

New distributional records of Encyrtidae (Hymenoptera: Chalcidoidea) from Puducherry, India

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ABSTRACT: Thirty six genera and forty species of encyrtid parasitoids are reported as new records from Pondicherry and Karaikal districts of Union Territory of Puducherry (=Pondicherry), India.

Along with Aphelinidae and Braconidae, the hymenopteran family Encyrtidae is one of the most economically important groups of beneficial insects. Species are frequently parasitoids of important pests of fruits and vegetable crops and are among the most successful parasitoids to be used in the control of mealybug, soft scale and other coccoid pests of agriculture. Some species may attack aphids and psyllids (Hemiptera) whilst others attack insects belonging to the orders Lepidoptera, Diptera and Coleoptera. A few are exclusively oophagous, attacking eggs of spiders and insects whilst some parasitize immature ticks. Encyrtidae is one of the largest families of Chalcidoidea and easiest to recognise (Hayat, 1985 and Noyes, 2004). Encyrtids also hold the distinction of being one of the most morphologically diverse groups of chalcidoids. Included species possess an incredible variety of structure of antenna, head shape and just about every other part of the body (Grissell and Schauff, 1997).

This group of parasitoid has been little recorded in the Union Territory of Puducherry. There are currently only eight species of encyrtids previously recorded by Hayat (2006): *Adelencyrtus moderatus* (Howard), *Anagyrus discolor* Noyes and Hayat, *Cerchysiella kamathi* (Mani and Saraswat), *Diversinervus elegans* Silvestri, *Encyrtus aurantii* (Geoffroy), *Leptomastix nigrocoxalis* Compere, *Neodusmetia sangwani* (Subba Rao) and *Rhopus nigroclavatus* (Ashmead). Hence an attempt was made to study the fauna of this group in more detail from the region by conducting a survey during one week in February and March, 2011 at Pandit Jawaharlal Nehru College of Agriculture (PAJANCOA), Karaikal and Pondicherry (Pondicherry University premises) respectively of Union Territory of Puducherry (Figure 1). Collections were made using different methods including yellow pan traps and sweep netting. Parasitoids were also reared from likely hosts, such as coccoids, cercopids and membracids. The resulting parasitoids were dry mounted on rectangles and

labelled according to the standard procedure suggested by Noyes (1982). Specimens were identified using keys provided by Noyes and Hayat (1994) and Hayat (2006, 2009). All material is deposited in Parasitoid Taxonomy and Biocontrol Laboratory, Department of Entomology, Faculty of Agriculture, Annamalai University (EDAU), Chidambaram, Tamil Nadu, India.



FIGURE 1. Map of Puducherry and Karaikal in India.

1. *Acerophagus papayae* Noyes and Schauff, 2003 (Introduced species)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep and yellow pan trap from forest ecosystem, 03.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 2 females, through yellow pan trap from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Mexico (Noyes, 2012), India: Tamil Nadu (Manickavasagam and Rameshkumar 2010), Andhra Pradesh (Rameshkumar *et al.*, 2011), Puducherry (**New record**).

Host: *Paracoccus marginatus* (Noyes and Schauff, 2003).

2. *Adelencyrtus coxalis* Hayat, Alam and Agarwal, 1975

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 6 females, through net sweep and yellow pan trap from forest ecosystem, 04.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 3 females, through yellow pan trap from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Andhra Pradesh (Hayat, 2006), Delhi (Manickavasagam *et al.*, 2010), Tamil Nadu (Nalini and Manickavasagam, 2011), Puducherry (**New record**).

Host: *Pinnaspis strachani* on *Murraya koenigii* (Hayat *et al.*, 1975).

3. *Adelencyrtus mayurai* (Subba Rao, 1957)

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through yellow pan trap from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Mauritania (Noyes, 2012), India: Delhi, Gujarat, Karnataka, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Melanaspis glomerata* [on sugarcane] (Subba Rao, 1957; Hayat, 2003).

