ISRAEL JOURNAL OF ENTOMOLOGY, Vol. 40, 2010, pp. 145–168

The identification of females of the West Palaearctic species of *Gymnochiromyia* Hendel (Diptera: Chyromyidae) and descriptions of five new species from Israel and the United Arab Emirates

MARTIN J. EBEJER
Entomology Section, Department of Biodiversity & Systematic Biology, National Museum Wales, Cathays Park, Cardiff CF10 3NP, UK. martin.ebejer@btinternet.com

ABSTRACT

The females of all West Palaearctic species of *Gymnochiromyia* were studied to elucidate taxonomic characters that may aid identification. Four new species are described from Israel: *G. hermonensis*, *G meronensis*, *G. pallida*, *G. persimilis* and one from the United Arab Emirates: *G. curtisetosa*. Illustrations are provided of the female postabdomen of all the eight previously described species and of the postabdomen of both sexes of the new species. A key is provided for the identification of both sexes of *Gymnochiromyia* currently known from this zoogeographical area.

KEYWORDS: faunistics, key, Palaearctic Region, taxonomy

INTRODUCTION

The Chyromyidae is a small family of acalyptrate flies that occur in all zoogeographical regions of the world, except Antarctica. About 180 species are known worldwide, of which 125 species are recorded from the Palaearctic Region. Chyromyidae is a reasonably well-supported monophyletic group in the superfamily Heteromyzoidea. Ebejer (2009) summarized the biology and ecology of this family. Larvae develop in nests of small mammals and birds, in guano and dung, and in decaying debris in tree hollows. The most favored habitats for species of the genus *Gymnochiromyia* Hendel, 1933, are broad-leaved forests, in particular oak and vegetated sand-dunes, especially along sea coasts. Temperate and subtropical latitudes support more species and larger populations than colder or equatorial regions.

The Palaearctic species of *Gymnochiromyia* were reviewed by Ebejer (1998a). *Gymnochiromyia fulvipyga* Ebejer, 2001 (Ebejer and Báez, 2001), and *Gymnochiromyia homobifida* Carles-Tolrá, 2001, were subsequently described from the Canary Islands and mainland Spain, respectively. Due to the problems of associating females with males, Ebejer's study (Ebejer, 1998a) was based on males alone, which has prompted the examination of the female postabdomen to elucidate taxonomic characters that may prove useful in determining female specimens.

The Swedish Chyromyidae were reviewed by Andersson (1971), but illustrations of *G. flavella* (Zetterstedt, 1848) were not provided. The chapter on Chyromyidae by Wheeler (1998) in the Manual of Palaearctic Diptera is now outdated, given recent studies on this family (Deeming, 2008; Ebejer, 1998a,b, 2006, 2008ab; Ebejer and Báez, 2001; Gibbs, 2007). That work also lacks illustrations of female terminalia for *Gymnochiromyia* species.

In a recent study, Ebejer (2008b) provided a detailed re-description of the genus *Gymnochiromyia* and included an appraisal of the female postabdomen for the first time, with illustrations of 7 of the 15 known Afrotropical species.

As far as the western Palaearctic *Gymnochiromyia* fauna is concerned, only Carles-Tolrá (2001) provided outline illustrations of females for the species *G. fallax* Ebejer and *G. homobifida* Carles-Tolrá, but these are insufficiently detailed to allow comparison.

The majority of *Gymnochiromyia* species are difficult to identify; females especially so. In this study, therefore, I attempt to overcome this difficulty through a detailed comparative study and illustration of the female terminalia of all Palaearctic species. High power stereomicroscope examination of dissected and suitably prepared postabdomens was necessary in most species.

The female abdomen in Chyromyidae consists of seven easily recognized segments followed by the postabdomen, which consists of segments 8 to 10 and the cerci. In *Gymnochiromyia*, a small ventral structure, which is sometimes a sclerite, lies caudal to segment 8 (or 10, of some authors), but beyond the genital and anal opening. This is probably the hypoproct (subanal plate). The supra-anal plate (epiproct) is absent. The cerci are separated and relatively small compared to those of the other genera. They lie just lateral and a little more caudal to the hypoproct. They are similar in size and appearance between species and have no special modifications.

In *Gymnochiromyia*, segment 8 was said to have no sclerite dorsally (Ebejer, 2008b), but in some Palaearctic species there is either a small and narrow tergite 8 that is well separated from the ventral pair of sclerites (sternite 8) or a pair of small sclerites lying lateral and dorsal to the sternites of segment 8. As in the African species, the ventral sclerites of segment 8 bear a number of well-developed setae.

The paired spermathecae are very small, round or nearly so, heavily sclerotized, and pigmented. The spermathecal ducts are not visible in most species, unless stained during preparation. Each spermatheca has a wide opening on one side and a small, circular, translucent area more or less on the opposite side. Sometimes, darker internal structures are visible, but these appear to vary in shape, depending on the degree of distortion produced in desiccation and subsequent preparation of the postabdomen. Therefore, these structures may not be reliable for separation of species. Likewise, the position of the sclerites of the postabdomen relative to each other and the preceding segments varies, depending on the distension or otherwise of the abdomen with ova, and to the extent that the genital duct everts during maceration (Figs. 3, 8). However, the number, loci and general orientation of setae on the sclerites (dorsal and ventral) of segment 8, the shape of these sclerites, and that of the hypoproct are useful characters for separation of species.

MATERIAL AND METHODS

This paper is largely based upon material housed in Tel Aviv University (TAUI), kindly loaned for study by Dr. Amnon Freidberg. This material was supplemented by specimens housed in the author's private collection and in Amgueddfa Cymru—National Museum Wales, Cardiff (NMWC).

Critical examination of a large number of specimens from Israel revealed four undescribed species, three of which are almost identical in external characters and also very similar to *G. inermis* (Collin, 1933) that was described from Britain. These new species are described in this article, along with another species from the United Arab Emirates (UAE). The latter was mentioned in a recent article on the Chyromyidae of the UAE (Ebejer, 2008a), but was not described as no males were available at the time.

The method for preparing the postabdomen was previously described by Ebejer (2008b), and is not repeated here. The majority of studied specimens are dry-mounted, with dissected parts preserved in glycerine in a plastic vial pinned beneath the specimen. In the case of specimens originally preserved in alcohol or subsequently wetted from a dry state, the entire specimen is preserved with the detached and macerated parts in a plastic vial. Where sufficient material was available for study, at least three specimens of each sex of each species were dissected or examined in a wet state, thus reducing the risk of significant variation giving rise to misinterpretation of characters. The illustrations were prepared freehand, using a stereoscopic microscope.

The following abbreviations were used in the text and in the figures:

acrs—acrostichal
basiph—basiphallus
cerc—cercus, cerci
dc—dorsocentral
distiph—distiphallus
ej apd—ejaculatory apodeme
ep—epandrium
fr—frons, frontal
hu—humeral
hyp—hypandrium
hypr—hypoproct
ia—intra-alar
mtn—metanotum
ntpl—notopleuron, notopleural
ocp—occiput, occipital
oc—ocellar
orb—orbital
pa—postalar
ph—phallus
ph apd—phallapodeme
post-hu—posthumeral
prg—pregonite
ppr—postpronotum, postpronotal
prscut—prescutellar
prsut—presutural
psg—postgonite
pvt—postvertical
s—spermatheca(e)
sa—supra-alar
st—sternite
surs—surstylus
tg—tergite
vt—vertical
vte—lateral (external) vertical
vti—medial (internal) vertical

Some of the material mentioned in a previous study of Palaearctic *Gymnochiromyia* (Ebejer, 1998a) was reexamined. In most cases, additional male specimens were dis-

sected from geographical areas not included in this earlier study. The additional material is listed under each species heading below. The depository of specimens is in parenthesis at the end of each citation and the abbreviations are as follows:

BMNH—Natural History Museum, London, UK
MHNG—Muséum d'Histoire Naturelle, Genève, Switzerland
MJE—Private Collection, M.J. Ebejer, Cowbridge, UK
NMWC—National Museum Wales, Cardiff, UK
PG—Private Collection, P. Gatt, Malta
TAUI—Tel Aviv University, Tel Aviv, Israel
ZSM—Zoological Museum, Munich, Germany

RESULTS

The Palaearctic species of *Gymnochiromyia* can be divided into five species-groups based on external characters. In many cases, there are external characters that easily delineate males within these groups and these characters may also serve in the identification of females in some cases, although some females require dissection for positive identification. The single species from the United Arab Emirates (UAE) is regarded here as being sufficiently distinctive in both sexes to be readily identifiable without dissection.

