



# On the geographic distribution of *Gastrosericus* Spinola, 1839 (Hymenoptera: Crabronidae) in India

N. V. Ayisha Mawadda\* and P. Girish Kumar

Western Ghat Regional Centre, Zoological Survey of India, Eranhpalam, Kozhikode – 673006, Kerala, India; Email: ayishakmr@gmail.com

## Abstract

The taxonomy of crabronid wasp genus *Gastrosericus* Spinola, 1839 is studied from India. The range extension of species *G. moricei* Saunders, 1910, *G. rothneyi* Cameron, 1889, *G. waltlii* Spinola, 1839, and *G. wroughtoni* Cameron, 1889 are augmented.

**Keywords:** Crabroninae, Gastrosericina, *Gastrosericus*, India, Larrini, The New Record

## Introduction

*Gastrosericus* Spinola (Hymenoptera: Crabronidae) consists of 61 species worldwide, of these 12 species are reported from the Indian subcontinent and 7 from India (Pulawski, 2021). The members of this genus generally prey on orthopteran nymphs of the families Acrididae, Gryllidae, and Tridactylidae (Arnold, 1922; Arnold, 1944; Honoré, 1942; Bohart & Menke, 1976). They prefer warm, dry habitats and are almost never found in rain forests (Krombein & Pulawski, 1986). Species of *Gastrosericus* have peculiar distribution pattern, found all over Africa, some parts of Arabian Peninsula, Armenia to India and Sri Lanka, east to Vietnam, north to Kazakhstan and Mongolia, but never been found in Europe, Malaysia, Indonesia, Philippines, and Australia (Pulawski, 1995). A revision of eastern Palearctic *Gastrosericus* was provided by Gussakovskij in 1931, whereas a revision of Sri Lankan species were done by Krombein and Pulawski in 1986, which includes a detailed account of the behavior and biology of these wasps. In 1995, Pulawski published a revision of world species. The biology of the genus was reviewed by Kazenas in 2001.

## Materials and Methods

This study is based on the specimens collected from various localities of India. The specimens have been

studied and photographed using a Leica Stereomicroscope model LEICA M 205A with LEICA DFC 500 Camera. The species are mainly identified by using the key of Pulawski (1995). Since all the species from India are well described by the previous workers, especially Krombein and Pulawski (1986) and Pulawski (1995), we did not attempt to redescribe any of the Indian species studied here. All the identified specimens are deposited at Western Ghat Regional Centre, Zoological Survey of India, Kozhikode (ZSIK).

The following abbreviations are used for the Museums in the text: BMNH: The Natural History Museum, formerly British Museum (Natural History), London, Great Britain; MSNT: Museo Regionale di Scienze Naturali, Torino, Italy; OXUM: Hope Department of Entomology, Oxford, Great Britain; ZSIK: Western Ghat Regional Centre, Zoological Survey of India, Kozhikode.

## Results

### *Gastrosericus* Spinola, 1839

*Gastrosericus* Spinola, 1839: 480. Type species: *Gastrosericus waltlii* Spinola, 1839, by monotypy.

**Diagnosis:** Hind ocellus is modified into flat, elongate, narrow scar, their long axes forming an angle of 130° to 145°; forewing with two submarginal cell; episternal sulcus incomplete.

\* Author for correspondence

*Distribution:* Ethiopian, Oriental, Palearctic Regions.

***Gastrosericus moricei*** Saunders, 1910 (Figures 1–8)

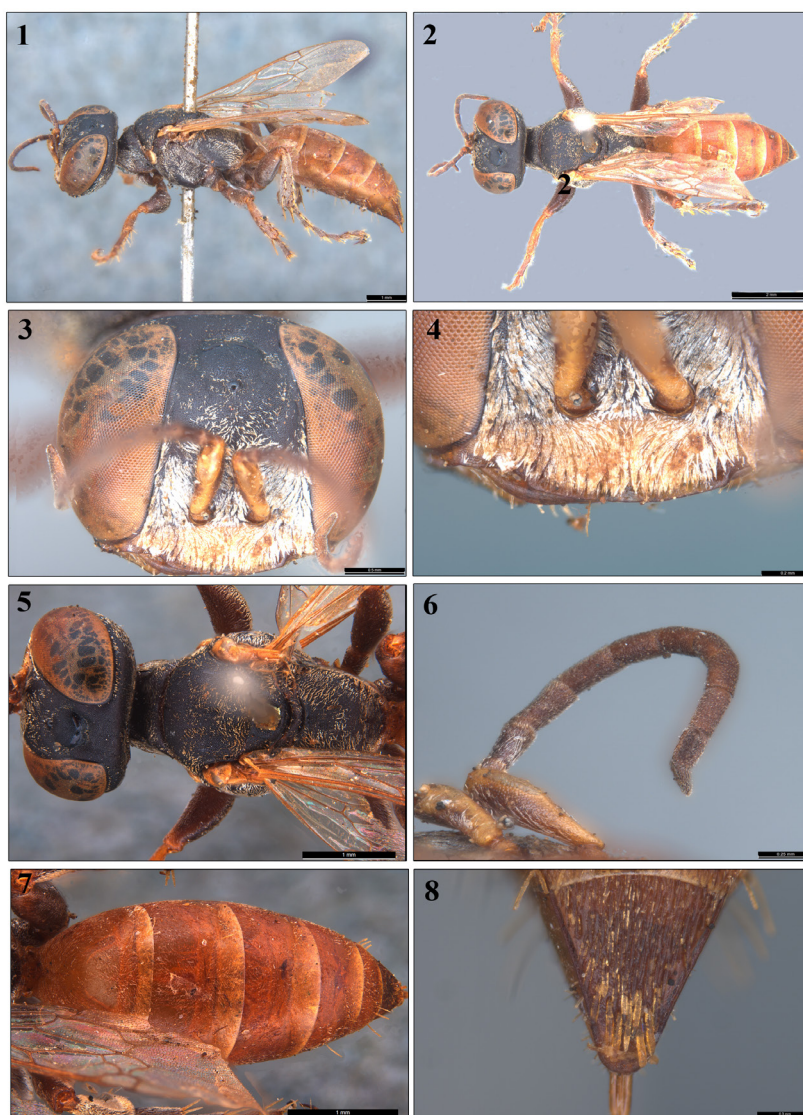
*Gastrosericus moricei* E. Saunders, 1910: 529, ♂.  
Holotype: ♂, Algeria: Biskra (OXUM, F.D. Morice coll.).

