



Systematic study of Tettigoniidae (Orthoptera: Insecta) fauna from Chhattisgarh, India

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Abstract

A total of 23 species belonging 15 genera under 5 subfamilies i.e., Conocephalinae, Hexacentrinae, Mecopodinae, Phaneropterinae, and Pseudophyllinae of Tettigoniids are reported from Chhattisgarh state.

Keywords: Bilaspur, Distribution, Korba, Raipur, Taxonomy, Tettigoniodea

Introduction

The Cosmopolitan Orthoptera is a moderately diverse order of exopterygote insects; about 23,000 species and 4,200 genera have been described (Storozhenko *et al.*, 2015). This order is subdivided into two suborder: Ensifera, or long-horned orthopterans (Katydids, cave-cricket, crickets and mole crickets), and Caelifera, or short-horned orthopterans (grasshoppers, locusts, pygmy grasshoppers, and pygmy mole-cricket). The oldest Orthoptera (suborder Ensifera, family Oedischiidae) hail from the Late Carboniferous period in France and China. The oldest Caelifera (family Locustopseidae) known is from the Triassic period (Gorochov, 1995; Gorochov and Rasnitsyn, 2002; Grimaldi and Engel, 2005).

The present work is an attempt to provide a comprehensive account of Orthopteran fauna of Chhattisgarh. Chhattisgarh is a newly formed state of India which was established by the bifurcation of seven districts of Madhya Pradesh on 1st November, 2000. At present, it includes twenty seven districts.

The contributions on Indian Tettigoniid fauna were done by Linnaeus (1831), Serville Audient (1839), Walker (1869a, b), Brunner von Wattenwyl (1895), Kirby (1904-1910), Caudell (1908-1916), Karny, (1912a,b,c,d), Zeuner

(1936), Bei-Bienko, G. Y (1971), Beier, (1954), Ragge (1960), Barman and Srivastava (1976), Narang and Chahal (1985), Barman (1991, 1993, 1995, 2000, 2003), Ingrisch (1990b, 1998a, b, c), Gorochov (1993, 2005), Ingrisch and Shishodia (1997, 1998, 2000), Sharma *et al.*, (1999) Ingrisch and Muralirangan (2003), Shishodia and Barman (2004), Ingrisch *et al.*, (2004) and Shishodia (2006b).

Recently Srinivasan and Prabakar (2012) worked on Orthoptera fauna of Arunachal Pradesh and reported 10 species of Tettigoniids under 10 genera belonging to five families of the family Tettigoniidae, of which five species are new records from India. Hajong (2014) described a new species *Lichnofugia umshingensis* from Shillong, Meghalaya. Nagar and Swaminathan (2015) described a new species of *Letana dentata* from Meghalaya and recorded *Letana rubescens* (Stal, 1861) from Srinagar, Jammu and Kashmir. Nagar *et al.*, (2015a) recorded *Anelytra (Anelytra) eunigrifrons* Ingrisch, 1998 from Meghalaya. Nagar *et al.*, (2015b) described a new species of *Isopsera arcuata* from Coimbatore, Tamil Nadu. Nagar *et al.*, (2015c) described a new species of *Ducetia serratus* from Meghalaya.

A total of 23 species belonging 15 genera under 5 subfamilies of Tettigoniids fauna of which, Conocephalinae

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4 species, 2 genera; Hexacentrinae 1 species, 1 genus; Mecopodinae 1 species, 1 genus; Phaneropterinae 12 species, 7 genera and Pseudophyllinae 5 species, 5 genera are known from Chhattisgarh state.

Material and Methods

Study Area

The survey was undertaken in Chhattisgarh state covering seven protected areas and six districts i.e., Achanakmar Wildlife Sanctuary, Badalkhol Wildlife Sanctuary, Barnawapara Wildlife Sanctuary, Boramdev Wildlife Sanctuary, Gomerda Wildlife Sanctuary, Sitanadi Udanti Wildlife Sanctuary and Gurughasidas National Park and Bilaspur, Bastar, Durg, Kabirdham, Korba and Surguja district.

The specimens were collected by sweeping over grassland and other vegetation by using insect net and the larger specimens were picked up directly by hand or with the help of fine forceps. Some species of Orthoptera were collected by light trap. The specimens were brought to laboratory and pinned, labeled and preserved for the identification. Live images of specimens were captured by using Nikon D 300S with 105 macro lens and Sony Digital Camera DSC-HX9V. The identified specimens were deposited in the National Zoological Collection, Zoological Survey of India, Kolkata.

Results

List of species

Order ORTHOPTERA
Suborder ENSIFERA
Superfamily TETTIGONIOIDEA
Family TETTIGONIIDAE
Subfamily CONOCEPHALINAE
Genus *Conocephalus* Thunberg, 1815
Subgenus *Anisoptera* Latreille, 1829

1. *Conocephalus (Anisoptera) maculatus* (Le Guillou, 1841)
Subgenus *Chloroxiphidion* Hebard, 1922

2. *Conocephalus (Chloroxiphidion) laetus* (Redtenbacher, 1891)

Genus *Euconocephalus* Karny, 1907

3. *Euconocephalus incertus* (Walker, 1869)

4. *Euconocephalus pallidus* (Redtenbacher, 1891)

Subfamily HEXACENTRINAE

Genus *Hexacentrus* Serville, 1831

5. *Hexacentrus unicolor* Serville, 1831

Subfamily MECOPODINAE

Genus *Mecopoda* Serville, 1831

6. *Mecopoda elongata elongata* (Linnaeus, 1758)

