

Diversity of Short-Horned Grasshoppers (Orthoptera: Caelifera) from Forested Region of Kolhapur District, Maharashtra, India of Northern Western Ghats

Sunil M. Gaikwad, Yogesh J. Koli, Gopal A. Raut, Ganesh P. Bhawane

Abstract—The present investigation was directed to study the diversity of short-horned grasshoppers from a forested area of Kolhapur district, Maharashtra, India, which is spread along the hilly terrain of the Northern Western Ghats. The collection was made during 2013 to 2015, and identified with the help of a reference collection of ZSI, Kolkata, and recent literature and dry preserved. The study resulted in the enumeration of 40 species of short-horned grasshoppers belonging to four families of suborder: Caelifera. The family Acrididae was dominant (27 species) followed by Tetrigidae (eight species), Pyrgomorphidae (four species) and Chorotypidae (one species). The report of 40 species from the forest habitat of the study region highlights the significance of the Western Ghats. Ecologically, short-horned grasshoppers are integral to food chains, being consumed by a wide variety of animals. The observations of the present investigation may prove useful for conservation of the Diversity in Northern Western Ghats.

Keywords—Diversity, Kolhapur, Northern Western Ghats, Short-horned grasshoppers.

I. INTRODUCTION

SUB-ORDER Caelifera is a group of short-horned grasshoppers of the order Orthoptera. This group was previously rather fairly known from Maharashtra because the majority of Caelifera is diurnal and some of them are nocturnal insects. The suborder Caelifera classified into four families under viz. Acrididae, Chorotypidae, Pyrgomorphidae and Tetrigidae. A capacious literature was available for Orthopteran studies from India. The Orthoptera fauna of India comprise about 1033 species belonging to 398 genera [1]. Whereas from Maharashtra 143 species of Orthoptera belongs to 98 genera in eight families [2].

The major contribution on Orthopteran fauna of India by Kirby [3] in "The Fauna of British India, including Ceylon and reference [4] in "The Fauna of India and adjacent countries: Orthoptera, 2 Grylloidea." ZSI publication. Other studies on the Orthoptera from other parts of India contributed by Bhowmik [5], Shishodia and Hazra [6], Mandal et al. [7], Shishodia [8]-[11], Hazra et al. [12], [13], Vasanth [14],

Shishodia and Tandon [15], Dey and Hazra [16], Shishodia et al. [17], Mandal and Yadav [18], Gupta et al. [19], Sharma et al. [20], Kulkarni and Sharma [21] and Kulkarni and Shishodia [22], [23]. From Maharashtra, some contribution was given by [8], [14], [20]-[23].

The present investigation was directed to study the diversity of Caelifera from regions of the Western Ghats from Kolhapur districts including protected areas. Three major protected areas fall under the study area viz. Radhanagari Wildlife Sanctuary, Amba Reserve Forest and Chandoli National Park which is spread along the hilly terrain of the Sahyadri ranges of Western Ghats of Maharashtra, India. The western boundary of Kolhapur district was bounded by the Western Ghats started from the north-west Chandoli National Park (CNP) to the southwest forests of Tilari Nagar of Chandgad Tehsil. The study area consists of southern semi-evergreen; moist mixed deciduous and evergreen type of forest with mixed patches of grassland which supports the huge biodiversity must need to explore.

II. MATERIAL AND METHODS

The extensive surveys were made from fields of Western Ghats regions of Kolhapur districts during 2013 to 2016. The sampling of short-horned insects was done by standard insect collection methods at day time, mostly, along with some time at evening. The short-horned grasshoppers are terrestrial insects habitual to live in grasses, dwarf vegetations, bushes and also in dense vegetation. Collection with an insect swiping net is very useful along with the hand picking method. Some species were also collected at the light source. Only adult grasshoppers were collected and identified with the help of the literature of Kirby [3], a reference collection of the Zoological Survey of India, Kolkata, *Orthoptera species file* website, and expertise in the field, Dr. Sigfrid Ingrisch.

III. RESULTS

This communication presents the comprehensive checklist of short-horned grasshopper species known from the forested area of Kolhapur district, Maharashtra, India along with their known localities. In all, 40 species of the suborder Caelifera were estimated belonging to four families viz. Acrididae, Chorotypidae, Pyrgomorphidae and Tetrigidae. The family Acrididae is dominant with 27 species followed by family Tetrigidae with eight species, family Pyrgomorphidae with four species and family Chorotypidae with one species.

Sunil M. Gaikwad is with the Department of Zoology, Shivaji University, Kolhapur, Maharashtra, India-416 004 (phone: +919604260460; e-mail: gaikwadsm@rediffmail.com).

Yogesh J. Koli is with the Department of Zoology, Sant Rawool Maharaj College, Kudal, Sindhudurga, Maharashtra, India (e-mail: gaikwadsm@rediffmail.com).

Gopal A. Raut and Ganesh P. Bhawane are with the Department of Zoology, Shivaji University, Kolhapur, Maharashtra, India-416 004 (e-mail: rautgopal189@gmail.com, drgpbhawane@rediffmail.com).

Order: ORTHOPTERA
 Suborder: CAELIFERA
 Superfamily: ACRIDOIDEA
 Family: ACRIDIDAE
 Subfamily: ACRIDINAE
 Genus: *Acrida* (Linnaeus, 1758)

A. Acrida exaltata (Walker, 1859)

1859. *Truxalis exaltata* Walker. Ann. Mag. nat. Hist. 34: 222.

Diagnostics: Head conically ascending, basal part narrow; fastigium of vertex broad, laminate and truncate at extremities; transverse sulcus of pronotum placed close to the middle of the disc; hind femora without any peg-like structure or internal surface; male subgenital plate long; tegmina with somewhat rounded apex, a little produced beyond the hind knees; wings shorter than the tegmina.

Material Examined: 1 ♂, 2 ♀, CNP, Kolhapur Dist., 12. x. 2014; 2 ♀, Jat, Sangli, Dist., 13.xi.2013.

Distribution: India: (Widely distributed).

Elsewhere: Afghanistan, Arabia, Bangladesh, Iran, Nepal, Pakistan, Saudi Arabia, Sri Lanka, Tibet, Yemen & West Eden.

Habitat: The maximum population of this species is found in and around cultivated fields, bare ground, and grassy lands. Nymphs and adults occur almost throughout the year.

