cordyla crassicornis* Meigen, 1818:275.

MATERIAL EXAMINED. ISRAEL: Panyas, 24.iv.1982 (1♂); Tel Dan, 20.iv.1974 (2♂) (both A. Freidberg; TAU).

DISCUSSION. The male genitalia were figured by Edwards (1925).

BIOLOGY. The larvae develop in fungi of the genus *Russula* in Europe.

DISTRIBUTION. Common in Europe, also found in the Atlantic islands (Chandler and Ribeiro, in press). There is an unpublished record from one of the Greek islands (Chios).

*Cordyla styliforceps* (Bukowski, 1934)

*Polyxena styliforceps* Bukowski, 1934:186.

MATERIAL EXAMINED. ISRAEL: Karmel, 14.ii.1976, A. Freidberg (1♂); Herzliyya, 27.ii.1982 (1♂), 16.iv.1982 (1♂), A. Freidberg; Tel Aviv, 10.xii.1975, A. Freidberg (1♂); Bet haKerem, 25.iv.1950, O. Theodor (1♂); Yerushalayim (= Jerusalem), 29.i.1936, reared (?) ii.1936, ? collector (2♂) (all TAU).

DISCUSSION. The male genitalia were figured by Bukowski (1934) and by Chandler and Ribeiro (in press).

BIOLOGY. Chandler and Ribeiro (in press) recorded a rearing in Spain from the subterranean fungus *Rhizopogon*. Ribeiro (1990) reared it from species of *Russula*, *Lactarius*, *Amanita* and *Tricholoma*.

DISTRIBUTION. Described from an Ukrainian type (Crimea); now known from the Canary Islands, Portugal, mainland Spain and Israel.

*Pseudexechia* Tuomikoski, 1966

*Pseudexechia* Tuomikoski, 1966:180.

Type species: *Exechia trisignata* Edwards, 1913:370 (original designation).

This is a compact mainly Holarctic group with one widespread species occurring in Israel. Chandler (1978) revised and keyed the European species with observations on those from North America.

*Pseudexechia trisignata* (Edwards, 1913)*Exechia trisignata* Edwards, 1913:370.

MATERIAL EXAMINED. ISRAEL: Mount Hermon, 2000 m, 23.iv.1982, A. Freidberg (1♂); Montfort, 4.iii.1976, A. Freidberg (1♂); Muhraqa [Karmel], 18.iii.1987, I. Nussbaum (1♂) (all TAU).

DISCUSSION. The male genitalia were figured by Edwards (1913) and Chandler (1978).

BIOLOGY. This species was reared in Britain from species of the small agarics *Naucoria* and *Galerina* (Chandler, 1993).

DISTRIBUTION. Frequent in the northern Palaearctic but also recorded from Corsica (Edwards 1928) and there are unpublished records from Tunisia, Corfu, Cyprus and Turkey.

*Exechia* Winnertz, 1863*Exechia* Winnertz, 1863:879.

Type species: *Tipula fungorum* Winnertz, 1863:886 (misidentification) as *Exechia fungorum* (De Geer, 1776:361) (designation by Johannsen, 1909:106) [= *Mycetophila fusca* Meigen, 1804:91].

This is a large genus in the Holarctic with certain species groups also well represented in the Oriental and Afrotropical regions. There are four species in Israel, three of them widespread in Europe and found elsewhere in the Mediterranean region, the fourth common in the latter region.

KEY TO SPECIES OF *EXECHIA* IN ISRAEL

1. Male abdominal T2-T4 with large yellow lateral markings; female with T2-T5 with broad yellow markings, T7 and ovipositor yellow, cercus one segmented . . . . . *E. bicincta* (Staeger)
- Male abdomen mainly dark, sometimes with small lateral markings on tergites; female with yellow lateral markings on tergites but T7 not entirely yellow and cercus two segmented . . . . . *E. separata* Lundström
2. Thorax yellow on humeral area. Male abdomen all black . . . . . *E. separata* Lundström
- Thorax black with grey dusting at sides. Male abdomen sometimes with small yellow lateral markings . . . . . *E. fulva* Santos Abreu
3. Fore metatarsus 1.2 times as long as its tibia. Outer stylomere of gonostylus with long spatulate internal apical process . . . . . *E. fulva* Santos Abreu
- Fore metatarsus subequal to 1.1 times as long as its tibia. Outer stylomere of gonostylus with shorter slender internal apical process . . . . . *E. fusca* (Meigen)

*Exechia bicincta* (Staeger, 1840)*Mycetophila bicincta* Staeger, 1840:263.*Mycetophila interrupta* Zetterstedt, 1852:4240.*Exechia serpentina* Lundström, 1911:40.*Exechia spinosa* Bukowski, 1949:407.

MATERIAL EXAMINED. (30♂, 43♀), ISRAEL: Panyas; Montfort; Hurfeish; Karmel; Herzliyya; Nahal Tirza; Tel Aviv; Hulda; Latrun; Yerushalayim (= Jerusalem); Bet Guvrin (collection dates i-v, xii; TAU).

DISCUSSION. The male genitalia were figured by Lundström (1911) (as *E. serpentina*) and by Dziedzicki (1915) (as *E. interrupta*).

BIOLOGY. This species has been reared from fungi on three occasions in Israel: from *Pleurotus eryngii* var. *ferulae*, Hulda, 4.ii.1976, M. Kaplan (10♂, 22♀), and twice from undetermined *Boletus* species: Bet Guvrin, 23.i.1973, emerged ii.1973, M. Kaplan (8♂, 17♀); Karmel, 15.vii.1969, J. Kugler (1♂). It has been reared from *Gomphidius* and *Omphalotus* in Portugal (Ribeiro, 1990).

DISTRIBUTION. Frequent and widespread in Europe and recorded from Corsica by Edwards (1928).

*Exechia fulva* Santos Abreu, 1920*Exechia fulva* Santos Abreu, 1920:78.*Exechia peyerimhoffi* Burghel-Balacesco, 1967:330.

MATERIAL EXAMINED. (4♂, 6♀), ISRAEL: Panyas; Montfort; Avivim; Haspin; Yagur; Qusbiya; Herzliyya; Segula (collection dates i-iv; TAU).

DISCUSSION. The above synonymy was established by Chandler and Ribeiro (in press). The male genitalia were previously figured by Burghel-Balacesco (1967); the long spatulate internal subapical process of the outer stylomere of the gonostylus distinguishes this species from *E. fusca* (Meigen), which has a shorter slender process in this position, but is otherwise closely allied.

BIOLOGY. This species was reared from a large range of fungi, both agarics and boleti, in Portugal by Ribeiro (1990).

DISTRIBUTION. The types of *E. peyerimhoffi* were from Algeria, of *E. fulva* from the Canary Islands. Edwards (1928) recorded it from Corsica under the name *E. confinis* Winnertz, an allied north European species. It is evidently a frequent Mediterranean species as there are unpublished records from Tunisia, mainland Greece, Corfu, Andros, Naxos, Rhodes, Cyprus and Turkey.



*Exechia fusca* (Meigen, 1804)

*Mycetophila fusca* Meigen, 1804:91.  
*Mycetophila lateralis* Meigen, 1818:206.

MATERIAL EXAMINED. (7♂, 3♀), ISRAEL: Montfort; Har Meron; Herzliyya; Nahal Perat; 'Immanu'el; Tel Aviv; Petah-Tiqwa (collection dates i-iv; TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1915, as "*E. fungorum* (De Geer)", a name relating to a species of *Mycetophila*, which was often misapplied to *E. fusca* by earlier authors).

BIOLOGY. *E. fusca* has been reared on many occasions in Europe and is polyphagous in agarics, boleti, soft polypores and *Clavaria*.

DISTRIBUTION. A very common Holarctic species, occurring in the Atlantic Islands and found widely in the Mediterranean region, with unpublished records from Tunisia, Cephalonia, Samos, Crete and Cyprus.

*Exechia separata* Lundström, 1912

*Exechia separata* Lundström, 1912a:34.

MATERIAL EXAMINED. ISRAEL: Har Meron, 1100 m, 9.iv.1977, A. Freidberg (1♂) (TAU).

DISCUSSION. The male genitalia were figured by Lundström (1912a) and by Dziedzicki (1915) under the name *E. lateralis* (Meigen), now considered a synonym of *E. fusca*.

BIOLOGY. This species is regularly associated with Boletaceae and has also been reared from *Clitocybe*, *Amanita* (Ribeiro, 1990), *Pluteus* (Chandler, 1993), *Cortinarius* and *Gomphidius*.

DISTRIBUTION. Common in Europe, also recorded from Algeria, and there are unpublished records from Cyprus.

*Exechiopsis* Tuomikoski, 1966

*Exechiopsis* Tuomikoski, 1966:177.

Type species: *Exechia subulata* Winnertz, 1863:881 (original designation).

