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A new *Besseria* Robineau-Desvoidy (Diptera: Tachinidae) from Israel

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ABSTRACT

A new species of the genus *Besseria* Robineau-Desvoidy, 1830 (Diptera: Tachinidae), *B. prophetarum* n. sp., from the Negev Desert (Israel), is described. Features that distinguish this new species from the presumably closely related *B. lateritia* (Meigen) are the chaetotaxy of the fronto-orbital plate and occiput, the shape of the labella and the color of the third abdominal tergite.

KEYWORDS**:** *Besseria lateritia*, *Besseria prophetarum*, Diptera, Israel, new species, Phasiinae, Tachinidae

INTRODUCTION

The genus *Besseria* Robineau-Desvoidy, 1830, belongs to the subfamily Phasiinae (tribe Cylindromyini), a group of Tachinidae highly specialized as Heteroptera parasitoids. It was previously known from fourteen species (see list below) from the Nearctic, Palearctic, and Afrotropical regions.

The Palearctic and Afrotropical species of *Besseria* generally inhabit dry biotopes, with open vegetation, and are often collected while feeding on flowers of Asteraceae and Apiaceae. Hosts are known for only two species, *B. dimidiata* (Zetterstedt, 1844) and *B. lateritia* (Meigen, 1824) which are parasitoids of the pentatomid bugs *Menaccarus arenicola* (Scholtz, 1847; Mońko, 1957; Szpila and Konefał, 2004) and *Psacasta exanthematica* (Scopoli, 1763; Viktorov and Kozharina, 1961), respectively.

Three species of *Besseria* have been recorded from Israel to date: *B. lateritia*, a widely distributed species from southwest to eastern Europe and Transcaucasia; *B. nuditibia*, known only from the type locality (Wadi Faria); and *B. zonaria*, a widespread Afrotropical element that extends to the Mediterranean subregion and Central Asia (Crosskey, 1980; Herting and Dely-Draskovits, 1993; Cerretti and Freidberg, 2009).

In the present paper, we describe a new species of *Besseria* from the Negev Desert and compare it with the presumably closely related *B. lateritia*. A key to the species of Israel and a checklist of world *Besseria* are included. This paper was prepared within the

framework of a comprehensive study on the Tachinidae of Israel for the *Fauna Palaestina* series, supported by the Israel Academy of Science and Humanities.

MATERIALS AND METHODS

Terminology of external morphology essentially follows Merz and Haenni (2000). Measurements and ratios of the head follow Tschorsnig and Richter (1998). The holotype of *Besseria prophetarum* n. sp. is deposited in the entomological collection of the Department of Zoology, Tel Aviv University, Tel Aviv, Israel (TAUI). Coordinates in square brackets were retrieved from Google Earth 4.3.7284.3916 (beta).

TAXONOMY

Besseria Robineau-Desvoidy, 1830

Recognition

Scutum with two postsutural intra-alar setae, separated from each other by a wide distance; anepimeral seta absent; postmetacoxal area membranous; ventral calypter sometimes divergent from scutellum [e.g., *B. anthophila* (Loew), *B. longicornis* Zeegers, *B. oblita* Herting, *B. zonaria* (Loew)]; abdomen shiny, without microtomentum; terminalia of male and female large, bent ventrally; female abdominal segment 6 strongly developed; (see fig. 254 in Wood, 1987, and figs. 330.5, 331.4–7 in Cerretti, 2010); abdominal sternites with connecting membrane large and exposed; male tergites 3 and 4 often with large patch of dense appressed setulae (sometimes the corresponding tergal surface of these patches is clearly concave); abdominal tergites more or less fused dorsally in *B. melanura* and in females of other species.

Generic keys for the identification of *Besseria*

Nearctic: Wood (1987); Afrotropical: Crosskey (1984); Palearctic: Draber-Mońko (1964), Tschorsnig and Herting (1994), Tschorsnig and Richter (1998), Richter (2004), Zeegers (2007), Cerretti (2010), Cerretti et al. (2010).

Besseria prophetarum Cerretti, Lo Giudice and Mei, n. sp.

