



Taxonomy and Systematic

Two new species of *Omyomymar* Schauff (Hymenoptera: Mymaridae) from the Indian Himalayan Region with a key to Indian species

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Abstract. Two new species of the genus *Omyomymar* Schauff (Hymenoptera: Mymaridae), *Omyomymar sudhiri* sp. nov. Anwar & Zeya and *Omyomymar supremus* sp. nov. Anwar & Zeya are described from the Indian Himalayan regions. An identification key to Indian species is provided. All the previously recorded and described species of the genus are analyzed and discussed.

Keywords: Chalcidoidea; description; fairyfly; India; record; taxonomy.

In his study SCHAUFF (1983) erected genus *Omyomymar* Schauff for *Paranaphoidea silvanum* (Ogloblin), and in his phylogenetic hypothesis (SCHAUFF 1984), placed it with *Erythmelus* Enock and *Anaphes* Haliday. Later, LIN *et al.* (2007) placed *Omyomymar* in *Anagrus*-group of the genera of Mymaridae (Hymenoptera: Chalcidoidea) based on partially or completely divided posterior scutellum. LIN & CHIAPPINI (1996) recorded the genus from China, described three species, and provided a key to the females of the then-existing species. MANICKAVASAGAM *et al.* (2011) reported the occurrence of the genus in India and recorded *O. silvanum* (Ogloblin). ANWAR *et al.* (2015) described two species (*Omyomymar insulanum* Zeya & Anwar and *Omyomymar yusufi* Anwar & Zeya) from India with an updated list of world species and their distribution. GOWRIPRAKASH & MANICKAVASAGAM (2016) reported *O. silvanum* from India to be a misidentification and described it as *O. huberi* Manickavasagam & Gowriprakash along with another very closely related species *O. noyesi* Manickavasagam & Gowriprakash, both are collected from the same localities. RAMESHKUMAR *et al.* (2015) recorded *O. glabrum* Lin & Chiappini from Meghalaya. SANKARARAMAN & MANICKAVASAGAM (2020) described *O. hayati* Manickavasagam & Sankararaman. Currently, the genus contains six species from India (excluding two species described here as new).

The objective of this paper is to describe, illustrate and diagnose two new species of genus based on two distinct females, collected from Himachal Pradesh and Sikkim states of Indian Himalayan regions. An identification key to all the known species of the genus from India is also provided. The validity of previously recorded and described Indian species is analyzed and discussed.

MATERIAL AND METHODS

The studied specimens are deposited at Insect Collections Department of Zoology, Aligarh Muslim University, Aligarh, Uttar Pradesh, India (ZDAMU). Collection and preservation techniques follow NOYES (1982). Dry specimens were mounted on cards of the sizes (14×5 mm), cut by a card-punching machine (QAMAR 2016). Slides were prepared following HUBER (2015) and ANWAR *et al.* (2020). The terminology used follows ZEYA & HAYAT (1995), and GIBSON (1997). All measurements are in µm. Body lengths are taken from card-mounted specimens; all other measurements are from slide mounts made at 400× magnification. The radicle remained attached to the head on slide, so, its length is not included with the scape. The illustrations of body parts mounted on slide were taken with a digital camera "Leica DFC295" attached to a compound microscope "Leica DM 2500", whereas the habitus view of insects on cards was taken under the stereo zoom binocular "Nikon SMZ25". The photographs were slightly cleaned and retouched using Adobe Photoshop® CS3.

The following abbreviations are used:

F, funicle segment; mps, multiporous plate sensillum or sensilla (= longitudinal sensilla of authors); MT, malaise trap; SN, sweep net; YPT, yellow pan trap; ICAR, Indian council of Agricultural Research.

