

## Original Article

# A review of the genus *Besseria* Robineau-Desvoidy (Diptera: Tachinidae) in Iran, with description of a new species

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**ABSTRACT.** The genus *Besseria* Robineau-Desvoidy, 1830 with 15 described species (Tachinidae: Phasiinae) is distributed in the Palaearctic, Nearctic, and Afrotropical Regions. A new species, *Besseria macrocerca* sp. nov., is described from the western and southern regions of Iran. This species is diagnosed and illustrated based on both male and female specimens, with particular emphasis on distinctive morphological characters and male terminalia, notably the elongated cerci. An updated key to the Palaearctic *Besseria* species with a stalked  $r_{4+5}$  wing cell is provided, along with a key to three species of the genus known from Iran. Distributional data and revised records of previously known Iranian species are also presented. Previous records from the country include only two confirmed species, with some doubtful identifications. This study significantly improves knowledge of *Besseria* diversity in Iran, confirming the presence of three valid species in the country.

**KEYWORDS:** *Cylindromyiini*, Fars, Hormozgan, Kermanshah, New species, Phasiinae, Taxonomy

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## INTRODUCTION

The genus *Besseria*, comprising 15 described species, belongs to the tribe *Cylindromyiini* (Tachinidae: Phasiinae) and is distributed across the Palaearctic, Nearctic, and Afrotropical Regions (O'Hara et al. 2020). This genus can be distinguished from other genera within the tribe *Cylindromyiini* by the following combination of characters: Postmetacoxal area membranous; posteroventral half of the head with white setulae and, in some species, vein M not reaching the wing margin (i.e., the postangular section of vein M absent). The hosts of most *Besseria* species remain unknown, except for *B. dimidiata* (Zetterstedt, 1844) and *B. lateritia* (Meigen, 1824), which parasitize the pentatomid bugs *Menaccarus arenicola* (Scholtz, 1847) and *Pscacasta exanthematica* (Scopoli, 1763), respectively (Tschorsnig & Herting 1994; Tschorsnig 2017).

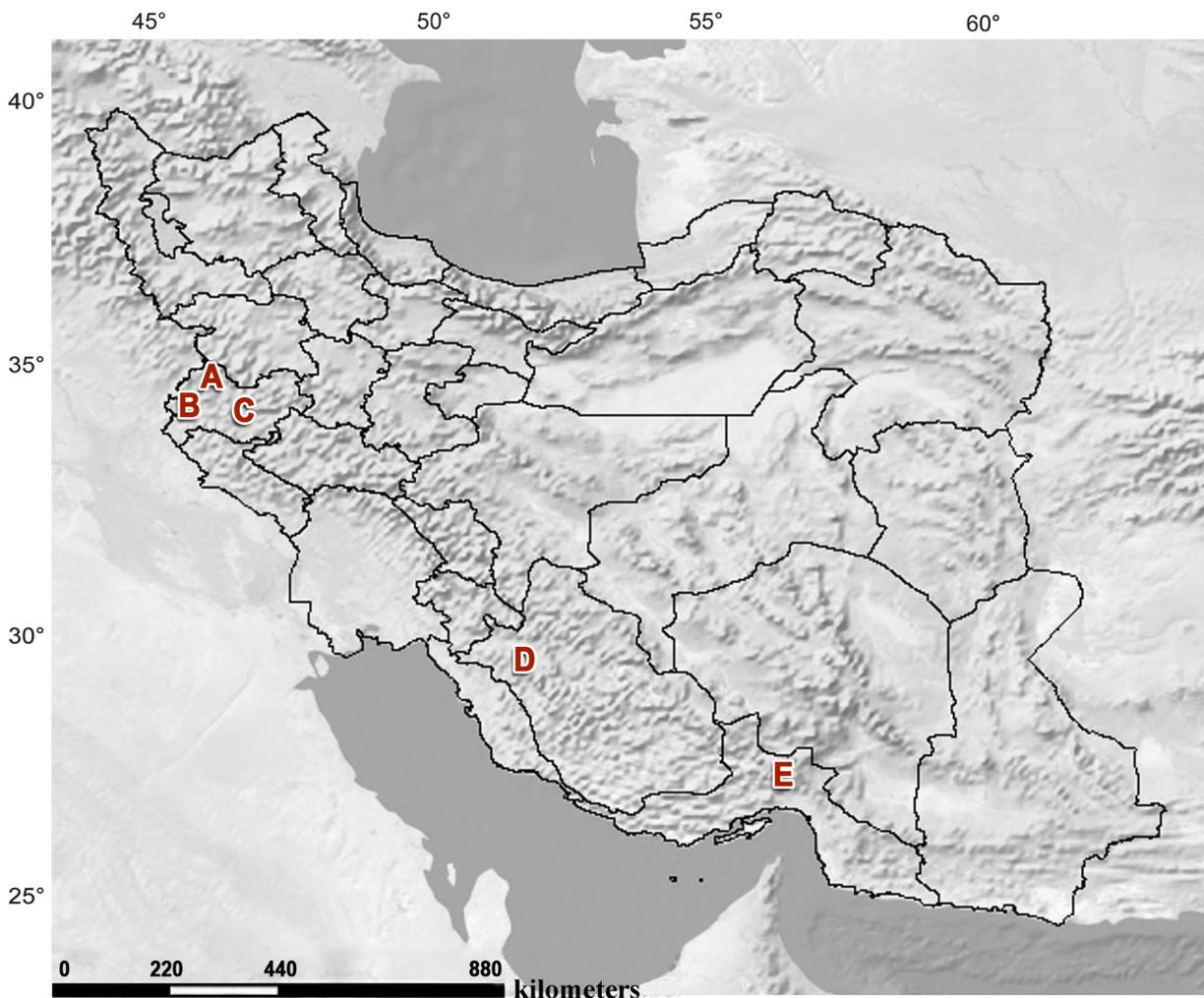
Two species of *Besseria*, namely *B. lateritia* and *B. zonaria* (Loew, 1847), have been recorded from the northern, northwestern, and central regions of Iran (Sahebari et al. 2016; Sahebari & Talebi 2021, 2023; Gilasian et al. 2022). Although Sahebari and Talebi (2021, 2023) list *Besseria anthophila* (Loew, 1871), this record should be regarded as doubtful pending detailed examination of the voucher specimens. In addition, Gheibi et al. (2009) reported an unnamed species of the genus *Besseria* from southern Iran (Fars Province). In other regions of the world, this genus of the family Tachinidae has been the subject of more extensive studies. Herting (1979) studied the *Besseria anthophila* species complex, providing an identification key to distinguish *B. zonaria* and *B. anthophila*, along with illustrations of the male terminalia for both species. Tschorsnig & Herting (1994) provided an identification key to the *Besseria* species occurring in Central Europe, along with notes on their known hosts. Zeegers (2007) and Cerretti et al. (2010) each described