(Figs. 2–7)

Diagnosis

Besseria prophetarum n. sp. is similar to *B. lateritia* (Meigen, 1824) in: the wing vein M complete (e.g., not vanishing on wing membrane) and cell r_{4+5} widely open (Fig. 6), section of M between R-M and DM-Cu longer than section between DM-Cu and bend of M (Fig. 6), mesotibia with one anterodorsal seta, male claws of protarsus about twice as long as fifth tarsal segment, tergite 3 with one pair of median marginal setae (Fig. 7), tergites 3 and 4 unmodified and without patches of fine setae (Fig. 7), and body length

range of 7.0–10.0 mm (all other *Besseria* species are smaller). The two species can be distinguished following the couplet 3 in the key to species of Israel (see below).

Description

Male

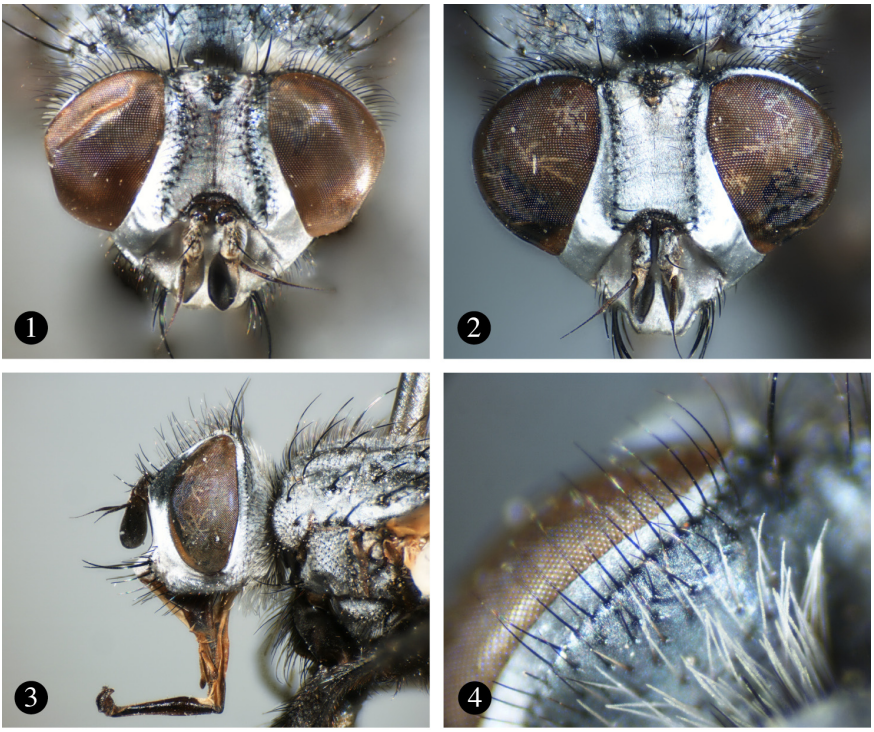
Body length: 7.7 mm.

Coloration: Head mainly black (except for genal groove, which is red), covered with silver-gray microtomentum; antenna black; palpus light brown basally, shading into dark brown distally. Thorax black, covered with dense silver-gray microtomentum; scutum anterior to transverse suture with four longitudinal dark vittae, medial pair about as wide as separating space (Fig. 5). Scutellum entirely black. Legs black. Tegula black. Basicosta yellow. Abdomen shiny, without microtomentum, mainly yellow (except black on mid-dorsal excavation of syntergite 1+2 and a drop-shaped spot posterior to mid-dorsal excavation, posterior 0.25–0.33 of tergite 4, and entire tergite 5).

Head: (Figs. 2–5). Arista thickened on basal 2/3. Second aristomere about 2.5 times as long as wide. First flagellomere 2.2 times as long as pedicel. Frons at its narrowest point 0.8 times as wide as eye in dorsal view. Lateral vertical setae not differentiated from postocular setae. Ocellar setae lateroclinate. A row of 7 frontal setae interspersed with several short and fine setulae (Fig. 3). Fronto-orbital plate entirely bare (Fig. 2). Parafacial bare, at its narrowest point about 0.6 times as wide as first flagellomere. Gena in profile 0.16 times as high as vertical diameter of eye. Occiput with row of long, black setae posterior to postocular setae (Figs. 4, 5). Prementum about 7 times as long as wide; labella well sclerotized and pointed apically (Fig. 3).