RESULTS AND DISCUSSION

Key to Indian species of *Omyomymar* Schauff (females)

1. Clava without apical projection (Figure 2)2
- Clava with apical projection (Figure 11, indicated by arrow)

-4
 2. Clava at least 3.5× as long as broad, shorter than F4–F6 combined ***O. glabrum* Lin & Chiappini**
 - Clava at most 3× as long as broad, as long as F4–F6 combined3
 3. Clava 2.5× as long as broad; apical fourth of fore wing sparsely setose; marginal fringe of both wings relatively thick and fewer in number; ovipositor 3.5× as long as metatibia....
 ***O. yousufi* Anwar & Zeya**
 - Clava 2.2× as long as broad; apical fourth of fore wing densely setose (Figure 4); marginal fringe of both wings relatively thin and more in number; ovipositor 2.3× as long as metatibia
 ***O. supremus* sp. nov. Anwar & Zeya**
 4. Apical projection of clava finger-like, projected part at least 2× as long as broad (Figure 11); ovipositor at most 2.5× mesotibia length ***O. sudhiri* sp. nov. Anwar & Zeya**
 - Apical projection of clava nipple-like, projected part at most 1× as long as broad; ovipositor at least 2.9× mesotibia length5
 5. Clava longer than F3–F6 combined
 ***O. insulanum* Zeya & Anwar**
 - Clava shorter than F3–F6 combined 6
 6. Clava at most 3.1× as long as wide, as long as F4–F6 combined; F1 distinctly longer than F2
 ***O. hayati* Manickavasagam & Sankararaman**
 - Clava at least 3.6× as long as wide, longer than F4–F6 combined; F1 at most or, slightly longer than F2 7
 7. F1 the longest; ovipositor 2.9× mesotibia length; exerted part of ovipositor 0.6× gaster length
 ***O. huberi* Manickavasagam & Gowriprakash**
 - F2 the longest; ovipositor 5.3× mesotibia length; exerted part of ovipositor 0.9× gaster length
 ***O. noyesi* Manickavasagam & Gowriprakash**

Description of new taxa (listed in same order as keyed)

Omyomymar supremus sp. nov. Anwar & Zeya
 (Figures 1-8)

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<urn:lsid:zoobank.org:act:CFB54C0E-5CA4-4F61-A8E8-C4A23DD75DC0>

Type material. Holotype, female (on slide under 4 coverslips, slide No. MYM.698), INDIA: SIKKIM: Tadong (ICAR Comp.) (YPT), 3.XI.2014, Coll. K. Veenakumari, (ZDAMU).

Diagnosis. *Omyomymar supremus* sp. nov. can be distinguished from other the species of the genus by its larger body length 970 µm, which is nearly 660 µm in all the other described species. The new species is probably closely related to *O. yousufi* Anwar & Zeya in having its antennal clava without projection but differs in following characters: clava relatively broader, 2.2× as long as broad (clava relatively less broad, 2.5× as long as broad in *O. yousufi*), fore wing apically one-fourth densely setose (fore wing apically one-fourth less densely setose in *O. yousufi*), ovipositor 3× as long as mesotibia and 3.5× as long as metatibia (ovipositor 2.85× as long as mesotibia and 2.28× as long as metatibia in *O. yousufi*).

Description. Female holotype. Length, 970 µm (excluding the exerted part of ovipositor). Head and eyes dark brown. Antenna with radicle, scape, pedicel and F1 pale brown, F2–F6 and clava brown. Mesosoma dark brown. Wings subhyaline. Legs, including coxae, pale brown. Metasoma in basal half yellow, rest dark brown; ovipositor pale brown.

Head (Figure 3). Head, 1.2× as broad as high. Antenna

(Figure 2) with scape 2.4× as long as broad; pedicel 1.8× as long as broad; funicular segments markedly decreasing in length distad, F1–F5 longer than broad; F1, longest with proximal and distal ends slightly dilated, F6 shortest, 1.3× as broad as long; clava 2.2× as long as broad, longer than F4–F6 combined, slightly truncated at apex and without projection; basal segment of clava with one mps, apical segment with four mps.

Mesosoma (Figure 5). Mesosoma 0.6× metasoma length. Mesoscutum (Figure 6) with polygonal reticulate sculpture, notaular lines complete; scutellum and frenum longitudinally striae (Figure 7); propodeum (Figure 8) medially smooth, sides with faint longitudinal polygonal sculpture. Fore wing (Figure 4) 8.4× as long as broad, with two lines of setae, each running parallel to its wing margin, disc one-fourth apically densely setose and a few setae behind venation; longest marginal seta about 1.7× as long as maximum wing width. Hind wing (Figure 4) 23.8× as long as broad, longest marginal seta 4.5× as long as maximum wing width.

