

NEW RECORD OF SEVEN SPECIES OF SHORT-HORNED GRASSHOPPERS AND GROUND HOPPERS (ORTHOPTERA: INSECTA) FROM CHHATTISGARH, INDIA

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ABSTRACT

The present paper reports new record of seven species of Orthoptera viz. *Gerania selangorensis* Miller, *Coptacra tuberculata* Ramme, *Pternoscirta pulchripes* Uvarov, *Pyrgomorpha* (*Pyrgomorpha*) *conica tereticornis* (Brulle), *Pyrgomorpha* (*Pyrgomorpha*) *conica fusca* (Beauvois), *Hedotettix rusticus* Bolivar and *Hedotettix angustatus* Hancock from India. The systematic account, details of material collected, co-ordinates and geographic distribution and map of all these species in Chhattisgarh are incorporated. A brief note on zoogeography is given.

Key word: Acrididae, Pyrgomorphidae, Tetrigidae, Raipur, Raigarh, Kabirdham, New record.

INTRODUCTION

The representatives of suborder Caelifera of the order Orthoptera are commonly known as short-horned grasshoppers, pigmy grasshoppers, ground hoppers and grouse-locusts. The mouth parts biting and chewing type, the compound eyes well developed and the ocelli mostly 1 to 3. Antennae may be filiform or sometimes ensiform. Prothorax large. The hind legs usually enlarged and modified for leaping or jumping. Fore-wings, if developed well, elongate and more or less thickened with a submarginal costal vein and most often modified as stridulatory organs, while the hind-wings membranous with an extensive anal area. Females generally possess a well-developed ovipositor.

The study of Indian Caeliferan was first initiated by Stål (1861,1873). There after notable contributions were made by the authors like

Walker (1870), Saussure (1884,1888), Bolivar (1902,1909,1918), Hancock (1906,1912,1915), Kirby (1914), Uvarov (1921,1942a,b) and Hebard (1929).

Tandon (1975), Tandon and Shishodia (1977, 1989), Shishodia (1984,1987a,b,1991a,b,c,1993, 1995), and Usmani and Shaffi (1983,1985a,b,1990) made a series of publication on Indian grasshoppers, from different states. Shishodia *et al.* (2010) has made a checklist of Orthoptera, included 518 species of caeliferan insects belonging 214 genera under 9 families from India.

There is a distinct correlation of distribution of these newly recorded species with the adjacent countries. The species show Indo-Chinese relation, Afro-tropical as well as Indo-Malayan relation in their distribution.

MATERIALS AND METHODS

Study area: The survey were carried out in

Chhattisgarh state, covering four protected areas and two districts. Barnawapara wildlife sanctuary is situated in Raipur district, covering an area of about 244.66 sq. km., lies between 21°18'45" to 21°30' N and 88°22'30" to 82°37'30" E. Bhoramdev wildlife sanctuary is situated in the western part of Kabirdham and lies between 21.32° and 22.28° N and 80.48° and 81.48° E covering an area 163.59 sq. km. Gomerda Wildlife Sanctuary is spread over about 277.82 sq. km., located in the Raigarh district and lies between 21°30'24" to 21°49'76" N and 83°06'47" to 83°09'66" E. Udanti Wildlife Sanctuary is located in the south-western part of earlier Raipur district, now in Gariyaband district. The area of the Udanti Wildlife Sanctuary is about 247.80 sq. km., lies between 20°0' N to 20°15' and 82°30' E to 82°0' E. Surguja district is located in the extreme northern part of state, lies between 23°37'25" to 24°6'17" N and 81°34'40" to 84°4'40" E covering an area 8654.96 sq. km. Bastar district is situated in the southern part of Chhattisgarh state and lies between latitudes 18.4° to 19.9° N and 80.5° to 82.1° E, with an area of about 4029.98 sq.km.

