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The Psilidae (Diptera) of Israel, with emphasis on the *Chamaepsila hebraica* group

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ABSTRACT

The Psilidae (Diptera) fauna of Israel is reviewed and found to include 11 species: *Chyliza extenuata* (Rossi); *Loxocera aristata* (Panzer); and nine species of *Chamaepsila*, three of which (*Ch. basalis*, *Ch. friedmani,* and *Ch. homochroa*) are described as new. *Chamaepsila hebraica* Hennig is redescribed and its taxonomic and nomenclatural status are clarified, including a designation of a neotype. This species and the three newly described species comprise a monophyletic group (the *hebraica* group) endemic to Israel and its immediate environs. The little known and rarely collected *Chyliza gracilis* Loew is transferred to *Chamaepsila* (new combination) in which it is a homonym of *Chamaepsila gracilis* (Meigen). It is therefore renamed as *Chamaepsila setalba*, nomen novum, and redescribed. A key to all the Israeli taxa and a discussion of their temporal and geographic distribution in Israel are provided.

KEY WORDS: Psilidae, Israel, faunistics, taxonomy, *Chyliza, Loxocera, Chamaepsila, Chamaepsila hebraica* group, new species

INTRODUCTION

The family Psilidae includes small to medium-sized acalyptrate flies (length up to 13 mm), frequently with elongate body and characteristic wing venation (vein *C* with a break at level of distal end of vein *Sc*, which is incomplete; vein Cu_2, bordering distally cell *bcu*, is straight). The chaetotaxy is characterized by 0–1 notopleurals; acrostichals usually not differentiated (but some species with a prescutellar pair); and pleura without differentiated setae, only with setulae. Three subfamilies are recognized (Shatalkin, 2002): the plesiomorphic Belobackenbardiinae (3 species of *Belobackenbardia* Shatalkin from South Africa) and the more derived Chylizinae (with a single genus *Chyliza* Fallén and 116 species, mainly in the Oriental and Afrotropical Regions) and Psilinae (with from four to six genera and about 210 species, mainly in the Holarctic Region). The Belobackenbardiinae are characterized by the presence of a genal brush

of very long white setulae located distantly from the eye margin (*Chyliza* possesses a similar brush of shorter white setulae located close to the eye margin), cell bcu parallel-sided, about eight times as long as wide (cell *bcu* shorter in the rest of the Psilidae), and phallus dorsally-curved (phallus ventrally-curved in the rest of the Psilidae). The Chylizinae are characterized by a rounded head, the postcoxal bridge present, the anatergite enlarged, the surstyli present (except in the Far-Eastern *Chyliza ocellaris* Shatalkin, 1989), and the parameres reduced. The Psilinae are characterized by a triangular head and receding face in lateral view, the surstyli absent, and the parameres well developed. The larvae of Psilidae are phytophagous, borrowing in stems, rootstocks, tubers or under the bark of thin twigs. The carrot fly, *Chamaepsila rosae* (Fabricius, 1794) (= *Ch. hennigi* Thompson and Pont, 1994, but see Chandler, 1998, and ICZN, 1999, the latter conserving the specific name *rosae*), is occasionally a severe pest of carrots. In Japan it is replaced by another pest, *Synaphopsila nartshukae* Shatalkin. 1986 (= *Phytopsila carota* Iwasa, Hanada and Kajino, 1987). There are currently 130 species in 4–6 genera recorded from the Palaearctic Region.

Several important taxonomic studies on the West-Palaearctic fauna and keys for the taxa have been published subsequent to the most recent Palaearctic Catalog (Soós, 1984), including the following: Wang (1988, key to *Chamaepsila*); Goot (1996, keys to Psilidae of Northwest Europe); and Iwasa (1998, key to genera). Shatalkin (1986) reviewed the Palaearctic species of *Psila* s.l., but this work is out of date. Five additional studies with descriptions of seven European species (Soós, 1985; Shatalkin, 1989, 1996; Carles-Tolra, 1993a, 1993b) were also published subsequent to the Palaearctic catalog. In addition, Shatalkin (1998a) compiled a key to the Asian species of *Chyliza* that also includes all West-Palaearctic species. Finally, it is noteworthy that since publication of Hennig's revision (1941), no new European species of *Chyliza* or *Loxocera* has been discovered.

Thus far, specific research on the psilid fauna of Israel has not been published. In his *Prodromus Faunae Palestinae*, Bodenheimer (1937) listed *Psila atra* Meigen, *Psila gracilis* Meigen, and *Psila villosula* Meigen (all now in *Chamaepsila*) from the study area. However, these species do not occur in Israel, and as he gave no indication of source for his information, we must consider all three records to have been based on misidentifications. Avidov (1961) discussed the damage caused by *Psila rosae* (now in *Chamaepsila*) to Israeli agriculture. However, this record too is a misidentification, and the exact identity of the reported pest remains unknown. The only species described so far from Israel is *Chamaepsila hebraica* Hennig, 1941, which is still known with certainty from Israel only.

Freidberg (1988) briefly characterized the Israeli fauna, mentioning the three known genera (*Chyliza* Fallén, *Loxocera* Meigen, and *Psila* Meigen) together with the number of species for each genus. He also noted that the Israeli species are restricted to the northern half of the country, apparently forming an extension of a larger, more northern fauna. This observation is basically corroborated by the present study (southernmost distribution coordinate: 30°52′ N, at Sede Boqer). Another apparent phenomenon is the distinct seasonal preference of adults of the Israeli species. This is demonstrated by an analysis

that was conducted by writing down the month of each of the records listed below (a total of 300) regardless of all other data (such as locality, other species collected on the same day and number of specimens) and assuming a more or less random collection. The distribution by month (I = January, etc.) is as follows:

I – 28; II – 44; III – 65; IV – 21; V – 4; VI – 1; VII – 0; VIII – 0; IX – 2; X – 6; **XI – 46; XII – 83**. Total: 300.

The 266 collecting records between and including November and March (in bold type) constitute about 89% of all records, and only three records fall within the summer months of June–September, with none in July and August. The name "winter flies" would therefore seem to be very appropriate for this family in Israel and would indicate the unusual seasonal activity of adults that, even in view of the relatively mild winters of Israel, should be considered exceptional. Moreover, we may suggest a correlation between zoogeography and seasonality for this fauna. That is, the Israeli fauna is composed of a typical northern temperate element that is adapted to a relatively cool climate. Such a correlation may also occur in other Diptera families in Israel with similar local zoogeographical characteristics, such as Heleomyzidae, Lauxaniidae, and Sciomyzidae (Freidberg, 1988), although in the latter families seasonality does not form such a distinct feature as in the Psilidae.

A total of about 1320 specimens of Israeli Psilidae were studied, representing collecting efforts of eight decades, although collecting was more focused in the last four decades. Most specimens, including all the holotypes, are deposited in the entomological collection of the Department of Zoology, Tel Aviv University (TAUI). Depositories are mentioned throughout the text only for those specimens not deposited in TAUI and for the holotypes. The following institutes (listed by their acronyms) and curators either contributed to this study or will receive paratypes:

BMNH – The Natural History Museum, London, UK (Dr. J. Chainey)
DEI – Deutsches Entomologisches Institut, Eberswalde, Germany (Dr. J. Ziegler)
SMNS – Staatliches Museum für Naturkunde, Stuttgart, Germany (Dr. H.-P. Tschorsnig)
TAUI – Tel Aviv University, Department of Zoology, Tel Aviv, Israel
USNM – National Museum of Natural History, Washington, D.C., USA (Dr. A.L. Norrbom)
ZMAS – Zoological Museum, Academy of Science, St. Petersburg, Russia (Dr. V. Zaitzev)
ZMUM – Zoological Museum, University of Moscow, Russia

Terminology follows McAlpine (1981) with modifications proposed by White et al. (1999). The localities in the Material Examined sections are arranged from north to south and from west to east. Transliterated names of localities are according to the "Israel Touring Map" (1:250,000) and "List of Settlements", published by the Survey of Israel, Ministry of Labor. Where names of localities have changed since the labels were prepared, the most recent Hebrew names are cited with the old names (Arabic or Latin)

given in brackets, as in the following example: 'En Hemed [Aquabella]'. Collector names are recorded in the Material Examined sections only if other than A. Freidberg. The following abbreviations of setae are used in the text: *acr* = acrostichal; *dc* = dorsocentral; *l vt* = lateral vertical; *m vt* = medial vertical; *npl* = notopleural; *orb* = orbital; *pal* = postalar; *poc* = postocellar; *psut spal* = postsutural supra-alar; *sc* = scutellar; *vt* = vertical.

KEY TO THE GENERA OF PSILIDAE IN ISRAEL

1. Postcoxal bridge present; anatergite enlarged, callus-like; 3 pairs of scutellar setae; head not triangular in profile (Hennig, 1941, Plate I, Fig. 9) (Subfamily Chylizinae) ..... ***Chyliza* Fallén**
-. Postcoxal bridge lacking; anatergite not enlarged; 1–2 pairs of scutellar setae; head usually triangular in profile (Figs. 1–3**,** Subfamily Psilinae) **2**
2. Hind femur preapically with ventral pad of very dense short setulae; 1st flagellomere elongate and parallel-sided, longer than face, 6-12 times as long as high; female with elongate, well-sclerotized ovipositor..... ***Loxocera* Meigen**
-. Hind femur without such pad; 1st flagellomere usually short and not parallel-sided, shorter than face, less than 5 times as long as high ..... ***Chamaepsila* Hendel**

CHYLIZA FALLÉN, 1820

Chyliza is characterized by a large number of distinct features, including enlarged (callus-like) anatergite, concave occiput, face nearly perpendicular, not receding, head not triangular in profile, as a rule 3 pairs of scutellar setae, postcoxal bridge well developed, cell *bcu* shorter than cell *bm*, surstyli present and parameres absent (except in the *Chyliza cylindrica* (Walker, 1852) group). This genus contains 116 species, distributed in all zoogeographic regions, but mainly in the Oriental and Afrotropical regions. Only one species is found in Israel.

