



Research Article

Additions to the Chalcidoidea (Hymenoptera) of Meghalaya with special reference to Encyrtidae, Mymaridae and Aphelinidae

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ABSTRACT: Encyrtidae, Mymaridae and Aphelinidae were surveyed from Ri-Bhoi, Jaintia hills, East Khasi hills, and West Khasi hills districts of Meghalaya in 2013. New distribution records of 55 genera and 61 species of encyrtids, mymarids aphelinids and eucharitids for Meghalaya state are documented.

KEY WORDS: Encyrtidae, Mymaridae, Aphelinidae, distributional records, India, Meghalaya

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INTRODUCTION

Studies on the Chalcidoidea fauna of Meghalaya are very limited and the state has not been systematically surveyed for encyrtids, mymarids and aphelinids though they play an important role in natural and applied biological control. Hayat and his co-workers have contributed to the known fauna of Meghalaya (Hayat, 1998; Hayat, 2006; Kazmi and Hayat, 2012; Zeya and Hayat, 1995). We surveyed four districts of Meghalaya in 2013 for Chalcidoidea with particular reference to Encyrtidae, Aphelinidae and Mymaridae and documented several taxa new to the state. The results of our studies are presented in this paper.

MATERIALS AND METHODS

Extensive surveys were conducted from 31st May to 17th June 2013 at various places in Ri-Bhoi, Jaintia hills, East Khasi hills, and West Khasi hills districts of Meghalaya for collection of Chalcidoidea. Different collection methods (host rearing, net sweep, yellow pan trap and Malaise trap) were used for collection from different ecosystems. Collected parasitoids were processed and curated as per standard protocol (Noyes, 1982) and identified using appropriate keys. Voucher specimens are deposited with ICAR - National Bureau of Agricultural Insect Resources (ICAR-NBAIR), Bangalore, Karnataka, India. Imaging was done using Leica M205A stereo microscope and

composite images were obtained from image stacks using Combine ZP. The images were arranged in plates in Adobe Photoshop Elements 11.

RESULTS AND DISCUSSION

During the survey, 950 specimens of chalcidoids and other parasitoids were collected. Twenty two species representing 16 genera of mymarids, 30 species representing 28 genera of encyrtids, 10 genera and 8 species of aphelinids and *Orasema initiator* Kerrich of eucharitid are reported as new distribution records for Meghalaya as listed below. Notes on distribution and hosts (wherever known) are provided for all the species. A brief diagnostic account is given only for *Orasema initiator* Kerrich as it has been recorded as a pest of tea by Kerrich (1963).

New distributional records for Meghalaya

I. Family Mymaridae

1. *Acmopolynema tachikawai* Taguchi

Specimen examined: INDIA, Meghalaya, East Khasi hills, Cherrapunji, net sweep, forest land, 09.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: *Palumbia glaucittis* (Syrphidae) (Triapitsyn and Berezovskiy, 2007)

Distribution: India: Karnataka (Triapitsyn and Berezovskiy, 2007), Meghalaya (new record).

2. *Alaptus* Westwood

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, Malaise trap, Peach orchard, 14.vi.2013, A. Rameshkumar, 8 females, 1 male (ICAR-NBAIR).

Hosts: Psocoptera (Lin *et al.*, 2007), *Erythroneura mori* (Cicadellidae), *Saissetia oleae* (Coccidae), *Carulaspis minima*, *Leucaspis pusilla* (Diaspididae), *Caecilius flavidus* (Caeciliidae) (Noyes, 2014).

Distribution: India: Delhi, Tamil Nadu, West Bengal (Subba Rao and Hayat, 1983), Pudhucherry (Rameshkumar, *et al.*, 2011b), Karnataka (Manickavasagam *et al.*, 2011), Uttarakhand (Anwar and Zeya, 2014), Meghalaya (new record).

3. *Anagrus* Haliday

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 28 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, Malaise trap, Peach orchard, 14.vi.2013, A. Rameshkumar, 5 females, 1 male (ICAR-NBAIR); East Khasi Hills, Mawkriah, yellow pan traps, potato field, 08.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 7 females (ICAR-NBAIR).

