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RESEARCH ARTICLE

A new species of *Copidosomyia* Girault (Hymenoptera: Encyrtidae) from India, with a key to global species and additional distribution records of encyrtids from India

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Abstract: A new taxon, *Copidosomyia abdulkalami* **sp. nov.** (Hymenoptera: Encyrtidae) is described from the material collected from Yercaud, Tamil Nadu, India, a key to global species of *Copidosomyia* is provided and additional distribution records of encyrtids from the state of Andhra Pradesh, India are also presented.

Key words: Chalcidoidea, Encyrtinae, Aphycini, Bothriothoracini, Habrolepidini, Tamil Nadu, Andhra Pradesh.

Introduction

Surveys conducted in several states of India in 2014 resulted in the recovery of specimens representing a new species belonging to the uncommon genus *Copidosomyia*. As members of this genus are known to be parasitic on potentially beneficial chrysopids (Neuroptera: Chrysiopidae) in agriculture the identity of the species is established below. The genus *Copidosomyia* was erected by Girault (1915) with type species *Copidosomyia cinctiventris*. This genus belongs to the subfamily Encyrtinae, tribe Aphycini (Hayat 2006) and currently includes three species: *C. bhimolpornae* (Tachikawa) from Thailand, a parasitoid of the larvae and pupae of *Chrysopa basalis* Walker and *Chrysopa* sp. (Neuroptera: Chrysopidae) (Tachikawa1979); *C. ambiguous* (Subba Rao) from Bangladesh, reared from pupae of *Chrysopa* sp. on *Citrus* sp., but also erroneously reported as a parasitoid of

Phenacoccus mangiferae Green on *Mangifera indica* L., in Bangladesh (see Subba Rao 1979 and Hayat 2006) and *C. cinctiventris* from Australia (Queensland) for which the host is unknown. Here we describe a new species, collected from the Indian state of Tamil Nadu, as *Copidosomyia abdulkalami* **sp. nov.**

Material and methods

Collections were made using yellow pan traps as described by Noyes (1982) from, Yercaud, Salem, Tamil Nadu. The length of specimens is given in millimetres. All other measurements were taken from micrometer divisions directly fitted in the eye piece of a Leica S8 APO stereozoom trinocular microscope at 80× (one micrometer division = 0.0125) for card mounted specimens or at 100× using a Leica DM750 phase contrast microscope (one micrometer division = 0.01) for slide-mounted parts. Images of card-mounted specimens were captured using a Leica M205C stereozoom trinocular microscope with a DMC2900 camera, and those of slide mounted parts using a DFC 295 camera attached to a Leica DM750 phase contrast microscope.

The following abbreviations are used:

AOL = Minimum distance between a posterior ocellus and the anterior ocellus.
OCL = Minimum distance between a posterior ocellus and the occipital margin.
OOL = Minimum distance between a posterior ocellus and the corresponding eye margin.
POL = Minimum distance between the posterior ocelli.
F1, F2, etc. = Funicle segments 1, 2, etc.
YPT = Yellow Pan Trap.

The following acronym is used for the institutions:

EDAU = Entomology Department, Annamalai University, Chidambaram, Tamil Nadu, India.
RARS = Regional Agricultural Research Station, Visakapattanam, Chinthapalli, India.

Results

Copidosomyia Girault, 1915

Copidosomyia Girault, 1915a: 99. Type species *Copidosomyia cinctiventris* Girault, by monotypy and original designation.
Acridencyrtus Subba Rao, 1979: 144. Type species *Acridencyrtus ambiguous* Subba Rao, by monotypy and original designation. Synonymy by Noyes & Hayat, 1984: 259.
Neochrysopophilus Tachikawa, 1979: 175. Type species *Neochrysopophilus bhimolpornae* Tachikawa, by monotypy and original designation. Synonymy by Noyes & Hayat, 1984: 259.

Diagnosis (modified from Girault 1915)**:** Female body usually dark brown to black (Fig. 1); head shaped like that of a grasshopper (hence the name *Acridencyrtus*), long-ovate, distinctly longer than wide, cheeks two-thirds length of eyes, frontovertex narrow, about 0.14× head width; eye nearly semicircular, with silvery white setae, ocelli forming a very acute triangle, lateral ocelli contiguous with eyes and remote from the occipital margin, malar space long, about 0.70× head height; mandibles with three acute teeth. Antenna inserted at mouth border, scrobes forming a shallow short triangle, face convex, with scattered pin punctures, scape not less than 8× as long as wide; pedicel not less than 3× as long as wide, funicle length gradually decreasing, width increasing, 6-segmented; clava solid, obliquely truncate. Fore

wing with a dark brown infuscate band medially, base of wing hyaline without setae, marginal vein twice as long as wide; hind wing hyaline. Gaster shorter than the mesosoma, flat above, compressed beneath, second segment of abdomen occupying half of surface; hypopygium extending to apex of gaster; ovipositor exserted.