4. *Aenasius advena* Compere, 1937

Specimens examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 3 females, through yellow pan trap from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afghanistan, Afrotropical, Argentina, Bangladesh, Bolivia, Brazil, Congo, Costa Rica, Fiji, Hawaii, Malaysia, Mexico, Pakistan, Panama, Philippines, Puerto Rico, South Africa, Thailand, Trinidad & Tobago, USA, Venezuela (Noyes, 2012), India: Andaman and Nicobar, Delhi, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Punjab, Tamil Nadu, Uttaranchal, Uttar Pradesh (Hayat, 2006), Andhra Pradesh (Rameshkumar *et al.*, 2011) Puducherry (**New record**).

Host: *Ferrisia virgata* (Kerrich, 1967), *Planococcus citri* (Noyes and Ren, 1995).

5. *Aenasius bambawalei* Hayat, 2009

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, 2 males, through net sweep from forest ecosystem, 05.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 6 females, 3 males, through net sweep from weed ecosystem, 12.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Only reported from India (Noyes, 2012): Delhi, Haryana, Maharashtra (Hayat, 2006), Tamil Nadu (Nalini and Manickavasagam, 2011), Andhra Pradesh (Rameshkumar *et al.*, 2011), Puducherry (**New record**).

Host: *Phenacoccus solenopsis* (Hayat, 2009).

6. *Anagyrus chrysos* Noyes and Hayat, 1994

Specimens examined: INDIA, Puducherry, Pondicherry

University premises (12.02° N, 79.85° E), 2 females, through net sweep from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Bangladesh, Malaysia (Noyes, 2012), India: Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Rastrococcus iceryoides* and *R. mangiferae* (Noyes and Hayat, 1984); *Planococcoides robustus* (Shafee *et al.*, 1975).

7. *Anagyrus dactylopii* (Howard, 1898)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, through net sweep from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Australia, Barbados, Fiji, Hawaii, Indonesia, Iran, Iraq, Japan, Oman, China, Peru, Philippines, Taiwan, Thailand (Noyes, 2012), India: Andaman and Nicobar Islands, Andhra Pradesh, Bihar, [?] Chandigarh, Delhi, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Punjab, Tamil Nadu, Uttaranchal, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Ferrisia virgata* on *Acacia* sp.; *Maconellicoccus hirsutus* on *Anona squamosa* and grapes; *Nipaeococcus viridis*; same host on Citrus, vines, *Euphorbia hirta* and *Dalbergia sissoo*; same host on *Ficus* sp.; same host on *Acacia* sp., *Ziziphus* sp., *Casuarina*, *Tephrosia purpurea*; *Planococcus citri* on *Citrus medica*; *Pseudococcus* sp. on *Citrus aurantifolia*; *Rastrococcus capparidae* (see Hayat, 2006).

8. *Anagyrus kamali* Moursi, 1948

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through net sweep from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Antilles, Bangladesh, Belize, Caribbean, Egypt, Grenada, Hawaii, Indonesia, Jordan, Montserrat, Pakistan, China, Puerto Rico, Saint Lucia, Sri Lanka, Trinidad & Tobago, US Virgin Islands (Noyes, 2012). India: Delhi, Himachal Pradesh, Karnataka, Maharashtra, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Ferrisia* sp. and *F. virgata* on avenue tree; *Maconellicoccus hirsutus*, *Nipaeococcus* sp. on *Acacia*, *Nipaeococcus* sp.; *N. viridis* on *Zizyphus* sp.; *Pseudococcus* sp. on *Citrus limonum*. Coccids on *Hibiscus rosa sinensis* (see Hayat, 2006).

9. *Anagyrus ranchiensis* Shamim and Shafee, 1984

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through net sweep from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: China, Thailand (Noyes, 2012), India: Andhra Pradesh, Goa, Jharkhand, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Nipaeococcus viridis* (Shamim and Shafee 1984).

10. *Anagyrus subflaviceps* (Girault, 1915)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Australia, Nepal, Papua New Guinea, Portugal, South Africa, Spain, Zimbabwe (Noyes, 2012), India: Andaman and Nicobar Islands, Andhra Pradesh, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Unknown. indet. Pseudococcid (Fatima, 1999).