*Material examined:* India: **Andhra Pradesh**, Guntur district, Nagarjunakonda (16°31'19"N, 79°14'09"E), (1 female), 26.vii.1962, Coll. B. Nath, ZSIK Regd. No. ZSI/WGRC/IR/INV/17857.

*Note:* The specimen studied here is similar to the Indian populations as mentioned by Pulawski (1995). In

the examined specimen, femora of all legs blackish brown and fore and mid tibiae light ferruginous dorsally, and hind tibiae blackish brown.

*Distribution:* India: Andhra Pradesh (**new state record**), Gujarat, Rajasthan. *Elsewhere:* Algeria; Bahrain; Burkina Faso; Egypt; Gambia; Israel; Libya; Mali; Mauritania; Morocco; Niger; Oman; Pakistan; Saudi Arabia; Senegal; Somalia; Sri Lanka; Sudan; Tajikistan; Thailand; Togo; Tunisia; United Arab Emirates; Uzbekistan; Yemen (Pulawski, 1995; Pulawski, 2021).



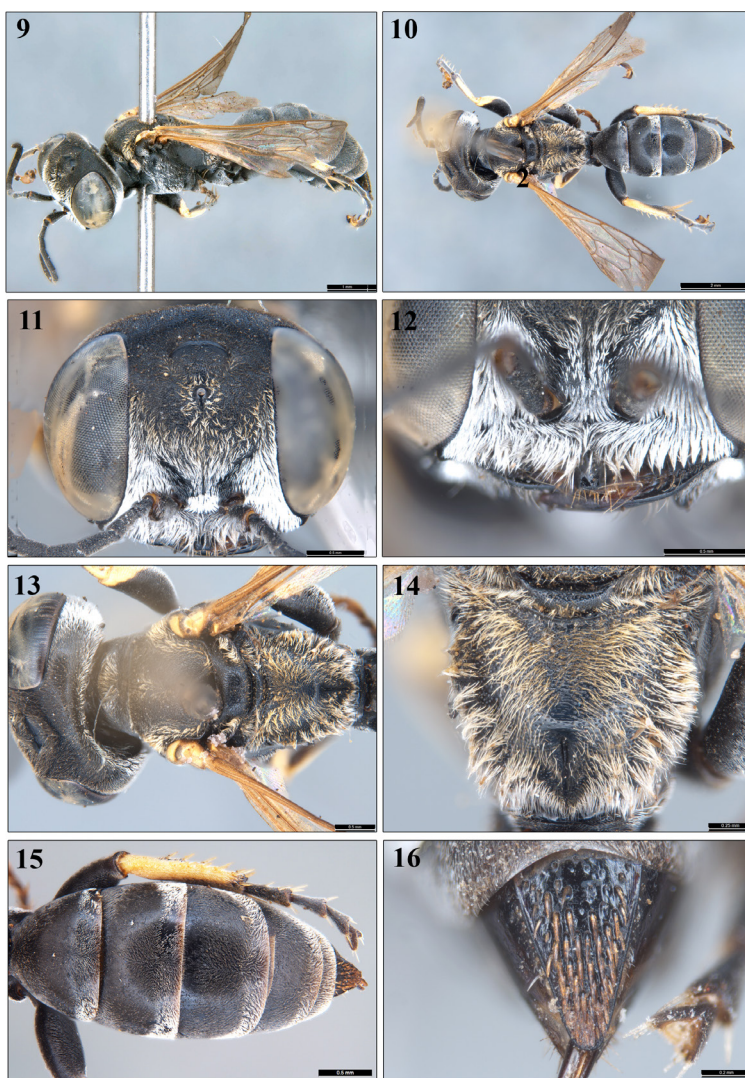
**Figure 1-8.** *Gastrosericus moricei* Saunders, female. 1, Habitus, lateral view; 2, Habitus, dorsal view; 3, Head, frontal view; 4, Clypeus; 5, Head & thorax, dorsal view; 6, Antennae; 7, Gaster; 8, Pygidium.