Key to the world species of *Copidosomyia* (Females)

1. Distal third of mid femur white, gaster black with white band at base [Australia & Queensland] ..... *C. cinctiventris* Girault
- Entire mid femur white, gaster fully black ……..……...…… 2
2. Mid tibia completely dark brown; post marginal vein longer than stigmal vein [India] .....*C. abdulkalami* **sp. nov.**
- Apical one third of mid tibia yellowish white, remainder brownish black; post marginal vein shorter than stigmal vein …….....…… 3
3. Hind femur dark brown with basal white band; hind basitarsus brown rest of tarsus yellowish white (Fig. 3A of Tachikawa 1979) [Thailand] .... *C. bhimolpornae* Tachikawa
- Hind femur fully brown; hind tarsus completely dark brown (scape 9× as long as wide; pedicel less than 0.25× scape length) [Bangladesh & India] .... *C. ambiguous* (Subba Rao)

***Copidosomyia abdulkalami* Manickavasagam & Krishnachaitanya sp. nov.** (Figs 1−6)

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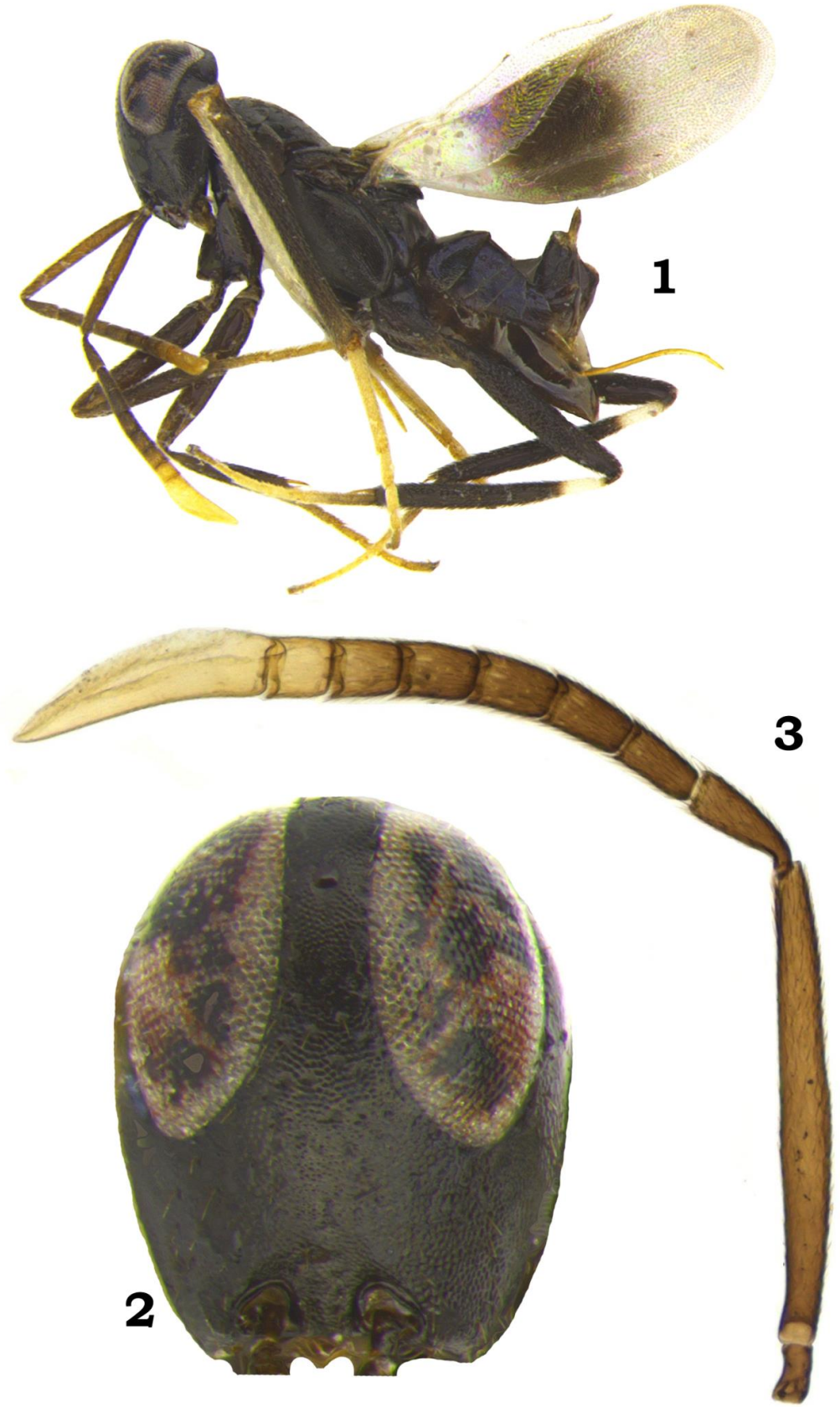
Diagnosis: Female body dark brown (Fig. 1); antenna with radicle, scape, pedicel and F1−F4 brown, F5 basally brown, apically light brown, F6 and clava white or antenna fully brown except clava white; scape slender and cylindrical, 12.75× as long as wide; pedicel 3.1× as long as wide; pronotum and mesoscutum with imbricate sculpture, axillae and scutellum with punctate reticulate sculpture; fore wing 3.5× as long as wide; costal cell 12.8× as long as wide; postmarginal vein 1.3× as long as stigmal vein.