11. *Anagyrus tricolor* (Girault, 1913)

Specimens examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 5 females, 3 males, through net sweep and yellow pan trap from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Australia, Indonesia, Laos, Malaysia, Nepal, China, Thailand, Vietnam (Noyes, 2012), India: Delhi, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

12. *Anomalicornia tenuicornis* Mercet, 1921

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, 1 male, through yellow pan trap from forest ecosystem, 05.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Australia, Austria, Burkina Faso, Cameroon, Czechoslovakia, Europe, Germany, Hungary, Indonesia, Ivory Coast, Kazakhstan, Madagascar, China, Philippines, Portugal, Romania, Slovakia, Spain, Thailand, Tselinograd Obl., UK, USA, Zimbabwe (Noyes, 2012), India: Andhra Pradesh, Delhi, Karnataka, Kerala, Rajasthan, Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

13. *Apoleptomastix bicoloricornis* (Girault, 1915)

Specimens examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 1 female, 2 males, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afrotropical, Australia, Bangladesh, Ethiopia, Gambia, Indonesia, Namibia, Nepal, Nigeria, Pakistan, Papua New Guinea, China, South Africa, Tadzhikistan, Thailand, Vietnam, Zambia Zimbabwe (Noyes, 2012), India: Andhra Pradesh, Delhi, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal (Hayat, 2006), Puducherry (**New record**).

Host: *Coccidohystrix insolita* (Shamim and Shafee, 1984) and *Brevennia rehi* (Noyes and Hayat, 1984).

14. *Apoleptomastix rufiscapus* Kerrich, 1982

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, 1 male, through net sweep from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Delhi, Jharkhand, Karnataka, Kerala, Tamil Nadu (Hayat,

2006), Puducherry (**New record**).

Host: *Nipaeococcus viridis* (Shamim and Shafee 1984).

15. *Blepyrus insularis* (Cameron, 1886) (Blackburn and Cameron, 1886)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep from forest ecosystem, 03.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 2 females, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afrotropical, Australia, Bahamas, Bangladesh, Colombia, Congo, Costa Rica, Cuba, Egypt, Gambia, Ghana, Guinea-Bissau, Guyana, Hawaii, Madagascar, Malaysia, Mexico, Micronesia, Nearctic, Nigeria, Papua New Guinea, China, Philippines, South Africa, Sri Lanka, Sudan, Thailand, Togo, Trinidad & Tobago, USA, West Africa (Noyes, 2012), India: Delhi, Goa, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttaranchal, Uttar Pradesh, West Bengal (Hayat, 2006), Andhra Pradesh (Rameshkumar *et al.*, 2011), Puducherry (**New record**).

Host: *Ferrisia virgata* (Hayat, 1999), *Maconellicoccus hirsutus* (Noyes, 2000).

16. *Caenohomalopoda longiclava* Basha and Hayat, 2002

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 5 females, 3 males, through net sweep and yellow pan trap from forest ecosystem, 04-05.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Bihar (Hayat, 2006), Delhi (Manickavasagam *et al.*, 2010), Puducherry (**New record**).

Host: Unknown.

17. *Cerchysiella laticapa* (Fatma and Shafee, 1983)

Specimen examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 1 female, through net sweep from weed ecosystem, 12.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

18. *Cheiloneurus exitiosus* (Perkins, 1906)

Specimens examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 9 females, 5 males, through net sweep and yellow pan trap from weed ecosystem, 12.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: American Samoa, Australia, Fiji, Malaysia, China, Philippines, West Samoa (Noyes, 2012), India: Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Unknown from India; ex dryinids on brown planthopper (BPH) in Rice (Hayat, 2006).

19. *Cheiloneurus longicornis* Hayat, Alam and Agarwal, 1975

Specimen examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 1 female, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: [with] *Nipaecoccus* sp. (Hayat *et al.*, 1975); *N. vastator* (Shafee and Avasthi, 1983).