***Gastrosericus rothneyi*** Cameron, 1889 (Figures 9–24)  
*Gastrosericus rothneyi* Cameron, **1889**: 147, ♀ (as *Rothneyi*, incorrect original capitalization). Lectotype: ♀, India: West Bengal: Barrackpore (OXUM), designated by Pulawski, **1995**: 114.

*Material examined*: India: **Kerala**, Thiruvananthapuram district, Palode, Jawaharlal Nehru Tropical Botanical Garden (8°45'08"N, 77°01'54"E), (2 males), 24.x.2016, Coll. P. Girish Kumar, ZSIK Regd. Nos. ZSI/WGRC/IR/INV/16850 & 16851; Kozhikode district, Purameri (11°39'58"N, 75°37'46"E), (2 males), 30.v.2021, Coll.

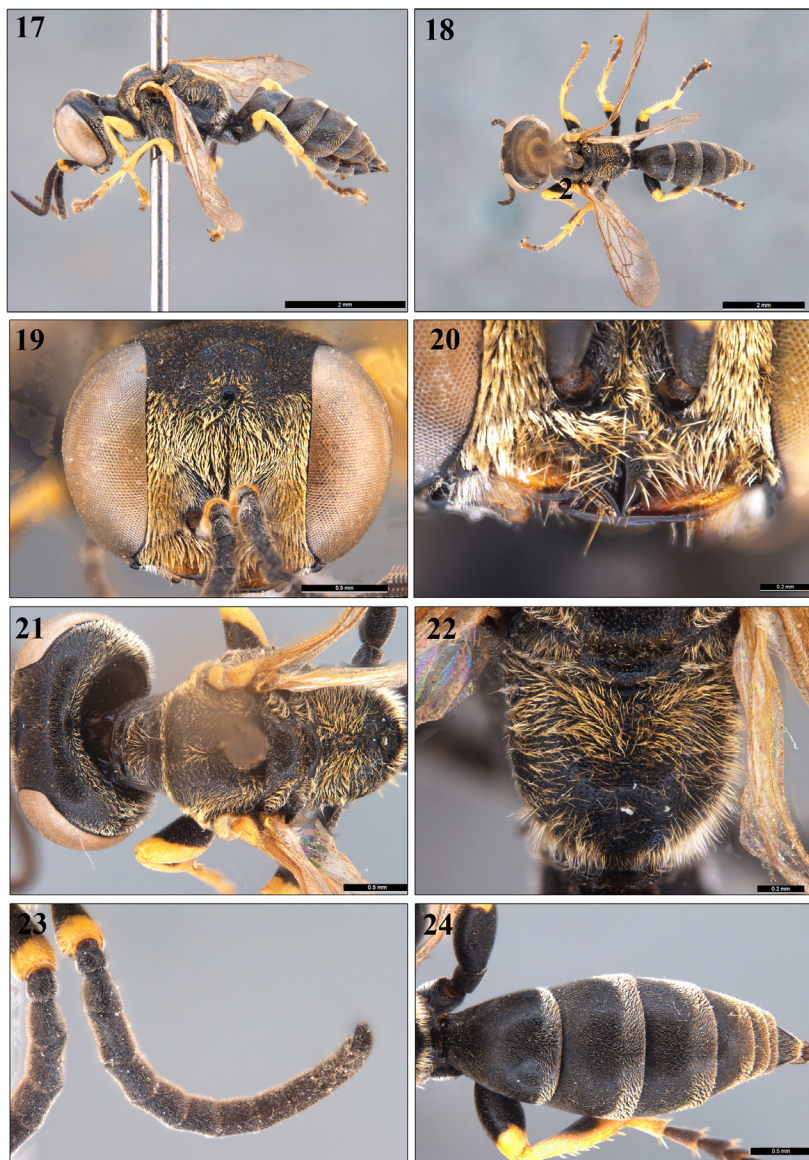
K.P. Hanima Raveendran, ZSIK Regd. Nos. ZSI/WGRC/IR/INV/17858. **Tamil Nadu**, Thirunelveli district, Manimuthar dam site (8°38'82"N, 77°25'24"E), (1 female), 1.x.2018, Coll. P. Girish Kumar, ZSIK Regd. No. ZSI/WGRC/IR/INV/16848; Thirunelveli district, Old Courtallam (8°55'03"N, 77°17'01"E), (1 male), 3.x.2018, Coll. P. Girish Kumar, ZSIK Regd. No. ZSI/WGRC/IR/INV/16849.

*Distribution*: India: Kerala (**new state record**), Tamil Nadu, West Bengal. *Elsewhere*: Nepal; Sri Lanka; Thailand; Vietnam (Pulawski, 1995, 2021).



