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REDESCRIPTION OF *PHLAEOBA RAMAKRISHNAI* BOLIVAR (ORTHOPTERA: ACRIDIDAE) – AN ENDEMIC GRASSHOPPER OF WESTERN GHATS OF INDIA

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KEY WORDS
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ABSTRACT: Ninety-eight years after its description, a male specimen of *Phlaeoba ramakrishnai* Bolívar, 1914 was discovered at a new locality in the Western Ghats of India. Opportunity is taken to redescribe and illustrate the male including its genitalia. Its distribution is presented on a map.

INTRODUCTION

The genus *Phlaeoba* (Orthoptera: Acrididae: Acridinae) established by Stål, in 1861, includes 24 species worldwide (Cigliano *et al*., 2018). Eight species of *Phlaeoba* have been reported from India (Shishodia *et al*., 2010) including four species (*P. angustidorsis angustidorsis* Bolivar, 1902; *P. assama* Ramme, 1941; *Phlaeoba ramakrishnai* Bolivar, 1914; and *P. rotundata* Uvarov, 1929) endemic to India (Chandra and Gupta, 2013). *P. ramakrishnai* Bolivar, 1914, is endemic to the Western Ghats of India. After Bolivar (1914), no collection data were published on this species. Therefore, till now, this species is known from type locality only. Hence, no further study of this species, especially the male genitalia, has been carried out so far. Ninety-eight years after its description, the species was rediscovered in Maharashtra state in India. A single male specimen was collected here during a survey conducted in connection with a major research project entitled "Diversity of Acridoidea (Orthoptera) in different parts of Western Ghats of India" in 2012. In the present paper, the male of *P. ramakrishnai* Bolívar is redescribed and illustrated along with its genitalic structures.

MATERIALS AND METHODS

The collected specimen was processed following the method of Kumar and Usmani (2015). Morphological

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measurements were taken using a Vernier caliper. Figure 1a was made by an Olympus SLR digital camera and Figure 1a-p were obtained by a digital camera attached to a Nikon stereozoom microscope. Figures 2a-d were prepared using a drawing tube connected to a Nikon stereozoom microscope. Scaling was done with the help of an ocular micrometer. The dissected male genitalic structures are kept in vials containing glycerine and pinned under the specimens. The terminology used for external morphology follows Uvarov (1966) and for male genitalia Dirsh (1956). Identification was done with the help of the description given by Bolivar (1914) and photographs of holotype available at Orthoptera Species File. The specimen is deposited in the Zoological Museum of the Aligarh Muslim University, Aligarh, India (ZDAMU).

RESULTS

Phlaeoba ramakrishnai Bolívar, 1914 (Figures 1 and 2; Map 1).

P. ramakrishnai Bolívar, 1914. *Trab. Mus. Cienc. nat., Madrid* (*Ser. zool.*), 20: 92 (holotype - male; India: Karnataka, Dakshina Kannada, Nagodi; deposited in MNCN Madrid, Spain); Bolívar, 1917. p. 377; Bhowmik, 1985. p. 14; Shishodia *et al*., 2010: 21; Chandra and Gupta, 2013. p. 24.

Map 1: Distribution *Phlaeoba ramakrishnai* Bolívar in the Western Ghats of India.