20. *Cheiloneurus quadricolor* (Girault, 1915)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 8 females, through net sweep and yellow pan trap from forest ecosystem, 03.iii.2011; Puducherry, 3 females, through net sweep and yellow pan trap from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afghanistan, Australia, Egypt, Pakistan, Russia, Tadjikistan, Turkmenistan (Noyes, 2012), India: Andaman and Nicobar Islands, Andhra Pradesh, Delhi, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Rajasthan, Tamil Nadu, Uttaranchal, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Dryinid* species via *Pyrilla* sp. (Mani, 1939).

21. *Cheiloneurus zeyai* Anis and Hayat, 2002

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep from forest ecosystem, 03.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 2 females, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Delhi, Kerala (Hayat, 2006), Tamil Nadu (Manickavasagam and Rameshkumar, 2010), Puducherry (**New record**).

Host: Unknown.

22. *Coagerus bouceki* Noyes and Hayat, 1984

Specimen examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 1 female, through yellow pan trap from weed ecosystem, 12.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: China, Sri Lanka (Noyes, 2012), India: Karnataka, Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

23. *Cowperia indica* (Kerrich, 1963)

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through net sweep from forest ecosystem, 05.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Sri Lanka (Noyes, 2012), India: Karnataka, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Parasitoids of coccinellid (Coleoptera) larvae predaceous on mealy bugs (Homoptera: Pseudococcidae) (Hayat, 2006).

24. *Homalotylus agarwali* Anis and Hayat, 1998

Specimen examined: INDIA, Puducherry, Karaikal,

PAJANCOA premises (10.55° N, 79.52° E), 1 female, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Kerala (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

25. *Leptomastix nigrocincta* Risbec, 1959 (1958)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Madagascar, China, Togo, Zambia (Noyes, 2012), India: Andaman and Nicobar Islands, Andhra Pradesh, Delhi, Karnataka, Kerala, Madhya Pradesh, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: *Coccidohystrix insolita* (Sankaran, 1959).

26. *Leptomastix salemensis* Hayat, Alam and Agarwal, 1975

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, through net sweep from forest ecosystem, 04.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Andhra Pradesh, Karnataka, Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: *Chorizococcus* sp., *Nipaecoccus* sp. (Noyes and Hayat, 1994), undetectable Coccids on *Hemigraphes* sp. (Hayat *et al.*, 1975), undetectable Coccids (Khan and Shafee, 1975).

27. *Leptomastix tsukumiensis* Tachikawa, 1963

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep from forest ecosystem, 03-04.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 2 females, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Benin, Cameroon, Gambia, Ivory Coast, Japan, Kenya, Laos, Nigeria, China, Philippines, Somalia, South Africa, Uganda, Zambia, Zimbabwe (Noyes, 2012), India: Andhra Pradesh, Bihar, Delhi, Jharkhand, Karnataka, Kerala, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal (Hayat, 2006), Puducherry (**New record**).

Host: Indet. Mealy bug on *Citrus* sp. (Shafee, 1971), coccid on *Ficus* (Noyes and Hayat, 1994).

28. *Manicnemus indicus* (Mani and Saraswat, 1974) (Mani *et al.*, 1974)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, 1 male, through net sweep from forest ecosystem, 03.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 1 male, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Assam, Bihar, Delhi, Jharkhand, Karnataka, Kerala, Maharashtra, Orissa, Rajasthan, Uttar Pradesh (Hayat,

2006), Tamil Nadu (Manickavasagam and Rameshkumar, 2010), Puducherry (**New record**).

Host: [?] *Greenaspis divergens* (Shafee *et al.*, 1975).

29. *Mayridia caerulea* (Hayat and Verma, 1978)

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), and 1 female, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Andhra Pradesh, Madhya Pradesh, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

30. *Mayridia dunensis* Hayat, 2003

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 5 females, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Uttaranchal (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

31. *Mayridia procera* (Mercet, 1921)

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Bulgaria, Croatia, Europe, Georgia, Germany, Greece, Hungary, Israel, Kazakhstan, Moldova, Romania, Russia, Slovakia, Spain, Tselinograd, Obl., Ukraine, UK, Yugoslavia (Noyes, 2012), India: Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

32. *Ooencyrtus segestes* Trjapitzin, 1965

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, 2 males, through net sweep and yellow pan trap from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Indonesia, Malaysia, China (Noyes, 2012), India: Andhra Pradesh, Assam, Bihar, Delhi, Karnataka, Tamil Nadu, Uttar Pradesh (Hayat, 2006) Puducherry (**New record**).

