

## INTERESTING SPECIES OF NEUROPTERA FROM HIMACHAL PRADESH

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The present contribution is based on a fairly good collection of neuroptera belonging to the families Chrysopidae and Myrmeleontidae from Himachal Pradesh received by the author for identification from High Altitude Field Zoology Station, Solan. Amongst a total of ten species examined, four species and the female of a species are for the first time recorded from India. All the species, except two, constitute new locality records for Himachal Pradesh. Besides, the Keys to taxa of the examined material, geographical distribution, remarks, wherever necessary, and suitable references have been provided.

### Family CHRYSOPIDAE

#### Key to genera of the family Chrysopidae

1. Gradate veins distributed in two regular series in wing disc. 2
- Gradate veins distributed irregularly over wing disc. *Tumeochrysa* Needham
2. With tignum but without gonapsis in males. *Chrysperla* Steinmann
- Without tignum and gonapsis in males. *Chrysopa* Leach

#### ***Tumeochrysa indica* Needham**

1909. *Tumeochrysa indica* Needham, *Rec. Indian Mus.* 3 : 24.

*Material examined* : 1♂ : India, Himachal Pradesh, Kinnaur, 17. vii. 1988 (Coll. J. M. Julka).

*Distribution* : India (Manipur and Western Himalayas including Himachal Pradesh).

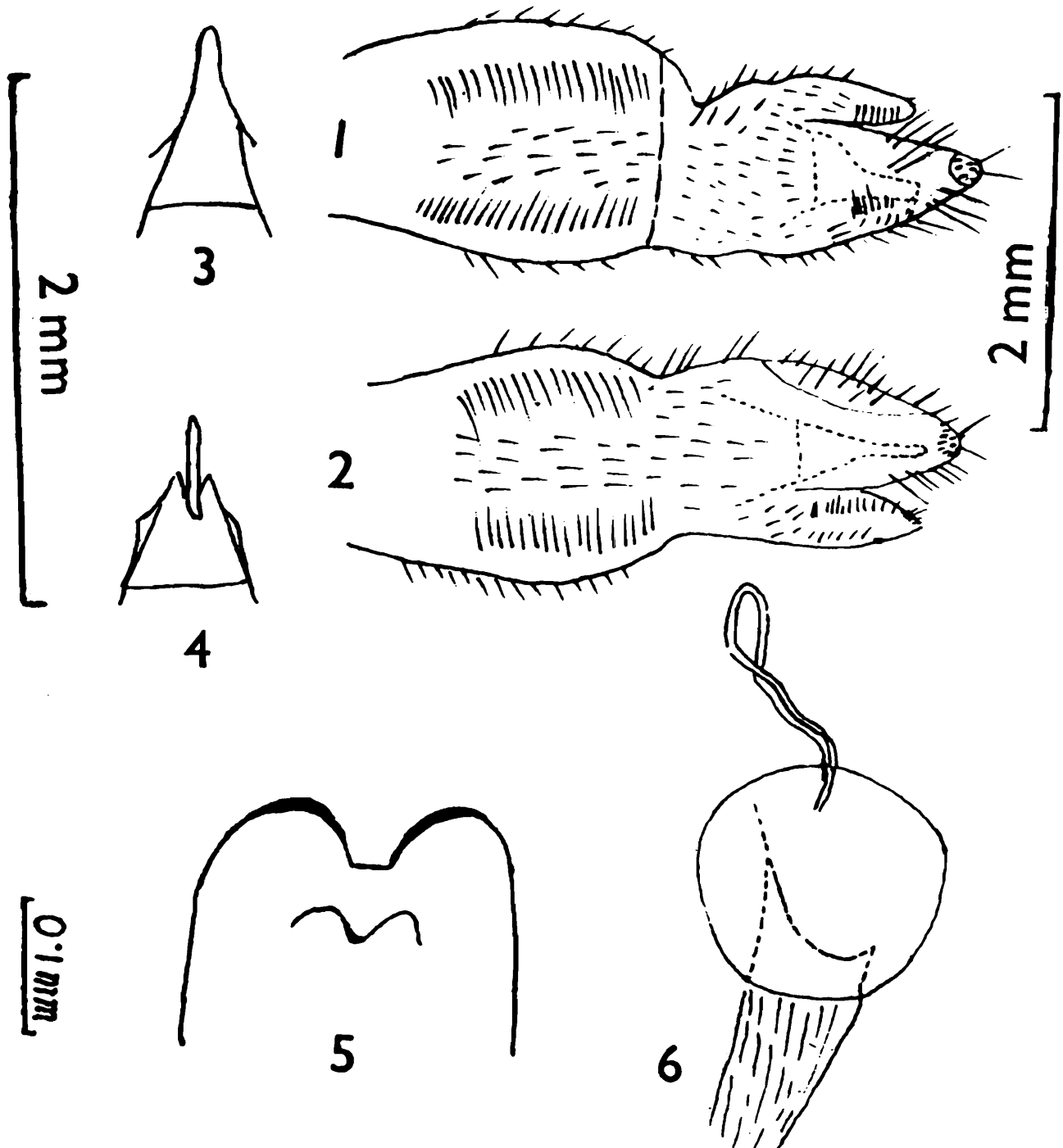
*Remarks* : Illustrations of the abdominal tips and genital armature (Figs. 1-4) in male are given.