Genus: *Phlaeoba* (Stål, 1860)

B. Phlaeoba antennata (Brunner, 1893)

1914. *Phlaeoba antennata*, Kirby, Fauna Brit. India, Orth.:102

Diagnostics: Medium sized; antennae ensiform, black, tipped with yellow; pronotum smooth, all the three carinae marked; straw to olive-brown colour with a broad band running from the vertex to the end of tegmina distinctly in male; wings bluish black at base, brownish tinge towards the tip; posterior tibiae dirty green to blue.

Material Examined: 1 ♀, Amba, Kolhapur, Diat., 11. vi. 2013, 2 ♂, CNP, Sangli Dist, 10. xi. 2014.

Distribution: India: Arunachal Pradesh, Assam, Kerala, Maharashtra, Orissa, Rajasthan and West Bengal.

Elsewhere: Bangladesh, Borneo, Myanmar, China, Malaysia, Tonking and Sumatra.

Habitat: This species generally occurred in thick forest. Highest population observed in the month of October.

C. Phlaeoba infumata (Brunner von Wattenwyl, 1893)

1893. *Phlaeoba infumata*, Brunner von Wattenwyl. Ann. Mus. Civ. Stor. Nat. Genova 2 13 (33): 124.

Diagnostics: Medium in size; antennae long and narrow with sharp edges and long as the head and pronotum together; fastigium of vertex above with a continuous the median carina extends along the head and pronotum. Wings dark, hyaline; brownish tinge towards apex; in male subgenital plate acute at apex.

Material Examined: 4 ♀, Amba, Kolhapur Dist., 11. vi. 2013, 3 ♂, CNP, Sangli Dist, 10. xi. 2013.

Distribution: India: Andhra Pradesh, Arunachal Pradesh,

Assam, Bihar, Delhi, Goa, Himachal Pradesh, Madhya Pradesh, Orissa, Maharashtra, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Myanmar, South China.

Habitat: This species generally occurred in thick forest. Highest population observed in the month of October.

Subfamily - OEDIPODINAE

Genus: *Trilophidia* (Stål, 1873)

D. Trilophidia annulata (Thunberg, 1815)

1815. *Gryllus annulatus* Thunberg. Mem. Acad. Imp. Sci. St. Petersburg. 5: 234.

Diagnostics: Small sized, vertex with a pair of tubercles behind eyes; fastigium of vertex elongate- trapezoid, antennae longer than head and pronotum together. Pronotum rugose with a high median carina, forming two teeth in front and with lateral carinae; hind tibiae narrow with a faint narrow pale band beyond the middle.

Material Examined: 1 ♀, CNP Kolhapur Dist., 18. xi. 2012; 2 ♂, 2 ♀, Karveer, Kolhapur Dist, 17.ii.2015.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Bangladesh, Borneo, China, Hong Kong, Japan, Java, Korea, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sarawak, Singapore, Sri Lanka, Sumatra, Taiwan, Thailand and Vietnam.

Habitat: The species is found on the bare ground, less in vegetation. Adults and nymphs found through the year.

Genus: *Aiolopus* (Fieber, 1853)

E. Aiolopus thalassinus tamulus (Fabricius, 1798)

1798. *Gryllus tamulus* Fabricius. Supplementum Entomologiae Systematicae Suppl. 195.

Diagnostics: Medium sized, antennae long, fastigium of vertex pentagonal with front angle acute, frontal ridge flat, gradually narrowing towards fastigial end, pronotum slightly constricted between prozona and metazona; two brown stripes present on the middle part of the eyes and running up to the metazona; posterior tibiae usually with red coloured in apical fourth and broadly separated from black band by a wide blue-greyish band, cerci, rounded and conical.

Material Examined: 2 ♂, 1 ♀, CNP, Kolhapur Dist. 19. iv. 2015, 1 ♂ (nymph), Sangli Dist. 20. iv. 2013.

Distribution: India: Andaman & Nicobar Islands Andhra Pradesh, Arunachal Pradesh, Chhattisgarh, Delhi, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Australia, Bangladesh, Borneo, Brunei, Celebes, China, Hong Kong, Japan, Java, Malaysia, Myanmar, New Guinea, Pakistan, Papua, Philippines, Singapore, Sri Lanka, Sumatra, Taiwan, Thailand and Timor.

Habitat: This species is associated grass and attached to cultivated fields like paddy. Adults occur throughout the year.

Genus: *Heteropternis* (Stål, 1873)

F. Heteropternis respondens (Walker, 1859)

1859. *Acridium respondens* Walker, F. Ann. Mag. nat. Hist. 3(4): 223.

Diagnostics: Head smooth, lateral carinae slender, antennae brown at the base, longer than the head and pronotum; pronotum velvety, pale above with a continuous median carina, cut by principal sulcus; tegmina longer than the abdomen, wings hyaline more or less clouded towards the tip, spotted irregularly and somewhat tinged with reddish or yellowish; hind femora yellowish, irregular spots on femora; hind tibiae red, with 10 black – tipped spines.

Material Examined: 4 ♂, CNP, Kolhapur Dist. 19. iv. 2015, 1 ♀, Miraj, Sangli Dist. 20. ii. 2014.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Bihar, Himachal Pradesh, Karnataka, Maharashtra, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, China, Indonesia, Japan, Java, Malacca, Malaysia, Myanmar, Nepal, Philippines, Sri Lanka, Sumatra and Taiwan.

Habitat: This species is found on dry grasslands on the plains as well as hilly regions. Adults are found throughout the year.

Genus: *Oedaleus* (Fieber, 1853)

G. Oedaleus abruptus (Thunberg, 1815)

1815. *Gryllus abruptus* Thunberg. Mem. Acad. Imp. Sci. St. Petersburg 5: 233.

Diagnostics: Small sized, fastigium of head almost flat; antennae longer than head and pronotum together. Pronotum short, with an incomplete white cross mark, median ridge strongly marked, strongly carinate, posterior margin pointed, wings with a broad transverse band curving inwards to anal angle; femora banded, hind tibiae reddish, with a yellow ring at the base.

Material Examined: 3 ♂, CNP, Kolhapur Dist. 5. vi. 2014; 2 ♂, 1 ♀, CNP, Sangli Dist. 6. vi. 2014.

Distribution: India: Andhra Pradesh, Bihar, Goa, Himachal Pradesh, Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Uttar Pradesh & West Bengal.

Elsewhere: Afghanistan, Bangladesh, China, Indo-China, Myanmar, Pakistan, Sri Lanka & Thailand.