Comparison of species-groups

The *Gymnochiromyia flavella* species-group comprises: *G. flavella* (Zetterstedt, 1848), *G. mihalyii* Soós, 1979, and *G. persimilis* n. sp. All three species possess a strong presutural dorsocentral seta. Virtually all males of *G. mihalyii* and *G. persimilis* have a black 5th tarsomere of the fore leg, but females are best separated by examination of the terminalia; in *G. mihalyii* (Fig. 12) and *G. persimilis* (Fig. 16), tergite 8 is membranous dorsally, more or less rectangular in lateral view, and the hypoproct is setulose. By contrast, in *G. flavella* (Fig. 4), the tergite 8 is complete with a rounded posterior margin and the hypoproct has long setae. The main differences in female terminalia between *G. mihalyii* and *G. persimilis* are in the shape of sternite 8 and the alignment of its setae. *G. persimilis* also has relatively shorter and more numerous setae on sternite 7. Until now, there has been some doubt as to the validity of *G. mihalyii* as a distinct species (Ebejer, 1998a), but examination of many specimens revealed consistent differences in the characters of the male and female postabdomens of this species and those of *G. flavella* and of *G. persimilis*. In males of *G. persimilis* (Fig. 15), the surstylus is longer, narrower, and with a right-angled bend at its middle. As in *G. mihalyii*, in which this structure is similarly shaped, *G. persimilis* also has a row of very minute setulae along the posterior margin. In contrast to *G. mihalyii*, the pregonite is narrower and longer and has only minute, but numerous fine setulae on its ventral surface (i.e., no strong black setae).

The *Gymnochiromyia seminitens* species-group comprises two species: *G. fulvipyga* Ebejer, 2001 and *G. seminitens* Hendel, 1933. These two species exhibit significant dark pigmentation, particularly in *G. seminitens*, and are the only species with a dark occiput.

In *G. fulvipyga*, many specimens have reduced dark coloration, but the scutum is usually distinctly brown-vittate longitudinally. However, these vittae commence anterior to the scutal transverse suture and fade or end before reaching the level of the posterior dorsocentral seta (see *G. curtisetosa*, below). Compared to *G. zernyi* (Fig. 18), females of *G. fulvipyga* (Fig. 5) are immediately recognized by the dark tarsomeres of all legs, a character state present in most specimens, and the comparatively large ventral sclerites of the 8th segment that are easily seen without dissection.

The *Gymnochiromyia curtisetosa* species-group comprises two species: *G. curtisetosa* n. sp. and *G. zernyi* (Czerny, 1929). The scutal vittae in these two species are most pronounced close to the posterior dorsocentral seta. The overall coloration is pale, even in *G. curtisetosa*, in which the dark maculae on the pleura and scutum may be relatively extensive. *Gymnochiromyia curtisetosa* is easily identified, however, by the presence of minute acrostichals and anterior dorsocentral setulae. The female (Fig. 2) lacks the tergite in segment 8, whereas in *G. zernyi* (Fig. 18) tergite 8 is present and only narrowly membranous dorsally.

The *Gymnochiromyia fallax* species-group comprises two species: *G. fallax* Ebejer, 1998, and *G. homobifida* Carles-Tolrá, 2001. The external characters applied for the separation of these two species by Carles-Tolrá (2001) are unreliable and examination of the terminalia of both sexes is required. Both species possess the darkened 5th tarsomere of the fore leg and also frequently some darkening of the 5th tarsomere of the remaining legs. This is usually more apparent in *G. homobifida*, however, and is rarely expressed in *G. fallax*. Both these species may possess a short dorsocentral seta close to the scutal transverse suture and occasionally an additional very short seta anterior to it. In males of *G. homobifida*, the pregonite is narrow and slightly ventrally-directed at its apex; in *G. fallax*, it is broad and lacks the curve. The surstylus of *G. homobifida* appears bifid in lateral view, but this is due to tortuosity. In *G. fallax*, however, it appears broader and is less tortuous. Females are more difficult to separate; both possess a membranous dorsal part to the tergite 8 and both have tergite 8 smaller than the corresponding sternite 8, which is oval in *G. homobifida* (Fig. 8) and of irregular rhomboidal shape in *G. fallax* (Fig. 3).

The *Gymnochiromyia inermis* species-group comprises four species: *G. hermonensis* n. sp., *G. inermis* (Collin, 1933), *G. meronensis* n. sp., and *G. pallida* n. sp. This species-group is easily defined on the basis of the entirely pale yellow integument and only one, or at most two, postsutural dorsocentral setae, but separation at the specific level is problematic. It is made more difficult by the variable structures in the female terminalia. A series of females of *G. inermis* (Fig. 9) from the Appenine mountains of Italy show some differences in the sclerites of the segment 8 (particularly in lateral view) and in the hypoproct, compared to specimens from Britain (Fig. 10). However, I do not consider these features alone to be sufficient to place this series from Italy in a new taxon, especially as no males are available. The females of *G. meronensis* and *G. pallida* cannot be distinguished from each other based on external characters, but females of *G. hermonensis* differ by having elongate oval sclerites with longer setae in the sternite 8. Females of *G. inermis* have a concave lateral margin of the sclerites of sternite 8.

KEY TO PALAEARCTIC SPECIES OF *GYMNOCHIROMYIA*

Males

1. Presutural *dc* present; even if short, clearly distinguishable from adjacent *acrs* **2**
-. Presutural *dc* absent; only 1–2 posterior *dc* present; if a third present, then extremely short and well-separated from transverse suture; if a fourth present, then this also very short, and species with dark markings on scutum, pleura and epandrium..... **4**
2. All tarsomeres yellow; rarely 5th tarsomere of fore leg appears slightly darkened in apical half..... ***flavella* (Zetterstedt)**
-. 5th tarsomere of fore leg entirely black, only occasionally brown or partially black **3**
3. Pregonite with minute, pale setulae on ventral surface (Fig. 15) ..... ***persimilis* n. sp.**
-. Pregonite with black setae on ventral surface ..... ***mihalyii* Soós**
4. Metanotum brown to black; pleura and epandrium variably marked with brown **5**
-. Metanotum yellow; pleura yellow, at most posterior part of katepisternum and katepimeron brown; epandrium invariably entirely yellow **7**
5. Setae and setulae short, especially *acrs* and anterior *dc*, posterior orbital seta about 0.33 as wide as frons at vertex; subapical scutellar setae about as long as scutellum; scutum with dark *dc* vittae; legs slender, with very short setae and setulae, longer setae on fore femur considerably shorter than diameter of femur (Fig. 1) ..... ***curtisetosa* n. sp.**
-. Setae and setulae of usual length, posterior orbital seta at least half as wide as frons at vertex; subapical scutellar setae distinctly longer than scutellum; scutum entirely dark or, at least, darkened more extensively than along *dc* vittae; legs normal, with setae and setulae of normal length, longer setae on fore femur longer than diameter of femur..... **6**
6. Dark species, with occiput, scutum, metanotum and abdominal tergites extensively darkened; tarsi usually all pale yellow ..... ***seminitens* Hendel**
-. Paler species, at least occiput and parts of thoracic pleura yellow; scutum usually with vittae and 5th tarsomere of all legs usually distinctly darkened..... ***fulvipyga* Ebejer**
7. All setae and setulae dark brown to black, pleural setae always dark; all tarsi yellow; scutum sometimes with brown vittae which may be reduced to short streaks posteriorly between *dc* and *ia* lines and between *ia* line and wing base; posterior part of katepisternum and katepimeron sometimes brown..... ***zernyi* (Czerny)**
-. Setae and especially setulae pale brown to yellow; scutum lacking markings, rarely with deeper yellow vittae; pleura invariably yellow..... **8**
8. 5th tarsomere of fore leg usually black, sometimes only dark brown; longer setae often brownish; scutum often with short *dc* behind transverse suture slightly longer than adjacent *acrs* (generally coastal and sand-dune species)..... **9**
-. 5th tarsomeres of all legs, and all setae yellow; *dc* near transverse suture never differentiated from adjacent *acrs* (generally inland, woodland species favouring higher altitude in the Mediterranean)..... **10**
9. 5th tarsomeres of all legs variably darkened, but never black; pleural setae yellow, only rarely pale brown; surstylus broader, not tortuous or appearing bifid in profile..... ***fallax* Ebejer**
-. 5th tarsomere of fore leg black; longer setae of thorax often brown; surstylus tortuous, appearing bifid in profile ..... ***homobifida* Carles-Tolrá**
10. Prescutellar *acrs* absent or indistinct, at least not longer than adjacent setulae; gena strongly receding; distiphallus symmetrical, with two identical small sclerites ventrally at apex, ventrally with distinct more or less round sclerite medially, notched apically; surstylus short, curved almost at right angle medially, tip truncate (Fig. 11)..... ***meronensis* n. sp.**

-. Prescutellar *acrs* distinct, approximately twice as long as adjacent setulae; gena not strongly receding; distiphallus either simple tubular or asymmetrical; surstylus of different shape . ..**11**
11. Distiphallus narrow, tubular; surstylus with broad translucent border; pregonite small, more or less oval with 3 minute setulae (Fig. 7) ..... ***hermonensis* n. sp.**
-. Distiphallus broad, complex; surstylus narrow, lacking translucent border; pregonite larger **12**
12. Pregonite and postgonite in the shape of large, well sclerotized disc (Fig. 14) .... ***pallida* n. sp.**
-. Pregonite thinly sclerotized, rhomboidal in shape and finely setulose beneath; postgonite broad, but neither large nor heavily sclerotized..... ***inermis* (Collin)**