Host: Unknown.

33. *Ooencyrtus utetheisae* (Risbec, 1951)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep and yellow pan trap from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afrotropical, Indonesia, Ivory Coast, Malaysia, Nepal, Nigeria, Papua New Guinea, China, Philippines, Senegal, Tanzania (Noyes, 2012), India: Assam, Karnataka, Kerala, Meghalaya, Tamil Nadu, Uttaranchal, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Eggs of *Leptocorisa* sp., *Nezara viridula* (Hemiptera) (Huang and Noyes, 1994).

34. *Paraclausenia herbicola* Hayat, 1980

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 4 females, through net sweep from forest ecosystem, 03.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 3 females, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Andhra Pradesh, Assam, Himachal Pradesh, Jharkhand, Kerala, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Delhi (coll. Manickavasagam *et al.*, 2010), Puducherry (**New record**).

Host: *Rastrococcus* sp. (Shafee and Avasthi, 1983).

35. *Prochiloneurus aegyptiacus* (Mercet, 1929)

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afrotropical, Afghanistan, Algeria, Congo, Egypt, Eritrea, Ethiopia, Gabon, Ghana, Iran, Iraq, Israel, Italy, Ivory Coast, Namibia, Nigeria, North Africa, South Africa, Tanzania, Togo, Turkmenistan, former USSR, Yugoslavia (Noyes, 2012), India: Kerala, Tamil Nadu (Hayat 2006), Puducherry (**New record**).

Host: [with] *Nipaecoccus viridis* (Shafee *et al.*, 1975), indetectable coccid on *Hemigraphes* sp., and *Tamarindus indica* (Hayat, 1981).

36. *Prochiloneurus albifuniculus* (Hayat, Alam and Agarwal, 1975)

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Assam, Himachal Pradesh, Rajasthan, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: [with] *Antonina* sp. (Hayat, 2006), *Coccidohystrix insolita*, *Nipaecoccus* sp., indetectable coccid (Hayat *et al.*, 1975).

37. *Proleurocerus fulgoridis* Ferriere, 1935

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 3 females, through net sweep from forest ecosystem, 03.iii.2011; Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 1 female, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Andhra Pradesh, Kerala, Karnataka, Maharashtra, Tamil Nadu (Hayat, 2006), Puducherry (**New record**).

Host: Eggs of *Eurybrachys tomentosa* (Ferriere, 1935), eggs of cut worms on mulberry (Hayat and Kazmi, 1996).

38. *Proleurocerus litoralis* Hayat and Kazmi, 1996

Specimens examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 2 females, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012):

Kerala (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

39. *Psyllaephagus africanus* Prinsloo, 1985

Specimens examined: INDIA, Puducherry, Karaikal, PAJANCOA premises (10.55° N, 79.52° E), 2 females, through net sweep from weed ecosystem, 11.ii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Afrotropical, South Africa (Noyes, 2012), India: Delhi, Uttar Pradesh (Hayat, 2006), Puducherry (**New record**).

Host: Unknown.

40. *Saucrencyrtus insulanus* Hayat and Singh, 2002

Specimen examined: INDIA, Puducherry, Pondicherry University premises (12.02° N, 79.85° E), 1 female, through net sweep from forest ecosystem, 03.iii.2011 (coll. S. Manickavasagam and A. Rameshkumar).

Distribution: Reported only from India (Noyes, 2012): Andaman and Nicobar Islands (Hayat, 2006), Tamil Nadu (Manickavasagam and Rameshkumar 2010), Puducherry (**New record**).

Host: Unknown.