Metasoma (Figure 5). Ovipositor strongly exerted beyond the apex of gaster, 1.9× as long as gaster, 3× as long as mesotibia and 3.5× as long as metatibia, exerted part as long as gaster length.

Measurements (µm). head width: height, 200:165; antennal segments including radicle L:W - radicle, 15:20; scape, 95:40; pedicel, 50:28; F1, 100:13; F2, 75:15; F3, 65:15; F4, 38:20; F5, 30:25; F6, 28:35; clava, 130:60; mesosoma, 338; fore wing L:W, 948:113; longest marginal seta, 188; hind wing L:W, 893:38; longest marginal seta, 170; protibia, 185; mesotibia, 378; metatibia, 325; gaster, 600; ovipositor, 1130; exerted part of ovipositor, 630.

Male. Unknown.

Host. Unknown.

Distribution. India: Sikkim.

Etymology. The species name is an arbitrary combination of letters and may be taken as a noun in apposition.

Omyomymar sudhiri sp. nov. Anwar & Zeya (Figures 9-15)

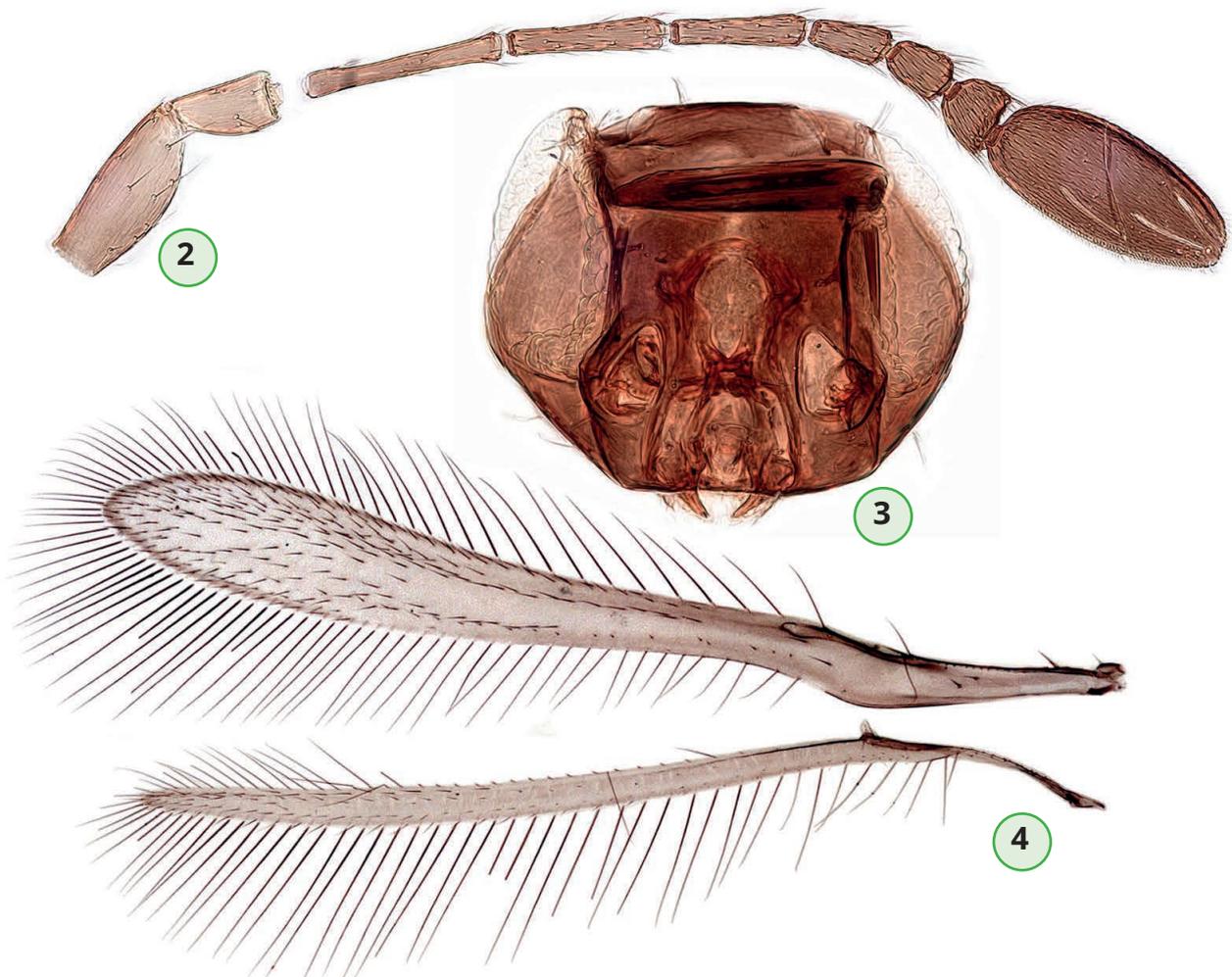
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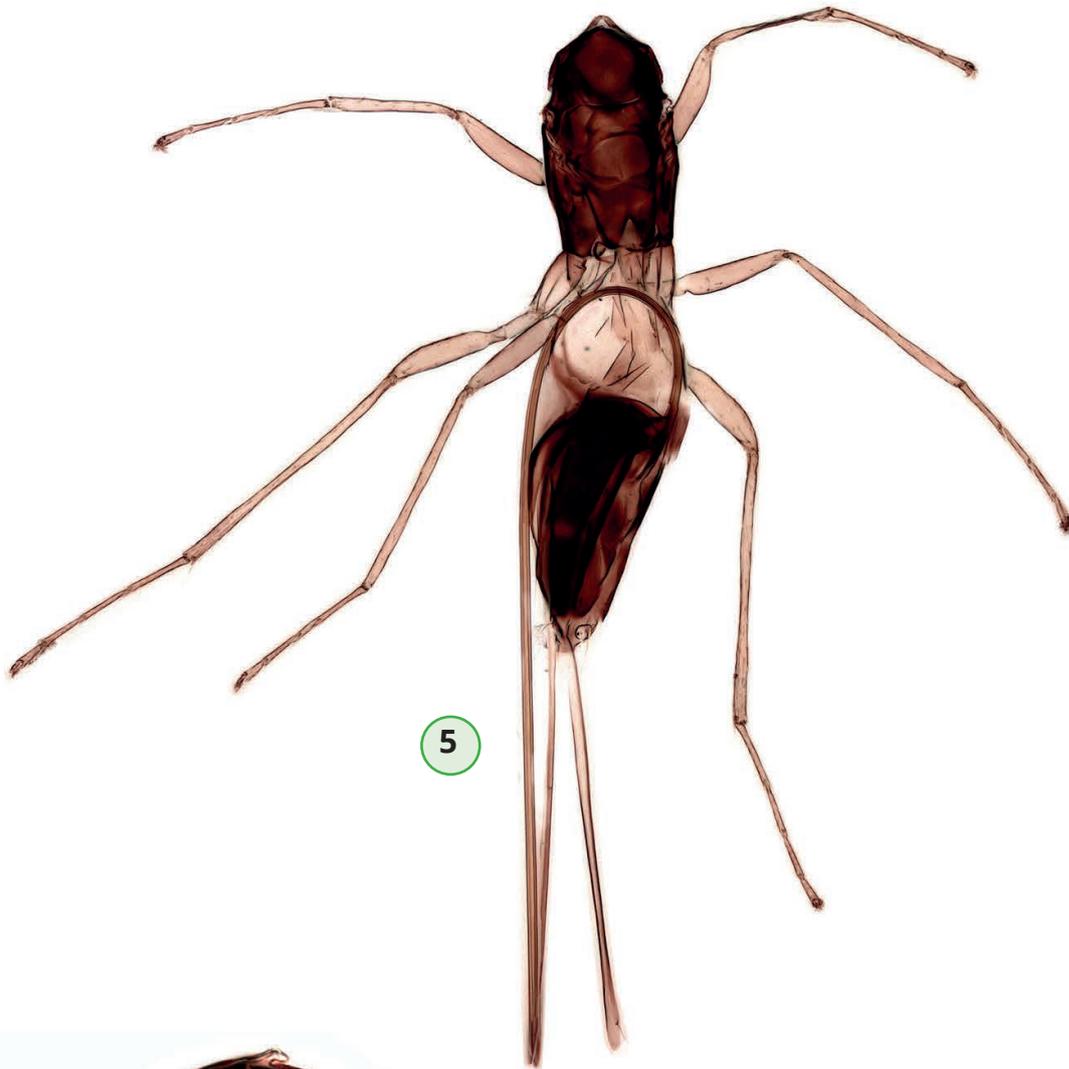
Type material. Holotype, female (on slide under 4 coverslips, slide No. MYM.697); INDIA: HIMACHAL PRADESH: Gandawal, Una, (SN), 30.IX.2013, Coll. PT Anwar, (ZDAMU).