Chyliza extenuata (Rossi, 1790)

Material examined

ISRAEL: Ma'ayan Barukh, 17.iii.1973, D. Furth (1♀); Ginosar, 28.ii.1977 (1♀); Park HaYarden, 4.iv.1983, I. Yarom (1♀); Nesher, 2.iv.1975, F. Kaplan (1♀); Tel Aviv, Tel Barukh, 5.ii.1996 (1♂, 1♀); Yarhiv, 24.iii.1983, I. Yarom and A. Freidberg (18♂, 12♀); Jericho, 8.iii.1976 (1♂); Segula, 9.iii.1973, D. Furth (1♂); Sederot, 27.ii.1974 (1♂); Moshava(?), 21.ii.1973, D. Furth (1♀) [The latter is not a locality name, and Furth (pers. comm.) could not retrace the exact locality but provided a range of possible localities visited by him on that day, from the Hula Valley to Yavne'el (near Lake Kinneret)].

Distribution

Central and southern Europe, Middle East, Middle Asia (Turkmenistan).

Comments

This species can be easily distinguished from all other congeners by the arista having dense black rays. The larvae live in the swollen underground parts of *Orobanche* L. (Orobanchaceae) (Chandler, 1975).

LOXOCERA MEIGEN, 1803

Loxocera is distinguished from the other genera of Psilidae by the elongate 1st flagellomere and the densely pilose ventroapical pad of the hind femur. At least 35 species are known worldwide, 12 of which are Palaearctic. The subgenus *Asiopsila* Shatalkin 1998b (including18 species) was proposed for small species (body length 3.5–5.0 mm). The Oriental species of *Loxocera* were transferred to *Psila sensu lato* (Buck and Marshall, 2006). The single species known in Israel is widespread in Europe and the former Soviet Union. It is easily distinguished from the other Palaearctic species by the characters given under the comments for *L. aristata* below.

Loxocera aristata (Panzer, 1801)

Material examined

Panyas [spelled "Banias" or "Baniass"], 24.iv.1982, F. Kaplan and A. Freidberg (7♂, 1♀), 19.v.1983, F. Kaplan and A. Freidberg (4♂, 2♀), 13.vi.1982 (1♂, 3♀); Nahal Senir [Hazbani], 24.iv.1982, I. Yarom (1♂).

Distribution

West Palaearctic, as far east as Ural and Caucasus.

Comments

This species differs externally from all other Palaearctic species of the genus by the entirely black face and the whitish-yellow, or brownish-yellow, triangular spot below the eye. It is also characterized by the specific structure of the terminalia. *L. aristata* is west-Palaearctic in distribution. The most closely related species is *L. glandicula* Iwasa, 1993 from Nepal and Kashmir (Shatalkin, 1998b). The above records are from the extreme north of Israel.

CHAMAEPSILA HENDEL, 1917

Chamaepsila is sometimes considered as a subgenus of *Psila* (e.g., Shatalkin, 1986; Iwasa, 1998). All Israeli species of *Psila sensu lato* belong to *Chamaepsila* (*poc* present, and anepimeron without setulae), and representatives of *Psila sensu stricto* (with *poc* absent, and anepimeron with fine setulae) have not been found in Israel. *Chamaepsila* includes some monophyletic subgroups with very different character sets and might be a paraphyletic group. The phylogenetic and taxonomic relationships between *Chamaepsila* and other closely related genera remain to be studied. *Chamaepsila* is distributed in

most zoogeographical regions except the Neotropical Region.

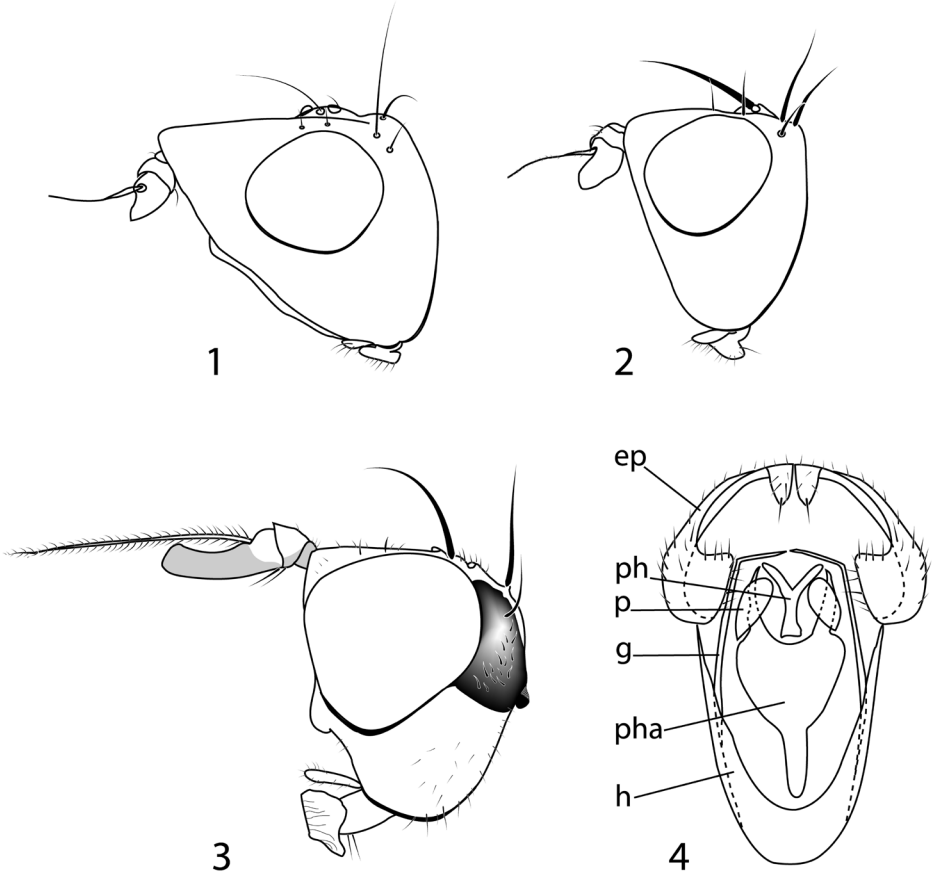
Characters of the female terminalia do not seem to vary significantly between the species and therefore are not included in the following descriptions.

KEY TO THE SPECIES OF *CHAMAEPSILA* IN ISRAEL

1. Thorax partly or entirely yellow **2**
-. Thorax practically entirely black (sometimes brownish-black or with proepisternum or other small sclerites yellowish) **4**
2. Arista white with dense and rather long white rays; feathering about 0.75 times as wide as 1st flagellomere; head with pair of occipital black spots (Fig. 3); thorax with brown lateral stripe extending from postpronotum to meron; vertical setae 2 ..... ***Ch. setalba* Freidberg and Shatalkin, nomen novum**
-. Arista brownish, with microscopic rays, feathering at most 0.25 times as wide as 1st flagellomere. Head and thorax yellow; vertical setae 3 ..... **3**
3. Dorsocentral setae 1 ..... ***Ch. pseudobicolor* Soós**
-. Dorsocentral setae 2 ..... ***Ch*. sp. aff. *pallida* (Fallén)**
4. Prescutellar acrostichal setae present; dorsocentral setae 3–6, but usually more than 3 ..... **5**
-. Prescutellar acrostichal setae lacking; dorsocentral setae 2–3 ..... **6**
5. Phallus (Fig. 15) strongly sclerotized and serrated, pointed; epandrium 1.8–2.0 times as high as long in lateral view (Fig. 10); generally darker species, with head and legs usually dark brown to black; frontofacial angle usually less prominent, and parafacial usually narrower (compare with Fig. 2) ..... ***Ch. friedmani* Freidberg and Shatalkin sp. n.**
-. Phallus (Fig. 16) not strongly sclerotized and not serrated, blunt; epandrium 2.5–3.0 times as high as long in lateral view (Fig. 11); generally paler species, with head and legs often yellow; frontofacial angle often prominent, parafacial sometimes half as wide as eye length (Fig. 1) ..... ***Ch. hebraica* Hennig**
6. Vertical setae 2 ..... **7**
-. Vertical setae 3 ..... **8**
7. Dorsocentral setae 2. Head predominantly yellow ..... ***Ch. sardoa* (Rondani)**
-. Dorsocentral setae 3. Head dark brown ..... ***Ch. homochroa* Freidberg and Shatalkin, sp. n.**
8. Dorsocentral setae 2. 1st flagellomere more or less black, scape and pedicel yellow. Legs entirely yellow ..... ***Ch. nigricornis* (Meigen)**
-. Dorsocentral setae 3. Antenna, including scape and pedicel, black or brown. Legs partly brownish ..... ***Ch. basalis* Freidberg and Shatalkin, sp. n.**

THE *CHAMAEPSILA HEBRAICA* GROUP

The group comprising *Ch. hebraica* and the three new species described here (*Ch. basalis, Ch. friedmani*, and *Ch. homochroa*) is thought to be a monophyletic group and is characterized by the combination of black or brown scape and pedicel, at least 3 pairs of dorsocentral setae, and the structure of the male terminalia (Figs. 5–8): the epandrium basally has ventral prolonged and acute corners; the parameres are triangular, in the form of two open mussel shells, between which is the phallus; the phallapodeme is very short, Y-shaped. Adults of these four species are active in the early winter (November–January), with about 75% of the collections made in December. This is in contrast to the



Figs. 1–3. Heads. 1. *Chamaepsila hebraica,* Herzliyya. 2. *Ch. hebraica*, Latrun. 3. *Ch. setalba*. Fig. 4. *Chamaepsila setalba*, male terminalia, posteroventral view. Abbreviations: ep — epandrium; g — gonopod; h — hypandrium; p — paramere; ph — phallus; pha — phallapodeme.

other species with multiple collection records in Israel (*Ch. nigricornis* and *Ch. sardoa*), which have a notable broader seasonal activity, skewed more toward spring (February–April).