Subfamily PHANEROPTERINAE

Genus *Elimaea* Stål, 1874

Subgenus *Orthelimaea* Karny, 1926

7. *Elimaea (Orthelimaea) securigera* Brunner von wattenwyl, 1878

Genus *Ducetia* Stål, 1874

8. *Ducetia japonica* (Thunberg)

Genus *Himertula* Uvarov, 1940

9. *Himertula kinneari* (Uvarov, 1923)

Genus *Holochlora* Stål, 1873

10. *Holochlora indica* Kirby, 1906

Genus *Khaoyaiana* Ingrisch, 1990

11. *Khaoyaiana nitens* Ingrisch, 1990

Genus *Letana* Walker, 1869

12. *Letana bulbosa* Ingrisch, 1990

13. *Letana intermedia* Ingrisch, 1990

14. *Letana inflata* (Brunner von Wattenwyl, 1878)

15. *Letana infurcata* Ingrisch, 1990

16. *Letana megastridula* Ingrisch, 1990

Genus *Phaneroptera* Serville, 1831

Subgenus *Phaneroptera* Serville, 1831

17. *Phaneroptera (Phaneroptera) gracilis* Burmeister, 1838

18. *Phaneroptera (Phaneroptera) myllocerca* Ragge, 1956

Subfamily PSEUDOPHYLLINAE

Genus *Parasanaa* Beier, 1944

19. *Parasanaa donovani* (Donovon, 1834)

Genus *Phyllozelus* Redtenbacher, 1892

Subgenus *Phyllozelus* (Redtenbacher, 1892)

20. *Phyllozelus (Phyllozelus) siccus siccus* (Walker, 1869)Genus *Sanaa* Walker, 1870**21. *Sanaa regalis*** (Brunner, 1895)Genus *Sathrophyllia* Stål, 1874**22. *Sathrophyllia femorata*** (Fabricius, 1787)**23. *Sathrophyllia rugosa*** (Linnaeus, 1758)

Order ORTHOPTERA

Suborder ENSIFERA

Superfamily TETTIGONIOIDEA

Family TETTIGONIIDAE

Subfamily CONOCEPHALINAE

Genus *Conocephalus* Thunberg, 1815Subgenus *Anisoptera* Latreille, 1829**1. *Conocephalus (Anisoptera) maculatus*** (Le Guillou, 1841)1841. *Xiphidion maculatum* Le Guillou, *Revue Zool.*, 4: 294.2007. *Conocephalus maculatus* Chandra, K., Gupta, S. K. and Shishodia, M. S., *Zoos'Print Journal*, 22 (5): 2684.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Nakti Pond, 13.vii.2011, 1(♂,DC); Latadadar, 22.x.2011, 1(♀,DC); Barnawapara camp, 02.vii.2011, 3(♂,NC); 13.vii.2011, 1(♀,NC). Kabirdham, Bhoramdev WLS; Sarondhadadar, 27.viii.2011, 2(♂,DC); Jeevmar nala, 29.viii.2011, 1(♀,DC); Rajadhar Forest, 01.xii.2011, 2(♂,♀,DC); 27.viii.2011, 1(♀,NC). Bastar, Jagdalpur range, 15.vii.2011, 1(♀,DC); Bhanpuri Forest, 20.x.2011, 1(♀,DC). Koriya, Gurughasidas NP; Pipertala Forest, 17.xi.2011, 1(♂,DC); Sonhut FRH, 14.v.2012, 1(♀,NC); 22.v.2012, 1(♂,NC); Berdev Nala, 17.xi.2013, 2(♂,♀,NC); Rewala, 09.xii.2013, 2(♀,NC). Gariyaband, Udanti WLS; Jugad, 17.x.2011, 1(♂,DC); Mainpur, 25.vi.2014, 4(2♂,2♀,DC). Raigarh, Gomerda WLS; Kankabira, 19.ii.2012, 6(♂,DC); Tamtora Rest House, 19.ii.2012, 1(♂,♀, NC); Naresh nagar, 20.ii.2012, 2(♀,DC). Jashpur, Badalkhol WLS; Sahidand, 28.v.2012 4(2♂,2♀,DC); Lujari ghat, 24.ix.2013, 2(♂,♀,DC); Kuhapani Watch Tower, 22.iii.2014, 1(♂,DC). Durg, Gondli dam west, 28.i.2014, 1(♂,DC). Korba, Hukradugru, 30.v.2012, 20(13♂,7♀,DC); Telimnala, 03.vi.2012, 6(1♂,5♀,DC). Surguja, Tamor Pingla WLS; Ramkola, 15.v.2013, 4(1♂,3♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body size small, colour light brown to light green. Prosternum bispinose; presence of suffused

and interrupted brown band between median and ulnar veins of the tegmina; hind femora unarmed ventrally; male cerci with one internal spine; ovipositor short and straight.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Chhattisgarh (Bastar, Bilaspur, Durg, Gariyaband, Jashpur, Koriya, Raigarh, Raipur and Surguja), Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttarakhand and West Bengal. *Elsewhere:* Africa; Australia; Hong Kong; Indonesia; Java; Malaysia; Nepal; New Guinea; Philippines and Sierra Leone.

Subgenus *Chloroxiphidion* Hebard, 1922**2. *Conocephalus (Chloroxiphidion) laetus*** (Redtenbacher, 1891)1891. *Conocephalus laetus* Redtenbacher, *Verhandl. zool. bot. Ges.*, 41: 514.2010. *Conocephalus (Chloroxiphidion) laetus*, Shishodia *et al. Rec. zool. Surv. India*, Occ. Paper No. 314: 285.

Material examined: Chhattisgarh, Koriya, Gurughasidas NP; Sonhut FRH, 23.viii.2011, 1(♀,NC) coll. S. K. Gupta & party.