**Figure 9-16.** *Gastrosericus rothneyi* Cameron, female. 9, Habitus, lateral view; 10, Habitus, dorsal view; 11, Head, frontal view; 12, Clypeus; 13, Head & thorax, dorsal view; 14, Thorax, dorsal view; 15, Gaster; 16, Pygidium.





**Figure 17-24.** *Gastrosericus rothneyi* Cameron, male. 17, Habitus, lateral view; 18, Habitus, dorsal view; 19, Head, frontal view; 20, Clypeus; 21, Head & thorax, dorsal view; 22, Thorax, dorsal view; 23, Antennae; 24, Gaster.

*Gastrosericus siamensis* Tsuneki, 1974 (Figures 25–33)

*Gastrosericus siamensis* Tsuneki, 1974: 626, ♂. Holotype: ♂, Thailand: Ayuttaya (Tadashi Tano personal coll., Fukui, Japan).

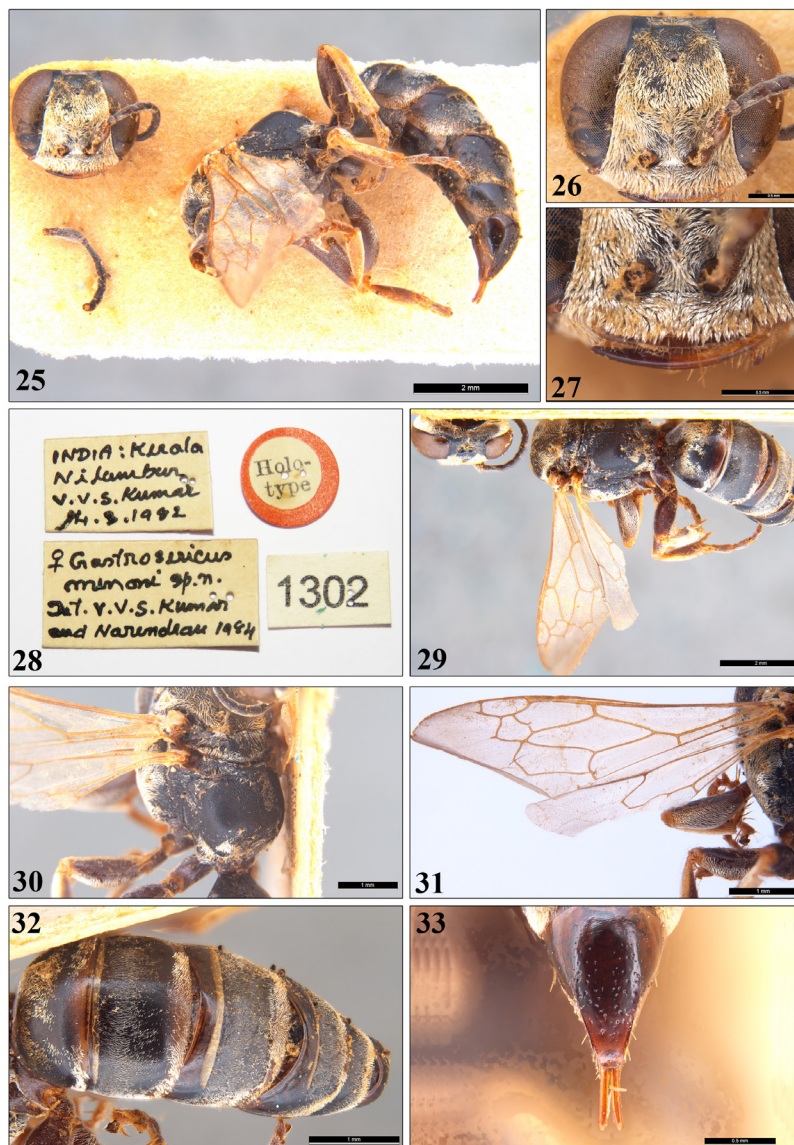
*Gastrosericus menoni* Sudheendrakumar and Narendran, 1985: 50, ♀. Holotype: ♀, India: Kerala: Nilambur (originally Calicut Univ., now ZSIK).

Synonymized with *Gastrosericus siamensis* by Pulawski, 1995: 127.

*Material examined:* India: **Kerala**, Malappuram district, Nilambur (11°15'53"N, 76°13' 17"E), Holotype female, 14.3.1982, Coll. V.V.S. Kumar, ZSIK Regd. No. ZSI/WGRC/IR/INV/1302.

*Distribution:* India: Kerala, Tamil Nadu. *Elsewhere:* Myanmar; Thailand (Pulawski, 1995, 2021).





**Figure 25-33.** *Gastrosericus siamensis* Tsuneki, female. 25, Habitus, lateral view; 26, Head, frontal view; 27, Clypeus; 28, Type, label; 29, Habitus, dorsal view; 30, Mesosoma; 32, Gaster; 33, Pygidium.

