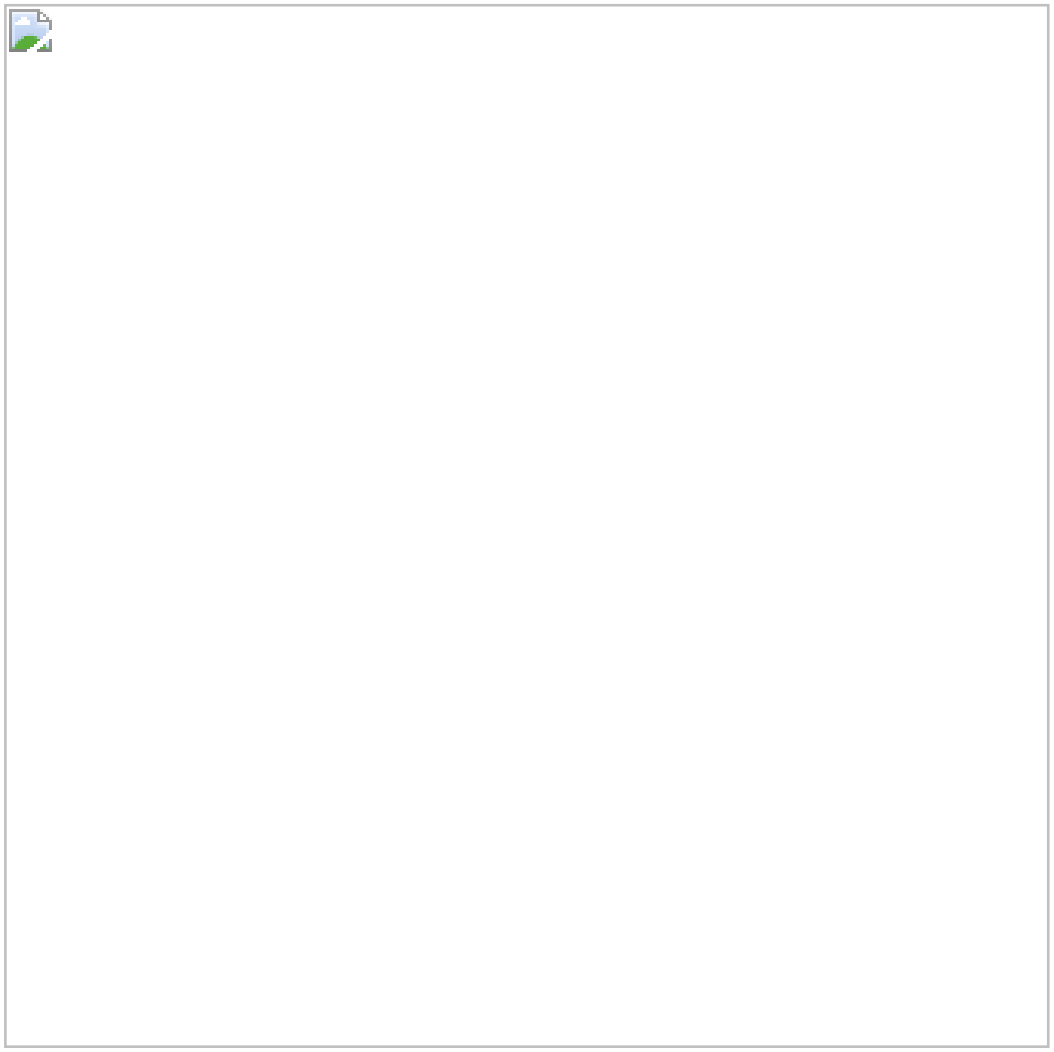

First record of the genus Ampulicomorpha Ashmead, 1893 (Hymenoptera: Chrysidoidea: Embolemidae) from India

Authors: Bhat, Deen Mohd, Maqbool, Amir, Wachkoo, Aijaz Ahmad, and Olmi, Massimo

Source: Integrative Systematics: Stuttgart Contributions to Natural History, 6(2) : 121-125