Diagnosis. *Omyomymar sudhiri* sp. nov. is close to *O. silvanum* Schauff and *O. longidigitum* Lin & Chiappini, but differing from them for details of morphological characteristics, as discussed below.

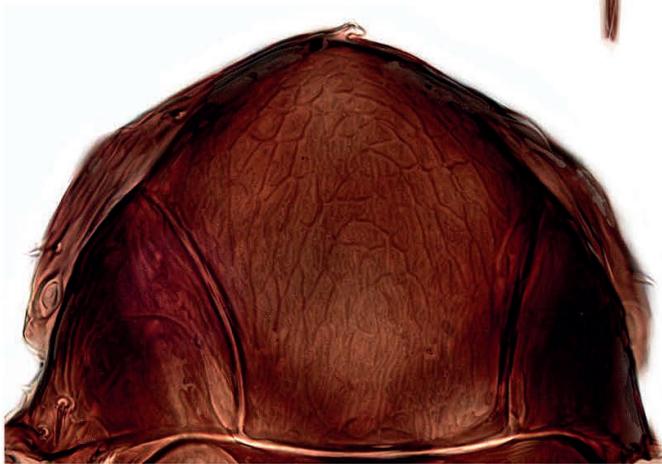
O. sudhiri sp. nov. probably closely related to *O. silvanum* in having apical part of clava with projection, however, both differs from each other in following characters: antenna with funicle segments relatively shorter, F6 slightly broader than long; clava with finger-like projection, projected part 2× as long as broad (antenna with funicle segments relatively longer, F6 distinctly longer than broad; clava with the nipple-like process, projected part broader than long in *O. silvanum*); fore wing 9× as long as broad (fore wing 7.3× as long as broad in *O. silvanum*). *O. sudhiri* sp. nov. also comes close to *O. longidigitum* from China in having dorsal margin of F6 excised however it differs from the latter in having antenna with F2 the longest; F6 subquadrate; clava longer than F4–F6 combined; basal segment of clava 0.7× apical



Figures 1-4. *Omyomymar supremus* sp. nov., female (Holotype). 1. Habitus. 2. Antenna. 3. Head, frontal view. 4. wings.