There are two subgenera, included in the generic key and one species of each subgenus has been seen from Israel. Both subgenera have a Holarctic distribution, with *Exechiopsis sensu stricto* more numerous in species.

Subgenus *Exechiopsis* Tuomikoski, 1966 sensu stricto

One specimen belonging to this subgenus (ISRAEL: Ein el Asad, 18.iv.1984, I. Nussbaum) lacks the abdomen and cannot be determined. It has three dark thoracic stripes on a yellow ground so may belong to the *E. intersecta* (Meigen) group, but further material will be necessary to establish its identity.

Subgenus *Xenexechia* Tuomikoski, 1966

*Xenexechia* Tuomikoski, 1966:179.

Type species: *Exechia perspicua* Johannsen, 1912:67 (original designation).

*Exechiopsis (Xenexechia) pollicata* (Edwards, 1925)

*Exechia pollicata* Edwards, 1925:549.

MATERIAL EXAMINED. ISRAEL: Montfort, 9.iii.1982, A. Freidberg (1♂) (TAU).

DISCUSSION. Edwards (1925) figured the male genitalia, which are very distinct from other known species.

BIOLOGY. Unknown.

DISTRIBUTION. Widespread in Europe and recorded from Mongolia and Algeria.

*Rymosia* Winnertz, 1863

*Rymosia* Winnertz, 1863:810.

Type species: *Mycetophila discoidea* Winnertz, 1863:810 (not Meigen, 1818:268) (designation by Johannsen, 1909:102) [= *Mycetophila fasciata* Meigen, 1804:131].

A large Holarctic group, especially well represented in the Mediterranean region, with several species restricted to this region and also several endemic species in the Atlantic islands (Chandler and Ribeiro, in press). Of the four species found in Israel, all are widespread in the Mediterranean region and two of them are found more widely in Europe.

KEY TO SPECIES OF *RYMOSIA* IN ISRAEL

1. Fore metatarsus 1.7 times as long as its tibia. Male fore tarsus with segments 3-4 bearing strong spines ventrally. T2-T4 narrowly yellow basally (both sexes) (female cercus short, more triangular in lateral view) . . . . . *R. spinipes* Winnertz
- Fore metatarsus 1.3 or less times as long as its tibia. Male fore tarsus with or without spines ventrally. T2-T4 variously coloured (female cercus otherwise formed) . . . . . 2
2. Male fore tarsus with segments 3-4 bearing strong spines ventrally. Fore metatarsus 1.3 times as long as its tibia. Broad yellow patches on T2-T4 (male), narrow yellow basal margins to T2-T6 (female) (female cercus narrow, dark and blunt ended) . . . . . *R. affinis* Winnertz
- Male fore tarsus without spines. Fore metatarsus 1.3 or less times as long as its tibia. Abdomen variously marked (female cercus otherwise formed) . . . . . 3
3. T2-T5 with broad yellow basal bands (both sexes). Fore metatarsus 1.3 times as long as its tibia . . . . . *R. beaucournui* Matile
- T2-T5 (male) or T2-T6 (female) with yellow lateral markings on basal two thirds, broadly separated dorsally. Fore metatarsus 1.1 times as long as its tibia . . . . . *R. pseudocretensis* Burghel-Balacesco

*Rymosia affinis* Winnertz, 1863

*Rymosia affinis* Winnertz, 1863:816.

*Rymosia gracilipes* Dziedzicki, 1910:92.

MATERIAL EXAMINED. (15♂, 27♀), LEBANON: Ain Sofar, 10.x.1941 (1♀). ISRAEL: Mount Hermon, 1600 m; Bar'am; Har Meron, 1100 m; Nahal Amud; Karmel (collection dates, iv–vii, ix, xii) (all TAU).

DISCUSSION. The male genitalia and ovipositor were figured by Dziedzicki (1910, as *R. gracilipes*).

BIOLOGY. This species has been reared from stipes of *Russula* and *Amanita* species in European Mediterranean records are often from caves, in which the adults aestivate.

DISTRIBUTION. Widespread in Europe and recorded from Algeria (Burghele-Balacesco, 1967) and Afghanistan (Nielsen, 1963). There are records from Corsica (Edwards, 1928) and unpublished records from Mallorca, Cephalonia, Crete and Cyprus.

*Rymosia beaucournui* Matile, 1963

*Rymosia beaucournui* Matile, 1963:190.

MATERIAL EXAMINED. (14♂, 9♀), ISRAEL: Mount Hermon; Newé Ativ; Montfort; Karmel; Herzliya; Bet haKerem; Bet Lehem; Sederot (collection dates ii, vi–ix, xii; all TAU).

DISCUSSION. The male genitalia were figured by Matile (1963).

BIOLOGY. This has been reared from species of *Amanita*, *Laccaria* and *Camarophyllus* in Portugal by Ribeiro (1990).

DISTRIBUTION. *R. beaucournui* has been recorded from the Mediterranean part of France (Matile, 1963, 1977) and Portugal (Ribeiro, 1990). There are unpublished records from Morocco, Tunisia, mainland Greece and Crete.

*Rymosia pseudocretensis* Burghele-Balacesco, 1967

*Rymosia pseudocretensis* Burghele-Balacesco, 1967:332.

MATERIAL EXAMINED. ISRAEL: Mount Hermon, 1400–1650 m, 18.v.1976 (1♀); 1600 m, 7.vii.1987 (1♂); 1700 m, 9.vi.1983 (1♂); 2000 m, 23.iv.1982 (2♂); Herzliya, 19.iv.1981 (1♂), 25.ii.1982 (1♂) (all A. Freidberg; TAU).

DISCUSSION. The male genitalia were figured by Burghele-Balacesco (1967).

BIOLOGY. This species has been reared in Portugal from species of *Agaricus*, *Melanoleuca*, *Macrolepiota* and *Lycoperdon* (Ribeiro, 1990).

DISTRIBUTION. The type locality was in Algeria. Matile (1977) recorded it from the Mediterranean part of France (Bouches-du-Rhône) and Ribeiro (1990) recorded it from Portugal. There are unpublished records from Morocco, Italy and Turkey.

*Rymosia spinipes* Winnertz, 1863

*Rymosia spinipes* Winnertz, 1863:813.

MATERIAL EXAMINED. ISRAEL: Har Meron, 1100 m, 30.iv.1987 (1♂); Nahal Amud, 30.viii.1977 (1♀); Karmel, 6.ix.1975 (1♂) (all A. Freidberg, TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1910, 1915).

BIOLOGY. This species has been reared from species of *Entoloma*, *Inocybe* and *Tricholoma* by Ribeiro (1990).

DISTRIBUTION. A widespread European species, also known from Afghanistan (Nielsen, 1963), the Atlantic islands (Chandler and Ribeiro, in press) and Tunisia.

*Tarnania* Tuomikoski, 1966

*Tarnania* Tuomikoski, 1966:170.

Type species: *Rymosia tarnanii* Dziedzicki, 1910:99 (original designation).

This genus is a small Holarctic group, with uniform external characters. There are at least four species in Europe and one of them is also widespread in the Mediterranean region and occurs in Israel.

*Tarnania dziedickii* (Edwards, 1941)

*Rymosia dziedickii* Edwards, 1941:78.

MATERIAL EXAMINED. ISRAEL: Bar'am, 22.xi.1977, A. Freidberg (1♀); Har Meron, 10.xi.1976, A. Freidberg (1♂); Qusbiya, 20.xii.1983, I. Nussbaum (1♀) (all TAU).

DISCUSSION. Edwards (1941) figured the genitalia of this and the other species of the genus (under *Rymosia*).

BIOLOGY. *T. dziedickii* regularly aestivates in caves. Burghele-Balacesco (1967) commented that it was the commonest gnat in caves in Spain and France. It was reared by Ribeiro (1990) from several genera of agarics, the greatest number of rearings being from *Russula* species. Other species of *Tarnania* have been reared from a wide range of agarics and boleti.

DISTRIBUTION. Widespread in western and southern Europe. There are unpublished records from Corfu, Crete and Rhodes.

*Brevicornu* Marshall, 1896

*Brevicornu* Marshall, 1896:306.

Type species: *Brevicornu flavum* Marshall, 1896:307 (designation by Tuomikoski, 1966:185).

Tuomikoski (1966) recognised that a large group of Holarctic gnats formerly included in *Allodia* Winnertz correctly belonged here. They have very uniform external appearance and few characters other than the male genitalia to separate species, so females are not satisfactorily recognised except by association. In the Mediterranean region, however, there are

relatively few species so association of the sexes is more practicable, using the characters cited in the key although it must be stressed that these are variable.

