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DESCRIPTION OF A NEW SPECIES OF *EUBRONCUS* YOSHIMOTO (HYMENOPTERA: MYMARIDAE) FROM INDIA, WITH A KEY TO WORLD SPECIES

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Abstract: A new species of the genus *Eubroncus* Yoshimoto, Kozlov & Trjapitzin is described from India and a key to world species is provided.

Keywords: *Eubroncus scutatus* sp. nov., Hymenoptera, India, Karnataka, Mymaridae, new species, Tamil Nadu.

Abbreviations: YPT - Yellow pan trap; F - 1-6 Funicle segments; Gt₁ - Gastral tergite 1; Gs₁ - Gastral sternite 1; OD - Mid ocelli diameter; POD - Post ocelli diameter; OOL - Ocular-ocelli distance; OCL - Least post ocellus-occipital margin length; POL - Postocelli distance; MOL - Least mid ocellus-occipital margin length.

Genus *Eubroncus* was erected by Yoshimoto et al. (1972) under the subfamily Eubroncinae, that includes two genera, *Eubroncus* Yoshimoto, Kozlov & Trjapitzin and *Stomatrotrum* Yoshimoto, Kozlov & Trjapitzin, based on prominent mandibles that were almost as long as the head height. *Eubroncus* was erected with *E. orientalis* Yoshimoto, Kozlov & Trjapitzin (male) as the type species

from Malaysia, and *Stomatrotrum* with *S. prodigiosum* Yoshimoto, Kozlov & Trjapitzin (female) from the Russian Far East. Later Triapitsyn & Huber (2000) synonymized *Stomatrotrum* with *Eubroncus*. Triapitsyn & Berezovskiy (2002) redescribed *E. prodigiosus* (Yoshimoto, Kozlov & Trjapitzin) and keyed males of the two known species based on color of mesosoma and whether the pronotum is divided or not. Viggiani (2003) described the male genitalia of *E. prodigiosus* from Japan. Lin et al. (2007) recorded an unidentified species from Australia. Hayat & Khan (2009) described the third species, *E. indicus* Hayat & Khan, from a single female from India. Jin & Li (2014) described three additional species, *E. vertexus* Jin & Li, *E. bani* Jin & Li and *E. tibetanus* Jin & Li, from China. Here we describe the second species from India and seventh from the world.



DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
DD	LC	NT	VU	EN	CR	EW	EX

Eubroncus scutatus sp. nov.



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MATERIALS AND METHODS

Collections were made using yellow pan traps as described by Noyes (1982) from sandalwood forest area of Institute of Wood Science and Technology (IWST), Bengaluru, Karnataka and Oilpalm ecosystem, Mulakadu, Kallakuruchi Taluk of Tamil Nadu. Specimens were processed using hexamethyldisilazane as described by Brown (1993) and either card, point or slide mounted, labeled and studied. All specimens are deposited with Entomology Department, Annamalai University (EDAU), Chidambaram, Tamil Nadu, India and National Bureau of Agricultural Insect Resources (NBAIR) (formerly NBAII), Bengaluru, Karnataka, India. All measurements (except habitus images) are actual divisions under 40x (One division = 0.0025mm). Montage images were captured using Leica DM 750 phase contrast microscope for slide mounted parts and the habitus images using Leica M205C stereo zoom microscope.

RESULTS

Eubroncus scutatus

Manickavasagam & Palanivel sp. nov. (Images 1–11)

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Materials examined

Holotype: EDAU/Mym10/2014, 25.x.2013, female (EDAU) on slide, labeled “*Eubroncus scutatus* Manickavasagam & Palanivel”, sandalwood forest, yellow pan traps, IWST campus, Bengaluru, Karnataka,

India. Coll. Manickavasagam & Palanivel.

Paratypes: EDAU/Mym10/2014, 4.viii.2014, one male on slide under five coverslips with same data as in Holotype. Two females and two males [1 female & 1 male on slide under five coverslips with NBAIR, Bengaluru (ICAR/NBAIR/P225)], [1 female & 1 male on card with EDAU], yellow pan traps, oil palm ecosystem, Mulakadu, Kallakuruchi Taluk, coll. Gowthaman & Abhinav Kumar.