a new species of this genus and, respectively, provided identification keys to the species of Yemen and Israel. In addition to compiling a list of the Afrotropical species of this genus, O'Hara and Cerretti (2016) proposed that *B. longicornis* Zeegers (2007), originally described from Yemen, be regarded as a synonym of *B. fossulata* Bezzi, 1908. O'Hara et al. (2020) provided a checklist of all described species worldwide based on the most recently published sources.

This study is a part of our ongoing surveys on the fauna of the family Tachinidae in Iran and aims to improve the existing knowledge of the taxonomy of this family in the Palearctic region.

## MATERIAL AND METHODS

The specimens of the new species were collected using Malaise traps and sweeping net in the western and southern provinces of Kermanshah, Fars, and Hormozgan (Fig. 1). To properly process the material preserved in ethanol, we followed the AXA method proposed by van Achterberg (2009). The pictures of dry collection specimens of adult flies were taken with a Sony® Alpha 7R Mark III equipped with Mitutoyo Plan Apo 5× and 10× objectives and a Novoflex Castel-Micro stacking rail system run under CaptureOne software at MNKB. Stacked photographs were combined using Helicon Focus™ software (Kozub et al. 2023). A Canon® EOS 500D camera, a Canon® EF 100 mm macro lens, and a Canon® macro ring light MR-14EX were used to photograph live specimens. Preparation of the male terminalia was conducted following the procedures outlined by Gilasian et al. (2016). Inked drawings and digital images were edited using Adobe Photoshop CS2.



**Figure 1.** Distribution of *Besseria macrocerca* sp. nov. in Iran. **A.** Kermanshah (Sarpolzahab); **B.** Kermanshah (Paveh); **C.** Kermanshah (Ghazanchi, Gheshlagh); **D.** Fars (Dasht-e Arjan); **E.** Hormozgan (Haji Abad).

The specimens are deposited in the Hayk Mirzayans Insect Museum (HMIM), Insect Taxonomy Research Department, Iranian Research Institute of Plant Protection, Tehran, Iran; in the Department of Entomology, National Museum of the Czech Republic, Prague, Czech Republic (NMPC); in the Museum für Naturkunde – Leibniz Institute for Evolution and Biodiversity Science, Berlin, Germany (ZMHB), and also in the private collection of Joachim Ziegler (CZB), Bernau, Germany. Measurements and ratios were calculated as proposed by Tschorsnig & Herting (1994) and Tschorsnig & Richter (1998). Statements given in square brackets in the description refer to paratypes. Overall lengths of specimens (in mm) were measured in lateral view from the anterior margin of the head, excluding the antenna, to the tip of the abdomen. The label data of the holotype is given verbatim, with a forward slash separating different lines, a double forward slash separating different labels, and descriptive information included in square brackets. The morphological terminology used in this paper follows Merz & Haenni (2000) (most external morphology), Stuckenberg (1999) (antenna), Sinclair (2000) (male terminalia), and Tschorsnig & Richter (1998) (wing).