Published By: Stuttgart State Museum of Natural History

URL: https://doi.org/10.18476/2023.206206

The BioOne Digital Library (https://bioone.org/) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics-Stuttgart-Contributions-to-Natural-History on 24 Apr 2023
Terms of Use: https://staging.bioone.org/terms-of-use

SHORT COMMUNICATION

First record of the genus *Ampulicomorpha* Ashmead, 1893 (Hymenoptera: Chrysidoidea: Embolemidae) from India

Deen Mohd Bhat[1], Amir Maqbool[2], Aijaz Ahmad Wachkoo[3] & Massimo Olmi[4]

Abstract

The wasp genus *Ampulicomorpha* Ashmead, 1893 (Hymenoptera: Chrysidoidea: Embolemidae) is widely distributed in all zoogeographical regions, but had so far not been recorded from India. Here, we provide the first Indian record of the genus with *A. nepalensis* Olmi, 1997, a species previously reported from Nepal, Vietnam, and Tajikistan.

Keywords: *Ampulicomorpha nepalensis*, distribution, Kashmir, new record.

Zusammenfassung

Die Wespengattung *Ampulicomorpha* Ashmead, 1893 (Hymenoptera: Chrysidoidea: Embolemidae) ist in allen zoogeographischen Regionen weit verbreitet, war für Indien bisher aber noch nicht nachgewiesen. In der vorliegenden Studie wird die Gattung mit *A. nepalensis* Olmi, 1997 zum ersten Mal für Indien gemeldet. Diese Art war bisher nur aus Nepal, Vietnam und Tadschikistan bekannt.

Embolemidae (Hymenoptera: Chrysidoidea) are parasitoids of nymphs of two Hemiptera families: Achilidae and Cixiidae (Olmi et al. 2014a). The family had a broader diversity in the past, with four genera and 20 species from the Cenozoic and the Cretaceous, from both amber and rock deposits (Olmi et al. 2020; Perkovsky et al. 2021). Its extant diversity comprises 66 species in three genera: *Ampulicomorpha* Ashmead, 1893; *Embolemus* Westwood, 1833; and *Trogloembolemus* Olmi, Mita & Guglielmino, 2014.

The embolemid wasp genus *Ampulicomorpha* Ashmead, 1893 currently comprises 26 valid, extant species distributed in all zoogeographical regions (Chény et al. 2020; Olmi 2023). In the Oriental Region, two species, namely *A. nigra* (van Achterberg, 2000) and *A. nepalensis* Olmi, 1997, have been recorded to date, and no species has been reported from India. Both species are based on macropterous females, so they are attributed to the genus *Ampulicomorpha* (see below for a more complete explanation).

Hosts of extant *Ampulicomorpha* are nymphs of Achilidae living in rotten logs and feeding on the hyphal sheets of shelf fungi (Olmi et al. 2014b). These wasps are rarely collected, and knowledge of their biology remains very limited due to their habitat, small size and cryptic behaviour, making them difficult to find and observe (Olmi 1996; Mita & Olmi 2018).

van Achterberg & van Kats (2000) considered *Ampulicomorpha* a junior synonym of *Embolemus*. This decision was based on the fact that males of these two genera are often difficult to separate, sharing a very uniform morphology, including that of the genitalia (Perkovsky et al. 2021; Olmi 2023). On the contrary, females are not a problem, because they are macropterous in *Ampulicomorpha* and micropterous or rarely brachypterous in *Embolemus* (Olmi 1996). The synonymy of the genera was accepted in 2013 by Mircea-Dan Mitroiu and Massimo Olmi in the Fauna Europaea checklist (Mitroiu & Olmi 2013). However, in subsequent papers it was questioned based on the different hosts of these two genera: *Embolemus* species parasitize nymphs of Cixiidae feeding on roots in the soil (Varrone & Olmi 2012), whereas *Ampulicomorpha* species parasitize nymphs of Achilidae feeding on shelf fungi in rotten logs (Bridwell 1958; Krombein 1979; Wharton 1989; Guglielmino & Bückle 2013). Since 2014, *Ampulicomorpha* and *Embolemus* have been treated as separate genera in the literature (e.g., Olmi et al. 2014a, 2014b, 2016, 2019, 2020, 2021, 2023; Mita et al. 2017; Martynova et al. 2019; Chény et al. 2020; Perkovsky et al. 2021). Pending a molecular study of both genera by one of us (MO), not yet concluded mainly because of difficulties in finding fresh females of *Embolemus*, we also consider *Ampulicomorpha* and *Embolemus* to be distinct genera based on the morphological and ecological differences outlined above.