Females

1. Presutural *dc* present, even if short, clearly distinguishable from adjacent *acrs*; species without dark markings on body **2**
-. Presutural *dc* absent, only 1–2 posterior *dc* present; if third *dc* present, then extremely short and well-separated from transverse suture; if fourth *dc* present, then this also very short, and species with dark markings on scutum, pleura and epandrium **4**
2. Abdomen with segment 8 sclerotized dorsally and laterally; hypoproct broad, with several setae as long as those on adjacent sclerites of sternite 8 (Fig. 4) ..... ***flavella* (Zetterstedt)**
-. Abdomen with segment 8 membranous dorsally and with two more or less rectangular sclerites laterally; hypoproct narrow, with two rows of minute setulae **3**
3. Sternite 8 oval, with setae along medial margin of sclerite; sternite 7 with approximately 8–10 setae virtually as long as sternite (Fig. 12) ..... ***mihalyii* Soós**
-. Sternite 8 triangular, with setae along posterior margin; sternite 7 with approximately 14 setae approximately half as long as sternite (Fig. 16) ..... ***persimilis* n. sp.**
4. Metanotum brown to black; all setae usually brown or black; thoracic pleura variably marked with brown; epandrium brown, at least with brown macula medially **5**
-. Metanotum yellow; setae usually yellow (except in *G. zernyi*), at most some thoracic setae brown; pleura yellow, at most posterior part of katepisternum and katepimeron brown; epandrium invariably entirely yellow **7**
5. Setae of head and thorax of normal length, posterior orbital about 0.33 width of frons at vertex, subapical scutellar setae about as long as scutellum; *acrs* in at least 4 rows at level of transverse suture; scutal setulae numerous **6**
-. Setae of head and thorax short, posterior orbital at least half width of frons at vertex, subapical scutellar setae distinctly longer than scutellum; *acrs* in 2 rows at level of transverse suture; scutal setulae sparse (Fig. 2)..... ***curtisetosa* n. sp.**
6. Dark species, occiput, scutum, metanotum and abdominal tergites extensively darkened; segment 8 membranous dorsally, with sclerites laterally; paired sclerites of sternite 8 small, less than 0.1 mm in length, and setulae in apical half less than half transverse diameter of sclerite (Fig. 17) ..... ***seminitens* Hendel**
-. Paler species, occiput and parts of pleura yellow; scutum usually with vittae; segment 8 sclerotized dorsally and laterally; paired sclerites of sternite 8 large, more than 0.15 mm in length, with setulae scattered and longer than half transverse diameter of sclerite (Fig. 5)..... ..... ***fulvipyga* Ebejer**
7. All setae and setulae dark brown to black; all tarsi yellow; scutum with brown vittae in some cases, which may be reduced to short streaks posteriorly between *dc* and *ia* lines and between *ia* line and wing base; posterior part of katepisternum and katepimeron brown in some specimens; segment 8 with narrow membranous area dorsally (about 1/6 width of tergite)

(Fig. 18) ..... ***zernyi* (Czerny)**

-. Setae and setulae pale brown to yellow; scutum lacking markings, only rarely with deeper yellow vittae; pleura invariably yellow; segment 8 either entirely membranous or with broad membranous area dorsally (about 1/3 width of tergite or more) **8**

8. Scutum often with short *dc* posterior to scutal transverse suture slightly longer than adjacent *acrs*; sclerites of tergite 8 present (generally coastal and sand dune species) **9**

-. Scutum with *dc* posterior to scutal transverse suture not differentiated from adjacent *acrs*; entire tergite 8 unsclerotized (generally inland, woodland species that favor higher altitude in the Mediterranean) **10**

9. Sternite 8 more or less oval; hypoproct somewhat elongate oval with setulae in two rows medially (Fig. 8) ..... ***homobifida* Carles-Tolrá**

-. Sternite 8 irregular rhomboidal in outline; hypoproct broad with setulae towards apex (Fig. 3) ..... ***fallax* Ebejer**

10. Prescutellar *acrs* absent, not well-differentiated from adjacent setulae; frons distinctly broader than eye (viewed from above and measured at level of anterior ocellus); gena strongly receding; postabdomen as in Fig. 14 ..... ***meronensis* n. sp.**

-. Prescutellar *acrs* present, well-differentiated from adjacent setulae, usually at least twice as long as adjacent setulae; frons hardly broader than one eye (viewed from above and measured at level of anterior ocellus); gena not or only slightly receding **11**

11. Sternite 8 well sclerotized, apical half with lateral border slightly concave; longest setae of sternite 8 shorter than width of sclerite at widest point; tergite 8 membranous (Figs. 9, 10) .... ***inermis* (Collin)**

-. Sternite 8 well sclerotized only on margin, truncate apically or rounded and narrowed, lateral margins convex; most setae as long as, or longer than, width of sclerite at widest point; tergite 8 sclerotized and divided dorsally **12**

12. Sclerites of sternite 8 elongate oval, about 2.5 times as long as wide, apically narrow and rounded; dorsal edge of tergite 8 appearing narrow in lateral view (Fig. 6) .... ***hermonensis* n. sp.**

-. Sclerites of sternite 8 broad and almost truncate apically, about 1.8 times as long as wide; dorsal edge of tergite 8 appearing broadly round in lateral view (Fig. 14) ..... ***pallida* n. sp.**

Gymnochiromyia curtisetosa Ebejer, n. sp.

(Figs. 1, 2)

Description

Measurements: male and female (overall length)—1.8 mm, wing length—1.6 mm.

Male

Head: Entirely yellow, except for black *oc* triangle; *fr* narrow and margins converge anteriorly; at level of anterior *oc* equal to half width of head, at level of antenna equal to 0.75 that at level of anterior *oc*. Gena slightly narrower anteriorly than posteriorly, at middle equal to height of eye, with scanty pale yellow setulae. Face poorly sclerotized and depressed; median carina absent; isolated ventral post-genal seta present. Mouthparts small, entirely yellow; vibrissal setulae short, but distinct from others. Antenna yellow, flagellomere 1 slightly oval, faintly brownish on lateral surface at middle; pedicel

paler than flagellomere 1, with distinct short seta dorsally; flagellomere 1 very finely pubescent; 2 basal segments of arista yellow, apical segment yellow in basal 0.25, otherwise black and entirely glabrous. Chaetotaxy: 3 short *orb*, anterior inclinate, middle and posterior *orb* reclinate, posterior *orb* about 0.33 times as long as greatest width of *fr*; *pvt* distinct and cruciate; 1 *vte*, 1 *vti*; ocellars short, proclinate and lateroclinate, about as long as *oc* triangle; *ca*. 3 very short setulae across middle of *fr*, barely visible, with row of short postocular setulae.

Thorax: Scutum yellow, with 4 broad pale brown vittae that coalesce anteriorly, becoming darker along *dc* lines posteriorly, medial pair ending at transverse suture; scutellum yellow, with broad macula at basolateral margin; *mtn* black; pleura yellow, with black macula at base of halter. Chaetotaxy: 1 *ppr*, 1 minute *post-hu*, 2 *ntpl*, 1 short *sa*, 1 longer *pa*, 1 posterior *dc* seta developed, others only expressed as minute setulae, about 2+6 *acrs* setulae in two irregular rows, *pre-scut* absent, scutellum with 2 pairs of setae, subapicals only about as long as scutellum, 1 short anepisternal postero-medially, 1 short katepisternal at posterodorsal corner of sclerite.

Wing: Hyaline, veins pale yellow throughout; costa unbroken at *hu* crossvein; distance on costa between R_{2+3} and R_{4+5} about 0.8 times that between R_{4+5} and M_{1+2}; distance between crossveins about 1.3 times length of crossvein *DM-Cu*; apical section of vein *Cu* about 2.4 times length of crossvein *DM-Cu*. Halter stem pale yellow, knob pearly-white.

Legs: Entirely yellow, unmodified, femora only slightly dilated; scanty fine short setulae scattered on legs, mid tibial ventroapical seta absent; claws and pulvilli unmodified.

Abdomen: Yellow with brown transverse vittae along basal 0.66 of *tg*, but extending posteriorly along lateral margins and midline where darker longitudinal vittae are thus formed for entire length of abdomen; all segments with very short setulae, longest about 0.16 times as long as *tg*. Postabdomen (Fig. 1): Hypopygium with small yellow *ep*, with long setae along ventrolateral margin; *surs* relatively large, sinuous, visible externally; cerci yellow; *prg* fused with *hyp*; *ph apd*, long, narrow with somewhat globular base, *ej apd* small, *psg* broad and blade-shaped, phallic complex composed of membranous and sclerotized parts.

Female

Similar to male, but generally darker, tergites with broader and darker shiny brown fasciae; Postabdomen as in Fig. 2.

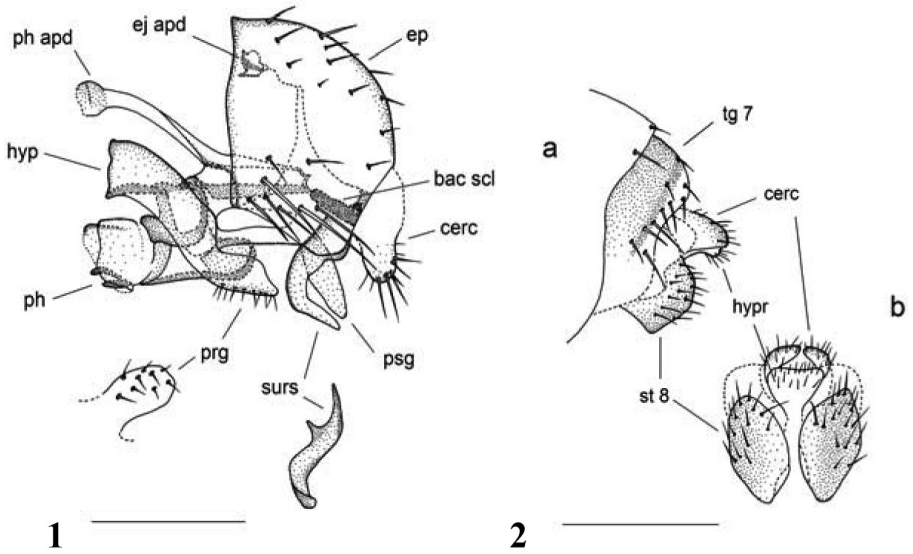
Variation: One female examined has brown setulae on the legs, another has darker scutal vittae and a black triangular macula on the katepisternum.

