



ESI

## A taxonomic review of the genus *Spilomena* Shuckard (Hymenoptera: Crabronidae: Pemphredoninae) from the Indian subcontinent with the description of a new species from Southern Western Ghats

Tessy Rajan<sup>1\*</sup>, Pavittu Meethal Sureshan<sup>1</sup>, Puthuvayi Girish Kumar<sup>1</sup> and Ayisha N.V. Mawadda<sup>1</sup>

<sup>1</sup> Western Ghats Regional Centre, Zoological Survey of India, Eraniel, Kozhikode, Kerala- 673006, India.

**Received:**  
27 August, 2018

**Accepted:**  
14 November, 2018

**Published:**  
21 November, 2018

**Subject Editor:**  
Christian Schmid-Egger

**ABSTRACT.** The genus *Spilomena* Shuckard, 1838, is reviewed from the Indian subcontinent. One new species, *Spilomena keralaensis* Rajan, Sureshan & Girish Kumar **sp. nov.** is described from the Southern Western Ghats of Kerala and differences from similar species are given.

**Key words:** *Spilomena*, new species, review, Indian subcontinent

**Citation:** Rajan, T., Sureshan, P.M., Girish Kumar, P. & Mawadda, A. N.V. (2018) A taxonomic review of the genus *Spilomena* Shuckard (Hymenoptera: Crabronidae: Pemphredoninae) from the Indian subcontinent with the description of a new species from Southern Western Ghats. *Journal of Insect Biodiversity and Systematics*, 4(3), 157–162.

### Introduction

Shuckard (1837) described the genus *Celia* based on the type species *Celia troglodytes* (Van der Linden, 1829) and later (Shuckard, 1838) substituted the name as *Spilomena*. This genus is distributed in all zoogeographical realms with a total of 87 species worldwide of which 9 species from the Oriental Region and one species from the Indian subcontinent (Pulawski, 2018). The only species from the Indian subcontinent *S. indostana* Turner, 1918, is described from Bombay, India. This species makes their nests in twigs, timber, decayed wood, buildings, etc. (Bohart & Menke, 1976; Turillazzi et al., 2014). The prey are thrips, psyllids, coccids, aphids, etc. (Krombein, 1956; Beaumont, 1964). In

this paper one new species, namely *Spilomena keralaensis* Rajan, Sureshan & Girish Kumar **sp. nov.** is described from the Pandimotta shola of Shendurney Wildlife Sanctuary of Southern Western Ghats of Kerala and differences from similar species are given.

### Material and methods

This study is based on the specimens collected from the Pandimotta shola of Shendurney Wildlife Sanctuary of Southern Western Ghats of Kerala. It is the highest place within the sanctuary (1300 m) with a unique shola forest ecosystem. The specimens were studied and photographed by using a Leica Stereo microscope model

Corresponding author: Tessy Rajan, E-mail: [tessy.rajan3@gmail.com](mailto:tessy.rajan3@gmail.com)

Copyright © 2018, Rajan et al. This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY NC 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

LEICA M 205A with LEICA DFC 500 Camera. Types of the new species kept at the 'National Zoological Collections' of the Western Ghat Regional Centre, Zoological Survey of India, Kozhikode (ZSIK).

Abbreviations used for the Museums: BMNH – The Natural History Museum, formerly British Museum (Natural History), London, Great Britain; ZSIK – Western Ghat Regional Centre, Zoological Survey of India, Kozhikode, India.

Abbreviations used for the terms: AOL= Distance between anterior ocellus and posterior ocellus; F = Flagellar segments; H= Head; M= Mesosoma; OOL= Ocellocular length; POL= Posterior ocellar length; T= Metasomal terga.

## Results

### Genus *Spilomena* Shuckard, 1838

*Celia* Shuckard, 1837: 182. Type species: *Celia troglodytes* (Van der Linden, 1829) [= *Stigmus troglodytes* Van der Linden], by original designation and monotypy. Junior homonym of *Celia* Zimmermann, 1832.

*Spilomena* Shuckard, 1838: 79. Substitute name for *Celia* Shuckard, 1837.

*Microglossa* Rayment, 1930: 212. Type species: *Microglossa longifrons* Rayment, by original designation. Junior homonym of *Microglossa* Voight, 1831.

*Microglossella* Rayment, 1935: 634. Substitute name for *Microglossa* Rayment, 1930.

*Taialia* Tsuneki, 1971: 10. Type species: *Taialia formosana* Tsuneki, 1971, by original designation and monotypy. Synonymized with *Spilomena* by Bohart in Bohart & Menke, 1976: 41.

**Diagnosis:** Occipital carina absent; hindwing media not diverging before Cu-a, not separated from Cu; forewing with marginal cell elongate which is larger than stigma and closed apically, two closed submarginal cells present, one recurrent vein and two discoidal cells present, stigma

large; gaster without petiole; pronotal collar with complete transverse carina.

