

**RECORD OF *ELASMUS* WESTWOOD (HYMENOPTERA:
CHALCIDOIDEA: EULOPHIDAE: EULOPHINAE: ELASMINI)
OF PUNJAB, INDIA**

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[Kazmi, S. I. & Sheela, S. 2017. Record of *Elasmus* Westwood (Hymenoptera: Chalcidoidea: Eulophidae: Eulophinae: Elasmmini) of Punjab, India. Munis Entomology & Zoology, 12 (1): 280-284]

ABSTRACT: The present paper deals with the study of subfamily Eulophinae of Punjab which includes 04 female species. Out of these *Elasmus viridiscutellatus* Verma & Hayat is new records from Punjab. A key to Punjab species is also given.

KEY WORDS: New record, parasitic wasps, Chalcidoidea, Eulophidae, Elasmmini, Punjab, India

The genus *Elasmus* is the only member of the hymenopteran subfamily Elasmninae (formerly classified as a separate family, Elasmidae), and contains approximately 226 species worldwide. Indian species of genus *Elasmus* Westwood was reviewed by Verma et al. (2002) and Narendran et al. (2008). The genus *Elasmus* contains 54 species from India; out of which 06 species (including male species) are represented from the Indian state Punjab. In the present paper *Elasmus viridiscutellatus* Verma & Hayat is new records from Punjab. Besides, new records, diagnosis, hosts and distribution of all known species are provided. Few male specimens of *Elasmus* sp. were also collected but not included.

The present study is based on the specimens collected from Indian state Punjab during 2012 to 2014. By the sweeping method and were collected with the help of aspirator. Freshly collected specimens were killed in ethyl acetate fumes and stored in 70% ethyl alcohol. They were later dried and mounted on rectangular card using water soluble glue. Dried specimens were photographed by Leica stereo microscope version 3.6.0.

Terminology used The following abbreviations are used: F1-F3 = first, second and third funicle segments; TI – TVII = gastral terga 1 to 7; F = female; M = male; BMNH = The Natural History Museum, London; USNM = The U. S. National Museum, Washington, D.C.

An asterisk (*) marked after the name of the species indicates that it is a new record from the state Punjab. The species studied are deposited in the National Zoological collections, Zoological Survey of India, Kolkata, India.

Genus *Elasmus* Westwood

Elasmus Westwood, 1833: 343 [Type species *Elasmus flabellatus* Fonscolombe, by monotypy] *Aneure* Nees, 1834: 194 [Type species *Aneure nuda* Nees, designated by Gahan & Fagan, 1923: 12. Synonymy by Westwood, 1839: 74]

Heptocondyla Rondani, 1877: 182 [Type species *Heptocondyla unicolor* Rondani, by monotypy. Synonymy by Bouček, 1974: 252, 279]

Cyclopleura Cameron, 1913: 96 [Type species *Cyclopleura fumipennis* Cameron (*Elasmus cameroni* Verma & Hayat as replacement name), designated by Gahan & Fagan, 1923: 41. Synonymy by Waterston, in Mahdihasan, 1925]

Austelasmus Riek, 1967: 148 [Type species *Elasmus trifasciiventris* Girault, by original designation. Synonymy by Burks, in Krombein et al., 1979: 1020]

Diagnosis:

Female. The *Elasmus* are easily recognized by the enlarged body, yellowish, and brown to black in colour, with metallic luster. Antenna with funicle 3-segmented and a conspicuous anellus, scutellum with a triangular apical projection, notaular lines incomplete, fore wings elongate and narrow, densely covered with setae, with a very long marginal vein, hind coxae compressed and disc like; hind tibiae with diamond-shaped or wavy lines patterns of setae, tarsi four-segmented.

Male. Similar to female except antennal formula (1143) with F1 to F3 each with a dorsal ramus.

Biology: They are mainly parasitoids or hyperparasitoids of lepidopteran larvae, though several species are parasitoids of *Polistes* wasp larvae. Some species develop regularly both as primary and hyperparasitoids. They are usually gregarious.

Distribution: *Elasmus* have been distributed all over major zoogeographical regions but they are not particularly abundant.

Statistics: Number of world genera one and species nearly 226 (from Indian region 54, Nearctic 16, Neotropical 20).