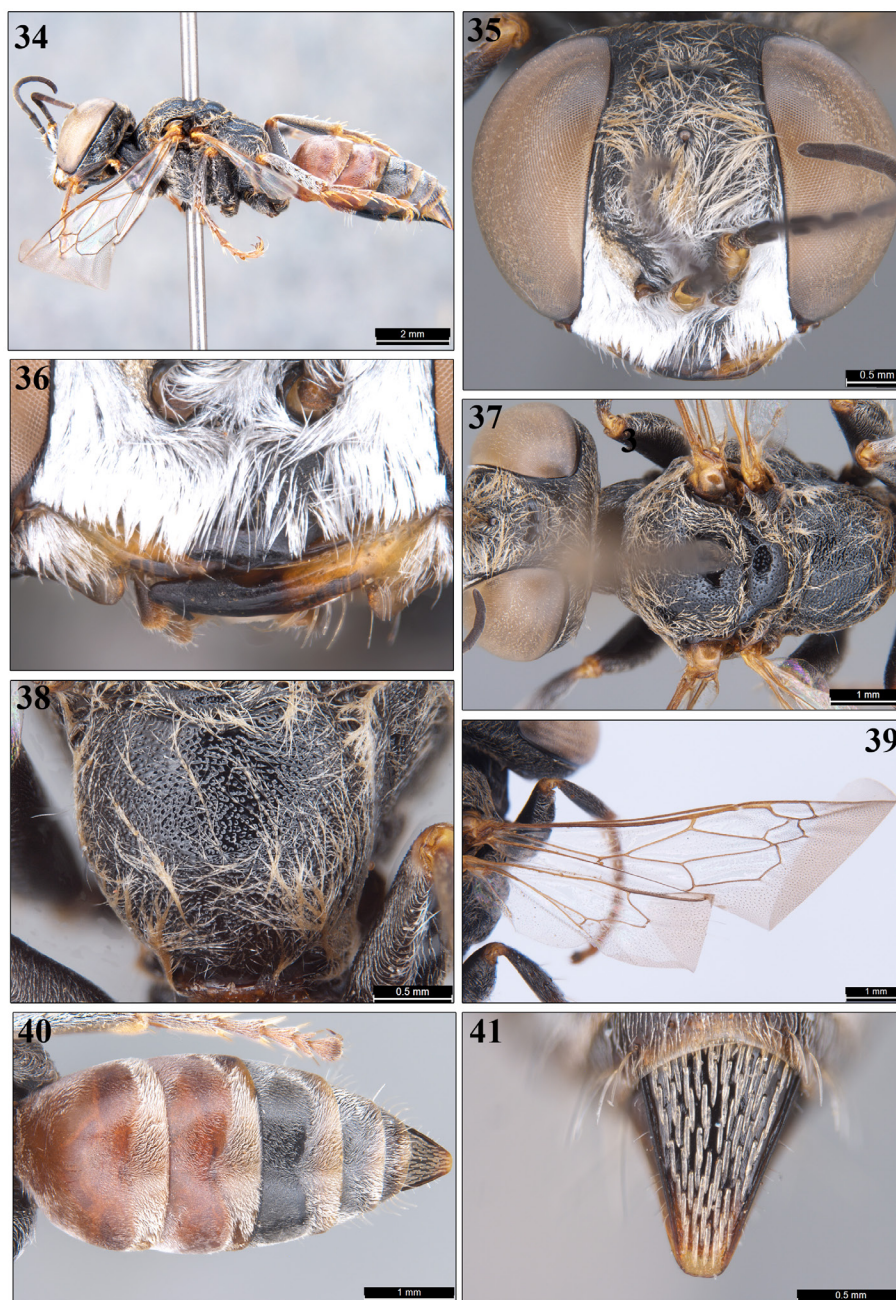
***Gastrosericus waltlii* Spinola, 1839 (Figures 34–48)**

*Gastrosericus waltlii* Spinola, 1839: 481, ♂ (as *Waltlii*, incorrect original capitalization). Lectotype: ♂, Egypt: no specific locality (MSNT), designated by de Beaumont, 1952: 49.

**Material examined:** India: **Rajasthan**, Thar desert, Jodhpur district, Guda Bishnoi Village (26°06'29"N, 73°04'44"E), (1 male), 24.iii.2019, Coll. P. Girish Kumar, ZSIK Regd. No. ZSI/WGRC/IR/INV/17856; Thar desert, Desert National Park, Jaisalmer district, Sam (26°54'38"N, 70°48'37"E), (1 female), 25.iii.2019, Coll. P. Girish Kumar, ZSIK Regd. No. ZSI/WGRC/IR/INV/17855.

**Distribution:** India: Gujarat, Karnataka, Maharashtra, Rajasthan, Tamil Nadu. *Elsewhere:* Algeria; Angola; Armenia; Azerbaijan; Chad; China; Cyprus; France; Ghana; Greece; Egypt; Eritrea; Jordan; Iran; Iraq; Israel; Ivory coast; Kazakhstan; Kenya; Kuwait; Libya; Malawi; Mali; Morocco; Namibia; Oman; Pakistan; Qatar; Russia; Saudi Arabia; Senegal; Sri Lanka; Sudan; Syria; Tajikistan; Tanzania; Thailand; Tunisia; Turkey; Turkmenistan; United Arab Emirates; Uzbekistan; Yemen; Zimbabwe (Pulawski, 1995; Pulawski, 2021).