Female (Image 1)

(Holotype) Body length 0.81mm. Head black with ocelli and brown mandibles and eyes dirty pink. Antenna dark brown with radicle yellowish-brown; mesosoma dark brown; wings more or less uniformly infuscate, with paler spots below base of marginal vein; all legs uniformly brown with ovipositor light brown.

Head (Image 3) 1.4x as long as wide; eyes sub triangular, 2.3x as long as wide, finely setose. Vertex smooth, 1.6x as long as wide. Mid ocellus more or less round, postocelli oval. MOL 1.7x as long as OD; OCL equal to POD; POL 0.28x as long as OOL. Mandible (Image 4) 0.69x as long as head and 1.6x as long as vertex in dorsal view. Antenna (1161) (Image 5) with radicle 0.30x as long as scape; scape 4.3x as long as wide; pedicel 1.7x as long as wide, and 2.8x as long as F1; F1 without sensilla, F2–F6 each with two longitudinal sensillae; clava shorter than scape, 2.4x as long as wide, with six visible longitudinal sensillae.



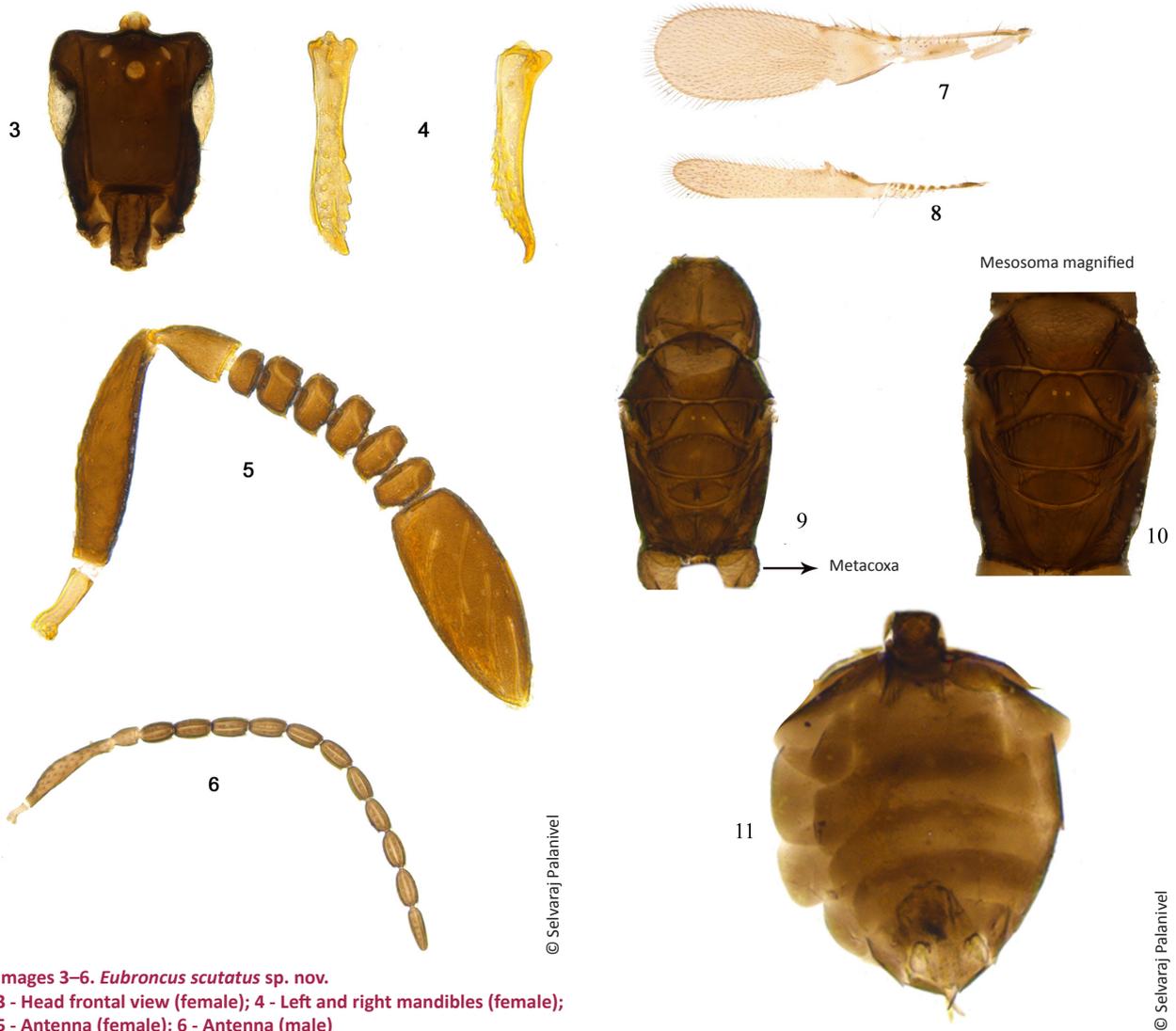
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Image 1. *Eubroncus scutatus* sp. nov. - habitus image of female