In the present study, we report the genus *Ampulicomorpha* from India for the first time, based on the finding of *A. nepalensis* in the Kashmir valley. Previously, Embolemidae in India were represented only by *Embolemus krombeini* Olmi, 1996.

© Staatliches Museum für Naturkunde Stuttgart

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 18 Apr 2025
Terms of Use: https://staging.bioone.org/terms-of-use

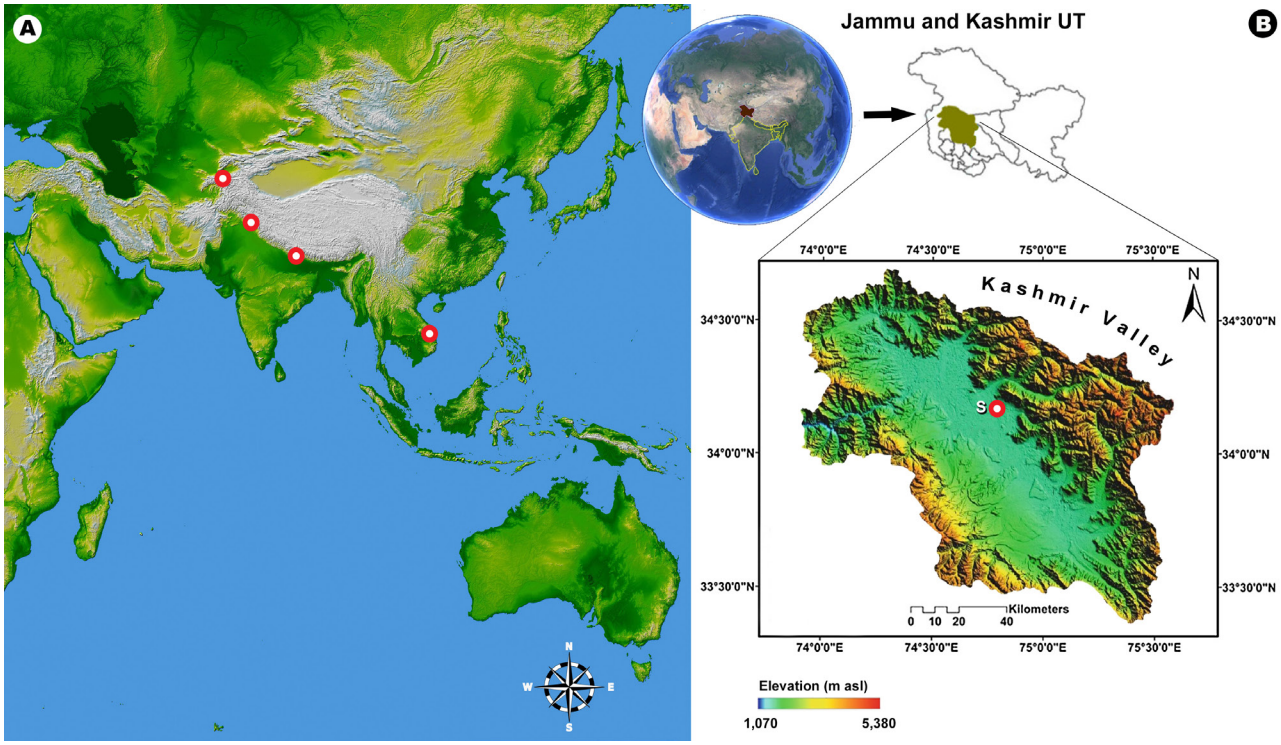

Fig. 1. Maps. **A**. Known distribution of *Ampulicomorpha nepalensis* Olmi, 1997. **B**. Map of Kashmir valley showing sampling site (S) of *A. nepalensis*.