Diagnostic characters: Fastigium of vertex moderately narrow; prosternum bispinose; tegmina unicolorous; hind femora unarmed ventrally; stridulatory area of left male tegmen large and male cerci with internal spine.

Distribution: India: Chhattisgarh (Koriya) and Nagaland.Genus *Euconocephalus* Karny, 1907**3. *Euconocephalus incertus*** (Walker, 1869)1869. *Conocephalus incertus* Walker, *Cat. Derm. Salt. Brit. Mus.*, 2: 320.2000. *Euconocephalus incertus*, Shishodia, *Rec. zool. Surv. India*, 98(1): 76.

Material examined: Chhattisgarh, Bilaspur, Achanakmar WLS; Chhapparwa, 07.vi.04, 1(♀,NC), 24.vii.05, 1(♂,NC), 29.vi.04, 2(♂,NC). Raipur, Barnawapara WLS; Barnawapara camp, 03.vii.2011, 1(♀,NC); 04.ix.2011, 1(♀,NC); Furfundi village, 02.v.2012, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body size medium to large, colour light green. Fastigium of vertex produced conically in front; posterior margin of pronotum broadly rounded. Tegmina and wings well developed, wings with radius sector 2 arise much before the middle; male subgenital plate with two styles at apex, style bifurcated apically; ovipositor well developed and subequal to the length of body.

Distribution: India: Andaman & Nicobar Islands, Chhattisgarh (Bastar, Bilaspur and Raipur), Madhya Pradesh, Meghalaya, Nagaland, Orissa, Pondicherry, Rajasthan, Sikkim and West Bengal. *Elsewhere:* Australia; Borneo; China; Java; Myanmar; Pinang; Sri Lanka and Sumatra.

4. *Euconocephalus pallidus* (Redtenbacher, 1891)

1891. *Conocephalus pallidus* Redtenbacher, *Verh. zool. bot. Ges. Wien.*, 41: 414.
1922. *Euconocephalus pallidus* Hebard, *Proc. Acad. Nat. Sci. Phil.*, 74: 239-240.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara camp, 14.vii.2011, 1(♀,NC); 06.ix.2011, 1(♂,NC); 14.vii.2011, 2(1♂,1♀,NC); Latadadar, 23.ix.2011, 1(♀,DC). Koriya, Gurughasidas NP; Ramghat, 09.xi.2011, 1(♀,DC). Korba, Kartala Nursury, 01.xii.2011, 5(3♂,2♀,DC); Hukradugru, 30.v.2012, 1(♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body colour green. Vertex obtusely produced in front; pronotum obtusely rounded at posterior margin; radius sector 2 arises from middle of tegmina; male subgenital plate with 2 style-like projections; style bifurcated at apex.

Distribution: India: Andaman & Nicobar Islands, Assam, Chhattisgarh (Bilaspur, Korba, Raipur, Koriya), Himachal Pradesh, Gujarat, Kerala, Meghalaya, Mizoram, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal. *Elsewhere:* Bangladesh; Borneo; East Indies; Java; Myanmar; Philippines; Pinang; Singapore; Sri Lanka and Tonkin.

Subfamily HEXACENTRINAE
Genus *Hexacentrus* Serville, 1831

5. *Hexacentrus unicolor* Serville, 1831

1831. *Hexacentrus unicolor* Serville, *Ann. Sci. nat. (Zool.)*, Paris, 22: 146.
2000. *Hexacentrus unicolor*; Shishodia, *Rec. zool. Surv. India*. 98 (1): 13.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara camp, 10.ix.2011, 1(♂,NC); Bar Forest, 16.vii.2011, 1(♂,DC); 06.viii.2011, 1(♀,DC). Kabirdham, Borhamdev WLS; Chilpi FRH, 26.viii.2011, 1(♂,NC); 30.viii.2011, 1(♂,NC); 31.viii.2011, 1(♀,NC); Turia, 28.viii.2011, 1(♂,DC); Balsamund, 01.ix.2011, 1(♂,DC); Pagvahi village, 01.ix.2011, 2(♂,♀,DC); Jeevmar Nala, 29.viii.2011, 1(♂,DC); Gariyaband, Udanti WLS; Torenga FRH, 23.viii.2013, 1(♂,NC). Raigarh, Gomerda WLS; Tamtora FRH, 28.v.2014, 1(♂,NC). Surguja, Tara FRH, 16.ix.2012, 2(♂,NC) coll. S. K. Gupta & party.

Diagnostic characters: Colour brownish-yellow or greenish-yellow; a special dark-brown coloured band covers the pro, meso and metanotum; left anterior tibia with 6 external and 5 internal and right anterior tibia with 5 external and 6 internal spines; hind knee lobes with a spine on each side; hind femora with widely spaced big spines and between them lie small spines; hind tibiae with small spines on dorsal and ventral face externally and internally.

Distribution: India: Andaman & Nicobar Islands, Chhattisgarh (Raipur, Gariyaband, Kabirdham, Raigarh and Surguja), Himachal Pradesh, Manipur, Mizoram, Nagaland and Sikkim. *Elsewhere:* Borneo; Celebes; China; Japan; Java; Moluccas; Myanmar; Philippines; Sumatra; Singapore; Taiwan and Thailand.

Subfamily MECOPODINAE
Genus *Mecopoda* Serville, 1831

6. *Mecopoda elongata elongata* (Linnaeus, 1758)

1758. *Gryllus (Tettigonia) elongatus* Linnaeus, *Syst. Nat.* (10th ed.), 1: 429.
2003. *Mecopoda elongata*, Barman, *State Fauna Series 9: Fauna of Sikkim*, Zool. Surv. India, (2): 195.