## RESULTS

### *Taxonomic hierarchy*

**Class Insecta Linnaeus, 1758**

**Order Diptera Linnaeus, 1758**

**Suborder Brachycera Zetterstedt, 1842**

**Superfamily Oestroidea Leach, 1815**

**Family Tachinidae Robineau-Desvoidy, 1830**

**Subfamily Phasiinae Robineau-Desvoidy, 1830**

**Tribe Cylindromyiini Townsend, 1912**

**Genus *Besseria* Robineau-Desvoidy, 1830**

*Besseria* Robineau-Desvoidy, 1830:232. Type species: *Besseria reflexa* Robineau-Desvoidy, 1830:233, by monotypy. [For a complete list of synonyms, see O'Hara et al. (2020)]

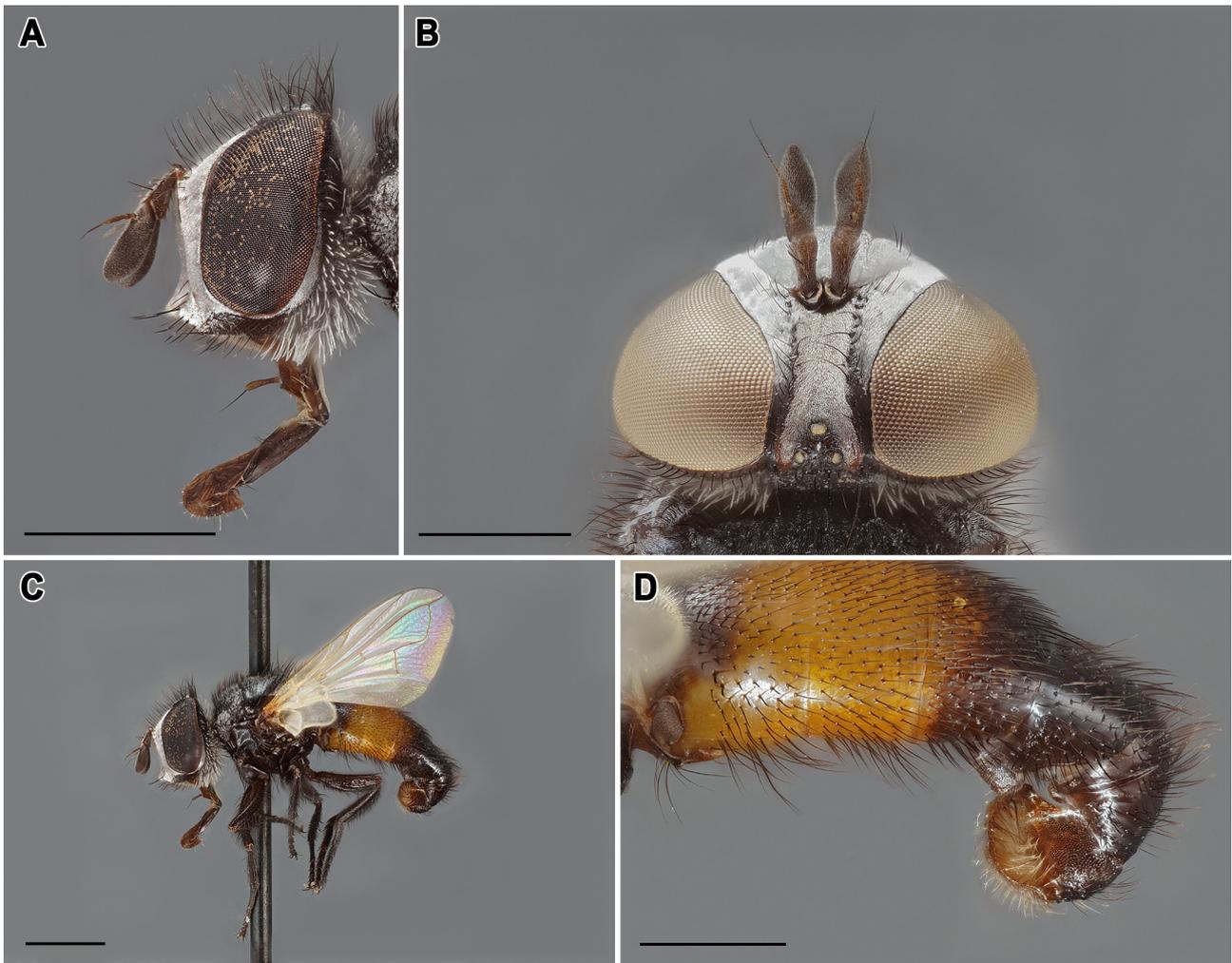
### ***Besseria macrocerca* Gilasian & Ziegler sp. nov.**

