



NEW RECORD OF DELTOCEPHALINE LEAFHOPPER GENUS *BHAVAPURA* CHALAM AND RAO FROM HIMACHAL PRADESH AND MIZORAM

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ABSTRACT

The monotypic leafhopper genus *Bhavapura* Chalam and Rao (Cicadellidae: Deltocephalinae; Paralimnini) is described herein as new record from Himachal Pradesh and Mizoram. Distribution records for the genus are updated here and detailed redescriptions and diagnosis along with the illustrations for the species are provided.

Key words: *Bhavapura*, monotypic genus, leafhopper, redescriptions, genitalia, distribution, new record, *B. rufobilineata*, illustrations, diagnosis, Himachal Pradesh, Mizoram

Genus *Bhavapura* Melichar (1914) was erected by Chalam and Rao (2005 with *B. rufobilineata* (Melichar)) as its type species. The genus is the monotypic and so far known from only India, and it has been reported from Andhra Pradesh, Bihar, Karnataka and Madhya Pradesh. The present study provides a new record of this genus from two Indian states, i.e. Himachal Pradesh and Mizoram. The genus is diagnosed by following characters: presence of a pair of prominent orange lines extending from vertex to pronotum and scutellum, a transverse brown band either side of midline of vertex near the apex. Head marginally wider than pronotum. Vertex as long as the interocular distance, apically subacute, and a long median sulcus. Clypellus longer than wide. Distance between eyes and ocelli approximate the ocelli diameter. Antennae arising near middle of eyes. Pronotum without lateral carina. Fore wing orange yellow in color with pale yellow veins and with four apical and three anteapical cells, with anteriorly petiolate outer anteapical cell. Pygofer longer than its width, lobes elongate having numerous elongated macrosetae, devoid of processes. Valve triangular in shape. Subgenital plates short, broadly triangular, slightly truncate distally, with heavily sclerotized dorsoapical area, and uniseriate row of long lateral macrostae present. Style apophysis short, dentate and heavily sclerotized; short lateral lobe. Connective racket-shaped with distally touching arms, moderately long stem. Aedeagus and connective articulated, simple lacks basal apodeme; shaft elongate, cylindrical, slightly curved ventrally and in lateral view tapered into acute apex, tip bifurcate, gonopore apical on ventral surface. This study also provides redescriptions

and illustrations of the salient characters of the type species *Bhavapura rufobilineata* (Melichar).

MATERIALS AND METHODS

Specimens were collected and processed following the standard procedures. The terminology follows that of Viraktamath and Viraktamath (1992). Photographs were taken with a Leica DFC 425C digital camera on the Leica M205FA stereozoom automontage microscope. Male genitalia dissections were carried out as described by Oman (1949) and Knight (1965). Materials examined are deposited in the National Pusa Collection (NPC), Division of Entomology, ICAR-Indian Agricultural Research Institute, New Delhi, India.