Material and methods

This study is based on a single female specimen collected using a yellow pan trap in the Kashmir valley in the north-western part of the Indian subcontinent between 33°22' and 34°50'N latitude and 73°55' and 75°33'E longitude (Maqbool et al. 2018; Wachkoo et al. 2019). The Kashmir valley represents a transitional zone between the Oriental and Palaearctic regions, sharing boundaries with the north-western tip of the Oriental Region and the mid-south of the Palaearctic Region (Das 1966; Maqbool et al. 2022).

Study of the specimen was conducted using a G2Mark stereomicroscope (G2Mark, India). Species-level identification was confirmed using the identification keys of van Achterberg & van Kats (2000), Xu et al. (2012) and Mita et al. (2017), in addition to unpublished keys by one of the authors (MO).

Images of the specimen were captured with a mirrorless digital camera (Nikon Z50) and proper light exposure was obtained with a light box (Wachkoo et al. 2021). Multiple images were focus-stacked to create one final image using the CombineZP software. Final plates were assembled with Adobe Photoshop ®CS4.

Maps showing the global distribution of *Ampulicomorpha nepalensis* Olmi, 1997 (Fig. 1A) and the sampling site of *A. nepalensis* in the Kashmir valley (Fig. 1B) were prepared using Google Maps and Google Earth Pro 7.3.6.9326.

Specimens are deposited in the following repository institutions:

CNC Canadian National Collection of Insects, Ottawa, Canada
CUZM Cluster University Zoological Museum, Srinagar, Jammu and Kashmir, India

Ampulicomorpha nepalensis Olmi, 1997
(Fig. 2)

Ampulicomorpha nepalensis Olmi, 1997: 127. Holotype ♀, Nepal, Godawari, 27°36'05.6"N 85°21'55.1"E, ~ 1,640 m a.s.l. (CNC).

Material examined

India: 1♀, Jammu and Kashmir, Ganderbal, 34°14'43.1"N 74°47'02.7"E, 1,639 m a.s.l., 21.v.2023, D. M. Bhat leg., D_Bhatl000013(CUZM).

Diagnosis

Female macropterous (Fig. 2A, B); dorsal surface of metapectal-propodeal complex with trapezoid basal area near anterior margin (Fig. 2G); dorsal surface of metapectal-propodeal complex with two medial longitudinal keels; scrobal sulcus smooth; forewing hyaline, not darkened; body black, but parts of head (Fig. 2C–E) and mesosoma (Fig. 2H) dark brown; 1st antennal segment much longer than 3rd (Fig. 2F). Male dorsal membranous process of paramere with numerous distal hairs and papillae (Olmi 1997; Xu et al. 2012; Mita et al. 2017).

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 18 Apr 2025
Terms of Use: https://staging.bioone.org/terms-of-use

Fig. 2. *Ampulicomorpha nepalensis* Olmi, 1997, female. **A**. Habitus, dorsal view. **B**. Habitus, lateral view. **C**. Head, frontal view. **D**. Head, lateral view. **E**. Head, dorsal view. **F**. Antenna. **G**. Thorax, dorsal view. **H**. Thorax, lateral view. **I**. Wings. **J**. Hind leg. **K**. Hind tibial spurs. Scales bars: 1.0 mm (A, B), 0.1 mm (C–K).

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 18 Apr 2025
Terms of Use: https://staging.bioone.org/terms-of-use

Distribution

India (new record), Nepal, Tajikistan and Vietnam (Xu et al. 2012).