Material examined: Chhattisgarh; Raipur, Barnawapara WLS; Gabod, 20.vii.2011, 1(♂,DC); Barnawapara

camp, 05.ix.2011, 1(♀,NC). Kabirdham, Bhoramdev WLS; Chilpi FRH, 26.viii.2011, 1(♀,NC); Balsamund, 01.ix.2011, 3(1♂,2♀,DC); Turia, 28.viii.2011, 1(♂,DC). Bastar, Pujariguda, 16.iv.2012, 1(♀,DC). Gariyaband, Udanti WLS; Torenga FRH, 23.viii.2013, 1(♂,NC). Raigarh, Gomerda WLS; Madosilly Water Fall, 22.ii.2012, 1(♀,DC). Durg, Keshavpur Forest, 06.ii.2014, 1(♀,DC); Baddhum FRH, 08.ii.2014, 1(♀,NC); 31.iii.2014, 1(♂,NC) coll. S. K. Gupta & party.

Diagnostic characters: Body very large, brown to dry leaf colour, head more or less rounded, antennae slightly margined, fastigium wide, pronotum wide at posterior margin, lateral lobes of pronotum dark brown at least on upper margin, prosternum with a pair of long spines; tegmina with 4-6 white spots in the middle wings fully developed, hind femora and tibiae very large, male subgenital plate bifurcated, apex pointed.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh (Bastar, Bilaspur, Gariyaband, Durg, Kabirdham, Raigarh and Raipur), Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal. *Elsewhere:* Australia; Aru Islands; Borneo; Celebes; China; Indonesia; Japan; Malacca; Malaysia; Moluccas; New Guinea; Philippines; Singapore; Sunda Islands; Taiwan; Thailand and Tonkin.

Subfamily PHANEROPTERINAE

Genus *Elimaea* Stål, 1874

Subgenus *Orthelimaea* Karny, 1926

7. *Elimaea (Orthelimaea) securigera* Brunner von wattenwyl, 1878

1878. *Elimaea (Orthelimaea) securigera* Brunner von Wattenwyl, *Monographie der Phaneropteriden* : 93.

2000. *Elimaea (Orthelimaea) securigera*, Barman, *State Fauna Series 7: Fauna of Tripura*, Zool. Surv. India, (2): 264.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Devgaon, 12.vii.2011, 1(♂,DC); Barnawapara camp, 29.vii.2011, 1(♂,NC); 14.viii.2011, 2(♂,NC); Nawapara, 28.vii.2011, 2(♂,DC); Barbandha Pond, 28.ix.2011, 1(♂,DC); Latadadar, 23.ix.2011, 1(♂,DC). Kabirdham, Bhoramdev WLS; Chilpi FRH, 30.viii.2011,

1(♂,NC); Sankri River, 25.viii.2011, 2(♂,DC). Bastar, Malgaon, 27.vii.2011, 1(♂,DC). Dhamatari, Sitanadi WLS; Bhiragaon, 18.ii.2014, 2(♂,DC). Gariyaband, Udanti WLS; Torenga FRH, 23.viii.2013, 1(♂,DC); Mainpur, 25.vi.2014, 2(♂,♀,DC). Surguja; Tara FRH, 16.ix.2012, 1(♂,NC); Mainpat FRH, 20.xi.2011, 2(♂,NC) coll. S. K. Gupta & party.

Diagnostic characters: Fastigium of vertex narrow conical, dorsally furrowed. Antennae without white rings. Pronotum with fine, yellowish median carinula, disc rounded, apical area flattened, posterior margin of pronotum truncate. Tegmina slender, radius sector with 3-4 branches; media straight, running about in middle between radius sector, and cubitus with vertical, rather regularly spaced, transverse veinlets; stridulatory file with a break shortly before posterior end, anterior femora not compressed, straight, front coxae with spines, cerci not strongly curved dorsally, apex securiform, lobes of male subgenital plate widely separated in the middle.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Assam, Chhattisgarh (Bastar, Bilaspur, Kabirdham, Dhamtari, Gariyaband, Surguja and Raipur), Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, Tripura and West Bengal. *Elsewhere:* Australia; Indonesia; Java; Nepal; Philippines and Sri Lanka.

Genus *Ducetia* Stål, 1874

8. *Ducetia japonica* (Thunberg)

1815. *Locusta japonica* Thunberg, *Mem. Acad. Sci. St. Petersb. (Sci. Phys.)*, 5: 282.

1961. *Ducetia japonica*, Ragge, *Bull. Brit. Mus. nat. Hist. (Ent.)*, 10(5): 182.

2005. *Ducetia japonica*, Kulkarni & Shishodia, *Fauna of Conservation Area 24: Fauna of Melghat Tiger Reserve*, Zool. Surv. India: 321.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Devgaon, 16.vii.2011 1(♂,DC); Barnawapara camp, 29.vii.2011, 1(♂,NC) coll. S. K. Gupta & party.

Diagnostic characters: Body size small to medium, colour dark green. Tegmina and wings well developed; tegmina less than 35 mm.in length, posterior radial sector with 4-6

closely parallel branches; cerci with interno-ventral ridge at apex; subgenital plate deeply bifurcate with contiguous lobes and without apical teeth.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Manipur, Maharashtra, Meghalaya, Sikkim, Tamil Nadu and West Bengal. *Elsewhere:* Bangladesh, China, Hainan, Indo-China, Japan, Java, Myanmar, Nepal, Sri Lanka, Thailand, Tibet and Tonkin.