***Gastrosericus wroughtoni* Cameron, 1889 (Figures 49–64)**



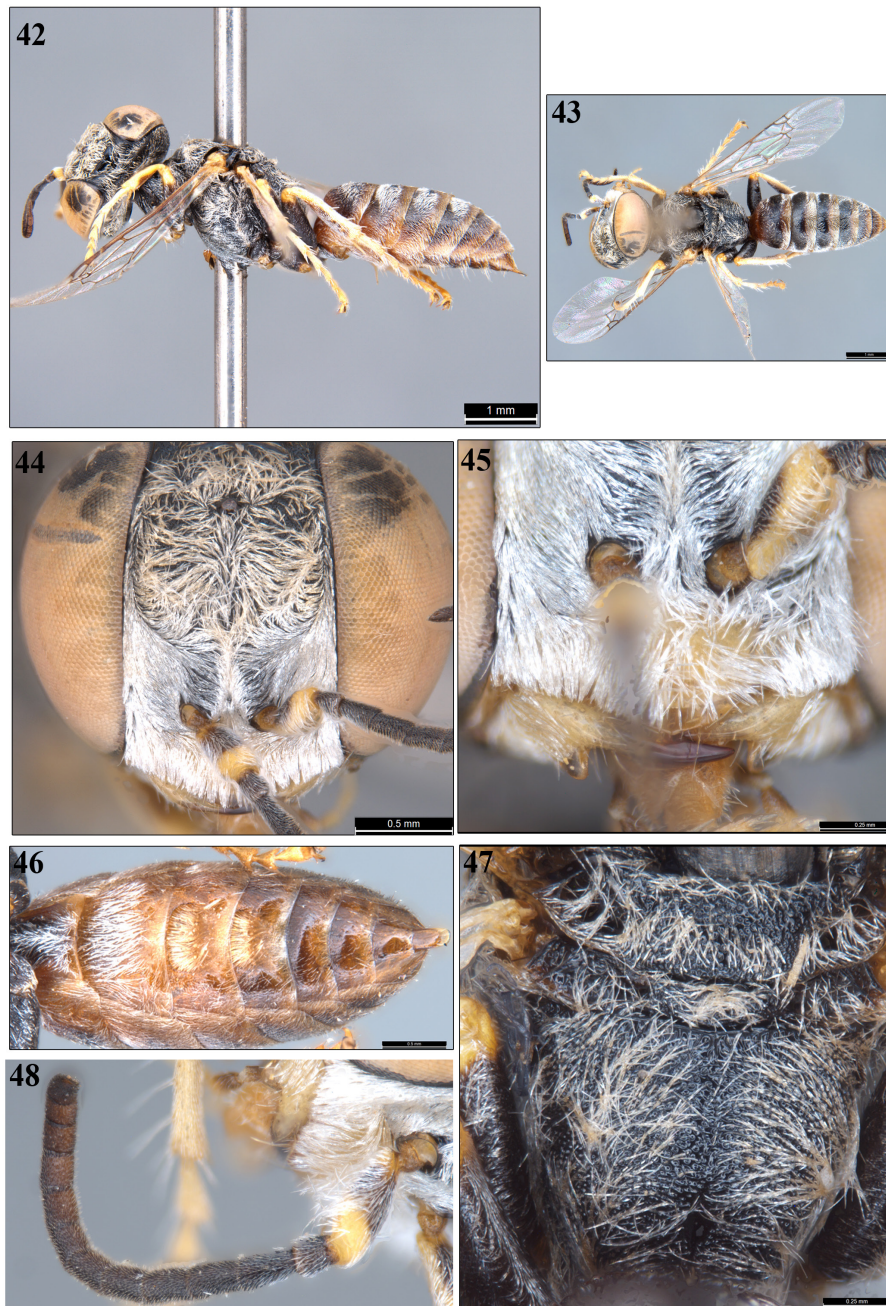
**Figure 34-41.** *Gastrosericus waltlii* Spinola, female. 34, Habitus, lateral view; 35, Head, frontal view; 36, Clypeus; 37, Head & thorax, dorsal view; 38, Propodeum; 39, Forewing; 40, Gaster; 41, Pygidium.

*Gastrosericus wroughtoni* Cameron, 1889: 147, ♀ (as *Wroughtoni*, incorrect original capitalization). Holotype: ♀, India: Maharashtra: Pune (BMNH).

*Material examined:* India: **Andhra Pradesh**, Chittoor district, Tirupati, Mangalam (13°39'05"N, 79°27'43"E), (1 male), 21.vi.2021, Coll. Dintomon Joy, ZSIK Regd.