Discussion

This is the first published record of *Ampulicomorpha nepalensis* and of the genus *Ampulicomorpha* from India. The new record lies within the known distributional range of this species approximately 1240 km north-west of the type locality and about halfway between the type locality and the Tajikistan record (Xu et al. 2012). The species is now known to occur in four countries in the Oriental and the Palaearctic regions. The composition of the insect fauna of the Kashmir Himalayas is a mixture of Palaearctic and Oriental faunal elements (Das 1966; Shah et al. 2014; Zubair et al. 2021; Maqbool et al. 2023). Although the finding of the genus *Ampulicomorpha* in India is not surprising, our new record of *A. nepalensis* is important because it fills previous sampling gaps. The hymenopterans of India, especially the Himalayas, remain little known, and species richness there is expected to be much greater than currently known (Rather et al. 2019; Wachkoo & Akbar 2019).

Acknowledgements

We are thankful to associate editor Jonah Ulmer and to Denis Brothers and an anonymous reviewer for valuable comments and suggestions that improved the manuscript.

References

Achterberg, C. van & Kats, R. J. M. van (2000): Revision of the Palaearctic Embolemidae (Hymenoptera). – Zoologische Mededelingen **74**: 251–269.

Bridwell, J. C. (1958): Biological notes on *Ampulicomorpha confusa* Ashmead and its fulgoroid host. – Proceedings of the Entomological Society of Washington **6** (1): 23–26.

Chény, C., Guillam, E., Nel, A. & Perrichot, V. (2020): A new species of *Ampulicomorpha* Ashmead from Eocene French amber, with a list of fossil and extant Embolemidae (Insecta: Hymenoptera) of the world. – BSGF Earth Sciences Bulletin **191**: 20.
https://doi.org/10.1051/bsgf/2020020

Das, S. (1966): Palaearctic elements in the fauna of Kashmir. – Nature **212**: 1327–1330.
https://doi.org/10.1038/2121327a0

Guglielmino, A. & Bückle, C. (2013): Description of the mature larva of *Ampulicomorpha schajovskoyi* De Santis & Vidal Sarmiento (Hymenoptera: Embolemidae). – Zootaxa **3637** (3): 385–393.
https://doi.org/10.11646/zootaxa.3637.3.10

Krombein, K. V. (1979): Embolemidae. – In: Krombein, K. V., Hurd, P. D., Smith, D. R. & Burks, B. D. (eds.): Catalog of Hymenoptera in America north of Mexico. Volume 2, p. 1251; Washington, D.C. (Smithsonian Institution Press).

Maqbool, A., Akbar, A. A. & Wachkoo, A. A. (2018): First record of the genus *Ficobracon* (Hymenoptera: Braconidae) from India, with description of new species. – Zootaxa **4379** (3): 421–428.
https://doi.org/10.11646/zootaxa.4379.3.5

Maqbool, I., Varga, O., Maqbool, A., Wachkoo, A. A., Banu, N. A. & Rather, S. U. (2022): *Xorides xylotrechi* sp. n. (Hymenoptera: Ichneumonidae: Xoridinae) parasitizing *Xylotrechus stebbingi* (Gahan, 1906) (Coleoptera: Cerambycidae) in India. – Zootaxa **5150** (1): 121–128.
https://doi.org/10.11646/zootaxa.5150.1.7

Maqbool, A., Akbar, A. A. & Wachkoo, A. A. (2023): First records of the genus *Myathropa* Rondani, 1845 (Diptera, Syrphidae) from India with new distributional and taxonomic notes for *Myathropa semenovi* (Smirnov, 1925). – Journaal van Syrphidae 2 (5): 1–9.
https://doi.org/10.55710/1.LLJR4612

Martynova, K. V., Perkovsky, E. E., Olmi, M. & Vasilenko, D. V. (2019): New records of upper Eocene chrysidoid wasps (Hymenoptera: Chrysidoidea) from basins of Styr and Stokhod Rivers (Rovno Amber). – Paleontological Journal **53** (10): 998–1023.
https://doi.org/10.1134/S0031030119100125