Etymology

The specific epithet is derived from the Latin adjective "*curtum*", meaning short and noun "*seta*", meaning bristle, and refers to the characteristic short setae of this species.

Type-material Examined

Holotype ♂, United Arab Emirates (UAE): Sharjah Desert Park, 24.xi–22.xii.2007,



Figs. 1–2. *Gymnochiromyia curtisetosa* n. sp. 1. Male postabdomen, lateral, with *prg* ventral and *surs* posterior. 2. Female postabdomen. a. lateral. b. ventral. Scale bars = 0.15 mm.

light trap, A. van Harten (NMWC). Paratypes (all UAE): Sharjah, Wadi Safad, 31.i–21.ii.2006, light trap, A. van Harten (2♀); Sharjah, Hatta, 30.i–26.ii.2006, A. van Harten (1♀); Sharjah, Hatta, 11–28.v.2008, A. van Harten (1♀) (all NMWC).

Distribution

Known only from the type-material collected in the United Arab Emirates.

Gymnochiromyia fallax Ebejer, 1998

(Fig. 3)

The male postabdomen is illustrated in Ebejer (1998) page 23. The female postabdomen is illustrated here (Fig. 3).

Material Examined

SPAIN: Mallorca, S'Albufera, Es Comu, coastal dunes, on bush of *Pistacia lentiscus* near pine wood, 16.iv.2001, M.J. Ebejer (4♀). MALTA: Mtahleb, swept from flowers of *Ferula* and *Euphorbia*, 16.iv.2000, M.J. Ebejer (8♂, 1♀); Mgiebah, 25.iii.2001, M.J. Ebejer (1♀); Ghajn Rihana, 2.v.2001, M.J. Ebejer (2♀) (all MJE).

Distribution

Known from France, Malta, Spain (Balearics), and Tunisia, inhabiting coastal dunes and marshes.

Gymnochiromyia flavella (Zetterstedt, 1848)
(Fig. 4)

The male postabdomen is illustrated in Ebejer (1998) page 24. The female postabdomen is illustrated here (Fig. 4).

Material Examined

FRANCE: East Pyrenees, Massif du Canigou, Prunet et Bel Puig, meadows & shrubs in *Quercus* forest, 610 m, 42º34′18″N/2º39′10″E, 7–8.vi.2007, M.J. Ebejer (1♀); East Pyrenees, Perpignan, Etang de Canet et de St. Nazaire, St. Cyprien-Plage, dunes, marsh, Chenopodaiceae, Graminae, *Tamarix*, 0 m, 42º39′14″N, 03º01′59″E, M.J. Ebejer (2♂, 1♀) (all MJE). ISRAEL: 'Atlit, 28.iv.1996, A. Freidberg (1♂, 3♀) (TAUI). SPAIN: Menorca, Fornells, Cala Tirant, beach and dunes, 4.vi.2008, M.J. Ebejer (1♀; MJE). TURKEY: Hakkari, Habul Deresi-Tal S Beytisebap, 1200 m, 26.vi.1985, W. Schacht (1♀, in alcohol; ZSM).

Distribution

Widespread in Europe and on several Mediterranean islands. Occurring in a range of habitat types, including: dunes, broad-leafed woodland, garrigue, and maquis-type vegetation. The species appears to be more common and numerous in the north of Europe.

Gymnochiromyia fulvipyga Ebejer, 2001
(Fig. 5)

The male postabdomen is illustrated in Ebejer and Baèz (2000) page 294. The female postabdomen is illustrated here (Fig. 5).

Material Examined

ISRAEL: Holon, 23.iii.1995, on *Tamarix*, A. Freidberg (2♂, 3♀); Nizzanim, 23.iii.1995, on *Tamarix*, I. Yarom (2♀); Nahal Besor, 1.v.1995, I. Yarom (1♂, 2♀); 'Enot Zuqim, 19.iii.1995, A. Freidberg, (1♂, 4♀); 'Enot Zuqim, 3.iii.1998, on *Tamarix*, N. Meltzer & V. Kravchenko (1♂, 3♀); 'Enot Zuqim, 12.iv.2000, N. Meltzer & V. Kravchenko (3♀) (all TAUI); Dead Sea, –400m, 'Enot Zuqim, 25.iii.2000, 31º43′N, 35º27′E, on *Tamarix*, M.J. Ebejer (10♂, 7♀) (MJE); 'En Mor, 16.iii.1995, B. Merz (6♂, 3♀; MHNG); Mizpe Ramon, 25 km NW, 2.v.1995, I. Yarom (2♂, 1♀; TAUI); Western Negev, Nahal Lavan, 24.iii.2000, 30º58′N, 34º24′E, on shrubs, M.J. Ebejer (13♂, 9♀; MJE); Western Negev, 'Ezuz, 24.iii.2000, 30º46′N, 34º29′E, grazed grass and dung, M.J. Ebejer (1♀; MJE); 'Iddan, 19.iii.1995, A. Freidberg (2♂; TAUI). TUNISIA: Sfax, Hachichina, Khaoula saltmarsh, 6.iv.2007, P. Gatt (2♂, 2♀); Sfax, Thyna saltmarsh, 6.iv.2007, P. Gatt (4♂, 4♀) (all PG); same data (3♂, 3♀) (MJE).

Distribution

Occurring on the Canary Islands, in Tunisia, and in Israel; a predominantly coastal or lowland species.

Gymnochiromyia hermonensis Ebejer, n. sp.

(Figs. 6, 7)

Description

Measurements: male (overall length)—1.7 mm, wing length—1.6 mm; female (overall length)—1.8 mm, wing length—1.9 mm.

Male

Head: Entirely yellow, except for black-ringed *oc*; *fr* narrow and converging, at level of anterior *oc* equal to about half width of head, at level of antenna equal to 0.5 that at level of anterior *oc*. Gena slightly narrower anteriorly than posteriorly, at middle equal to about 0.8 times height of eye, with scanty pale yellow setulae; isolated ventral postgenal seta present, as long as middle *orb*. Face poorly sclerotized and depressed; median carina absent. Mouthparts small, entirely yellow, palpus oval; vibrissal setulae short, but distinct from others. Antenna yellow, flagellomere 1 rounded, pedicel paler than flagellomere 1, with distinct short seta dorsally; flagellomere 1 very finely pubescent; 2 basal segments of arista yellow, third segment yellow at basal 0.25, otherwise black and glabrous. Chaetotaxy: 3 long *orb*, anterior inclinate, middle and posterior *orb* reclinate, posterior *orb* about as long as 0.66 greatest width of *fr*; *pvt* distinct and cruciate; 1 *vte*, 1 *vti*; ocellars proclinate and lateroclinate, almost as long as half width of *fr* at this level; no short setulae across middle of *fr*, postocular setulae in single row.

Thorax: Scutum and scutellum entirely pale yellow; *mtn* yellow; pleura yellow lacking black macula at base of halter. Chaetotaxy: 1 *ppr*, 1 *post-hu*, 2 *ntpl*, 1 *sa*, 1 *pa*, 2 postsutural *dc*, anterior seta half length of posterior, others only expressed as setulae, *acrs* setulae in 6 irregular rows, *pre-scut* short, but distinct; scutellum with 2 pairs of setae, subapicals longer than scutellum, 1 posterior anepisternal, 1 katepisternal at posterodorsal corner of sclerite. Setae yellow, the longer slightly brownish.