#### KEY TO SPECIES OF *BREVICORNU* IN ISRAEL

1. Hind femur with dark tip. Base of posterior fork beyond level of base of crossvein r-m . . . . . *B. intermedium* (Santos Abreu)
- Hind femur entirely yellow. Base of posterior fork varying in position . . . . .
2. Base of posterior fork before level of base of crossvein r-m . . . . . *B. griseicollis* (Staeger)
- Base of posterior fork at or beyond level of base of crossvein r-m . . . . . *B. verralli* (Edwards)

#### *Brevicornu griseicollis* (Staeger, 1840)

*Mycetophila griseicollis* Staeger, 1840:258.

MATERIAL EXAMINED. ISRAEL: Har Meron, 28.v.1981, F. Kaplan (1♂) (TAU).

DISCUSSION. The male genitalia were figured by Edwards (1925).

BIOLOGY. This species has been reared from Cortinariaceae (*Hebeloma*, *Cortinarius* and *Inocybe* species) in Europe.

DISTRIBUTION. A common species in Europe and recorded from Siberia and the Atlantic islands. It was recorded from Corsica (Edwards, 1928) and there are unpublished records from Greece, Turkey and many of the Mediterranean islands.

#### *Brevicornu intermedium* (Santos Abreu, 1920)

*Allodia intermedia* Santos Abreu, 1920:100.

*Brevicornu hissaricum* Zaitzev, 1985:41.

MATERIAL EXAMINED. (6♂, 9♀), ISRAEL: Tel Dan; Nahal Nimrod; Montfort; Har Meron; Upper Nahal Ammud; Nahal Tirza (collection dates iii-vi, viii; all TAU).

DISCUSSION. The synonymy cited above was established by Chandler and Ribeiro (in press). This species was previously confused with *B. fissicauda* (Lundström, 1911:398), from which it differs most obviously in the shape of the median sternal process of the gonocoxites (bifid and tapered to two points in *B. intermedium*, bluntly rounded on either side of a median emargination in *B. fissicauda*). The male genitalia were figured by Zaitzev (1985) as *B. hissaricum*.

BIOLOGY. Unknown.

DISTRIBUTION. Widespread in Europe, but evidently most frequent in the Mediterranean region (including Corsica, Mallorca) and also in the Atlantic islands.

#### *Brevicornu verralli* (Edwards, 1925)

*Allodia verralli* Edwards, 1925:60.

MATERIAL EXAMINED. ISRAEL: Har Meron, 28.v.1981, F. Kaplan (2♂, 1♀), 30.iv.1981, A. Freidberg (2♀); Muhraqa [Karmel], 18.iii.1982, I. Nussbaum (1♂) (all TAU).

DISCUSSION. The male genitalia were figured by Edwards (1925).

BIOLOGY. Unknown.

DISTRIBUTION. Widespread in Europe, also occurring in the Atlantic islands and there are records from Corsica (Edwards, 1928), Sardinia, Tunisia, Cephalonia, Corfu, mainland Greece, Crete, Cyprus and Turkey.

#### *Allodia* Winnertz, 1863

*Allodia* Winnertz, 1863:826.

Type species: *Mycetophila ornaticollis* Winnertz, 1863:830 (designation by Johannsen, 1909:104) [= *Mycetophila lugens* Wiedemann, 1817:68, misidentification].

Two well defined subgenera were recognised by Tuomikoski (1966) and there is one representative of each in Israel. They are readily separated by the key characters cited above.

#### Subgenus *Allodia* Winnertz, 1863 sensu stricto

The species of this subgenus are of very uniform external appearance and structure, only being separable by the male genitalia. As only one female has been examined from Israel (Panyas, 8.iii.1984, I. Nussbaum, TAU) its identity cannot be established. Several species are found in the Mediterranean region and one (*A. ornaticollis* (Meigen)) occurs in the Atlantic islands and North Africa so is perhaps the most likely species to be found in Israel.

#### Subgenus *Brachycampta* Winnertz, 1863

*Brachycampta* Winnertz, 1863:833.

Type species: *Mycetophila alternans* Winnertz, 1863:834 (designation by Coquillett, 1910:515) [= *Mycetophila grata* Meigen, 1830:303, misidentification].

This is a rather more diverse group than *Allodia* sensu stricto, both in external appearance and genital structure.

#### *Allodia (Brachycampta) pistillata* (Lundström, 1911)

*Brachycampta pistillata* Lundström, 1911: 399.

MATERIAL EXAMINED. ISRAEL: Panyas, 20.iv.1974 (1♂, 1♀), 24.iv.1982 (1♀); Montfort, 4.iii.1976 (1♂) (all A. Freidberg; TAU).

DISCUSSION. The male genitalia were figured by Lundström (1911).

BIOLOGY. Unknown but *A. pistillata* belongs to a species group which develop mostly in cup fungi such as *Peziza*.

DISTRIBUTION. A widespread Holarctic species, recorded from Madeira (Chandler and Ribeiro, in press) and Iran (Matile, 1969). There are unpublished records from Tunisia, Corfu, mainland Greece, Crete, Cyprus and Turkey.

### Mycetophilini

#### *Trichonta* Winnertz, 1863

*Trichonta* Winnertz, 1863:847.

Type species: *Mycetophila melanura* Staeger, 1840:259 (designation by Johannsen, 1909:94).

This mainly Holarctic genus was revised by Gagné (1981). There are relatively few species in the Mediterranean region; two have been seen from Israel but one of them is represented only by one female and may be an undescribed species.

#### KEY TO SPECIES OF *TRICHONTA* IN ISRAEL

1. Vein Sc extends less than halfway to base of vein Rs and ends free. Wing brown on costal margin near tip. Thorax yellow with three brown stripes; T1-T4 yellow basally . . . . . *T. vitta* (Meigen)
- Vein Sc extends more than two thirds distance to base of vein Rs and ends in vein R. Apical third of wing brown tinted, this coloration extending narrowly along hind margin. Thorax and abdomen entirely dark coloured . . . . . *Trichonta* ? n. sp.

#### *Trichonta vitta* (Meigen, 1830)

*Mycetophila vitta* Meigen, 1830:300.

MATERIAL EXAMINED. ISRAEL: Har Meron, 10.xi.1976, M. Kaplan (1♂) (TAU).

DISCUSSION. The male genitalia of this species were figured by Gagné (1981) and Chandler (1992).

BIOLOGY. *T. vitta* has been reared from fungi encrusting wood in Europe; Chandler (1992) gave a record for *Schizophora paradoxa*.

DISTRIBUTION. This is a common European species, also recorded from Algeria, Corsica and the Atlantic islands. There are unpublished records from Mallorca, Corfu and Lesbos.

#### *Trichonta* ? n. sp.

MATERIAL EXAMINED. ISRAEL: Montfort, 26.xii.1970, J. Kugler (1♀) (TAU).

DISCUSSION. This single female (length of wing 3.6 mm) runs to *T. subfusca* Lundström (1909:35), which does not have the wing marking and is otherwise dissimilar, in Gagné

(1981) key. In addition to the key characters the legs are entirely yellow, including the hind femur. Examination of corresponding males will be necessary to establish its identity.

BIOLOGY. Unknown.

DISTRIBUTION. Israel.

### *Phronia* Winnertz, 1863

*Phronia* Winnertz, 1863:825.

Type species: *Phronia rustica* Winnertz, 1863:875 (designation by Johannsen, 1909:121) [= *Mycetophila exigua* Zetterstedt, 1852:4246].

Another large Holarctic genus, and the revision of the Nearctic species by Gagné (1975) has some relevance to the Palaearctic species. Many species are boreal or montane in distribution, but a few widespread species are common in the Mediterranean region. Specific characters other than in genitalia are few but the three species found in Israel are easily separated by external characters.

#### KEY TO SPECIES OF *PHRONIA* IN ISRAEL

1. Costa strongly produced beyond tip of vein R<sub>s</sub> (nearly third of distance to vein M<sub>1</sub>). Vein R<sub>s</sub> parallel with vein M<sub>1</sub> apically. Body mainly dark with pale basal margins to abdominal segments 3 and 4 (male), more broadly on 2 and narrowly on other tergites (female) . . . . . *P. basalis* Winnertz
- Costa only produced a short distance beyond vein R<sub>s</sub>, which is downturned and convergent with vein M<sub>1</sub> apically. Body variously coloured . . . . . 2
2. Wing clear in both sexes . . . . . *P. tenuis* Winnertz
- Wing with apical quarter and patch behind vein CuA<sub>2</sub> grey or light brown (male); latter marking continuous with band across middle of wing (female) . . . . . *P. biarcuata* (Becker)

#### *Phronia basalis* Winnertz, 1863

*Phronia basalis* Winnertz, 1863:870.

MATERIAL EXAMINED. (19♂, 14♀, 9 without abdomen), ISRAEL: Montfort; Har Meron; Hefa; Karmel; Nahal Oren; Nahal Poleg; Herzliyya; Abu Kabir (collection dates i-iii, xi-xii; all TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1885, 1915). There is minor variation in structure in some Mediterranean material.

BIOLOGY. Unknown.