Genus *Himertula* Uvarov, 1940

9. *Himertula kinneari* (Uvarov, 1923)

1923. *Himerta kinneari* Uvarov, *J. Bombay nat. Hist. Soc.*, **29** (3): 661.
2000. *Himertula kinneari*, Ingrisch & Shishodia, *Mitt. Münch. Ent. Ges.*, **90**: 20.

Material examined: Chhattisgarh; Raipur, Barnawapara WLS; Barnawapara camp, 12.vii.2011, 1(♀,NC); Dond Nala, 10.vii.2011, 3(♀,NC); 23.vii.2011, 1(♂); 27.vii.2011, 1(♂); 10.viii.2011, 1(♂); 18.viii.2011, 1(♂); Nakti Pond, 13.vii.2011, 1(♀,NC); Thatghat, 09.viii.2011, 2(♀,DC); Hardi Pathar, 12.viii.2011, 1(♂,DC); Dongpahari, 4.vii.2011, 1(♂,DC); Jhiriya nala, 25.vii.2011, 4(1♂,3♀,DC). Kabirdham, Bhoramdev WLS; Chilpi FRH, 25.viii.2011, 1(♀,NC); 26.viii.2011, 1(♂,NC); Pagvahi village, 1.ix.2011, 1(♂,DC); Turia, 28.viii.2011, 2(♂,DC). Bastar, Jagdalpur range, 30.viii.2011, 1(♀,DC). Koriya, Gurughasidas NP; Sonhut FRH, 01.viii.2011, 1(♂,NC). Durg, Gondli dam, 23.viii.2011, 1(♀,DC); Keshavpur, 06.xi.2014, 3(♂). Korba, Tharpakhra Nala, 25.iii.2014, 1(♂,DC); Devpahari, 25.iii.2014, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Last tergite large, narrowly sulcate along the middle, with the hind margin almost straight, very feebly and broadly sinuate, not obtusely excised; cerci with their apices compressed portion straight, forming an obtuse rounded angle with the base; male subgenital plate with the lobes very long, strongly compressed and recurved, female subgenital plate transverse, simply truncate behind. Ovipositor short, strongly recurved; upper margin straight; lower margin regularly curved; disc rugulose.

Distribution: India: Bihar, Chhattisgarh (Bastar, Durg, Kabirdham, Korba, Koriya and Raipur), Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal. *Elsewhere:* Bhutan and Nepal.

Genus *Holochlora* Stål, 1873

10. *Holochlora indica* Kirby, 1906

1906. *Holochlora indica* Kirby, *Syn. Cata. Orth.*: 430.
2000. *Holochlora indica*, Barman, *State Fauna Series 7: Fauna of Tripura*, Zool. Surv. India, (2): 264.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara camp, 6.ix.2011, 1(♀,NC); Latadadar, 23.ix.2011, 2(1♂,1♀,DC); Balamdehi River, 1.x.2011, 1(♀,DC). Surguja, Tamor Pingla WLS; Ramkola, 14.v.2013, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Fastigium conically produced with round apex; anterior margin of pronotum concave and posterior margin convex, radius sector-2 arises from middle of wing and bifurcated at its basal third; hind femur with spines on apical half and anterior two pairs bare of spines; male subgenital plate at the region of bifurcation forms a circle, style foot-shaped; circus gradually narrowed and curved at apex; ovipositor curved and serrate at apical region.

Distribution: India: Andaman & Nicobar Islands, Chhattisgarh (Raipur and Surguja), Himachal Pradesh, Karnataka, Manipur, Meghalaya, Mizoram, Orissa, Sikkim, Tamil Nadu, Tripura and West Bengal. *Elsewhere:* Java and Sri Lanka.

Genus *Khaoyaiana* Ingrisch, 1990

11. *Khaoyaiana nitens* Ingrisch, 1990

1990. *Khaoyaiana nitens* Ingrisch, *Senckenbergiana biologica*, **70**: 107.
2010. *Khaoyaiana nitens*, Shishodia *et al.*, *Rec. zool. Surv. India*, Occ. Paper No. **314**: 301.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barbandha Pond, 27.vii.2011, 1(♂,DC); Achanakpur, 31.vii.2011, 1(♂,DC); Barnawapara camp, 6.viii.2011,

1(♂,NC); 09.viii.2011, 1(♀,NC); 05.ix.2011, 1(♀,NC); Mohda Forest, 23.ix.2011, 2(1♂,1♀,DC); Loridkhar, 24.ix.2011, 3(2♂,1♀,DC); Barbandha Pond, 28.ix.2011, 1(♂,DC). Kabirdham, Boramdev WLS; Chilpi FRH, 01.ix.2011, 2(1♂,1♀,NC). Koriya, Gurughasidas NP; Sonhut FRH, 18.viii.2011, 1(♀,NC). Durg; Gondli dam, 23.viii.2011, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Eyes rounded; antennae not surpassing the tegmina. Pronotum more or less straight in front, convex posteriorly; apical tergite convex; supra-anal plate long, tongue shaped; cerci long, symmetrical; subgenital plate long, wide at baso-laterally.

Distribution: India: Chhattisgarh (Durg, Kabirdham, Koriya and Raipur), Manipur, Meghalaya and Mizoram. *Elsewhere:* Bhutan; Central Thailand and China.

Genus *Letana* Walker, 1869

12. *Letana bulbosa* Ingrisch, 1990

1990. *Letana bulbosa* Ingrisch, *Entomologica Scandinavica*, **21**(3): 254.

