

NEW STATUS AND REDESCRIPTION OF *DYSDERCUS PAPUENSIS* DISTANT (HEMIPTERA: PYRRHOCORIDAE) WITH SPECIAL REFERENCE TO ITS UNKNOWN FEMALE GENITALIA AND PHYLOGENETIC RELATIONSHIP

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ABSTRACT

Dysdercus papuensis Distant is redescribed in detail with special reference to its metathoracic scent auricle and female genitalia including spermatheca. In this light the species is compared with its closest allies and its phylogenetic relationship is also briefly discussed.

Key words: Redescription, *Dysdercus papuensis*, genitalia, Hemiptera, Pyrrhocoridae,

INTRODUCTION

The Cotton stainer's genus *Dysdercus* Gueren-Menville is known to include the pests of malvacian plants, mainly cotton and is distributed in tropical and subtropical areas of the world. Hussey's (1929) Catalogue comprises three subgenera and 77 new and old-world species. Distant (1888) described *D. papuensis*. Freeman (1947) revised the genus from old world and gave illustrations of parameres, spermatheca and vertical processes of some of the species. Freeman (*op. cit.*) categorised the genus in four groups and placed *D. decussatus* Boisduval in group II B as type species with which he synonymised the present species and *D. simplex* Walker without any comment. Kapur and Vazirani (1960) probably followed Freeman (*op. cit.*) in its synonymy without comment. The present authors earlier have resurrected *simplex* (Ahmad *et. al.*, 2004) and have redescribed *decussatus* (Qadri and Ahmad, 2005) with reference to its phylogeny.

The sub-generic groups of *Dysdercus* were established by Stehlik (1965a & b). He classified it into four distinct sub-genera viz., *Dysdercus sensu stricto*, *Neodysdercus* Stehlik, *Paradysdercus* Stehlik and *Megadysdercus* Breddin. *Dysdercus papuensis* Distant is described here in detail with special reference to metathoracic scent auricle and female genitalia including spermatheca and in this light its relationship within its group is also briefly discussed, particularly differentiating it from *D. simplex* and *D. decussatus*.

MATERIALS AND METHODS

One Holotype female specimen collected from New Guinea, determined by Distant and lodged at Natural History Museum, London (BMNH), was borrowed from the above museum by the courtesy of Mr. Mick Webb incharge Hemiptera section of that museum and was examined.

For the dissection of the female spermatheca, the entire abdomen was warmed on a bench lamp (after completing the external view diagram of the ovipositor) for 15 minutes. The spermatheca was dissected out in tap water after washing the specimen thoroughly. The components of female genitalia were preserved in glycerine in microvial pinned with the specimen. The measurements were taken and illustrations were made following Ahmad *et al.* (2003). All the measurements are in millimeters and illustrations are to the given scales.

RESULTS

Dysdercus papuensis Distant New status

(Figs. A-E)

Dysdercus papuensis Distant 1888: 484.

Dysdercus decussatus Freeman 1947 : 417-419 (in part).

Colouration:-

Body castaneous, except pale lateral margins of pronotum, all margins of corium pale, callosities of pronotum and dorsum of abdomen red.

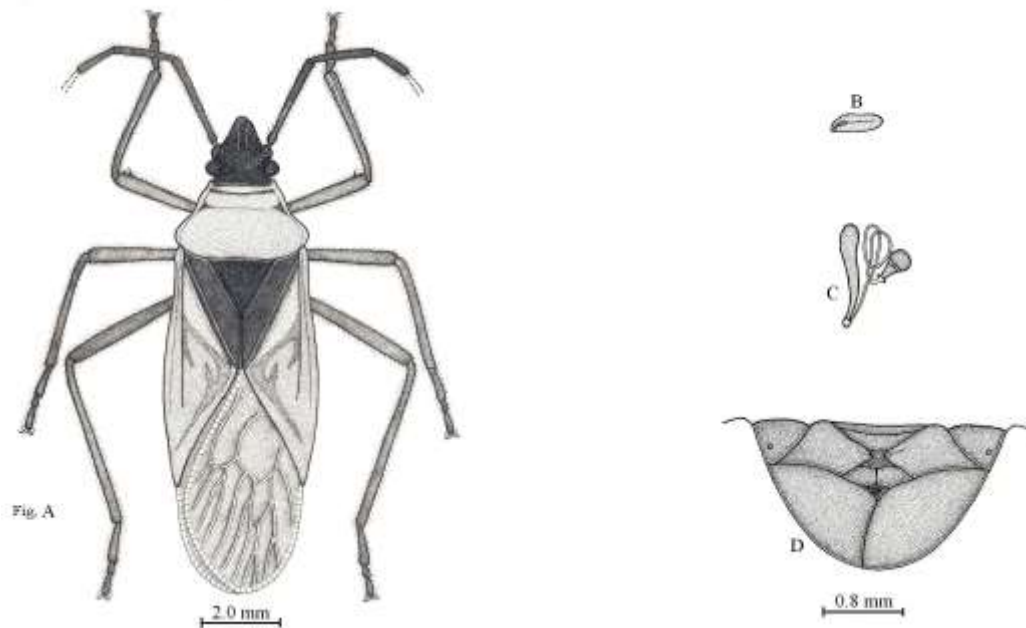


Fig1. *Dysdercus papuensis* Distant, A, entire specimen, dorsal view; B, metathoracic sent gland ostiolar peritreme, ventral view; C, spermatheca, lateral view; D, female terminalia, ventral view.