Mita, T. & Olmi, M. (2018): Taxonomic additions of Embolemidae and Sclerogibbidae (Hymenoptera: Chrysidoidea) from Japan, with description of a new species of *Trogloembolemus*. – Zootaxa **4497** (4): 586–592.
https://doi.org/10.11646/zootaxa.4497.4.8

Mita, T., Nagano, H. & Olmi, M. (2017): Dryinidae and Embolemidae (Hymenoptera, Chrysidoidea) from Anijima, Ogasawara Islands, Japan. – Zootaxa **4323** (2): 239–249.
https://doi.org/10.11646/zootaxa.4323.2.7

Mitroiu, M.-D. & Olmi, M. (2013): Family Embolemidae. Fauna Europaea. Available from: https://fauna-eu.org/ (accessed 18 July 2023).

Olmi, M. (1996): A revision of the world Embolemidae (Hymenoptera Chrysidoidea). – Frustula Entomologica. New Series **17**: 85–146.

Olmi, M. (1997): A contribution to the knowledge of the Embolemidae and Dryinidae (Hymenoptera Chrysidoidea). – Bollettino di Zoologia Agraria e di Bachicoltura (Ser. II) **29**: 125–150.

Olmi, M. (2023): Description of a new species of *Ampulicomorpha* Ashmead (Hymenoptera, Embolemidae) from Madagascar. – Zootaxa **5296** (2): 275–282.
https://doi.org/10.11646/zootaxa.5296.2.8

Olmi, M., Capradossi, L. & Guglielmino, A. (2019): Discovery of the first species of *Ampulicomorpha* Ashmead (Hymenoptera: Embolemidae) in French Guiana. – Israel Journal of Entomology **49** (1): 49–55.
https://doi.org/10.5281/zenodo.3524485

Olmi, M., Guglielmino, A., Müller P., Capradossi, L. & Perkovsky, E. E. (2021): Descriptions of the first females of *Embolemus* (Hymenoptera: Chrysidoidea) from Kachin (Myanmar) amber. – Palaeoentomology **4** (1): 44–49.
https://doi.org/10.11646/palaeoentomology.4.1.9

Olmi, M., Marletta, A. & Guglielmino, A. (2016): Description of a new species of Embolemidae (Hymenoptera: Chrysidoidea) from Papua New Guinea, with a revision of the Australasian species. – In: Robillard, T., Legendre, F., Villemant, C. & Leponce, M. (eds.): Insects of Mount Wilhelm, Papua New Guinea, pp. 285–306; Paris (Mémoires du Museum National d'Histoire Naturelle).

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 18 Apr 2025
Terms of Use: https://staging.bioone.org/terms-of-use

Olmi, M., Marletta, A. & Guglielmino, A. (2020): The first record of the family Embolemidae (Hymenoptera: Chrysidoidea) in Réunion, with description of a new species of *Embolemus* Westwood. – Israel Journal of Entomology **50** (1): 40–48. https://doi.org/10.5281/zenodo.3928171

Olmi, M., Belokobylskij, S. A. & Guglielmino, A. (2014b): Revision of the family Embolemidae of Russia and Ukraine (Hymenoptera: Chrysidoidea), with description of a new species. – Annales Zoologici **64** (1): 97–108. https://doi.org/10.3161/000345414X680672

Olmi, M., Rasnitsyn, A. P., Brothers, D. J. & Guglielmino, A. (2014a): The first fossil Embolemidae (Hymenoptera: Chrysidoidea) from Burmese amber (Myanmar) and Orapa Kimberlitic deposits (Botswana) and their phylogenetic significance. – Journal of Systematic Palaeontology **12** (6): 623–635. https://doi.org/10.1080/14772019.2013.829533