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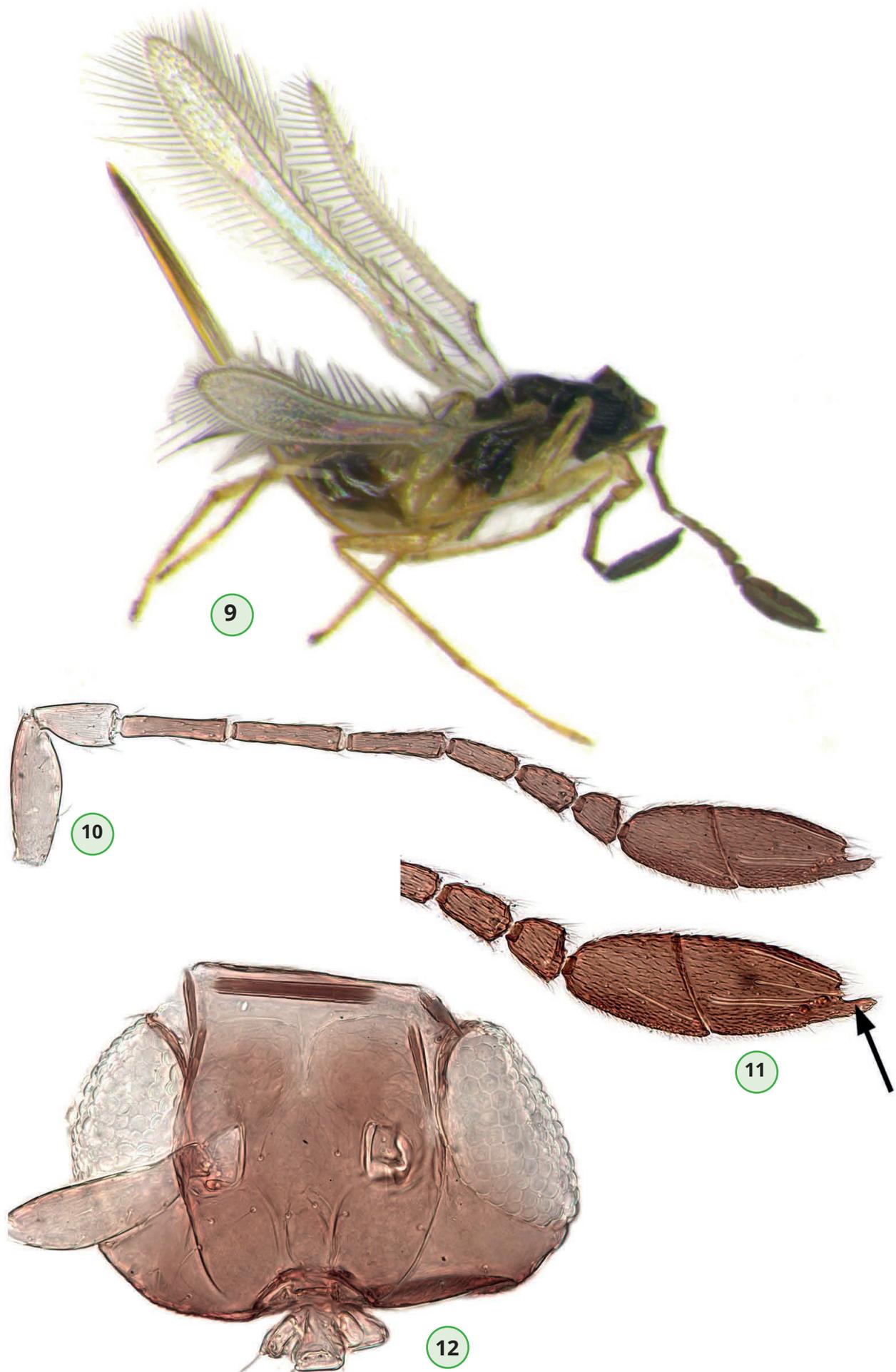