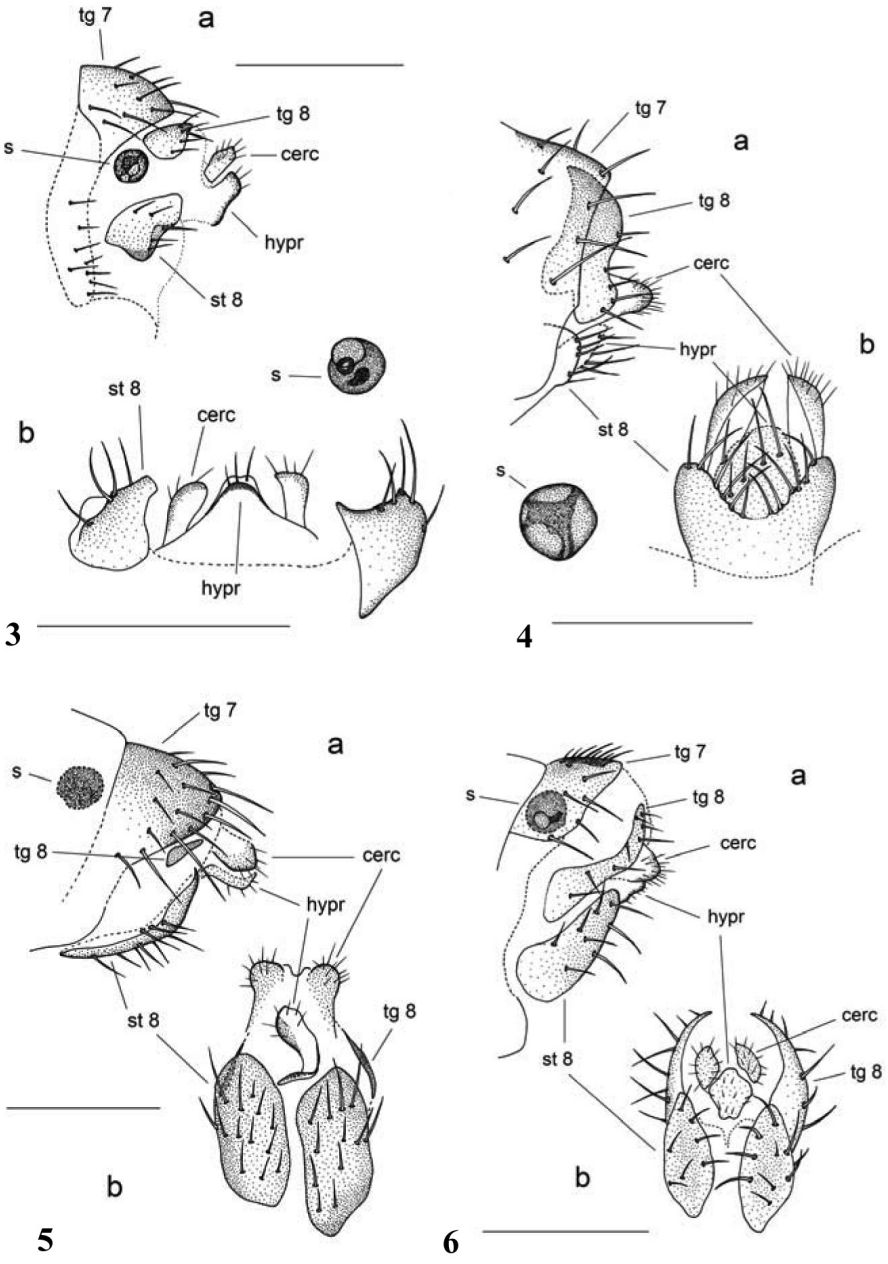
Wing: Hyaline, veins entirely pale yellow; costa unbroken at *hu* crossvein; distance on costa between R_{2+3} and R_{4+5} about 0.8 times that between R_{4+5} and M_{1+2}; distance between crossveins about equal to length of crossvein *DM-Cu*; apical section of vein *Cu* about 2 times length of crossvein *DM-Cu*. Halter: pale yellow, same as pleura.

Legs: Entirely yellow, unmodified, femora relatively slender; scanty fine short setulae scattered on all pairs of legs, mid tibial ventroapical seta absent; claws and pulvilli unmodified.

Abdomen: Yellow; all segments with short setulae, longest about 0.33 times length of *tg*. Postabdomen: *ep* yellow, without distinguishing features, *distiph* narrow tubular, somewhat pointed at apex; *surs* with broad translucent border; *prg* small, more or less oval with 3 minute setulae, *psg* small and narrow.

Female

Similar to male, but generally of darker coloration, *tg* with broad and shiny pale brown transverse fasciae; *tg* 7 with dark brown macula medially. Postabdomen with *tg*



Figs. 3–6. *Gymnochiromyia* female postabdomens. 3. *G. fallax* Ebejer. a. lateral. b. ventral. 4. *G. flavella* (Zetterstedt). a. lateral. b. ventral. 5. *G. fulvipyga* Ebejer. a. lateral. b. ventral. 6. *G. hermonensis* n. sp. a. lateral. b. ventral. Scale bars = 0.15 mm.

8 membranous dorsomedially, with sclerites of about same size as sclerites of *st* 8; each sclerite of *st* 8 with 7–9 short setae; *hypr* rhomboidal and fine setulose.

Variation: None noted.

Etymology

The specific epithet *hermonensis* is derived from the name of the type-locality, Mount Hermon, in Israel.

Type-material Examined

Holotype ♂, ISRAEL: Har Hermon, 1650 m, 33º18′N 35º46′E, 17–18.vii.1995, I. Yarom (TAUI). Paratypes (all ISRAEL): same data as holotype (1♀); Har Hermon, 1600 m, 18.vii.1995, I. Yarom (2♂, 3♀); Panyas, 18.vii.1995, A. Freidberg (1♀) (all TAUI). Other material examined: LEBANON: Horsh Ehden, 20.v.–3.vi.2000, Malaise trap (1♀); Horsh Ehden, 18.vi.–1.vii.2000, Malaise trap (2♀) (all in glycerine; MJE).

Distribution

Israel and Lebanon. A montane species found predominantly in open oak forest and maquis-type vegetation.

Gymnochiromyia homobifida Carles-Tolrá, 2001

(Fig. 8)

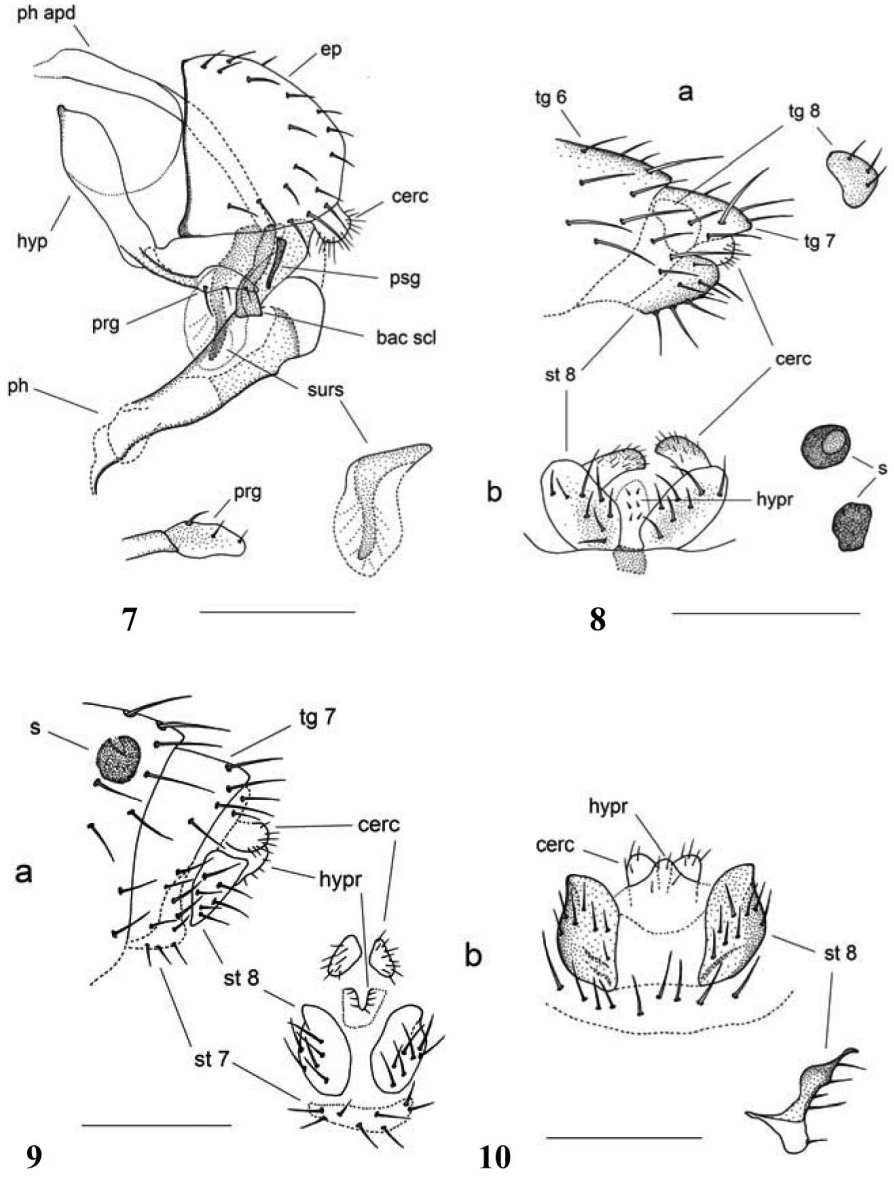
The male postabdomen is illustrated in Carles-Tolrá (2001) p. 62. The female postabdomen is illustrated here (Fig. 8).

