First record of the genus *Spilomyia* (Diptera, Syrphidae) from the Oriental region

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Abstract: *Spilomyia manicata* (Rondani, 1865) is reported as a new genus and species record from India and the Oriental region. A brief diagnosis, images, and comparison with allied species are provided to scientifically validate this new faunal record from the Indian subcontinent and to facilitate its prompt identification. The species shows rare distribution across its range, and various factors pose a threat to the existence of this large pollinator species. Therefore, the documentation of this species assumes significance for devising conservation strategies and sustainable management.

Key words: *Spilomyia manicata*, Syrphidae, new record, distribution, Indian subcontinent

The genus *Spilomyia* Meigen, 1803 currently includes 38 species, mainly distributed in the Holarctic region with a few species occurring in the Neotropics (van Steenis, 2000). On the Indian subcontinent, this genus is represented by 2 species: *Spilomyia saltuum* (Fabricius, 1794) and *Spilomyia sulphurea* Sack, 1910, both reported from Afghanistan (Bańkowska, 1968; Ghorpadé, 2014). Despite their large size (9–22 mm) and widespread distribution, *Spilomyia* species are often overlooked in the field even by experienced collectors because of their morphological and behavioral similarity with social wasps (Curran, 1951; van Steenis, 2000).

Here we present the first records of *Spilomyia manicata* (Rondani, 1865) from Afghanistan and India. These records also mark the first member of this genus from India (Ghorpadé, 2014; Shah et al., 2014; Sengupta et al., 2016) and the Oriental region. A brief diagnosis and colored images of its diagnostic characters are given here to facilitate its easy identification, and also to validate this new faunal species record for the region. The discovery is important because this species is very rare in distribution, and this record represents a significant southeastward extension of the geographic range for this genus (Stackelberg, 1958; Kuznetzov, 1997; van Steenis, 2000).

The Indian subcontinent ranges from Afghanistan east through Pakistan, India, Nepal, Bhutan, and Bangladesh to Myanmar and from Kashmir and SE Tibet to Sri Lanka, the Laccadive and Maldivian islands, and the Chagos archipelago in the Indian Ocean (Ghorpadé, 2014). The specimens representing this Indian record were freshly collected by sweep net in the Kashmir Valley (Jammu and Kashmir) and Naggar Castle of the Kullu Valley (Himachal Pradesh), situated in the northern fringe of the Western Himalayas of the Indian subcontinent, while the specimen from Afghanistan was studied in the MNHNP collection. The taxonomic study was conducted using a Leica Wild M 10 stereomicroscope (Leica, Wetzlar, Germany) and images were produced using a Canon EOS 500D camera (Canon, Tokyo, Japan). The acronyms used are:

- CNC Canadian National Collection of Insects, Arachnids, and Nematodes, Ontario, Canada
- MNHN Museum National d’Histoire Naturelle, Paris, France
- MZUF Museo Zoologico "La Specola", Florence, Italy
- NBC Naturalis Biodiversity Centre, Leiden, the Netherlands
- ZSI Zoological Survey of India, Kolkata, India

*Spilomyia manicata* (Rondani, 1865) (Figures 1–3)


*Spilomyia integra* Kuntze, 1913: 549. ST 5 ♂♂, 5♀♀ [lost]. France (Corsica: Monte Doro).

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Spilomyia boschmai Lucas, 1964: 206. HT ♀ [NBC]; PT 1 ♀ [NBC]. Italy (Sicily, Monte Soro, Cesaro).

Diagnosis: Like the other species of the genus, Spilomyia manicata has the following characters: concave face; a dark brown pattern on the eyes; elongate antennae; strongly oblique wing vein r–m; nonpollinose yellow thoracic and abdominal color pattern; metafemur with apicoventral anterolateral spur. It differs from the other species by the combination of the following characters: mesonotum and scutellum long and pilose; macula on scutum in front of scutellum semicircular; scutellum yellow on posterior 1/4–1/3; pleura with 4–6 yellow spots, 1 each on proepimeron, dorsal part of katepisternum, katepimeron, and anepisternum, and sometimes also on dorsal part of metepimeron and katatergite; protarsus entirely black; protibia black on apical 1/4–2/3; anteromedial fascia on tergites II–IV entire to only very slightly separated medially; posterior fascia on tergite IV curved in the male.