Hosts: Cicadellidae, Delphacidae, Cercopidae, Tingidae, and Odonata (Zygoptera) (Lin *et al.*, 2007), Noyes (2014) provided a complete list of known hosts of *Anagrus*.

Distribution: India: Himachal Pradesh, Delhi, Odisha (Subba Rao and Hayat, 1983), Kerala (Rameshkumar *et al.*, 2011a), Tamil Nadu (Manickavasagam and Rameshkumar, 2011), Pudhucherry (Rameshkumar *et al.*, 2011b), Karnataka (Manickavasagam *et al.*, 2011), Meghalaya (new record).

4. *Anaphes* Haliday

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field,

08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 23 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy (spinach) field, 14.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 7 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, Malaise trap, Peach orchard, 14.vi.2013, A. Rameshkumar, 9 females, 1 male (ICAR-NBAIR); East Khasi Hills, Mawkriah, yellow pan traps, potato field, 08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: Curculionidae (Huber and Prinsloo 1990), Curculionidae and Chrysomelidae; also from Argidae, Brentidae, Byrrhidae, Ephydriidae, Gerridae, Miridae, Tephritidae and Tipulidae (Lin *et al.*, 2007). Noyes (2014) has listed the known hosts of *Anaphes*.

Distribution: India: Uttar Pradesh, Himachal Pradesh (Subba Rao and Haya, 1983), Kerala (Rameshkumar *et al.*, 2011a), Tamil Nadu (Manickavasagam and Rameshkumar, 2011), Pudhucherry (Rameshkumar *et al.*, 2011b), Meghalaya (new record).

5. *Arescon* Walker

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, Malaise trap, peach cum weedy field, 14.vi.2013, A. Rameshkumar, 9 females, 1 male (ICAR-NBAIR).

Hosts: Cicadellidae (Lin *et al.*, 2007), *Arescon enocki* (Subba Rao and Kaur) from jassid eggs (Subba Rao and Hayat 1983), *Amrasca devastans* (Cicadellidae) (Noyes, 2014).

Distribution: India: Bihar, Delhi, Gujarat, Himachal Pradesh, Karnataka, Maharashtra (Subba Rao and Hayat, 1983), Kerala (Rameshkumar *et al.*, 2011a), Tamil Nadu (Manickavasagam and Rameshkumar 2011), Pudhucherry (Rameshkumar *et al.*, 2011b), Meghalaya (new record).

6. *Camptoptera matcheta* Subba Rao

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Karnataka (Subba Rao 1989), Meghalaya (new record).

7. *Cleruchus* Enoch

Specimens examined: INDIA, Meghalaya, East Khasi hills, Cherrapunji, net sweep, forest land, 09.vi.2014, A. Rameshkumar, 2 females (ICAR-NBAIR).

Hosts: Curculionidae and Tettigoniidae (Lin *et al.*, 2007).

Distribution: India: Manipur (Manickavasgam and Palanivel, 2013), Meghalaya (new record).

8. *Dicopomorpha* Ogloblin

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, Malaise trap, peach cum weedy field, 14.vi.2013, A. Rameshkumar, 1 female, 1 male (ICAR-NBAIR).

Host: Eggs of Psocoptera (Lin *et al.*, 2007).

Distribution: India: Tamil Nadu, Kerala (Manickavasagam and Rameshkumar, 2011), Karnataka (Subba Rao, 1989), Meghalaya (new record).

9. *Erythmelus* (*Erythmelus*) *flavovarius* (Walker)

Specimen examined: INDIA, Ri-Bhoi, Umiam, ICAR complex, Malaise trap, Peach orchard, 14.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Hosts: *Adelphocoris lineolatus* (Goeze) (Ogloblin 1934), *Lygus lineolaris* (Palisot de Beauvois) and *L. rugulipennis* Poppius (Triapitsyn *et al.*, 2007) (Miridae: Hemiptera), *Asciodema obsoleta* (Fieber), *Heterocordylus tibialis* (Hahn), *Pilophorus perplexus* Douglas and Scott, and *Polymerus cognatus* (Fieber) (Triapitsyn, 2003).