No. ZSI/WGRC/IR/INV/17859. **Kerala**, Kannur district, Kannapuram (11°58'21"N, 75°19'52"E), (1 male), 23.iv.2019, Coll. C. Charesh, ZSIK Regd. No. ZSI/WGRC/IR/INV/17736; Kannur district, Madayipara (12°02'25"N, 75°15'37"E), (2 males & 1 female), 6.iii.2020, Coll. N.V. Ayisha Mawadda & Party, ZSIK Regd. Nos. ZSI/WGRC/IR/INV/17737–17739. **Tamil Nadu**,





**Figure 42-48.** *Gastrosericus waltlii* Spinola, male. 42, Habitus, lateral view; 43, Head, dorsal view; 44, Head & thorax; 45, Clypeus; 46, Gaster, ventral view; 47, Propodeum, dorsal view; 48, Antennae.

Kanyakumari district, Kanyakumari Wildlife Sanctuary, Alagiyapandipuram Range, Keeriparai (8°22'29"N, 77°25'32"E), (4 males), 19.ii.2020, Coll. Souvik Sen & Party, ZSIK Regd. Nos. ZSI/WGRC/IR/INV/16840–16843; Kanyakumari district, Alagiyapandipuram Range, Pallakulam (9°03'16"N, 78°16'30"E), (1 male & 1 female), 14.ii.2020, Coll. Souvik Sen & Party, ZSIK Regd. Nos. ZSI/

WGRC/IR/INV/16844 & 16845; Thirunelveli district, Gadanam dam site (8°52'41"N, 77°31'48"E), (1 male & 1 female), 30.ix.2018, Coll. P. Girish Kumar & Party, ZSIK Regd. Nos. ZSI/WGRC/IR/INV/16846 & 16847.

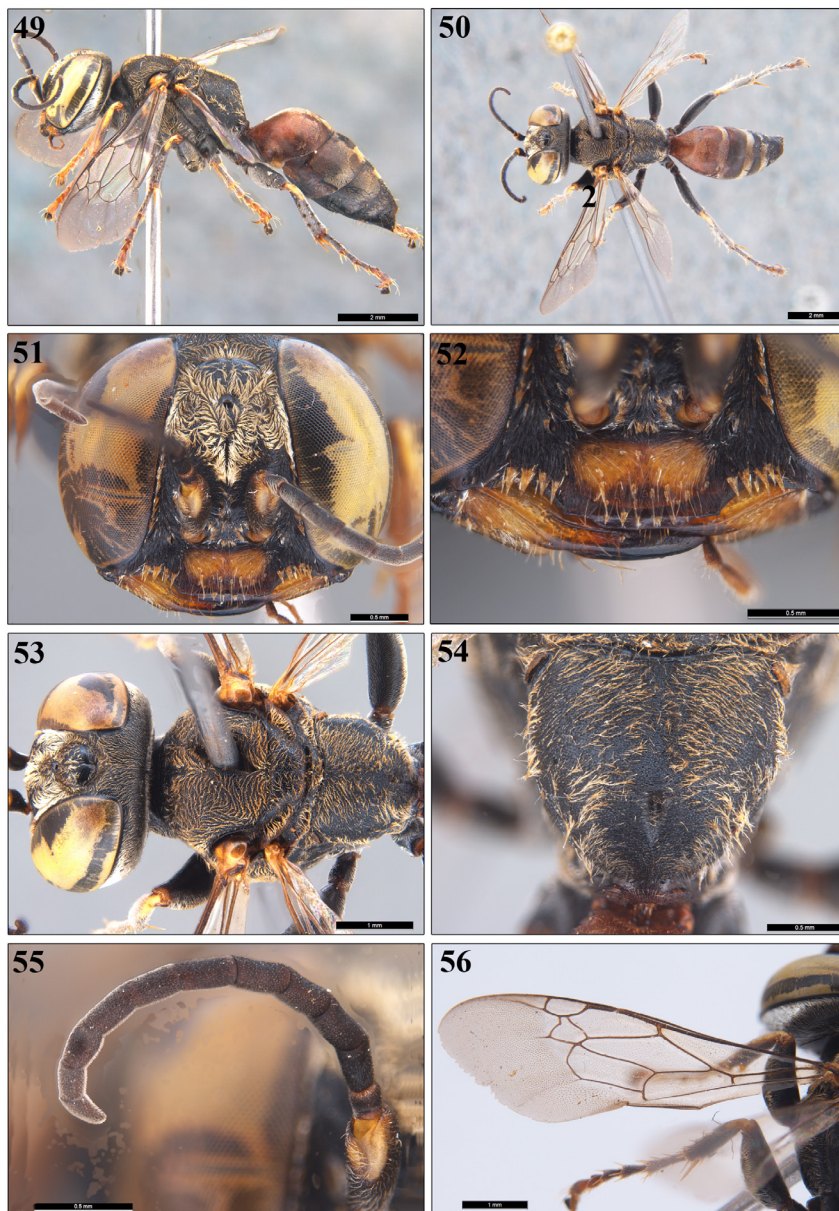
*Distribution:* India: Andhra Pradesh (**new state record**), Kerala (**new state record**), Maharashtra,

Rajasthan, Tamil Nadu. *Elsewhere*: Pakistan; Sri Lanka (Pulawski, 1995; Pulawski, 2021).