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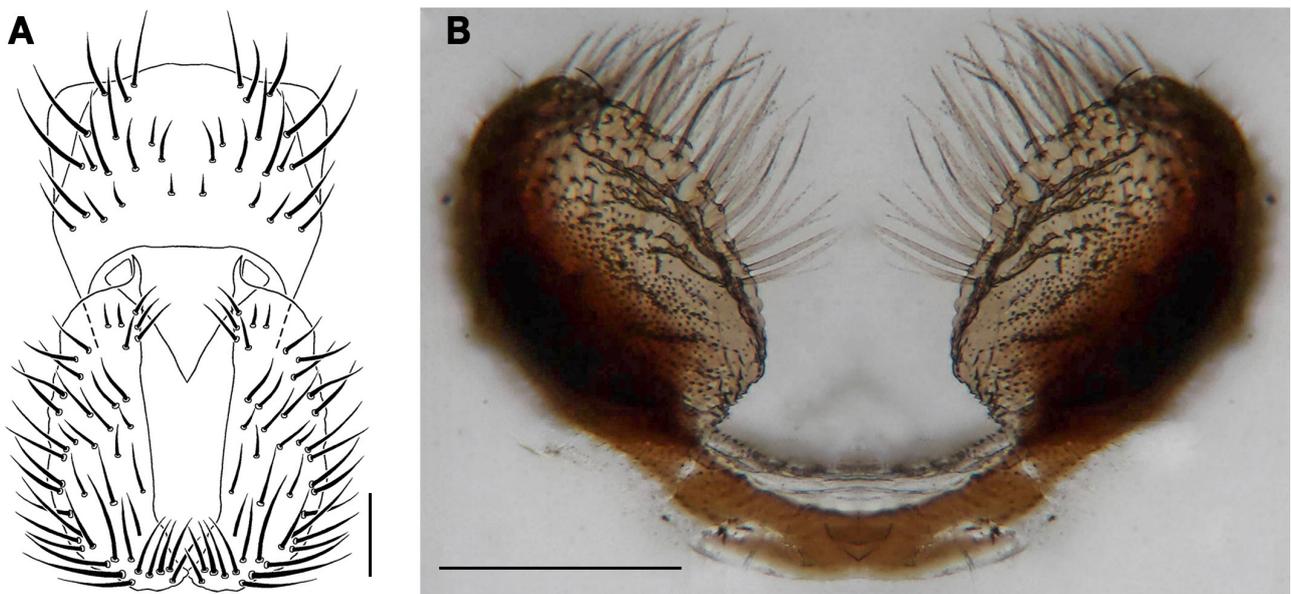
Figs 2–4

**Type material.** Holotype ♂ (glued to a card point): "IRAN: Kermanshah Prov., / Sarpolzahab, 556 m / 34°27'27"N, 045°52'6.9"E / 14.v.2015, Malaise trap, / M. Zardouei [white label] // "HOLOTYPUS ♂ / *Besseria macrocerca* / Gilasian & Ziegler / 2026" [red label]; HMIM. Paratypes: 2♂♂ 7♀♀ (glued to a card point), same collecting data as holotype [HMIM], 1♂ same data [ZMHB]; 1♂ 2♀♀ (glued to a card point), Kermanshah Prov., Ghazanchi, 1310 m, 34°26'45"N, 047°01'23"E, 1.vii.2015, Malaise trap, M. Zardouei [HMIN], 1♂ 1♀ same data [CZB]; 1♀ (glued to a card point), Kermanshah Prov., Gheshlagh, 1544 m, 34°40'17"N, 047°06'41"E, 1.vii.2015, Malaise trap, M. Zardouei [HMIN]; 1♀ (glued to a card point), Kermanshah Prov., Paveh, Dodan, 1100 m, 35°00'25.5"N, 046°12'54.1"E, 5.vi.2016, Malaise trap, M. Zardouei [HMIN]. 2♂♂ 3♀♀ (on minute pins) Hormozgan Province, Patal-e Isin, north of Bandar Abbas, approx. 70 m, 28.iv.–6.v.1977. Label data: "S. Iran / Isin / 28.iv.–6.v.1977 // Loc. No. 320 / Exped. Nat. Mus. / Praha". See also Hoberlandt (1983:14) [NMPC]; 1♂ (on minute pin) Hormozgan Province, Kuh-e Surmeh Mts south of Hajjiabad north of Bandar Abbas, 10.v.1973. Label data: "E. Iran, 55 km / S Hadjiabad, 2000 m / 10.v.1973 // Loc. No. 195 / Exped. Nat. Mus. / Praha". See also Hoberlandt (1981:20) [NMPC] [comment: The label information "E. Iran" is incorrect. The coordinates and altitude given by Hoberlandt (1981:22) are also inaccurate in detail, and the area is located in the province of Hormozgan, not in Kerman Province].

**Etymology.** The name '*macrocerca* (Latin, adjective) is derived from Greek 'makros' (long) and 'kerkos' (tail), in reference to the long cercus in male terminalia.



**Figure 2.** *Besseria macrocerca* Gilasian & Ziegler **sp. nov.**, male, paratype. **A.** Head, lateral view; **B.** Head, dorsal view; **C.** Habitus; **D.** Abdomen, postabdomen, lateral view. Scale bar: dorsal view of head and abdomen: 0.5 mm; lateral view of head and habitus: 1 mm.



**Figure 3.** *Besseria macrocerca* Gilasian & Ziegler **sp. nov.**, male terminalia, paratype. **A.** Epandrium, syncercus, dorsal view; **B.** Sternite V. Scale bar: 0.1 mm.

**Diagnosis.** Genal dilation shiny black; frons at its narrowest point about 0.5 times as wide as an eye in dorsal view; palpus about 0.5 times as long as postpedicel; scutum without acrostichal setae before scutellum; scutellum with 3 pairs of marginal setae, apical setae nearly as long as subapical setae; lower calypter large, about as wide as scutellum; vein M with a distinct bend, reaching wing margin; wing cell  $r_{4+5}$  with a long petiole; abdominal tergites in male without sexual patches; male cercus distinctly longer than surstylus and epandrium; abdominal tergite 2 in female with spine field ventrally.

**Description.** — **Male** (Holotype, Figs 2–3) (statements given in square brackets refer to the variation found among the paratypes). Overall length: 4.0 [3.4–4.0] mm.