The vegetation of the areas of comprises of tropical dry deciduous forest with Tendu (*Diospyros melanoxylon*), Teak (*Tectona grandis*), Saja (*Terminalia tomentosa*), Sal (*Shorea robusta*), Bamboo (*Dendrocalamus strictus*) Semal (*Bombax ceiba*), Dhaora (*Anogeissus latifolia*), Salai (*Boswellia serrata*), Aonla (*Embllica ofcinalis*), Haldu (*Adina cordifolia*), Mahua (*Madhuca longifolia*), Kulu (*Sterculia urens*), Amaltas (*Cassia fistula*) and Ber (*Ziziphus* as prominent species).

The specimens were collected by sweeping over vegetation by insect net, and the larger specimens were picked up directly by hand or with the help of fine forceps. The specimens were killed containing benzene or ethyl acetate in a killing bottle. For temporary storage in the field they were kept in insect envelopes. The specimens were brought to laboratory and pinned, labeled and preserved for the identification. Survey site co-ordinates were recorded using GPS (Garmin Oregon 550). The identified specimens were deposited in National Zoological Collection, Zoological Survey of India, Kolkata.

Collection localities: The list of collection localities along with latitude, longitude and altitude from four protected areas and two districts:

| Name of Locality | Latitude | | | Longitude | | | Altitude Metre |
|---------------------------|----------|--------|--------|-----------|--------|--------|-------------------|
| | Degree | Minute | Second | Degree | Minute | Second | |
| Adharpani Bhaithak | 21 | 27 | 15.4 | 83 | 03 | 28.1 | 432 |
| Barnawapara | 21 | 24 | 002 | 82 | 25 | 313 | 301 |
| Dharamshala | 22 | 06 | 46.8 | 81 | 09 | 15.3 | 491 |
| Durghutta beat | 23 | 39 | 32.7 | 83 | 38 | 4.7 | 534 |
| Ganga Jamuna village | 20 | 07 | 24.5 | 82 | 15 | 12.2 | 495 |
| Jhariya bahara Forest | 20 | 13 | 56.6 | 82 | 11 | 48.6 | 580 |
| Jugad | 20 | 08 | 42.9 | 82 | 16 | 34.3 | 438 |
| Latadadar | 22 | 25 | 28.9 | 82 | 25 | 40.1 | 306 |
| Madosilly Water Fall | 21 | 27 | 28.4 | 83 | 10 | 39.5 | 278 |
| Metawada | 19 | 07 | 13.8 | 82 | 01 | 36.4 | 551 |
| Sonarpal village | 19 | 18 | 37.5 | 81 | 51 | 51.5 | 486 |
| Tamtora Forest Rest House | 21 | 26 | 39.6 | 83 | 04 | 58.6 | 372 |
| Torenga Forest Rest House | 20 | 11 | 07 | 82 | 15 | 31.5 | 443 |

SYSTEMATIC ACCOUNTS

Order ORTHOPTERA

Suborder CAELIFERA

Superfamily ACRIDOIDEA

Family ACRIDIDAE

Subfamily CATANTOPINAE

Genus *Gerenia* Stål, 18781. *Gerenia selangorensis* Miller, 1935

(Plate 1, Fig. 1)

1935. *Gerenia selangorensis* Miller, *Jour. Fed. Malay States Mus.*, **17**(4): 706.1957. *Gerenia selangorensis*, Willemse, *Publ. natuurhist. Genootsch. Limburg*, **10**: 437.*Material examined*: Chhattisgarh; Gariyaband, Udanti WLS, Jhariya bahara, 24.vi.2014, 1(♀,DC), coll. S. K. Gupta & party.*Diagnosis characters*: Antenna filiform, longer than head and pronotum. Head short. fastigium slightly concave, frontal ridge widened between antennae. Pronotum longer than with, punctured all over, moderately tectiform; median carina distinct, linear and crossed by three transverse sulci, Prozona longer than metazona; prosternal tubercle conical. Tegmen longer than abdomen, median area with longitudinal black band. Wings shorter than tegmen.*Distribution*: India : Chhattisgarh: Gariyaband. *Elsewhere*: Malaysia.