#### ***Chrysoperla gujaratensis* Ghosh**

1976. *Chrysopa (Chrysoperla) gujaratensis* Ghosh, *Ent. scand.*, 7 : 74.

*Female* : Vertex, frons and clypeus : yellow ; palpi : pale brownish ; antenna : first two basal segments yellow but other flagellar segments pale brownish ; thorax : pronotum yellow at middle and brownish laterally ; sides parallel, anterior angles rounded ; a raised transverse ridge across middle ; meso— and metanotum : yellowish ; wings : transparent, veins pale yellowish ; fore wing ; elongate, oval, apex sub-

acute, pterostigma distinct ; first intra-median cell distinct, ovate and basal cross vein between  $R_s + M_2$  beyond apex of median loop ; hairs on margin not long ; 5-6 crossveins in outer gradates and 6-8 crossveins in the inner ; hindwings : similar to forewing, 4-5 crossveins in the inner and 6-7 in the outer gradates ; legs : pale yellowish with short black hairs, tarsi brown and claws dark brown ; abdomen : dorsally yellow ; tergite 9 + ectoproct oblique structures with subacute upper angle, gonapophysis lateralis not very broad, subgenital plate with apical lobes separated and rounded in ventral view (fig. 6) ; spermatheca not large (fig. 7).



Figs. 1-4. *Tumeochrysa indica* Needham, (1) Apex of male abdomen (dorsal), (2) Same (ventral) (3) Genitalia in male (dorsal), (4) Same (Ventral), Figs. 6-7. *Chrysoperla gujaratensis* Ghosh, (6) Subgenital plate (Ventral), (7) Spermatheca (dorsal).

**Measurement :** Length of forewing, 12-13 mm ; hindwing, 11-12 mm.

**Material examined :** 12 exs. ♂ ♀ : India, Himachal Pradesh, Kinnaur, Pooh, 11.vii.88, 6 exs ; Rogi, 8 kms. of Kalpa, 8.vii.88, 6 exs. (Coll. J.M. Julka & party).

*Distribution* : India (Himachal Pradesh and Gujarat).

*Remarks* : Ghosh (1976) described the species from Gujarat on the basis of males. The female, hitherto unreported, is described from Himachal Pradesh for the first time. It constitutes a new locality record for Himachal Pradesh.