DISTRIBUTION. A common European species, recorded from Corsica with unpublished records from Algeria, Mallorca, Crete, Cyprus and Turkey.

*Phronia biarcuata* (Becker, 1908)

*Phronia nitidiventris*: Winnertz, 1863:864, nec van der Wulp, 1858:181.

*Telmaphilus biarcuatus* Becker, 1908b:67.

*Phronia johannae* Steenberg, 1924:41.

*Phronia praecox* Edwards, 1925:626.

MATERIAL EXAMINED. ISRAEL: Mount Hermon, 2000 m, 23.iv.1982, A. Freidberg (1♂) (TAU).

DISCUSSION. The above synonymy was established by Gagné (1974), who figured the male genitalia. Dziedzicki (1889) figured it as *P. nitidiventris* Winnertz, a misidentification.

BIOLOGY. This species has case bearing larvae which live on the surface of encrusting fungi and were studied in some detail by Steenberg (1924).

DISTRIBUTION. This species is widespread and frequent in Europe as well as occurring in the Atlantic islands. It is recorded from Corsica and there are unpublished records from Morocco, Tunisia, Sardinia, Sicily, Cyprus and Turkey.

*Phronia tenuis* Winnertz, 1863

*Phronia tenuis* Winnertz, 1863:872.

MATERIAL EXAMINED. ISRAEL: Montfort, 4.iii.1993, A. Freidberg (1♀); Upper Nahal Amud, 28.v.1981, A. Freidberg (2♂, 2♀); Har Meron, 30.iv.1981 (1♂, 1♀); 1100 m, 30.iv.1981 (6♂, 2♀) (A. Freidberg); 650 m, 18.iv.1984, I. Nussbaum (1♀) (all TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1889, 1915).

BIOLOGY. The slime covered larvae live on the surface of encrusting fungi.

DISTRIBUTION. A Holarctic species, common in Europe, recorded from Corsica (Edwards, 1928), and there are unpublished records from Mallorca, Sardinia, Algeria, Tunisia, Corsica, Crete, Cyprus and Turkey.

*Mycetophila* Meigen, 1803

*Mycetophila* Meigen, 1803:263.

Type species: *Tipula agarici* Villers, 1789:393 (designation by Johannsen, 1909:116 [= *Tipula fungorum* De Geer, 1776:361]).

This is a large genus found in all zoogeographic regions, which has many distinct species groups, several of which are represented in Israel. There are eight widespread species found in Israel, all easily recognised within the Israeli fauna on external characters.

## KEY TO SPECIES OF MYCETOPHILA IN ISRAEL

1. Ventral setae absent from mid tibia. Central spot only on wing . . . . . *M. britannica* Laštovka and Kidd
- One to three ventral setae on mid tibia. Wing variously marked . . . . .

2. A broad shade from fore margin of wing apically, fading behind. Anterior setulae on mid and hind tibiae all dark. (Female fore tarsus simple, cercus two segmented) . . . . . 3
- Preapical wing marking, if present and including tips of veins  $R_1$  and  $R_5$ , is distinctly narrowed behind vein  $R_5$ . Tibial setulae variously coloured. (Female fore tarsus simple or enlarged, cercus one or two segmented) . . . . . 4
3. An elongate clear area behind vein  $R_5$  included within the apical shaded part of the wing. Thorax grey dusted, yellowish only on humeral and posthumeral areas . . . . . *M. ocellus* Walker
- Apical wing shade uniform without clear area. Thorax more yellowish with distinct darker stripes . . . . . *M. sordida* Wulp
4. Preapical wing marking including or approximated to tip of vein  $R_1$ , sometimes narrowly distal to it. Anterior setulae on mid and hind tibiae all dark . . . . . 5
- Preapical wing marking when present distinctly distal to tip of vein  $R_1$  . . . . . 6
5. Hind tibia with short dorsal setae interspersed with usual long setae. Thorax dull brown, yellow on humeral area and often on sides of mesoscutum. Female fore tarsus with segments 2–4 strongly thickened, cercus one segmented . . . . . *M. pictula* Meigen
- Hind tibia with only strong dorsal setae. Thorax with mesoscutum shining black, with yellow humeral areas. Both sexes with segments 2–4 of fore tarsus narrowly but distinctly thickened; female cercus two segmented . . . . . *M. srigatoides* (Landrock)
6. Vein  $tb$  (= vein  $M$  before crossvein  $r-m$  of Edwards) setulose for greater part below. Anterior setulae on mid and hind tibiae all dark; short setae interspersed with long dorsal setae on hind tibia. Thorax dull, yellow at sides of mesoscutum, with three dark stripes fused behind on disc. Preapical wing marking faint or absent, central spot may also be faint . . . . . *M. mitis* Johannsen
- Vein  $tb$  bare. Anterior tibial setulae not all dark; short setae present or absent between long dorsal setae on hind tibia. Thorax variously coloured. Preapical wing marking present or absent but central spot usually present . . . . . 7
7. Only strong dorsal setae on hind tibia. Most anterior setulae on hind tibia yellow, only first row below anterior setae always mainly brown. Thorax all black. Preapical wing marking absent. Female fore tarsus with segments 2–3 thickened . . . . . *M. unicolor* Stannius
- Short setae interspersed with strong dorsal setae on hind tibia. At least first two rows of anterior setulae on hind tibia mainly brown. Thorax brownish yellow with three dark stripes on disc. Preapical wing marking well marked and sinuous. Female fore tarsus simple . . . . . *M. spectabilis* Winnertz

*Mycetophila britannica* Laštovka and Kidd, 1975

*Mycetophila britannica* Laštovka and Kidd, 1975:203.

MATERIAL EXAMINED. ISRAEL: Montfort, 4.iii.1976 (1♂, 4♀), 5.iii.1978 (2♂), 14.iii.1985 (1♀), 2.iii.1987 (1♂, 2♀), 4.iii.1993 (1♂) (all A. Freidberg); Har Meron, 30.iv.1981, A.

Freidberg (1♀), 28.v.1981, F. Kaplan (1♀); Muhraqa [Karmel], 18.iii.1987, I. Nussbaum (1♂, 2♀) (all TAU).

DISCUSSION. This is a member of the *M. ruficollis* Meigen group, which was formerly confused under the name *M. lineola* Meigen (and the record under that name by Bodenheimer (1937) probably refers to this species). The male genitalia were figured by Laštovka and Kidd (1975).

BIOLOGY. This species develops in a wide range of soft fungi, mainly agarics but also *Polyporus squamosus*.

DISTRIBUTION. *M. britannica* was described from Britain where it is common and was recorded from Mediterranean France by Matile (1980) and the Atlantic Islands by Chandler and Ribeiro (in press). It is also proving to be the common species of the *M. ruficollis* group in the Mediterranean region.

#### *Mycetophila mitis* (Johannsen, 1912)

*Mycothera mitis* Johannsen, 1912:82.

*Mycetophila jenkinsoni* Edwards, 1941:87.

MATERIAL EXAMINED. ISRAEL: Nahal Nimrod, 10.vi.1976, D. Simon (2♂, 2♀); Upper Nahal Ammud, 28.v.1981, F. Kaplan (1♀); Herzliyya, 17.iv.1982, A. Freidberg (1♂) (all TAU).

DISCUSSION. The male genitalia were figured by Edwards (1941) and Laffoon (1957).

BIOLOGY. Unknown.

DISTRIBUTION. A local Holarctic species, with the European records including Mediterranean France (Matile, 1977).

#### *Mycetophila ocellus* Walker, 1848

*Mycetophila ocellus* Walker, 1848:95.

*Mycetophila dimidiata* Staeger, 1840:247.

*Mycothera vanderwulpui* Dziedzicki, 1884:303.

MATERIAL EXAMINED. ISRAEL: Rawiya, 2.iii.1984, I. Nussbaum (1♀); Ein el Asad, 18.iv.1984, I. Nussbaum (1♂); Har Meron, 30.iv.1981, A. Freidberg (5♂, 6♀); Meron, 10.vi.1982, A. Freidberg (1♂) (all TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1884, as *vanderwulpui* Dziedzicki; 1915, as *dimidiata* Staeger). Forms with strongly marked wings occur on the Atlantic islands.

BIOLOGY. *M. ocellus* is polyphagous on wood-encrusting fungi and has also been reared from *Pleurotus*.

DISTRIBUTION. A very common Holarctic species, found in the Atlantic islands (Chandler and Ribeiro, in press), Corsica (Edwards, 1928) and there are unpublished records from Sardinia, Cyprus and Turkey.

#### *Mycetophila pictula* Meigen, 1830

*Sciara bimaculata* Fabricius, 1805:57 (junior primary homonym of *Mycetophila bimaculata* Meigen, 1804:92, now in *Leia*).

*Mycetophila pictula* Meigen, 1830:299.