2000. *Letana bulbosa*, Ingrisch & Shishodia, *Mitt. Münch. Ent. Ges.*, **90**: 16.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara, 16.vii.2011, 1(♂,NC); Barbandha Pond, 28.ix.2011, 1(♂,DC); Achanakpur village, 31.vii.2011, 1(♂,DC); Jashpur, Badalkhol WLS; Bachhram Beat, 25.V.2012, 1(♀,DC); Korea, Gurughasidas NP, Sonhut FRH, 10.v.2012, 1(♂,NC); Belya Forest, 17.v.2012, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body medium-sized, green. Stridulatory file small, substraight, but slightly curved at base. Ninth tergite rather weakly projecting behind, apex truncate to very slightly concave. Supra-anal plate with lateral margins concave, surface shallowly depressed, apex subtruncate, apico-lateral angles slightly protruding.

Distribution: India: Chhattisgarh (Raipur), Kerala, Karnataka, Pondicherry, Tamil Nadu and West Bengal.

13. *Letana intermedia* Ingrisch, 1990

1990. *Letana intermedia* Ingrisch, *Ent. Scand.*, **21**(3): 260.

2005. *Letana intermedia*: Kulkarni and Shishodia, *Fauna of Melghat Tiger Reserve, Conservation area series*, **24**: 321.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Devgaon, 5.viii.2011, 3(1♂,2♀,DC); Dond nala, 14.viii.2011, 1(♂,DC); Barnawapara camp, 25.ix.2011, 2(♂,NC). Kabirdham, Boramdev WLS; Chilpi FRH, 31.viii.2011, 1(♂,NC). Koriya, Gurughasidas NP; Thitima Pahad, 24.x.2011, 5(♂,DC). Gariyaband, Udanti WLS; Torenga FRH, 26.vi.2014, 1(♀,NC); Ganga Jamuna village, 28.vi.2014, 4(1♂,3♀,DC). Raigarh, Gomerda WLS; Lohari Pond, 28.v.2014, 4(1♂,3♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body size medium; pronotum inflated in male; tegmina surpassing hind knees; radial sector forked (rarely unforked on one side); ninth tergite moderately projecting behind, apex subtruncate; cerci substraight behind basal curvature, with a black, baso internal bump.

Distribution: India: Chhattisgarh (Bilaspur, Kabirdham, Koriya, Gariyaband, Raigarh and Raipur), Delhi and Maharashtra.

14. *Letana inflata* (Brunner von Wattenwyl, 1878)

1878. *Pyrrhicia inflata* Brunner von Wattenwyl, *Monographie der Phaneropteriden*: 116.

1906. *Letana inflata*, Kirby, *Syn. Cat. Orth.*: 400.

1990. *Letana inflata*, Ingrisch, *Entomologica Scandinavica*, **21**(3): 253.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Keduva nala, 09.vii.2011, 1(♀,DC); Jagdalpur, Ganesh Bahar Nala, 27.iii.2012, 1(♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body medium sized, green. Pronotum strongly inflated in male, normal in female. Stridulatory file with only a few, large, spaced pegs, and at anterior margin with a short row of small, dense pegs. Ninth tergite rather weakly projecting behind, apex rounded. Supra-anal plate with almost parallel lateral margins, depressed in the middle, apex subtruncate to slightly concave, apico-lateral angles slightly protruding. Cerci long, curved in basal third, substraight behind. Subgenital plate lateral lobes with apical part slender, apex rounded.

Distribution: India: Chhattisgarh (Jagdalpur, Raipur), Delhi and Tamil Nadu. *Elsewhere:* Sri Lanka.

15. *Letana infurcata* Ingrisch, 1990

1990. *Letana infurcata* Ingrisch, *Ent. Scand.*, **21** (3): 249.
 2007. *Letana infurcata*, Chandra *et. al.*, *Zoos' Print Journal*, **22** (5): 2684.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Bafra, 22.vii.2011, 1(♀,DC); Barnawapara camp, 01.viii.2011, 1(♂,NC). Koriya, Gurughasidas NP; Sonhut RH, 24.iv.2013, 1(♀,NC) coll. S. K. Gupta & party.

Diagnostic characters: Body size rather small, green, tegmina rather broad and hind wings hardly protruding. Radial sector of tegmen unforked. Male: Stridulatory file short, almost straight to subarcuate, with comparatively large pegs, ninth tergite rather weakly projecting behind, apex broadly rounded, truncate, or even slightly concave. Supra-anal plate with concave lateral margins, surface shallowly depressed in the middle, apex very slightly convex to subtruncate. Cerci rather short, arcuate. Subgenital plate lateral lobes with apical part slender, apex rounded. Phallus sclerite small, hardly sclerotised, bulging, lamellate, teeth minute. Female: Supra-anal plate circa semicircular, with a shallow medial longitudinal groove or furrow in basal half. Cerci short, stout, apex subacute to obtuse. Subgenital plate circa pentagonal, with a baso-medial, longitudinal fold almost over the whole length.

Distribution: India: Chhattisgarh (Koriya and Raipur), Madhya Pradesh, Pondicherry and Tamil Nadu.

16. *Letana megastridula* Ingrisch, 1990

1990. *Letana megastridula* Ingrisch, *Ent. Scand.*, **21**(3): 258.
 2007. *Letana megastridula*, Chandra *et. al.*, *Zoos' Print Journal*, **22** (5): 2684.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Domar Pani, 31.viii.2012, 1(♂,DC). Kabirdham, Borhamdev WLS; Jeevmar Nala, 29.viii.2011, 1(♂,DC). Koriya, Gurughasidas NP; Sonhut FRH, 24.iv.2013, 1(♂,NC) coll. S. K. Gupta & party.

Diagnostic characters: Body and legs with black or reddish dots, stridulatory field larger than broad, supra anal plate with an almost circular, shallow depression in the middle, cerci with a weak basoventral swelling, subgenital plate

lateral lobes with apical part widening, ovipositor short, curved in middle, apex turned upwards.