Thorax: (Fig. 5). Prosternum and proepisternum bare. Postpronotum with 2 setae. Scutum with 0+1 acrostichal setae; 3+3 dorsocentral setae; 0+2 intra-alar setae (postsutural setae separated by distance greater than distance between anterior seta and transverse suture); 1+2 supra-alar setae (first postsutural supra-alar seta lacking). Scutellum with 3 pairs of marginal setae: basal, subapical and crossed apical setae. Two katepisternal setae. Katepimeron bare. Anepimeral seta not differentiated. Anatergite with patch of short erect setulae ventral to ventral calypter. Posterior lappet of metathoracic spiracle larger than anterior one. Legs: protibia with 2 posterior setae; claws of protarsus long and thin, about twice as long as fifth protarsomere. Mesotibia with 1 anterodorsal seta, 2 posterior setae, and 1 ventral seta. Metatibia with irregular row of anterodorsal setae, 2–3 posterodorsal and 2 anterior setae. Wing (Fig. 6): vein R_{4+5} entirely bare. Sixth costal sector missing in part (wing margin damaged). Section of vein M between crossveins R-M and DM-Cu longer than section between DM-Cu and bend of M. Cell r_{4+5} open.

Abdomen: (Fig. 7). Mid-dorsal excavation on syntergite 1+2 confined approximately to anterior third of this segment. Syntergite 1+2 with one pair of median marginal setae, without lateral marginal setae. Tergite 3 with one pair of median marginal and 1 pair of lateral marginal setae. Tergite 4 with row of 8–10 marginal setae. Tergite 5 0.8 times as long as tergite 4.



Figs. 1–4. *Besseria* spp. 1. *Besseria lateritia* (Meigen), male head in anterodorsal view (Israel, Hamat Gader, 7.v.1997, A. Freidberg leg [TAUI]). 2–4. *Besseria prophetarum* n. sp. (holotype). 2. Head in anterodorsal view. 3. Head in lateral view. 4. Left dorsal half of occiput in posterolateral view.

Male terminalia: The holotype was not dissected in order not to damage the only available specimen of this species.

Female

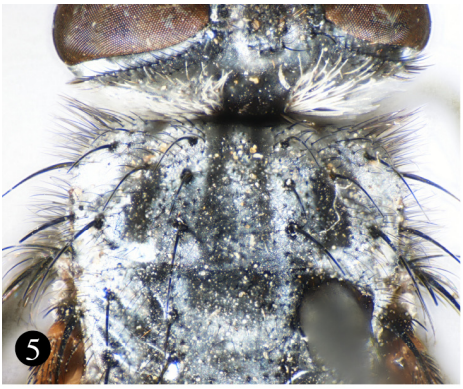
Unknown.

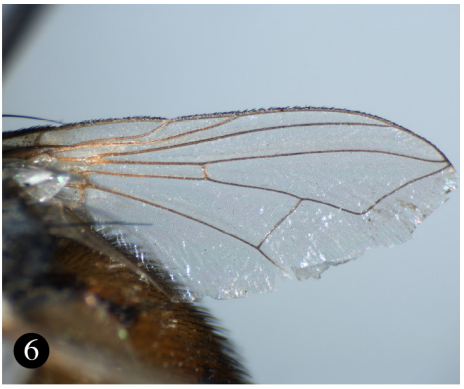
Material Examined

Holotype ♂: Israel: ‘Ezuz [30°48′N, 34°26′E] (Be’erotayim), near Nizzana, 17.iv.1998, A. Freidberg (TAUI).

Etymology

The specific epithet *prophetarum* is the genitive plural of the Latin noun *propheta* (*-ae*) meaning “prophet”.