Subfamily COPTACRIDINAE

Genus *Coptacra* Stål, 18732. *Coptacra tuberculata* Ramme, 1941

(Plate 1, Fig. 2)

1941. *Coptacra tuberculata* Ramme, *Mitt. Zool. Mus. Berlin*, **25**: 176.1957. *Coptacra tuberculata* Willemse, *Publ. natuurhist. Genootsch. Limburg*, **10**: 447.*Material examined*: Chhattisgarh; Raigarh, Gomerda WLS, Tamtora Rest house, 28.v.2014, 2(1♂, 1♀, NC), coll. S. K. Gupta & party.*Diagnosis characters*: Size small to medium. Antenna filiform 22 segments, longer than head and pronotum. Pronotum median and lateral carinae indistinct, three transverse sulci. Prozona and metazona sub-equal. Frontal ridge

punctured, sulcated, wider between the antennae. Prosternal tubercle conical. Tegmina and wings fully developed. Posterior femur slightly robust. Posterior tibia with 8 external and 9 internal spines.

Distribution: India: Chhattisgarh: Raigarh. *Elsewhere*: China.

Subfamily OEDIPODINAE

Genus *Pternoscirta* Saussure, 18843. *Pternoscirta pulchripes* Uvarov, 1925

(Plate 1, Fig. 3)

1925. *Pternoscirta pulchripes* Uvarov, *Jour. Asiat. Soc. Bengal*, **20**: 326.2013. *Pternoscirta pulchripes* Huang *et al.*, *Zootaxa*, **3718** (6): 550.*Material examined*: Chhattisgarh; Gariyaband, Udanti WLS, Jhariyabahara, 25.vi.2014, 1(♂,DC), coll. S.K. Gupta & party.*Diagnosis characters*: Body large, head large shorter than pronotum. Frontal ridge broad and flattened. Vertex short, broad, sloping forwards, broadly flattened dorsally with truncate anterior margin. Eyes oval. Antennae filiform, exceeding the posterior margin of pronotum. Pronotum trapezoid in dorsal view, anterior margin slightly broadly bisinuate; posterior margin angularly protruding with apex bluntly rounded; median carina complete, straight in profile view, distinctly raised into low lamelliform and crossed by posterior transverse sulcus forming a distinct incision in profile view, lateral carinae absent or weakly visible in metazona, prozona shorter than metazona. Tegmina and hind wings developed. Hind femora stout, upper median carinae with extremely fine denticles.*Distribution*: India: Chhattisgarh: Gariyaband. *Elsewhere*: China.

Superfamily PYRGOMORPHOIDEA

Family PYRGOMORPHIDAE

Genus *Pyrgomorpha* Serville, 18384. *Pyrgomorpha (Pyrgomorpha) conica tereticornis* (Brulle, 1840) (Plate 1, Fig. 4)1840. *Tryxalis tereticornis* Brulle, In: Web, P.B. & Berthelot. *Histoire naturelle des Iles Canaries*, **2**(2): 76.

1999. *Pyrgomorpha conica tereticornis*, Ingrisch, *Esperiana*, 7: 352.

Material examined: Chhattisgarh; Raipur, Barnawapara WLS, Barnawapara, 08.viii.2011, 1(♂, DC); Latadadar, 23.ix.2011, 2(♂, DC), coll. S.K. Gupta & party.

Diagnosis characters: Body generally more slender and usually a little smaller, typically with a distinct posteroventral point on the lateral pronotal lobe. Eye somewhat larger; frontal profile more weakly concave; cheek tubercles fewer and smaller; pronotal disc weakly rugose; lateral pronotal lobe with fewer, weaker granular tubercles, posteroventral angle more obliquely truncate and the point usually sharper; mesosternal lobes at least 1.5 times as long as wide; interval between metasternal pits about equal to (not less than) the basal width of a mesosternal lobe; hind femora more than 5 times as long as its greatest width.