Distribution: India: Bihar, Chhattisgarh (Bastar, Kabirdham, Koriya and Raipur), Himachal Pradesh, Maharashtra and Tamil Nadu.

Genus *Phaneroptera* Serville, 1831

Subgenus *Phaneroptera* Serville, 1831

17. *Phaneroptera (Phaneroptera) gracilis* Burmeister, 1838

1838. *Phaneroptera gracilis* Burmeister, *Handb. Ent.*: 690.
 1999. *Phaneroptera gracilis*, Shishodia, *Rec. zool. Surv. India*, **97**(4): 36.

Material examined: Chhattisgarh; Bilaspur, Raipur, Barnawapara WLS; Latadadar, 26.vi.2011, 1(♀,DC); Barnawapara camp, 08.vii.2011, 1(♀,NC). Kabirdham, Borhamdev WLS; Chilpi FRH, 27.viii.2011, 1(♂,NC); Baudha forest, 24.xi.2011, 1(♂,DC). Bastar, Ericpal, 24.ii.2012, 1(♂,DC). Koriya, Guru ghasidas NP; Sonhut FRH, 10.vii.2013, 1(♂,NC); Berdev Nala, 17.xi.2013, 1(♀,NC). Raigarh, Gomerda WLS; Madosilly Water Fall, 22.xi.2012, 1(♂,DC). Korba, Bijakhara nala, 24.xi.2011, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Greenish colour, fastigium of vertex sulcated dorsally; fore coxae with well developed spine; fore tibiae with oval tympanum, opening on both sides, middle tibiae swollen in basal half; hind femora slender hind tibiae with 3 apical spines on both sides; abdominal tergite without median carina. Cerci very long, subgenital plate elongate, supra anal plate longer than broad.

Distribution: India: Arunachal Pradesh, Assam, Bihar, Chhattisgarh (Bastar, Bilaspur, Kabirdham, Korba, Koriya, Raigarh, Raipur), Himachal Pradesh, Karnataka, Madhya Pradesh, Manipur, Orissa, Sikkim, Tamil Nadu and Uttarakhand. *Elsewhere:* Africa; Annam; Australia; Celebes; China; Indo-China; Java; Malaysia; Maldive Islands, Myanmar; Solomon; Sri Lanka; Sumatra and Sumba.

18. *Phaneroptera (Phaneroptera) myllocerca* Ragge, 1956

1956. *Phaneroptera myllocerca* Ragge, *Proc. Zool. Soc. London*, **127**: 254.

2006. *Phaneroptera myllocerca*, Shishodia, *State Fauna Series*, **12: Fauna of Nagaland**, Zool. Surv. India, : 91.

Material examined: Chhattisgarh, Kabirdham, Borhamdev WLS; Fen river, 07.viii.2011, 1(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Fastigium of vertex moderately narrow, long sulcated above; pronotum without lateral carinae; prosternum bispinose. Macropterous. Tegmina reddish brown with distinct bifurcate radial sector which is free from median; Forewings unicolor. Cross veins of costal and precostal areas of forewings irregular. Stridulatory area of left male forewing large. Fore tibiae with 3-5 external spurs, including 1-2 apical ones; middle tibiae with about 7-8 external spurs; hind femora unarmed ventrally. hind tibiae with 6 apical spurs. Cerci terminating upwards directed spine with recurved black apical spine; subgenital plate with almost contiguous lobes. Ovipositor long, straight.

Distribution: India: Arunachal Pradesh, Chhattisgarh (Kabirdham), Himachal Pradesh, Jammu & Kashmir, Nagaland, Sikkim and Uttarakhand. *Elsewhere*: China and Myanmar.

Subfamily PSEUDOPHYLLINAE

Genus *Parasanaa* Beier, 1944

19. *Parasanaa donovani* (Donovon, 1834)

1834. *Gryllus donovani* Donovan, *Nat. Repos.*, **2**: 69.
1962. *Parasanaa donovani*, Beier, *Das Tierreich*, **73**: 174.
2000. *Parasanaa donovani*, Ingrisch and Shishodia, *Mitt. Münch. Ent. Ges.*, **90**: 21.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara camp, 01.ix.2011, 1(♀,NC); 06.ix.2011, 1(♀,NC); 08.ix.2011, 3(♀,NC); 10.ix.2011, 1(♀,NC); Furfundi, 21.ix.2011, 1(♀,DC). Jashpur, Badalkhol WLS; Bachhram Beat, 25.v.2012, 2(♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Head and body dark brown. Only the pronotum and one transverse band on the fifth abdominal tergite bright yellow. Antennae brownish. Pronotum with 2 dark brown spots at hind margin. The tegmina dark reddish brown with 3 big irregular bright

yellow spots between radius and cubitus. Ovipositor reddish brown.

Distribution: India: Chhattisgarh (Jashpur and Raipur), Rajasthan and Sikkim.

Genus *Phyllozelus* Redtenbacher, 1892

Subgenus *Phyllozelus* (Redtenbacher, 1892)

20. *Phyllozelus (Phyllozelus) siccus siccus* (Walker, 1869)

1869. *Pseudophyllus siccus* Walker, *Cat. Derm. Salt. Brit. Mus.* **2** : 403.
1869. *Pseudophyllus signatus* Walker, *Cat. Derm. Salt. Brit. Mus.* **2** : 407.
1962. *Phyllozelus siccus*, Beier, *Das Tierreich*, **73**: 87.
2003. *Phyllozelus siccus*, Barman, *State Fauna Series 9: Fauna of Sikkim*, Zool. Surv. India, (2): 200.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara camp, 06.viii.2011, 1(♂,NC); 05.ix.2011, 2(1♂,1♀,NC); 06.ix.2011, 2(♀,NC); 19.ix.2011, 1(♀,NC); Marer Pond, 22.ix.2011, 1(♂,DC); Latadadar, 23.ix.2011, 2(♂,DC). Surguja, Tara FRH, 16.ix.2012, 11(♂,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body robust. Fastigium verticis narrow conically, dorsally furrowed, apex blunt, not surpassing the rim of antennal scrobe. Pronotum not roof-shaped, carinated; apex gradually tapering, with 2 long spines. Prosternum armed; meso and metasternum strongly transverse, all of them as long as wide, lobes blunt; tegmen broad and leaf like, surpassing hind knees; radius sector branching slightly before the middle of tegmen length, forked.