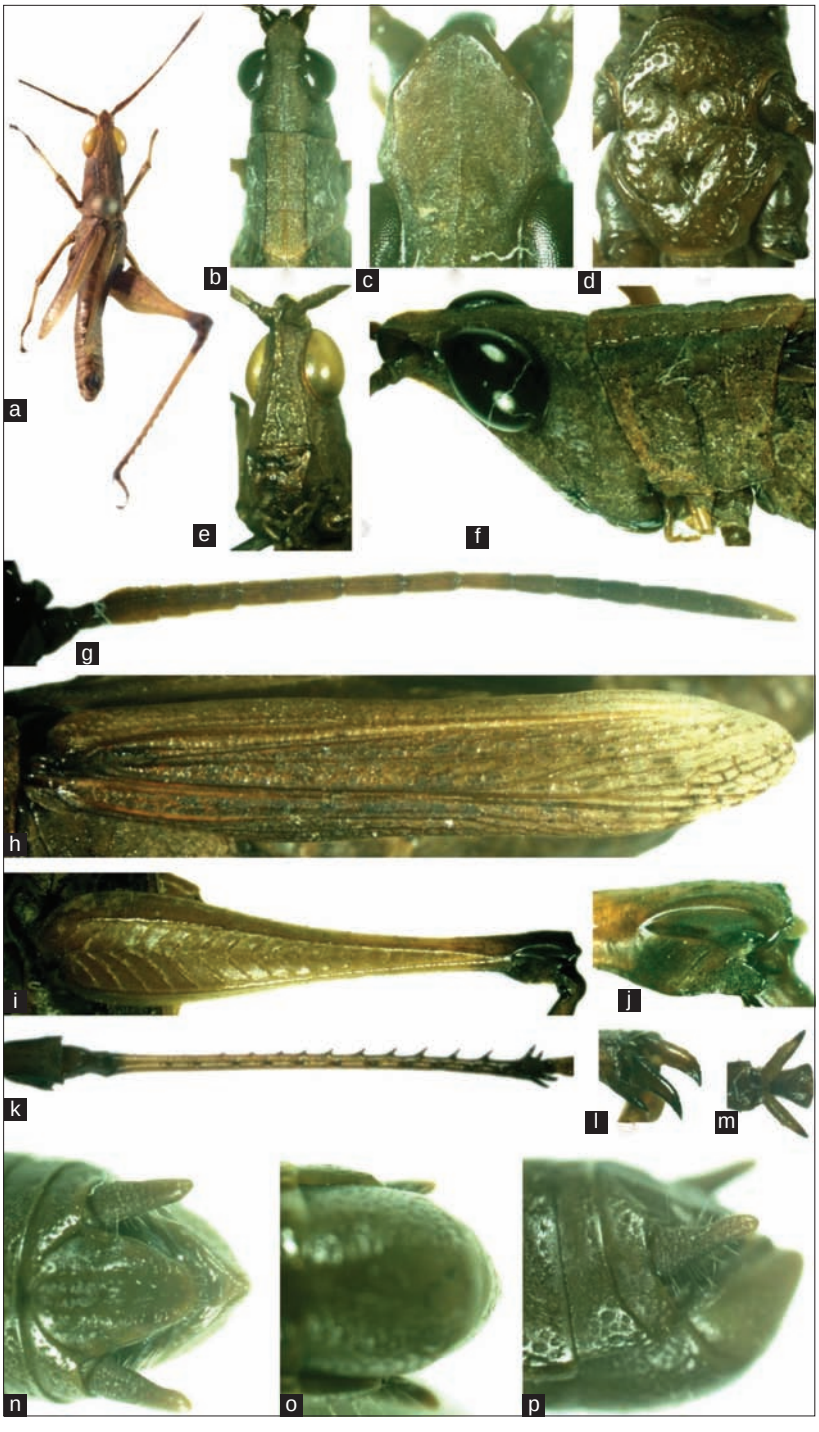

Figure 1: *Phlaeoba ramakrishnai* Bolívar. Male: (a) Dorsal view; (b) dorsal view of head and pronotum; (c) dorsal view of fastigium of vertex; (d) ventral view of sternum; (e) frontal ridge; (f) lateral view of head and pronotum; (g) antenna; (h) tegmen; (i) dorsal view of hind femur; (j) hind knee; (k) hind tibia; (l) hind tibial spurs; (m) hind arolium; (n) dorsal view of male terminalia; (o) ventral view of male terminalia; (p) lateral view of male terminalia.