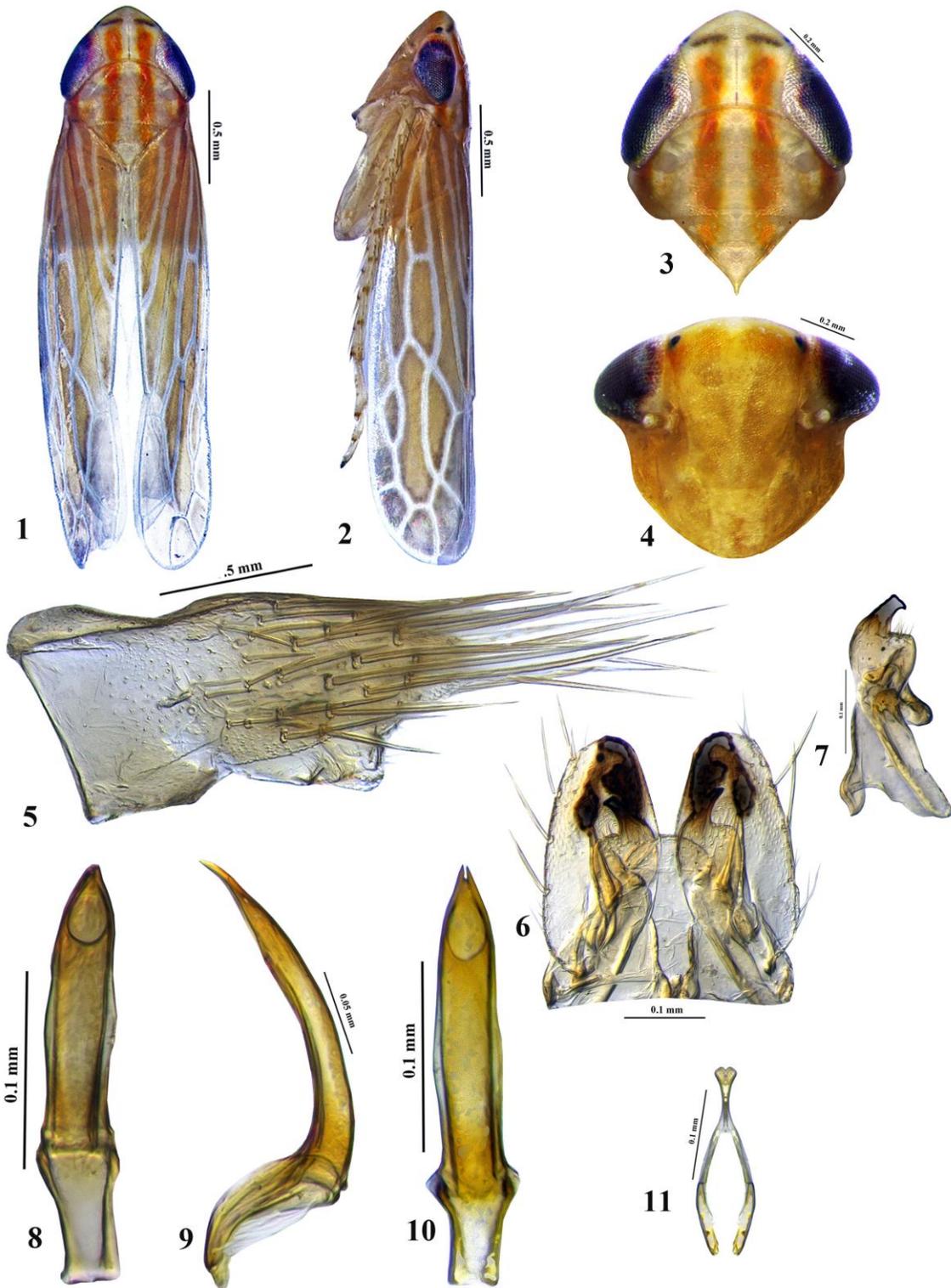
RESULTS AND DISCUSSION

***Bhavapura rufobilineata* (Melichar)** (Figs. 1-20)

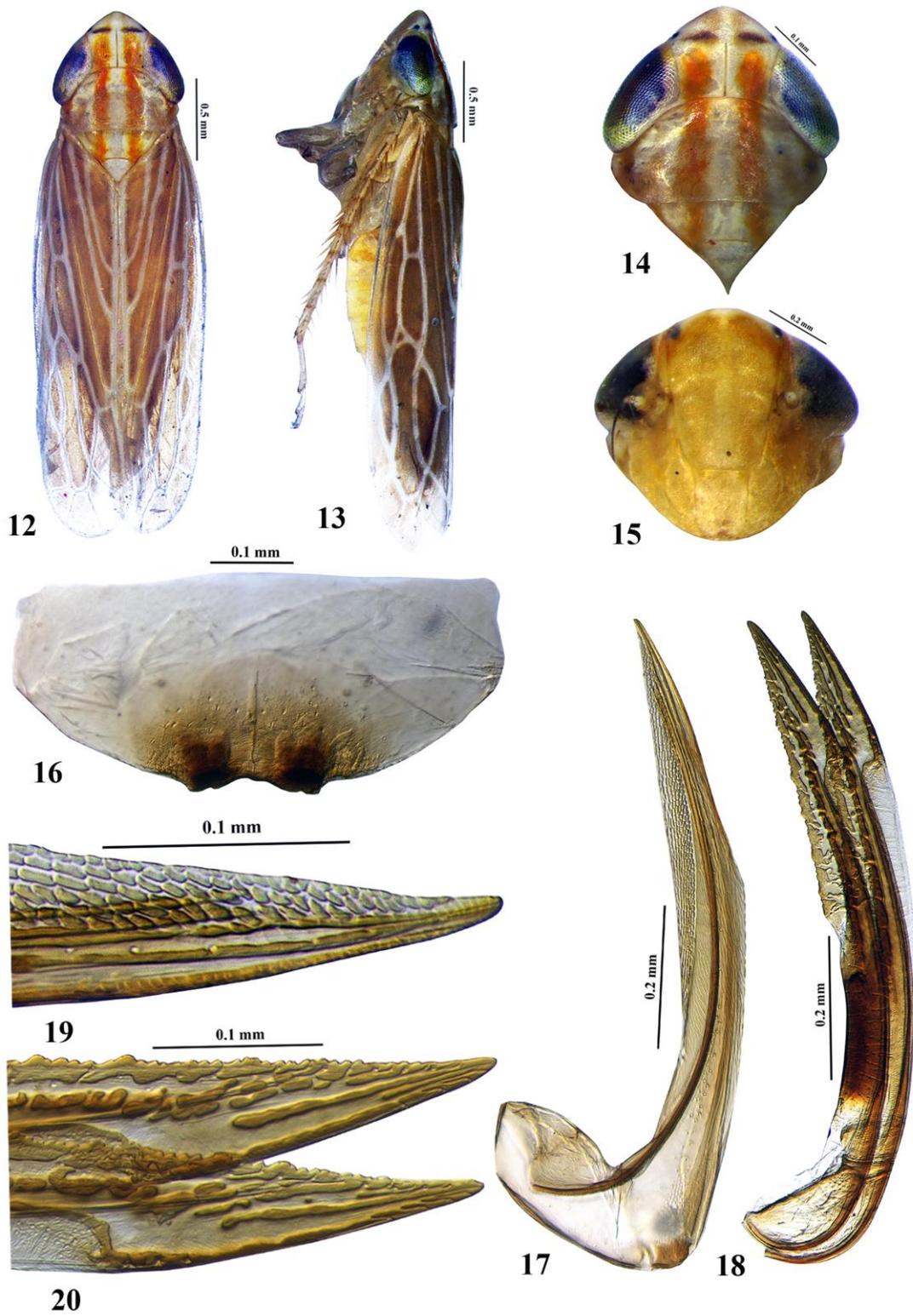
Deltocephalus rufobilineatus Melichar, 1914:140; Chalam and Rao, 2005: 384-387