Distribution: India: Delhi (Subba Rao and Hayat, 1983), Tamil Nadu (Manickavasagam *et al.*, 2011), Kerala and Puducherry (Rameshkumar *et al.*, 2011a and b), Uttarakhnad, Uttar Pradesh (Anwar and Zeya, 2012), Meghalaya (new record).

10. *Gonatocerus aegyptiacus* Soyka

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR).

Hosts: Eggs of *Nilaparvata lugens* (Stal) and *Sogatella furcifera* (Horvath) (Zeya and Hayat, 1995).

Distribution: India: Assam, Andhra Pradesh, Bihar, Jammu and Kashmir, Kerala, Karnataka, Maharashtra,

Meghalaya, Tamil Nadu, Uttar Pradesh (Zeya and Hayat, 1995).

11. *Gonatocerus ater* Foerster

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: *Empoasca devastans* (Zeya and Hayat 1995).

Distribution: India: Andhra Pradesh, Assam, Bihar, Delhi, Kerala, Punjab, Uttar Pradesh (Zeya and Hayat 1995), Odisha, Sikkim, West Bengal, Karnataka (Zeya *et al.*, 2014), Meghalaya (new record).

12. *Gonatocerus aureus* Girault

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR).

Host: *Quadraspidiotus perniciosus* (Zeya and Hayat, 1995).

Distribution: India: Andhra Pradesh, Assam, Bihar, Jammu and Kashmir, Kerala, Maharashtra, Odisha, Tamil Nadu (Zeya and Hayat, 1995), Meghalaya (new record).

13. *Gonatocerus delhiensis* (Narayanan and Subba Rao)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen. V, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Bihar, Delhi, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh (Zeya and Hayat, 1995), Odisha, Puducherry, Jharkhand, Andhra Pradesh (Zeya *et al.*, 2014), Meghalaya (new record).

14. *Gonatocerus kodaianus* (Mani and Saraswat)

Specimen examined: INDIA, Meghalaya, West Kashi hills, Nongbri, net sweep, forest land, 07.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Tamil Nadu (Zeya and Hayat, 1995), Meghalaya (new record).

15. *Gonatocerus malanadensis* Subba Rao

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, net sweep, forest land, 04.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Karnataka (Zeya and Hayat 1995), Meghalaya (new record).

16. *Gonatocerus monticolus* Zeya

Specimen examined: INDIA, Meghalaya, East Khasi hills, Cherrapunji, net sweep, forest land, 09.vi.2014, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Himachal Pradesh (Zeya and Hayat, 1995), Sikkim, Uttarakhand, Karnataka (Zeya *et al.*, 2014), Meghalaya (new record).

17. *Gonatocerus trialbifuniculatus* Subba Rao

Specimen examined: INDIA, Meghalaya, Jaintia hills, Jowai, net sweep, forest land, 11.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Karnataka (Subba Rao, 1989), West Bengal, Uttarakhand (Anwar and Zeya, 2012), Meghalaya (new record).

18. *Gonatocerus udakamundus* Mani and Saraswat

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, grassy/weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Tamil Nadu (Zeya and Hayat, 1995), Meghalaya (new record).

19. *Gonatocerus venustus* Zeya

Specimen examined: INDIA, Meghalaya, Shillong, Upper Shillong, net sweep, weedy field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Bihar, Kerala, Meghalaya, Tamil Nadu (Zeya and Hayat, 1995).

20. *Himopolynema hallongum* Hayat and Singh

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps,

grassy/weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Assam (Hayat *et al.*, 2003), Meghalaya (new record).

21. *Mymar schwanni* Girault

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Uttar Pradesh (Hayat, 1992), Kerala (Rameshkumar *et al.*, 2011a), Meghalaya (new record).