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Image 2. *Eubroncus scutatus* sp. nov. - habitus image of male



Images 3–6. *Eubroncus scutatus* sp. nov.
 3 - Head frontal view (female); 4 - Left and right mandibles (female);
 5 - Antenna (female); 6 - Antenna (male)

Images 7–11. *Eubroncus scutatus* sp. nov. (female)
 7 - Fore wing; 8 - Hind wing; 9 - Mesosoma; 10 - Part of mesosoma
 magnified; 11 - Metasoma with ovipositor

Mesosoma (Image 9) 1.9x as long as wide. Pronotum 0.59x as long as wide, with a faint longitudinal carina medially, each lobe with about 25 setae dorsally, with reticulate sculpture ventrally. Mesoscutum 0.91x as long as pronotum, strongly reticulate (Image 10), with a pair of strong setae at posterolateral angle, lateral lobes also sculptured and again with a seta in each lobe posterolaterally. Axilla with longitudinal carinae laterally fading towards anterior scutellum, with one strong seta in each axilla, posterior end with reticulate sculpture. Scutellum 1.19x as long as mesoscutum, anterior scutellum with two placoid sensillae at middle, post scutellum with 2–3 longitudinal carinae on lateral sides and strongly foveate on the entire anterior margin; whole mesosoma ventrally reticulately sculptured. Metanotum band like medially and narrowing laterally and reticulately sculptured anterodorsally. Propodeum

0.82x as long as mesoscutum, and 0.67x as long as scutellum, with strong reticulate sculpture medially and laterally and with a pair of setae. Mesophragma broadly 'v' shaped almost reaching posterior margin of propodeum.

Fore wing (Image 7) 4.0x as long as wide, longest marginal cilia about 0.33x as long as maximum wing width; submarginal vein with eight, marginal vein with six setae along anterior margin. Hind wing (Image 8) 9.0x as long as wide, longest marginal cilia about 0.77x as long as maximum wing width. Legs: fore coxae 2.8x as long as wide; fore, mid and hind coxae respectively very faintly, faintly and strongly reticulately sculptured.

Metasoma (Image 11) petiole as long as wide with short spine like projections anterolaterally, and with

reticulate sculpture dorsally. Gt1 and Gs1 smooth; ovipositor slightly exerted, as long as mesotibia.

Measurements (length/width): Head: 101:69, Antenna: radicle: 16:5, scape 52:12, Pedicel 17:10, F1 6:11, F2 8:12, F3 8:13, F4 8:13, F5 7:13, F6 7:15, Clava 51:21, Forewing: 290:71, longest marginal cilia 24. Hind wing: 280:31, marginal cilia 24. Mesosoma: 155:79; pronotum: 37:62; Metasoma 149:110, ovipositor: 57:30. Legs (given as coxae, femur, tibia, tarsus 1-4): Fore 52:56:44:20:10:8:11, Middle: 22:51:56:15:11:8:12, Hind: 32:52:74:15:14:12:14.