The four included species are only known from Israel but are expected to eventually be discovered in the neighboring countries. Some of the species are highly variable and extremely similar to each other (e.g., *Ch. hebraica* and *Ch. friedmani*) both externally and in their terminalia, rendering their determination a challenge, especially in females. The male terminalia were studied relatively in detail in this group, yielding the following general conclusions: 1. The shape of the epandrium, both in lateral and posterior views, is quite variable intraspecifically (perhaps more so than in most Diptera we have seen), although it may still be used to characterize species. 2. The structure of the phal-

lus is both unique to species and little variable intraspecifically, providing the best tool to distinguish otherwise very similar species, such as *Ch. hebraica* and *Ch. friedmani*. This was especially useful in those preserved specimens in which the phallus was protruding, and as a consequence a dissection was not required. The female terminalia do not seem to be so informative (sclerotized spermathecae are not present), but a more detailed study may also discover useful characters in females. The relationships of this group with other species of *Chamaepsila* are not clear, but the most similar and probably phylogenetically closest group is the *Ch. kaszabi* Soós, 1974 group.

The species of this group are treated in an alphabetical order, as are all other species of the genus that follow.

Chamaepsila basalis Freidberg and Shatalkin, sp. n.

(Figs. 5, 9, 14)

Diagnosis

Within the *hebraica* group, this species is characterized by the following combination of characters: Vertical setae 3; prescutellar acrostichal seta lacking; dorsocentral setae 3; and the shape of the male terminalia. Externally this species is similar to the European *Ch. villosula* (Meigen, 1826), that is also characterized by three pairs of dorsocentral setae. However, *Ch. basalis* differs from *Ch. villosula* by having the scape and pedicel dark brown to black, whereas these parts are yellow (and the 1st flagellomere black, yellowish ventrobasally) in *Ch. villosula*.

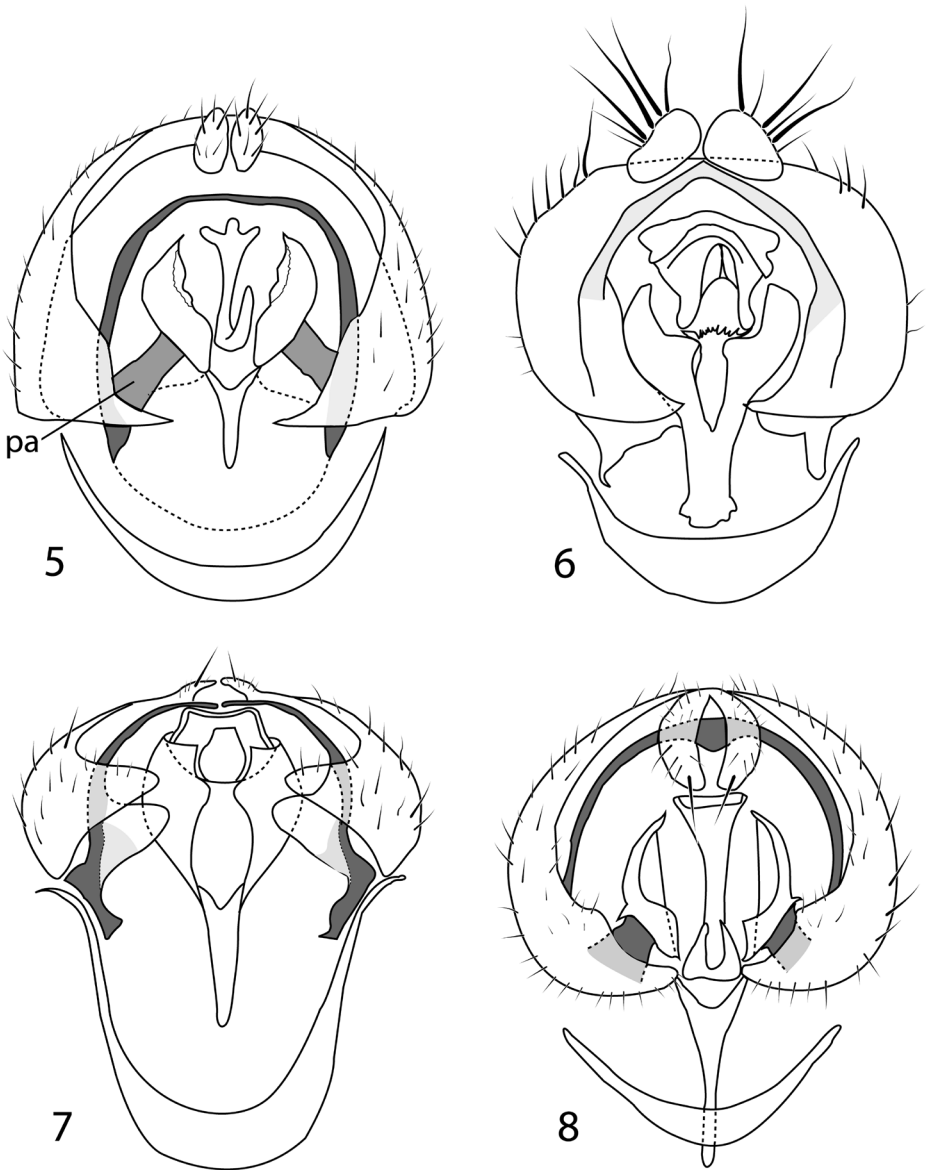
Description

Male. Head mostly yellow, ocellar triangle black, frontal triangle dark brown posteriorly, brown anteriorly, occiput between *l vt* dark brown; antenna mostly black, scape and pedicel dark brown to black, arista dark brown, with very short rays; palpus black. First flagellomere short**,** about 1.5 times as long as high; frons slightly protuberant, its length in profile from base of antenna to anterior margin of eye about 0.25–0.33 times as long as eye; width of frons between eyes about equal to length from anterior margin to posterior ocellus; gena about 0.6–1.1 times as high as eye; parafacial very wide; face slightly concave dorsally; eye round. Thorax black. Legs yellow; foreleg slightly brownish, especially distally; mid coxa, mid tibia, hind coxa, and all tarsi brownish. Wing hyaline. Section of vein *M* between crossveins *R-M* and *DM-Cu* about 2.15–3.00 times as long as preceding section. Halter yellowish white. Abdomen black. Male terminalia (Fig. 5): epandrium basally (at articulation with hypandrium) with ventral elongate and acute corners; parameral arms well distinguished; epandrium in lateral view (Fig. 9) triangular; phallus (Figs. 5, 14) narrow, not forked, with tridentate base.

Chaetotaxy: 3 *vt*, 1 *poc*, 2 *orb*; 1 *npl*, 1 *psut spal* (*sa)*, 1 *pal*, 3 *dc*, 1 *sc*; anepimeron bare.

Body length 3-4 mm; wing length 3.2–4.0 mm.

Female. Similar to male.



Figs. 5–8. *Chamaepsila hebraica* group, male terminalia, posteroventral view. 5. *Ch. basalis*. Abbreviation: pa — parameral arm (sclerite between paramere and gonopod). 6. *Ch. friedmani*. 7. *Ch. hebraica*. 8. *Ch. homochroa*.

Material examined

Holotype ♂, ISRAEL: Herzliyya, 3.xii.1981, A. Freidberg, Malaise trap. Paratypes: ISRAEL: Har Hermon, 1650 m, 26.xi.1978 (1♀); Montfort, 10.xii.1972 (1♀); Elqosh, 3 km NE, 27.xi.1997 (1♂, 1♀); Har Meron, 10.xi.1976, M. Kaplan and A. Freidberg (1♂, 2♀); Har Meron, 1100m, 32°59.8′N 35°25′E, 22.xi.2006 (1♂); Bar'am, 18–20.xi.1977 (1♀), 27.xi.1997 (2♂); Karmel, 11.xii.1976 (1♂). Herzliyya, Malaise trap, 27.ix.1981 (3♂); 23.xi.1981 (1♂); 24.xi.1981 (1♀); 4.xii.1981 (3♂); 7.xii.1981 (2♂); 8.xii.1981 (1♂, 1♀); 9.xii.1981 (1♂, 1♀); 10.xii.1981 (2♂, 1♀); 12.xii.1981 (1♂); 14.xii.1981 (2♂); Herzliyya, 27.xi.2005 (1♀), 4.xii.2005 (1♀). The holotype is double mounted on a minuten pin in a polyporus block, is in excellent condition, and is deposited in TAUI together with most paratypes.

