

**FIRST REPORT OF *CAENOHOMALOPODA SHIKOKUENSIS*
(TACHIKAWA) (INSECTA: HYMENOPTERA: ENCYRTIDAE)
FROM INDIA AND OTHER DISTRIBUTIONAL RECORDS OF
ENCYRTIDS**

M. Ayyamperumal* and S. Manickavasagam*

* Parasitoid Taxonomy and Biocontrol Laboratory, Department of Entomology, Faculty of Agriculture, Annamalai University, Chidambaram 608 002, Tamil Nadu, INDIA. E-mail: drmanicks2003@yahoo.co.in

[Ayyamperumal, M. & Manickavasagam, S. 2019. First report of *Caenohomalopoda shikokuensis* (Tachikawa) (Insecta: Hymenoptera: Encyrtidae) from India and other distributional records of encyrtids. Munis Entomology & Zoology, 14 (1): 126-129]

ABSTRACT: *Caenohomalopoda shikokuensis* (Tachikawa) is first reported from India. *Caenohomalopoda longiclava* Basha & Hayat from Tamil Nadu, *C. tchai* Fatima & Zeya from Karnataka, *Coagerus bouceki* Noyes & Hayat from Andhra Pradesh, *Cryptanusia ajmerensis* (Fatma & Shafee) from Assam and Tamil Nadu, *Ethoris dahmsi* Noyes & Hayat from Manipur, *Eugahania flaviscapus* Singh & Agarwal from Andhra Pradesh, Madhya Pradesh and Meghalaya, *Hemileucoceras longicornis* Hayat from Tamil Nadu, *Homalopoda cristata* Howard from Tamil Nadu, *Paratetracnemoidea malenotti* (Mercet) from Andhra Pradesh and Meghalaya and *Yasumatsuiola orientalis* Trjapitzin from Andhra Pradesh and Bihar are reported as additional distribution records from Indian states.

KEY WORDS: Chalcidoidea, taxonomy, first report, distributional record, India

The Indian fauna of Encyrtidae (Hymenoptera: Chalcidoidea) is presently represented by 152 genera that includes 720 species (Noyes, 2018). Members of this family mainly attack Sternorrhyncha (Hemiptera), but coleopteran, heteropteran eggs, some lepidopteran eggs and larvae, dipteran pupa like syrphids and cecidomids, neuropteran cocoon and nymphs of ticks are also attacked (Tachikawa, 1981). Such an economically important group of parasitoid must be thoroughly surveyed from biological control of point of view, also to know the Indian faunal diversity. Our recent routine attempts to explore the Indian encyrtids, resulted in first report of *Caenohomalopoda shikokuensis* from India and also many other distributional records from various Indian states as given below.

MATERIALS AND METHODS

Parasitoids were collected from different states of India by using yellow pan trap. Collected specimens were card or slide mounted using the standard procedure adopted by Noyes (1982). Antenna and wing images were captured using a DFC295 camera attached to a Leica DM750 phase contrast microscope and habitus using a Leica M205C trinocular stereo zoom microscope with a DMC2900 camera. The images were stacked using montage and Combine ZP soft wares and processed using Adobe Photoshop version 7.0.

Abbreviations Used: YPT—Yellow pan trap. Acronyms used: EDAU—Entomology Department, Annamalai University, Chidambaram, India.

RESULTS

Caenohomalopoda shikokuensis (Tachikawa)

(Figs. 1-3)

Brief diagnosis: Fore wing 2.8× as long as broad; the infusate band towards post marginal and stigmal veins perpendicular to anterior margin of the fore wing; F1 slightly longer than wide; antenna brown, except radicle, apical half of F3, F4, clava 2 and 3 yellow; mesosoma metallic green except median triangle of scutellum, tegula, metanotum and propodeum brown to dark brown; legs brown except bases and apices of femora, apices of tibia and tarsi pale yellow; metasoma dark brown with pale brown patches on the lateral sides.