Description (Female)

Holotype. Length, excluding ovipositor, 1.96 mm. Body dark brown (Fig. 1). Eye with silvery white setae. Antenna (Fig. 3) with radicle, scape, pedicel and F1−F4 brown, F5 basally brown, apically light brown, F6 and clava white or antenna brown with only clava white. Fore wing (Fig. 4) basally infuscate, otherwise hyaline in proximal 1/3, middle 1/3 infuscate, apical 1/3 lightly infuscate; hind wing hyaline. Legs dark brown, except mid femur and basal part of hind tibia white; all tarsi white, ovipositor sheath brownish and ovipositor yellowish.

Head (Fig. 2) in frontal view longer than wide (55:47); frontal view of eye about as high as wide (21:20); head with imbricate punctate sculpture. Antenna (Fig. 3) with scape slender and cylindrical, 12.75× as long as wide; pedicel 3.1× as long as wide; funicle length gradually decreasing, width increasing, F1 2.25× and F2 2× as long as wide and F3−F6 longer than wide; clava obliquely truncated, 4.5× as long as wide. *Measurements*−head height:width, 55:47; eye height:width, 21:20; frontovertex width 7; POL 3; OOL 0; OCL 9; AOL 10; malar space length, 39; scape length:width, 51:4; pedicel length:width, 14:4.5; funicle length:width, F1, 9:4; F2, 8:4; F3, 8:5; F4, 8:5.2; F5, 7:5.5; F6, 7:5.3; clava length:width, 27:6.

Mesosoma (Fig. 5) 1.4× as long as wide; mesoscutum 2.0× as wide as long; scutellum 1.2× as wide as long, pronotum and mesoscutum with imbricate, axillae and scutellum with



Figures 1−3. *Copidosomyia abdulkalami* Manickavasagam & Krishnachaitanya **sp. nov.**, holotype (♀). **1,** habitus image; **2,** head frontal view; **3**, antenna.

punctate reticulate sculpture. Fore wing (Fig. 4) 3.5× as long as wide; costal cell 12.8× as long as wide; marginal vein longer than wide; postmarginal vein 1.3× as long as stigmal vein. Mid tibia 3× as long as mid tibialspur; mid basitarsus 1.1× as long as mid tibial spur. *Measurements*−mesosoma length:width, 63:46; mesoscutum length:width, 22:46; scutellum length:width, 27:33; forewing length:width, 165:47; costal cell length:width, 64:5; marginal vein length:width, 11:4; postmarginal vein length 14; stigmal vein length 11; mid tibia length 80; mid basitarsus length 30; mid tibial spur length 27.

Metasoma shorter than mesosoma (50:63), with imbricate sculpture; hypopygium extending to apex of gaster; ovipositor (Fig. 6) 1.8× as long as mid basitarsus and slightly exserted. *Measurements*−metasoma length 50; exserted ovipositor length 9; ovipositor length 53.

