

## Description of a new species of *Megachalcis* Cameron (Hymenoptera: Chalcidoidea: Chalcididae) from India with a revised key to species

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### Abstract

A new species of *Megachalcis* Cameron (Hymenoptera: Chalcididae) is described based on the study of a female specimen collected from the Kannapuram mangroves of Kerala. A revised key to the species of *Megachalcis* is also provided.

**Keywords:** Hymenoptera, Chalcididae, *Megachalcis*, new species, Key.

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### Introduction

The genus *Megachalcis* Cameron belongs to the tribe Cratocentrini of the subfamily Chalcidinae of the family Chalcididae (Hymenoptera: Chalcidoidea) which is currently known by 7 species described worldwide, distributed in south Asia from western India to eastern Indonesia (Narendran, 1989; Narendran & Achterberg, 2016; Noyes, 2018). *Megachalcis* specimens are very rarely encountered in collections and they are probably parasitoids of wood boring beetles, occurring in naturally rich rain-forest habitats and no actual host records are available till date (Bouček, 1988). The representative of the genus from India is *M. malabarica* Narendran, and the species was described by Narendran (1989) based on the type specimens collected from the campus of University of Calicut, Kerala, India, the vegetation of the locality is more or less a scrub jungle type. Studies on a female specimen collected from the mangroves (Fig. 10) of Kannur district of Kerala yielded one undescribed species which is described here. The key to species of *Megachalcis* published by Narendran, 1989 and Narendran & Achterberg, 2016 are modified here to accommodate the new species described.

### Materials and Methods

The specimen of the present study was

collected using a sweep net over the inflorescence of a mangrove plant of *Avicennia* sp. from Kannapuram (11.5835°N & 75.1817°E) which is located in the Kannur district of Kerala. The specimen was preserved in 70% ethyl alcohol and card mounted for microscopic observation. It was examined under a stereoscopic binocular microscope of model LEICA M205 and the images were captured with the camera model LEICA DFC 500. Terminology used in the paper generally follows Narendran (1989) and the type specimens are deposited in the National Zoological collections of Zoological Survey of India, Western Ghat Regional Centre, Kozhikode (ZSIK). The present description is based on a single specimen since further efforts to collect more specimens did not yield any additional material due to the rare nature of the genus.

*The following abbreviations are used in the text:* AOL = Distance between anterior ocellus and posterior ocellus; F = Funicular segments; LOL = Diameter of anterior ocellus; MV = Marginal vein; OOL = Ocellocular distance; PMV = Postmarginal vein; POL = Postocellar distance; SMV = Submarginal vein; STV = Stigmal vein.

### Results and Discussion

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### *Megachalcis* Cameron

*Megachalcis* Cameron, 1903: *J. Straits Brch. R. Asiat. Soc.* 39: 96-97. Type species *Megachalcis fumipennis* Cameron, by monotypy.

*Allocentrus* Cameron, 1911: *Societas ent.* 26: 12. Type species *Allocentrus hirticeps* Cameron, by monotypy.

*Macrochalcis* Masi, 1944: *Ann. Mus. civ. Stor. nat. Giacomo Doria* 62:136-137. Type species *Macrochalcis bischoffi* Masi, by original designation.

**Diagnosis** : *Megachalcis* is characterized by a gaster in female produced in to a long tail , tergites 2 to 4 strongly reduced and for most part hidden under the large first tergite; PMV much longer than MV; mesosoma often with rasp-like sculpture and body with some silvery patches of hairs.

**Hosts**: Apparently parasites of wood-boring beetles on dead or fallen trees, but no host records are available (Boucek, 1988).

**Distribution**: Southeast Asia.

### *Megachalcis kannapuramensis* Sureshan & Girish Kumar sp. n.

(Figs. 1-9)

[urn:lsid:zoobank.org:act:8A24DB8A-9628-4B26-840A-7407462EA4A7](https://doi.org/10.21203/rs.3.rs-2448884/v1)

**Description**: Holotype, ♀, length of body 12.5 mm (including 5.86 mm length of ovipositor sheath in profile view). Body black with the following parts as follows: eyes grey; tarsi liver brown. Wings hyaline with brownish tinge; veins dark brown; pubescence silvery.

**Head** (Figs. 1, 2 & 3): Head densely punctate, width in frontal view 1.75x its height (up to clypeal apex); POL 1.28x OOL; LOL 1.10x AOL; width between eyes in dorsal view 3.63x POL; occiput concave; pits on head large, mostly carinate; scrobe reaching anterior ocellus; median area of top of scrobe with few pubescence; malar space 0.49x eye height in profile; eye width 0.71x eye height in profile; eyes bare; preorbital carina absent; post orbital carina starting from malar space running upwards, not reaching geno-temporal margin; antenna (Fig. 4) inserted slightly below the level of ventral margin of eyes; scape not reaching

anterior ocellus. Relative length: width of antennal segments: scape 25: 6; pedicel 7: 5; anellus 3: 3.5; F1 to F6 almost equal length and width (8: 5); F7 = 7.5: 5; clava = 11.5: 5.5; clava 1.53x as long as preceding segment; scape densely setose ventrally.