22. *Mymar taprobanicum* Ward

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: *Nilaparvata lugens* and *Sogatella furcifera* (Hayat 1992).

Distribution: India: Uttar Pradesh, Madhya Pradesh (Hayat 1992), Kerala (Rameshkumar *et al.*, 2011b), Meghalaya (new record).

23. *Palaeoneura bagicha* (Narayanan, Subba Rao and Kaur)

Specimens examined: INDIA, Meghalaya, Jaintia hills, Jowai, net sweep, forest land, 11.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Host: Eggs of *Sophonia rufofasciata* (Cicadellidae) (Noyes, 2014).

Distribution: India: Delhi (Narayanan *et al.*, 1960), Karnataka, Tamil Nadu (Subba Rao, 1989), Uttar Pradesh (Hayat, 1992), Himachal Pradesh, Maharashtra, Punjab (Hayat *et al.*, 2008), Kerala (Manickavasagam *et al.*, 2011), Meghalaya (new record).

24. *Polynema brevicarinae* Annecke and Doutt

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field,

08.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 15 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy (spinach) field, 14.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 8 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, Malaise trap, Peach orchard, 14.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Bihar, Delhi, Karnataka, Kerala, Maharashtra, Odisha, Pudhucherry, Tamil Nadu, Uttar Pradesh (Hayat and Anis, 1999c), Andaman and Nicobar Islands, Uttarakhand (Zeya *et al.*, 2014), Meghalaya (new record).

25. *Polynema dhenkunde* Mani and Saraswat

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, Malaise trap, peachy field, 14.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Himachal Pradesh (Hayat and Anis, 1999), Kerala (Rameshkumar *et al.*, 2011a), Meghalaya (new record).

26. *Polynema dunense* Hayat and Anis

Specimen examined: INDIA, Meghalaya, Upper Shillong, net sweep, weedy field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Uttar Pradesh (Hayat and Anis 1999c), Meghalaya (new record).

27. *Polynema huberi* Manickavasagam and Rameshkumar

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 15 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy (spinach) field, 14.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 6 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, Malaise trap, Peach orchard,

14.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Tamil Nadu (Manickavasagam and Rameshkumar, 2012), Meghalaya (new record).

28. *Schizophragma Ogloblin*

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Host: Eggs of Membracidae (Lin *et al.*, 2007).

Distribution: India: Meghalaya (new record).

29. *Stephanodes reduvioli* (Perkins)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: Eggs of *Nabis blackburni* and *N. capsiformis* (Hemiptera: Nabidae) (Noyes, 2014).

Distribution: India: Bihar, Delhi, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu, Uttar Pradesh (Noyes, 2014), Meghalaya (new record).

II. Family Encyrtidae

30. *Acerophagus* nr. *solidus* Hayat

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Assam, Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

31. *Anagyrus diversicornis* (Howard)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 3 females (ICAR-NBAIR).

Hosts: Indet. coccids on *Annona squamosa* and pseudococcid on *Solanum nigrum* (Manickavasagam *et al.*, 2001).

Distribution: India: Tamil Nadu (Hayat, 2006), Meghalaya (new record).

32. *Anagyrus gracilis* (Hayat)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field,

08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: *Coccidohystrix insolita* on Solanum (Shamim and Shafee 1985); indet. coccid (Hayat, 1970); *Brevennia rehi* (Hemiptera: Pseudococcidae), *Antigastra catalaunalis* (Lepidoptera: Pyralidae) (Noyes, 2014).

Distribution: India: Delhi, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu (Hayat, 2006), Andaman and Nicobar Islands, Andhra Pradesh, Assam, Bihar, Jammu and Kashmir, Jharkhand, Maharashtra, Odisha, Rajasthan, Uttar Pradesh, West Bengal (Noyes, 2014), Meghalaya (new record).

33. *Anagyrus jenniferae* Noyes and Hayat

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Karnataka, Kerala (Hayat, 2006), Meghalaya (new record).

34. *Anagyrus tricolor* (Girault)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Delhi, Himachal Pradesh, Karnataka, Kerala, Tamil Nadu (Hayat, 2006), Meghalaya (new record).

