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New distributional records of egg parasitoids (Hymenoptera, Chalcidoidea, Trichogrammatidae) from Chhattisgarh, India

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ABSTRACT: Egg parasitoids from the Trichogrammatidae family, including *Aphelinoidea, Paracentrobia,* and *Ufens*, parasitize the hemipteran eggs on crops, orchards, and forest tree species. In agro-forestry areas, trichogrammatids are widely recognised as effective biocontrol agents for lepidopterous insect pests of different crops. They play a significant role and are widely accepted in the biological management of insect pests. Many trichogrammatid egg parasitoids were explored in sweep net collecting samples during surveys carried out in the agro-forestry regions of Chhattisgarh, India, during February–March and October–November 2017. Ten species of trichogrammatids, namely *Aphelinoidea gwaliorensis* Yousuf & Shafee; *Lathromeroidea ajmerensis* Yousuf & Shafee*, Oligosita debaiensis* Yousuf & Shafee*, Oligosita gilvus* Yousuf & Shafee*, Pseudoligosita nephotetticum* (Mani)*, Oligosita novisanguinea* Girault*, Oligosita sanguinea* Yousuf & Shafee*, Paracentrobia magniclavata* Yousuf & Shafee*, Ufens gurgaonensis* Yousuf & Shafee and *Ufens jaipurensis* Yousuf & Shafee were recorded as indigenous species, with new distribution in Chhattisgarh.

KEY WORDS: Biocontrol agents, new records, forest, agro-forestry

Biodiversity of parasitic fauna explored in India represents only 5 per cent of the world parasitic species (Rathod and Karnataka, 2009). Egg parasitoids constitute an economically important group of parasitic insects in terrestrial ecosystem as they regularly exercise a natural check on the populations of various insect pests. The minute egg parasitoids, generally about less than a 0.5 mm, parasitize various groups of insect pests but mostly recorded attacking members of Lepidoptera and Hemiptera. These egg parasitoids are universally accepted bio-control agents of lepidopteran pests of agro-forestry (Doutt and Viggiani, 1968; Debach and Rosen, 1991; Smith, 1996) and *Trichogramma* spp. have world-wide popularity as biocontrol agents.

Some species of the genus Trichogramma: *Trichogramma kankerensis* Yousuf & Hassan; *Trichogramma plasseyensis* Nagaraja; *Trichogramma raoi* Nagaraja; *Trichogramma thalense* Pinto & Oatman (Yousuf *et al.*, 2015)

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were reported from Chhattisgarh. So, due to lack of research in exploration of egg parasitoids this study was carried out in several locations in Chhattisgarh state to assess the diversity of egg parasitoids belonging to the trichogrammatidae family. Thus, Chhattisgarh has flora including mango, litchi, jackfruit, bamboo, shisam, karanj, ber and sal dominant forest area. So, insect pests attacking on aforementioned vegetation and natural enemies associated with them Trichogrammatid egg parasitoids were collected from a various locations in agro-forestry zones in Chhattisgarh, India.

All the Collected and examined specimens have been submitted in National Forest Insect collection (NFIC), Dehradun, Uttarakhand, India.

Surveys were conducted in agro-forestry areas of different districts, namely Bilaspur, Dhamatari, Durg, Korba, Jangir-Champa, Raipur, Rajnandgaon in Chhattisgarh for the collection of trichogrammatid egg parasitoids. During monsoon and post monsoon periods, collection of trichogrammatids was carried out by sweeping method. Sweep net sampling was adopted in greenland areas of forest and agro-forests and the insect fauna collected were preserved in alcohol (70%). From these samples, trichogrammatid egg parasitoids were sorted out for the present study. After going through the normal course of dehydration, minute egg parasitoids were dissected in clove oil and mounted in euparal under glass cover slips. For identification of the collected material, important literature on trichogrammatid taxonomy (Doutt and Viggiani, 1968; Yousuf and Shafee, 1988; Lin, 1994) was consulted.

A total of 10 species of trichogrammatid egg parasitoids, namely *Aphelinoidea gwaliorensis* Yousuf & Shafee; *Lathromeroidea ajmerensis* Yousuf & Shafee, *Oligosita debaiensis* Yousuf & Shafee, *Oligosita gilvus* Yousuf & Shafee, *Pseudoligosita nephotetticum* (Mani), *Oligosita novisanguinea* Girault, *Oligosita sanguinea* Yousuf & Shafee, *Paracentrobia magniclavata* Yousuf & Shafee, *Ufens gurgaonensis* Yousuf & Shafee and *Ufens jaipurensis* Yousuf & Shafee were identified up-to species level. Brief account of these trichogrammatids collected from Chhattisgarh is presented.

1. *Aphelinoidea gwaliorensis* Yousuf and Shafee

Aphelinoidea gwaliorensis Yousuf and Shafee, 1985b: 303.

Hosts: Unknown

Distribution: INDIA: Andhra Pradesh, Arunachal Pradesh, Himachal Pradesh, Jammu & Kashmir Madhya Pradesh, Odisha, Punjab, Uttar Pradesh, West Bengal.

Specimens examined: INDIA: Chhattisgarh: Bilaspur, Khootaghat, 1♀(on slide), 1.iii.2017; Koni, 1♀ (on slide), 30.x.2017. coll. Manendra Kaneria (sweeping).