Material Examined

CYPRUS: Pissouri, 10 km west, beach, 34º41′14″N, 32º44′42″E, 23.iv.2002, M.J. Ebejer (2♂, 1♀); Akamas, Aghios Georgios, 34º55′11″N, 32º19′39″E, 28.iv.2002, M.J. Ebejer (2♀); Kourion, 34º38′10″N, 32º54′05″E, 30.iv.2002, M.J. Ebejer (2♀); Mazotos, beach, 10 km SW, on *Atriplex* and *Chrysanthemum*, 34º46′32″N, 32º28′12″E, 6.iv.2002, M.J. Ebejer (2♀); Akrotiri Peninsula, Akrotiri salt marsh and dunes, 34º36′04″N, 32º58′18″E, 30.iv.2002, M.J. Ebejer (1♀) (all MJE). FRANCE: Bouche du Rhone, Salin de Giraud, 29.v.1995, B. Merz & M. Eggenberger (3♂, 1♀); East Pyrenees, Perpignan, Etand de Canet et de St. Nazaire, St. Cyprien-Plage, dunes, marsh, Chenopodiaceae, Graminae, *Tamarix*, 0 m, 42º39′14″N, 03º01′59″E, 12.vi.2007, M.J. Ebejer (2♂, 4♀). PORTUGAL: (1♂) Arcozelo, Vila Nova de Gaia, 16.vi.2009, R. Andrade, yellow water trap (1♂) (in alcohol: all MJE). SPAIN: Almeria, Cabo de Gata Natural Park Dune Reserve, 28.iii.1996, I. Yarom (2♂, 1♀; TAUI); Madrid, Rascafriá, Puerto de la Morcuera, 12–20.vii.1999, A. Baz (1♂, 2♀); Ibiza, Parc Natural Ses Salines, Torre de Ses Portes, on *Pistacia*, 1.vi.2006, M.J. Ebejer (1♀) (all MJE).

Distribution

Cyprus, France, Italy (Sardinia), Portugal, and Spain (mainland and Balearics).



Figs. 7–10. *Gymnochiromyia* postabdomens. 7. *G. hermonensis* n. sp., male, lateral, with *surs* lateral and *prg* ventral. 8. *G. homobifida* Carles-Tolrá, female. a. lateral. b. ventral. 9. *G. inermis* (Collin), female specimen from Italy. a. lateral. b. ventral. 10. *G. inermis* (Collin), female specimen from Britain, ventral with sternite lateral. Scale bars = 0.15 mm.

Gymnochiromyia inermis (Collin, 1933)
(Fig. 9)

The male postabdomen is illustrated in Ebejer (1998) page 25. The female postabdomen is illustrated here (Fig. 9).

Material Examined

GERMANY: Bayern, Unterfranken Steigerwald, ca. 300 m, Forstammt Eltmann, District Ebersberg, Baumkronenfauna B5, 5/2, August 1995, A. Floren (1♀, in alcohol; ZSM). ITALY: Abruzzo, Passo del Diavolo, 1200 m, on *Quercus* in flowery meadow, M.J. Ebejer (3♀). PORTUGAL: Arcozelo, Vila Nova de Gaia, 19.v.2009, R. Andrade, (2♀) yellow water trap (in alcohol); Arcozelo, Vila Nova de Gaia, 22.v.2009, R. Andrade, (1♀) yellow water trap (in alcohol). SWITZERLAND: Valais, Leuk, Pfynwald, 600m, 46º18′40″N, 07º37′58″E, dry meadow near pine forest, M.J. Ebejer (1♀) (all MJE).

Distribution

Widespread in Europe, it is the most common species of the genus occurring in Britain. In southern Europe (Italy, including Sicily), it favors high altitude. It exhibits a strong association with broad-leafed woodland, especially that of oak.

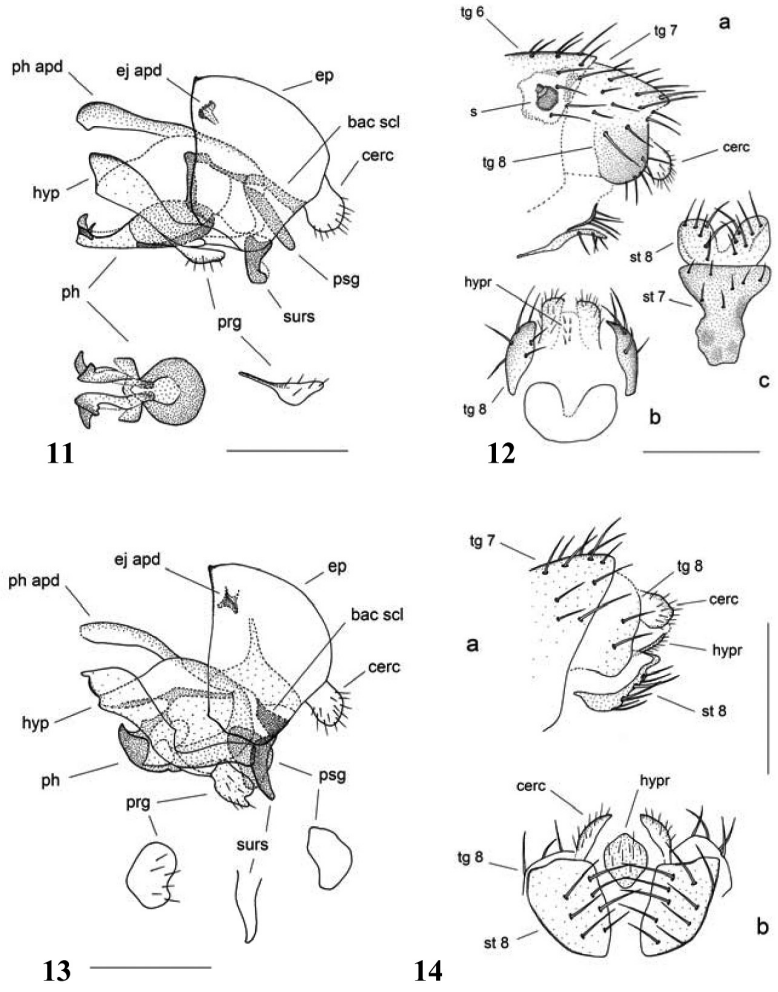
Gymnochiromyia meronensis Ebejer, n. sp.
(Fig. 11)

Description

Measurements: male (overall length)—1.4 mm, wing length—1.5 mm; female (overall length)—1.6 mm, wing length—1.7 mm.

Male

Head: Entirely yellow, except for black *oc* triangle; *fr* broad and margins converge anteriorly; at level of anterior *oc* equal to more than half width of head, at level of antenna equal to 0.6 that at level of anterior *oc*; about 12 fine pale setulae scattered across *fr* and in between *orb*. Gena: slightly narrower anteriorly than posteriorly, at middle equal to about 1.2 height of eye and with scanty pale yellow setulae; strongly receding, thus in profile appears almost triangular; isolated ventral postgenal seta present, as long as middle *orb*. Face poorly sclerotized and depressed; median carina absent. Mouthparts small, all yellow, palpus oval; vibrissal setulae short but distinct from others. Antenna yellow, flagellomere 1 round, pedicel paler than flagellomere 1, with distinct short seta dorsally; flagellomere 1 very finely pubescent; 2 basal segments of arista yellow, apical segment brown and glabrous. Chaetotaxy: 3 long *orb*, anterior inclinate, middle and posterior *orb* reclinate, posterior *orb* about as long as half greatest width of *fr*; *pvt* distinct and crossed; 1 *vte*, 1 *vti*; *oc* proclinate and lateroclinate, less than half width of *fr* at this level; postocular setulae in one row.



Figs. 11–14. *Gymnochiromyia* postabdomens. 11. *G. meronensis* n. sp., male, lateral with *ph* and *prg* ventral. 12. *G. mihalyii* Soós, female. a. lateral. b. ventral. c. sternites ventral. 13. *G. pallida* n. sp. , male, lateral with *prg* ventral, *surs* posterior, and *psg* lateral. 14. *G. pallida* n. sp., female. a. lateral. b. ventral. Scale bars = 0.15 mm.

Thorax: Scutum and scutellum completely pale yellow; *mtn* yellow; pleura yellow without black macula at base of halter. Chaetotaxy: 2 *ppr*, one short, 1 *post-hu*, 2 *ntpl*, 1 *sa*, 1 *pa*, 1 posterior *dc* seta with another half its length anterior to it, others only as setulae, *acrs* setulae in 4-6 irregular rows, *pre-scut* absent or very short; scutellum with 2 pairs of setae, subapicals longer than scutellum, 1 anepisternal at middle of posterior margin with another short seta above it, 1 katepisternal at posterodorsal corner of sclerite. Setae yellow with longer ones a little brownish.

Wing: Relatively long, hyaline, veins pale yellow; costa not broken at *hu* crossvein; distance on costa between R_{2+3} and R_{4+5} about 0.8 times that between R_{4+5} and M_{1+2}; distance between crossveins about equal to length of crossvein *DM-Cu*; apical section of vein *Cu* about 2.2 times length of crossvein *DM-Cu*. Halter: pale yellow, same as pleura.

Legs: Entirely yellow, unmodified, femora relatively slender with anterodorsal and posterodorsal setae as long as diameter of femur; scanty fine short pale setulae scattered on all pairs of legs, mid tibial ventroapical seta absent; claws and pulvilli unmodified.

Abdomen: Yellow; all segments with short pale fine setulae, longest about 0.33 times length of *tg*; *tg* 5 and 6 together as long as *ep*. Postabdomen: *ep* yellow and without distinguishing features, *distiph* broad, symmetrical with two identical small sclerites ventrally at apex, also ventrally at middle with distinct more or less round sclerite, notched apically; *surs* short, at middle curved almost at right angles, tip truncate, *prg* small tringular with few fine setulae, *psg* more or less straight rod-shaped.

Female

Similar to male, but some specimens have longer brown setae on head and thorax; and *tg* 3-6 pale brown medially. Postabdomen with *tg* 8 membranous dorsomedially with sclerites of about same size as sclerites of *st* 8; each sclerite of *st* 8 with 10 long setae more or less in two rows, with medial row overlapping that of opposite sclerite; *hypr* almost round, finely setulose. Females of this species cannot be separated from females of *pallida* on the basis of the postabdomen.