Distribution: India: Assam, Chhattisgarh (Raipur and Surguja), Sikkim and Tamil Nadu.

Genus *Sanaa* Walker, 1870

21. *Sanaa regalis* (Brunner, 1895)

1895. *Termera regalis* Brunner, von Wattenwyl, *Verhaud. K. K. Zool. Bot. Ges. Wier.*: 94.
1962. *Sanaa regalis*, Beier, *Das Tierreich*, **73**: 214.
2003. *Sanaa regalis*, Barman, *State Fauna Series 9: Fauna of Sikkim*, Zool. Surv. India, (2): 197.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Balamdehi river, 01.x.2011, 1(♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Pronotum yellow, elytron brown with black spots, hind wing spotted anteriorly; meso and metasternum brown; pleura black; legs largely brownish, all femora medially and ventrally black; ovipositor black at the base.

Distribution: India: Assam, Chhattisgarh (Raipur), Meghalaya, Nagaland, Sikkim and West Bengal.

Genus *Sathrophyllia* Stål, 1874

22. *Sathrophyllia femorata* (Fabricius, 1787)

1787. *Locusta femorata* Fabricius, *Mantissa Insectorum stens eorum species nuper detectas adjectis characteribus genericis, differentiis specificis, emendationibus, observationibus*, : 233.

1869. *Sathrophyllia femorata* Walker, *Cat. Derm. Salt. Brit. Mus.*; 401.

2003. *Sathrophyllia femorata*; Barman, *State Fauna Series 9: Fauna of Sikkim*, Zool.Surv. India, (2): 197.

Material examined: Chhattisgarh, Raipur, Barnawapara WLS; Barnawapara camp, 24.ix.2011, 2(♂,NC). Kabirdham, Bhoramdev WLS; Balsamund, 01.ix.2011, 1(♂,DC); Chilpi FRH, 31.viii.2011, 1(♂,NC); Sunwahi Forest, 18.xi.2011, 1(♂,DC). Korba, Kartala Nursury, 01.xii.2011, 1(♂,DC). Surguja, Khar village, 10.xi.2011, 1(♀,DC); Taralekhudal, 15.ix.2012, 1(♀,DC); Mendragaon, 19.xi.2011, 1(♀,DC) coll. S. K. Gupta & party.

Diagnostic characters: Body colour light brownish; head without any wrinkle or hump; pronotum without any hump, broadly rounded posteriorly; tegmina 3.5 times longer than broad, sparsely spotted with dark-brown marks; hind wings with transverse cross veins with dark-brown patches; anterior femora faintly or not undulated; anterior tibiae ventrally spined on outside; middle and hind femora undulated ventrally; ovipositor long, wide at base, directed upwards beyond the middle.

Distribution: India: Chhattisgarh (Kabirdham, Korba, Raipur and Surguja), Karnataka, Maharashtra, Sikkim, Tamil Nadu and West Bengal. *Elsewhere:* Borneo; Cambodia; Java; Malaysia; Myanmar and Sumatra.

23. *Sathrophyllia rugosa* (Linnaeus, 1758)

1758. *Gryllus (Tettignonia) rugosa* Linnaeus, *Syst. Nat.* (10th ed.) 1: 430.

1962. *Sathrophyllia rugosa*, Beier, *Das Tierreich*, 73: 199-200.

Material examined: Chhattisgarh; Kabirdham, Bhoramdev WLS; Rengakhar Forest, 04.xii.2011, 1(♀,DC). Bastar, Jagdalpur, Lamon Eco Park, 22.vii.2011, 1(♀,DC). Koriya, Gurughasidas NP; Sonhut FRH, 10.vii.2013, 1(♂,NC); Berdev Nala, 17.xi.2013, 1(♀,DC). Gariyaband, Udanti WLS; Jugad, 29.vi.2014, 1(♀,DC). Durg, Balod FRH, 23.i.2014, 1(♂,NC); Badbhum FRH, 08.ii.2014, 1(♀,NC); 01.iv.2014, 1(♀,NC) coll. S. K. Gupta & party.

Diagnostic characters: Body rugose, pronotum of middle crest large, often swollen on the basal part of pronotum, tegmina convex, femora with semi-rounded grooves ventrally, tibia spotted, ovipositor blade like.

Distribution: India: Chhattisgarh (Bastar, Gariyaband, Kabirdham, Koriya and Raipur), Karnataka, Madhya Pradesh, Manipur, Meghalaya, Sikkim, Tamil Nadu and West Bengal. *Elsewhere* : Java; Sri Lanka and Sumatra.

Abbreviation: WLS: Wildlife Sanctuary; coll.: Collector; DC: Day collection; NC: Night collection; FRH: Forest Rest House.

Summary

A comprehensive account of Tettigoniids fauna of Chhattisgarh has been provided. Presently 23 species of Orthoptera belonging to 15 genera under 5 subfamilies of Tettigoniids fauna are reported from Chhattisgarh, India.

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