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LITERATURE CITED

- Anis, S.B. and M. Hayat. 1998. The Indian species of *Homalotylus* (Hymenoptera: Encyrtidae). *Oriental Insects* 32: 191-218.
- Anis, S.B. and M. Hayat. 2002. A revision of the Indian species of *Cheiloneurus* Westwood (Hymenoptera: Chalcidoidea: Encyrtidae). *Oriental Insects* 36: 129-206.
- Basha, M.C. and M. Hayat. 2002. Descriptions of two new species of Encyrtidae (Hymenoptera: Chalcidoidea) from India. *Zoos' Print Journal* 17: 791-794.
- Blackburn, T. and P. Cameron. 1886. On the Hymenoptera of the Hawaiian Islands. *Memoirs of the Manchester Literary and Philosophical Society* 10(3): 243
- Compere, H. 1937. The species of *Aenasius*, encyrtid parasites of mealybugs. *Proceedings of the Hawaiian Entomological Society* 9: 383-404.
- Fatima, A. 1999. Two new species of *Anagyrus* Howard (Encyrtidae: Tetracneminae) from India. *Records of the Zoological Survey of India* 97: 49-52.
- Fatma, A. and S.A. Shafee. 1983. *Zeteticontus latiscapus* (Hymenoptera: Encyrtidae) (n.g. n.sp.). *Proceedings of the Indian Science Congress* 70 (3) (VII): 125-126.
- Ferriere, C. 1935. The chalcidoid parasites of Lac insects. *Bulletin of Entomological Research* 26: 391-406.
- Girault, A.A. 1913. Some chalcidoid Hymenoptera from North Queensland. *Archiv fur Naturgeschichte* 79(A): 70-90.
- Girault, A.A. 1915. Australian Hymenoptera Chalcidoidea - VII. The family Encyrtidae with descriptions of new genera and species. *Memoirs of the Queensland Museum* 4: 1-184.
- Grissell, E.E. and M.E. Schauff. 1997. A handbook of the families of Nearctic Chalcidoidea (Hymenoptera): Second Edition, revised. *The Entomological Society of Washington* 62-63.
- Hayat, 1980. On *Paraclauseria* gen. nov., *Metapterencyrtus* and *Neocharitopus* from India (Hymenoptera: Encyrtidae). *Journal of Natural History* 14: 637-645.
- Hayat, M. 1981. Taxonomic notes on Indian Encyrtidae (Hymenoptera: Chalcidoidea). II. *Journal of Natural History*, 15: 17-29.
- Hayat, M. 1985. Family Encyrtidae; p. 192-223 In B.R. Subba Rao and M. Hayat (ed.). *The Chalcidoidea (Insecta: Hymenoptera) of India and the adjacent countries, Oriental Insects*, 19.
- Hayat, M. 1999. Taxonomic notes on Indian Encyrtidae (Hymenoptera: Chalcidoidea). V. *Oriental Insects* 33: 349-407.
- Hayat, M. 2003. Records and descriptions of Indian Encyrtidae (Hymenoptera: Chalcidoidea). *Oriental Insects* 37: 187-259.
- Hayat, M. 2006. *Indian Encyrtidae (Hymenoptera: Chalcidoidea)*. Aligarh: Aligarh Muslim University. 496 p.
- Hayat, M. 2009. Description of a new species of *Aenasius* Walker (Hymenoptera: Encyrtidae), parasitoid of the mealybug, *Phenacoccus solenopsis* Tinsley (Homoptera: Pseudococcidae) in India. *Biosystematica* 3(1): 21-26.
- Hayat, M., S.M. Alam and M.M. Agarwal. 1975. Taxonomic survey of encyrtid parasites (Hymenoptera: Encyrtidae) in India. *Aligarh Muslim University Publications (Zoological series) on Indian Insect Types* 9(1-3): 1-112.
- Hayat, M. and S.I. Kazmi. 1996. The species of *Proleurocerus* (Hymenoptera: Encyrtidae) from India. *Shashpa* 3: 17-21.
- Hayat, M. and S. Singh. 2002. Description of a new genus and two new species with record of a known species of Encyrtidae (Hymenoptera: Chalcidoidea), from the Andaman & Nicobar Islands, India. *Entomon* 27: 161-168.
- Hayat, M. and M. Verma. 1978. Species of *Helegonatopus* and *Parasyrphophagus* from India, with description of a new genus (Hymenoptera: Encyrtidae). *Oriental Insects* 12: 355-364.
