

New records of egg parasitoids (Hymenoptera, Chalcidoidea, Trichogrammatidae) from Kashmir Valley, Jammu and Kashmir, India

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ABSTRACT: Extensive surveys carried out in a range of habitats in several Kashmir valley districts, documented ten species of trichogrammatids from genera, including *Chaetostricha* Haliday, *Lathromeroidea* Girault, *Oligosita* Haliday, *Paracentrobia* Howard, *Pseudoligosita* Girault, *Trichogramma* Westwood and *Ufens* Girault, as indigenous species with newly identified distribution in the Kashmir valley. These findings expand the known diversity of these egg parasitoids and mark the first report of these trichogrammatids that have been recorded in Kashmir valley, Jammu and Kashmir, India.

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KEY WORDS: Surveys, indigenous species, distribution, Western Himalayas

The Trichogrammatidae family is a significant taxon within the Chalcidoidea superfamily. These insects, which may be solitary or gregarious, are egg parasitoids. They aim at an extensive range of insects from multiple orders, specifically emphasizing Coleoptera, Diptera, Hemiptera and Lepidoptera. They aim at an extensive range of insects from multiple orders, specifically emphasizing Coleoptera, Diptera, Hemiptera, and Lepidoptera (Pinto and Stouthamer, 1994). In India, however, there are about 200 species across 35 genera, distributed among two subfamilies and five tribes (Noyes, 2022). The research was conducted in the Kashmir valley, located in Jammu and Kashmir, India. This valley is encircled by the Himalayan mountains, bordered by the Pir Panjal

Range in the southwest and the Greater Himalayan Range in the northeast.

The collection sites of Kashmir Valley, J&K, India are located in the districts of Ganderbal, Srinagar, and Bandipora. Used a sweeping net for collecting insect samples from different habitats, including grass fields, rice paddies, vegetable gardens, orchards, herbs, shrubs, and bushes, across various locations in the Ganderbal, Srinagar, and Bandipora districts of the Kashmir Valley. The samples were immediately transferred into small vials containing ethyl alcohol (70%) for preservation. Freshly collected trichogrammatid specimens were sorted under a stereo zoom microscope (Olympus SZX16) and thereafter preserved in Eppendorf tubes with

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70 per cent ethyl alcohol. Slides were prepared according to Noyes' (1982) methodology. Dissections were done using the stereo zoom microscope (Olympus SZX16), while photography and measurements were carried out with a CILIKA Patented Digital Head Technology slide microscope, equipped with an 8-megapixel camera on an iPad. All specimens were identified up-to species level with help by studying the world as well as Indian literature, and keys provided by Nagaraja and Nagarkatti (1973) and Yousuf and Shafee (1988).

This study represents the first systematic examination of trichogrammatids in the Kashmir valley. It includes new records of species from the Trichogrammatidae family, specifically within the genera *Oligosita* Haliday, *Pseudoligosita* Girault, *Paracentrobia* Howard, *Lathromeroidea* Girault, *Ufens* Girault, *Chaetostricha* Haliday and *Trichogramma* Westwood. *Chaetostricha magniclavata* Yousuf and Shafee, *Lathromeroidea ajmerensis* Yousuf, *L. longiciliata*, Ikram & Yousuf, Shafee *Oligosita gilvus* Yousuf & Shafee, *O. ferozepurensis* Ikram & Yousuf, *O. meerutensis* Yousuf & Shafee, *Paracentrobia bharatpurensis* Yousuf and Shafee, *Pseudoligosita nephotetticum* (Mani), *Trichogramma chilonis* Ishii and *Ufens latipennis* Yousuf & Shafee are new records.

I. Pseudoligosita nephotetticum (Mani, 1939)

P. nephotetticum (Mani, 1939)

P. nephotetticum (Mani): Pinto & Viggiani (2004)

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

Distribution: INDIA: Bihar, Chhattisgarh (Raipur & Bilaspur: Ikram *et al.*, 2023), Haryana (Bhiwani, Hisar, Jhajjar, Karnal and Kurukshetra: Yousuf and Ikram, 2015), Jharkhand, Madhya Pradesh, Punjab, Rajasthan, and Uttar Pradesh (Noyes, 2022).