2. *Lathromeroidea ajmerensis* Yousuf and Shafee

Lathromeroidea ajmerensis Yousuf and Shafee, 1988: 160.

Hosts: Unknown

Distribution: INDIA: Madhya Pradesh, Punjab, Rajasthan.

Specimens examined: INDIA: **Chhattisgarh:** Bilaspur, Ratanpur, Khootaghat; 1♀, 1.iii.2017; coll. Manendra Kaneria (Sweeping); 1♀; Bilaspur, Koni; 30.x.2017; coll. Manendra Kaneria (sweeping).

3. *Oligosita debaiensis* Yousuf and Shafee

Oligosita debaiensis Yousuf and Shafee, 1988: 152-153.

Hosts: Unknown

Distribution: INDIA: Punjab, Uttar Pradesh.

Specimens examined: INDIA: Chhattisgarh, Korba, Kechuna; 1♀, 5.iii.2017; coll. Manish Kaneria (sweeping); 1♀; Dhamtari, Jamtara; 2.xi.2017; coll. Manish Kaneria (sweeping).

4. *Oligosita gilvus* Yousuf and Shafee

Oligosita gilvus Yousuf and Shafee, 1984: 17.

Hosts: Unknown

Distribution : INDIA: Madhya Pradesh, Punjab and Uttar Pradesh).

Specimens examined: INDIA: Chhattisgarh: Bilaspur, Ratanpur, Khootaghat, 1♀, 1.iii.2017; Rajnandgaon, Dongargarh, Pragyagiri; 2♀, 10.iii.2017; coll. Manish Kaneria (sweeping);

Bilaspur, Koni; 1♀, 30.x.2017; coll. Manendra Kaneria (sweeping).

5. *Pseudoligosita nephotetticum* (Mani)

Oligosita nephotetticum (Mani): Pinto & Viggiani, 2004: 289.

Hosts: *Nephotettix bipunctatus* (Uhler) on rice (Hemiptera: Cicadellidae).

Distribution: INDIA : Uttar Pradesh, Punjab, Haryana and Uttarakhand.

Specimens examined: INDIA: Chhattisgarh: Raipur, Barauda; 1♀, 9.iii.2017; coll. Manendra Kaneria (sweeping); Bilaspur, Koni; 1♀, 30.x.2017; coll. Manendra Kaneria (sweeping).

6. *Oligosita novisanguinea* Girault

Oligosita novisanguinea Girault, 1912:79-80.

Oligosita ruficorpa Yousuf and Shafee, 1988:146.

Oligosita novisanguinea Girault: Hayat 2008: 7.1.

Hosts: *Asphondylia miki*

Distribution: INDIA: Uttar Pradesh, Himachal Pradesh, Jammu and Kashmir, Haryana, Punjab); USA and Italy.

Specimens examined: INDIA: Chhattisgarh: Bilaspur, Ratanpur, Khootaghat; 1♀, 1.iii.2017; coll. Manendra Kaneria (Sweeping); Korba, Kechuna; 2♀, 5.iii.2017; Manish Kaneria (sweeping); 1♀; Bilaspur, Koni; 30.x.2017; coll. Manendra Kaneria (sweeping); 1♀, Rajnandgaon, Dongargarh, Pragyagiri; 10.iii.2017; coll. Manish Kaneria (sweeping);

7. *Oligosita sanguinea* Yousuf and Shafee

Oligosita sanguinea (Girault): Doutt & Viggiani, 1968: 540.

Hosts: Unknown

Distribution: INDIA: **Chhattisgarh,** Madhya Pradesh, Punjab.

Specimen examined: INDIA: Chhattisgarh: Jangir-Champa, Kotmi Sonar; 1♀, 15.vii.2016; coll. Manendra Kaneria (sweeping).

8. *Paracentrobia magniclavata* Yousuf and Shafee

Paracentrobia magniclavata Yousuf and Shafee, 1985a:301.

Hosts: Egg of coleopteran insect.

Distribution: INDIA: Uttar Pradesh, Madhya Pradesh and Punjab.

Specimen examined: INDIA: Chhattisgarh: Bilaspur, Ratanpur, Khootaghat; 1♀, 1.iii.2017; coll. Manendra Kaneria (Sweeping).

***9.* Ufens gurgaonensis** *Yousuf and Shafee*

Ufens gurgaonensis Yousuf and Shafee, 1988: 75.

Hosts: Unknown

Distribution: INDIA**:** Haryana, Gurugram, Madhya Pradesh, Punjab.

Specimens examined: INDIA: Chhattisgarh: Raipur, Kacheri; 1♀, 9.iii.2017; coll. Manendra Kaneria (sweeping); 2♀, 11.iii.2017; Durg, Pulgaon road; coll. Manendra Kaneria (sweeping)

10. *Ufens jaipurensis* Yousuf and Shafee

Ufens jaipurensis Yousuf & Shafee, 1988: 80.

Hosts: Unknown

Distribution: INDIA: Rajasthan, Punjab.

Specimen examined: INDIA: Chhattisgarh, Raipur, Kacheri; 1♀, 9.i0ii.2017; coll. Manendra Kaneria (sweeping).

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