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### NOTE

**LONG-HORNED GRASSHOPPERS (ORTHOPTERA: TETTIGONIIDAE) IN RADHANAGARI WILDLIFE SANCTUARY, MAHARASHTRA, INDIA**

Sunil M. Gaikwad, Yogesh J. Koli, Gopal A. Raut,  
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## LONG-HORNED GRASSHOPPERS (ORTHOPTERA: TETTIGONIIDAE) IN RADHANAGARI WILDLIFE SANCTUARY, MAHARASHTRA, INDIA

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Members of the family Tettigoniidae are commonly known as long-horned grasshoppers and katydids. Earlier, Barman & Srivastava (1976), Barman (2003), Ingrisch & Shishodia (2000), Shishodia (2000), and Ingrisch & Muralirangan (2003) have produced major work on Indian Tettigoniidae. Kulkarni & Shishodia (2004) reported eight species of long-horned grasshopper from Pench National Park. Senthilkumar et al. (2006) studied the orthopteran fauna from Gibbon Wildlife Sanctuary, Assam. Chandra et al. (2007) published a checklist of Madhya Pradesh and Chhattisgarh tettigoniids including other orthopteran insects. Senthikumar (2010) studied the Orthopteroids in Kaziranga National Park, Assam. Shishodia et al. (2010) published a checklist including 160 species and subspecies of tettigoniids from India, out of these 18 species are recorded from Maharashtra. Chandra & Gupta (2012) have compiled the list of Tettigoniidae from Maharashtra based on the deposited material in Zoological Survey of India, Pune and Kolkata, which contains 18 species belonging to 18 genera. Srinivasan & Prabakar (2012) have reported 10 species

of Tettigoniidae belonging to 10 genera from different localities of Arunachal Pradesh. This group of insects was previously rather poorly known because the majority of Tettigoniidae are nocturnal insects that are associated with vegetation, particularly during inactive periods when they retreat into leaves but even ground dwelling, use burrows in the soil (Kevan 1989) and holes in wood and thus not easily collected. Tettigoniids are mixed feeders, feeding on vegetation, seeds, carrion and occasional prey (Gwynne & Morris 2002).

The present study was directed to study the diversity of tettigoniids from Radhanagari Wildlife Sanctuary, which is spread along the hilly terrain of the Sahyadri ranges of Western Ghats, located in Radhanagari Tehsil of Kolhapur District, Maharashtra, India. It lies within the latitude range of 16°10'–16°30'N & 73°52'–74°14'E, with the altitude range of 530–1033 m. It covers an area about 351.16km<sup>2</sup>. The Sanctuary consists of southern semi-evergreen, moist mixed deciduous and evergreen type of forest with mixed patches of grassland (www.mahaforest.nic.in).

Long-horned grasshoppers were sampled with the help of light trap and battery torch by hand picking method during night hours (19:00–23:00 hr) from January, 2012 to December, 2014. They were killed and preserved by dry preservation method and deposited at Zoological Survey of India, Western Regional Centre, Pune. They were identified with the help <http://orthoptera.speciesfile.org>, Srinivasan and Prabakar (2012) and by comparing with reference collection at



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Zoological Survey of India, Kolkata and Pune regional centre. Identification of some specimens was done by Dr. Sigfrid Ingrisch up to genus level.

The study resulted in the enumeration of 11 species of long-horned grasshoppers. Out of these nine species are known from Maharashtra and *Phyllozelus* (*Phyllozelus*) *siccus siccus* and *Hexacentrus unicolor* are new locality records.

Order: Orthoptera  
Suborder: Ensifera  
Superfamily: Tettigoniodea  
Family: Tettigoniidae

Subfamily: Phaneropterinae  
Genus: *Himertula* Uvaro, 1940

**1. *Himertula kinneari* (Uvaro, 1923) (Image 1)**

Material examined: Ent.5/1443/ZSI, Pune, 2 females, 1 male, 09.iii.2013, Radhanagari WS, coll. S.M. Gaikwad,  
Distribution: India: Bihar, Chhattisgarh, Gujarat, Himachal Pradesh, Karnataka, Maharashtra, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal; Bhutan and Nepal.

Habitat: This species is generally found on grass.

Remark: This species was previously recorded from Maharashtra, from Bombay in 1923 by Uvarov (1923).

Genus *Letana* Walker, 1869

**2. *Letana megastridula* Ingrisch, 1990 (Image 2)**

Material Examined: Ent.5/1444/ZSI, Pune, 1 female, 13.i.2012, 1 male, 23.xii.2012; 3 males, 1 female, 17.xi.2013. Radhanagari WS, coll. Y.J. Koli.