**Colouration and microtrichosity.** Head predominantly brownish-black; lunule brown; ocellar triangle, genal dilation and about posterior half of fronto-orbital plate shiny black; upper narrow margin of gena with grey microtrichosity; genal setulae black; face, parafacial, frontal vitta and about anterior half of fronto-orbital plate with dense silvery-grey microtrichosity; occiput mostly shiny black with white setulae, lower 1/3 of occiput with a narrow grey microtrichosity behind eye; antenna including arista brown; prementum and palpus brown; thorax black, scutum weakly covered with grey microtrichosity (strictly dorsal view); scutellum shiny black; wing hyaline; calypter white; tegula brownish-black; basicosta brownish-orange; halter brownish-orange; legs entirely dark brown; abdomen predominantly orange, without microtrichosity, anterior 1/2 of syntergite 1+2, posterior 1/3 of tergite 4 as well as tergite 5 black, posterior 1/2 of syntergite 1+2 to anterior 2/3 of tergite 4 orange with a median longitudinal black vitta; terminalia brown.

**Head** (Fig. 2A–B). Eye bare; height of gena in lateral view about 0.13 [0.06–0.13] times as long as vertical diameter of eye; face almost 1.13 [1.00–1.13] times as long as frons in lateral view; frons at its narrowest point 0.52 [0.45–0.60] times as wide as an eye in dorsal view; frontal vitta medially almost 3.0–3.5 times as wide as fronto-orbital plate; medial vertical seta nearly 0.23 [0.20–0.26] times as long as vertical diameter of eye, lateral vertical seta absent; ocellar setae proclinate; postocellar setae short, parallel; frons with 13 [9–14] frontal setae, added by a few weaker setae, descending to mid-length of pedicel; facial ridge bare, parafacial almost bare, [2]–4 frontal setae extending to upper portion of parafacial; fronto-orbital plate without proclinate orbital setae, at level of scape nearly 0.33 [0.25–0.33] times as wide as transverse diameter of eye; parafacial at its narrowest point almost 0.12 [0.07–0.15] times as wide as transverse eye diameter and nearly 0.45 [0.40–0.50] times as wide as postpedicel in lateral view; vibrissa short, arising at level of lower facial margin and about 0.25–[0.20–0.30] times as long as face; lower facial margin well visible in lateral view; postpedicel 1.8–[2.7] times as long as pedicel and about 2.5–3.0 times as long as wide; arista thickened almost on basal 1/3, first aristomere very short, second aristomere almost 3 times as long as wide; prementum about 5 times as long as wide; palpus about 0.40–0.50 times as long as postpedicel, with a strong black seta at apical tip, 0.6–1.4 times as long as palpus.

**Thorax.** Prosternum and proepisternum bare; postpronotum with 2 setae; scutum without acrostichal, with 1[2]+2 dorsocentral, 1+1 intra-alar, 2 notopleural, and 1 supra-alar seta; first postsutural supra-alar seta absent; postalar callus with 2 setae; anatergite bare below lower calypter; katepimeron bare; katepisternum with 2 (1+1) setae, not differentiated from other katepisternal setae; postmetacoxal area membranous; scutellum with 3 pairs of marginal setae, apical setae crossed [or rarely parallel to divergent] and nearly as long as subapical setae, lateral setae absent, basal setae almost as long as apical setae.

**Wing.** Costal seta not differentiated; second costal section bare ventrally; third costal section almost [1.70]–2.0 times as long as fourth costal section; fourth costal section (between veins  $R_{2+3}$  and  $R_{4+5}$ ) about 1.60 [1.50–2.20] times as long as second costal section (between subcostal break and vein  $R_1$ ) and nearly 4.0 [3.5–4.5] times as long as sixth costal section; vein  $R_{4+5}$  with 1[0] very short dorsal and ventral basal setulae; cell  $r_{4+5}$  with a petiole about 2.6–[3.8] times as long as crossvein r-m and almost [0.45]–0.65 times as long as section of vein M beyond bend; section of vein M between crossveins r-m and dm-cu about 0.73 [0.68–0.95] times as long as section between dm-cu and bend of M; bend of M forming an acute angle without an appendix; crossvein dm-cu nearly 3.75–[4.50] times as long as crossvein r-m.

**Leg.** Fore leg: coxa bare on anterior and posterior surfaces; tibia with 2 posterior setae and a row of short anterodorsal setae; preapical anterodorsal seta a bit shorter than preapical dorsal seta, preapical posterodorsal seta absent; tarsomere 1 nearly 2.0 times as long as tarsomere 2 and 0.40 times as long as

tibia; claw almost 0.80 times as long as tarsomere 5. Mid leg: tibia with 1 anterodorsal setae, 2 posterior and 1 ventral setae. Hind leg: tibia with a row of anterodorsal and posterodorsal setae, 2–3 setae a bit longer and stronger than other setae, and with 2 anteroventral and 2 preapical dorsal setae.

*Abdomen.* Middorsal depression of syntergite 1+2 not extending to posterior margin of that segment; tergites without marginal and discal setae and without sexual patches, covered with inclined setulae; tergite 3 nearly 0.35 times as long as wide; tergite 5 about 0.80 times as long as tergite 4.

*Terminalia* (Figs 2D, 3A–B). Sternite 5 (Fig. 3B) narrowed medially with enlarged elliptical lateral portion; syncercus with very large lateral processes, longer than surstylus and epandrium, narrow in lateral view and wide in dorsal view with dense brownish-yellow setae on lateral and ventral portions (Figs 2D, 3A).