Distribution: India: Chhattisgarh: Raipur. *Elsewhere*: Africa.

5. *Pyrgomorpha (Pyrgomorpha) conica fusca* (Beauvois, 1807) (Plate 1, Fig. 5)

1807. *Truxalis fuscus* Beauvois, *Insectes recueillis en Afrique et en Amerique*, *Orthopt.*, 5: 80.

2004. *Pyrgomorpha conica fusca*, Baccetti, *Redia*, 86: 27.

Material examined: Chhattisgarh; Gariyaband, Udanti WLS, Torenga forest rest house, 01.vii.2014, 2(1♂, 1♀, DC), coll. S.K. Gupta & party.

Diagnosis characters: Body generally robust, posterior parts of the inferior margins of the lateral pronotal lobes are rather irregular. In male cheek tubercles less developed or virtually absent; pronotal disc more weakly rugose; mesosternal lobes more than 1.5 times as long as wide; distance between metasternal pits equal width of a mesosternal lobe; hind femur not nearly reaching the end of the abdomen. Female fastigium of vertex almost as long as its width; median carinula of occiput distinct, not obsolescent; posteroventral

point of lateral pronotal lobe larger; mesosternal lobes more than 1.5 times as long as wide, their interspace almost twice basal width of a lobe; interspace between metasternal lobes in form of an inverted triangle; tenth abdominal tergum medially notched.

Distribution: India: Chhattisgarh: Gariyaband. *Elsewhere*: Africa.

Superfamily TETRIGOIDEA

Family TETRIGIDAE

Subfamily TETRIGINAE

Genus *Hedotettix* Bolivar, 1887

6. *Hedotettix rusticus* Bolivar, 1887

(Plate 1, Fig. 6)

1887. *Hedotettix rusticus* Bolivar, *Ann. Soc. Entom. Belgique*, 31: 286.

1994. *Hedotettix rusticus*, Paris, *Eos*, 69: 230.

Material examined: Chhattisgarh; Raigarh, Gomerda WLS, Tamtora forest rest house, 28.v.2014, 1(♀,NC); Gariyaband, Udanti WLS, Jhariyabahara forest, 23.vi.2014, 1(1♀,DC); Surguja, Durgahutta Beat, 17.xi.2011, 1(♀,DC), coll. S. K. Gupta & party.

Diagnosis characters: Pronotum truncate anteriorly, extend beyond the hind femoral apices, apex rounded, dorsum concave, prozonal carinae distinct, antennal grooves are situated at the level of the lower margin of the compound eyes. Frontal costa bifurcation starts at the level of upper margin of compound eyes, and elevated in between antennal grooves, sinuate. Scutellum wider. Lateral ocelli inserted between the middle of the compound eyes height. Frontal costa bifurcates into facial carinae above the paired ocelli and facial carinae run parallel to the median ocellus forming wider scutellum. Pronotum bears medium size granules. Tegmina oblong, apex rounded. Wings surpassing beyond the hind process of pronotum. Posterior femora elongate, margins slightly serrulate.

Distribution: India: Chhattisgarh: Gariyaband, Raigarh and Surguja. *Elsewhere*: Malaysia.

PLATE 1



Fig. 1. *Gerenia selangorensis* Miller, 1935



Fig. 2. *Coptacra tuberculata* Ramme, 1941



Fig. 3. *Pternoscirta pulchripes* Uvarov, 1925

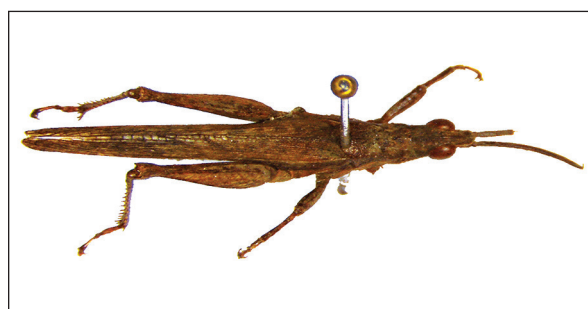


Fig. 4. *Pyrgomorpha (Pyrgomorpha) conica tereticornis* (Brulle, 1840)