Distribution: India: Bihar, Chhattisgarh, Himachal Pradesh, Maharashtra and Tamil Nadu.

Habitat: This species is generally found on grass. Adults are prevalent in the months of October and November.

Remarks: It is easily recognized by black or reddish dots on body and legs.

Genus *Ducetia* Stal, 1874

**3. *Ducetia japonica* (Thunberg, 1815) (Image 3)**

Material Examined: Ent.5/1445/ZSI, Pune, 1 male, 26.xi.2012, 1 female, 18.xii.2012, Radhanagari WS, coll. S.M. Gaikwad.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Jammu & Kashmir, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisha, Rajasthan, Sikkim, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal; Australia, Bangladesh, Borneo, China, Formosa, Hainan,



Image 1. *Himertula kinneari*



Image 2. *Letana megastridula*

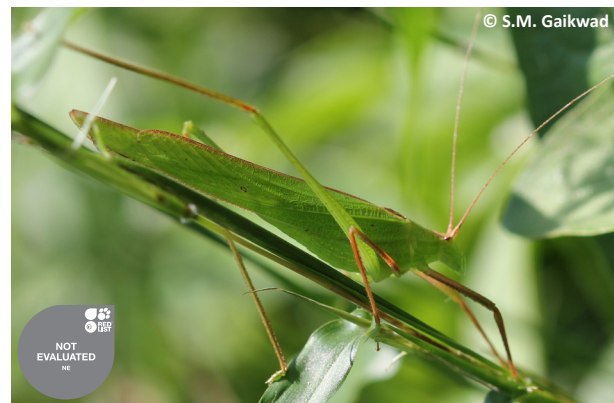


Image 3. *Ducetia japonica*

Indo-China, Japan, Java, Kuala Lumpur, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Selangor, Singapore, Solomon, Island, Sri Lanka, Thailand, Tibet and Tonkin.

Habitat: This species is associated with grass. It is found in hilly areas as well as plains. Adults are common during the months of December and January.

Remarks: This species was previously recorded from

Maharashtra, from Bombay by Nadkerny (1965).

Genus: *Trigonocorypha*, Stal, 1873

**4. *Trigonocorypha unicolor* (Stoll, 1787) (Image 4)**

Material Examined: Ent.5/1446/ZSI, Pune, 1 female, 01.iii.2013, Radhanagari WS, coll. S.M. Gaikwad.

Distribution: India: Andaman & Nicobar Islands, Karnataka, Maharashtra, Meghalaya, Odisha, Rajasthan, Tamil Nadu and West Bengal; Java and Sri Lanka.

Remark: Recorded recently from Kolhapur, Maharashtra by Koli et al. (2014).

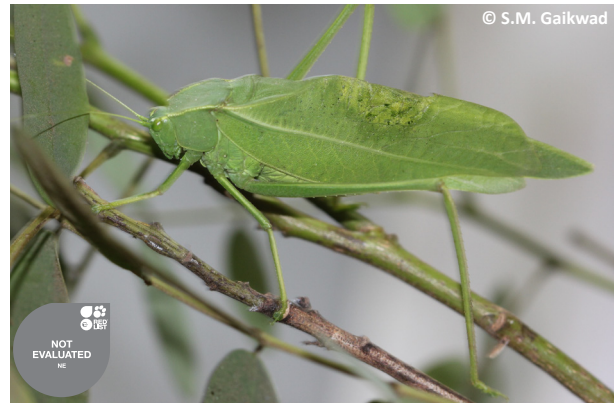


Image 4. *Trigonocorypha unicolor*

Subfamily: Conocephalinae

Genus *Conocephalus* Thunberg, 1815

Subgenus *Anisoptera*, Latreille, 1829

**5. *Conocephalus (Anisoptera) maculatus* (Le Guillou, 1841) (Image 5)**

Material Examined: Ent.5/1447/ZSI, Pune, 2 males, 2 females, 3.i.2013, 1 male, 7.ii.2014, Radhanagari WS, coll. S.M. Gaikwad.

Distribution: India: Andaman & Nicobar Islands, Arunachal Pradesh, Chhattisgarh, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, Tripura, Uttarakhand and West Bengal; Africa, Australia, Hong Kong, Indonesia, Java, Malaysia, Nepal, New Guinea, Philippines and Sierra Leone.

Habitat: This species prefers mixed vegetation zones in hilly as well as plain area. Maximum population observed in the month of November.