**Female** (Figs 4A–D). Differs from male as follows: Fronto-orbital plate mostly shiny black with exception for antero-lateral grey portion; abdomen mostly yellowish-orange, tergite 3 entirely yellowish-orange or with a pale median longitudinal blackish vitta, tergite 4 with a pale posterior semi-triangular blackish vitta; tergite 5 entirely brownish-black; frons at its narrowest point 1.00–1.15 times as wide as an eye in dorsal view; frontal vitta medially almost 1.25 times as wide as fronto-orbital plate; fronto-orbital plate with two irregular rows of 7–10 proclinate setulae on shining black posterior half area, abdominal tergite 2 with a spine field ventrally, postabdomen as in Figure 4D.



**Figure 4.** *Besseria macrocerca* sp. nov., female, paratype. A. Head, lateral view; B. Head, dorsal view; C. Habitus; D. Abdomen, postabdomen, lateral view. Scale bar: dorsal view of head and abdomen: 0.5 mm; lateral view of head and habitus: 1 mm.

**Remarks.** Within the genus *Besseria*, the new species can be easily assigned to a group of morphologically similar Palaearctic species based on its wing characteristics as follows: *Besseria macrocerca* **sp. nov.**, with its stalked wing cell  $r_{4+5}$ , is readily distinguishable from the species lacking a wing cell (*B. anthophila*, *B. fossulata*, *B. oblita*, and *B. zonaria*) as well as from those with an open wing cell (*B. atra*, *B. lateritia*, *B. nuditibia*, and *B. prophetarum*). Among the remaining species, males of *B. caffra*, *B. excavata*, and *B. pilimaculata* possess sexual patches on tergites 3 and 4—features absent in the new species. Apart from *B. macrocerca*, only *B. brevipennis*, *B. dimidiata*, *B. melanura*, and *B. reflexa* share the aforementioned diagnostic characters. The Nearctic *B. brevipennis* differs from these in several respects, including its entirely yellow abdomen. The four remaining Palaearctic species can be distinguished using the modified identification key of Tschorsnig and Herting (1994), as follows.

**Key to the Palaearctic species of *Besseria* Robineau-Desvoidy, 1830, with stalked wing cell.**

- 1 Scutellum with 4–8 pairs of marginal setae, apart from a pair of basal setae with 6–14 more or less parallel directed marginal setae; palpus about 0.2–0.4 times as long as postpedicel. .. *B. melanura* (Meigen, 1824)
- Scutellum with only 3 pairs of marginal setae (basal, subapical, and apical); palpus at least 0.4 times as long as postpedicel. ....2
- 2 Genal dilation with dense white microtrichosity (Fig. 5A); frontal vitta with dense yellow-grey microtrichosity; mid tibia with 2 ventral setae, upper seta often much weaker. Male: tergite 5 with dense erected setulae; cerci-surstyli complex 2–3 times as long as epandrium, roof-like developed, inside with a ring of yellow scale-like setulae (Fig. 5B). Females: tergites 2 and 3 with spine fields ventrally. .... *B. dimidiata* (Zetterstedt, 1844)
- Genal dilation at least on its front half shiny black (Figs 2C, 4C, 5C); frontal vitta black with weak or dense whitish microtrichosity; mid tibia with 1 (rarely 2) ventral setae. Male: tergite 5 not entirely covered with dense erect setulae, but either partially bare or with semi-adherent setulae; Females: spine field only present on tergite 2 ventrally. ....3
- 3 Palpus almost as long as postpedicel (Fig. 5C); scutum with a pair of acrostichal setae before scutellum. Male: tergite 5 dorsally partly bare, smooth and shiny; cerci a little shorter than epandrium (Fig. 5D). .... *B. reflexa* Robineau-Desvoidy, 1830
- Palpus about 0.4–0.5 times as long as postpedicel (Figs 2A, 4A); scutum without acrostichal setae before scutellum. Male: tergite 5 dorsally with dense semi-adherent setulae; cerci longer than epandrium, narrow in lateral view and wide in dorsal (caudal) view with dense brownish-yellow setae on lateral and ventral portions (Fig. 2D). .... *B. macrocerca* **sp. nov.**

**Key to the Iranian species of *Besseria* Robineau-Desvoidy, 1830**

- 1 Vein M not reaching wing margin (i.e., postangular section of vein M absent); gena shiny black; scutum with one pair of acrostichal setae before scutellum; lower calypter very small, about half as wide as scutellum. .... *B. zonaria* (Loew, 1847)
- Vein M reaching wing margin, with a distinct bend; gena shiny black or microtrichose; scutum without acrostichal setae before scutellum; lower calypter large, about as wide as scutellum. ....2
- 2 Cell  $r_{4+5}$  open; frons in male 0.8–0.9 times an eye viewed dorsally; gena with gray microtrichosity; male cercus shorter than surstylus and epandrium. .... *B. lateritia* (Meigen, 1824)
- Cell  $r_{4+5}$  closed, with a distinct petiole; frons in male about 0.5 times an eye viewed dorsally; genal dilation shiny black; male cercus distinctly longer than surstylus and epandrium. .... *B. macrocerca* **sp. nov.**