### Key to species of the Genus **Chrysopa**

A black spot on head between antenna.....*septempunctata* Wesmael  
No black spot on head between antenna.....*albolineata* Killington

### **Chrysopa albolineata** Killington

1935. *Chrysopa albolineata* Killington, *Jour Soc. Brit. Ent.*, 1(3) : 87.

1967. *Chrysopa albolineata*, Holzel, *Beitr. naturk. Forsch. Sw-Deutschl.*, 26(1) : 43.

*Material examined* : 24 exs. ♂ ♀ : India, Himachal Pradesh, Kinnaur, Pooh, 11.vii, 13.vii.1988, 10 exs. ; Rogi, 8 kms. of Kalpa, 9.vii.1988, 14 exs. (Coll. J.M. Julka).

*Distribution* : India (Himachal Pradesh) ; Anatolia, Afghanistan, Europe, North Africa and Japan.

*Remarks* : Killington (1935) reported the species from Europe, Holzel (1967) recorded the species from Anatolia, Afghanistan and indicated the distribution of species in Japan. However, with the first record of species from India, it is now known to be distributed in both the Palaearctic and Oriental regions of the globe.

### **Chrysopa septempunctata** Wesmael

1841. *Chrysopa septempunctata* Wesmael, *Bull. I Acad. Brux.* 8 : 210.

1967. *Chrysopa septempunctata*, Holzel, *Beitr. naturk. Forsch. Sw-Deutschl.*, 26(1) : 43.

*Material examined* : 30 exs. ♂ ♀ : India, Himachal Pradesh, Kinnaur, Pooh, 10.vii.1988 & 13-15.vii.88 (Coll. J.M. Julka).

*Distribution* : India (Himachal Pradesh) ; Europe, North Africa, Afghanistan, Pakistan, Iran, Irak, Lebanon, Mauritius, Turkey, Eastern Siberia, China, Cambodia, and Japan.

*Remarks* : The species is for the first time recorded from Himachal Pradesh.

### Key to subfamilies of the family Myrmeleontidae

Cup in forewing long, free and terminating at posterior margin of wing  
*Palparinae* Banks  
Cup in forewing short or sometimes long and fused with 1A in its course  
*Myrmeleontinae* Banks

## Subfamily PALPARINAE

## Tribe Palparini

**Palpares pardus Rambur**

1842. *Myrmeleon pardus* Rambur, *Hist. nat. Ins. Néur*, p. 375.

1983. *Palpares pardus*, Ghosh, *Rec. Zool. Surv. India*, 81 : 79.

*Material examined* : 1 ♂ : India, Himachal Pradesh, Kinnaur, 11.vii.88 (Coll. J.M. Julka).

*Distribution* : India (Sikkim, "North India", West Bengal, Orissa, South India, Maharashtra, Goa, Rajasthan and Himachal Pradesh).

## Subfamily MYRMELEONTINAE

## Key to tribes of subfamily Myrmeleontinae

- |                                                                 |                             |
|-----------------------------------------------------------------|-----------------------------|
| 1. Inner radial field of hindwing with three or more crossveins | 2                           |
| Inner radial field of hindwing with only one crossvein          | <i>Distoleonini</i> Navas   |
| 2. 1A in hindwing fused with lower branch of Cu                 | <i>Acanthaclisini</i> Navas |
| 1A in hindwing not fused with Cu                                | <i>Myrmeleonini</i> Banks   |

## Key to genera of tribe Distoleonini

- |                                                   |                          |
|---------------------------------------------------|--------------------------|
| 1. Cup in forewing well developed                 | 2                        |
| Cup in forewing shorter than a crossvein          | <i>Pignatellus</i> Navas |
| 2. Wing heavily spotted and legs strongly hairy   | <i>Distoleon</i> Banks   |
| Wing less spotted and legs without special hairs. | <i>Neuroleon</i> Navas   |

## Tribe Distoleonini

**Pignatellus intricatus Holzel**

1972. *Pignatellus intricatus* Holzel, *Beitr. naturk. Forsch. Sw-Deutschl.*, 1 : 47.