Comparison with Spilomyia saltuum: the long pilose mesonotum and scutellum is diagnostic for S. manicata (very short and pilose in S. saltuum); protarsus entirely black, at most fifth tarsomere light brown (S. saltuum with at least tarsomeres 4 and 5 light brown to yellow); setulae on protarsus black (S. saltuum yellow); macula on scutum in front of scutellum semicircular (S. saltuum subtriangular); anteromedial fascia on tergites II–IV entire, in male sometimes very narrowly separated medially, and posterior fascia on tergite IV curved in the male (S. saltuum all fascia straight and clearly separated medially).

Distribution: Austria, Balkan Peninsula, Belgium, Croatia, Czech Republic, Denmark, France, Germany, Greece, Italy, Macedonia, the Netherlands, Norway, Poland, Rumania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, former Yugoslavia (Barendregt et al., 2000; van Steenis, 2000; Vujič et al., 2001; de Groot, 2004). New record from Afghanistan and India (Himachal Pradesh and Jammu and Kashmir).


Srinagar was swept from *Ageratum houstonianum*, an exotic ornamental plant at SKUAST campus in Kashmir Valley in the Northwest Himalayas at moderate elevation (1800 m a.s.l.), with an average annual precipitation of 660 mm and 13 °C average temperature. The other Indian specimen was collected from the Western Himalayan state of Himachal Pradesh from a local wildflower bush (Figure 4) at moderate elevation (1887 m a.s.l.) with an average annual temperature of 16.1 °C and an average annual precipitation of 110 mm. The specimen from Afghanistan was collected on the south slopes of the Hindu Kush Mountains in the northeastern part of the country.

Despite being widespread, this species has often been misidentified as *Spilomyia saltuum*. However, van Steenis (2000) clarified the demarcation between the 2 species. This large pollinator species, although widespread in Palearctic distribution, is rare, and is known by only a few recent records from most parts of its range (Speight, 2013). It is probably threatened over much, if not all, of Europe and may be facing a high risk of threat in future (Vujić et al., 2001; Speight, 2013). This species marks the first record of the genus *Spilomyia* from India and is the third species from Afghanistan. As major areas of the vast Indian subcontinent are poorly sampled, future biodiversity surveys should provide many more new records and new species in the region (Wachkoo et al., 2017; Ballal et al., 2018; Háva et al., 2019). This discovery is important in documenting our declining biodiversity and its impact on mankind. The discovery gains more importance with the knowledge that India is a signatory to the Convention on Biological Diversity (CBD), and our prime responsibility as a developing nation is to take stern measures to preserve disappearing biodiversity (Wachkoo et al., 2018a, 2018b). The potential for reduced pollination ecosystem service due to the global decline of bees and other pollinators is cause for considerable concern, which has resulted in the establishment of special initiatives by the CBD (International Pollinator Initiative) to tackle the issues of pollinator decline (Potts et al., 2010). Given the weight of evidence of pollinator loss and associated risks, investment in developing mitigation options such as alternative managed pollinators is essential to ensure sustainable pollination services in a changing world.

The female from Srinagar has been genetically analyzed in Canada (Jeff Skevington, pers. comm.); its DNA was found to differ from European species of *Spilomyia manicata*. The morphological characters of the specimens studied here and European specimens of *S. manicata* were not found to be different. There is a possibility that the DNA was not correctly extracted and thus that the specimens studied here are *S. manicata*. However, if the DNA extraction and analysis was done correctly, it is most likely that the specimens belong to an undescribed species. Additional material and a more thorough study of molecular and morphological characters is needed before there could be a satisfactory confirmation of the real identity of the Indian specimens.

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**References**