## Discussion

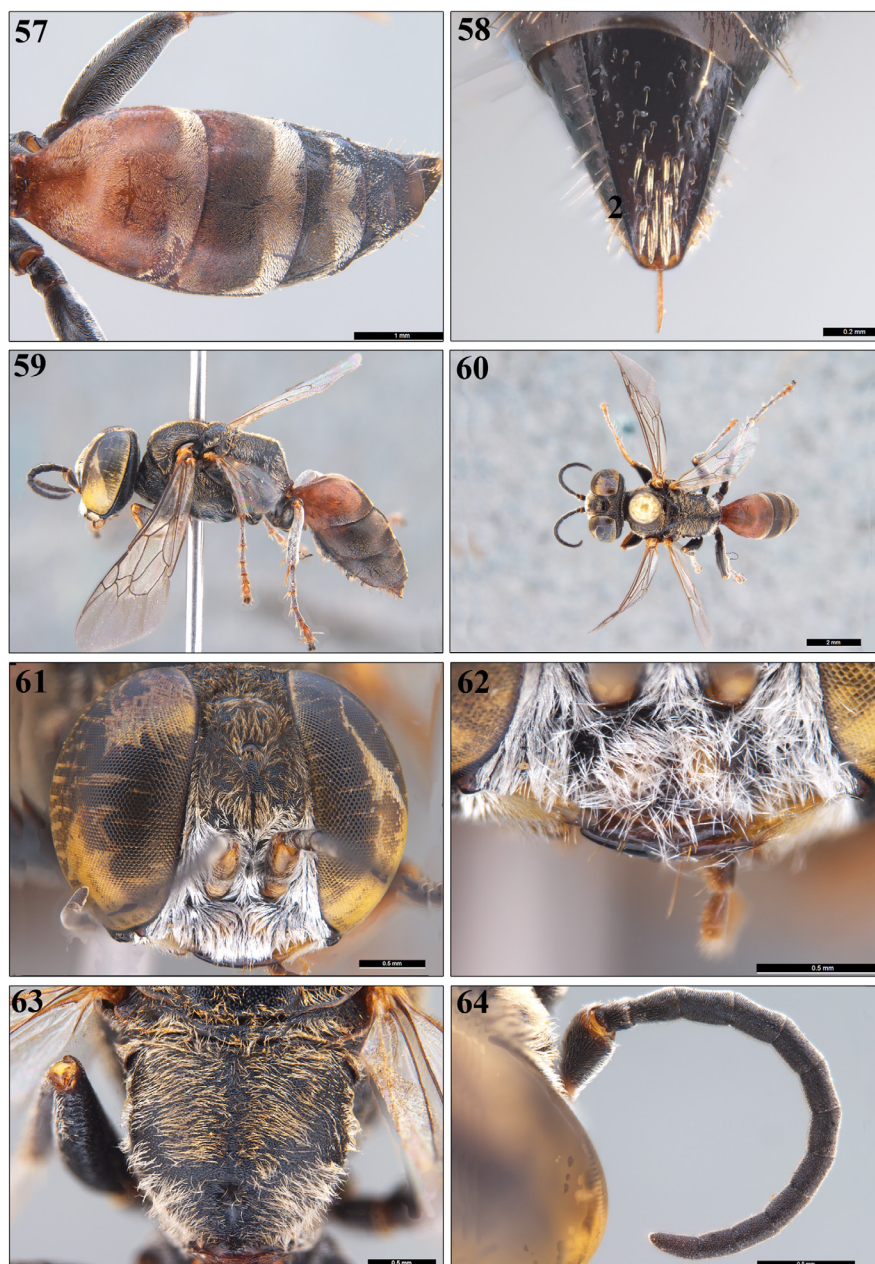
Although rare in collections, *Gastrosericus* Spinola is a well-studied genus in the Indian subcontinent. Hitherto, 12 species are reported from the Indian subcontinent

including 7 species from India. As an outcome of this study, *Gastrosericus moricei* Saunders is newly recorded from Andhra Pradesh, *Gastrosericus rothneyi* Cameron is newly recorded from Kerala, and *Gastrosericus wroughtoni* Cameron is newly recorded from Andhra Pradesh and Kerala. Serious field explorations in the dry and warmer parts of the country may yield interesting species of this genus.



**Figure 49-56.** *Gastrosericus wroughtoni* Cameron, female. 49, Habitus, lateral view; 50, Habitus, dorsal view; 51, Head, frontal view; 52, Clypeus; 53, Head & thorax; 54, Propodeum, dorsal view; 55, Antennae; 56, Forewing.





**Figure 57-64.** *Gastrosericus wroughtoni* Cameron. 57-58, female. 57, Gaster; 58, Pygidium; 59-64, male. 59, Habitus, lateral view; 60, Habitus, dorsal view; 61, Head, dorsal view; 62, Clypeus; 63, Propodeum, dorsal view; 64, Antennae.

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