Habitat: Both adult and nymph are geophilous; it was generally associated with the bare ground surface. Maximum population in the month of August.

Genus: *Morphacris* Walker, 1870

H. Morphacris citrina (Kirby, 1910)

1910. *Morphacris citrina* Kirby. A Synonymic Catalogue of Orthoptera (Orthoptera Saltatoria, Locustidae vel Acridiidae). 3(2): 219.

Diagnostics: Small in size, head brown, darker along the frontal ridge; pronotum brown, with a black band on the pleura, marked with a raised yellowish line ventrally.

Abdomen yellowish with a shining black spot above near the base. Legs brown, hind femora within with two longitudinal black bands covering much of the surface; hind tibiae yellow, with a dark band near the base. Tegmina brown, paler at the base with little black dots on the inner side, wings yellowish at the base encircled by a broad blackish band.

Subfamily: TERATODINAE

Genus: *Teratodes* Brulle, 1835

I. Teratodes monticollis (Gray, 1832)

1832. *Gryllus monticollis* Gray. In Griffith. Anim. Kingdom 15: 215.

Diagnostics: Medium sized, head broad, rounded, face vertical, antennae filiform, shorter than head and pronotum. Pronotum compressed, the front arched above the head in a point, the middle forming a high crest, denticulate, covering the half the length of the abdomen. Legs short, femora with a transverse yellow band; tegmina opaque.

Material Examined: 2 ♂, CNP, Kolhapur Dist., 16. xii. 2014; 1 ♀, CNP, Sangli Dist., 16. xii. 2014.

Distribution: India: Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh and Maharashtra.

Elsewhere: Sri Lanka.

Habitats: This species is usually found on trees in hilly regions.

Subfamily: HEMIACRIDINAE

Genus: *Hieroglyphus* Krauss, 1877

J. Hieroglyphus banian (Fabricius, 1798)

1798. *Grills Banian* Fabricius. Supplementum Entomologiae Systematicae Suppl. 194.

Diagnostics: Medium sized, antennae filiform, longer than head and pronotum together; fastigium of vertex broad, pronotum green with four black coloured sulci, narrowly lined, 1st sulci present only laterally, 2nd present on medially and the last two continuous; tegmina and wings are shorter or longer than the abdomen, reddish tinged at the base, supra-anal plate longer than wide in the apical area with two ridges like elevation; hind tibiae blue, with black-tipped spines.

Material Examined: 2 ♂, 1 ♀, CNP, Kolhapur, Dist. 28. ix. 2009; 2 ♂, CNP, Sangli Dist. 28. ix. 2009.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Bangladesh, Bhutan, China, Myanmar, Nepal, Thailand and Vietnam.

Habitat: It is commonly known as rice pest because it is a major pest of paddy. The maximum population occurs at the end of October when the paddy is fully matured.

Genus: *Clonacris* (Uvarov, 1943)

K. Clonacris kirbyi (Finot, 1903)

1903. *Clonacris kirbyi*, Finot. Ann. Soc. ent. Fr. 71:629.

Diagnostics: Body very stout, light brown with green spots and blotches. Head reddish brown, with green marking above, finely punctured; antennae slender, 23 jointed, shorter than the

head and pronotum together, rusty brown, dark in the middle. Pronotum short, constricted in the middle, brown, with the deflexed lobes more yellowish, impress-punctate, rugose behind and with a very slight median carina, hind border obtusely rounded; deflexed lobes with the lower margin nearly straight and strongly rounded at the hinder angle; the transverse sulci dark, well-marked, the hind sulcus placed beyond the middle.

Material Examined: 2 ♂, 1 ♀, Patgaon, Kolhapur, Dist. 28. ix. 2009.

Habitat: It is not common rarely found in evergreen forested vegetation and dry bushy type of vegetation.

Genus: *Parahieroglyphus* Carl, 1916

L. Parahieroglyphus bilineatus (Bolivar, 1912)

1912. *Hieroceryx bilineatus* Saussure. In Bolívar, I. Estudios entomológicos III. El genero *Hieroglyphus* Krauss y otros proximos. Trab. Mus. Cienc. nat., Madrid (Ser. Zool.). 6: 60.

Diagnostics: Yellow brown, scutellum of the vertex short, transverse, obtusely rounded and almost ridged in front; pronotum closely punctured with four sulci, the front one lateral and from its upper extremity runs a black line backwards for two-third length of the tegmina; tegmina one-third of the length of the abdomen in the female and about half as long in the male.

Material Examined: 2 ♂, 1 ♀, RWC, Kolhapur dist., 12.x.2014.

Distribution: India: Himachal Pradesh, Madhya Pradesh, Maharashtra, Uttarakhand & West Bengal.

Elsewhere: Bangladesh.

Subfamily: SPATHOSTERNINAE

Genus: *Spathosternum* Krauss, 1877

M.Spathosternum prasiniferum prasiniferum (Walker, 1871)

1871. *Heteracris prasinifera* Walker. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum. 5:65, 69, 82, 83.

Diagnostics: Medium to small sized, broad blackish or dark green stripe runs behind the lower part of the eye following below the lateral carinae of the pronotum; central area of the tegmen with a longitudinal black streak which is well marked in female and almost obsolete in male; tegmina and wings well developed.

Material Examined: 2 ♂, CNP, Kolhapur Dist., 16. iii. 2013; 3 ♀, CNP, Sangli Dist., 16. iii. 2013.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Hainan, Myanmar, Nepal, Pakistan, South & East China, Sri Lanka, Thailand, Vietnam and West Malaysia.

Habitat: This species is associated with grass. Adults and

nymphs occur almost throughout the year; there are three generations in a year. It is found in the hilly area as well as in the plains.

Subfamily: OXYINAE

Genus: *Oxya* (Serville, 1831)

N.Oxya hyla hyla (Serville, 1831)

1831. *Oxya hyla* Serville. Ann. Sci. nat. 22(86):28-65, 134-167, 262-292.

Diagnostics: Body medium size, finely rugose in male, supra-anal plate trapezoidal, with triangular apical projection; small tubercle present on both sides of the supra-anal plate; antennae filiform; Pronotum flat, smooth, median carina indistinctly marked; cercus conical or compressed rounded to acute or subacute apex; in subgenital plate with two longitudinal ridges extending forwards from posterior margin.