Key to species of *Elasmus* Westwood, from Punjab based on females

(Adopted from Verma et al., 2002; Narendran et al., 2008)

1. Hind coxa completely dark brown to black, at most with extreme apex yellowish (Mid coxa largely dark brown to black).....2
 --. Hind coxa yellow at least apical third.....3
2. F1 slightly shorter than pedicel and at most slightly longer than broad, F2 and F3 broader than long; body blackish; gaster completely black or apices of TI and TII and occasionally also TIII, and basal four sternites, honey yellow.....***brevicornis* Gahan**
 --. F1-3 usually elongate, F1 almost sub-equal in length to pedicel; F3 at most quadrate, usually larger than broad, if pedicel longer than F1 then F2 and F3 quadrate, usually clearly longer than broad; pedicel shorter than F1; F1-3 relatively longer; F3 1.5× as long as broad; forewing 3.5 × as long as broad.....***johnstoni* Ferriere**
3. Gaster with narrow, dusky yellow stripes at apices of TI-TIV; pedicel only slightly shorter than F1 which is at most 2.5× as long as broad; forewing hyaline; hind femur yellowish with blackish margins; mid coxa and femur largely yellow...***viridiscutellatus* Verma & Hayat**
 --. Gaster reddish, orange, or honey yellow, at most with dark spots or bands, but apical two terga more or less completely dark; pedicel about 2× as long as broad and only slightly shorter than F1; F1 about 2.5× as long as broad; gaster with T1 about 3x as long as TII; head entirely blackish.....***zehntneri* Ferriere**

***Elasmus brevicornis* Gahan**

(Figs. 2, 5)

Elasmus brevicornis Gahan, 1922: 50, M, F. Type F: Indonesia: Java, Buitenzora (USNM).

Diagnosis: Body dark brown to black; head, pronotum and mesoscutum with bluish shine; tegula brownish, yellowish at base, gaster blackish with the venter except at apex, apices of TI and TII somewhat honey yellow; antennal radicle and scape pallid, flagellum yellowish brown; wings hyaline. Legs: coxae dark brown except yellowish at apex of fore coxa; fore femur with brownish infuscation at base; middle and hind femora dark brown, yellowish at base and tip; all trochanters, tibiae and tarsal segments yellowish.

Hosts: *Biloba subsecivela*; *Cnaphalocrocis medinalis*; *Diaphania indica*; *Hapalia machaeralis* on *Tectona grandis*; *Lamprosema indicata*; *Lygropia*

quarternalis defoliating *Helictares isora*; *Marasma suspicalis*; *Nausinoe geometralis*. Braconid, *Apanteles machaeralis*.

Distribution: India: Punjab, Andhra Pradesh, Kerala, Chhattisgarh, Uttar Pradesh, Delhi, Goa, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttarakhand, West Bengal.

Materials examined: INDIA: Punjab, Hoshiarpur, Mahengrowal, Takhni-Rehmapur WLS Riverside, 1 F, 10.xi.2013 (S. I. Kazmi), [N 31° 38.985'; E 075°55.494', Elevation 1200']; Dholbaha Dam, 1 F, 11.xi.2013 (S. I. Kazmi), [N 31° 44.120'; E 075°53.421' Elevation 1604']; Ludhiana, Doraha, 1 F, 15.xi.2013 (S. I. Kazmi), [N 30° 51.553'; E 076° 07.825', Elevation 820']

Elasmus johnstoni Ferriere

(Fig. 4)

Elasmus johnstoni Ferriere, 1929: 258, F, M. Type F: Sudan, Wad Medani (BMNH).

Elasmus valparaicus Mani & Saraswat, 1972: 481, F.: India (USNM). Synonymy by Narendran et al., 2008: 12.

Diagnosis: Body dark brownish with bluish green shine on propodeum and base of TI of gaster; tegulae brownish; antennal radicle and scape dusky; flagellum brownish; wings hyaline; legs concolourous with body, except sometimes trochanters, base and apex of all femora, base and extreme apex of hind tibia and tibial spurs yellowish.