**Mesosoma** (Figs. 1 & 5): Dorsal side of pronotum with close, deep pits, interstices mostly carinate, two distinct humps present sub medially on posterior marginal area; posterior margin of pronotum a little emarginated medially; mesoscutum and scutellum closely pitted, interstices carinate. Propodeum (Fig. 6) with large foveolae, plicae raised and carinate, spiracle bean-shaped, a distinct tooth on either side projecting to lateral side; propodeum with dense silvery large setae on either side, spread over to median part. Fore wing (Fig. 7) 5.39x as long as wide; relative length of SMV = 48.5; MV = 12; PMV = 31; STV = 5. Hind coxa without a dorso-basal tooth; hind femur (Fig. 8) twice as long as broad, ventral margin with a row of 12 teeth of different size; inner side of hind femur with a ventro-basal tooth; hind tibia with a deep smooth lengthy fovea from middle to apex on inner side.

**Metasoma** (Fig. 1 & 9): Metasoma (excluding ovipositor sheath) distinctly longer than mesosoma (48: 38); distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) about as long as metasoma (63: 61.5).

**Male**: Unknown.

**Material examined**: Holotype ♀, INDIA: Kerala, Kannur district, Kannapuram mangroves (11.5835°N & 75.1817° E), 13.v.2018, Coll. C. Charesh, ZSIK Regd. No. ZSI/WGRC/ IR/ INV/ 11417.

**Host**: Unknown.

**Distribution**: India: Kerala

**Etymology**: The species is named after the type locality.

**Discussion**: In the key to Oriental species of *Megachalcis* of Narendran, 1989, this new species comes close to *M. malabarica* Narendran in having an inner basal tooth on the hind femur and general morphology. However it

differs from *M. malabarica* in having: 1) distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) about as long as metasoma (63: 61.5) (in *M. malabarica*, distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) shorter than metasoma); 2) Pronotum with two submedian prominent convex areas (humps) (in *M. malabarica*, pronotum without submedian humps); 3) Pronotal side flange, tegulae and basal tergite black (in *M. malabarica*, pronotal side flange, tegulae and basal tergite reddish); 4) Body length (including ovipositor) 12.5 mm (in *M. malabarica*, body length (including ovipositor) 6.39-8.58 mm).

This new species also comes close to *M. vietnamensis* Narendran & Achterberg, 2016 in general morphology and having an inner basal tooth at the hind femur and general morphology. However, it differs from *M. vietnamensis* in having: 1) distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) about as long as metasoma (63: 61.5) (in *M. vietnamensis*, distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) distinctly longer than metasoma (56: 44); 2) Hind coxa without a dorsal tooth (in *M. vietnamensis*, hind coxa with a dorsal tooth); 3) Fore wing 5.39x as long as wide (in *M. vietnamensis*, fore wing 3.3x as long as wide); 4) Apical margin of first tergite and sternites black (in *M. vietnamensis*, apical margin of first tergite and sternites pale brown).

**Key to species of *Megachalcis* Cameron**

(based on females; modified from Narendran, 1989 and Narendran & Achterberg, 2016)

1. Hind femur with an inner basal tooth present.....2
  - Hind femur without inner basal tooth.....4
2. Hind coxa with a dorsal tooth; distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) longer than metasoma (56: 44).....*M. vietnamensis* Narendran & Achterberg
  - Hind coxa without a dorsal tooth; distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) about as long as or shorter than metasoma.....3

3. Pronotum with two submedian prominent convex areas (humps); distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) about as long as metasoma; pronotal side flange, tegulae and basal tergite black; body size 12.5mm (including ovipositor).....*M. kannapuramensis* Sureshan & Girish Kumar sp. n.
  - Pronotum without submedian convex areas (humps); distance between apex of epipygium to tip of ovipositor sheath (in dorsal view) shorter than metasoma; pronotal side flange, tegulae and basal tergite reddish; body size 6.39-8.58mm (including ovipositor).....*M. malabarica* Narendran
4. Apex of scutellum arcuate; basal areoles of propodeum of uniform size and apical cells not interrupted by median carina (see Fig. 222 of Narendran, 1989) except at extreme ends; pronotum always with two convex areas (humps).....5
  - Apex of scutellum projecting angularly; basal areoles of propodeum not as above (see Fig. 224 of Narendran, 1989); pronotum not always with two prominent convex areas (humps).....7
5. Wings uniformly infumated; pronotal convex areas well developed; first gastral tergite smooth.....*M. fumipennis* Cameron
  - Wings hyaline; pronotal convex areas not well developed as in alternate; first gastral tergite sparsely pitted.....6
6. Body unusually pubescent, much longer than in alternate with a longer ovipositor (body 16 mm with ovipositor 26mm); propodeum with a median tooth.....*M. timorensis* Bouček
  - Body not unusually pubescent, not as large as in alternate, with shorter body (7mm without ovipositor); propodeum without a median tooth.....*M. secundaria* (Masi)
7. Forewing uniformly infumated; pronotal convex humps less developed than in alternate; scapulae and axillae moderately convex; propodeum with proximal dent more robust than distal dent; hind tibia unpolished, mat, hollow depression with a number of almost contiguous pits; antenna black.....
  - Forewing greatly infumated at base than at apex; pronotal convex humps well developed; scapulae and axillae moderately

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convex; propodeal distal dent more robust than proximal; hind tibia shiny, hollow

depression with minute sparse pits.....  
.....*M. carinata* (Steffan)



FIGURES 1-9 *Megachalcis kannapuramensis* Sureshan & Girish Kumar **sp. nov.** Holotype ♀.  
1, Body, in profileview. 2, Head, in frontal view.  
3, Head, in dorsal view. 4, Antenna.  
5, Head & mesosoma, in dorsal view.  
6, Propodeum. 7, Fore wing. 8, Hind femur & tibia.  
9, Metasoma, in dorsal view.  
FIGURE 10, Collection locality.

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