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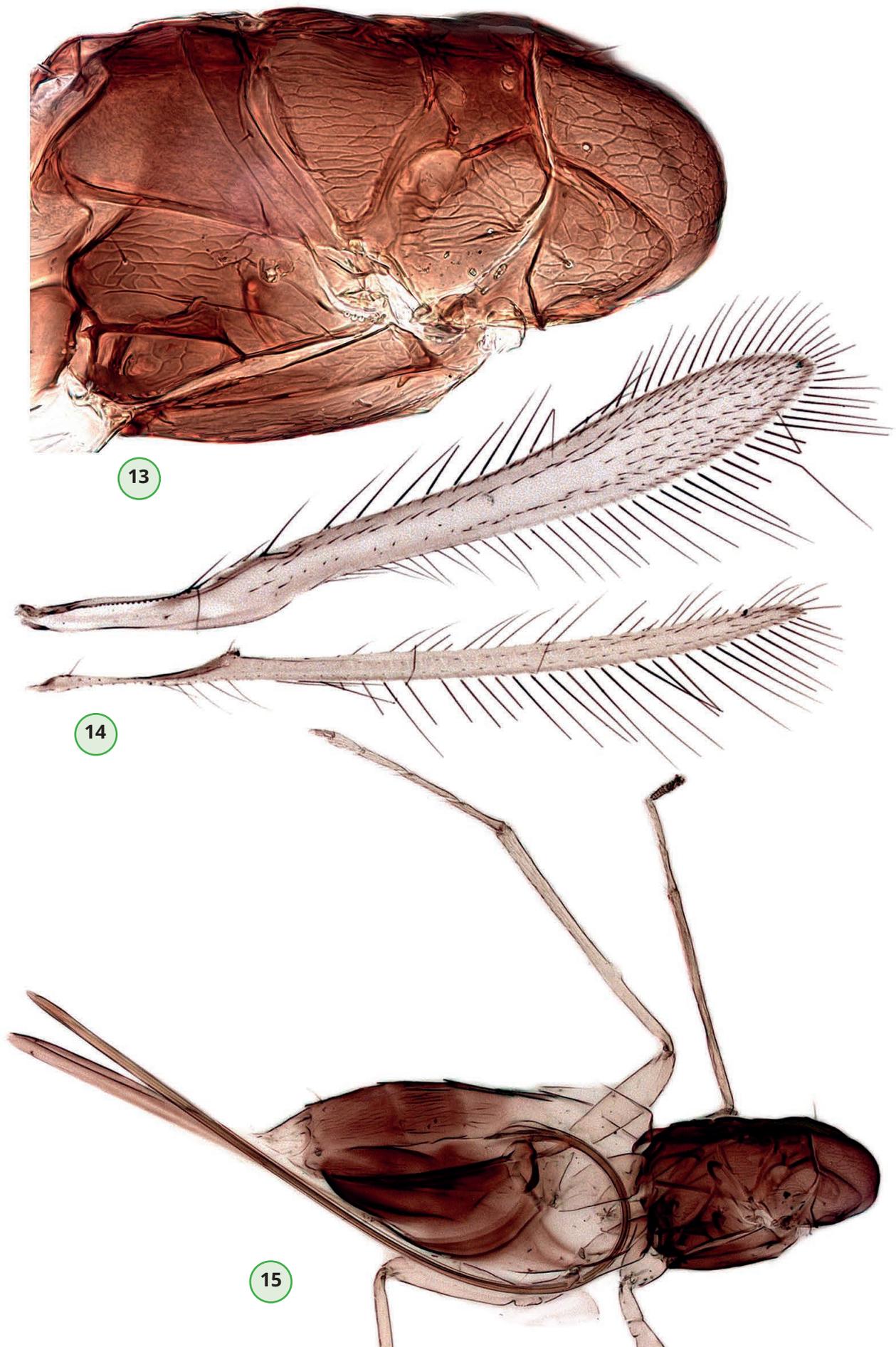


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Figures 5-8. *Omyomymar supremus* sp. nov., female (Holotype). 5. Mesosoma and metasoma, dorsal view. 6. Mesoscutum, dorsal view. 7. Scutellum, dorsal view. 8. Propodeum, dorsal view.



Figures 9-12. *Omyomymar sudhiri* sp. nov., female (Holotype). 9. Habitus. 10. Antenna. 11. F5, F6 and clava enlarged, arrow indicates apical projection on clava. 12. Head, frontal view.



Figures 13-15. *Omyomymar sudhiri* sp. nov., female (Holotype). 13. Mesosoma, dorsolateral view. 14. Wings. 15. Mesosoma and metasoma, dorsolateral view.

segment; ovipositor longer than body; exerted part of ovipositor 0.67× as long as gaster (in *O. longidigitum* F1 the longest; F6 distinctly longer than broad; clava shorter than F4–F6 combined; basal segment of clava about 0.5× length of the apical segment; ovipositor shorter than body length; exerted part of ovipositor 0.85× as long as metasoma).

Description. Female holotype. Length, 570 µm (excluding exerted ovipositor). Body dark brown except metasoma in basal two-third pale brown. Antenna brown, clava with apical projection. Wings subhyaline. Legs, including coxae, pale yellow. Ovipositor pale brown.