Hosts: *Earias insulana*; *E. cupreoviridis*; *E. fabia*; *Hapalia machaeralis*; *Hyblaea puera*; *Nephanteryx rhodobasalis*; *Pectinophora gossypiella*; *Sylepta derogate*; *Braconidae*: *Apanteles impartunus*; *A. machaeralis*; *A. malevolus*.

Distribution: India: Punjab, Haryana, Jharkhand, Maharashtra, Rajasthan, Uttarakhand, Uttar Pradesh, Madhya Pradesh, Tamil Nadu, Chhattisgarh, West Bengal.

Specimen examined: INDIA: Punjab, Ludhiana, Jhar Sahib, 1 F, 15.xi.2013 (S. I. Kazmi), [N 30° 53.282'; E 076° 07.825', Elevation 820']

Elasmus viridiscutellatus Verma & Hayat*

(Figs. 1, 3)

Elasmus viridiscutellatus Verma & Hayat, 2002: 270-271, F. Type F: India: Maharashtra, Elephanta caves off Mumbai (BMNH).

Diagnosis: Body blackish with greenish blue shine on frontovertex, pronotum and mesoscutum, more intense on scutellum, propodeum less bluish; tegulae dark, appear metallic; posterior extension of metanotum hyaline except at base yellowish; gaster blackish dorsally with bluish green shine at base of TI; apex of TI-IV with transverse dusky yellow strips; antennal pedicel yellow, dorsal margin slightly brownish; flagellum dark brown covered with short black setae; wings hyaline; legs yellowish except extreme base of fore coxa, sides of middle coxa at base, dorsal and ventral margin in middle of middle femur, brownish; slightly less than basal half of hind coxa blackish with bluish shine, dorsal margin of hind femur and a spot on ventral margin, brownish.

Hosts: *Cnephalocrosis medinalis*, larvae.

Distribution: India: Punjab, Andhra Pradesh, Bihar, Maharashtra, Tamil Nadu, West Bengal.

Specimen examined: INDIA: Punjab, Roopnagar, Bhaku Majara, 1 F, 14.xi.2013 (S. I. Kazmi) [N 30° 54.416'; E 076° 22.905', Elevation 856']

***Elasmus zehntneri* Ferriere**

Elasmus sp. Zehntner, 1900: 1 (by Ferriere, 1929).

Elasmus zehntneri Ferriere, 1929: 417, F, M. Type F: Indonesia, West Java (BMNH).

Elasmus mahabaleswarensis Mani & Saraswat, 1972: 475-476, F: India (USNM). Synonymy by Narendran et al., 2008: 13.

Diagnosis: Head and thorax blackish with bluish green shine on frontovertex, pronotum and mesoscutum; less bluish on scutellum; gaster honey yellow with brownish spots as follows: faint brownish spots at base of TI; bases of TII-V slightly extending on lateral side with triangular brownish spots; TVI to apex completely dark brown to blackish; antennal radicle dusky; scape yellowish, dorsal margin slightly brownish; flagellum brownish; wings hyaline; legs yellowish; basal third of hind coxa metallic black, basal third or so of middle femur broadly brownish; tibia and tarsal segments of all legs yellowish.

Male: Not studied. (INDIA: Punjab, Patiala, Ranidhee, Bhadson WLS, 1 M, 07.iii.2013 (S. I. Kazmi) [N 30° 30.409'; E 076°13.972', Elevation 790']

Hosts: *Bissetia steniella*; *Chilo infuscatellus*; *Pectinophora gossypiella*; *Scirpophaga* sp., *S. auriflua*; *Tryporyza monostigma*; *T. novella*; *T. rhodoproctalis*.

Distribution: India: Punjab, Andhra Pradesh, Bihar, Delhi, Karnataka, Maharashtra, Tamil Nadu, Kerala, West Bengal.

Specimen examined: None. Above description is based on Verma et al., 2002.

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Fig. 1. *Elasmus viridiscutellatus* Verma & Hayat



Fig. 2. *Elasmus brevicornis* Gahan



Fig. 3. *E. viridiscutellatus* Verma & Hayat, Forwing



Fig. 4. *Elasmus johnstoni* Ferr.

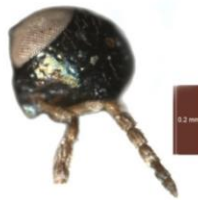


Fig. 5. *E. brevicornis* Gahan, Antennae