Distribution

Israel.

Etymology

This species is named after the peculiar epandrium, which has acute corners basally rather than apically as in most species.

***Chamaepsila friedmani* Freidberg and Shatalkin, sp.n.**

(Figs. 6, 10a,b, 15)

Diagnosis

Within the *hebraica* group, this species is characterized by the following combination of characters: Vertical setae usually 2, sometimes 3; prescutellar acrostichal seta present; dorsocentral setae 3–6; and the shape of the male terminalia. It differs from *P. hebraica* primarily by the male terminalia (e.g., phallus strongly sclerotized and serrated, pointed; in *P. hebraica* the phallus is weakly sclerotized, non-serrated, and truncate), and also by the generally less protuberant frons and generally darker coloration.

Description

Male. Head: Varies from brownish-yellow to black; frontal triangle blackish; scape and pedicel yellowish-brown; 1st flagellomere black, short, about 1.3-1.5 times as long as wide; arista dark brown, distinctly thickened basally, with microscopic rays. Head shape greatly variable, approximately as seen in the two figures of *P. hebraica* (Figs. 1–2). Frons often strongly protuberant: its length in profile from antenna to anterior margin of eye about 0.3–0.5 times as long as eye; width of frons between eyes almost equal to length from anterior margin to posterior ocellus; gena about 0.8–1.1 times as high as eye; parafacial very wide; face dark brown, narrow, strongly concave dorsally; eye round; palpus black. Thorax black. Legs mostly dark brown to black, extremities of femora and tibiae and hind metatarsus lighter. Wing transparent. Section of *M* between crossveins *R-M* and *DM-Cu* about 2.2–3.0 times as long as preceding section. Halter yellowish-

white. Abdomen black. Male terminalia (Fig. 6): Epandrium in lateral view (Fig. 10) 1.8–2.0 times as high as long, variable in shape; phallus (Fig. 15) strongly sclerotized, serrated and pointed.

Chaetotaxy: 2–3 *vt* (3 in about 10% of the specimens), 1 *poc*, 2 *orb*; 1 *npl*, 1 *psut spal* (*sa)*, 1 *pal*, 3–6 *dc*, 1 *acr*, 1 *sc*; anepimeron bare.

Body length 2.75–3.60 mm; wing length 2.75–3.50 mm.

Female. Similar to male, but legs generally lighter. Body length 3.40–4.25 mm; wing length 3.05–3.80 mm.

Material examined

Holotype ♂: ISRAEL: [Golan Heights,] Quneitra, 1.xii.1973, A. Freidberg. Paratypes: Same locality data as holotype (12♂, 5♀); Merom Golan, 2.xii.1982, Y. Zvik (2♂, 3♀); Horbat Nappah [Nafech], 10.xii.1973, (1♂, 3♀); 20.xii.1973, (1♂, 2♀); 1.i.1974 (1♀); Har Meron, 1100m, 32º59.8′N 35º25′E, 22.xi.2006 (13♂, 5♀); Karmel, 11.xii.1976 (1♂, 1♀); 27.xi.1971, 4.xii.1971 (2♂); Herzliyya, 18.xii.2000, A. Freidberg and L. Friedman (3♂); Herzliyya, 27.xi.2005 (1♀), 4.xii.2005 (1♂); Herzliyya, Hill, 32º11′N 34º49′E, 15.xii.2007 (2♂, 1♀), 12.i.2008 (1♂, 1♀); Hadar Ramatayim, 7.xii.1994 (1♂, 3♀); Qalqilya, 27.xii.1972 (4♂); Rosh ha'Ayin [Rosh haayin], 18.i.1987, I. Nussbaum (1♂); Migdal Aféq [Migdal Zedek], 22.xii.1993, A. Freidberg and Fini Kaplan (3♂, 6♀), 30.xii.1977 (1♀), 13.xii.1997 (5♂, 1♀); Tel Aviv, 15.xii.1974 (1♂, 8♀); 7.xii.1975 (1♀); 20.xii.1970 (2♂); Nizzanim, 23.xii.2004 (3♂). The holotype is double mounted on a minuten pin in a polyporus block, is in excellent condition, and is deposited in TAUI together with most paratypes.

Distribution

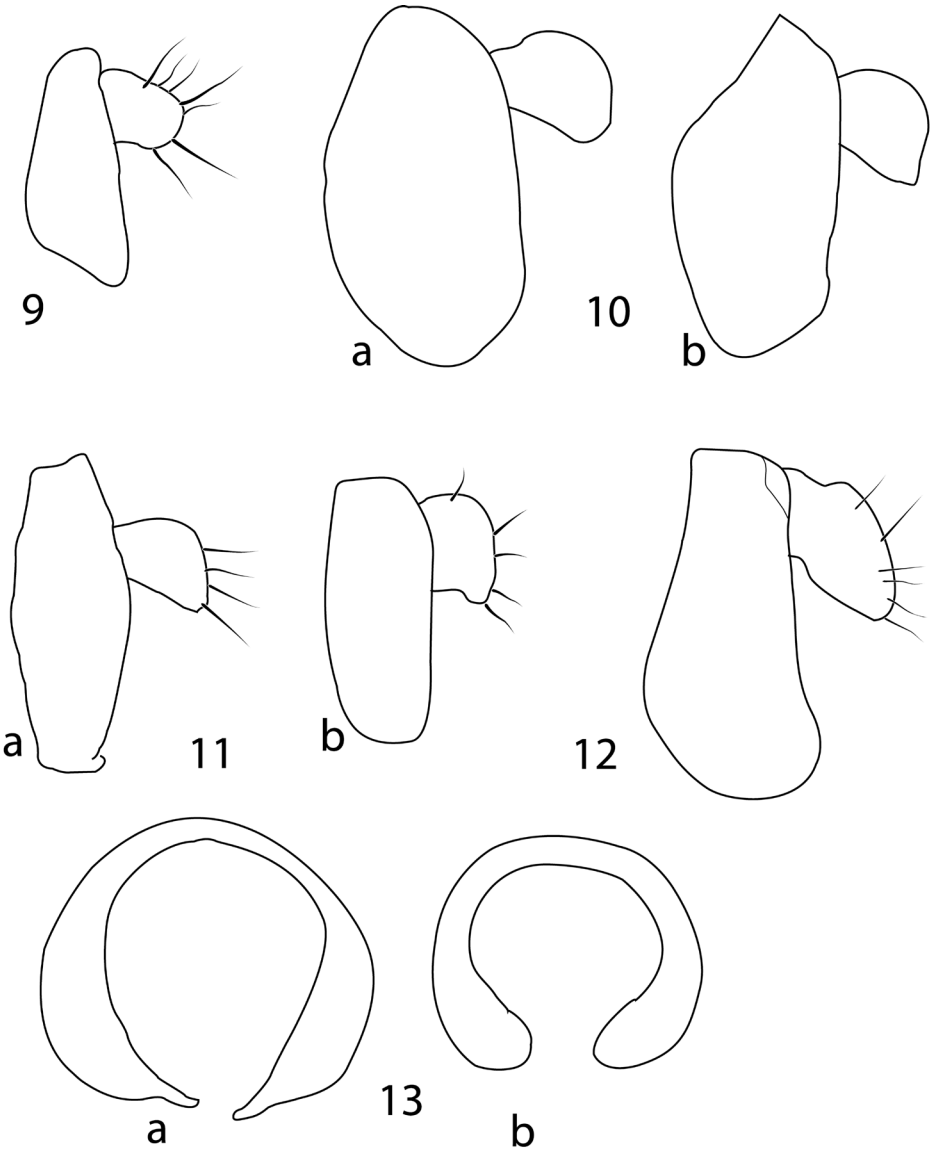
Israel.