35. *Anomalicornia tenuicornis* Mercet

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, grassy/weedy field, 08.vi.2013, A. Rameshkumar, 6 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 7 females (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Andhra Pradesh, Delhi, Karnataka, Kerala, Rajasthan, Tamil Nadu (Hayat, 2006), Meghalaya (new record).

36. *Apoleptomastix bicoloricornis* (Girault)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Hosts: *Coccidohystrix insolita* (Shamim and Shafee 1984); *Brevennia rehi* on rice (Noyes and Hayat, 1994).

Distribution: India: Andhra Pradesh, Delhi, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal (Hayat, 2006), Meghalaya (new record).

37. *Cerchysiella harliga* Hayat and Basha

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, net sweep, forest land, 12.vi.2014, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

38. *Cladiscodes orientalis* Singh and Agarwal

Specimen examined: INDIA, Meghalaya, East Khasi hills, Cherrapunji, net sweep, forest land, 09.vi.2014, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Arunachal Pradesh (Hayat, 2006), Meghalaya (new record).

39. *Coccidencyrtus clavatus* (Hayat, Alam and Agarwal)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Hosts: *Lepidosaphes* sp. or *Unaspis atricolor* on *Tamarindus indica* (Hayat et al., 1975).

Distribution: India: Andaman and Nicobar Islands, Andhra Pradesh (Hayat, 2006), Meghalaya (new record).

40. *Coelopenicyrtus krishnamurtii* (Mahdihassan)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: *Xylocopa tenuiscapa* Westwood (Mahdihassan, 1957).

Distribution: India: Andaman and Nicobar Islands, Andhra Pradesh, Karnataka, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

41. *Copidosoma floridanum* (Ashmead)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, grassy/weedy field, 08.vi.2013, A. Rameshkumar, 8 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 6 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy (spinach) field, 14.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 9 females (ICAR-NBAIR);

East Khasi Hills, Mawkriah, yellow pan traps, potato field, 08.vi.2013, A. Rameshkumar, 20 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 12 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 10 females (ICAR-NBAIR).

Hosts: *Plusia signata* on ragi (Gahan, 1919); *Helicoverpa armigera*, *Trichoplusia ni* on sugar cane (Guerrieri and Noyes 2005); *H. armigera* on pigeon pea (Hayat 2006).

Distribution: India: Bihar, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Odisha, Tamil Nadu, Uttar Pradesh, West Bengal (Hayat, 2006), Meghalaya (new record).

42. *Copidosomopsis nr. arenicola* (Trjapitzin)

Specimen examined: INDIA, Meghalaya, East Khasi hills, Cherrapunji, net sweep, forest land, 09.vi.2014, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Kerala (Hayat, 2006), Meghalaya (new record).

43. *Encyrtus infelix* (Embleton)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Assam (Hayat, 2006), Meghalaya (new record).

44. *Eugahania flaviscapus* Singh and Agarwal

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 2 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Assam (Hayat, 2006), Meghalaya (new record).

45. *Homalotylus turkmenicus* Myartseva

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR).

Hosts: [coccinellids predaceous on]: *Centrocooccus* sp. on *Withania somnifera* (Hayat *et al.*, 1975); *Coccidohystrix*

insolita on *W. somnifera* (Hayat *et al.*, 1975) and *Solanum melongena* (Anis and Hayat 1998; Hayat 1977; *Nipaecoccus* sp. on *Peristrophe bicalyculata* (Hayat *et al.*, 1975).

Distribution: India: Haryana, Punjab, Rajasthan, Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

46. *Leptomastix dactylopii* Howard

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR).

Hosts: *Planococcus citri* on Arabica coffee, mealybugs on pomegranate and grapevine (Noyes and Hayat, 1994); *P. lilacinus* (Krishnamoorthy, 1988).

Distribution: India: Karnataka, Tamil Nadu (Hayat, 2006), Meghalaya (new record).