**Distribution:** In all zoogeographical realms.

*Spilomena keralaensis* Rajan, Sureshan & Girish Kumar sp. nov. (Figures 1–10)

**Material examined:** **Holotype** female, India: Kerala, Kollam district, Shendurney Wildlife Sanctuary, Pandimotta shola (8°48'27"N, 77°13'58"E), 17.xii.2015, Coll. K. Rajmohana & Party, ZSIK Regd. No. ZSI/WGRC/IR/INV/11602. **Paratypes:** 2 females, collection data as that of holotype, ZSIK Regd. Nos. ZSI/WGRC/IR/INV/11603 & 11604.

**Description:** Holotype ♀ (Fig. 1). Size (H+M+T1+T2) 3.90 mm. Body predominantly black, non-metallic, metasoma dark brown. Following parts yellow: Antennae, palps, mandibles, tegula, legs (including coxae), and apical margins of clypeus. Following parts white: clypeus (except basally brown and apical margin yellow), posterior portion of pronotal lobes, and setal brush on tergite VII. Following parts pale brownish white: lower frons near to inner eye margins broadly. Following parts brown: mandible tips, lateral sides of pronotum and stigma of forewing. Wings yellowish hyaline with veins yellow becoming brown beyond stigma. Body hairs silvery.

**Head:** Transverse, globular, eyes slightly convergent dorsally (Fig. 2); inner tooth of mandible pointed; clypeus weakly convex in the middle, with anterior margin slightly incised in middle; vertex finely, distinctly coriaceous, setigerous punctures minute; single elongate seta just in front of each lateral ocellus; occipital carina absent; median frontal carina extending about half distance to median ocellus; frontal carina extending up to one third of clypeus; gena longitudinally finely striate; clypeus broadly emarginated; malar space 1.28x as long as diameter of median ocellus; POL

0.38x OOL (Fig. 4); POL 0.90x AOL; frons distinctly protuberant, evenly convex; antennal sockets separated from clypeal margin by about their diameter, and from eyes by 0.63x their diameter; mandibles bidentate, outer tooth distinctly longer than inner tooth. Antenna (Fig. 3) with scape 6.9x as long as broad, 0.79x the combined length of pedicel plus first five flagellomeres; F9 0.6x as long as F10.

**Mesosoma:** Posterior carina of pronotum well defined, distinctly curved forward laterally; notauli weakly present; mesoscutum, scutellum, metanotum, and mesopleuron predominantly coriaceous with minute setigerous punctures; mesoscutum with distinct crenulate narrow furrow along lateral margin; scutellum anteriorly with a broad transverse crenulate furrow (Fig. 4); episternal sulcus incomplete, weakly areolate; posterolateral corners of propodeal hind face each with a small, weak tooth-like tubercle; propodeal dorsum areolate with a network of coarse ridges, without two longitudinal carinae near the middle, and with a smooth area at the apex (Fig. 6); lateral face of propodeum with some strong transverse striations anteriorly and a large smooth area medially (Fig. 5). Forewing (Fig. 8) with marginal cell distally acute, two submarginal cells present, Im-cu vein proximal to bifurcation of Rs + M, stigma 3.9x as long as width; hind wing (Fig. 9) with cu-a slightly curved.

**Metasoma:** T I basally with a median furrow, and few somewhat longitudinal striations, rest of T I smooth and shining (Fig. 10); remaining tergites shining, faintly scaly reticulate and sparsely clothed with short, erect setae (Fig. 7); dense brush of short setae at apex of T VI.

**Male:** Unknown.

**Distribution:** India: Kerala.

**Etymology:** The species is named after Kerala, the state from which specimens were collected.

## Discussion

This new species distinctly differs from the only other Indian species *Spilomena indostana* Turner, 1918, in having: (1) Inner tooth of mandible pointed (in *S. indostana*, inner tooth of mandible broad and blunt); (2) Clypeus weakly convex in the middle (in *S. indostana*, clypeus very strongly convex in the middle); (3) Dorsal face of propodeum without two longitudinal carinae near the middle (in *S. indostana*, propodeum with two longitudinal carinae near the middle); and (4) Larger species (3.90 mm) (in *S. indostana*, body size 3 mm).

This new species distinctly differs from all other Oriental species except *Spilomena socialis* Matthews, 2014, which is so far known only from its type locality, i.e., Bukit Frazer of Pahang of Malaysia. However, the new species differs from *S. socialis* in having: (1) Malar space 1.28x as long as diameter of median ocellus (in *S. socialis*, malar space distinctly less than diameter of median ocellus (9:16)); (2) Posterior carina of pronotum distinctly curved forward laterally (in *S. socialis*, pronotal carina almost straight); (3) Clypeus white, except basally brown and apical margin yellow (in *S. socialis*, clypeus black except apical margin yellow); (4) Lower frons near to inner eye margins broadly pale brownish white (in *S. socialis*, lower frons near to inner eye margins black); (5) Scape 0.79x the combined length of pedicel plus first five flagellomeres (in *S. socialis*, scape about equal in length to pedicel plus the first five flagellomeres).

## *Spilomena indostana* Turner, 1918

*Spilomena indostana* Turner, 1918: 358, ♀. Holotype or syntypes: ♀, India: Maharashtra: Bombay (BMNH). Additional citation: Bohart and Menke, 1976: 193 (in checklist of world Sphecidae).