MATERIAL EXAMINED. (11♂, 5♀), ISRAEL: Panyas; Montfort; Bar'am; Ein el Asad; Har Meron; Meron; Upper Nahal Ammud; Hefa (collection dates iii-vi, xi; all TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1915) and Laffoon (1957) (as *M. bimaculata* (Fabricius)).

BIOLOGY. This species has been reared from *Xylodon* in Europe.

DISTRIBUTION. A Holarctic species, widespread in Europe but more common in the Mediterranean region. It has been recorded from Corsica (Edwards, 1928 as *M. bimaculata*) and there are unpublished records from Mallorca, Corfu, Cephalonia, Crete, Chios, Cyprus and Turkey.

#### *Mycetophila sordida* van der Wulp, 1874

*Mycetophila sordida* van der Wulp, 1874:125.

MATERIAL EXAMINED. ISRAEL: Har Meron, 1100 m, 30.iv.1981, A. Freidberg (1♂) (TAU).

DISCUSSION. The male genitalia were figured by Lundström (1909) and Laffoon (1957). This species is allied to *M. czizeki* Landrock which has also been recorded from the Mediterranean region and differs mainly in details of the male genitalia.

BIOLOGY. Unknown.

DISTRIBUTION. Widespread in western and northern Europe. There are also records from Morocco, Corsica, Sardinia, mainland Greece, Cyprus and Iran.

#### *Mycetophila spectabilis* Winnertz, 1863

*Mycetophila spectabilis* Winnertz, 1863:932.

MATERIAL EXAMINED. ISRAEL: Montfort, 5.iii.1978 (1♂); Har Meron, 1700 m, 30.iv.1981 (1♀); Upper Nahal Ammud, 28.v.1981 (2♀) (all A. Freidberg, TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1915) and are also figured by Chandler and Ribeiro (in press) for comparison with allied species occurring in the Atlantic islands.

BIOLOGY. This species has been reared from species of *Lactarius* and *Tricholoma* in Europe.

DISTRIBUTION. A common European species, recorded from Corsica (Edwards, 1928), and there are unpublished records from Mallorca, mainland Greece, Chios, Cyprus and Turkey.

*Mycetophila strigatoides* (Landrock, 1927)

*Mycetophila "strygata" Zetterstedt* sensu Dziedzicki, 1884: Tab.VII, Figs. 9-12.  
*Fungivora strigatoides* Landrock, 1927:177 (new name for *M. strigata*: Dziedzicki, not Staeger, misidentification).

*Fungivora pseudoquadra* Bukowski, 1934:188, n. syn.  
*Mycetophila pseudoquadroides* Matile, 1967:213, n. syn.

MATERIAL EXAMINED. (3♂, 4♀), ISRAEL: Panyas; Nahal Iyyon Reserve; Rawiya; Montfort; Meron; Biq'at Bet Zayda (collection dates iii-iv, vi, xi; all TAU).

DISCUSSION. Chandler (1977b) figured the male genitalia, suggesting that *M. pseudoquadra* and *M. pseudoquadroides* might be synonymous. This is indicated by the genitalia figures of Bukowski (1934) and Matile (1967) and those of Dziedzicki (1884). The holotype male of *M. pseudoquadroides* (France: Barrage de Castillon, 9.vi.1964, MNHN) has been examined and confirmed to belong to *M. strigatoides*. If the Nearctic species *M. venusta* (Laffoon) is also synonymous, the Holarctic distribution suggested by the Palearctic Catalogue (Hackman et al., 1988) is correct.

BIOLOGY. Unknown.

DISTRIBUTION. A local species in northern Europe, recorded (as *M. pseudoquadroides*) from Corsica by Matile (1977). There are unpublished records from Sardinia, Tunisia and Turkey.

*Mycetophila unicolor* Stannius, 1831

*Mycetophila unicolor* Stannius, 1831:15.

MATERIAL EXAMINED. ISRAEL: Tel Dan, 24.vi.1974, A. Freidberg (1♀) (TAU).

DISCUSSION. The male genitalia were figured by Dziedzicki (1884, 1915).

BIOLOGY. Unknown.

DISTRIBUTION. Frequent in Europe, also occurring in the Atlantic islands (Chandler and Ribeiro, in press). It was recorded from Corsica by Matile (1977) and has been examined from Crete and Turkey.

*Zygomyia* Winnertz, 1863

*Zygomyia* Winnertz, 1863:901.

Type species: *Mycetophila vara* Staeger, 1840:206 (designation by Johannsen, 1909:112).

This genus is a small mainly Holarctic group, with several species frequent in southern Europe. Two species occur in Israel, but one is represented only by females belonging to a group where only males can presently be distinguished.

## KEY TO SPECIES OF ZYGOMYIA IN ISRAEL

1. Body all black. Wing almost clear (faint shade near costa apically). Only strong anterior and dorsal setae on hind tibia; no posterodorsal series. Female fore tarsus with segments 2-4 enlarged ventrally . . . . . *Z. valida* Winnertz
- Thorax brownish with large yellow humeral area. Brown shade over crossvein r-m and base of vein Rs. A series of posterodorsal setae (mostly on apical half) of hind tibia, shorter than tibial width, in addition to 4 strong dorsal setae. Female fore tarsus simple . . . . . *Z. ? sp. (humeralis* (Wiedemann) group)

*Zygomyia valida* Winnertz, 1863

*Zygomyia valida* Winnertz, 1863:902.

MATERIAL EXAMINED. (6♂, 8♀), ISRAEL: Panyas; Montfort; Kefar Shamma; Har Meron; Karmel; Qalya (collection dates iii-v; all TAU).

DISCUSSION. Chandler (1991) figured the male genitalia of this and allied species.

BIOLOGY. Unknown.

DISTRIBUTION. A common European species, also recorded from the Atlantic islands; there are unpublished records for mainland Greece, Corfu, Cephalonia, Lesbos, Chios, Crete, Cyprus and Turkey.

*Zygomyia ? species*

MATERIAL EXAMINED. ISRAEL: Har Meron, 1100 m, 30.iv.1981, F. Kaplan (1♀); Hefa, 13.v.1978, A. Freidberg (1♀) (TAU).

DISCUSSION. Chandler (1991) discussed the *Z. humeralis* (Wiedemann, 1817:65) group, which includes at least four species in Europe. *Z. humeralis* itself is widespread in the Mediterranean region with unpublished records from the islands and North Africa, and is perhaps the most likely species to be found in Israel.

*Sceptonia* Winnertz, 1863

*Sceptonia* Winnertz, 1863:907.

Type species: *Mycetophila nigra* Meigen, 1804:92 (designation by Johannsen, 1909:113).

This is a Holarctic genus with many similar species distinguished mainly by details of the male genitalia, which are the only reliable distinctions between closely allied species. Members of this genus are small slender bodied mainly shining black (although those found in Israel are partly yellow) gnats which are often found running on tree foliage. Two species occur in Israel, both belonging to the group with the radial veins closely approximated to the costa. All specimens were submitted to Dimitar Bechev to assist his study of the genus, and the determinations are due to him; the females were associated on the basis of the colour characters cited in the key.



KEY TO SPECIES OF *SCEPTONIA* IN ISRAEL

1. Thorax all black; abdomen with T1–T3 more or less yellow (ranging from mainly yellow with only brown dorsal patches to yellow on sides, extended dorsally on margins of T2–T3) (male); abdomen yellow on all sternites, sides of tergites and apical half of T4 (female) . . . . . *S. cryptocauda* Chandler
- Thorax with large yellow humeral area, black on disc or separated into stripes; sides of T1–T3 (T1–T4) broadly yellow, extended dorsally on margins of T3 (T3–T4) . . . . . *S. intestata* Plassmann and Schacht

*Sceptonia cryptocauda* Chandler, 1991

*Sceptonia cryptocauda* Chandler, 1991:151.

MATERIAL EXAMINED. (33♂, 27♀), ISRAEL: Nahal Nimrod; Panyas; Tel Dan; Upper Nahal Amud (collection dates vi–viii; TAU).

DISCUSSION. Chandler (1991) figured the male genitalia of this species.

BIOLOGY. Unknown.

DISTRIBUTION. The type material is from the British Isles but the species has been examined from other parts of Europe and from Iran.

*Sceptonia intestata* Plassmann and Schacht, 1990

*Sceptonia intestata* Plassmann and Schacht, 1990:150.

*Sceptonia curvisetosa* Caspers, 1991:334, n. syn.

MATERIAL EXAMINED. ISRAEL: Mount Hermon, 1400 m, 1.vii.1986, G. Eldar (1♀); Panyas, 1.vii.1986, G. Eldar (1♀); Tel Dan, 26.vi.1974 (1♂, 1♀), 7.vii.1974 (1♀), 10.vii.1975 (1♀); A. Freidberg (all TAU).