47. *Leptomastix tsukumiensis* Tachikawa

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

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

Distribution: India: Andhra Pradesh, Bihar, Delhi, Jharkhand, Karnataka, Kerala, Odisha, Tamil Nadu, Uttar Pradesh, West Bengal (Hayat, 2006), Meghalaya (new record).

48. *Metaphycus* Mercet

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 5 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR); East Khasi Hills, Mawkriah, yellow pan traps, potato field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

Hosts: Parasitoids of soft scale insects (Hemiptera: Coccidae), Asterolecaniidae, Eriococcidae, Kerridae and Diaspididae (Hayat, 2006).

Distribution: Cosmopolitan. Meghalaya (new record).

49. *Microterys nietneri* (Motschulsky)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field,

08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: *Coccus hesperidum* (Pruthi and Mani, 1945); *Lecanium* sp. (Ayyar and Margabandhu, 1934); *Parasaissetia nigra* (Ayyar and Margabandhu, 1934; Pruthi and Mani, 1945); *Pulvinaria* sp. (Ayyar and Margabandhu, 1934); *Saissetia* sp. on *Carica papaya* (Sankaran and Pattar, 1977); *S. coffeae* on *Carica sinensis*, *Crossandra infundibuliformis* (Sankaran and Pattar, 1977); *S. miranda* on *Erythrina lithosperma* (Chacko and Sridharan, 1981); *Saissetia oleae* on mango (Tandon and Srivastava 1980).

Distribution: India: Karnataka, Kerala, Tamil Nadu, Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

50. *Neodusmetia sangwani* (Subba Rao)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 6 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, spinach field with weeds, 14.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 6 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: *Antonina indica* (Subba Rao 1957; Burks 1957); *Antonina* sp. on grass (Hayat 1981), *Cynodon* sp. (Shafee *et al.*, 1975), and *Eragrostes ciliaris* (Hayat 1977).

Distribution: India: Andaman and Nicobar Islands, Andhra Pradesh, Assam, Delhi, Karnataka, Kerala, Pudhucherry, Rajasthan, Tamil Nadu, Uttar Pradesh (Hayat 2006), Meghalaya (new record).

51. *Ooencyrtus guamensis* Fullaway

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Hosts: *Exelastis atomosa* (Pterophoridae); Syrphid pupae; *Paragus auratus*; aphid on safflower (Huang and Noyes 1994).

Distribution: India: Andhra Pradesh, Bihar, Delhi, Haryana, Jharkhand, Karnataka, Kerala, Maharashtra, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh (Hayat 2006), Meghalaya (new record).

52. *Ooencyrtus utetheisae* (Risbec)

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field,

10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

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

Distribution: India: Assam, Karnataka, Kerala, Meghalaya, Tamil Nadu, Uttarakhand, Uttar Pradesh (Hayat 2006).

53. *Parablatticida aligarhensis* Hayat

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Uttar Pradesh (Hayat 2006), Meghalaya (new record).

54. *Paraclausenia herbicola* Hayat

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR).

Host: *Rastrococcus* sp. on *Acacia moniliformis* (Shafee and Avasthi 1983).

Distribution: India: Andhra Pradesh, Assam, Himachal Pradesh, Jharkhand, Kerala, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh (Hayat 2006), Meghalaya (new record).

55. *Pentelicus* Howard

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Meghalaya (new record).

56. *Prochiloneurus albifuniculus* (Hayat, Alam and Agarwal)

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: [with] *Antonina* sp. on grass (Hayat, 2006); *Coccidohystrix insolita*, *Nipaecoccus* sp. on *Citrus* sp. (Hayat *et al.*, 1975).

Distribution: India: Assam, Himachal Pradesh, Rajasthan, Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

57. *Protyndarichoides indicus* Singh and Agarwal

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR);

Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 females (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Uttar Pradesh (Hayat 2006), West Bengal (Noyes, 2014), Meghalaya (new record).

58. *Rhopus Foerster*

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 13 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, capsicum field, 11.vi.2013, Naveen V, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V 2 females (ICAR-NBAIR).