Head (Figure 12). Head, 1.4× as broad as high. Antenna (Figure 10) with scape 2.8× as long as broad; pedicel 1.6× as long as broad; funicular segments decreasing in length distally; F1–F5 distinctly longer than broad, F6 subquadrate, widening apically; F2 the longest; clava with projection, 3× as long as broad, longer than F4–F6 combined; basal segment of clava with one placoid sensillum and, with one mps; apical segment with two placoid sensilla and, with four mps, projected part of clava 2× as long as broad (Figure 11).

Mesosoma (Figures 13, 15). Mesosoma 0.6× metasoma length. Mesoscutum with notaular lines complete, reticulated (Figure 13); mid lobe of mesoscutum with 2 setae, lateral lobe with one seta at lateral angle; scutellum with polygonal reticulation, 0.6× frenum, a pair of setae in the middle and one seta near each axilla; frenum with longitudinally stretched polygonal reticulation; propodeum 1.3× as long as scutellum, medially smooth, sides with polygonal sculpture (Figure 13). Fore wing (Figure 14) 9× as long as broad, with two lines of setae, each running parallel to its wing margin, disc one-fourth apically densely setose and a few setae behind venation; longest marginal seta 1.6× as long as maximum wing width. Hind wing (Figure 14) 26× as long as broad, longest marginal seta 4× as long as maximum wing width.

Metasoma (Figure 15). Ovipositor strongly exerted beyond apex of gaster, 1.8× as long as gaster, 3× as long as mesotibia and 2.5× as long as metatibia; exerted part of ovipositor 0.7× gaster length.

Measurements (µm). head width:height, 215:155; antennal segments including radicle L:W - radicle, 15:13; scape, 78:28; pedicel, 40:25; F1, 55:10; F2, 58:13; F3, 50:13; F4, 35:15; F5, 28:18; F6, 23:25; clava, 138:45; claval process, 15; mesosoma, 250; fore wing L:W, 725:80; longest marginal seta, 125; hind wing L:W, 713:28; longest marginal seta, 113; protibia, 143; mesotibia, 238; metatibia, 293; gaster, 415; ovipositor, 725; exerted part of ovipositor, 278.

Male. Unknown.

Host. Unknown

Distribution. India: Himachal Pradesh.

Etymology. The species is named in honor of Dr. Sudhir Singh, Head of Entomology Section, Forest Research Institute, Dehradun, India, for his contributions to the taxonomy of the Indian Chalcidoidea.

DISCUSSION

Species of *Omyomymar* is among a few genera of Mymaridae that represent a long exerted ovipositor except *O. andriescui* Pricop (PRICOP 2014). Consequently, ovipositor length to tibial ratio is an important character in differentiating two or more closely related species. As for the available data records, for Mymaridae with the longest ovipositor, the ovipositor length to metatibia ratio is 6.28× [for *Tanyxiphium harriet* (Zeya), (ZEYA 2015)]; however, the ratio may surpass for some species

of *Australomymar* Girault (see, figure 50 in NOYES & VALENTINE 1989) and species of *Borneomymar* Huber (MICHAEL *et al.* 2013).

MANICKAVASAGAM *et al.* (2011) recorded *O. slivanum* from India which was later reported to be misidentified and described as *O. huberi* Manickavasagam & Gowriprakash (GOWRIPRAKASH & MANICKAVASAGAM 2016). GOWRIPRAKASH & MANICKAVASAGAM (2016) described another species *O. noyesi* Manickavasagam & Gowriprakash collected from the same localities, which seems to be similar except for some measurements, that could be an artifact of poor slide preparation and erroneous morphometric and data records (see page 394 in MANICKAVASAGAM *et al.* 2011 and pages 3,4 in GOWRIPRAKASH & MANICKAVASAGAM 2016) and hence may be conspecific. The recorded ovipositor-mesotibial ratio is 2.9× for *O. huberi* and 5.3× for *O. noyesi*. We strongly believe that the authors wrongly recorded the measurements for the latter species which cannot be more than 3× (see figure 6 (habitus) in GOWRIPRAKASH & MANICKAVASAGAM 2016). The other recorded species *O. glabrum* Lin & Chiappini by RAMESHKUMAR *et al.* (2015) seems to be conspecific with the Palaearctic species as it shares all its characters. Hence, it is clear that the genus in the Oriental Region needs a taxonomic revision to standardize descriptions and, reanalyze measurements.

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