Specimens examined: Two; 1♀ (on slide under four cover slips) labelled: India: Bihar, Banka, Bounsi (N25.14°, E86.56°), 8.i.2014, YPT, Coll. Abhinav Kumar; 1♀ (on card), India: Andhra Pradesh, Chintapalli (N17.87°, E82.35°), 12.ix.2013, YPT, Coll. T. Krishnachaitanya.

Distribution: Afrotropical (Prinsloo, 1979); Algeria (Trjapitzin, 1989); Cayman Islands (Askew, 1994); Japan (Tachikawa, 1956); Korea (Trjapitzin & Paik, 1996); China (Xu & Huang, 2004; Zhang & Huang, 2004, 2006); Puerto Rico (Desantis & Fidalgo, 1994); USA: Florida (Bennett & Noyes, 1989); India (new record).

Variation: F1-3 color shade varies from brown to yellow (Fig. 2).

Comments: All Indian species have the II infusate band not perpendicular to anterior margin of the fore wing and this is the first species that has perpendicular II infusate band, possibly introduced and not of Indian origin (Fig. 3).

DISTRIBUTIONAL RECORDS:

Caenohomalopoda longiclava Basha & Hayat

Specimen examined: 1♀ (on card): India: Tamil Nadu, Yercaud (N11° 48.88, E078°12), 26.ix.15, YPT, Coll. S. Palanivel and M. Ayyamperumal. **Distribution:** India: Bihar (Basha & Hayat, 2002); Delhi (Manickavasagam et al., 2010); Pondicherry (Manickavasagam & Rameshkumar, 2012); Uttar Pradesh (Fatima & Zeya, 2017); Tamil Nadu (New record).

Caenohomalopoda tahai Fatima & Zeya

Specimen examined: 1♀ (on slide under four cover slips) labelled: India: Karnataka, Mudigere. (N13.13°, E75.63°), 11.iv.16, Sweep net, Coll. M. Ayyamperumal and M. Avinkumar. **Distribution:** India: Uttarakhand (Fatima & Zeya, 2017); Karnataka (New record).

Coagerus bouceki Noyes & Hayat

Specimens examined: 2♀♀ (on card): India: Andhra Pradesh, Araku (N18.32°, E82.87°), YPT, Coll. T. Krishnachaitanya. **Distribution:** India: Karnataka, Tamil Nadu (Noyes & Hayat, 1984); Puducherry (Manickavasagam & Rameshkumar, 2012); Uttar Pradesh (Hayat et al., 2008); Uttarakhand (Hayat & Khan, 2015); Andhra Pradesh (New record).

Cryptanusia ajmerensis (Fatma & Shafee)

Specimens examined: 3♀♀ (on card): 2♀♀, India: Tamil Nadu, Yercaud, (N11° 48.88, E078°12), 26.i.18, YPT, Coll. M. Ayyamperumal & S. Ajay Karthick; 1♀, India: Assam. (N26°07, E091° 49), 26.vi.16, YPT, Coll. S. Palanivel and T. Krishnachaitanya. **Distribution:** India: Rajasthan (Fatma & Shafee, 1988); Assam & Tamil Nadu (New record).

Ethoris dahmsi Noyes & Hayat

Specimens examined: 2♀♀ (on card): India: Manipur, senapati (N25.32°, E94.15°), 9.iv.2015, YPT. Coll. KH. Sophis Singh. **Distribution:** India: Andhra Pradesh (Noyes & Hayat, 1984); Manipur (New record).

Eugahania flaviscapus Singh & Agarwal

Specimens examined: 8♀♀ (on card): India: Meghalaya, Umiyam (N25.67°, E91.92°), 26.vi.2016, YPT, Coll. S. Palanivel and T. Krishnachaitanya; 1♀, India: Andhra Pradesh

(N17.87°, E82.35°), 16.v.2014, YPT, Coll. T. Krishnachaitanya. **Distribution:** India: Assam (Singh & Agarwal, 1992); Andhra Pradesh & Meghalaya (new record).

***Hemileucoceras longicornis* Hayat**

Specimen examined: 1♀ (on card): India: Tamil Nadu, Yercaud. (N11° 48.88, E078°12), 12.iv.15, YPT. Coll. M. Ayyamperumal and Abhinav Kumar. **Distribution:** India: Uttar Pradesh (Hayat, 2003); West Bengal (Hayat & Khan, 2008); Tamil Nadu (New record).