Etymology

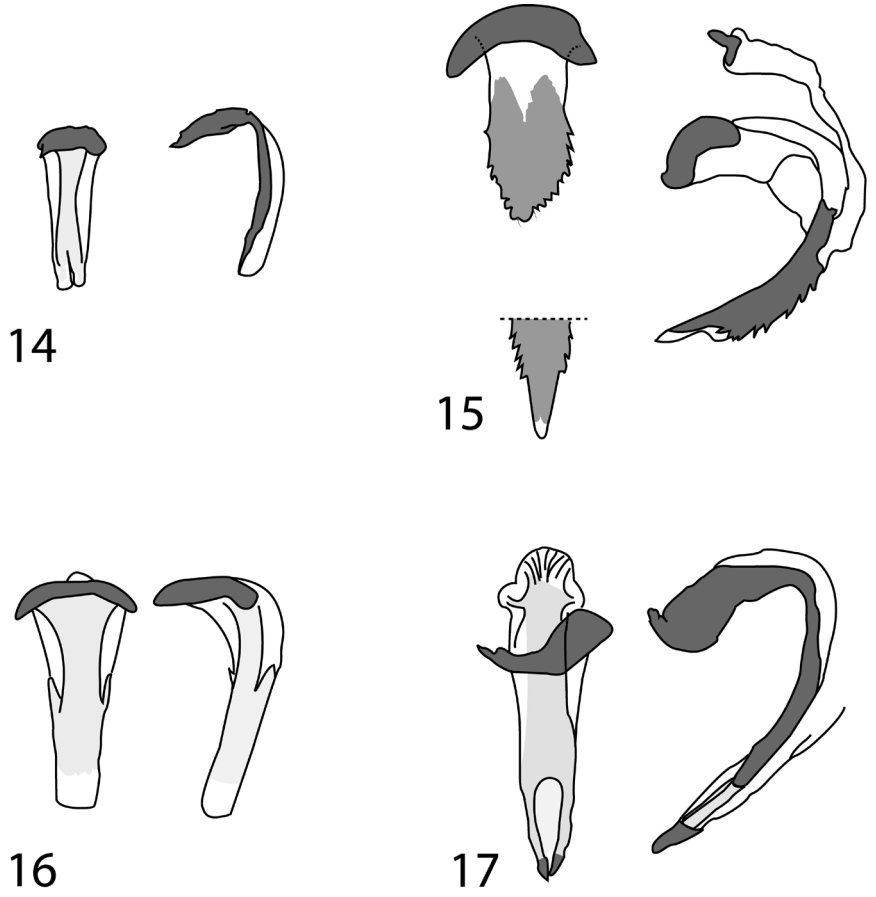
This species is named in honor of Mr. Leonid Friedman, who helped clarify the identity of both sibling species: *Ch. hebraica* and this one.

Comments

Both this species and *Ch. hebraica* are extremely variable, and their characters vary in a similar manner (same variable characters, similar range of variation), except the male terminalia, rendering a secure determination based only on the male terminalia. They also co-occur, and series are occasionally mixed. Because of the difficulty in distinguishing between specimens of these species, the type series of this species was selected in such a way that it contains either males with visible phallus (dissected and undissected), or males that belong to series containing males with visible phallus, or females of such series that were not found to include males of *Ch. hebraica*. All other specimens were recorded under *Ch. hebraica*, although some such females may actually belong to *Ch. friedmani*.



Figs. 9–12. *Chamaepsila hebraica* group, epandrium, lateral view. 9. *Ch. basalis*. 10a,b. *Ch. friedmani* (variation). 11a,b. *Ch. hebraica* (variation). 12. *Ch. homochroa*. Fig. 13. *Ch. hebraica*, epandrium, posterior view, variation. a. Yuval. b. Herz̲liyya.



Figs. 14–17. *Chamaepsila hebraica* group, phallus, left: dorsal view; right: lateral view. 14. *Ch. basalis*. 15. *Ch. friedmani* (tip also shown in maximum extension). 16. *Ch. hebraica*. 17. *Ch. homochroa*.

Chamaepsila hebraica **Hennig, 1941**

(Figs. 1, 2, 7, 11a,b, 13a,b, 16)

Diagnosis

Within the *hebraica* group, this species is characterized by the following combination of characters: Vertical setae usually 2, sometimes 3; prescutellar acrostichal seta present; dorsocentral setae 4–6; and the shape of the male terminalia. The only other species of *Chamaepsila* that has prescutellar acrostichal seta is *Ch. friedmani*, which differs from this species by the shape of the phallus (the phallus of *Ch. hebraica* is weakly sclerotized, not serrated, and truncate, whereas the phallus of *Ch. friedmani* is strongly sclerotized, serrated, and pointed).

Redescription

Male. Head (Figs. 1–2) yellowish-brown; frontal triangle dark brown anteriorly and black posteriorly; occiput dark brown; scape and pedicel yellowish-brown; 1st flagellomere black, short, about 1.3–1.5 times as long as wide; arista dark brown, distinctly thickened basally, with microscopic rays. Head structure greatly variable, as seen in the two figures depicting two extreme cases; frons often strongly protuberant: its length in profile from antenna to anterior margin of eye about 0.25–0.75 times as long as eye; width of frons between eyes almost equal to length from anterior margin to posterior ocellus; gena about 0.55–0.90 times as high as eye; parafacial very wide; face dark brown, narrow, strongly concave dorsally; eye round; palpus black. Thorax black. Legs brown, femora and tarsi anteriorly dark brown. Wing transparent. Section of vein *M* between crossveins *R*-*M* and *DM*-*Cu* about 2.2 times as long as preceding section. Halter yellowish-white. Abdomen black. Male terminalia (Fig. 7): Epandrium (Figs. 11, 13) greatly variable in shape, occasionally with ventromesal tip produced into a projection (Figs. 11a, 13a, and Hennig's 1941: fig. 17 and Tafelfig. 39); phallus (Fig. 16) relatively weakly sclerotized, truncate, not forked apically and with base wide trapezoidal and black margined; gonopod with wide lobe basally.

Chaetotaxy: 2–3 *vt* (3 in 10–20% of the specimens, more so in specimens from Jerusalem, including two of the type specimens), 1 *poc*, 2 *orb*; 1 *npl*, 1 *psut spal* (*sa)*, 1 *pal*, 3-6 *dc*, 1 *acr*, 1 *sc*; anepimeron bare.

Body length 2.7–4.9 mm; wing length 2.9–4.1 mm.

Female. Similar to male. Legs usually lighter than in male, often almost entirely yellow.

Material examined

This is divided into type material, which is important for the following nomenclatural treatment, and all other material.

TYPE MATERIAL: Four specimens, apparently corresponding to the holotype male and the three male paratypes recorded in the original description (Hennig, 1941), were available for study, some represented by fragments. The following information was recorded verbatim from the labels, but parentheses, commas and slashes are ours; the latter denoting different labels:

1. Jerusalem, Sco Pus, 6.1.31, J. Aharoni Coll/ hiervon micr. Prap. ♂ Kopulat.-Apparat/ *Chamaepsila hebraica* n. sp. det. Dr. W. Hennig 1940/ *Chamaepsila Hebraica* Hennig/ Paratype 1972 (red label)/(in addition to the above label it has a small hand-written label in Hebrew that reads: HHZ [probably acronym for Har HaZoffim - Mount Scopus - in Hebrew], 6.1.31) (1♂? [tip of abdomen, including terminalia, missing]; DEI).
2. Slide of a male terminalia (tilted about 30° from the position shown in Hennig's fig. 17; the two labels handwritten): Jerusalem, Scopus, 6.1.31, J. Aharoni leg., Mus Stuttgart, Typus/ *Chamaepsila hebraica* n.sp. Hennig ♂ Typus Postabdomen, KOH

Na-perorat, Kanada balsam (DEI).

3. Rehoboth bei Jaffa, 8.XII.33., J. Aharoni coll./ TYPE (red label)/ *Chamaepsila hebraica* Nova spec Det Dr. W. Hennig 1939 (1♂?; SMNS) [A badly damaged specimen (remains of thorax, three legs and a wing) double mounted (minuten on card)].
4. Jerusalem,-Sco Pus, 12.1.31, J. Aharoni coll./ Paratypus (1♂; SMNS) [A male in good condition, with 3 vt and exposed phallus, pinned directly, labeled (in addition to the above label it has a small hand-written label in Hebrew that reads: HHZ [probably acronym for Har HaZoffim — Mount Scopus — in Hebrew], 12.1.31)].

OTHER MATERIAL EXAMINED. Yuval, 20.i.1976, (2♂, 2♀); Kefar Szold, 2.i.1973 (1♀); Montfort, 8.i.1975 (1♀); Elqosh, 3km NE, 27.xi.1997 (1♀); Qusbīya [Qasabiya], 30.xii.83, Nussbaum (2♀); 'En Gev, 15.i.1972, D. Furth (2♀); Haifa, 26.xii.1970 (1♂, 2♀); Nahal Oren, 22.xii.2002 (2♀); Nahal Poleg, 6.i.1981, I. Yarom (1♀); Herzliyya, Hill, 32º11′N 34º49′E, 1.xii.2007 (2♂), 15.xii.2007 (19♂, 4♀); Herzliyya, 27.xi.2005 (1♂, 1♀), 4.xii.2005 (21♂, 18♀); Herzliyya, 32º09′N 34º51′E, 1.xii.2006 (1♀); Herzliyya, 2.xii.1995 (17♂, 10♀); 27.xi.1975 (2♂); 18.xii.2000, A. Freidberg and L. Friedman (7♂, 5♀ pinned + 26♂, 34♀ in alcohol), Herzliyya (all from Malaise trap), 21.ix.1982 (1♂), 25.xi.1981 (1♂, 1♀), 26.xi.1981 (2♂, 2♀), 30.xi.1981 (1♀), 7.xii.1981 (1♀), 8.xii.1981 (1♂, 3♀), 9.xii.1981 (2♀), 10.xii.1981 (3♀), 11.xii.1981 (3♀), 12.xii.1981 (2♂, 1♀), 13.xii.1981 (2♂), 15.xii.1981 (1♂, 1♀), 21.xii.1981 (1♂); Ra'anana, 8.xii.1976 (4♂); Qalqilya, 27.xii.1972 (5♂, 4♀); Qedumim, 29.xii.2000, L. Friedman (14♂, 13♀); Tel Aviv, 7.i.1975 (6♀); 14.xii.1974 (1♂, 3♀);7.xii.1972 (1♂); Antipatris, 21.1.1986, I. Nussbaum (1♀); Rosh ha'Ayin [Rosh haayin], 31.xii.1986, I. Nussbaum (2♀); Migdal Afeq [Migdal Zedek], 13.i.82 (1♂, 6♀); Nahal Rabba [Nahal Raba], 20.xii.81 (2♀); Ben Shemen, 1926, F. S. Bodenheimer (1♀); Latrun, 24.xii.1974 (10♂, 13♀); Bet Shemesh, 13.xii.1976 (1♀); Rehovot [spelled Rehoboth on some labels], 2.i.1999, Y. Nussbaum (28♂, 26♀); Rehoboth bei Jaffa, 25.xii.31, J. Aharoni (1♀; SMNS), 22.i.32, J. Aharoni (1♀; SMNS); Yavne, 24.xii.1972 (2♀); Zafririm [Tzafririm], 18.xi.83. Nussbaum (1♀); Nizzanim, 23.xii.2004 (14♂, 12♀). Yerushalayim, Bet haKerem [Jerusalem, Bet Hakerem], ii.1949, ii,1950, O. Theodor (2♀); Yerushalayim, Har haZofim [Jerusalem, Scopus], 11.ii.1932, J. Aharoni (1♀; TAUI). Yerushalayim, Har haZofim [Jerusalem-Scopus or Scopus Jerusalem], 25.xii.1921 (1♀), 31.xii.21 (1♀), 6.i.31 (1♀), 13.i.31 (1♀), 6.ii.31 (1♂, 1♀),1.i.1932 (1♀), 12.i.32 (1♀), 11.i.1932 (1♂), all J. Aharoni (SMNS).