Redescription: Insipid orange, a transverse brown band on either side of dorsal mid line, near the apex of vertex with two prominent orange lines running from base of dark transvers bands near vertex extending on to pronotum and scutellum (Figs. 1-2; 12-13). Eyes dark, pale along the coronal suture, ocelli dark. Face yellow devoid of any markings; Pronotum having additional orange bands towards the lateral margin (Fig. 3, 14).

Head slightly wider than pronotum. Vertex subacute, slightly angular, about as long as distance between eyes, with prominent median coronal sulcus, 1.1x shorter



Figs. 1-11. *Bhavapura rufobilineatus* (Melichar) Male: 1. habitus dorsal; 2. habitus lateral; 3. Head; 4. face; 5. Pygofer; 6. subgenital plate; 7. style; 8. aedeagus dorsal; 9. aedeagus latera I; 10. aedeagus ventral; 11. connective



Figs. 12-20: *Bhavapura rufobilineata* (Melichar) Female: 12. habitus dorsal; 13. habitus latera l; 14. Head; 15. face; 16. 7th sterna; 17. 1st vulva; 18. 2nd vulva, 19. 1st vulva magnified; 20. 2nd vulva magnified

than the length of the pronotum. Eyes are large, ocelli marginal, distance between eyes and ocelli as long as the ocellus diameter. Frontoclypeus wide with narrowing apex, anteclypeus straight, do not exceed the facial margin, lorum is not prominent. Antennae arising near lower corner of eyes (Fig. 4, 15). Pronotum 2x wider than long, hind margin of pronotum 1.9x the length of the scutellum. Scutellum triangular and slightly shorter than the length of the pronotum. Fore wings with three antepical cells and prominent venation (Fig. 3, 14).

Male Genitalia: Pygofer 1.7x longer than broad, covered by long macrosetae, medially depressed (Fig. 5). Valve triangular with rounded apex. Subgenital plates truncate distally, margin circular, heavily sclerotized dorsoapical area, apical macrosetae present, lateral margins with few marginal micro and macrosetae (Fig. 6). Styles stout, apophysis short, dentate heavily sclerotized with subapical microsetae on well-developed preapical lobe (Fig. 7). Connective with arms 2x longer than the stem, wide apart (Fig. 8). Aedeagus articulated with connective, dorsal apodeme short, shaft elongate, tapering towards apex, dorsally curved, slightly broad in the middle and tip bifurcate with subapical gonopore with dorsal opening (Figs. 9-10).

Female genitalia: Seventh sterna with medially produced posterior margin, with central concavity in between two greatly sclerotized lobes with outward pointing apex, surrounded by sinuate markings, lateral margins short (Fig. 16). First vulva thinner with dorsal half with maculose sculpturing, ventral half membranous, central ridge with hyaline pits, anterior margin uneven, dentate, posterior margin plain without dentations, apex slightly curved upwardly (Figs. 17, 19). Second vulva slender with dorsal margin serrated, uneven ridges, posterior margin even, convex, with tapering apex and median sculpturing (Figs. 18, 20).

Measurements: Male: 3.1 mm long, 0.7 mm wide across eyes, 0.5 mm wide across hind margin of

pronotum. Female: 3.1 mm long, 0.8 mm wide across eyes, 0.5 mm wide across hind margin of pronotum.

Material examined: 1♂ and 5♀, India: Mizoram: Kolasib (24°12'52.2"N 92°40'23.3"E), 13.ii.2020, net sweep, Coll. Tahseen (NPC). 1♂ and 2♀, Himachal Pradesh: Hamirpur (31°42'08.2"N 76°31'13.5"E), 22.xi.2019 net sweep, Coll. Niranjana N. (NPC). 5♂ and 3♀, Uttarakhand: Pantnagar (29°01'29.8"N 79°29'55.5"E), 9.iii.2018, net sweep, Coll. Rajgopal N. N. (NPC).

Distribution: Andhra Pradesh, Bihar, Himachal Pradesh, Karnataka, Madhya Pradesh, Mizoram and Uttarakhand.

Remarks: This species is the only described species from the genus *Bhavapura*, and so far known only from Andhra Pradesh, Bihar, Karnataka and Madhya Pradesh.

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