- Howard, L.O. 1898. On some new parasitic insects of the subfamily Encyrtinae. *Proceedings of the United States National Museum* 21: 231-248.
- Huang, D.W. and J.S. Noyes. 1994. A revision of the Indo-Pacific species of *Ooencyrtus* (Hymenoptera: Encyrtidae), parasitoids of the immature stages of economically important insect species (mainly Hemiptera and Lepidoptera). *Bulletin of the Natural History Museum, London (Entomology)* 63: 1-136.
- Kerrich, G.J. 1963. A study of the encyrtid genus *Aminelus* Masi, with systematic notes on the related genera (Hymenoptera: Chalcidoidea). *Beitrag zur Entomologie* 13: 359-368.
- Kerrich, G.J. 1967. On the classification of the anagryine Encyrtidae, with a revision of some of the genera (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology)* 20: 143-250.
- Kerrich, G.J. 1982. Further systematic studies on tetracnemine Encyrtidae (Hymenoptera: Chalcidoidea) including a revision of the genus *Apoanagyrus* Compere. *Journal of Natural History* 16: 399-430.
- Khan, M.Y. and S.A. Shafee. 1975. Indian species of *Leptomastix* Foerster (Hymenoptera: Encyrtidae). *Geobios* 2: 193-196.
- Mani, M.S. 1939. Descriptions of new and records of some known chalcidoid and other hymenopterous parasites from India. *Indian Journal of Entomology* 1: 69-99.
- Mani, M.S., O.P. Dubey, B.K. Kaul and G.G. Saraswat. 1974. Description of some new and new records of some known Chalcidoidea (Hymenoptera) from India. *Memoirs of the School of Entomology, St. John's College, Agra* 3: 77-79.
- Manickavasagam, S. and A. Rameshkumar. 2010. New records of genera and species of Encyrtidae (Hymenoptera: Chalcidoidea) from Tamil Nadu, India. *Madras Agricultural Journal* 97(10-12): 402-407.
- Manickavasagam, S., A. Rameshkumar and M.S. Akhtar. 2010. New records of Encyrtidae (Hymenoptera: Chalcidoidea) from Delhi, India. *Annals of Entomology* 28(2): 107-108.
- Mercet, R.G. 1921. Fauna Iberica. Himenopteros Fam. Encirtidos. *Madrid* 727.
- Mercet, R.G. 1929. Los generos *Prochiloneurus* y *Achrysopophagus*. Eos, *Madrid* 5: 359-363.
- Moursi, A.A. 1948. Contributions to the knowledge of the natural enemies of mealybugs. 1. Description of two new species of *Anagyrus* (Hymenoptera: Encyrtidae). *Bulletin de la Societe Fouad ler Entomology* 32: 1-7.
- Nalini, T. and S. Manickavasagam. 2011. Records of Encyrtidae (Hymenoptera: Chalcidoidea) parasitoids on mealybugs (Hemiptera: Pseudococcidae) from Tamil Nadu, India. *Check List* 7(4): 510-515.
- Noyes, J.S. 1982. Collecting and preserving chalcid wasps (Hymenoptera: Chalcidoidea). *Journal of Natural History* 16: 315-334.
- Noyes, J.S. 2000. Encyrtidae of Costa Rica (Hymenoptera: Chalcidoidea), 1. The subfamily Tetracneminae, parasitoids of mealybugs (Homoptera: Pseudococcidae). *Memoirs of the American Entomological Institute* 62: 1-355.
- Noyes, J.S. 2004. Encyrtidae of Costa Rica (Hymenoptera: Chalcidoidea), 2. *Metaphycus* and related genera, parasitoids of scale insects (Coccoidea) and whiteflies (Aleyrodidae). *Memoirs of the American Entomological Institute* 73: 1-459.
- Noyes, J.S. 2012. *Universal Chalcidoidea Database*. Electronic Dayabase Accessible at <http://www.nhm.ac.uk/chalcidoids>. Captured in October 2012.
- Noyes, J.S. and M. Hayat. 1984. A review of the general of Indo-Pacific Encyrtidae (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology)* 48: 131-395.
- Noyes, J.S. and M. Hayat. 1994. *Oriental Mealybug Parasitoids of the Anagyrini (Hymenoptera: Encyrtidae)*. Oxon: CAB International. 554 p.