Material examined. INDIA: Jammu and Kashmir: Ganderbal, Wakura; 4♀, 1♂, 1.vi.2023; Zazna, 2♀, 4.vi.2023 coll. Rabiya Irshad (sweeping). Srinagar, Harwan; 2♀, 15.vii.2023; Hazratbal; 2♀ and 1♂, 17.vii.2023; coll. Rabiya Irshad (sweeping). Bandipora: Sumbal; 2♀, 1. viii.2023; Tarazuea; 2♀,

6.viii.2023; coll. Rabiya Irshad (sweeping).

2. *Oligosita meerutensis* Yousuf and Shafee; Yousuf and Shafee (1984)

Host: Unknown

Distribution: INDIA: Haryana, Jharkand, Punjab, Uttarakhand (Dehradun, Almora: Begum *et al.*, 2015) and Uttar Pradesh (Meerut).

Material examined. INDIA: Jammu & Kashmir: Ganderbal: Gadoora; 1♀, 3.vi.2023; Nuner; 1♀, 6.vii.2023; coll. Rabiya Irshad (sweeping). Srinagar: Eidgah; 1♀, 16.vii.2023; coll. Rabiya Irshad (sweeping).

3. *O. gilvus* Yousuf and Shafee; Yousuf and Shafee (1984)

Host: Unknown

Distribution: INDIA: Assam (Kamrup: Begum *et al.*, 2015), Punjab, Madhya Pradesh, Uttar Pradesh.

Material examined. INDIA: Jammu and Kashmir: Ganderbal: Gadoora; 1♀, 3.vi.2023; coll. Rabiya Irshad (sweeping); Nuner; 1♀, 6.vi.2023; coll. Rabiya Irshad (sweeping); Srinagar: Gulabpora ; 1♀, 18.vii.2023; coll. Rabiya Irshad (sweeping).

4. *O. ferozepurensis* Ikram and Yousuf (2016)

Host: Unknown

Distribution: INDIA: Delhi, Haryana, Punjab, Uttar Pradesh.

Material examined. INDIA: Jammu & Kashmir: Ganderbal: Rapora; 1♀, 5.vi.2023; Nuner; 1♀, 6.vi.2023; coll. Rabiya Irshad (sweeping). Srinagar: Shalimar; 1♀, 20.vii.2023; coll. Rabiya Irshad (sweeping). Bandipora: Shadipora; 1♀, 8. viii.2023; Hajan; 1♀, 9.viii.2023; coll. Rabiya Irshad (sweeping).

5. *Lathromeroidea ajmerensis* Yousuf and Shafee (1988)

Host: Unknown

Distribution: INDIA: Chhattisgarh (Bilaspur: Ikram *et al.*, 2023), Madhya Pradesh,

Punjab, Rajasthan.

Material examined. INDIA: Jammu & Kashmir: Ganderbal: Rapora; 1 ♂, 5.vi.2023;

Nuner; 1 ♂, 6.vi.2023; coll. Rabiya Irshad (sweeping).

6. *Paracentrobia bharatpurensis* Yousuf and Shafee; Yousuf and Shafee (1988)

Host: Unknown

Distribution: INDIA: Rajasthan (Bharatpur), Punjab.

Material examined. INDIA: Jammu and Kashmir: Ganderbal: Manasbal; 1 ♀, 7. vi.2023;

1 ♀, Wakura; 1.vi.2023; coll. Rabiya Irshad (sweeping).

7. *Chaetostricha magniclavata* Yousuf and Shafee; Yousuf and Shafee (1988)

Host: Unknown

Distribution: INDIA: Uttar Pradesh.

Material examined. INDIA: Jammu and Kashmir: Nowgam; 1 ♂, 19.vii.2023; coll. Rabiya

Irshad (sweeping).

8. *Lathromeroidea longiciliata*, Ikram and Yousuf; Ikram and Yousuf (2017)

Host: Unknown.