**Distribution:** India: Maharashtra.



**Figures 1-10.** *Spilomena keralaensis* Rajan, Sureshan & Girish Kumar **sp. nov.**, Holotype female. **1.** Body profile; **2.** Head, frontal view; **3.** Antenna; **4.** Head and mesosoma, dorsal view; **5.** Mesosoma, lateral view; **6.** Propodeum; **7.** Apical metasomal segments, dorsal view; **8.** Fore wing; **9.** Hind wing; **10.** Metasomal tegum I, dorsal view.

### Acknowledgments

The authors are grateful to Dr. Kailash Chandra, Director, Zoological Survey of India, Kolkata, for providing facilities and encouragements. We are also thankful to Tingjing Li, Department of Entomology, College of Plant protection, Yunnan Agricultural University, China for providing us some useful literatures for our studies.

### Conflict of Interests

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

### References

- Beaumont, J. De. (1964) *Insecta Helvetica Fauna 3. Hymenoptera: Sphecidae*. 169 pp. Société Entomologique Suisse, Lausanne.
- Bohart, R.M. & Menke, A.S. (1976) *Sphecid wasps of the world. A generic revision*. University of California Press, Berkeley, Los Angeles, London. 1 color plate, IX + 695 pp.
- Krombein, K.V. (1956) Biological and taxonomic notes on the wasps of Lost River State Park, West Virginia, with additions to the faunal list (Hymenoptera, Aculeata). *Proceedings of the Entomological Society of Washington*, 58, 153–161.
- Pulawski, W.J. (2018) *Catalog of Sphecidae*. Available from: <https://www.calacademy.org/scientists/projects/catalog-of-sphecidae> [Accessed 9th August 2018].
- Rayment, T. (1930) Microglossa and Melitribus, new genera of Australian bees. *Proceedings of the Royal Society of Victoria (New Series)*, 42, 211–220, pl. XXI.
- Rayment, T. (1935) *A cluster of bees*. Sixty essays on the life-histories of Australian bees, with specific descriptions of over 100 new species, and an introduction by Professor E.F. Phillips, D. Ph., Cornell University, U.S.A. The Endavour Press, Sydney. 1 color pl., 752 pp.
- Shuckard, W.E. (1837) *Essay on the indigenous fossorial Hymenoptera; comprising a description of all the British species of burrowing sand wasps contained in the metropolitan collections; with their habits as far as they have been observed*. Richter and Co., London. XII pp., one pl., 252 + [2] pp., pls. 1–4, [4] pp.
- Shuckard, W.E. (1838) Descriptions of new exotic aculeate Hymenoptera. *The Transactions of the Entomological Society of London*, 2, 68–82, pl. VIII.  
<https://doi.org/10.1111/j.1365-2311.1836.tb00298.x>
- Tsuneki, K. (1971) Studies on the Formosan Sphecidae (XIII). A supplement to the subfamily Pemphredoninae (Hym.) with a key to the Formosan species. *Etizenia*, 57, 1–21.
- Turillazzi, S., Matthews, R.W., Pradella, D., Meucci, F. & Baracchi, D. (2014) Nest architecture and colony composition of communally nesting *Spilomena socialis* sp. n. (Hymenoptera, Crabronidae, Pemphredoninae) from peninsular Malaysia. *Journal of Hymenoptera Research*, 41, 113–129.  
<https://doi.org/10.3897/JHR.41.8515>
- Turner, R.E. (1918) Notes on fossorial Hymenoptera.–XXXV. On new Sphecoidea in the British Museum. *The Annals and Magazine of Natural History (Series 9)*, 1, 356–364.  
<https://doi.org/10.1080/00222931808562327>

بازبینی تاکسونومیک جنس *Spilomena* Shuckard, 1838 (Hym.: Crabronidae: Pemphredoninae) در شبه قاره هند، به همراه توصیف یک گونه جدید از جنوب غربی گاتس

تسی راجان<sup>۱\*</sup>، پاویتو میتال سورشان<sup>۱</sup>، پوتوواپی گیریش کومار<sup>۱</sup> و آیشا موادا<sup>۱</sup>

۱ مرکز منطقه گاتس غربی، بخش ارزیابی جانورشناسی هند، ارانهی پالام، کوژیکود، کراالا-۶۷۳۰۰۶، هند.

\* پست الکترونیکی نویسنده مسئول مکاتبه: [tessy.rajana3@gmail.com](mailto:tessy.rajana3@gmail.com)

تاریخ دریافت: ۰۵ شهریور ۱۳۹۷، تاریخ پذیرش: ۲۳ آبان ۱۳۹۷، تاریخ انتشار: ۳۰ آبان ۱۳۹۷

**چکیده:** جنس *Spilomena* Shuckard, 1838 در شبه قاره هند بازبینی شد. گونه‌  
از *Spilomena keralaensis* Rajan, Sureshan & Girish Kumar **sp. nov.**  
جنوب‌غربی رشته کوه‌های گاتس ایالت کراالا توصیف و اختلاف آن با گونه‌های نزدیک  
ارایه شد.

**واژگان کلیدی:** *Spilomena*، گونه جدید، بررسی، شبه قاره هند