Remarks: This species can easily be recognized by large dark spots on tegmina.

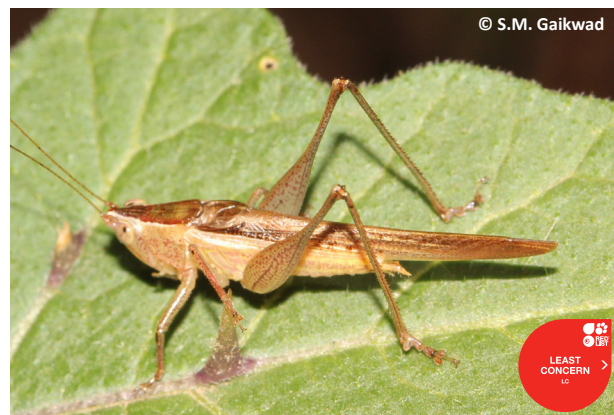


Image 5. *Conocephalus (Anisoptera) maculatus*

Subfamily: Mecopodinae

Genus *Mecopoda* Serville, 1831

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

Material Examined: Ent.5/1448/ZSI, Pune, 1 male, 1 female, 10.xi.2013, Radhanagari WS, coll. G.A. Raut.

Distribution: India: Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamil Nadu, Tripura, Uttarakhand and West Bengal; Australia, Aru Islands, Borneo, Celebes, China, Indonesia, Japan, Malacca, Malaysia, Moluccas, New Guinea, Philippines, Singapore, Sunda Islands, Taiwan, Thailand and Tonkin.

Habitat: This species occurs inside forests associated with dense undergrowth of mixed vegetation.

Remarks: This species was previously recorded from



Image 6. *Mecopoda elongata elongata*

Maharashtra, from Bombay in 1936 (Nadkerny 1965).

Subfamily: Pseudophyllinae

Genus *Sathrophyllia* Stål, 1874

**7. *Sathrophyllia rugosa* (Linnaeus, 1758) (Image 7)**

Material Examined: Ent.5/1449/ZSI, Pune, 1 female, 5.x.2012, Radhanagari WS, coll. S.M. Gaikwad.

Distribution: India: Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Sikkim, Tamil Nadu & West Bengal; Java, Sri Lanka and Sumatra.

Habitat: This species is associated with tall grass and trees. Maximum population observed in the month of October.

Remarks: This species was previously recorded from Maharashtra from Andheri in 1908 and Nashik in 1938 (Nadkerny 1965).

Genus *Paramorsimus* Beier, 1954

**8. *Paramorsimus oleifolius* (Fabricius, 1793) (Image 8)**

Material Examined: Ent.5/1450/ZSI, Pune, 1 female, 1 male, 17.iv.2014, Radhanagari WS, coll. Y.J. Koli.

Distribution: India: Maharashtra, Odisha and Tamil Nadu; Sri Lanka.

Remark: This species was previously recorded from Maharashtra, from Bombay (Walker 1871).

Genus *Phyllozelus* Rdetenbacher, 1892

Subgenus: *Phyllozelus* Rdetenbacher, 1892

**9. *Phyllozelus (Phyllozelus) siccus siccus* (Walker, 1869) (Image 9)**

Material Examined: Ent.5/1451/ZSI, Pune, 1 male, 09.i.2014, Radhanagari WS, coll. S.M. Gaikwad.

Distribution: India: Assam, Sikkim and Tamil Nadu.

Remarks: *Phyllozelus (Phyllozelus) siccus siccus* was identified by the characters given in Srinivasan and Prabakar (2012). It distinguished from the subspecies *Phyllozelus (Phyllozelus) siccus brevisculus* by characters of supra-anal plate. The supra-anal plate is triangular and pointed terminally in *P.(P.) siccus siccus* while in *P.(P.) siccus brevisculus* supra-anal plate is obtuse. Shishodia (2010) mentioned its distribution in Assam, Sikkim and Tamil Nadu. Chandra & Gupta (2012) have not included *P.(P.) siccus siccus* in Maharashtra fauna, thus this present report constitutes its first record from the state.

Genus *Callimenellus* Walker, 1871

**10. *Callimenellus apterus* Beier, 1944 (Image 10)**

Material Examined: Ent.5/1452/ZSI, Pune, 2 females, 3 males, 27.iv.2014, Radhanagari WS, coll. Y.J. Koli.

Distribution: India: Maharashtra and Tamil Nadu.

Habitat: This species is found on short grass, bark of trees and bare ground land.