Material examined: 2 ♂, CNP, Kolhapur Dist. 9. i. 2014; 3 ♀, CNP, Sangli Dist. 9. i. 2014.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Africa, Angola, Bangladesh, Benin, Cameroun, Chad, Central Africa, Fernandopo, Gabon, Gambia, Ghana, Guinea, Iran, Kenya, Liberia, Madagascar, Maldives Island, Mali, Malawi, Nepal, Niger, Nigeria, Pakistan, São Tomé, Senegal, Sierra Leone, Sudan, Sri Lanka, Tanzania, Uganda, Zaire and Zambia.

Habitat: This species is found on small grass and bushy zone adjoining water ponds. It damages the seedlings of growing crops like paddy.

Subfamily: CYRTACANTHACRIDINAE

Genus: *Cyrtacanthacris* (Walker, 1870)

O.Cyrtacanthacris tatarica tatarica (Linnaeus, 1758)

1758. *Gryllus* (*Locusta*) *tataricus* Linnaeus. Systema Naturae per Regna tria naturae (10th Ed.). 1: 432.

Diagnostics: Large in size, reddish brown with whitish-yellowish patches; pronotum on both sides above with a broad velvety blackish brown band; tegmina with dense and thick reticulation or irregular spots; abdomen and legs reddish, hind tibiae bluish or brown with black tipped yellow or brown spines present.

Material Examined: 1 ♂, CNP, Kolhapur Dist, 26. v. 2014; 1 ♀, CNP, Sangli Dist, 26. v. 2014.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Africa, Bangladesh, Central America, Hainan, Indonesia, Madagascar, Mediterranean Region, Myanmar, Nepal, Pakistan, Philippines, Red-Sea, Sahara, Saudi Arabia,

Seychelles, Sri Lanka, South West Asia, Sumatra and Thailand.

Habitat: It is found feeding on wild and cultivated plants. This grasshopper occurs both in the plains as well as in hilly regions. The adults can travel long distance. It is a major pest of paddy.

Genus: *Patanga* (Uvarov, 1923)

P. Patanga succincta (Johansson, 1763)

1763. *Gryllus* (*Locusta*) *succinctus* Johannson. In Linnaeus, C.N. Amoenitates Academicae seu dissertationes variae Physicae, Medicae, Botanicae anthehac seorsim editae, 2nd Ed. 6:398.

Diagnostics: Body size large, pronotum, short, stouter; tegmina and wings very long, wing base rosy violet or colourless; pronotum very broad, punctured, brown with a wide median yellow stripe continuous with that of the head, over the carina; hind tibiae with a black-tipped spines; male subgenital plate long, curved upwards, apex pointed.

Material Examined: 1 ♂, CNP, Sangli Dist., 9. xi. 2013; 1 ♀, CNP, Kolhapur Dist., 9. xi. 2013.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Himachal Pradesh, Jammu & Kashmir, Kerala, Lakshadweep Island, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Australia, Borneo, China, Hainan Island, Japan, Malaysia, Myanmar, Pakistan, Philippines, South Arabia, Sri Lanka, South East Asia, Sumatra and Taiwan.

Habitat: It is commonly called as Bombay locust. It is a major pest of many crops in swarming phase. Adults and Nymphs feed on a variety of plants.

Genus: *Anacridium* (Uvarov, 1923)

Q. Anacridium flavescens (Fabricius, 1793)

1793. *Gryllus flavescens* Fabricius. Supplementum Entomologiae Systematicae 2: 52.

Diagnostics: Large in size; head yellowish behind the eyes, antennae black, longer than head and pronotum together; pronotum with elevated median carina; black antennae, large eyes; scattered dark spots on tegmina especially on wings, small scattered tubercles on prozona and trilobate subgenital plate are very distinctive.

Material Examined: 1 ♂, 1 ♀, Gaganbawda, Kolhapur Dist, 23. ix. 2013.

Distribution: India: Andhra Pradesh, Bihar, Karnataka, Kerala, Maharashtra, Orissa, Tamil Nadu and West Bengal.

Elsewhere: Sri Lanka.

Habitat: This grasshopper found in the litter as well as shrubby vegetation in hilly regions.

Genus: *Schistocerca* (Stål, 1873)

R. Schistocerca gregaria (Forskal, 1775)

1775. *Gryllus gregarius* Forskal. Descriptiones Animalium Avium, Amphibiorum, Piscium, Insectorum, Vermium; quae in Itinere Orientali observati Petrus Forskal. Prof. Haun. Post mortem Acutoris edit Carsten Nieburhr. 81.

Diagnostics: Large in size, yellow to brown in colour, pronotum with obtuse median carina, sometimes indistinct in prozona, metazona little longer than prozona. Prosternal process widened in the middle narrowed at apex, tegmina with transparent membrane and sparse reticulation, hind femur short.

Material Examined: 2 ♂, RWC, Kolhapur Dist, 3. vii. 2014.

Distribution: India: Assam, Bihar, Delhi, Gujarat, Haryana, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Punjab, Rajasthan, Sikkim, and Uttar Pradesh.

Elsewhere: Africa, Mediterranean Region, Nepal, Pakistan, Sri Lanka, South Europe, South & Central America and Western Asia.

Habitat: It is commonly called as a desert locust. The adults are very active and can travel long distance. This locust found on the plains as well as hilly regions. It is a serious pest of crops and vegetables.

Subfamily: CATANTOPINAE

Genus: *Catantops* (Schaum, 1853)

S. Catantops pinguis innotabilis (Walker, 1870)

1914. *Catantops pinguis*, Kirby, Fauna Brit, India, Orth.: 252.

Diagnostics: Body size medium, antennae shorter than head and pronotum together, basal disc of wings colourless to weakly greenish; external disc of the hind femur with a small black median spot; lateral lobe of pronotum plain; hind femur broad and thick without black median spot below upper carinula on external disc; small four black spots on internal disc; hind tibia red with spines basally back.

Material Examined: 3 ♂, 1 ♀, CNP, Kolhapur Dist., 28. vi. 2014, 2 ♂, 1 ♀, CNP, Sangli Dist., 29. iv. 2013.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Lakshadweep Island, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Bangladesh, Borneo, Hong Kong, Indo China, Java, Cambodia, Korea, Myanmar, Malaysia, Maldives Island, New Guinea, Pakistan, Philippines, Sri Lanka, Sumatra, South Tibet, Thailand and Yunnan.

Habitat: It is a minor pest of crops. The maximum population found in the month of October. Species found in the hilly area as well as in the plains.

