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New record of *Erianthus deflorata* (Brunner von Wattenwyl) with notes on *Xenerianthus affinis* (Westwood) [Orthoptera: Eumastacoidea: Chorotypidae) from Meghalaya, India

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ABSTRACT: Morphological characterization of the two species of monkey grasshoppers, *Xenerianthus affinis* (Westwood, 1843) and *Erianthina deflorata* (Brunner von Wattenwyl, 1893) collected from the northeastern state of Meghalaya, India is given. *Erianthina deflorata* has been recorded for the first time from India. A key to separate the two genera is also provided.

KEY WORDS: Erianthinae, *Xenerianthus*, *Erianthina*. New record

INTRODUCTION

Grasshoppers of the family Chorotypidae (super family Eumasticoidea), also termed as monkey grasshoppers, are sub-aerial herbivores of angiosperms and differ from the Acridoidea morphologically in having a head raised above the level of thorax, very short antennae, absence of abdominal tympani, wings (when present) widened distally and a laterally spread posture of the hind legs at rest in a majority of species. The Eumastacoidea known to be worldwide in distribution are predominantly tropical. They are entirely absent from Europe, New Zealand and Antarctica and have been considered an early branch of the Caelifera, a view confirmed by molecular systematic investigations which place them after the Tridactyloidea and Tetrigoidea, but before the remaining superfamilies (Flook and Rowell, 1997, Rowell and Flook, 1998, Flook *et al*., 1999).

The genus *Erianthus* is distributed in Indo-Malaysia and Africa; the subfamily Erianthinae is restricted to the Indo-Malaysian region (Descamps, 1973). The genus *Erianthus* Stal, 1875 was considered a heterogenous assemblage of species (Bolivar, 1930). Descamps (1975) divided this genus into ten genera and recognized ten species in *Erianthus* (*s. str*.); since this revision, one additional species has been described (Descamps, 1981). Earlier, Kirby (1914) had recorded 9 species of *Erianthus* from the Indian sub-continent; Ingrisch and Willemse (1988) revised the genus *Erianthus* reporting 10 species from Thailand and 2 additional species from Malaysia. Erianthinae subfamily includes 12 genera and 42 species (Eades *et al.,* 2015).

MATERIAL AND METHODS

The monkey grasshoppers were collected from the northeastern state of Meghalaya, India during June, 2013 under the Indian Council of Agricultural

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Research (New Delhi) sponsored Network Project on Insect Biosystematics unit at Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan. All specimens were either collected with a sweep net or hand-picked during early hours of the day and late at night, under illumination. Digital photographs of specimens and their body parts were taken with the help of Stemi 2000 C Stereozoom binocular microscope of Carl Zeiss make; the software used for linear measurements was Axio Vision L.E. 4.5. Line drawings were made with the help of a drawing tube attachment of Nikon SMZ 1500 binocular microscope. The type specimens are deposited in the Department of Entomology, Rajasthan College of Agriculture, MPUAT, Udaipur, and the University of Agricultural Sciences, GKVK, Bangalore.

RESULTS

Tribe Erianthini

Subfamily ERIANTHINAE Karsch, 1889: 27.

Genus ***Butania*** Bolivar, I., 1903: 303.

Butania lugubris major Bolivar, C., 1930: 143.

Genus ***Khaserianthus*** Descamps, 1975: 92, 109.

Khaserianthus acutipennis (Saussure, 1903: 78)

Genus ***Xenerianthus*** Descamps, 1975: 92, 94.

Xenerianthus affinis (Westwood, 1843: 54)

Key to the genera of Erianthini from India

Fastigium of vertex raised; vertex appears bifid in frontal view; head compressed, straight, pronotum lobate …….. *Xenerianthus*

Fastigium of vertex raised; vertex acuminate in frontal view; slant headed, compressed; pronotum not lobate ……...…….*Erianthina*

Genus *Xenerianthus* Descamps, 1975

Erianthus, Stål, Bih. Svensk. Akad. Handl. iii (14), 1875, p. 36; Brunner, Abh. Senckenb. Ges. Xxiv, 1898, p. 221; Burr, Gen. Ins., ortho. Eumast. 1903, pp.6, 7., Saussure, Rev. Suisse Zool. Xi, 1903, pp. 75,77. Type species: *Mastix affinis* Westwood, by original designation.

Fastigium of the vertex erect, tapering, with the tip straight or slightly reflexed, and obtuse; front flattened, rugose, with a smooth dilated ridge between the antennae. Pronotum smooth, slightly raised, truncated in front, obtusely produced behind, and longitudinally carinated. Tegmina narrow, broader towards the extremity, with a few veins, and more or less sub-hyaline. Wings triangular, sub-hyaline, not longer than the tegmina. Femora slightly compressed, carinated above, and produced into a tooth behind; hind femora slender, serrated above; hind tibia with 20-25 equal spines on the inner carina, and 25 on the outer; first joint of hind tarsi sulcated above, and dentated on the outer carina. Abdomen with the 8th segment expanded in the male, and the anal appendages very large; in the female bifid at the extremity, and grooved on each side; lower valves with the basal plates smooth and punctured, and the upper border dilated.