Hosts: Mealybugs (Hemiptera: Pseudococcidae), especially those associated with grasses (Hayat, 2006).

Distribution: Cosmopolitan. Meghalaya (new record).

59. *Syrphophagus hakki* Agarwal

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Indet. syrphid puparia (Agarwal 1962).

Distribution: India: Himachal Pradesh, Uttarakhand (Hayat, 2006), Meghalaya (new record).

60. *Tassonia gloriae* Girault

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 1 female (ICAR-NBAIR).

Hosts: *Hysteroneura setariae* on *Cynodon dactylon* (Hayat 1979); *Melanaphis* (= *Longiunguis*) *sacchari* on *Saccharum officinarum* (Shafee *et al.*, 1975); *Myzus persicae* (Hayat, 1979).

Distribution: India: Andhra Pradesh, Bihar, Goa, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal (Hayat, 2006), Meghalaya (new record).

61. *Trechnites nr. manaliensis* Hayat, Alam and Agarwal

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy

field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

Hosts: *Euphyllura eastopi*, *E. longiciliata*, *Psylla hyaline* (Hemiptera: Psyllidae) (Noyes, 2014).

Distribution: India: Himachal Pradesh (Hayat, 2006), Meghalaya (new record).

62. *Zaomma lambinus* (Walker)

Specimens examined: INDIA, Meghalaya, Jaintia hills, Jowai, net sweep, forest land, 11.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Indet. Diaspidini (Hayat *et al.*, 1975).

Distribution: India: Andaman and Nicobar Islands, Kerala, Uttar Pradesh (Hayat, 2006), Meghalaya (new record).

III. Family Aphelinidae

63. *Ablerus inquirenda* Silvestri

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

Host: *Aleurocanthus woglumi* (Hemiptera: Aleyrodidae) (Noyes, 2014).

Distribution: India: Tamil Nadu (Hayat 1998), Meghalaya (new record).

64. *Aphelinus acuminatus* Hayat

Specimen examined: INDIA, Meghalaya, Shillong, upper shillong, net sweep, weedy field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Indet. aphids on *Polygonum* sp. (Hayat 1998).

Distribution: India: Meghalaya (Hayat, 1998).

65. *Aphelinus humilis* Mercet

Specimen examined: INDIA, Meghalaya, Shillong, Upper shillong, net sweep, weedy field, 10.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: *Macrosiphum* sp. on *Rosa* sp. (Hayat 1998).

Distribution: India: Kerala, Uttar Pradesh, West Bengal (Hayat 1998), Meghalaya (new record).

66. *Aphytis* Howard

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, chilli field, 10.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR).

Hosts: Ectoparasitoids of diaspidid scales (Hemiptera: Diaspididae) (Hayat, 1998).

Distribution: India: Assam, Bihar, Haryana, Himachal Pradesh, Karnataka, New Delhi, Tamil Nadu, Uttar Pradesh (Hayat, 1998); Meghalaya (new record).

67. *Centrodora idioceri* Ferriere

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, grassy/weedy field, 08.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Hosts: Eggs of *Oxyrachis* sp. near *tarandus* on *Mangifera indica*; *Oxyrachis* sp. on *Ziziphus* sp.; indet. membracid eggs on *Cassia* sp. and *Cajanus cajan* (Hayat 1998).

Distribution: India: Andhra Pradesh, Assam, Bihar, Goa, Jammu and Kashmir, Punjab, Tamil Nadu, Uttar Pradesh (Hayat, 1998), Meghalaya (new record).

68. *Centrodora nr. ghorpadei* Hayat

Specimen examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 1 female (ICAR-NBAIR).

Host: Unknown.

Distribution: India: Karnataka (Hayat, 1998), Meghalaya (new record).

69. *Coccophagus burksi* Hayat

Specimens examined: INDIA, Meghalaya, East Khashi Hill, Chirapunjee, net sweep, forest land, 09.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR).

Host: Indet. coccids (Hayat, 1998).

Distribution: India: Pudhucherry (Hayat, 1998), Meghalaya (new record).