**Other species of the genus *Besseria* in Iran**

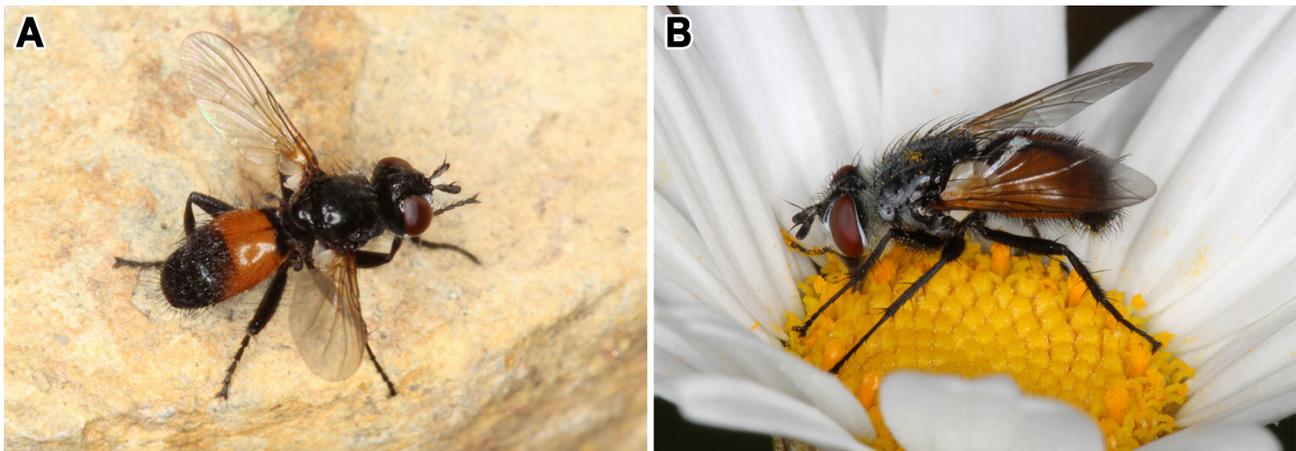
*Besseria zonaria* (Fig. 6A)

This species has been formally recorded from the Haftad-Qolleh Protected Area in Markazi Province (Gilasian et al. 2022).



**Figure 5.** *Besseria* species. **A–B.** *Besseria dimidiata* (Zetterstedt, 1844), male, Germany; **C–D.** *Besseria reflexa* Robineau-Desvoidy, 1830, male, Croatia. **A, C.** Habitus; **B, D.** Abdomen, postabdomen, lateral view. Scale bar: habitus: 2 mm, abdomen: 0.5 mm.

**Material examined.** **Ardabil province**, Alvares (Kuhha-ye Sabalan), north of Nir and southwest of Ardabil, summit, 2,490 m, 38°09'31.1"N 047°56'04.1"E, 7.viii.2005, 1♂, hilltopping, leg. J. Ziegler [ZMHB 29.271]. **Esfahan province**, Doulat Gharin nortnortheast of Semirom (Kuh-e Aljuq), Mountain top, 2,780 m, 31°31'48"N 051°36'37"E, 11.v.2007, 1♂, hilltopping, leg. J. Ziegler [ZMHB 31.072]. **Fars province**, 29 km east of Yasuj, Slope, 2,300 m, 30°41'N 051°43'E, 16.–17.vi.1973, loc. no. 245, see also Hoberlandt (1981:29), 1♂ leg. Exped. Nat. Mus. / Praha [NMPC]. **Fars province**, Gerdeniye-Alafa Pass (Kuh-e Bedyishk) southeast of Sarvestan, southeast of Shiraz, 1,910 m, 29°11'51"N 053°21'53"E, 24.iv.2006, 1♂, hilltopping, leg. J. Ziegler [ZMHB 29.790]. **Kerman province**, Haruz north of Kerman (Kuhha-ye Kuhpaye), 2,500 m, 30°42'02"N 057°01'15"E, 30.iv.2007, 1♂, hilltopping, leg. J. Ziegler [ZMHB 30.719]. **Khorasan-e Razavi province**, Chorki, north of Mareshk (Koppe Dag) north of Mashhad, 2,200 m, 36°50'05"N 059°35'01"E, 28.v.2006, 1♂, on yellow flowers of *Achillea biebersteinii* Afan., leg. J. Ziegler [ZMHB 29.995]. **Khorasan-e Razavi province**, Chovinli northeast of Emam Qoli (Koppe Dag), north of Quchan, Camp, 1,770 m, 37°25'31"N 058°32'03"E, 30.v.2006, 1♂, leg. J. Ziegler [ZMHB 30.029].



**Figure 6.** *Besseria* species. **A.** *Besseria zonaria* (Loew, 1847), male. Males of this species are infrequently, yet consistently, encountered on mountain peaks in Iran, where they typically perch on stones, as illustrated in the photograph. This behavior, known as “hilltopping,” involves males forming mating aggregations on hilltops and summits and has been documented in certain Tachinidae as well as in various other insect groups. Body length 4 mm. **B.** *Besseria lateritia* (Meigen, 1824), male, visiting a flower of *Tanacetum* spec. Most *Besseria* species are at least occasional flower visitors. Body length 10 mm.