***Xenerianthus affinis* (Westwood, 1843)**

[**Plates: I; Fig. 1 - 7**]

Mastax affinis, Westwood, Arcana Ent. Ii, 1834, p. 54, note.

Erianthus acutecarinatus, Brunner, Ann. Mus. Genova, xxxiii, 1893, p. 117, pl. v, fig. 48; Saussure, Rev. Suisse Zool. Xi, 1903, pp. 78, 80, pl. iii, fig. 11.

Xenerianthus affinis : Descamps 1975 : 95.

Xeneriathus affinis (Westwood, 1843)

Material examined: (15 Specimens, 6 ♂ & 9 ♀) Meghalaya: North Khasi Hills, East Khasi Hills: 9.VI.2013, Coll. Jhabar Mal (Boirymbong); 9. VI.2013, Coll. Rajendra Nagar (Boirymbong); 3.VI.2013, Coll. Jhabar Mal (Umiam); 9.VI.2013, Coll. R. Swaminathan (Boirymbong); 3.VI.2013, Coll. R. Swaminathan (Ri-bhoi); 8.VI.2013, Coll. Rajendra Nagar (Upper Shillong); 9.VI.2013, Rajendra Nagar (Boirymbong); 5.VI.2013, Coll.

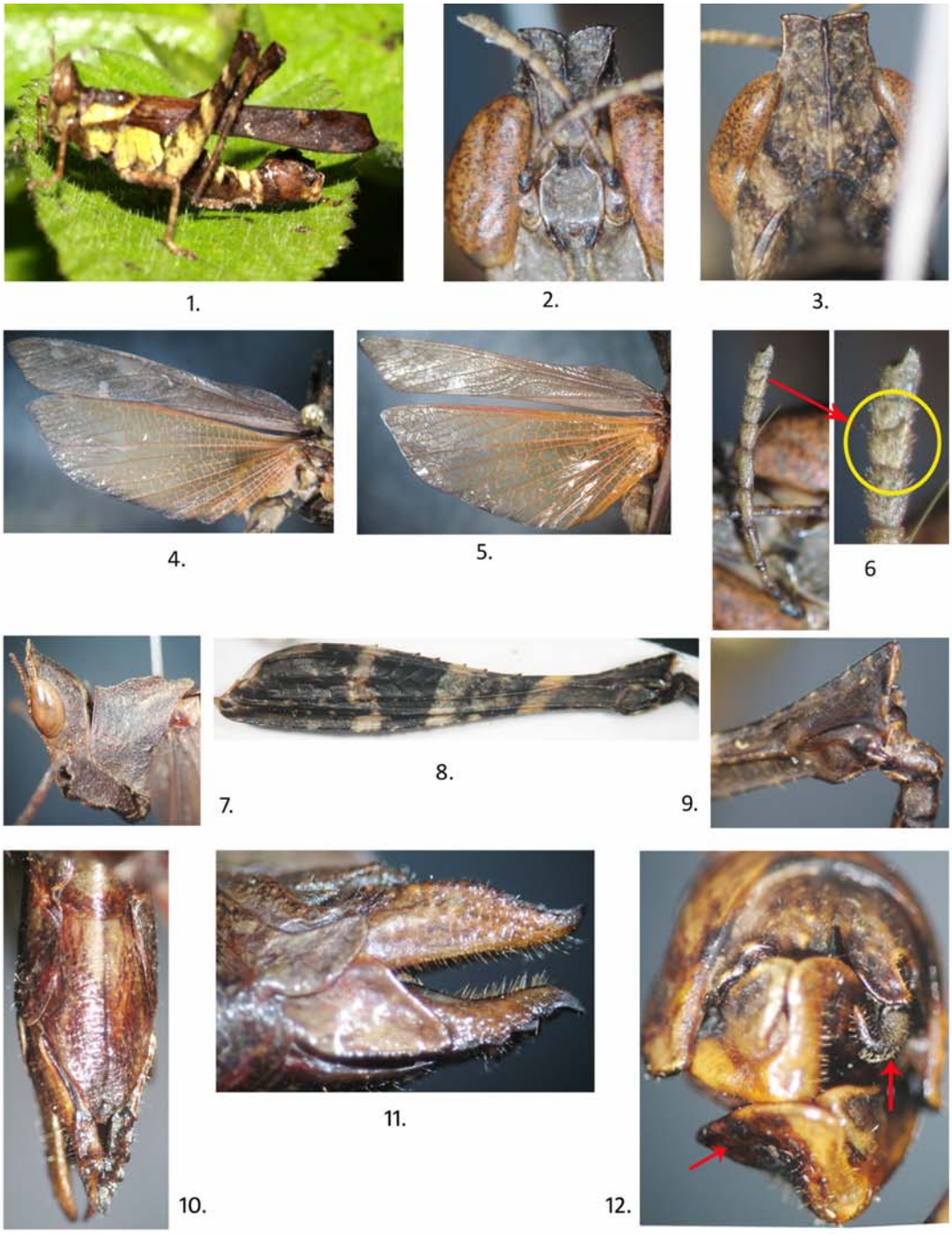

Plate I: *Xenerianthus affinis* (Westwood)