Genus: *Xenocatantops* (Dirsh & Uvarov, 1953)

T. Xenocatantops humilis humilis (Serville, 1838)

1838. *Acridium humile* Serville. Histoire naturelle des insectes. Orthoptères. 662.

Diagnostics: Medium in size, eyes large, antennae apically brown, longer than the head and pronotum together; pronotum thickly and finely punctured, constricted in the middle, pronotal and thoracic marking much lighter with proportionately broader light oblique band on episternum III, hind femora with two blackish bands above; hind tibiae and

tarsi red; tibiae with black-tipped spines; male circus with a rounded apex.

Material Examined: 4 ♂, CNP, Kolhapur Dist., 20. iv. 2014; 1 ♀, SWS, Sangli Dist., 22. iv. 2013.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Borneo, Indo-China, Java, Lombok, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sumatra, Sri Lanka, Thailand, Tibet, Vietnam and Yunnan.

Habitat: This species is generally inhabitant of a forest, a heavy infestation of this species is found on hilly slopes adjoining to the cultivated fields. Nymphs are found in groups under the leaves.

Genus: *Stenocatantops* (Dirsh & Uvarov, 1953)

U. Stenocatantops splendens (Thunberg, 1815)

1815. *Gryllus splendens* Thunberg. Mem. Acad. Imp. Sci. St. Petersburg 5: 236.

Diagnostics: Body colours brown or greenish brown; medium sized, body slender and elongated; middle joints of the antennae about twice or thrice times as long as broad, pronotum thickly punctured, prosternal tubercle strongly curved and inclined backward in profile. Tegmina long and narrow, rounded at the tips, wings yellowish hyaline.

Material Examined: 2 ♂, 2 ♀, CNP, Kolhapur Dist, 19. iv. 2014; 2 ♀, CNP, Sangli Dist, 19. iv. 2014.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Borneo, China, Celebes, Hainan, Java, Korea, Malaysia, Moluccas Island, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Sumatra, Taiwan, Thailand and Vietnam.

Habitat: This species is generally found beneath the trees, Adults are found throughout the year; Nymphs are found under the leaves.

Subfamily: GOMPHOCERINAE

Genus: *Aulacobothrus* (Boliver, 1902)

V. Aulacobothrus luteipes luteipes (Walker, 1871)

1871. *Stenobothrus luteipes* Walker. Catalogue of the Specimens of *Dermaptera Saltatoria* in the Collection of the British Museum Supplement: 82.

Diagnostics: Body testaceous; head with three blackish stripes behind eyes, vertex round in front, outer angles of vertex form small black depressions. Wings sub-hyaline, tegmina centrally dusky, costa and inner margin broadly pale. Hind femora with three blackish bands above, tibiae red, yellowish towards the base, with outer 12 small black spines and 10 on the inner border.

Material Examined: 1 ♂, 2 ♀ (nymph), Gaganbawda,

Kolhapur Dist, 23. ix. 2013.

Distribution: India: Andaman and Nicobar Islands, Andhra Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Himachal Pradesh, Jammu and Kashmir, Karnataka, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand and West Bengal.

Elsewhere: Bangladesh, China, Japan, Europe, Myanmar, Nepal, North America, Pakistan, Sri Lanka, Taiwan and Thailand.

Habitat: This species is a pest of paddy and also found on other crops. Adults found during June to December.

Genus: *Gelastorrhinus* (Brunner Van Wattenwyl, 1893)

W. Gelastorrhinus laticornis (Serville, 1839)

1839. *Opsomala laticornis* Serville. Histoire naturelle des insectes. Orthopteres. 590.

Diagnostics: Medium sized, green in colour; head large, conical, antennae thickened and flattened, at the base, ensiform; pronotum tricarinate; a dark lateral stripe runs behind each antenna, tegmina sub hyaline and obtusely pointed at the tips and longer than abdomen; wings hyaline as long as the tegmina.

Material Examined: 1 ♂, 1 ♀, Gaganbawda, Kolhapur Dist., 23. ix. 2013.

Distribution: India: Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra and West Bengal.

Habitat: This species is associated with tall grass, found in the hilly area as well as in the plains. It is a minor pest of various crops and vegetables.

Subfamily: EYPREPOCNEMIDINAE

Genus: *Tylotropidius*, (Stål, 1873)

X. Tylotropidius varicornis (Walker, 1870)

1870. *Heteracris varicornis* Walker. Catalogue of the Specimens of *Dermaptera Saltatoria* in the Collection of the British Museum. 4: 667.

Diagnostics: Large size; pronotum brown with lateral Carinae of pale colour; prosternal tubercle compressed, bituberculate at apex; antennae with a light colour pre-apical ring; tegmina castaneous with row triangular whitish spots up on the radial nervure, hind tibiae and tarsi dull blue; supra-anal plate of male elongate- triangular and sulcate; cerci straight, slightly compressed and acuminate.

Material Examined: 1 ♂, 3 ♀, CNP, Kolhapur Dist, 14. iv. 2013; 2 ♀, CNP, Sangli Dist, 17. iv. 2013.

Distribution: India: Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Goa, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Orissa, Rajasthan, Tamil Nadu, Tripura, Uttarakhand, and West Bengal.

Elsewhere: Myanmar and Sri Lanka

Habitat: This species is associated with grass and it is a minor pest of paddy. Adults are almost found in groups under the leaves. Maximum population observed in the month of October.

Genus: *Eyprepocnemis* (Fieber, 1853)

Y. Eyprepocnemis alacris alacris (Serville, 1838)

1838. *Acridium alacre* Serville. Histoire naturelle des

insectes. Orthopteres. 682.

Diagnostics: Body size medium, the concavity of fastigium of vertex distinct; a broad velvety black sub-parallel sided stripe runs over the vertex and pronotum; tegmina sub hyaline; hind tibiae bluish gray with two whitish rings at base, reddish tarsus, male cercus gradually narrows towards apex incurved and down curved, with an acute apex.

Material Examined: 1 ♂, Gaganbawda, Kolhapur Dist, 1. x. 2014; 2 ♂, CNP, Sangli Dist., 17. xi. 2014.

Distribution: India: Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Bangladesh, Iran, Iraq, Pakistan and Sri Lanka.

Habitat: This species occurs amongst the long coarse grass with bushes on the plain area. Both Nymphs and adults are abundant from the months April to November.

Subfamily: COPTACRIDINAE

Genus: *Coptacra* (Stål, 1873)

Z. Coptacra punctoria (Walker, 1870)

1914. *Bibracy Odia punctoria*, Kirby, Fauna Brit. India, Orth.: 236.