Variation: None noted.

Etymology

The specific epithet *meronensis* is derived from the name of the type-locality, Mount Meron in Israel.

Type-material Examined

Holotype ♂, ISRAEL: Har Meron, on oak, 32º00′N, 35º24′E, 17.v.1995, I. Yarom (TAUI). Paratypes (all ISRAEL): Har Meron, on oak, 17.v.1995, I. Yarom (6♂, 10♀); same data, (1♂, 1♀) except: *in cop*. (all TAUI); same data (1♂, 1♀; MJE); same data (2♂, 2♀; BMNH); same data (2♂, 2♀; NMWC); Har Meron, 900 m, 17.v.1995, A. Freidberg (1♂); Sasa, 21.v.1995, I. Yarom (2♂, 5♀); same data, (3♂, 3♀) except: *in cop*.; Har Meron, 1100 m, 22.v.1994, A. Freidberg & F. Kaplan (2♂); Har Meron, 1200 m, 11.vi.1996, A. Freidberg (2♂, 1♀) (all TAUI). Other material examined: LEBANON: Horsh Ehden, 15.vii.–12.viii.2000, Malaise trap (3♀, in glycerine; MJE).

Distribution

Israel and Lebanon, where it occurs at high altitude in open oak forest.

Gymnochiromyia mihalyii Soós, 1979

(Fig. 12)

The male postabdomen is illustrated in Ebejer (1998) page 26. The female postabdomen is illustrated here (Fig. 12).

Material Examined

CYPRUS: Limassol, hotel beach and garden, 29.iv.2002, B. Merz (3♂, 9♀; MHNG); Akrotiri Peninsula, Akrotiri salt marsh and dunes, 34º36′04″N, 32º58′18″E, 1.v.2002, M.J. Ebejer (1♂, 1♀) (MJE). FRANCE: East Pyrenees, Terrats, La Canterrane, on *Populus, Salix, Tamarix* in dry riverbed, 90 m, 42º36′20″N, 02º46′31″E, 9.vi.2007, M.J. Ebejer (8♂, 8♀; MJE); same data (2♂, 2♀; TAUI); TURKEY: Antalya, Selimye, 2.v.2000, B. Merz & Samay (2♂, 2♀) (MHNG); same data (1♂, 1♀; MJE).

Distribution

Widespread in Europe, including Britain, though apparently not Scandinavia. In the Mediterranean region it is known from Cyprus, France, Greece, Italy (mainland and Sicily), Spain, and Turkey.

Gymnochiromyia pallida Ebejer, n. sp.

(Figs. 13, 14)

Description

Measurements: male (overall length)—1.6 mm, wing length—1.6 mm; female (overall length)—1.7 mm, wing length—2.0 mm.

Male

Head: Entirely yellow except for black *oc* triangle; *fr* narrow, margins converge only slightly anteriorly; at level of anterior *oc* equal to more than half width of head, at level of antenna equal to 0.7 that at level of anterior *oc*; about 12 fine pale setulae scattered across *fr* and in between *orb*. Gena: slightly narrower anteriorly than posteriorly, at middle equal to about 0.8 height of eye and with scanty pale yellow setulae; less receding than in *meronensis*; isolated ventral postgenal seta present, as long as middle *orb*. Face poorly sclerotized and depressed; median carina absent. Mouthparts small, all yellow, palpus oval; vibrissal setulae short but distinct from others. Antenna yellow, flagellomere 1 round, pedicel paler than flagellomere 1, with distinct short seta dorsally; flagellomere 1 very finely pubescent; 2 basal segments of arista yellow, apical segment brown and glabrous. Chaetotaxy: 3 *orb*, anterior inclinate, middle and posterior *orb* reclinate, posterior *orb* as long as half greatest width of *fr*; *pvt* distinct and crossed; 1 *vte*, 1 *vti*; *oc* proclinate and lateroclinate, less than half width of *fr* at this level and only slightly longer than *oc* triangle; postocular setulae in one row.

Thorax: Scutum and scutellum completely pale yellow; *mtn* yellow; pleura completely yellow. Chaetotaxy: 2 *ppr*, one short, 1 *post-hu*, 2 *ntpl*, 1 *sa*, 1 *pa*, 1 posterior *dc* seta with another half its length anterior to it, others only as setulae, *acrs* setulae in 6-8 irregular rows, *pre-scut* very distinct; scutellum with 2 pairs of setae, subapicals longer than scutellum, 1 anepisternal at middle of posterior margin with another short seta above it, 1 katepisternal at posterodorsal corner of sclerite. Setae yellow with longer ones a little brownish.

Wing: Relatively long, hyaline, veins pale yellow; costa not broken at *hu* crossvein;

distance on costa between R_{2+3} and R_{4+5} about 0.8 times that between R_{4+5} and M_{1+2}; distance between crossveins about equal to length of crossvein *DM-Cu*; apical section of vein *Cu* about 2.2 times length of crossvein *DM-Cu*. Halter: pale yellow, same as pleura.

Legs: Entirely yellow, not modified, femora relatively slender with anterodorsal and posterodorsal setae as long as diameter of femur; scanty fine short pale setulae scattered on all pairs of legs, mid tibial ventroapical seta absent; claws and pulvilli unmodified.

Abdomen: Yellow; all segments with short pale fine setulae, most of which about 0.33 times length of *tg*; *ep* about 0.8 times length of *tg* 5 and 6 together. Postabdomen: *ep* yellow and without distinguishing features, *distiph* broad, asymmetrical at apex; *surs* narrowing towards apex and only slightly curved; *prg* and *psg* in the shape of large well sclerotized discs.

Female

Similar to male, but some specimens have longer brown setae on head and thorax and *tg* 3–6 pale brown medially. Postabdomen with *tg* 8 membranous dorsomedially, with sclerites of about equal size as sclerites of *st* 8; each sclerite of *st* 8 with 10 long setae more or less in two rows, with medial row overlapping that of opposite sclerite; *hypr* almost round, fine setulose. Females of this species cannot be separated from females of *meronensis* on the basis of the postabdomen.

Variation: None noted.

Etymology

The specific epithet *pallida* is derived from the Latin adjective "*pallidus*", meaning pale, and refers to the entirely pale yellow body color.

Type-material Examined

Holotype ♂, ISRAEL: Har Meron, 32º00′N, 35º25′′E, 1100 m, 22.v.1994, A. Freidberg & F. Kaplan (TAUI). Paratypes (all ISRAEL): Har Hermon, 1650 m, 17–18.vii.1995, I. Yarom (1♂); Har Hermon, 1600 m, 18.vii.1995, A. Freidberg (1♂); Sasa, 21.v.1995, I. Yarom (1♂, 1♀) *in cop*. (1 additional ♀) (all TAUI); Har Meron, 900 m, 17.v.1995, A. Freidberg (1♂, 1♀; NMWC); same data (3♀; TAUI); Har Meron, 17.v. 1995, on oak, I. Yarom (6♀; TAUI); same data (2♀; NMWC); Nahal Oren, 200 m, 11.v.1995, A. Freidberg (1♂); Nahal Oren, 30.v.1995, A. Freidberg (1♂, 1♀) (all TAUI); Har Ramon, 1000 m, 17.iii.1995, B. Merz (1♀); Mizpe Ramon Observatory, 17.iii.1995, B. Merz (1♀) (all MHNG).

Distribution

Only known from Israel where it mostly occurs at high altitude in open oak forest.

Gymnochiromyia persimilis Ebejer, n. sp.

(Figs. 15, 16)

Description

Measurements: male (overall length)—1.6 mm, wing length—1.7 mm; female (overall length)—1.7 mm, wing length—1.9 mm.

Male

Head: Entirely yellow including oc triangle; *fr* broad, at level of anterior *oc* about 0.7 width of head, at level of antenna equal to 0.5 that at level of anterior *oc*, projecting slightly beyond anterior eye margin; about 6 fine pale setulae scattered across *fr* and 1–2 in between *orb*. Gena: narrower anteriorly than posteriorly, at middle about equal to height of eye and with scanty pale yellow setulae; receding as in *meronensis*; isolated ventral postgenal seta present, but not quite as long as anterior *orb*. Face poorly sclerotized and depressed; median carina absent. Mouthparts small, yellow, palpus oval; vibrissal setulae short but distinct from others. Antenna yellow, flagellomere 1 round, pedicel paler than flagellomere 1, with distinct short seta dorsally; flagellomere 1 very finely pubescent; 2 basal segments of arista yellow, apical segment brown and glabrous. Chaetotaxy: 3 *orb*, anterior inclinate, middle and posterior *orb* reclinate, posterior *orb* longer than half greatest width of *fr*; *pvt* distinct and crossed; 1 *vte*, 1 *vti*; *oc* proclinate and lateroclinate, as long as half width of *fr* at this level and longer than *oc* triangle; postocular setulae in one irregular row.

Thorax: Scutum and scutellum completely pale yellow; *mtn* yellow; pleura completely yellow, paler than scutum. Chaetotaxy: 2 *ppr*, one short, 1 *post-hu*, 2 *ntpl*, 1 *sa*, 1 *pa*, 1+3 *dc*, *pre-scut* very long, *acrs* setulae in 4-6 irregular rows, *pre-scut* short, indistinct; scutellum with 2 pairs of setae, subapicals about 1.8 times length of scutellum, 1 anepisternal at middle of posterior margin with few setulae anterior to it, 1 katepisternal at posterodorsal corner of sclerite. Setae yellow with longer ones a little brownish.