70. *Encarsia Foerster*

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females (ICAR-NBAIR).

Hosts: Endoparasitoids of diaspidids (Hemiptera: Diaspididae) and whiteflies (Hemiptera: Aleyrodidae) (Hayat, 1998).

Distribution: Cosmopolitan. Meghalaya (new record).

71. *Eretmocerus Haldeman*

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 3 females (ICAR-NBAIR); Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, Naveen V, 2 females

(ICAR-NBAIR).

Hosts: Exclusive parasitoids of whiteflies (Hemiptera: Aleyrodidae) (Hayat 1998).

Distribution: India: Andhra Pradesh, Bihar, Delhi, Karnataka, Kerala, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh (Hayat 1998), Meghalaya (new record).

72. *Marietta leopardina* Motschulsky

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy field, 08.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR).

Host: For details refer Hayat (1998).

Distribution: Cosmopolitan, Meghalaya (new record).

73. *Promuscidea unfasciiventris* Girault

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, groundnut field, 13.vi.2013, A. Rameshkumar, 2 females (ICAR-NBAIR).

Hosts: A common hyperparasitoid of encyrtids through their mealybug hosts. For details refer Hayat (1998).

Distribution: Cosmopolitan, Meghalaya (new record).

74. *Pteroptrix* Westwood

Specimens examined: INDIA, Meghalaya, Ri-Bhoi, Umiam, ICAR complex, yellow pan traps, weedy (spinach) field, 14.vi.2013, A. Rameshkumar, 4 females (ICAR-NBAIR).

Hosts: Parasitoids of diaspidid scales (Hemiptera: Diaspididae) (Hayat, 1998).

Distribution: India: Karnataka, Uttar Pradesh, Jammu and Kashmir (Hayat, 1998), Meghalaya (new record).

IV. Family Eucharitidae

75. *Orasema initiator* Kerrich

Specimens examined: INDIA, Meghalaya, Jaintia hills, Jowai, net sweep, forest land, 11.vi.2013, A. Rameshkumar, 19 females, 2 males (ICAR-NBAIR).

Diagnosis

Female (Fig. 1): Head, mesosoma and metasoma dark metallic blue; antennal scape yellowish brown, flagellum yellowish brown; legs yellowish to orange except all coxae, trochanters and femora dark brownish blue, ovipositor reddish brown with a series of distinct serrations; wings hyaline. Fore wing with marginal vein elongate, postmarginal vein short, only slightly longer than stigmal vein. For detailed description, see Kerrich (1963).

Male (Fig. 2): Similar to female in general appearance and coloration except hind tibiae slightly more dusky

brown, wings visibly shorter, petiole distinctly longer (more than 2x as long). Antenna similar to female except for the dark brown scape and slightly darker flagellum. Head 1.4x as broad as high. Malar space 0.7x height of eye. Eyes separated by 1.7x their height. Flagellum 1.4x as long as height of head. Fore wing 2x as long as broad. Petiole 5.4x as long as broad, about 2x as long as hind coxa.

Host: Recorded as a pest of tea by Kerrich (1963).

Distribution: India: Assam (Kerrich, 1963), Meghalaya (new record).

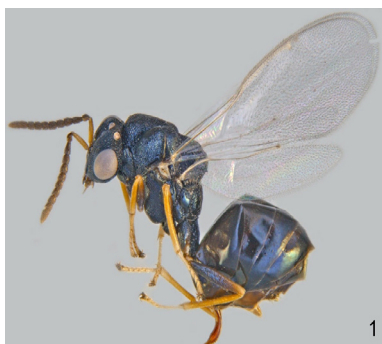


Fig. 1. *Orasema initiator*, female.



Fig. 2. *Orasema initiator*, male.

Comments. This species is closely related to *O. assectator* in general appearance, but can be distinguished from the latter by the distinctly shorter postmarginal vein, more elongate petiole, and the presence of dorsal and lateral keels on the petiole (Kerrich, 1963). Heraty (1994) has described both sexes of *O. initiator* with illustrations.

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