

Redescription of *Dysdercus philippinus* Herrich-Schäffer (Hemiptera: Pyrrhocoridae) With Reference to its Unknown Genitalia*

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Abstract.- *Dysdercus philippinus* Herrich-Schäffer is redescribed in detail with special reference to its metathoracic scent auricle, male genitalia including pygophore, and inflated aedeagus and female genitalia including spermatheca. None of the characters of its male genitalia and except a brief description of its spermatheca, none of the descriptions and illustrations of its female genitalia were known in literature. In the light of its genital characters it is compared with its closest allies and its phylogenetic relationship among its group is also briefly discussed.

Key words: *Dysdercus philippinus*, genitalia, Hemiptera, Pyrrhocoridae.

INTRODUCTION

The representatives of the genus *Dysdercus* Gueren-Menville are the pests of malvacean plants, mainly cotton and are distributed in Old and New World. Hussey (1929) described 77 species in the genus *Dysdercus*. Freeman (1947) revised the genus from Old World. He described this species from Philippine. Freeman (1947) categorized the genus *Dysdercus* in four groups and placed *D. philippinus* in group IIB with *D. decussatus* Boisduval as its type species.

The subgeneric groups of *Dysdercus* were established by Stehlik (1965a,b). He classified it into four distinct subgenera viz., *Dysdercus* sensu stricto, *Neodysdercus* Stehlik, *Paradysdercus* Stehlik and *Megadysdercus* Breddin. *Dysdercus philippinus* Herrich-Schäffer appears to belong to the subgenus *Megadysdercus* Breddin and in view of many of its unknown important male and female genitalial characters are described in detail with special reference to metathoracic scent auricle, male genitalia including inflated aedeagus and female genitalia including spermatheca and in this light its relationship within its group is also briefly discussed.

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MATERIALS AND METHODS

One male and two female specimens collected by E. S. Brown from Soloman Island and determined by Dr. J. L. Stehlik and lodged at Natural History Museum, London (BMNH), were borrowed from the museum by the courtesy of Mr. Mick Webb In-charge of Hemiptera section of that museum for examination.

For the study of male genitalia particularly for the inflation of the aedeagus the technique of Ahmad (1986) and Ahmad and McPherson (1990, 1998) were generally followed. For the inflation of aedeagus the pinned dry specimen after removing the label, was plunged into boiling water in a beaker, for 4-5 minutes. The specimen was then slipped off the pin. The genital capsule (Pygophore) was then removed from the relaxed specimen under a binocular stereoscope microscope, using very fine watch maker forceps (5 or finer). The genital capsule was then placed in 10% KOH and was warmed at 40°C for 5-10 minutes in a cavity block. The capsule was then removed in tap water (room temperature) in a depression dish and was washed thoroughly. The above fine forceps were used to hold the basal plate (attaching aedeagus to capsule) and then with the help of forceps the opening of phallosome was widened very carefully and the vesica was pulled out gently. This was done very carefully because the distal tip of vesica is very

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delicate and breaks off quickly.

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 male and female genitalia were preserved in glycerine in microvials pinned with the specimens. For measurements and illustrations the techniques of Ahmad *et al.* (2003, 2004) were generally followed. All the measurements are given in millimetres and all the illustrations are to the given scales.

***Dysdercus philippinus* Herrich-Schäffer**

(Figs. 1, 2)

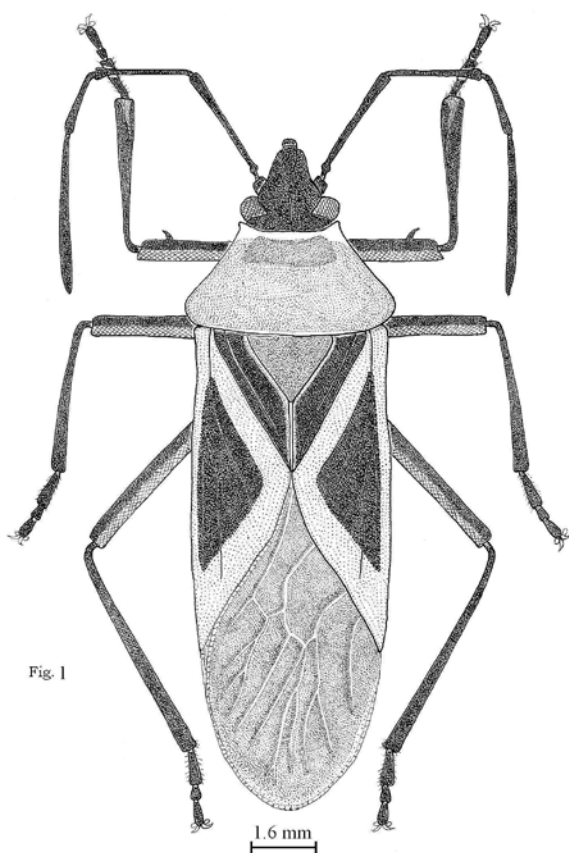


Fig. 1. *Dysdercus philippinus* Herrich-Schäffer, entire specimen, dorsal view.