1 -1 2: 1, Male habitus; 2, Head frontal view; 3, Head rear view; 4, Wings male; 5, Wings female; 6, Antennae; 7, Pronotum; 8, Hind femur banded; 9, Hind knee; 10, Subgenital plate female; 11, Female last abdominal segment bifid at the extremity, grooved on each side; lower valves with basal plates smooth and punctured; 12, Male abdomen with the 8th segment expanded and the anal appendages large

1.

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Plate II: *Erianthina deflorata* (Brunn.), male

1 - 9: 1, Head frontal view; 2, Head rear view; 3, Antenna; 4, Pronotum; 5, Wings 6, Tegmina apex; 7, Hind knee; 8, Hind femur; 9, Male tenth tergite split, sub-genital plate large and curved, reaching the tenth tergite.

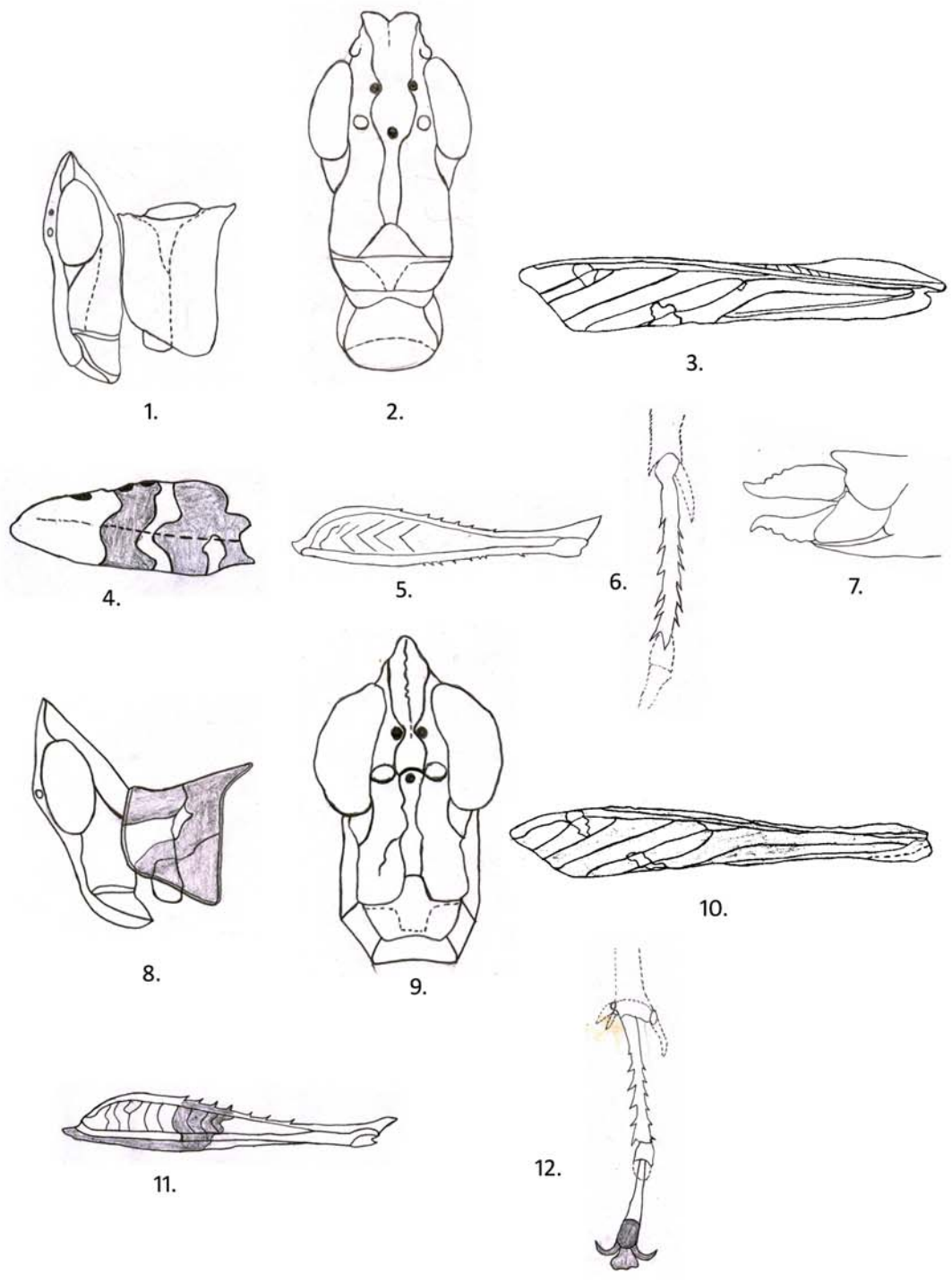

Fig.: 1-7 *Xenerianthus affinis* (Westwood): 1. Head with pronotum lateral view 2. Head frontal view 3. Tegmina 4. Anterior femur 5. Hind femur 6. Hind tarsus 7. Ovipositor

Fig.: 8-12 *Erianthina deflorata* (Brunn.): 8. Head with pronotum lateral view 9. Head frontal view 10. Tegmina 11. Hind femur 12. Hind tarsus

R. Swaminathan (Jowai); 7.VI.2013, Coll. Rajendra Nagar (East Khasi Hills); 8.VI.2013, Coll. Jhabar Mal (Mawflang); 9.VI. 2013, Coll. Yeshwanth (Ribhoi); 8.VI.2013, Coll. Yeshwant (Umiam).

Brown, inclining to rufous, fastigium of the vertex erect, very broad, and more or less bifid at the extremity. Pronotum rugose with a high irregular median carina. Tegmina with ferrugenous network, the spaces between sub-hyaline, especially above the principal nervure, and an oblique whitish stripe at about four fifths of the inner margin, running towards the tip. Wings fulvo-hyaline, with ferrugenous nervures, and a narrow brown hind margin. Abdomen ferrugenous brown, especially at the extremity. The upper appendages of the female are finely serrated and the lower appendages have three small teeth before the extremity. The male has a small white spot towards the apex of the tegmina. Femora blackish, strongly compressed and laminate- carinate above and below; hind femora with three white bands, and the upper carina terminating in a sharp triangular tooth.