DISCUSSION. The synonymy cited here was indicated by Caspers (1991) in a footnote to his paper as it became apparent prior to publication of his description of *S. curvisetosa*; it may be determined from his figures, which are the more detailed.

BIOLOGY. Unknown.

DISTRIBUTION. The type of *S. intestata* was from Spain, that of *S. curvisetosa* from mainland Greece, with other material from Corfu and Cephalonia mentioned.

## ACKNOWLEDGMENTS

I am indebted to both Amnon Freidberg and Loïc Matile for making the material on which this paper is based available for study. All the collectors who have contributed specimens are also to be thanked; I am also grateful to the authorities of the Natural History Museum, London for the opportunity to examine the material in their care. The comments on Mediterranean distribution are based largely on recently collected material referred by several collectors either to me or to Norbert Caspers and I am grateful to all involved. Amnon

Freidberg has also been of great assistance in providing information on localities and references to previous work on the fauna of Israel. For valuable comments and discussion on various aspects, I also wish to express my thanks to Loïc Matile, Rauno Väisänen, Dimitar Bechev and Norbert Caspers.

## REFERENCES

- Báez, M. and Santos-Pinto, E. 1981. Revisión de los géneros *Macrocera* y *Antlemon* en las Islas Canarias (Diptera, Mycetophiloidea, Keroplatidae). *Boletín de la Asociación española de Entomología* 4 (1980):37–42.
- Bechev, D. 1991. *Macrocera gemagea* sp. n. from Bulgaria (Insecta: Diptera: Mycetophilidae). *Reichenbachia* 28:185–186.
- Bechev, D. 1992a. On the type specimens of *Macrocera nigricoxa* Winnertz, 1863 and *Macrorrhyncha exempla* (Plassmann, 1978). *Senckenbergiana biologica* 72:317–320.
- Bechev, D. 1992b. A new species of *Macrorrhyncha* (Diptera: Keroplatidae) from Bulgaria. *Acta Zoologica Bulgarica* 45:61–62.
- Becker, T. 1908a. Die Ergebnisse meiner dipterologischen Frühjahrsreise nach Algier und Tunis, 1906. *Zeitschrift für Systematische Hymenopterologie und Dipterologie* 7 (1907):225–256.
- Becker, T. 1908b. Dipteren der Kanarischen Inseln. *Mitteilungen aus dem Zoologischen Museum in Berlin* 4(1):1–180.
- Bodenheimer, F.S. 1937. Prodrómus Faunae Palaestinae. Essai sur les éléments zoogéographiques et historiques du sud-ouest du sous-règne paléarctique. *Mémoires présentés à l'Institut d'Égypte* 33:179.
- Bukowski, W. 1934. Neue und abweichende Formen von Pilzmücken (Diptera, Fungivoridae) aus der Krim. *Konowia* 13:184–192.
- Bukowski, W. 1949. [New fungus gnats (Diptera, Fungivoridae) from the Crimea]. *Entomologicheskoe Obozrenie* 30:405–409 (in Russian).
- Burghele-Balacesco, A. 1967. Les Mycetophilidae (Diptères) cavernicoles de la collection Biospéologie (IV<sup>e</sup>–VIII<sup>e</sup> séries des "Grottes visitées"). *International Journal of Speleology* 2 (1966):319–334.
- Burghele-Balacesco, A. 1972. Contribution à l'étude de Mycetophilidae des grottes de Roumanie avec la description de deux espèces nouvelles. *International Journal of Speleology* 3–4:387–395.
- Caspers, N. 1991. New and remarkable species of Mycetophiloidea (Diptera, Nematocera) from the Mediterranean region. *Spixiana* 14:321–338.
- Chandler, P.J. 1977a. Notes on British fungus gnats of the subfamilies Ditomiyiinae, Bolitophilinae, Diadocidiinae, Manotinae and Keroplatinae (Diptera: Mycetophilidae). *Entomologist's Monthly Magazine* 113:31–44.
- Chandler, P.J. 1977b. *Mycetophila strigatoides* (Landrock): an overlooked British fungus gnat (Diptera: Mycetophilidae). *Entomologist's Record and Journal of Variation* 89:323–325.
- Chandler, P.J. 1978. Notes on the Holarctic species of *Pseudexechia* Tuomikoski (Diptera: Mycetophilidae), with the description of a new British species. *Entomologist's Record and Journal of Variation* 90:44–51.
- Chandler, P.J. 1990. Notes on *Macrocera* Meigen (Mycetophiloidea, Keroplatidae) including *M. nigropicea* Lundström new to Britain. *Dipterists Digest* 3:27–31.
- Chandler, P.J. 1991. New species and additions to the British list of the fungus gnat genera *Zygomomyia* Winnertz and *Sceptonia* Winnertz (Diptera, Mycetophilidae). *British Journal of Entomology and Natural History* 4:143–155.
- Chandler, P.J. 1992. A review of the British *Phronia* Winnertz and *Trichonta* Winnertz (Diptera, Mycetophilidae). *Entomologist's Monthly Magazine* 128:237–254.