***Homalopoda cristata* Howard**

Specimen examined: 1♀ (on slide under four coverslips) labelled: India: Tamil Nadu, Yercaud. (N11° 48.88, E078°12), 12.v.16, YPT, Coll. M. Ayyamperumal and S. Palanivel. **Distribution:** India: Karnataka (Gupta & Poorani, 2008); Tamil Nadu (New record).

***Paratetracnemoidea malenotti* (Mercet)**

Specimens examined: 9♀♀ (on card): 3♀♀ India: Meghalaya, 26.vi.2016, YPT. Coll. S. Palanivel and T. Krishnachaitanya; 1♀, India: Andhra Pradesh, Chintapalli (N17.87°, E82.35°), 16.v.2014, YPT. Coll. T. Krishnachaitanya; 5♀♀, India: Madhya Pradesh, Jabalpur (N23.10°, E79.57°), 29.iii.2018, YPT. Coll. M. Ayyamperumal and H. Sankararaman. **Distribution:** India: Karnataka (Hayat, 2006a); Uttarakhand (Hayat & Khan, 2015); Meghalaya, Andhra Pradesh, Madhya Pradesh (New record).

***Yasumatsuiola orientalis* Trjapitzin**

Specimen examined: 2♀♀ (on card): 1♀, India, Bihar, Banka, Bounsi (N25.14°, E86.56°), 8.i.2014, YPT, Coll. Abhinav Kumar; 1♀, India: Andhra Pradesh, Chintapalli (N17.87°, E82.35°), 12.ix.2013, YPT, Coll. T. Krishnachaitanya. **Distribution:** India: Delhi, Karnataka, Tamil Nadu, Uttar Pradesh, (Noyes & Hayat, 1994); Kerala (Hayat, 2003); Uttarakhand (Hayat, 2006b); Andhra Pradesh and Bihar (New record).

ACKNOWLEDGEMENTS

The authors are thankful to Dr. R. Revennavar and Mr. Prasanna of College of Horticulture, Mudigere, Karnataka and Dr. S. Palanivel, Dr. T. Krishnachaitanya, Abhinav Kumar, S. Ajay Karthick and M. Avinkumar, our lab mates for their help in collection of encyrtids from various states of India. The authors are thankful to Annamalai University authorities for the facilities provided.

LITERATURE CITED

- Askew, R. R. 1994. Insects of the Cayman Islands. The Cayman Islands: Natural History and Biogeograph., pp. 353.
- Basha, M. C. & Hayat, M. 2002. Description of two new species of Encyrtidae (Hymenoptera: Chalcidoidea) from India. Zoos Print Journal, 17 (6): 791-794.
- Bennett, F. D. & Noyes, J. S. 1989. Three chalcidoid parasites of diaspines and whiteflies occurring in Florida and the Caribbean. Florida Entomologist, 72 (2): 370-373.
- De Santis, L. & Fidalgo P. 1994. Catalogo de Hymenopteros Calcidoideos. Serie de la Academia Nacional de Agronomia y Veterinaria, 13: 57.
- Fatima, F. & Zeya, S. B. 2017. Description of a new species of *Caenohomalopoda* Tachikawa (Hymenoptera: Encyrtidae) from India. Journal of Insect Systematics, 4 (1): 1-5.
- Fatma, A. & Shafee, S. A. 1988. Description of five new species of Encyrtidae (Hymenoptera) from India. Indian Journal of Systematic Entomology, 5 (1): 25-26.
- Gupta, A. & Poorani, J. 2008. A new species of *Caenohomalopoda* (Hymenoptera: Encyrtidae) from India. Zootaxa, 1933: 59-62.
- Hayat, M. 2003. Records and descriptions of Indian Encyrtidae (Hymenoptera: Chalcidoidea). Oriental Insects, 37: 187-260.
- Hayat, M. 2006a. Descriptions of eight new species of Encyrtidae from India, with some records (Hymenoptera: Chalcidoidea). Oriental Insects, 40: 303.
- Hayat, M. 2006b. Indian Encyrtidae (Hymenoptera: Chalcidoidea). Published by M. Hayat, Department of Zoology, Aligarh Muslim University, India. Viii+496.
- Hayat, M. & Khan, F. R. 2008. New records of Encyrtidae mainly from Orissa and West Bengal states of India (Hymenoptera: Chalcidoidea). Bionotes, 10 (4): 126.
- Hayat, M. & Khan, F. R. 2015. Taxonomic notes on some Indian Encyrtidae (Hymenoptera: Chalcidoidea) with descriptions of a new genus and species. Oriental Insects, 48 (1-2): 126-130.
- Hayat, M., Badruddin, S. M. A. & Khan, F. R. 2008. Descriptions of six new and records of eight known species of Encyrtidae from India (Hymenoptera: Chalcidoidea). Oriental Insects, 42: 103.
- Manickavasagam, S. & Rameshkumar, A. 2012. New distributional records of Encyrtidae (Hymenoptera: Chalcidoidea) from Pondicherry, India. Check List, 8 (6): 1337-1343.
- Manickavasagam, S., Rameshkumar, A. & Akhtar. 2010. New records of Encyrtidae (Hymenoptera: Chalcidoidea) from Delhi, India. Annals of Entomology, 28 (2): 107-108.