Subfamily: Hexacentrinae

Genus: *Hexacentrus* Serville, 1831

**11. *Hexacentrus unicolor* Serville, 1831 (Image 11)**

Material Examined: Ent.5/1453/ZSI, Pune, 1 female, 2 males, 17.vii.2013, Radhanagari WS, coll. G.A. Raut.

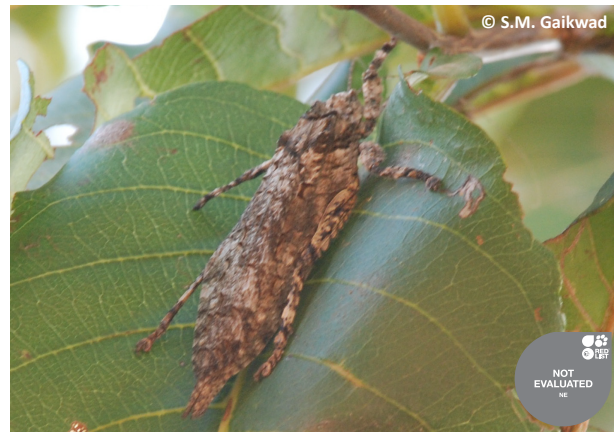


Image 7. *Sathrophyllia rugosa*

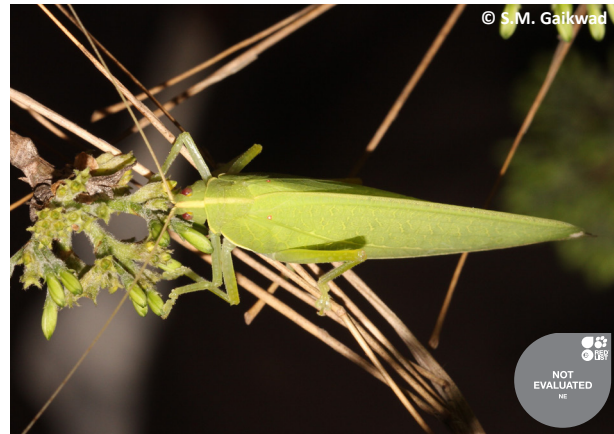


Image 8. *Paramorsimus oleifolius*

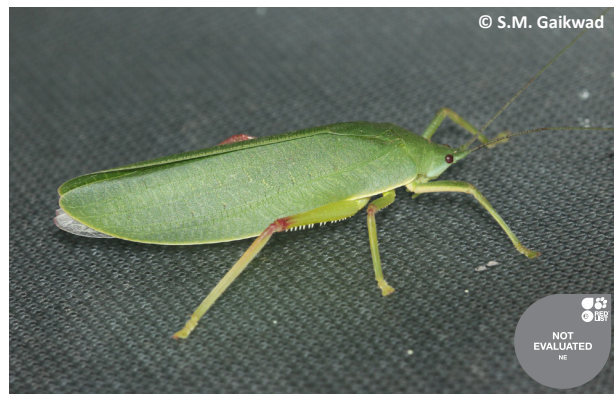


Image 9. *Phyllozelus (Phyllozelus) siccus siccus*

Distribution: India: Andaman & Nicobar Island, Himachal Pradesh, Manipur, Mizoram, Nagaland, Sikkim and Arunachal Pradesh; Borneo, Celebes, China, Japan, Java, Moluccas, Myanmar, Philippines, Sumatra, Singapore, Taiwan and Thailand.



Image 10. *Callimenellus apterus*

Habitat: This species is associated with tall grass and trees. Maximum population observed in the month of October.

Remarks: New record for Maharashtra.

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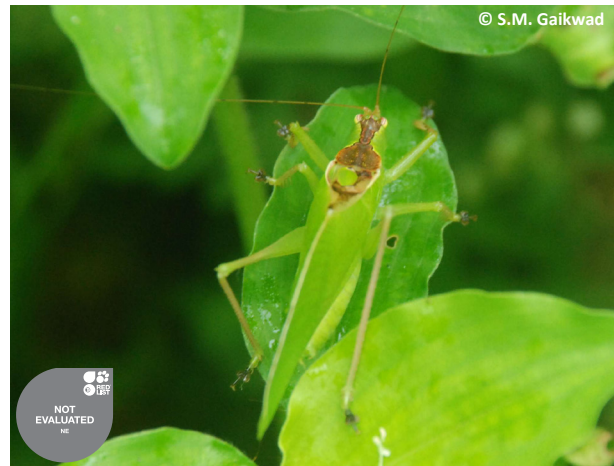


Image 11. *Hexacentrus unicolor*

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