- Chandler, P.J. 1993. New rearing records of fungus gnats (Diptera: Mycetophiloidea) and allied families. *Dipterists Digest* 13:29-35.
- Chandler, P.J. and Ribeiro, E. The Sciaroidea (excluding Sciaridae) of the Atlantic Islands. *Boletim do Museu Municipal do Funchal* (in press).
- Costa, A. 1857. Contribuzione alle fauna ditterologia italiana. *Giambattista Vico, Giornale Scientifico* 2:438-460.
- Coquillett, J.W. 1910. The type-species of the North American genera of Diptera. *Proceedings of the United States National Museum* 37:499-647.
- Curtis, J. 1837. British Entomology. Privately published. London 14:pls 626-674.
- De Geer, C. 1776. Mémoires pour servir à l'histoire des Insectes. P. Hesselberg, Stockholm. 6:1-522.
- Dziedzicki, H. 1884. Przyczynek do fauny owadów dwuskrzydłych. I. Teil. (*Mycothera*, *Mycetophila*, *Staegeria*). *Pamiętnik Fizyograficzny* 4:298-324.
- Dziedzicki, H. 1885. Przyczynek do fauny owadów dwuskrzydłych. Rodzaje nowe: *Hertwigia* nov. gen., *Eurycera* nov. gen. i gatunki rodzajów: *Boletina*, *Sciophila*. *Pamiętnik Fizyograficzny* 5:164-194.
- Dziedzicki, H. 1889. Revue des espèces européennes du genre *Phronia* Winnertz avec la description des deux genres nouveaux: *Macrobrachius* et *Megophthalmidia*. *Horae Societatis Entomologicae Rossicae* 23:404-532.
- Dziedzicki, H. 1910. Zur Monographie der Gattung *Rymosia* Winn. *Horae Societatis Entomologicae Rossicae* 39(1909):89-104.
- Dziedzicki, H. 1915. Atlas des organes génitaux des types de Winnertz et des genres de la collection de Mycetophiles. *Publications de la Société des Sciences de Varsovie* 3:1-16.
- Edwards, F.W. 1913. Notes on British Mycetophilidae. *Transactions of the Royal Entomological Society of London* 1913:334-382.
- Edwards, F.W. 1925. British fungus-gnats (Diptera, Mycetophilidae) with a revised generic classification of the family. *Transactions of the Royal Entomological Society of London* 1924:505-670.
- Edwards, F.W. 1928. The Nematocerous Diptera of Corsica. *Encyclopédie Entomologique* (B2) Dipt. 4:157-189.
- Edwards, F.W. 1929. Notes on the Ceroplatinae, with description of new Australian species (Diptera, Mycetophilidae). *Proceedings of the Linnaean Society of New South Wales* 54:162-175.
- Edwards, F.W. 1941. Notes on British fungus gnats (Diptera, Mycetophilidae). *Entomologist's Monthly Magazine* 77:21-32; 67-82.
- Enderlein, G. 1913. Dipterologische Studien. VII. *Kerteszia tunesica*, eine neue Mycetophiliden-gattung aus Nordafrika. *Zoologischer Anzeiger* 43:26-27.
- Fabricius, J.C. 1805. Systema antliatorum secundum ordines, genera, species. Reichard, Brunsvigae [= Brunswick]. 372 + 30 pp.
- Freidberg, A. 1988. 10. Zoogeography of the Diptera of Israel. In: The Zoogeography of Israel. Edit. Y. Yom-Tov and E. Tchernov. Dr. W. Junk Publishers. Dordrecht. pp. 277-308 (600 pp.).
- Gagné, R. 1974. A redescription of Becker's *Phronia* from the Canary Islands (Diptera: Mycetophilidae). *Proceedings of the Entomological Society of Washington* 76:452-454.
- Gagné, R. 1975. A review of the Nearctic species of the genus *Phronia* (Diptera: Mycetophilidae). *Transactions of the American Entomological Society* 101:227-318.
- Gagné, R. 1981. A monograph of *Trichonta* with a model for the distribution of Holarctic Mycetophilidae (Diptera). *Technical Bulletin U.S. Department of Agriculture* No. 1638:1-64.
- Georghiou, G.P. 1977. The insects of Cyprus. With emphasis on species of economic importance to agriculture, forests, man and domestic animals. Benaki Phytopathological Institute, Athens. 347 pp.
- Hackman, W. et al. 1988. Family Mycetophilidae. pp. 220-232. In: Catalogue of Palearctic Diptera. Edit. A. Soós and L. Papp. Volume 3. Ceratopogonidae — Mycetophilidae. Akadémiai Kiadó, Budapest. 448 pp.
- Hardy, D.E. 1960. Diptera: Nematocera — Brachycera (except Dolichopodidae). In: Insects of Hawaii. Edit. G.C. Zimmerman. University of Hawaii Press, Honolulu. 10:1-368.
- Hutson, A.M. 1978. An undescribed African species of *Leia* (Diptera, Mycetophilidae) infesting root ginger in London. *Entomologist's Monthly Magazine* 113 (1977):121-124.
- Hutson, A.M., Ackland, D.M. and Kidd, L.N. 1980. Mycetophilidae (Bolitophilinae, Ditomyiinae, Diadocidiinae, Keroplatinae, Sciophilinae and Manotinae). Diptera, Nematocera. In: Handbooks for the Identification of British Insects. Royal Entomological Society of London, London. 9(3):1-109.
- Johannsen, O.A. 1909. Diptera. Fam. Mycetophilidae. In: Genera Insectorum. Edit. P. Wytman. Fasc. 93:1-141.
- Johannsen, O.A. 1910. The Fungus Gnats of North America. Part II. *Bulletin of Maine Agricultural Experiment Station* (1909) (2) No. 172:209-276.
- Johannsen, O.A. 1912. Fungus Gnats of North America. IV. *Bulletin of Maine Agricultural Experiment Station* (2) No. 200:57-146.
- Kertész, K. 1902. Neue *Glaphyoptera* Arten aus Süd-Amerika. *Természettudományi Füzetek* 25:573-581.
- Laffoon, J. 1957. A revision of the Nearctic species of *Fungivora* (Diptera, Mycetophilidae). *Iowa State College Journal of Science* 31 (1956):141-340.
- Landrock, K. 1918. Tabellen zum Bestimmen europäischer Pilzmücken. II. *Wiener Entomologische Zeitung* 37:107-120.
- Landrock, K. 1927. *Fungivoridae*. In: Die Fliegen der Palaearktischen Region. Edit. E. Lindner. E. Schweizerbart'sche Verhandlungen, Stuttgart. 2(8):1-196.
- Laštovka, P. and Kidd, L.N. 1975. Review of the British and notes on other species of the *Mycetophila ruficollis* group, with the description of a new species (Dipt., Mycetophilidae). *Entomologist's Monthly Magazine* 110:203-214.
- Laštovka, P. and Matile, L. 1972. Révision des *Diadocidia* Holarctiques (Dipt., Mycetophilidae). *Annales de la Société entomologique de France* (nouvelle série) 8(1):205-223.
- Latreille, P.A. 1805. Histoire naturelle, générale et particulière, des Crustacés et Insectes. Dufart, Paris. 14:1-432.
- Loew, H. 1869. Beschreibung europäischer Dipteren. Systematische Beschreibung der bekannten europäischen zweiflügeligen Insekten von Johann Wilhelm Meigen. H.W. Schmidt, Halle. 1:xvi + 1-310.
- Lundström, C. 1909. Beiträge zur Kenntnis der Dipteren Finnlands. IV. Supplement. Mycetophilidae. *Acta Societatis pro Fauna et Flora Fennica* 32:1-63.
- Lundström, C. 1911. Neue oder wenig bekannte europäische Mycetophilidae. *Annales Historico-Naturales Musei Naturalis Hungarici* 9:390-419.
- Lundström, C. 1912a. Beiträge zur Kenntnis der Dipteren Finnlands. VIII, Supplement 2. *Acta Societatis pro Fauna et Flora Fennica* 36:1-39.
- Lundström, C. 1912b. Neue oder wenig bekannte europäische Mycetophilidae. II. *Annales Historico-Naturales Musei Naturalis Hungarici* 10:514-522.
- Lundström, C. 1913. Neue oder wenig bekannte europäische Mycetophilidae. III. *Annales Historico-Naturales Musei Naturalis Hungarici* 11:305-322.
- Macquart, J. 1826. Insectes Diptères du nord de la France. Tipulaires. *Mémoires de la Société des Sciences, de l'Agriculture et des Arts à Lille* 1823-1824:59-224.
- Macquart, J. 1834. Histoire naturelle des Insectes. Diptères. Roret, Paris. 1:1-578.
- Madwar, S. 1935. The biology and morphology of the immature stages of *Macrocera anglica* Edwards. *Psyche* 42:25-34.
- Malloch, J.R. 1928. Notes on Australian Diptera. No. XVII. *Proceedings of the Linnaean Society of New South Wales* 53:651-662.