*Material examined* : 13 exs. ♂ ♀ : India : Himachal Pradesh, Kinnaur, Pooh, 11.viii. 1988 and 13-14.vii.1988 ; Bhuiro, 4.ix.1988 (Coll. J.M. Julka).

*Distribution* : India (Himachal Pradesh) ; Afghanistan and Iran.

*Remarks* : The species is for the first time recorded from India including Himachal Pradesh after the discovery of species from Afghanistan and Iran by Holzel (1972). The species may be readily recognised by more or less strongly developed markings in forewing, abdomen in males shorter than wings and legs with short spurs.

**Distoleon verendus (Walker)**

1853. *Myrmeleon verendus* (Walker), *Cat. Brit. Mus. Néur.*, p 342.

1984. *Distoleon verendus*, Ghosh, *Rec. zool. India, Occ. paper*, no. 52 : 49.

*Material examined* : 3 exs. ♂ ♀ : India : Himachal Pradesh, Bhuiro, 4.ix.1988 (Coll. M. Singh).

*Distribution* : India (Himachal Pradesh, "North India ; Orissa and Maharashtra).

### **Neuroleon diana** Holzel

1972. *Neuroleon diana* Holzel, *Beitr. naturk. Forsch. Sw-Deutschl.*, 1 : 51.

*Material examined* : 4 exs. ♂ ♀ ; India : Himachal Pradesh, Kinnaur, Pooh, 10-11.vii.1988 (Coll. J.M. Julka).

*Distribution* : India (Himachal Pradesh) ; Iran and Afghanistan.

*Remarks* : Holzel (1972) described the species from Iran and Afghanistan. It is for the first time recorded from India including Himachal Pradesh. The species may be recognised by the two longitudinal middle stripes in the pronotum, shadings in forewing, abdomen with well developed dorso-lateral yellow spots and also by genitalia in males.

### Tribe Acanthaclisini

#### **Acanthaclisis occitanica** (Villers)

1789. *Myrmeleon occitanicum* Villers, *Linn. Ent.*, p. 63.

1972. *Acanthaclisis occitanica*, Holzel, *Beitr. naturk. Forsch. Sw-Deutschl.*, 1 : 12.

*Material examined* : 2 exs., ♂ ♀ : India, Himachal Pradesh, Kinnaur, Rogi, 8 kms. of Kalpa, 8. vii.1988 (Coll. J.M. Julka).

*Distribution* : India (Himachal Pradesh) ; Afghanistan, Iran, Pakistan, and Israel.

*Remarks* : The species is for the first time recorded from India including Himachal Pradesh. The species may be easily recognised by the division of the costal field by divisory veinlets near costa resulting the smaller cells in upper row. Besides, segment six of abdomen is hairy and the ectoproct long and dilated laterally in males.

### Tribe Myrmeleonini

#### **Myrmeleon montanus** Navas

1914. *Myrmeleon montanus* Navas, *Ann. Soc. Sci.*, 38 : 234.

1980. *Myrmeleon montanus*, Ghosh, *Rec. Zool. Surv. India, Occ. paper*, no. 52 : 24.

*Material examined* : 10 exs. ♂ ♀ : India, Himachal Pradesh, Kinnaur, Rogi, 8 kms. of Kalpa, 9. vii. 1988, 8 exs. ; Sanala, 17. vii. 1988, 1 ex. ; Rukti, near Sangta, 18.vii.1988, 1 ex. (Coll. J.M. Julka).

*Distribution* : India (Darjeeling and Himachal Pradesh).

*Remarks* : The species constitutes a new locality record for Himachal Pradesh.

### SUMMARY

The paper deals with altogether ten species from Himachal Pradesh out of which four species and the female of a species are for the first time reported from

India. All the species, except two, constitute new locality records for Himachal Pradesh.

#### ACKNOWLEDGEMENT

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#### REFERENCES

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