Fig. 5. *Pyrgomorpha (Pyrgomorpha) conica fusca* (Beauvois, 1807)



Fig. 6. *Hedotettix rusticus* Bolivar, 1887



Fig. 7. *Hedotettix angustatus* Hancock, 1909

PLATE 2

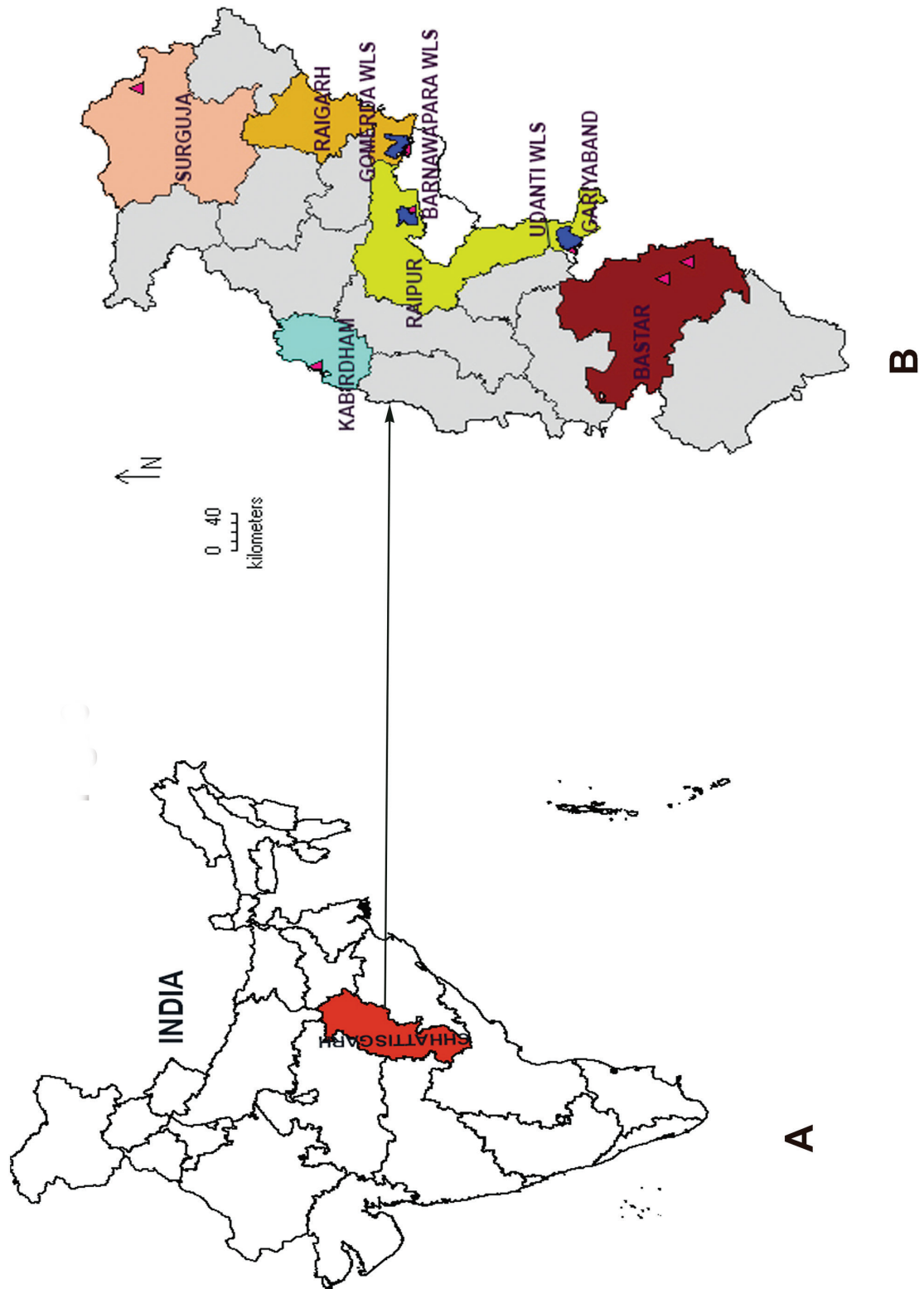


Fig. 8A-B. Distribution map of newly recorded Orthoptera species. A. India; coloured area denotes Chhattisgarh state, B. Districts and Sanctuaries; the tringle mark denotes the distribution of Orthoptera species.

7. *Hedotettix angustatus* Hancock, 1909

(Plate 1, Fig. 7)

1909. *Hedotettix angustatus* Hancock, *Trans. Entomol. Soc. London.*: 422.1992. *Hedotettix angustatus*, Blackith, Tetrigidae (Insecta: Orthoptera) of Southeast Asia: Annotated catalogue with partial translated keys and bibliography: 83.

Material examined: Chhattisgarh; Kabirdham, Boramdev WLS, Dhamsala, 28.ix.2013, 2(♀, DC); Bastar, Jagdalpur, Metawada, 03.ii.2012, 1(♀, DC); Sonarpal Beat, 17.x.2011, 1(♀, DC), coll. R. P. Gupta & party; Gariyaband, Udanti WLS, Jugad, 29.vi. 2014, 1(♀, DC); Ganga Jamuna, 28.vi.2014, 1(♀, DC); Raigarh, Gomerda WLS, Tamtora Forest Rest House, 28.v.2014, 2(1♂, 1♀, NC); Adharpani Bhaithak, 28.v.2014, 1(♀, DC); Madosilly water fall, 22.ii.2014, 1(♀, DC), coll. S. K. Gupta & party.

Diagnosis characters: Body granulate, head very little exserted; antennae inserted between the lower part of the eyes, article elongate, eyes little elevated, vertex narrower than one of the eyes. Vertex narrower than one of the eyes, frontal costa narrowly sulcate. Pronotum anteriorly truncate, very narrow between the