- Marshall, P. 1896. New Zealand Diptera. No. 2. Mycetophilidae. *Transactions and Proceedings of the New Zealand Institute* 28:250-309.
- Matile, L. 1963. Deux nouveaux Mycetophilides du genre *Rhymosia* de France (Diptera, Nematocera). *Revue française entomologique* 30:190-192.
- Matile, L. 1967. Note sur les Mycetophilidae de la région pyrénéenne et description de quatre espèces nouvelles (Diptera, Nematocera). *Bulletin de la Société Entomologique de France* 72:121-126, 208-217.
- Matile, L. 1969. Contribution à la faune de l'Iran. 14. Diptères Mycetophilidae des provinces caennaises. *Annales de la Société Entomologique de France* (nouvelle série) 5:239-250.
- Matile, L. 1974a. Notes sur les Mycetophilidae (Diptera) de la Faune de France. III. Le genre *Neuratelia*. *Entomologiste* 30:26-34.
- Matile, L. 1974b. A new species of *Asindulum* from Israel (Diptera, Mycetophilidae). *Israel Journal of Entomology* 9:73-75.
- Matile, L. 1975. Révision des *Asindulum* et des *Macrorrhyncha* de la région paléarctique (Diptera, Mycetophilidae). *Annales de la Société Entomologique de France* (nouvelle série) 11:491-515.
- Matile, L. 1977. Catalogue provisoire de Diptères Mycetophilidae de la faune de France. *Bulletin du Muséum National d'Histoire Naturelle* (3) 456, Zool. 319:621-655.
- Matile, L. 1978. Révision des *Truplasya* afrotropicaux (Diptera, Mycetophilidae). *Annales de la Société Entomologique de France* (nouvelle série) 14:451-477.
- Matile, L. 1980. Complément au Catalogue de Mycetophilidae de France (Dipt.). *Bulletin de la Société Entomologique de France* 85:93-102.
- Matile, L. 1990. Recherches sur la systématique et l'évolution des Keroplatidae (Diptera, Mycetophiloidea). *Mémoires du Muséum National d'Histoire Naturelle. Zoologie* 148:1-682.
- McAlpine, J.F. et al. 1981. Manual of Nearctic Diptera. Agriculture Canada Monograph 27. Biosystematics Research Centre. Ottawa. Vol. 1, vi + 674 pp.
- Meigen, J.W. 1803. Versuch einer neuen Gattungseinteilung der europäischen zweiflügeligen Insekten. *Magazin für Insektenkunde* 2:254-281.
- Meigen, J.W. 1804. Klassifikation und Beschreibung der europäischen zweiflügeligen Insekten (Diptera Linn.). Reichard, Braunschweig. pp. 1-152.
- Meigen, J.W. 1818. Systematische Beschreibung der europäischen zweiflügeligen Insekten. F. W. Forstmann, Aachen. 1:xxvi + 1-333.
- Meigen, J.W. 1830. Systematische Beschreibung der europäischen zweiflügeligen Insekten. Schulz, Hamm. 6:xi + 1-401.
- Nielsen, P. 1963. Records and descriptions of Nematocera from Afghanistan. *Stuttgarter Beiträge zur Naturkunde* 118:1-8.
- Plassmann, E. 1986. Neun neue Pilzmücken aus der Westpaläarkt (Diptera, Nematocera, Mycetophilidae). *Spixiana* 9:143-150.
- Plassmann, E. and Schacht, W. 1990. Ein Beitrag zur Pilzmückenfauna Spaniens mit Beschreibung zweier neuer Arten (Diptera, Nematocera, Mycetophilidae). *Entomofauna. Zeitschrift für Entomologie* 11:141-151.
- Ribeiro, E. 1990. Contribution to the study of fungus-gnats (Diptera: Mycetophiloidea) of Portugal. Seven new records. *Boletim da Sociedade Portuguesa de Entomologia* 4:173-194.
- Ribeiro, E. 1991. Contribution to the study of fungus gnats (Diptera: Mycetophiloidea) of Portugal. IV. Three new records. *Boletim da Sociedade Portuguesa de Entomologia* 134:21-28.
- Rondani, C. 1856. Dipterologicae italianae prodromus. Genera italica ordinis dipterorum ordinata disposita et distincta et in familias et stirpes aggregata. A. Stoschi, Parmae [= Parma]. 1:1-22.
- Ruthe, J.F. von. 1831. Einige Bemerkungen und Nachträge zur Meigen's Systematischer Beschreibung der europäischen zweiflügeligen Insekten. *Isis*, Jena. 1831 (11):1203-1222.
- Saigusa, T. 1973. A systematic study of the Mycetophilidae of Japan (Diptera). Part 1. A revision of the subfamily Ditomyiinae. *Sieboldia* 4:167-215.
- Santos Abreu, E. 1920. Monografía de los Fungivoridos de las Islas Canarias. *Memorias de la Real Academia de Ciencias y Artes de Barcelona* 16:1-152.
- Skuse, F.A.A. 1888. Diptera of Australia. III. The Mycetophilidae. *Proceedings of the Linnean Society of New South Wales* (2)3:1123-1222.
- Staeger, R.C. 1840. Systematisk fortegnelse over de i Danmark hidtil funde Diptera. *Naturhistorisk Tidsskrift* 3:1-58; 228-288.
- Stannius, F.H. 1831. Observationes de speciebus nonnullis generis *Mycetophila* vel novis, vel minus cognitiss. E. Pelz, Vratislaviae [= Wrocław]. pp. 1-30.
- Steenberg, C.M. 1924. Étude sur deux espèces dont les larves se forment de leurs excréments une couche protectrice: la *Phronia strenua* Winn. et le *P. johannae* n. sp. (Diptera, Nematocera). *Videnskabelige Meddelelser fra Dansk Naturhistorisk Forening i København* 78:1-51, 211.
- Storå, R. 1937. Family Mycetophilidae. In: R. Frey, Die Dipterenfauna der Kanarischen Inseln und ihre Probleme. *Commentationes biologicae* 6:10-14.
- Strobl, G. 1893. Beiträge zur Dipterenfauna des Österreichischen Littoral. *Wiener Entomologische Zeitung* 12:161-170.
- Strobl, G. 1898. [Diptera Fauna of Bosnia, Hercegovina and Dalmatia]. *Glasnik Zemaljskog Museja v Bosni i Hercegovini* 10:387-460; 561-616 (in Serbian).
- Strobl, G. 1906. Spanische Dipteren. 2. Beitrag. *Memorias de la Real Sociedad Española de Historia Natural* 3:271-422.
- Strobl, G. 1909. Spanische Dipteren. 3. Beitrag. *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien* 59:121-301.
- Strobl, G. 1910. Die Dipteren von Steiermark. 5 (Nachtr. II). *Mitteilungen des Naturwissenschaftlichen Vereins für Steiermark* 46:45-293.
- Tuomikoski, R. 1966. Generic taxonomy of the Exechiini (Dipt., Mycetophilidae). *Annales entomologicae fennici* 32:159-194.
- Väisänen, R. 1984a. A monograph of the genus *Mycomya* Rondani in the Holarctic region. *Acta Zoologica Fennica* 177:1-346.
- Väisänen, R. 1984b. A new Mediterranean species of *Grzegorzekia* (Diptera, Mycetophilidae). *Annales Entomologici Fennici* 50:55-57.
- Väisänen, R. 1984c. *Mycomya elephas* sp. n. from California, and records of other Holarctic species (Diptera, Mycetophilidae). *Annales Entomologici Fennici* 50:115-117.
- Villers, C. 1789. Caroli Linnaei entomologia, fauna sueciae descriptionibus aucta. Piastre et Delamollere, Lugduni [= Lyon]. 3:1-657.
- Vockeroth, J.R. 1981. Mycetophilidae. pp. 223-253. In: Manual of Nearctic Diptera. Edit. J.F. McAlpine et al. Agriculture Canada Monograph 27. Biosystematics Research Centre, Ottawa. Vol. 1, vi + 674 pp.
- Walker, F. 1848. List of specimens of dipterous insects in the collection of the British Museum. British Museum, London. 1:1-229.
- Walker, F. 1856a. Insecta Britannica Diptera. Reeve & Benham, London. 3:xxiv + 1-352.
- Walker, F. 1856b. Diptera. Vol. 1. In: Insecta Saundersiana. Edit. W.W. Saunders. Van Voorst, London. pp. 415-474.
- Westwood, J.O. 1840. Synopsis of the genera of British insects. pp. 1-158. In: An introduction to the modern classification of insects; founded on the natural habits and corresponding organisation of the different families. Longman, Orme, Brown, Green and Longmans, London. 2:xi + 1-587.
- Wiedemann, C.R.W. 1817. Neue Zweiflügler (Diptera Linn.) aus der Gegend um Kiel. *Zoologisches Magazin, Kiel* 1:61-86.

- Winnertz, J. 1846. Beschreibung einiger neuen Gattungen aus der Ordnung der Zweiflügler. *Stettiner Entomologische Zeitung* 7:11–20.
- Winnertz, J. 1863. Beitrag zu einer Monographie der Pilzmücken (Mycetophilidae). *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien* 13:637–964.
- Wulp, F.M. van der. 1858. Der Beschrijving van eenige twijfelachtige soorten van Diptera uit de familie der Nemocera. *Tijdschrift voor Entomologie* 2:159–185.
- Wulp, F.M. van der. 1874. Dipterologische aantekeningen. *Tijdschrift voor Entomologie* 17:109–143.
- Zaitzev, A.I. 1982a. [Fungus gnats of the genus *Sciophila* Meig. of the Holarctic]. *Akademia Nauk SSSR, Moscow*. pp. 1–75 (in Russian).
- Zaitzev, A.I. 1982b. [Dipterans of the genus *Acnemia* Winn. (Mycetophilidae) of the Holarctic fauna. *Zoologicheskii Zhurnal* 61:707–715 (in Russian).
- Zaitzev, A.I. 1982c. [Dipterans of the genus *Acnemia* Winn. (Mycetophilidae) of the Holarctic fauna. *Zoologicheskii Zhurnal* 61:867–874 (in Russian).
- Zaitzev, A.I. 1985. [Holarctic species of the fungus gnats of the genus *Brevicornu*, Groups *fissicauda* and *proximum* (Diptera, Mycetophilidae)]. *Vestnik Zoologii* 5:40–46 (in Russian).
- Zetterstedt, J.W. 1838. Diptera. In: *Insecta Lapponica*. Voss, Lipsiae [= Leipzig]. pp. 477–868.
- Zetterstedt, J.W. 1851. Diptera Scandinaviae disposita et descripta. *Officina Lundbergiana, Lundae* [= Lund]. 10:3711–4090.
- Zetterstedt, J.W. 1852. Diptera Scandinaviae disposita et descripta. *Officina Lundbergiana, Lundae* [= Lund]. 11:i–xii + 4091–4545.
- Zetterstedt, J.W. 1855. Diptera Scandinaviae disposita et descripta. *Officina Lundbergiana, Lundae* [= Lund]. 12:i–xx + 4547–4942.

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Israel Journal of Entomology  
 Vol. XXVIII (1994) pp. 101-117

THE STICK-INSECTS (PHASMATODEA) OF ISRAEL,  
 INCLUDING THE DESCRIPTION OF A NEW SPECIES

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ABSTRACT

The three species of stick-insects occurring in Israel are described and figured, including *Ramulus eitami* n. sp. Notes on distribution, biology, habitat, and eggs are presented, in addition to keys to adults and eggs. Electron microscope photographs of eggs of the three species are included.

KEY WORDS: Phasmatodea, stick-insects, Israel, distribution, adults, eggs.

INTRODUCTION

Stick- and leaf-insects (Phasmatodea = Phasmida) are a poorly studied order, and little is known about the biology, distribution or foodplants of the vast majority of species. Recent studies have provided this information on occasion, but there is still considerable scope for the professional and amateur entomologist to expand the knowledge of these fascinating insects.

This paper is a preliminary study of the stick-insects occurring in Israel, and it is the authors' hope that it will encourage further research on this group in Israel. Two previously recorded species of stick-insects and one new species are recorded from Israel and described in this paper, which includes illustrations of adults and eggs, along with simplified keys, and notes on distribution, habitat and biology. A series of electron microscope photographs clearly show the intricate structure of eggs. Only the new species *Ramulus eitami* is known from Israel alone. The species dealt with in this paper can easily be kept at temperatures ranging from 21°-27°C (70°-80°F) and humidity around 50%. Well ventilated cages are required (Brock, 1992). Abbreviations of museums are given in the acknowledgments section.