Dysdercus philippinus Herrich-Schäffer 1853 : 176; Mayr 1868: 134; Stål 1870a: 118; Stål 1870b:

667; Walker 1872 : 188; Distant 1888 : 484; Taeuber 1927 : 190, 195; Hussey 1929 : 99; Schmidt 1932: 263; Freeman 1947 : 416-417.

Colouration

Body dark brown except pronotum ochraceous; callus red; collar white; posterior margin of pronotum yellowish; scutellum red; X shaped yellowish mark on corium present; membrane dark hyaline.

Head

Anteocular distance about $1\frac{1}{2}x$ longer than remainder of head, length of head slightly shorter than its width, length of head 2.2 (2.0-2.2), width, 2.3 (2.2-2.4); antennae with 2nd segment more than $1\frac{1}{2}x$ the length of 3rd, length of segments I 2.8 (2.2-2.8), II 2.3 (2.1-2.5), III 1.3 (1.3-1.4), IV 3.8 (3.2-3.8), antennal formula $3 < 2 < 1 < 4$; labium reaching to 4th abdominal venter, basal and second segments separately $\frac{1}{3}$ again longer than the length of 3rd, length of segments I 2.4 (2.2-2.4), II 2.3 (2.3-2.4), III 1.8 (1.7-1.8), IV 1.9 (1.8-2.0), labial formula $3 < 4 < 2 < 1$; length anteocular distance 1.3 (1.2-1.3); length remainder of head 0.9 (0.8-0.9); interocular distance 1.2 (1.2-1.3).

Thorax and abdomen

Width of pronotum usually $1\frac{1}{2}x$ of its length, anterior angles of pronotum lobed, lateral margins distinctly sinuate, length of pronotum 2.8 (2.5-2.8), width 4.2 (4.0-5.0); scutellum distinctly broader than long, length of scutellum 1.0 (1.0-1.5), width 1.5 (1.5-1.8); metathoracic scent gland ostiolar peritereme lobe-like, broad at middle, apex narrowed (Fig. 2F); distance base scutellum apex clavus 3.1 (3.1-3.8), apex clavus-apex corium 4.0 (3.4-4.6); apex corium-apex abdomen including membrane 4.0 (3.5-.4.0), apex scutellum-apex abdomen including membrane 9.5 (8.7-10.5). Total length male 15.5, female 17.00.

Male genitalia

Pygophore (Figs. 2A,B) somewhat ovate, slightly broader than long, dorsoposterior margin concave, ventroposterior margin convex, inner surface of latter inwardly directed with subrounded apex, vertical processes bilobed with acute apices; parameral (Fig. 2E) shaft short, oblique, neck short, curved, head with transverse crest reduced, two

teeth like projections on inner surface, apical tooth small, sharp and curved, proximal tooth