Wing: Hyaline, veins pale yellow; costa not broken at *hu* crossvein; distance on costa between R_{2+3} and R_{4+5} about 0.8 that between R_{4+5} and M_{1+2}; distance between crossveins about 1.8 times length of crossvein *DM-Cu*; apical section of vein *Cu* about 1.2 times distance between crossveins. Halter: pale yellow, same as pleura.

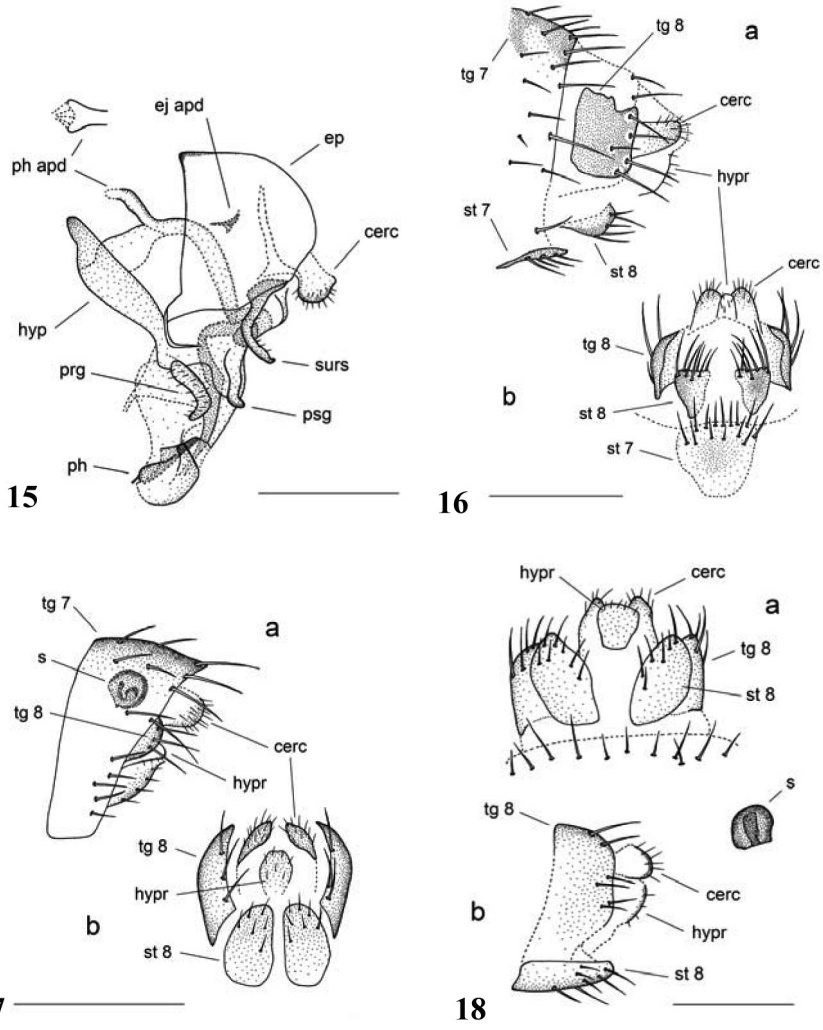
Legs: Yellow, not modified, 5th tarsomere of fore leg, black in male, 5th tarsomere of middle and posterior legs brown, femora relatively slender with anterodorsal and posterodorsal setae as long as diameter of femur; scanty fine short pale setulae scattered on all legs, mid tibial ventral apical seta absent; claws and pulvilli unmodified.

Abdomen: Yellow; all segments with pale setulae, many of which about as long as *tg*. Postabdomen: Hypopygium with relatively large, more or less globular, yellow *ep* and narrow elongated *surs* with minute setulae along posterior border, *prg* narrow with apex curved ventrally and with numerous minute setulae on ventral surface, *psg* narrow and apically somewhat pointed, *distiph* complex with membranous and sclerotized parts and apex semi-globular, *ej apd* small but distinctly sclerotized, basal tip of *ph apd* broadened in dorsal view.

Female

Similar to male. Postabdomen with *tg* 8 membranous dorsomedially, with its almost quadrate sclerites larger than triangular sclerites of *st* 8; each sclerite of *st* 8 with about 7 setae more or less positioned on posterior margin and directed posteriorly; *st* 7 weakly sclerotized and setulose along posterior margin; *hypr* small, elongate and with only a few minute setulae.

Variation: None noted.



Figs. 15–18. *Gymnochiromyia* postabdomens. 15. *G. persimilis* n. sp., male, lateral. 16. *G. persimilis* n. sp., female. a. lateral. b. ventral. 17. *G. seminitens* Hendel, female. a. lateral. b. ventral. 18. *G. zernyi* (Czerny), female. a. ventral. b. lateral. Scale bars = 0.15 mm.

Etymology

The specific epithet *persimilis* is derived from a combination of the Latin adverb "*per*", meaning very and adjective "*similis*", meaning similar, and refers to the striking external similarity of this species to *G. homobifida* from the western Mediterranean.

Type-material Examined

Holotype ♂, ISRAEL: Nizzanim, 31°43′11″N 34°36′23″E, 18.iv.2005, Malaise,

C. Grach (TAUI). Paratypes (all ISRAEL): same data as holotype (3♂, 13♀; TAUI); Panyas, 29.v.2000, B. Merz (4♂; MHNG); Nahal Senir, near HaGoshrim [Hazbani, near Hagoshrim], 16.v.1995, I. Yarom (3♂, 2♀); ?Qazrin [Qazin], 16.v.1995, I. Yarom (9♂, 25♀); Sasa, 21.v.1995, I. Yarom (2♂); Har Meron, 17.v.1995, on oak, I. Yarom (1♂, 4♀); Nahal Oren, 24.v.1995, A. Freidberg (2♀), 30.v.1995, A. Freidberg (2♂, 1♀); Park Caesarea, 27.iv.1999, N. Meltzer & V. Kravchenko (3♀), 15.v.2000, On *Tamarix nilotica*, N. Meltzer & V. Kravchenko (1♂, 1♀); Qesarya, 27.v.1998, on *Tamarix nilotica*, N. Meltzer & V. Kravchenko (1♀) (all TAUI); Ramat Aviv, 27.v.2000, B. Merz (5♀; MHNG); Tel Aviv, 23.iv.1994, F. Kaplan (3♂, 3♀); Holon, 7.iii.1995, on Tamarisk, A. Freidberg (3♀); Holon, 23.iii.1995, on Tamarisk, I. Yarom (16♂, 22♀) (all TAUI); same data as last locality (2♂; MHNG); same data (3♂, 3♀; NMWC); same data (3♂, 3♀; BMNH); same data (3♂, 3♀; MJE) Holon, 23.iii.1995, A. Freidberg (9♂, 7♀); Nizzanim, 23.iii.1995, on Tamarisk, I. Yarom (5♂, 8♀); Nizzanim, 23.iii.1995, A. Freidberg (3♂, 5♀); same data, on *Tamarix* sp., I. Yarom (1♂); Yerushalayim [Jerusalem], 2.vi.1995, I. Yarom (1♂, 4♀) (all TAUI).

Distribution

Known only from Israel, where it occurs in a range of habitats: at low altitude in suburban areas, at relatively high altitude, and on inland and coastal dunes.

Gymnochiromyia seminitens Hendel, 1933

(Fig. 17)

The male postabdomen is illustrated in Ebejer (1998), p. 27. The female postabdomen illustrated here (Fig. 17) is based on one of the specimens that I examined with the male in 1998, which are listed in the same article.

Material Examined

SPAIN: Puerto d. l. Ragua Nord, 1500 m, 23–25.vi.1988, W. Schacht (1♂, in alcohol; ZSM).

Distribution

One of the rarest species, recorded from southern Spain and Tunisia.

Gymnochiromyia zernyi (Czerny, 1929)

(Fig. 18)

The male postabdomen is illustrated in Ebejer (1998), page 28. The female postabdomen is illustrated here (Fig. 18).

Material Examined

SPAIN: Caceres, N Rio Almonte, Arroyo de la Vid, b. Strasse E4, 12–13.vi.1984, W. Schacht (11♂, 75♀); Jaen Cambil, SE Jaen, 23.vi.1988, W. Schacht (1♀); Puerto d. l. Ragua Nord, 1500 m, 23–25.vi.1988, W. Schacht (3♀); Granada, Sierra Nevada S N Capilaiera, 2500 m, 26.vi.1988, W. Schacht (2♂, 21♀) (all in alcohol: ZSM); same data (2♂, 2♀, in alcohol; MJE).

Distribution

Spain and Tunisia.

ACKNOWLEDGMENTS

I am grateful to Amnon Freidberg (Tel Aviv, Israel) and Ilan Yarom ('Iddan, Israel) for the loan of much high quality material of Chyromyidae that they and colleagues collected. Thanks are also due to Antonius van Harten (UAE), Bernhard Merz (Geneva), Paul Gatt (Malta), Rui Andrade (Portugal), and Marion Kotrba (Munich), who generously donated specimens. I thank Adrian Plant (NMWC) for reading the paper and commenting upon it.

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