Perkovsky, E. E., Olmi, M., Müller, P., Guglielmino, A., Jarzembowski, E. A., Capradossi, L. & Rasnitsyn, A. P. (2021): A review of the fossil Embolemidae (Hymenoptera: Chrysidoidea), with description of seven new species and history of the family. – Cretaceous Research **121**: 104708. https://doi.org/10.1016/j.cretres.2020.104708

Rather, Z. A., Wachkoo, A. A., Khuroo, A. A., Dar, A. R. & Dar, T. U. H. (2021): First record of *Aspicera hartigi* (Hymenoptera, Figitidae) from India, with observations on its foraging behavior on *Ephedra* plants. – Journal of Asia-Pacific Biodiversity **12** (3): 473–476. https://doi.org/10.1016/j.japb.2019.03.007

Shah, G. M., Jan, U. & Wachkoo, A. A. (2014): A checklist of hoverflies (Diptera: Syrphidae) in the Western Himalaya, India. – Acta Zoologica Academiae Scientiarum Hungaricae **60**: 283–305.

Varrone, R. & Olmi, M. (2012): First record of host of *Embolemus ruddii* Westwood (Hymenoptera: Embolemidae). – Frustula Entomologica. New Series **33**: 91–95.

Wachkoo, A. A. & Akbar, S. A. (2019): *Protichneumon pisorius* (Hymenoptera, Ichneumonidae)—the first record from India. – National Academy Science Letters **42**: 391–393. https://doi.org/10.1007/s40009-018-0775-2

Wachkoo, A. A., Steenis, J. van, Maqbool, A., Akbar, S. A., Skevington, J. H. & Mengual, X. (2021): Two flower fly species (Diptera: Syrphidae) new to India. – Journal of Insect Biodiversity **29** (2): 44–52. https://doi.org/10.12976/jib/2021.29.2.3

Wachkoo, A. A., Steenis, J. van, Rather, Z. A., Sengupta, J. & Banerjee, D. (2019): First record of the genus *Spilomyia* (Diptera, Syrphidae) from the Oriental region. – Turkish Journal of Zoology **43**: 239–242. https://doi.org/10.3906/zoo-1811-27

Wharton, R. A. (1989): Final instar larva of the Embolemid wasp *Ampulicomorpha confusa* (Hymenoptera). – Proceedings of the Entomological Society of Washington **91** (4): 509–512.

Xu, Z., Olmi, M. & Guglielmino, A. (2012): A new species of *Ampulicomorpha* (Hymenoptera: Embolemidae) from China. – Florida Entomologist **95** (4): 1187–1191. https://doi.org/10.1653/024.095.0450

Zubair, R., Maqbool, A., Wachkoo, A. A. & Biffi, G. (2021): A review of the Himalayan genus *Trypheridium* Brancucci (Coleoptera: Cantharidae: Chauliognathinae) with description of a new species. – European Journal of Taxonomy **764** (1): 18–36. https://doi.org/10.5852/ejt.2021.764.1467

Authors' addresses:

[1]Department of Zoology, Government College for Women, M.A. Road, Cluster University Srinagar, 190001, India;
e-mails: bhatdm2014@gmail.com (DMB), himalayanbiologist@gmail.com (AM); https://orcid.org/0000-0002-8084-6027 (DMB), https://orcid.org/0000-0003-4659-4775 (AM)

[2]Department of Zoology, Imtiyaz Memorial Govt. Degree College, Shopian, Jammu and Kashmir, 192303, India;
e-mail (corresponding author): aijaz_shoorida@yahoo.co.in; https://orcid.org/0000-0003-2506-9840

[3]Tropical Entomology Research Center, Via De Gasperi 10, 01100 Viterbo, Italy;
e-mail: olmimassimo@gmail.com; https://orcid.org/0000-0001-5953-5075

ZooBank registration: https://zoobank.org/References/B5101CAC-AB6F-47FF-AA8B-84FEE772DCC3

Manuscript received: 22.VI.2023; accepted: 02.XII.2023.

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 18 Apr 2025
Terms of Use: https://staging.bioone.org/terms-of-use