Head:-

Anteocular distance distinctly longer than remainder of head, length of head slightly shorter than its width, length 1.6, width 1.8; second antennal segment distinctly more than $1\frac{3}{4}$ x the length of third, length of segments I 2.7, II 2.0, III 1.1, IV 2.7, antennal formula $3 < 2 < 1 = 4$; labium reaching to posterior margin of third abdominal venter, basal segment distinctly longer than second and less than $1\frac{1}{2}$ x the length of third, length of segments I 2.15, II 1.8, III 1.55, IV missing; length anteocular distance 0.9; length remainder of head 0.7; interocular distance 1.15.

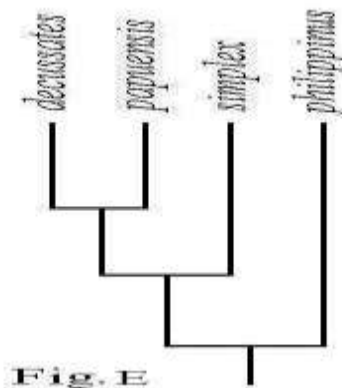


Fig. 2. Cladogram showing phylogenetic relationship of *papuensis* with related species.

Thorax and abdomen:-

Width of pronotum distinctly more than $1\frac{1}{2}$ x of its length, anterior angles of pronotum subrounded, lateral margins sinuate, length of pronotum 2.15, width 3.6; scutellum slightly shorter than its width, length scutellum 1.45, width 1.55; metathoracic scent gland ostiolar peritreme leaf like with apex pointed (Fig. B); distance base scutellum-apex clavus 2.9; apex clavus-apex corium 3.15; apex scutellum-apex abdomen including membrane 7.5. Total length female 11.25.

First gonocoxae large, broad with posterior margin distinctly sinuate; ninth paratergites conical in shape and slightly longer than eighth paratergites; second gonocoxae with posterior margin concave, proctiger broad with

posterior margin concave; spermatheca (Fig. C) more or less similar to that as in *decussatus* Boisduval.

Materials examined: Holotype female, New Guinea, 9-8, leg. Distant, lodged at BMNH.

Comparative note:-

This species is most closely related to *decussatus* in having length of head at least slightly shorter than its width and second antennal segment more than one and half times length of third but it can easily be separated from it in having ninth paratergites large, conical and spermathecal accessory gland balloon like smoothly tapering proximally in contrast to *decussatus* with ninth paratergites large, broad and accessory gland balloon like, large and very broad not as above.

DISCUSSION

Ahmad *et al.* (2003) identified the Asian red cotton bug sub group as the *simplex* sub-group, comprising *D. simplex* (Walker), *D. decussatus* Boisduval, *D. mesiostigma* Distant and *D. papuensis* Distant for their synapomorphies of trilobed second pair of conjunctival appendages in the male inflated aedeagus and accessory gland in the female spermatheca balloon-like. This species group falls in the sub genus *Megadysdercus* Breddin with type *D. mesiostigma*, as established by Stehlik (1965) and group IIB of Freeman (1947) with type *D. decussatus*. The above author also placed *D. mesiostigma* in group II B but synonymised *D. simplex* and *D. papuensis* under *D. decussatus*. Kapur and Vazirani (1960) and apparently Stehlik (1965b) also followed Freeman's course of action for the former altogether ignored these species and the later not only ignored these species but also commented that Freeman (1947) correctly synonymised certain species on the ground of the morphology of their genitalia. Ahmad *et al.* (2003) have not only identified *D. simplex* sub group of red cotton bug species as reported above taking out *D. simplex* and *D. papuensis* from the synonymy of *D. decussatus* during their redescription of *D. mesiostigma* but have also discussed in a recent paper (Ahmad *et al.* 2004) the independent status of *D. simplex* on the basis of the morphology of the male and female genitalia. The present authors got an opportunity to examine the holotype of *papuensis* Distant and Freeman's *decussatus* and on the basis of labium not passing beyond third abdominal venter, basal antennal segment longer than second, metathoracic scent gland ostiolar peritreme leaf-like with acute apex, the present taxon was considered as a distinct species

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(Accepted for publication March 2007)