Relative measurements: OD 7, OCL 4, OOL 14, POL 4, POD 4, MOL 12.

Male (Image 2)

Body length 0.78mm. Similar to female except for normal sexually dimorphic characters and following: Antenna with all flagellar segments longer than wide, each with two sensillae.

Measurements (Length/width, 0.78mm): Head 90:67, radicle 16:5, scape 56:11, Pedicel 16:10, F1 18:10, F2 19:9, F3 19:10, F4 20:10, F5 20:10, F6 19:9, F7 20:10, F8 19:10, F9 20:11, F10 20:10, F11 24:7, Fore wing 296:88, marginal cilia 36. Hind wing 284:31, marginal cilia 25. Genitalia: 32:5.

Host

Unknown.

Distribution

India: Karnataka and Tamil Nadu.

Etymology

This species is named after the species specific character of mesoscutum with reticulate sculpture.

Comments

Eubroncus scutatus can be separated from the closest species *E. vertexus* by its smooth vertex and sculptured mesoscutum (in *vertexus* vertex covered with scale-like sculpture and mesoscutum smooth), postscutellum with strong fovea along entire anterior margin (in *vertexus* fovea present only medially). Among other known species of *Eubroncus*, *E. prodigiosus* has scutum with faintly reticulate sculpture, but antennal measurements and wings are different [(in *scutatus*, scape is 4.3x as long as wide, in *prodigiosus* it is only 3x); fore wings 4x as long as wide in *scutatus*, 3.7x in *prodigiosus*; hind wings 9x long as wide in *scutatus* where as it is 7.8 to 8.2x in *prodigiosus*]].

Key to world species of *Eubroncus* (males and females)

(Note: females are not known for *E. orientalis*; males are not known for *E. indicus*, *E. bani* and *E. tibetanus*).
(Modified from Jin & Li 2014)

- 1 Female: Flagellum clavate, funicle 6-segmented and clava 1-segmented (Image 5) 2
- Male: Flagellum filiform, 11-segmented (Image 6) 7
- 2 Pronotum entire, without a faint longitudinal carina medially 3
- Pronotum with a faint longitudinal carina medially (Image 9) 4
- 3 Scape about 3.0x as long as wide; Gt1 with prominent carinae; eye circular *E. prodigiosus*
- Scape about 5.5x as long as wide; Gt1 without prominent carinae; eye oval *E. indicus*
- 4 Mesoscutum with reticulate sculpture (Image 10); vertex smooth (Image 3) *E. scutatus* sp. nov.
- Mesoscutum without reticulate sculpture; vertex partly or entirely covered with light or conspicuous scale-like sculpture ... 5
- 5 Hind wing without a group of long setae on disc behind the distal part of marginal vein; petiole with short and blunt spine-like projections anterolaterally; vertex entirely covered with conspicuous scale-like sculpture; ovipositor 0.87x–0.90x as long as mesotibia *E. vertexus*
- Hind wing with a group of long setae on disc behind the distal part of marginal vein; petiole with relatively long spine-like projections anterolaterally; vertex only partly covered with conspicuous sculpture or the sculpture inconspicuous; ovipositor 0.66x–0.68x as long as mesotibia 6
- 6 Vertex with conspicuous scale-like sculpture in anterior half, smooth in posterior half or nearly so; propodeum with distinct reticulate sculpture medially; scutellum with transverse row of fovea extending to lateral margins *E. tibetanus*
- Both vertex and propodeum with fine reticulate sculpture; scutellum with short transverse row of fovea medially *E. bani*
- 7 Pronotum entire, without longitudinal carina medially *E. prodigiosus*
- Pronotum with a faint longitudinal carina medially 8
- 8 Fore wing with a notch on basal third of posterior margin (Yoshimoto et al. 1972, Image 4) *E. orientalis*
- Fore wing without a notch on basal third of posterior margin 9
- 9 Mesoscutum with reticulate sculpture; vertex smooth *E. scutatus* sp. nov.
- Mesoscutum without reticulate sculpture; vertex entirely covered with conspicuous scale-like sculpture *E. vertexus*

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