Diagnostics: Body brown, with black granules; head rugosely punctate; pronotum rugosely punctate with raised granulose and crassate; antennae yellowish-brown, somewhat flattened, brownish at the tips; hind femur with a distinct or indistinct black spot on the superior external face, just before the middle; hind tibiae red.

Material Examined: 1 ♂ 1 ♀, RWC, Kolhapur Dist, 3. vii. 2013.

Distribution: India: Andhra Pradesh, Chhattisgarh, Kerala, Maharashtra, and Tamil Nadu.

Habitat: It is associated with small grass. It is a minor pest of paddy.

Subfamily: TROPIDOPOLINAE

Genus: *Tristria* (Stål, 1873)

AA. Tristria pulvinata (Uvarov, 1921)

2007. *Tristria pulvinata*, Mandal, Pictorial handbook on Indian Short- horned grasshopper pests (Acridoidea: Orthoptera), Rec. Zool. Surv. India: 31.

Diagnostics: Small to medium in size, fastigium of vertex parabolic; prosternal tubercle curved backward, strongly widened and concave apically.

Material Examined: 3 ♂ Chandgad, Kolhapur Dist, 17. xi. 2013.

Distribution: India: Andhra Pradesh, Assam, Bihar, Delhi, Haryana, Karnataka, Kerala, Maharashtra, Meghalaya, Orissa, Punjab, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Sri Lanka.

Habitat: This species may attack various grasses. The highest population in the month of May among dry long grasses and is minimum in December. It is found in hilly as

well as the plain area.

Family - CHOROTYPIDAE

Subfamily: CHOROTYPINAE

Genus: *Phyllochoreia* (Westwood, 1839)

BB. Phyllochoreia equa (Burr, 1899)

1914. *Phyllochoreia equa*, Kirby, Fauna, Brit. India, Orth.: 83.

Diagnostics: Green to ochreous, antennae short, head narrowed, pointed above, broad below the eye; pronotal crown projecting covers the head, arched above and extending middle of the abdomen; tegmina rather broadly pointed at the extremity, discoidal area having rows of long black spots; hind femora broad, denticulate at posterior; hind tibiae slender.

Material Examined: 2 ♂, 2 ♀, Gaganbawda, Kolhapur Dist, 19. iv. 2014; 2 ♀, CNP, Sangli Dist, 19. iv. 2014.

Distribution: India: Maharashtra.

Habitat: This species is associated with grass as well as shrubs. Adults are observed in the month of November.

Superfamily: PYRGOMORPOIDEA

Family: PYRGOMORPHIDAE

Subfamily: PYRGOMORPHINAE

Genus: *Atractomorpha* (Saussure, 1862)

CC. Atractomorpha crenulata (Fabricius, 1793)

1914. *Atractomorpha crenulata*, Kirby, Fauna Brit. India, Orth.: 181.

Diagnostics: Medium in size, narrow and slender; green to dry brown; antennae short and stout, sub- filiform, darker at the base; head conical, fastigium of vertex short, eye oval; pronotum punctured, sparsely granulated, submarginate, pink or pale crenulated behind the eyes; tegmina pointed, extended for one-fourth of their length beyond the hind femora; hind wings normally tyrian pink to light mallow purple at base.

Material Examined: 2 ♂, 2 ♀, Gaganbawda, Kolhapur Dist, 19. iv. 2014; 2 ♀, CNP, Sangli Dist, 19. iv. 2014.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Lakshadweep Island, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Nagaland, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Cambodia, Laos, Maldives Island, Malaya, Myanmar, Nepal, Pakistan, Sri Lanka, Sumatra, South Vietnam and Thailand.

Habitat: This species associated with a small grass or moist part of the forest. This species found throughout the year.

Genus: *Chrotogonus* (Serville, 1838)

DD. Chrotogonus (Chrotogonus) trachypterus trachypterus (Blanchard, 1836)

1914. *Chrotogonus incertus*, Kirby, Brit. India, Orth.: 163.

Diagnostics: Body small to medium size, stoutly built, tuberculated, dorsoventrally flattened; Pronotum short, broad with strongly tuberculate; hind wings hyaline or occasionally with faintly tinged yellowish brown as long as tegmina.

Material examined: 2 ♂, 2 ♀, Gaganbawda, Kolhapur

Dist, 19. iv. 2014; 2 ♀, CNP, Sangli Dist, 19. iv. 2014..

Distribution: India: Andhra Pradesh, Assam, Bihar, Chhattisgarh, Delhi, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Bangladesh, Iran, Nepal and Pakistan.

Habitat: This species is found in low grass and shrub and associated with a good deal of bare ground.

Genus: Aularches (Stål, 1873)

EE. Aularches (Chrotogonus) miliaris (Linnaeus, 1758)

1914. *Aularches miliaris* Kirby. Fauna of British India, Orth.:168.

Diagnostics: Large in size, tegmina light brown, very thickly reticulated with yellowish veins and yellow rounded even spots, wings purple-brown, darker towards the base; abdomen black with narrow yellow or orange-red incisions; hind knee marked with black on the sides.

Material examined: 2 ♂, 2 ♀, Gaganbawda, Kolhapur Dist, 19. iv. 2014; 2 ♀, CNP, Sangli Dist, 19. iv. 2014.

Distribution: India: Andhra Pradesh, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Manipur, Maharashtra, Meghalaya, Orissa, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Afghanistan, Bangladesh, Iran, Nepal and Pakistan.

Habitat: This species is found in low grass and shrub and associated with a good deal of bare ground.

Genus: Colemania (Bolivar, 1910)

FF. Colemania spenarioides (Bolivar, 1910)

1914. *Colemania spenarioides* Kirby, Fauna Brit. India, Orth.: 189.

Diagnostics: Medium-large size; Straw or bluish green in colour with the pink and yellow stripe running behind the eyes; antennae bluish-black, always having wing pads, tegmina extending up 1st abdominal segment; prosternum actually tuberculated; super anal plate forming a long triangle, longer than cerci.

Material Examined: 2 ♂, RWC, Kolhapur Dist, 1.x.2014; 1 ♀, CNP, Kolhapur Dist, 18.xi.2013.

Distribution: India: Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu.

Habitat: This species is popularly known as a Deccan grasshopper. It is a serious pest of Jawar, Bazra, Sugarcane and Millets. It hatches during July- August.