shoulders; median carina percurrent, but little elevated; lateral carinae distinct. Tegmina oval; apex rounded. Wings surpassing beyond the hind process of pronotum.

Distribution: India: Chhattisgarh, Bastar, Gariyaband: Raigarh. **Elsewhere:** Borneo, Malaysia.

Comments on distribution: From the table 1, it is very clear the species are widely distributed. Species number 2 & 3 belong to separate genera but same family and are Palearctic in nature. Species number 4th & 5th belong to same genera and same species but different subspecies and thus Afro-tropical in nature. The 1st, 6th & 7th similarly belonged to Indo-Malayan subregion.

Thus the present study yielded a good result on the additional Zoogeographical notes of the aforementioned species.

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Table 1. Zoogeographical distributional pattern of the new record

| Sl. No. | Name of species | Indian distributionn | Elsewhere |
|---------|---|----------------------|------------------|
| 1 | <i>Gerania selangorensis</i> Miller, 1935 | Chhattisgarh | Malaysia |
| 2 | <i>Coptacra tuberculata</i> Ramme, 1941 | Chhattisgarh | China |
| 3 | <i>Pternoscirta pulchripes</i> Uvarov, 1925 | Chhattisgarh | China |
| 4 | <i>Pyrgomorpha (Pyrgomorpha) conica tereticornis</i> (Brulle, 1840) | Chhattisgarh | Africa |
| 5 | <i>Pyrgomorpha (Pyrgomorpha) conica fusca</i> (Beauvois, 1807) | Chhattisgarh | Africa |
| 6 | <i>Hedotettix rusticus</i> Bolivar, 1887 | Chhattisgarh | Malaysia |
| 7 | <i>Hedotettix angustatus</i> Hancock, 1909 | Chhattisgarh | Borneo, Malaysia |

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