Material examined: Holotype, ♀ (on card): INDIA: Tamil Nadu, Salem, Yercaud, (N11 48.84, E078 12), 18.iii.2014, YPT, Coll. T. Krishnachaitanya and S. Manickavasagam through yellow pan traps. (EDAU, Registration No. Enc/005/2015). Paratype. 1 ♀ (on slide under 5 cover slips) with same data as holotype (EDAU, Registration No. Enc/005/2015).

Host: Unknown.

Male: Unknown.

Comments: This species is similar to *Copidosomyia ambiguous* in having the mid tibial spur shorter than the basitarsus, the pedicel less than 0.25× scape length, the mid femur and base of the hind tibia white and the fore wing marginal fringe short. It differs from *C. ambiguous* in having the scape 12.75× as long as wide, the post marginal vein 1.3× as long as the stigmal vein, the clava shorter than the combined lengths of the last three funicle segments, the mid tibia brown and the hind tarsi white, whereas in *C. ambiguous* the scape is 9× as long as wide, the postmarginal vein is shorter than the stigmal vein, the clava is longer than the combined lengths of the last three funicle segments and the mid tibia is white and the hind tarsus is dark brown.

Etymology: This species is named after the former President, Republic of India, Dr. A. P. J. Abdul Kalam, as this species description coincided with his sudden demise.

New distributional records:

Pentelicus punctatus Manickavasagam & Chaitanya

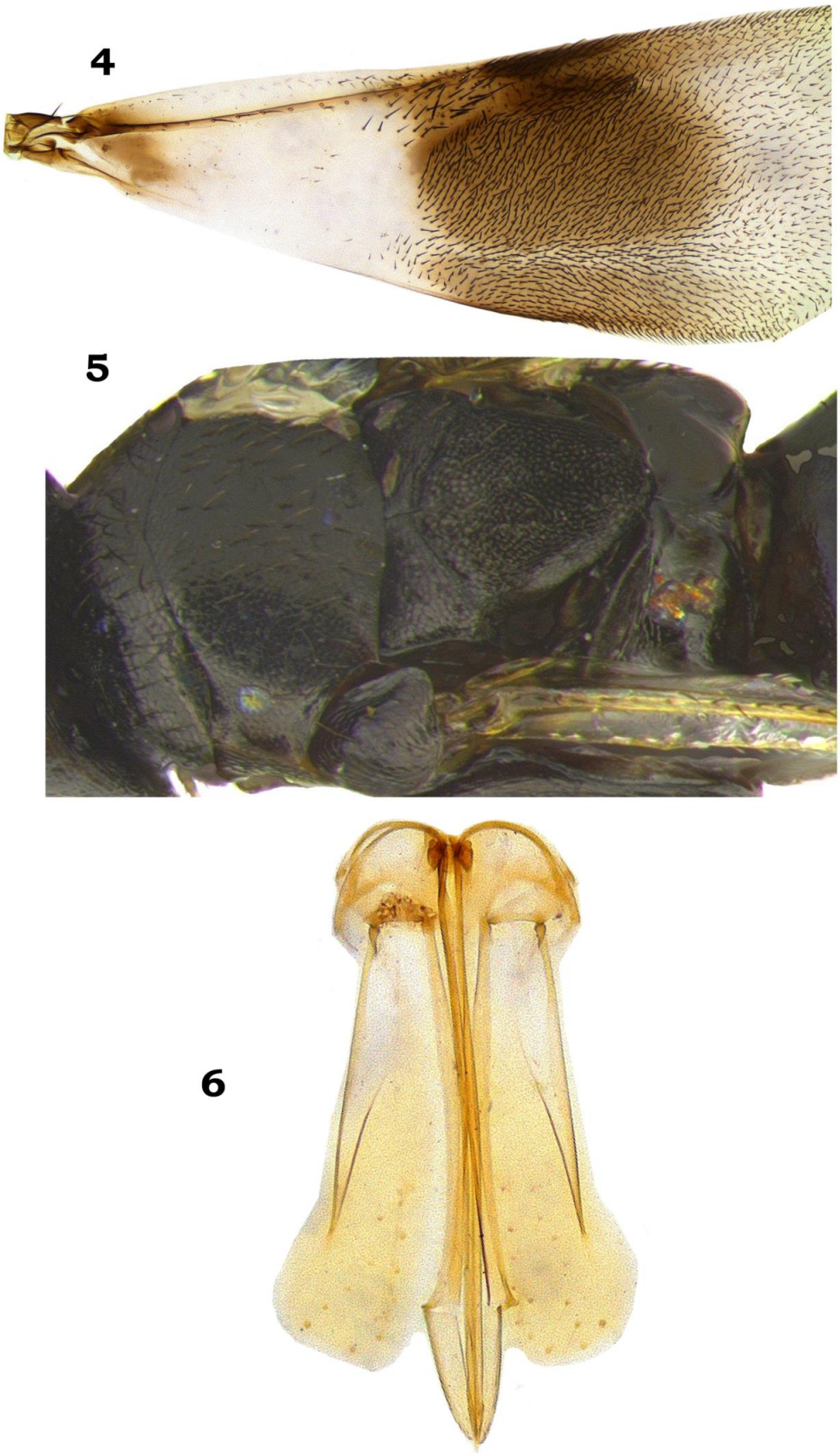
Material examined. INDIA: Andhra Pradesh: Vishakapattanam, Chinthapalli, RARS, 2 ♀ on card, (N18 94; E82 61), 06.Vii.2015, (YPT), Coll. T. Krishna Chaitanya. (2 females, EDAU). Tamil Nadu (Manickavasagam & Chaitanya 2015), new record from Andhra Pradesh State.