Superfamily: TETRIGOIDEA

Family: TETRIGIDAE

Subfamily: TETRIGINAE

Genus: Euparatettix (Hancock, 1904)

GG. Euparatettix personatus (Bolivar, 1887)

1887. *Paratettix personatus* Bolívar. Ann. Soc. Entom. Belgique. 31: 278.

Diagnostics: Medium in size, brown or dark brown, tuberculated, head little raised above the level of pronotum;

fastigium narrower than the globular eye, elevated forward; middle carinula distinct, frontal costa bifurcate behind the paired ocelli.

Material Examined: 2 ♂, 2 ♀, Ambaiwada, Kolhapur Dist, 15.iii.2013; CNP, Sangli Dist, 19. iv. 2014.

Distribution: India, Bangladesh, Pakistan, Sri Lanka, Burma, Java, Philippines, Taiwan.

Genus: Hedotettix (Bolivar, 1887)

HH. Hedotettix gracilis (Haan, 1842)

1914. *Hedotettix gracilis*, Kirby, Fauna of Brit. India, Orth.: 72

Diagnostics: Body small to large, variable in colour, head not exerted above the pronotum, vertex broad equal to or narrower than an eye, front margin rounded, pronotum annulated anteriorly, extended behind up to the apex of hind femora or beyond it, dorsum finely granulate, tectiform between shoulders, wings extended up to the pronotum or surpass a few.

Material Examined: 2 ♂, 2 ♀, Ambaiwada, Kolhapur Dist, 15.iii.2013; CNP, Sangli Dist, 19. iv. 2014.

Distribution: India: Arunachal Pradesh, Assam Madhya Pradesh, Manipur, Meghalaya, Maharashtra, Sikkim, Tripura, Orissa and West Bengal.

Elsewhere: Celebes, Java, Myanmar, Sumatra, Sri Lanka, Taiwan, Thailand and Vietnam.

II. Hedotettix lineiferum (Walker, 1871)

1871. *Tettix lineiferum*, Walker. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum. 5:828.

Material Examined: 2 ♂, 2 ♀, Ambaiwada, Kolhapur Dist, 15.iii.2013; CNP, Sangli Dist, 19. iv. 2014..

Distribution: India: Arunachal Pradesh, Assam Madhya Pradesh, Manipur, Meghalaya, Maharashtra, Sikkim, Tripura, Orissa and West Bengal.

Elsewhere: Celebes, Java, Myanmar, Sumatra, Sri Lanka, Taiwan, Thailand and Vietnam.

Genus: Coptotettix (Bolivar, 1887)

JJ. Coptotettix conspersus (Hancock, 1915)

1915. *Coptotettix conspersus*, Hancock. Rec. Ind. Mus. 11:119.

Diagnostics: Head not exerted above the pronotum, vertex narrower than one of the eye, and narrowed forward, not produced in front of eyes, lateral carinulae visible up to the half distance of the eye in front, pronotum truncate anteriorly, extended beyond the hind femoral apices posteriorly; dorsum convex with abbreviated curved.

Material Examined: 2 ♂, 2 ♀, Ambaiwada, Kolhapur Dist, 15.iii.2013; CNP, Sangli Dist, 19. iv. 2014.

Distribution: India: Arunachal Pradesh, Assam, Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Tripura, Uttarakhand, Uttar Pradesh and West Bengal.

Elsewhere: Sri Lanka.

Genus: Ergatettix (Kirby, 1914)

KK. Ergatettix guentheri (Steinmann, 1970)

1970. *Ergatettix guentheri*, Steinmann. Acta Zool. Acad. Sci. Hung. 16:215-240.

Diagnostics: Size medium to large. Colour ferruginous or grey, head distinctly exerted, vertex narrower than one of the eyes, a little narrower forward, not produced in front of the eyes, carinated in the middle; frontal costa bifurcate behind the paired ocelli, moderately arcuate between the antennae, declined towards the front; paired usually placed below the middle of the eyes. Antennae filiform, situated below the inferior margin of eyes, pronotum truncate anteriorly, median carina depressed in front.

Material Examined: 1 ♂, 2 ♀, CNP, Kolhapur Dist. 1.iii.2013.

Distribution: India: Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Himachal Pradesh, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Orissa, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Nepal and Sri Lanka.

LL. Ergatettix dorsifera (Walker, 1871)

1871. *Tettix dorsifera* Walker. Catalogue of the Specimens of Dermaptera Saltatoria in the Collection of the British Museum 5:825.

Material Examined: 1 ♀, 1 ♂, Chandgad, Kolhapur Dist, 15. ii. 2014.

Distribution: India: Arunachal Pradesh, Assam, Bihar, Delhi, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Orissa, Sikkim, Tripura, Uttar Pradesh and West Bengal.

Elsewhere: Bangladesh, Central Asia, Greater Sunda Island, Java, Myanmar, Nepal, South China, Sumatra, Sumba, Taiwan and Turkmenistan.

Subfamily: SCELIMENINAE

Genus: *Eucrietettix* (Hebard, 1929)

MM. Eucrietettix flavopictus (Bolivar, 1902)

1902. *Crietettix flavopictus* Bolívar. Ann. Soc. Ent. Fr. 70:582.

Diagnostics: Small sized, body elongated and slender, greyish brown with pale markings, head a little elevated; vertex narrower than eye, a little narrowed in front, extends up to the level of eyes in front, median carinula well developed, prozona carinated on either side; frontal costa bifurcated behind the paired ocelli, arcuate between antennae, pronotum smooth, or granulose.

Material Examined: 1 ♀, 1 ♂, Chandgad, Kolhapur Dist, 15. ii. 2014.

Distribution: India: Assam, Karnataka, Kerala, Maharashtra, Meghalaya and Tamil Nadu.

Elsewhere: Myanmar.

Genus: *Euscelimena* (Gunther, 1938)

NN. Euscelimena harpago (Serville, 1839)

1839. *Tetrix harpago* Serville. Histoire Naturelle des Insectes. Orthopteres. 763.

Diagnostics: Pale brownish black, thickly granulated,

vertex narrower than the eyes, more narrowed forward, antennae filiform, black with white incisions; pronotum wider than the head, front lateral angles rounded, pronotum tapers posteriorly; forelegs black, spotted with yellow markings, mid legs entirely black. Hind femora with yellow small and large toothed above, two strong tooth below.

Material Examined: 1 ♀, 1 ♂, Chandgad, Kolhapur Dist, 15. ii. 2014.