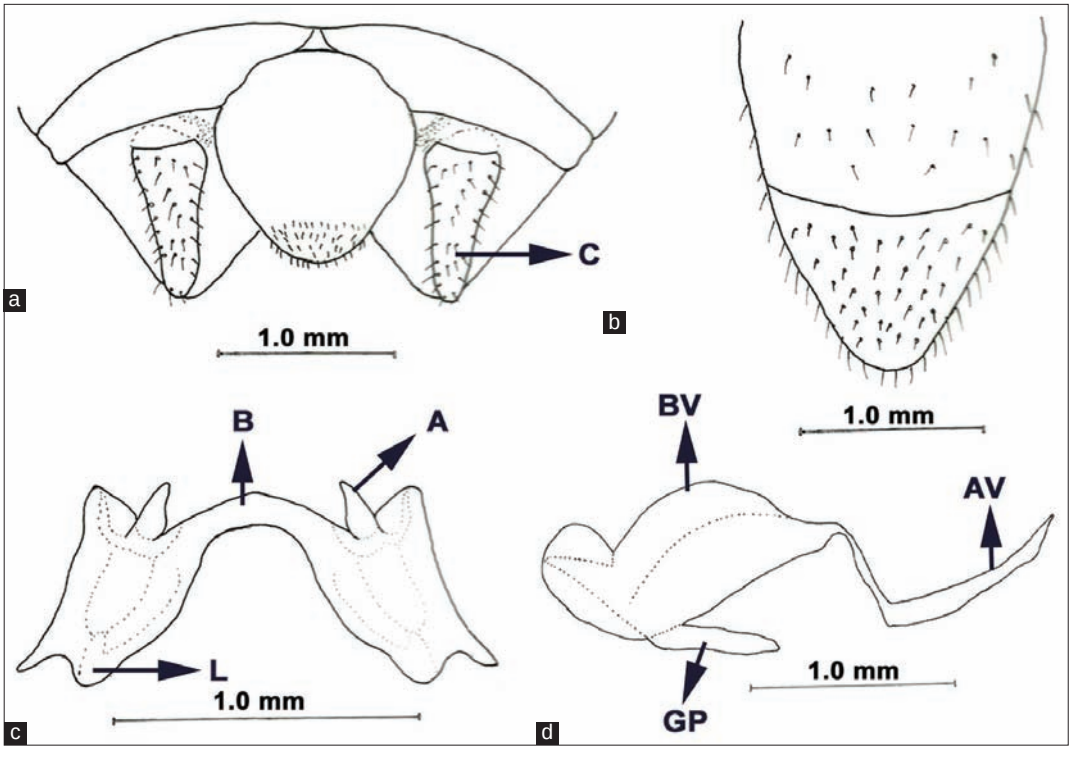

Figure 2: *Phlaeoba ramakrishnai* Bolívar. Male: (a) Supra-anal plate; (b) subgenital plate; (c) epiphallus; (d) aedeagus. A: Ancorae, B: Bridge, C: Cercus, L: Lophus, BV: Basal valve, AV: Apical valve, GP: Gonopore process.

Redescription

Male (Figure 1a)

Small sized; body cylindrical. Antennae (Figure 1g) filiform, flattened basally, thinner in middle, 18 segmented, longer than head, and pronotum together. Head conical, slightly shorter than pronotum. Eyes oval, near the apex, maximum diameter of eye longer than interocular distance. Frons (Figure 1h) oblique, slightly concave above median ocellus. Fastigium of vertex (Figure 1c) angular, wider than long, produced in front of eyes, shorter than the eye, slightly sulcate and obtusely rounded anteriorly, with well-developed median carinula which extends into the median carinula of vertex; width of vertex between eyes much wider than frontal ridge between antennal sockets. Frontal ridge (Figure 1e) very narrow and deeply sulcate with high lateral carina reaching up to clypeus, margins diverging below median ocellus. Dorsum of pronotum (Figure 1b) tectiform, longer than its width, rugose with well-developed median and parallel lateral carinae; a single transverse sulcus crossing median carina situated behind the middle; prozona much longer than metazona, posteroventral angle obtusely rounded, posterior margin of pronotum obtuse angular. Mesosternal lobes (Figure 1d) rounded, mesosternal interspace as long as wide; metasternal lobes almost contiguous. Tegmina (Figure 1h) short, surpassing the middle of hind femur with rounded apex. Hind femora (Figure 1i) broad basally, surpassing tip of abdomen, upper carina weakly serrated while lower carina smooth, lower genicular lobe (Figure 1j) produced roundly. Hind tibiae (Figure 1k) cylindrical, shorter than hind femur with 11 outer and 11 inner spines, inner spur on inner side (Figure 1l) of hind tibia slightly longer than external one but inner pair of spurs

slightly longer than external one. Arolium (Figure 1m) small sized.

Genitalia

Supra-anal plate (Figures 1n and 2a) elongate-angular, longer than wide, lateral margins slightly curved, a longitudinal groove preset on basal two-third, apex broadly rounded; cercus (Figures 1e and 2a) conical, narrowing apically, shorter than supra-anal plate, more than 2 times as long as wide, apex obtuse. Subgenital plate (Figures 1e and 2b) triangular, broad basally, wider than long, apex obtusely rounded. Epiphallus (Figure 2c) with bridge narrow and curved, ancorae short, with incurved obtuse apices; lophi small and lobiform. Aedeagus (Figure 2d) flexured, apical valve narrow, slightly curved upward, much narrower and shorter than the basal valve, apex pointed, connected with basal valve with flexure; basal valve broad and dilated basally and narrowing towards its obtuse apex; gonopore process long and broad with obtuse apex.

Female

Unknown.

Coloration

General coloration brown. Apex of antennae yellowish. Anal field of tegmina yellowish.

Material examined

India, Maharashtra, Ratnagiri, 16.99626N, 73.285153E, 1♂, 25-x-2012, on grasses (Coll. H. Kumar).

Measurements (length in mm)

Male

Body: 20.4; Pronotum: 4.4; Tegmina: 10.6; Hind Femur: 13.5.

Distribution (Map 1)

India: Karnataka: Dakshina Kannada, Nagodi (Bolivar, 1914); Maharashtra: Ratnagiri.

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