***Besseria lateritia* (Fig. 6B)**

This species has been formally reported only from West Azerbaijan province in northwestern Iran (Sahebari et al. 2016).

**Material examined.** **Esfahan province**, Natanz, Freezhand, 2379 m, 33°31'01"N 051°41'45"E, 18.v.2009, 2♂♂, leg. E. Gilasian [HMIM]. **Fars province**, Dasht-e Khoshk, south of Kakan, east of Yasuj, Slope, 2400 m, 30°29'41.4"N 051°52'04.8"E, 07.vii.2004, 13♂♂ 2♀♀ on flowers of *Mentha longifolia* (L.) Huds., leg. J. Ziegler [ZMHB 26.792-806]; 09.vii.2004, 5♂♂ 3♀♀ on flowers of *Mentha longifolia* (L.) Huds., leg. J. Ziegler [ZMHB 26.960-67]; Yasuj, Kakan, Dast-e Khoshk, 2350 m, 7.vii.2004, 6♂♂, leg. E. Gilasian [HMIM]. **Tehran province**, 40 km south of Tehran, 35°38'N 51°25'E, 7.iv.1977, loc. no. 278, see also Hoberlandt (1983:9), 1♀, leg. Exped. Nat. Mus. / Praha [NMPC]. **Tehran province**, Shahryar, 1100 m, 35°35'N 050°55'E, 10.v.2011, 1♂, leg. E. Gilasian [HMIM].

**DISCUSSION**

In couplet 222 of the key to the Palaearctic genera of Tachinidae (Tschorsnig & Richter 1998), the length of the subapical scutellar setae, as compared to the apical setae, is used to distinguish genera. According to this character, in the genus *Besseria*, the subapical setae are long, extending beyond the apices of the apical setae. In contrast, in the new species described here, the subapical setae are at most as long as the apical setae and do not extend beyond their apices.

Adults of the new species occur at the southwestern foothills of the Zagros Mountains as early as May, and at higher elevations in the southern Zagros during June and July. Gheibi et al. (2009:73) reported, under the name *Besseria* spec., the collection of four females on 06.vii.2007. The second author examined a male specimen from the Gheibi collection, collected from the same region many years ago. This specimen was identical to the new species described here. Gheibi’s report most likely also refers to specimens of the new species described here. During their study on the species diversity of the family Tachinidae in Mazandaran and Gilan provinces, Sahebari & Talebi (2021, 2023) reported *Besseria anthophila* (Loew, 1871) for the first time from Iran. However, the single female voucher specimen was only assigned to the *B. anthophila* species group, whereby the exact species affiliation remains undetermined. Therefore, the occurrence of this species in Iran is not confirmed, and only the presence of the similar *Besseria zonaria* is considered valid for the country.

#### AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: E. Gilasian & J. Ziegler: conceptualization, methodology, investigation, draft preparation, final review and edit, visualization. The authors read and approved the final version of the manuscript.

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#### AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in the Hayk Mirzayans Insect Museum (HMIM), Insect Taxonomy Research Department, Iranian Research Institute of Plant Protection, Tehran, Iran; in the Department of Entomology, National Museum of the Czech Republic, Prague, Czech Republic (NMPC); in the Museum für Naturkunde – Leibniz Institute for Evolution and Biodiversity Science, Berlin, Germany (ZMHB), and also in the private collection of Joachim Ziegler (CZB), Bernau, Germany and are available from the curator upon request.

#### ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

#### CONSENT FOR PUBLICATION

Not applicable.

#### CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

#### GENERATIVE AI STATEMENT

No generative AI tools were used in the preparation of this paper.

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## بررسی جنس *Besseria* Robineau-Desvoidy (Diptera: Tachinidae) در ایران، با توصیف یک گونه جدید

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**چکیده:** جنس *Besseria* Robineau-Desvoidy, 1830 (Tachinidae: Phasiinae) با ۱۵ گونه توصیف شده در نواحی پالتارکتیک، نئارکتیک و آفروتروپیک انتشار دارد. یک گونه جدید به نام، *Besseria macrocerca* sp. nov.، از نواحی غربی و جنوبی ایران توصیف شد. این گونه بر اساس نمونه‌های نر و ماده، شناسایی و تصاویر آن با تأکید خاص بر ویژگی‌های ریخت‌شناسی افتراقی بخش انتهایی بدن حشره نر، به‌ویژه سرسی کشیده، تهیه شد. یک کلید به‌روز شده برای گونه‌های *Besseria* منطقه پالتارکتیک با سلول بال ۴+۵ ساقه‌دار ارائه شد. همراه آن، یک کلید برای شناسایی سه گونه از این جنس که از ایران شناخته شده‌اند نیز ارائه شد. اطلاعات مربوط به دامنه انتشار و مرور گونه‌های ایرانی قبلاً شناخته شده نیز تهیه شد. سوابق قبلی از کشور با در نظر گرفتن برخی تشخیص‌های مشکوک، تنها شامل دو گونه تأیید شده است. این مطالعه به طور قابل توجهی دانش ما را از تنوع *Besseria* در ایران بهبود می‌بخشد و وجود سه گونه معتبر در کشور را تأیید می‌کند.

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**واژگان کلیدی:** *Cylindromyiini*، فارس، هرمزگان، کرمانشاه، گونه جدید، Phasiinae، تاکسونومی