Distribution: INDIA: Punjab (Jalandhar, Nawanshahr), Uttar Pradesh.

Material examined. INDIA: Jammu and Kashmir: Ganderbal: Rapora; 1 ♀, 5.vi.2023; Nuner; 1 ♀, 6.vi.2023; coll. Rabiya Irshad (sweeping). Bandipora: Shadipora; 1 ♀, 8. viii.2023; coll. Rabiya Irshad (sweeping).

9. *Trichogramma chilonis* Ishii (1941)

Host: *Achaea janata*, *Acherontia styx*, *Acigona steniellus*, *Acrobasis caryae*, *A. juglandis*, *Aglossa dimidiata*, *Agraulis vanillae*, *Agrius cingulata*, *Agriusless convolvuli*, *Ampillia dioscoridea*, *Anomis flava*, *Arctiaas coerulea*, *Argyroploce schistaceana*, *Ascotis selenariadianerla*, *Atherigona soccata*, *Bactra sp.*, *Barathra Agrius convolvuli brassicae*, *Cerura vinula*, *Chilo indicus*, *C. infuscatellus*,

C. partellus, *C. sacchariphagus*, *C. suppressalis*, *C. venosatus*, *Clanis bilineata*, *Clostera anachoreta*, *Cnaphalocrocis medinalis*, *Cocytodes coerulea*, *Corcyra cephalonica*, *Cretonotus transiens*, *Crocitolomia binotalis*, *Danaus plexippus*, *Deilephila nerii*, *Diatraea saccharalis*, *Earias insulana*, *Earias vitella*, *Emmalocera depressella*, *Trichogramma breviciliata*, *Ephestia cautella*, *Ergolis merione*, *Etiella zinekenella*, *Eucosma schistaceana*, *Euproctis flavinata*, *Eutectona machaeralis*, *Gastropacha populifolia*, *G. glycinivorella*, *Helicoverpa armigera*, *Heliothis assulta*, *H. zea*, *Hemerophila atrilieneata*, *Herse convolvuli*, *Homona coffearia*, *Hyblaea pueria*, *Hymenia recurvalis*, *Jaspida distinguenda*, *Laspeyresia caryana*, *Mycalesis gotama*, *Naranga aenescens*, *Oebia undalis*, *Olethreutes schistaceana*, *Ostrinia furnalis*, *O. nubilalis*, *Papilio xuthus*, *Parasa consocia*, *Parnaraentire guttata*, *Pelopidas mathias*, *Philosamia cynthia ricini*, *Pieris rapae*, *Plutella xylostella*, *Procerasacchariphagus*, *Proceras*, *Corcyra cephalonica*, *Eutectona machaeralis*, *venosatus*, *Prodenia litura*, *Prodesaia kurosawai*, *Psara*, *Hyblaea pueria*, *Hasora alexis*, *Samia cynthia*, *Scirpophaga excerptalis*, *S. incertulas*, *S. innotata*, *S. nivella*, *Scirpophaga sp.*, *Sesamia inferens*, *Sitotroga cerealella*, *Spilarctis obliqua*, *Spodoptera litura*, *Spodoptera* (Khan, 2002).

Distribution: INDIA: Andhra Pradesh, Bihar, Delhi, Gujarat, Haryana (Kumar *et al.*, 2009; Ram *et al.*, 1998; Ahmad *et al.*, 1997), Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh, and West Bengal.

Material examined. INDIA: Jammu and Kashmir: Ganderbal: Gadoora; 1 ♂, 3.vi.2023; Nuner; 1 ♂, 6.vi.2023; Nowgam; 1 ♂, 19.vii.2023; coll. Rabiya Irshad (sweeping). Bandipora: Asham; 1 ♀ (on slide), 3. viii.2023; coll. Rabiya Irshad (sweeping).

10. *Ufens latipennis* Yousuf and Shafee; Yousuf and Shafee (1988)

Host: Unknown

Distribution: INDIA: Uttar Pradesh

Material examined. INDIA: Jammu and Kashmir: Ganderbal: Wakura; 1♀, 1.vi.2023; coll. Rabiya Irshad (sweeping).

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