- Noyes, J. S.** 1982. Collecting and preserving chalcid wasps (Hymenoptera: Chalcidoidea). *Journal of Natural History*, 16: 315-334.
- Noyes, J. S.** 2018. Universal Chalcidoidea database. World Wide Web Electronic Publication. [accessed 2018 March]. www.nhm.ac.uk/entomology/chalcidoidea/index.html.
- 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.
- Noyes, J. S. & Hayat, M.** 1994. Oriental mealybug parasitoids of the Anagyrini (Hymenoptera: Encyrtidae), pp. 57. CAB International, Oxon, UK.
- Prinsloo, G. L.** 1979. On some little known African Encyrtidae (Hymenoptera: Chalcidoidea), with new records and descriptions of genera and species. *Journal of the Entomological Society of Southern Africa*, 42: 21.
- Singh, S. & Agarwal, M. M.** 1992. Taxonomic studies on Indian encyrtid parasites (Hymenoptera: Encyrtidae) from North-Eastern Region. Aligarh Muslim University Zoological Publications, Indian Insect Types, 14: 113-122.
- Tachikawa, T.** 1956. Description of a new species of the genus *Pseudohomalopoda* Girault from Japan, with a list of the known species and their hosts of the Habrolepis-like genera. *Insecta Matsumurana*, 20: 90-96.
- Tachikawa, T.** 1981. Hosts of encyrtid genera in the world (Hymenoptera: Chalcidoidea). *Memoris of the college of Agriculture, Ehime University*, 25: 85-110.
- Trjapitzin, V. A.** 1989. Parasitic Hymenoptera of the Fam. Encyrtidae of Palaearctics. *Opredelitelipo Faune SSSR*, 158: 295. Zoologicheskim Institutom Akademii Nauk SSR, Leningrad.
- Trjapitzin, V. A. & Paik, J. C.** 1996. Notes on some Encyrtidae (Hymenoptera: Chalcidoidea) from Korean peninsula. *Korean Journal of Applied Entomology*, 35 (2): 95-100.
- Xu, Z. H. & Huang, J.** 2004. Chinese fauna of parasitic wasps on scale insects, pp. 91. National Natural Science Foundation of China (ISBN 7-5323-7377-0).
- Zhang, Y. Z. & Huang, D. W.** 2004. A review and an illustrated key to genera of Encyrtidae (Hymenoptera: Chalcidoidea) from China, pp. 38. Science press, Beijing, China.
- Zhang, Y. Z. & Huang, D. W.** 2006. Species of *Caenohomalopoda* (Hymenoptera: Encyrtidae) from China. *Oriental Insects*, 40: 213-218.



Figures 1-3. *Caenohomalopoda shikokuensis* ♀: 1. habitus, lateral; 2. antenna; 3. fore wing.