AZORES?, 1 Dec., 1971, intercepted at McGuire AFB in NJ, military plane from Azores, 71-21168 (USNM; 1♂, 1♀).

Distribution

Israel, ?Azores (intercepted but apparently not established).

Comments

This species is the only psilid previously described and reported only from Israel (Hennig, 1941). It is highly variable, especially the shape of the head (in some specimens the frons is more protuberant and the head more triangular), size of the eye relative

to other parts of the head, number of dc setae, leg coloration, and shape of epandrium. However, more or less continuous clines indicate that this variation is intraspecific.

It is not known whether the specimens recorded here from the Azores actually originated there. It is possible that they originated in Israel on a flight that only stopped over in the Azores.

NOMENCLATURAL PROBLEMS AND DESIGNATION OF A NEOTYPE

The *Chamaepsila hebraica* problem, involving the proper taxonomic identification of this and a closely related species and the associated nomenclatural problems, is an interesting and somewhat complicated case. It involves the necessity to clarify the type or neotype identity of a species, of which specimens are missing and confusion prevails. This necessity has become acute because of the recent discovery of a new, sibling species. The new species cannot be properly described before the identity of *Ch. hebraica* is clarified. We are treating this problem in three discrete parts: statement of **facts, discussion** and **decision**.

Facts

Hennig (1941) described *Chamaepsila hebraica* Hennig (from "Palaestina") and provided illustrations of the male terminalia in posterior (Textfig. 17) and lateral (Tafelfig. 39) views. In his description Hennig noted that this species is easily distinguishable from all congeners by the presence of a prescutellar acrostichal seta (lacking in all other species) and by the large number (4–6) of dorsocentral setae (at most 3 in the other species, but 4 in *Ch. atra* (Meigen, 1826)). He also stated that the species had 2 "vt" (vertical setae).

Hennig (1941) listed his material as follows:

> "Typus: 1 ♂ Jerusalem-Scopus, 6.1.31, J. Aharoni Coll. Paratypen: 1 ♂ mit denselben Daten [with same data (A.F.)] und 1 ♂ vom 12.1.1931 und 1 ♂ Rehobot bei [near (A.F.)] Jaffa, 8.12.33, J. Aharoni Coll. Typus und Paratypen in der Würtembg. Naturliensammlung, Stuttgart, 1 paratypus im Deutschen Entomologischen Institut, Berlin-Dahlem."

Thanks to the courtesy of Dr. Hans-Peter Tschorsnig (SMNS) and Dr. J. Ziegler (DEI), we were able to study all that has remained of Hennig's type series of this species. The material included only the specimens and fragments listed in the Type Material section above.

A comparison between the stated and the actually available material shows that either one male is completely missing from the type series, or at least the main part of it is missing (if we consider the pinned DEI specimen different from the slide, although the matching labels on the pin and slide, as well as the lack of contradictory information, such as having the same abdominal parts in both items, indicate that we are dealing with two parts of the same specimen). In addition, another specimen is almost completely destroyed, represented by fragments that do not allow correct species or gender identification at this time.

Twelve other specimens, collected by Aharoni in Jerusalem (10) and Rehoboth (2) around the same dates of the type series, are available, most of them deposited in SMNS. Most of these specimens have 3 *vt*, at least on one side of the head. Numerous other specimens, collected in Israel in recent decades and matching Hennig's verbal diagnosis of *Ch. hebraica*, with the occasional exception of the number of *vt*, are available.

Discussion

We have discussed this case with several colleagues (listed in the Acknowledgments), whose help is much appreciated, and an anonymous referee, to whom we are grateful, also contributed to this discussion. Of the four specimens originally included by Hennig in the type series, only one has remained intact; one appears to have been lost, one is badly damaged, to the extent that its identity cannot be verified, one lacks the distal part of the abdomen, and one is represented by a slide (that could actually represent any of the following: the missing specimen; the badly damaged specimen; or the specimen with the missing distal part of abdomen). There is a mix-up with the type and paratype labels and the depositories: The badly damaged specimen from SMNS bears a type label, but the locality label (Rehoboth, 5.XII.33) does not match the data cited by Hennig for the type (Jerusalem-Scopus, 6.1.31). The second specimen from SMNS (Jerusalem-Scopus, 12.1.31) bears a paratype label, which does match Hennig's data for a paratype. The pinned specimen from DEI bears the same locality label as the "type", and a red "paratype" label, and could therefore be either a genuine paratype or the "type". Finally, the slide bears the right labels for a "type", but the embedded terminalia (although rather clear and positioned in a nearly posterior view) cannot be matched well with Hennig's drawings. In addition, the type was stated by Hennig to be deposited in SMNS, not in the DEI.

The obvious options confronting us were:

1. Consider the pinned specimen from the DEI as the "type", with or without the DEI slide, and exchange the red paratype label with a red type label (this would still require an adjustment of its depository).
2. Consider the slide as the type (this will require opening the slide in an attempt to establish its identity, which might prove to be futile, and it would require an adjustment of its depository).
3. Designate the only intact (SMNS) specimen as a neotype.
4. Designate the badly damaged specimen from Rehovot as a neotype (despite the impossibility to diagnose it).
5. Exchange the red paratype label with a red type label on the intact specimen from SMNS (which has the wrong date).
6. Select a neotype from specimens other than the type series.

Decision

The disadvantage of option 4 is so obvious that it requires no explanation. Likewise, we felt that option 2 is not desirable, because the identity of these terminalia is not clear, and re-mounting them might cause their destruction. Option 5 is not honest, and the

same general result can be achieved by the honest option 3. Option 6 is ruled out because it is no better than option 3, which is also preferable in view of recommendations in the International Code of Zoological Nomenclature (ICZN). Hence, a decision had to be made between options 1 and 3. We decided in favor of option 3, because the SMNS specimen from Jerusalem satisfied all the recommendations stated in Article 75 of the ICZN (1999). Moreover, this is the best preserved specimen of the original type series, and its exposed phallus permits accurate identification even without further preparation of the terminalia (despite the awkward condition of the slide specimen, it seems that the neotype is conspecific with it). The pinned DEI specimen, on the other hand, cannot be identified unequivocally because it lacks the terminalia. This neotype designation is made to ensure taxonomic stability in species recognition.

The result of this step is a new diagnosis of *Ch. hebraica*, which allows a safer recognition of both it and its most similar and probably closer congener, *Ch. friedmani*, which is described herewith as new.

Chamaepsila homochroa Freidberg and Shatalkin, sp.n.

(Figs. 8, 12, 17)

Diagnosis

Within the *hebraica* group, this species is characterized by the following combination of characters: Vertical setae 2; prescutellar acrostichal seta lacking; dorsocentral setae usually 3; and the shape of the male terminalia, of which the forked phallus is unique.

Description

Male. Head generally dark brown, including frontal triangle, occiput, and face; antenna black; 1st flagellomere short, about 1.3–1.5 times as long as wide; arista dark brown, thickened basally, with microscopic rays; frons slightly protuberant: its length in profile from antenna to anterior margin of eye about 0.22–0.33 times as long as eye; width of frons between eyes about equal to length (from anterior margin to posterior ocellus); gena very high, about 0.65–1.00 times as high as eye; parafacial very wide, narrowest width varying from about equal to height to about equal to length of 1st flagellomere; face narrow, deeply concave dorsally; eye round; palpus black. Thorax black. Legs brown, femora and tarsi predominantly dark brown. Wing hyaline. Section of vein *M* between crossveins *R-M* and *DM-Cu* about 2.00–2.63 times as long as preceding section. Halter yellowish-white. Abdomen black. Male terminalia (Fig. 8): Epandrium in lateral view (Fig. 12) widened and rounded ventrally; phallus (Fig. 17) with apex strongly sclerotized and slightly indented, appearing forked because of elongate weakly sclerotized area medio-subapically.

Chaetotaxy: 2 *vt*, 1 *poc*, 2 *orb*; 1 *npl*, 1 *psut spal* (*sa)*, 1 *pal*, 3 (sometimes 4) *dc*, *acr* absent, 1 *sc*; anepimeron bare.