Figs. 5–7. *Besseria prophetarum* n. sp. (holotype). 5. Posterior part of head and presutural area of scutum, dorsal view. 6. Right wing. 7. Abdomen, dorsal view.

KEY TO SPECIES OF *BESSERIA* IN ISRAEL

1. Postangular section of M absent (i.e., M vanishing on wing membrane where the bend should be). Scutum with one pair of presutural acrostichal setae. Ventral calypter tongue-like, very small, about half as wide as scutellum (measured at base). Genal dilation shiny black. First flagellomere not longer than pedicel. Frons about as wide as eye in dorsal view..... ..... ***B. zonaria* (Loew)**

-. Postangular section of M present and cell r_{4+5} open (Fig. 6) or just closed at wing margin. Scutum without presutural acrostichal setae. Other combination of characters..... **2**

2. Occiput with several irregular rows of black setae posterior to postocular setae. Cell r_{4+5} closed at wing margin or very short petiolate. Section of M between R-M and DM-Cu about as long as section between DM-Cu and bend. Male: protarsal claws at most as long as fifth protarsomere; frons at its narrowest point 0.52 times as wide as eye in dorsal view. Body length: 5.0 mm .... ***B. nuditibia* Kugler**

-. Occiput at most with 1 row of black setae posterior to postocular setae. Cell r_{4+5} open. Section of M between R-M and DM-Cu longer than section between DM-Cu and bend. Male: protarsal

claws about 2 times as long as fifth protarsomere; frons at its narrowest point 0.8–0.9 times as wide as eye in dorsal view (Figs. 1, 2). Body length: 7.3–9.8 mm **3**

3. Fronto-orbital plate with 2–4 rows of short erect setae lateral to frontal row (Fig. 1). Labella rounded, unmodified. Occiput usually without black setae posterior to postocular setae. Abdominal tergite 3 not entirely yellow, usually with a median longitudinal black band or at least with a dark median spot..... ***B. lateritia* (Meigen)**

-. Fronto-orbital plate entirely bare (Fig. 2). Labella narrow, pointed apically (Fig. 3). Occiput with a row of long, black setae posterior to postocular setae (Figs. 4, 5). Abdominal tergite 3 entirely yellow (Fig. 7) ..... ***B. prophetarum* n. sp.**

CHECKLIST OF THE WORLD SPECIES OF THE GENUS *BESSERIA*

B. anthophila (Loew, 1871)—Holarctic (Herting, 1979, 1984; Herting and Dely-Draskovits, 1993; Richter, 2004; O'Hara and Wood, 2004; Tschorsnig et al., 2004).

B. atra (Coquillett, 1897)—Nearctic (O'Hara and Wood, 2004).

B. brevipennis (Loew, 1863)—Nearctic (O'Hara and Wood, 2004).

B. caffra Villeneuve, 1920—Afrotropical (Crosskey, 1980).

B. dimidiata (Zetterstedt, 1844)—Palearctic (Herting, 1984; Herting and Dely-Draskovits, 1993; Tschorsnig et al., 2004).

B. excavata Herting, 1979—Afrotropical.

B. lateritia (Meigen, 1824)—Palearctic (Herting, 1984; Herting and Dely-Draskovits, 1993).

B. longicornis Zeegers, 2007—Afrotropical.

B. melanura (Meigen, 1824)—Palearctic (Herting, 1984; Herting and Dely-Draskovits, 1993; Richter, 2004; O'Hara et al., 2009).

B. nuditibia Kugler, 1977—Palearctic (Herting, 1984; Herting and Dely-Draskovits, 1993).

B. oblita Herting, 1979—Afrotropical.

B. pilimacula Herting, 1973—Palearctic (Herting, 1984; Herting and Dely-Draskovits, 1993).

B. prophetarum n. sp.—Palearctic.

B. reflexa Robineau-Desvoidy, 1830—Palearctic (Herting, 1984; Herting and Dely-Draskovits, 1993).

B. zonaria (Loew, 1847)—Afrotropical, Palearctic (Herting, 1979; Crosskey, 1980; Herting, 1984; Herting and Dely-Draskovits, 1993; Cerretti and Freidberg, 2009).

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