thumbshaped; inner margin concave and outer

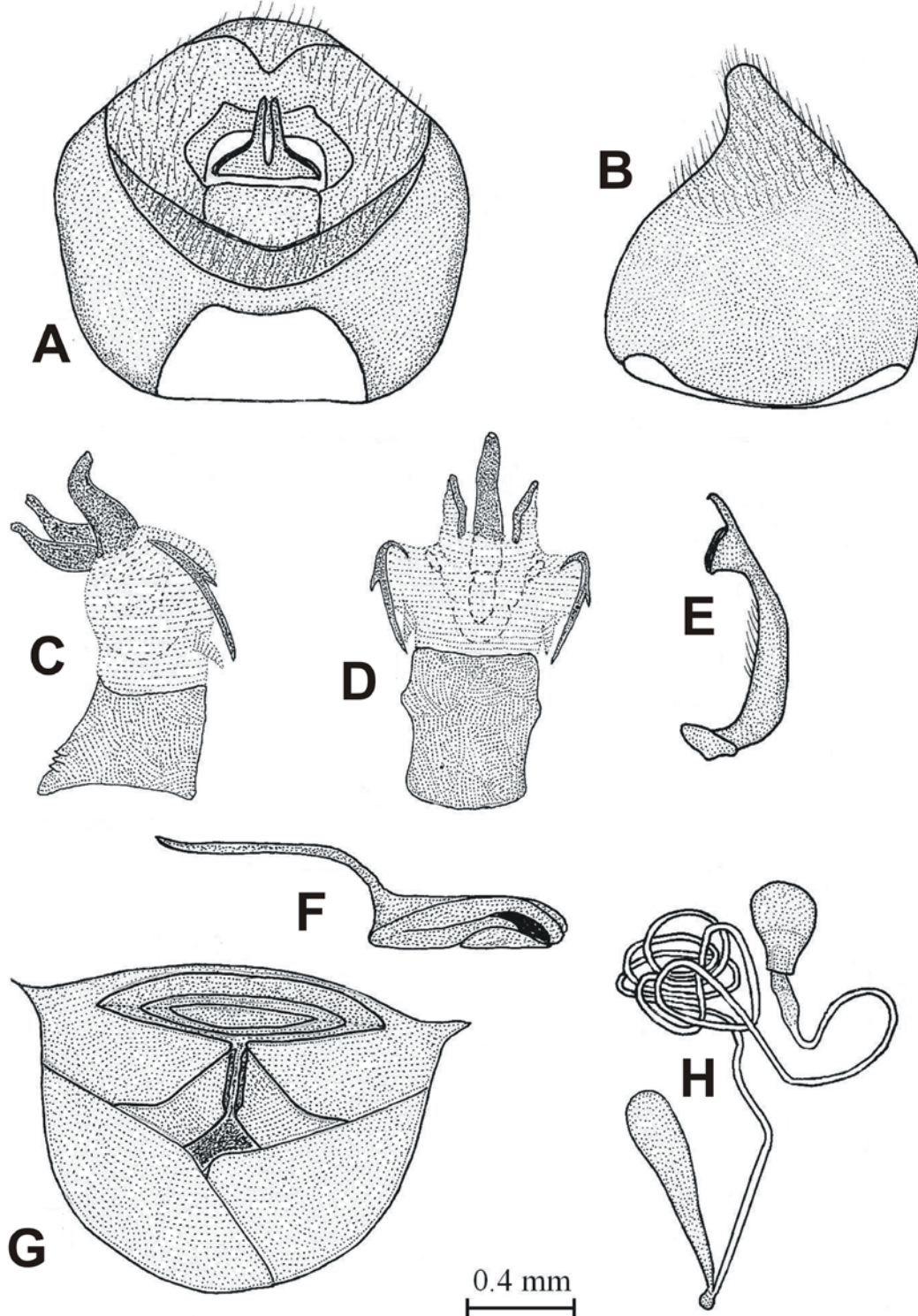


Fig. 2. *Dysdercus philippinus*; A, pygophore, dorsal view; B, pygophore, lateral view; C, inflated aedeagus,

ventral view; D, inflated aedeagus, lateral view; E, paramere, inner view; F, metathoracic scent gland ostiolar peritreme, ventral view; G, female terminalia, ventral view; H, spermatheca, lateral view.

margins convex; inflated aedeagus (Figs. 2C,D) with pair of broad dorsolateral membranous conjunctival appendages, pair of large curved S shaped dorsal conjunctival appendages, pair of elongate lobe like ventral conjunctival appendages, and pair of ventrolateral trilobed conjunctival appendages.

Female genitalia (Fig. 2G)

First gonocoxae large, broad, with posteroinner margin sinuate; 9th paratergites somewhat triangular and much longer than 8th paratergites; 2nd gonocoxae with convex posterior margin; proctiger broad with posterior margin concave; spermatheca (Fig. 2H) with prominent proximal flange, bulb somewhat ovate, pump region tube like, spermathecal duct much longer and highly convoluted, accessory gland balloon like.

Material examined

One male and 2 females, Solomon Island: Guadal canal, Kakum, Eduova, leg. E. S. Brown, 27-6, 10-10-1964, det : J. L. Stehlik 1962, Lodged at BMNH.

Comparative note

This species is most closely related to *decussatus* Boisduval, *papuensis* Distant and *simplex* (Walker) in having St. Andrew's cross present with anterior pronotal angles lobed and vertical process long and broad, arms conical in shape and tip sub acute but its appearance could easily isolate it in its group and it could easily be separated from other species of its group in having St. Andrew's cross with large conical spot and parameral second tooth large, thumb like.

DISCUSSION

This species on the basis of accessory gland balloon like and second pair of conjunctival appendages of inflated aedeagus trilobed falls in to the subgenus *Megadysdercus* with type *D. decussatus* established by Breddin (1890) which is followed by Freeman (1947) in his group IIB and by Stehlik (1965b) who also recognized it as a distinct

subgenus within *Dysdercus*.

Freeman (1947) described only spermatheca in morphology of the female genitalia without giving illustration. It forms a subclade with another subclade comprised by *argillaceus* Bergroth, *mesiostigma* Distant and *oceanicus* Boisduval. The *philippinus* subclade is neatly held together by the apomorphic characters of vertical processes long and broad, arms conical in shape with tip sub acute and St. Andrew's cross present with anterior pronotal angle lobed. In its subclade *philippinus* appears entirely isolated with apomorphies such as the presence of only subapical spine along the anterior femora which is of particular importance because it is comparatively a larger species and in general large species have better developed spines. Its bilobed vertical processes with acute apices having broad base isolate it among its subgroup (Fig. 3).

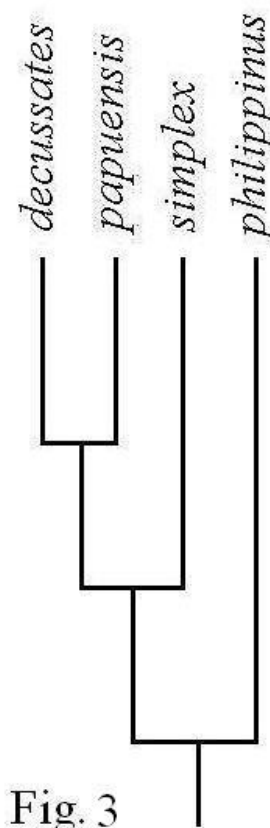


Fig. 3

Fig. 3. Cladogram showing phylogenetic relationship of *D. philippinus* with related species.

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