- Noyes, J.S. and H. Ren. 1995. Encyrtidae of Costa Rica (Hymenoptera: Chalcidoidea): the genus *Aenasius* Walker, parasitoids of mealybugs (Homoptera: Pseudococcidae). *Bulletin of Natural History Museum London (Entomology series)* 64: 117-163.
- Noyes, J.S. and M.E. Schauff. 2003. New Encyrtidae (Hymenoptera) from Papaya mealybug (*Paracoccus marginatus* Williams and Granara De Willink) (Hemiptera: Sternorrhyncha: Pseudococcidae). *Proceedings of Entomological Society Washington* 105(1): 184-185.
- Perkins, R.C.L. 1906. Leaf-hoppers and their natural enemies (VIII), *Bulletin Hawaiian Sugar Planters' Association Experiment Station (Entomology Series)* 1: 239-267.
- Prinsloo, G.L. 1985. Afrotropical Encyrtidae (Hymenoptera: Chalcidoidea): new records and notes. *Journal of Natural History* 19: 277-284.
- Rameshkumar, A., S. Manickavasagam, A. Jebanesan and S.J. Rahman. 2011. Records of some Mymaridae and Encyrtidae (Hymenoptera: Chalcidoidea) from Andhra Pradesh, India. *The Journal of Research Acharya N G Ranga Agricultural University* (in press).
- Risbec, J. 1951. Les Chalcidoïdes de l'Afrique occidentale française. II. Les Microgasterinae de l'Afrique occidentale française. *Memoires de l'Institut Français d'Afrique Noire* 13: 7-409.
- Risbec, J. 1958. Encyrtidae de Madagascar (Hym. Chalcid.). *Bulletin de l'Académie Malgache* 35: 17-44.
- Sankaran, T. 1959. A note on two parasites of *Phenacoccus insolitus* Green (Hemiptera: Coccidae). *Proceedings of Royal Entomological Society London (A)* 34: 25-26.
- Shafee, S.A. 1971. Two new species of Encyrtidae (Hymenoptera: Chalcidoidea) from India. *Bulletin of Entomology New Delhi* 12: 48-51.
- Shafee, S.A., S.M. Alam and M.M. Agarwal. 1975. Taxonomic survey of encyrtid parasites (Hymenoptera: Encyrtidae) in India. *Aligarh Muslim University Publications (Zoological Series) on Indian Insect Types* 10: 1-125pp.
- Shafee, S.A. and R.K. Avasthi. 1983. First record of *Clausenia* Ishii (Hymenoptera: Encyrtidae) from India with descriptions of two new species. *Journal of Bombay Natural History Society* 80: 176-179.
- Shamim, S.M. and S.A. Shafee. 1984. Four new species of Encyrtidae (Hymenoptera) from Bihar, India. *Indian Journal of Systematic Entomology* 1: 35-38.
- Subba Rao, B.R. 1957. Some new species of Indian Hymenoptera. *Proceedings of the Indian academy of Sciences (B)* 46: 376-390.
- Tachikawa, T. 1963. Revisional studies on the Encyrtidae of Japan (Hymenoptera: Chalcidoidea). *Memoirs of Ehime University* 9 (6): 1-264.
- Trjapitzin, V.A. 1965. Contributions to the knowledge of the encyrtid fauna of the Comodo and Padar Islands with a catalogue of Indonesian species (Hymenoptera, Encyrtidae). *Treubia* 26: 309-327.

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