Body length 2.1–4.1 mm; wing length 2.8–3.8 mm.

Female. Similar to male.

Material examined

Holotype ♂**:** ISRAEL: Har Meron, 1100m, 32°59.8′N 35°25′E, 22.xi.2006, A. Freidberg. Paratypes: Same locality data as holotype (59♂, 44♀); additional paratypes: Har Meron, 10.xi.1976, M. Kaplan and A. Freidberg (3♂, 1♀); Bar'am, 11–14.xi.1977 (1♂, 1♀), 18-20.xi.1977 (1♂); Bar'am Forest, 27.xi.1997 (3♂, 2♀); Golan: Spring n[ea]r Nahal Nimrod, 30.x.1985, Ian Susman and A. Freidberg (13♂, 3♀); Nimrod, 1000m, 8.xi.1984 (5♂,4♀); Qusbīya [Qasabiya], 30.xii.83, I. Nussbaum (1♀); Herzliyya, 7.xii.1981, Malaise trap (1♀); Bet Shemesh, 12.xii.1976 (1♂); Yerushalayim, Bet haKerem [Jerusalem, Bet haKerem], 13.xii.41 (2♂); 'Ofra, 30.i.86 (1♀). The holotype is double mounted on a minute pin in a plastic block, is in excellent condition, and is deposited in TAUI together with most paratypes.

Distribution

Israel.

Etymology

This species is named after its uniform dark appearance.

Comments

This species co-occurred with *Ch. basalis* and *Ch. friedmani* on Mt. Meron on 22.xi.2006, although it was clearly the dominant species there, at least on that particular day. These three species can readily be distinguished from each other by chaetotaxy characters (see key).

Chamaepsila nigricornis Meigen, 1826

Material examined

Har Hermon, 1300m, 23.iv.1982 (1♀); Nahal 'Iyyon Reserve, HaTanur, 20.ii.2002, L. Friedman (4♂, 6♀), 22.ii.2002, A. Freidberg (3♂, 1♀); HaTanur, 15.iii.1975, F. Kaplan (2♂, 3♀), 6.iii.1985 (1♀); Tel Dan, 13.iv.1983 (1♂); Panyas [Banias], 20.iv.1974 (1♀); Qiryat Shemona, 16.iv.1992 (2♂); Horbat Amir [Waset], 2.iii.1984. I. Nussbaum (1♀); Golan, Spring n[ea]r Nahal Nimrod, 30.x.1985 (1♀); Merom Golan, 18.iii.1973, M. Kaplan (1♂); Horbat Nappah [Kfar Nafech], 14.iii.1975 (1♂); Qusbiye, 14.iii.1975 (2♂), 15.iv.1982, F. Kaplan (1♀); Montfort, 14.iii.1985, I. Susman (1♀), 8.iii.1987 (1♀); Pa'ar Cave, near Sasa, 25.x.1994 (1♀); Bar'am, 11–28.xi.1977 (9♂, 12♀); Har Meron, 1000 m, 30.x.1985, I. Susman (1♂), Har Meron, 1100 m, 25.x.1994 (1♂), 9.iv.1977 (1♀), 800 m, 9.iv.1977 (1♀); Har Meron, 1100m, 21.x.1996 (4♂, 3♀),17.iv.2000, A. Freidberg and H. Ackerman (3♂, 1♀), 24.iv.2003 (2♀); Har Meron Reserve, Camping, 1100 m, 32°59′N 35°24′E, 25.iv.2002 (3♂); Meron, Ein el Asad, 18.iv.1984, I. Nussbaum (1♀); Nahal 'Ammud, 17.iii.1973, D. Furth (1♀); Gonen, 15.iii.1975 (9♂, 3♀); Park HaYarden, 16.xi.1982 (2♂), 4.iv.1983(1♂), 7.v.1997 (1♂), 21.iii.2000, A. Freidberg and H. Ackerman (2♀); Haifa, 17.iii.1973 (1♀); Karmel, 14.ii.1973 (1♂, 4♀); Qiryat Tiv'on, 2.iv.1975, F. Kaplan (4♂, 1♀), 6.iii.1975 (1♀); Hammat Gader [El Hamma], 2.iii.1978

(1♂); Kadoori, 6.iii.1985 (1♂, 1♀); Har Tavor, 31.iii.1973, D. Furth (1♀); Even Yizhaq (Gal'ed), 20.ii.2002, L. Friedman (1♂), 22.ii.2002 (1♀); Zikhron Ya'akov, 1.iv.1988 (1♂); Kokhav haYarden, moat of castle, 26.iii.2001, L. Friedman (1♂); Mikhmoret, 27.xi.1975 (1♀); Ga'ash, 10.iii.1976, F. Kaplan (1♀); Yarhiv, 24.iii.1983, I. Yarom and A. Freidberg (1♂, 2♀); Shekhem [Shechem], 1.iii.1973, M. Kaplan (1♀); Nahal Tirza [Wadi Faria], 1.iii.1973 (1♀); Central Nahal Tirza, 20.ii.1974 (1♀), Herzliyya (all from Malaise trap), 7.xi.1981 (1♂), 8.xi.1981 (1♂), 9.xi.1981 (2♂), 10.xi.1981 (2♂, 1♀), 15.xi.1981 (1♀), 16.xi.1981 (1♂), 22.xi.1981 (1♂), 1.xii.1981 (2♂), 10.xii.1981 (1♀), 15.xii.1981 (1♂), 22.xii.1981 (1♂), 30.xii.1981 (1♂), 23.i.1982 (1♂), 22.ii.1982 (1♂, 2♀), 29.ii.1982 (1♂), 4.iii.1982 (1♀); 27.iii.2005, L. Friedman (1♀); Tel Aviv, 6.iii.1976 (1♂, 1♀), 14.iii.1973 (1♀); Tel Aviv University, Botanical Garden, 1.xii.2006, W. Kuslitzky, Malaise trap (1♀); Holon, 26.x.1971, J. Kugler (2♀), 16.ii.1995, I. Yarom (1♂), 7.iii.1975, on Tamarisk (1♂, 2♀); Nahal Soreq [Nahal Rubin], 7.iii.1951, O. Theodor (1♂); Migdal Afeq [Migdal Zedek], 22.xii.1993, A. Freidberg and Fini Kaplan (6♂, 3♀), 13.xii.1997 (1♂, 1♀); Um 'Safa, 26.iii.2006, L. Friedman (1♂, 2♀); Latrun, 10.iii.2004 (1♂); Bet Guvrin, 29.iii.1992 (1♀), 10.iii.2004 (1♀); Nizzanim, 18.iv.2007 (1♂); Mrar (near Tel Nof), 11.iii.1993 (2♂); Hulda, 4.ii.1976 (23♂, 7♀), 6.ii.1975 (7♂, 1♀); Bet Shemesh, 13.xii.1976 (3♂, 1♀); Yerushalayim, Har haZofim [Jerusalem, Mt. Scopus], 22.ii.1941, O. Theodor (1♀); Yeriho, 8.iii.1976 (1♀), Nahal Perat [Wadi Qelt], 25.iii.1975 (1♀); 'Enot Zuqim, 23.xii.2002 (2♂, 1♀); Zafririm [Tzafririm], 18.xi.83, Nussbaum (1♀); Bet Guvrin, 24.iii.1983 (2♀); 'Arad, 5.i.1971, J. Kugler (1♀); Sede Boqer, 30°52′N 34°47′E, 24.i.2002, L. Friedman (2♂).

Distribution

Europe, Middle Asia, as far east as Kazakhstan and Mongolia, North Africa (Algeria, Tunisia, Egypt), Israel.

Comments

This is one of the most frequently encountered and widespread species of *Chamaepsila*. It might be the pest that Avidov (1961) referred to as *Psila rosae*.

Chamaepsila sp. aff. *pallida* (Fallén, 1820)

Material examined

Yerushalayim [Jerusalem, Palestine], 2.xii.1935, O. Theodor (1♀).

Comments

The studied female is similar to *Ch. pallida*, and both are characterized by the entirely yellow thorax, without pleural spots and mesonotal stripes. It differs from *Ch. pallida* by the apically black palpus. Unfortunately the 1st flagellomere is absent, so that two diagnostic antennal characters, namely the color of the 1st flagellomere and the length of the rays of the arista, cannot be compared.

Chamaepsila pseudobicolor Soós, 1985

Material examined

Tel Dan, 13.iv.1983, A. Freidberg and I. Yarom (6♀).

Distribution

Germany, Israel.

Comments

Based on the color pattern and chaetotaxy, these females appear to be *Ch. pseudobicolor*, previously known only from the type locality (S-Harz, Germany). It is one of five species of the *bicolor*-group (Carles-Tolrá, 1993a), which are distinguished reliably only by structures of the male epandrium that carries many small teeth medially (see fig. 9 in Carles-Tolrá, 1993a, p. 92). Capture of a male and study of its terminalia are therefore required in order to confirm the identity of the Israeli population.