Genus *Erianthina* Descamps, 1975

Descamps. 1975. Ann. Soc. ent. Fr. Nouvelle série 11(1):130 >> Note: Erianthinae > *Erianthina* urn : lsid : Orthoptera.speciesfile.org:TaxonName:41888

Otte, D. 1994. Orthoptera Species File 2:9 >> *Erianthina*

Yin, X.-C., J. Shi & Z. Yin. 1996. Synonymic Catalogue of Grasshoppers and their Allies of the World (Orthoptera: Caelifera) 791 >> *Erianthina*

Type species: *Erianthina kalawensis* Descamps, by original designation

***Erianthina deflorata,* Brunn.**
[Plate: II; Fig. 8 - 12].

Erianthus defloratus, Brunn. Ann. Mus. Genova, xxxiii, 1893, p. 116; id., Abb. Senckenb. Ges. Xxiv, 1898, pp. 222, 224; Saussure, Rev. Suisse Zool. Xi, 1903, pp. 78, 81.

Erianthus birmanicus Saussure 1903: 82. Synonymised by Descamps 1975: 132.*Erianthina deflorata*: Descamps 1975: 134.

Material examined: (5 Specimens, 2 ♂ & 3 ♀) Meghalaya: North Khasi Hills: 5.VI.2013, Coll. Jhabar Mal (Jowai); 4.VI.2013, Coll. Rajendra

Table 1: Measurements of different body parts of male monkey grasshoppers

Linear measurements (mm)	*Xenerianthus affinis*	*Erianthina deflorata*
Antennae	3.12	2.76
Tegmina length	16.58	19.71
Tegmina width	2.03	2.25
Wing length	18.27	18.96
Body up to genitalia tip	21.62	24.15
Body up to wing tip	29.52	18.31
Pronotum	3.10	2.95
I Femur	3.44	3.77
II Femur	3.70	3.80
III Femur	11.97	12.58
I Leg	9.61	10.14
II Leg	10.23	11.16
III Leg	28.15	29.23

Nagar (East Khasi Hills); 5.VI.2013, Yeshwanth (Umiam); 6.VI.2013, Yeshwanth (Mawflang); 8.VI.2013, Yeshwanth (Upper Shillong); 9.VI.2013, Yeshwanth (Ri-Bhoi).

Chestnut – brown, face olive, sides of pronotum often yellowish. Fastigium of the vertex obtuse, carinated. Median carina of pronotum acute, but not lobate. Tegmina brown, more or less sub-hyaline towards the base, and with or without a sub-hyaline spot at three- quarters of the inner margin; wings yellowish. Hind femora unspotted.

The measurements of different body parts in the males of the two species are given in table 1.

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