Distribution: India: Bihar, Gujarat, Karnataka, Maharashtra, Madhya Pradesh, Orissa, Tamil Nadu and Uttar Pradesh.

Elsewhere: Sri Lanka.

The present attempt is to bring out the picture of the short-horned grasshoppers from Kolhapur district, which is a part of the biodiversity hotspot, 'The Western Ghats'. The outcome of the present study is 40 species of the suborder Caelifera, highlighting the significance of the Western Ghats. This data may prove useful for policy makers for conserving the diversity of Western Ghats, especially on the background of large-scale habitat destruction taking place in this region.

ACKNOWLEDGMENT

The authors are grateful to the Director, Zoological Survey of India, Kolkata for permission to examine the Orthoptera reference collection available at the Zoological Survey of India, Kolkata. Thanks due to University Grant Commission (UGC), New Delhi for financial support during the work. The authors are also thankful to Head, Department of Zoology, Shivaji University, Kolhapur for laboratory facilities and the office of the Chief Conservator of Forests (Wildlife) Kolhapur for permission to survey in the study area. We wish to thank Dr. Sigfrid Ingrisch, for the help in identification.

REFERENCES

- [1] K. Chandra, M. S. Shishodia and S. K. Gupta, Diversity of Orthoptera (Insecta) In India: State of Our Knowledge. In Advancement in Invertebrate Taxonomy and Biodiversity, pp. 43-80, 2010.
- [2] K. Chandra, and S. K. Gupta, Insecta: Orthoptera. Fauna of Maharashtra, State Fauna Series, vol. 20, no. 2, pp. 429-436, 2012.
- [3] W. F. Kirby, The fauna of British India, including Ceylon and Burma, I. Orthoptera (Acrididae), vol. 9, pp. 27, 1914.
- [4] L. Chopard, The Fauna of India and adjacent countries: Orthoptera, 2 Grylloidea. Zoological Survey of India, vol. 2, pp. 1-421, 1969.
- [5] H. K. Bhowmik, Grasshopper fauna of West Bengal, India (Orthoptera: Acrididae). Zoological Survey of India, Technical Monographs, vol. 14, pp. 1-180, 1986.
- [6] M. S. Shishodia and A. K. Hazra, Orthopteran Fauna of Silent Valley, Kerala. Records of Zoological Survey of India, vol. 84, no. 1 and 4, pp. 191-228, 1986.
- [7] S. K. Mandal, A. Dey and A. K. Hazra, Pictorial Handbook on Indian short-horned grasshopper pests (Acridoidea: Orthoptera), pp. 1-57, 2007.
- [8] M. S. Shishodia, On a collection of Grouse-Locusts (Orthoptera: Tetrigidae) from Maharashtra, India, with some new distributional records. Records of Zoological Survey of India, vol. 88, no. 1, 29-36, 1991.
- [9] M. S. Shishodia, Orthoptera. Fauna of Conservation Areas 9, Fauna of Nanda Devi Biosphere Reserve, Zoological Survey of India, pp. 49-53, 1997.
- [10] M. S. Shishodia, Short and long-horned grasshoppers and crickets of Bastar district, Madhya Pradesh, India. Records of Zoological Survey of India, vol. 98, no. 1, pp. 27-80, 2000a.
- [11] M. S. Shishodia, Insecta: Orthoptera: Grylloidea and Tridactyloidea. State Fauna Series 7, Fauna of Tripura, Zoological Survey of India, vol.

- 2, pp. 247-262, 2000b.
- [12] A. K. Hazra, S. K. Tandon, M. S. Shishodia, A. Dey and S. K. Mandal, Insecta: Orthoptera: Acridoidea. State Fauna Series 3, Fauna of West Bengal Part 4, Zoological Survey of India, vol. 3 no.4, pp.287-354, 1993.
- [13] A. K. Hazra, S. K. Tandon, M. S. Shishodia, S. K. Mandal and A. Dey, Insecta: Orthoptera: Acridoidea. State Fauna Series 4, Fauna of Meghalaya Part 3, Zoological Survey of India, Vol. 3, no. 4, pp. 209-277, 1995.
- [14] M. Vasanth, Studies on crickets (Insecta: Orthoptera: Gryllidae) of North-east India. Records of Zoological Survey of India, Occasional Paper, vol. 132, no. i-vi, pp. 1-178, 1993.
- [15] M. S. Shishodia and S. K. Tandon, Insecta: Orthoptera: Acridoidea and Eumastacoidea. State Fauna Series 7, Fauna of Tripura, Part 2, Zoological Survey of India, pp. 197-230, 2000.
- [16] A. Dey and A. K. Hazra, Diversity and distribution of grasshopper fauna of Greater Kolkata with notes on their ecology. Memoirs, Zoological Survey of India, vol. 19, no.3, 1-118, 2003.
- [17] M. S. Shishodia, A. Dey and S. K. Tandon, Insecta: Orthoptera: Acridoidea and Eumastacoidea. State Fauna Series 9, Fauna of Sikkim, Zoological Survey of India, vol. 2, pp. 165-192, 2003.
- [18] S. K. Mandal and K. Yadav, Insecta: Orthoptera: Acridoidea. State Fauna Series 5, Fauna of Andhra Pradesh, Part 3. Zoological Survey of India, pp. 183-222, 2007.
- [19] S. K. Gupta, K. K. Dube and K. Chandra, On a collection of Orthoptera from Achanakmar Wildlife Sanctuary, Chhattisgarh. National Journal of Life Sciences, vol.5, no.1, 117-126, 2008.
- [20] R. M. Sharma, P. P. Kulkarni and R. H. Kamble, Population outburst of *Mecopoda elongata* Linn. (Orthoptera: Tettigoniidae) around Pune, Maharashtra. Zoos' Print Journal, vol. I-XIV, no. 3-12, pp. 174, 1999.
- [21] P. P. Kulkarni and R. M. Sharma, Unusual observation of mass immobilization of a grasshopper population in Maharashtra. Bionotes, vol. 6. no. 2, pp. 55, 2004.
- [22] P. P. Kulkarni and M. S. Shishodia, Insecta: Orthoptera. Conservation Area Series, Pench National Park. Zoological Survey of India, vol. 20, pp. 207-225, 2004.
- [23] P. P. Kulkarni and M. S. Shishodia, Insecta: Orthoptera. Conservation area series Fauna of Melghat Tiger Reserve Zoological Survey of India, vol. 24, pp. 317-340, 2005.