Chamaepsila sardoa (Rondani, 1876)

Material examined

Dafna, 18.iii.1973 (2♀); HaGoshrim, 28.ii.1977 (1♀); Amir, 5.iv.1978, D. Furth (1♀); Panyas [Banyas] 8.iii.1984, I. Nussbaum (3♂, 7♀); Gonen, 15.iii.1975 (5♂,4♀); Horbat Nappah [Nafech], 14.iii.1975 (1♀); Montfort, 4.iii.1976 (3♂,6♀); 'Akko, 27.xi.1971, J. Kugler (3♂,5♀), 4.iii.1976 (1♂,1♀), 10.xi.1976 (1♀), 5.iii.1978 (1♂), 27.xi.1997 (1♀); Mahanayim, 17.xi.1973 (2♀); Park HaYarden, 21.iii.2000 (2♀); 16.xi.1982, F. Kaplan and A. Freidberg (2♂); Elro'i, 4.iii.1975, F. Kaplan (2♀); Qiryat 'Amal, 14.iii.1940 (1♀); Hadera, 11.ii.2001, L. Friedman (1♂, 1♀); Mikhmoret, 29.xi.1975 (1♂,1♀); Meged, 20.iii.1949 (3♂,1♀), 27.i.1951, O. Theodor (3♀); Nahal Poleg, 6.ii.1973 (1♂,3♀), 5.ii.1975 (2♂,2♀), 11.xi.1969, J. Kugler (1♂,2♀), 27.ii.1968, J. Kugler (1♂), 28.ii.1985 (2♂,1♀); Netanya, 15.ii.1975, F. Kaplan (3♂,3♀); Ga'ash, 10.iii.1975 , F. Kaplan and A. Freidberg (12♂,11♀), 10.iii.1976 , F. Kaplan and A. Freidberg (11♂,14♀), 8.iii.1976, M. Kaplan (1♂,1♀), 6.iii.1973, M. Kaplan (1♂); Eyal, 10.ii.1975, F. Kaplan (1♂,1♀); Zur Yig'al, 27.xii.2001, A. Freidberg, L. Friedman & Y. Zvik (1♀); Kefar Shemaryahu, 6.iii.1985, I. Susman (1♀); Bet Berl, 1.iii.1983, I. Yarom (2♂,1♀); Herzliyya, 28.iii.1980, W.N. Mathis and A. Freidberg (1♀), 10.iii.1975 (2♂,3♀), 7.xi.1976 (1♂), 2.xii.1995 (2♂), 15.iii.1951, O. Theodor (1♀), 17.xi.1981, Malaise trap (1♂), 24.xi.1981, Malaise trap (1♂), 11.xii.1981, Malaise trap (1♀), 19.ii.1982, Malaise trap (1♂), 22.ii.1982, Malaise trap (1♂), 25.ii.1982, Malaise trap (1♂,1♀); Herzliyya swamp, 22.ii.2002 (3♂, 3♀); Herzliyya, Hill, 32º09′N 34º519′E, 1.xii.2006 (2♂, 2♀), 1.xii.2007 (10♂,8♀), 7.iii.2008 (3♂,2♀); Zofit, 11.i.1984. I. Yarom (1♀); Nir Eliyyahu, 9.ii.1975 (11♂,8♀); Ramat HaSharon, 20,ii.1975, D. Simon (1♀); Ramat Hadar, 15.xi.1982 (1♀); Tel Aviv, 10.iii.1975, F. Kaplan (7♂,3♀), 5.ii.1975, F. Kaplan (2♂,1♀), 11.iii.1972, J. Kugler (1♂), 20.xi.1974 (1♂), 8.ii.1982 (1♀), 26.ii.1973

(1♀), 10.ii.1973 (1♀), 10.xii.1975 (1♀); Antipatris, 21.i.1986, I. Nussbaum (1♀); Rosh ha'Ayin, 18.ii.1974 (6♂,5♀), 24.iii.1973, D. Furth (1♂); Zomet Rantis, 28.ii.2001, L. Friedman (1♀); Holon, 16.ii.1995, I. Yarom (1♀), 7.iii.1995 (1♀); Miqwe Yisra'el, 27.ii.1973 (1♀); Bet Dagan, 21-23.II.1968, S. Bleszynski (1♀; USNM). Palmahim, 8.iii.1975, F. and M. Kaplan (4♂), Yavne, 24.ii.1973 (1♂,3♀), 27.ii.1974, D. Furth (1♂,3♀), Rehovot, 13.ii.1951, Harpaz (1♂); Gedera, 26.xi.1973 (2♂,2♀); Sederot, 27.ii.1974, D. Furth and A. Freidberg (1♂,8♀); Yerushalayim [Jerusalem], 2.xii.1935, O. Theodor (1♂), 10.xii.1941 (1♂), 14.xii.1941 (1♂).

Distribution

Southern Europe, Near East, as far east as Middle Asia and Mongolia, Israel.

Comments

Ch. sardoa is similar to *Ch. buccata* Fallén, 1826 (=*Psila gracilis* Meigen, 1826) from which it differs by the black antenna, femora usually yellow, 2 pairs of *dc*, arista with very short rays, and smaller size (3.0–4.5 mm). *Ch. buccata* has yellow scape and pedicel, femora usually brownish, 1 dc, arista with distinct rays, and is larger (4–6 mm).

Chamaepsila setalba Freidberg and Shatalkin, n. comb., nomen novum

(Figs. 3, 4)

Diagnosis

This species was described as *Chyliza gracilis* Loew and is transferred to *Chamaepsila* and renamed by us here (see Comments below). It is only known from the original description but nevertheless is one of the most easily characterized species (or species complex) of *Chamaepsila*, differing from all congeners by the elongate 1st flagellomere and the white arista. Taking into account all characters *Ch. setalba* occupies a isolated position within *Chamaepsila*. According to Hennig (1941), the type is probably lost. A female, collected more recently (BULGARIA: Sandanski, 4.x.1973, Gorodkov; ZMAS), is very similar to specimens we consider to be *Ch. setalba* (see Material examined, below), differing by the presence of *poc* and by having two pairs of scutellar setae (usually one pair in *Ch. setalba*), a narrower occipital spot, and *m vt* placed on the yellow part (placed on the border of the occipital spot in *Ch. setalba*). This female may represent an undescribed species.

Redescription

Male. Head (Fig. 3) predominantly yellow; ocellar triangle black; occiput with large lateral black spot posterior to eye, *m vt* placed at border of spot; eye in profile attaining anterior margin of face; scape and pedicel yellow to brown; 1st flagellomere dark brown to black, slightly paler at base, about 3–4 times as long as wide, slightly concave dorsally and slightly convex ventrally; arista about as long as head height, white, with

dense white rays, feathering about 0.75 times as wide as 1st flagellomere; frons length equal to frons width; eye round; gena anteriorly about 0.1 and posteriorly about 0.33 times as high as eye; palpus mostly yellow, brownish in apical half. Thorax predominantly yellow to brownish; postpronotum and adjacent part of mesonotum up to level of mesonotal stripe, anepisternum dorsally, notopleuron, anepimeron (entirely), and laterotergite black or blackish, although some parts sometimes lighter; mesonotum with blackish postsutural stripe slightly lateral to *dc* seta; scutellum yellow, usually with one (apical) pair of setae. In one specimen basal seta present on one side. Legs yellow. Wing hyaline. Ratio of distalmost sections of vein *M* (from apex) 2.2: 2.2: 1.0. Halter yellow. Abdomen black. Terminalia (Fig. 4): parameres slightly shifted in direction of basis of phallapodeme; whereas parameres of the majority of *Chamaepsila* species situated on tips of fork of phallapodeme.

Chaetotaxy: 2 *vt*, *poc* absent, 2 *orb*, 1 *npl*, 1 *psut spal* (*sa)*, 1 *pal*, 1 *dc*, 1 *sc* (a setula-like second seta on one side of scutellum in one specimen); anepisternal tuft of white setulae moderately developed.

Body length 3.8–4.7 mm; wing length 3.8–5.0 mm.

Female. Similar to male. Ovipositor unsclerotized. Body length 3.5–5.0 mm; wing length 3.6–5.0 mm.

Material examined

ISRAEL: Upper Nahal ‘Ammud [Upper N. Amud], 28.v.1981 (4♂); Nahal [N.] ‘Ammud, 8.v.1973, D. Furth (1♀), 1.xi.1972 (2♀). TURKEY: Hatay, Teknepınar, 20km W[est] Antakya, 200m, 10.v.2000, A. Freidberg, L. Friedman & H. Ackerman (1♀). CYPRUS: Troodos Mts., Caledonian Falls, 3.viii.1993, F. Kaplan (1♂, 1♀) (TAUI and ZMUM).

Distribution

Turkey, Cyprus, Israel.

Comments

Meigen (1826: 359) described *Psila gracilis*, which was subsequently transferred to *Chamaepsila* (e.g. Soós 1984: 30). Loew (1854: 23) described *Chyliza gracilis*, which matches at least some of the specimens recorded in the Material examined section above. We consider these specimens to belong to *Chamaepsila*. Consequently, *Ch. gracilis* Loew is a homonym of *Ch. gracilis* Meigen, and we rename it as *Ch. setalba*.

The identity of *Chyliza gracilis* Loew is not entirely clear. Its type locality is “Bujukdere” (“bei Konstantinnopel” as per Hennig, 1941) (in the European part of Turkey), but the type is apparently lost, and the original description matches two similar, although distinct, species, together known from Bulgaria, Turkey, Cyprus, and Israel. We assume that the specimens known from the latter three countries represent *Chamaepsila setalba*, whereas the specimen from Bulgaria represents a new species that is not described here.

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