Pentelicus depunctatus Manickavasagam & Chaitanya

Material examined. INDIA: Andhra Pradesh: Vishakapattanam, Araku, 1 ♀ on card, (N18 33; E82 861), 30.vi.015, (YPT), Coll. T. Krishna Chaitanya. (1 female, EDAU). Tamil Nadu (Manickavasagam & Chaitanya 2015), new record from Andhra Pradesh State.

Plagiomerus bangaloriensis Shafee, Alam & Agarwal

Material examined. INDIA: Andhra Pradesh: Vishakapattanam, Chinthapalli, RARS, 1 ♀ on card (N18 94; E82 61), 06.Vii.2015, (YPT), Coll. T. Krishna Chaitanya. (1 female,



Figures 4−6. *Copidosomyia abdulkalami* Manickavasagam & Krishnachaitanya **sp. nov.**, (♀). **4**, fore wing (holotype); **5,** mesosoma (holotype); **6,** ovipositor (paratype).

EDAU). Karnataka, Kerala (Shafee, Alam & Agarwal 1975), new record from Andhra Pradesh State.

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References

Girault A. A. 1915. Australian Hymenoptera Chalcidoidea – VII. The family Encyrtidae with description of new genera and species. *Memoirs of the Queensland Museum* 4: 1−184.

Hayat M. 2006. *Indian Encyrtidae* (*Hymenoptera: Chalcidoidea*). viii+ 496pp. Published by Hayat M, Department of Zoology, Aligarh Muslim University, India.

Manickavasagam S. & Krishna Chaitanya T. 2015. Description of three new species of *Pentelicus* Howard (Hymenoptera: Encyrtidae) from India, with a key to world species. *Zootaxa* 3946(2): 221−232. http://dx.doi.org/10.11646/zootaxa.3946.2.4

Noyes J. S. 1982. Collecting and preserving chalcid wasps (Hymenoptera: Chalcidoidea). *Journal of Natural History* 16: 315−334.

Noyes J. S. 2015. *Universal Chalcidoidea Database*. World Wide Web electronic publication. Available from: http://www.nhm.ac.uk/chalcidoids. [accessed 20 July 2015].

Noyes J. S. & Hayat M. 1984. A review of the genera of Indo-Pacific Encyrtidae (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology)* 48: 131−395.

Shafee S. A., Alam S. M. & Agarwal M. M. 1975. *Taxonomic survey of encyrtid parasites (Hymenoptera: Encyrtidae) in India*. Aligarh Muslim University Publications (Zoological Series) on Indian Insect Types, 10: iii+ 1−125.

Subba Rao B. R. 1979. Taxonomic studies on some encyrtid genera (Hymenoptera: Chalcidoidea: Encyrtidae). *Oriental Insects* 13: 139−148.

Tachikawa T. 1979. A new genus and species of Encyrtidae (Hymenoptera) parasitic on *Chrysopa* (Neuroptera) in Thailand. *Transaction of the Shikoku Entomological Society* 14: 171−175.

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