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BIODIVERSITY OF RED COTTON BUGS: REDESCRIPTION OF *DYSDERCUS ORIENTALIS* SCHOUTEDEN (HEMIPTERA: PYRRHOCORIDAE)

S. S. Qadri [1] and Imtiaz Ahmad [2]

[1]*Department of Zoology, Jamia Millia Government Degree College, Malir, Karachi, Pakistan*
[2]*Department of Zoology, University of Karachi, Karachi-75270, Pakistan*

ABSTRACT

Dysdercus orientalis Schouteden is redescribed in detail with special reference to its metathoracic scent auricle, male genitalia including inflated aedeagus and female genitalia including spermatheca. The species is also compared with its closest allies and its cladistic relationship is also briefly discussed in the light of its apomorphic characters.

Key words: Redescription, *Dysdercus*, *orientalis*, genitalia, Hemiptera, Pyrrhocoridae.

INTRODUCTION

The representatives of the genus *Dysdercus* Gueren-Menville are the pest of malvacian plants, mainly cotton and distributed in Old and New world. Hussey (1929) described 75 species in the genus *Dysdercus.* Freeman (1947) revised the genus from old world. He described this species from Kenya, Uganda and Tanganyika and gave illustrations of parameres and spermatheca. Freeman (*op. cit.*) divided the genus *Dysdercus* in four groups and placed *D. orientalis* in group I B .

The sub-generic groups of *Dysdercus* were established by Stehlik (1965a and b), and classified it into four distinct sub-genera viz., *Dysdercus* sensu stricto, *Neodysdercus* Stehlik, *Paradysdercus* Stehlik and *Megadysdercus* Breddin. Stehlik (1965a) placed *Dysdercus orientalis* in the subgenus *Neodysdercus*. *Dysdercus orientalis* is here 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, particularly differentiating it from *D. intermedius* Distant, *D. pretiosus* Distant and *D. haemorrhoidalis* Signoret, which appear to be the components of its subgenus *Neodysdercus*.

MATERIALS AND METHODS

One male and two female specimens collected from Kenya, determined by S. A. Neave, M. Wilkin and Van Someran and lodged at Natural History Museum, London (BMNH), were borrowed from the above museum by the courtesy of Mr. Mick Webb incharge Hemiptera section of that museum and were examined.

For the study of male genitalia particularly for the inflation of the aedeagus the techniques 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 of the pin. The genital capsule (Pygophore) was then removed from the relaxed specimen under a binocular microscope, using very fine watch maker forceps (5 or finer). The genital capsule was then placed in 10% KOH and was warmed at 40^{o}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 phallotheca was widened very carefully and the vesica was pulled out gently. This was done very care fully because the distal tip of vesica is very 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.

Dysdercus orientalis Schouteden

(Fig. 1 & 2)

Dysdercus orientalis Schouteden 1910: 154; Schouteden 1912: 304 and 305; Hussey 1929: 98; Freeman 1947: 396-397;Stehlik 1965a: 216.

Dysdercus orientalis pulchra Schouteden 1910: 154; Schouteden 1912: 303; Hussey 1929: 98.

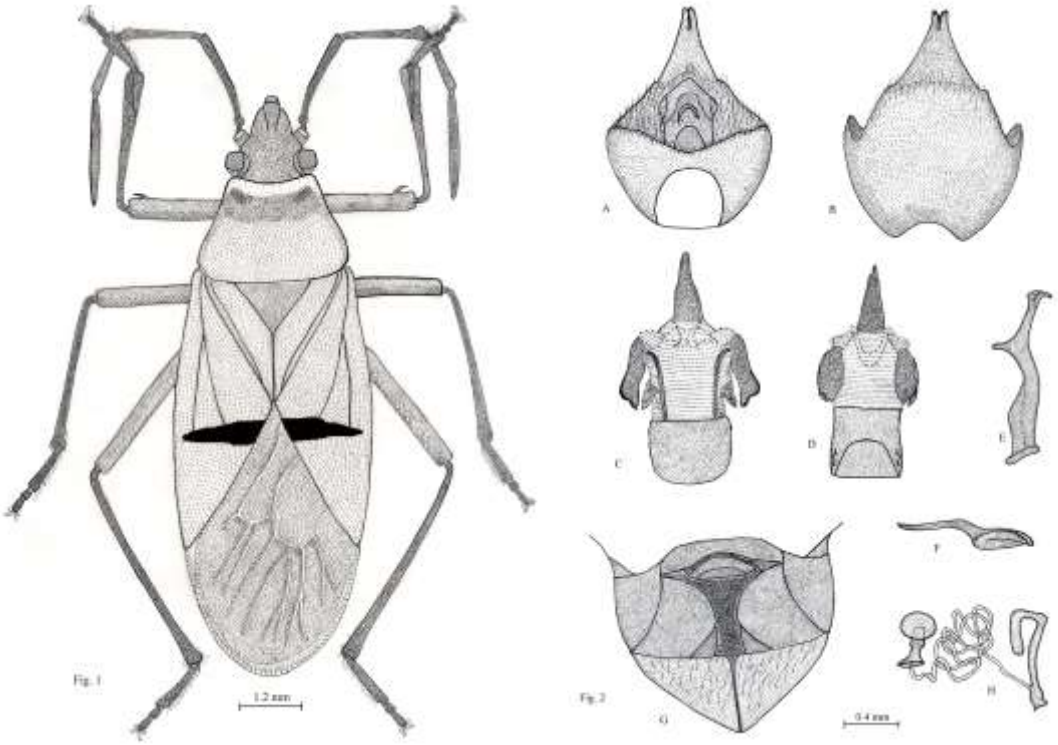

Fig1. *Dysdercus orientalis* Schouteden, entire specimen, dorsal view; **Fig2. A**, pygophore, dorsal view; **B,** same, ventral view; **C,** inflated aedeagus, dorsal view; **D,** same ventral view; **E,** paramere, inner view; **F**, metathoracic sent gland ostiolar peritreme, ventral view; **G,** female terminalia, ventral view; **H,** spermatheca, lateral view.

Colouration:

Body ochraceous except head, basal half of 1st antennal segment, callus, lateral margins of pronotun and scutellum red; antennae, anterior margin of callus, tibiae and tarsi dark brown; anterior sulcus, transverse fasica touching inner margin of corium and eyes black; collar white; membrane dark castaneous black with lighter margins.

Head:

Anteocular distance slightly more than 1¼x longer than remainder of head, length of head slightly shorter than its width, length of head 1.7 (1.6 - 1.7), width, 1.8 (1.8 - 2.1); antennae with 2nd segment more than 1½x the length of 3rd , length of segments I 2.1 (2.1 - 2.4), II 1.8 (1.7 - 2.2), III 1.1 (1.0 - 1.3), IV 2.4 (2.4 - 2.9), antennal formula 4 > 1 >2 >3; labium reaching to 4th abdominal venter, basal segment longer than the length of 3rd, length of segments I 1.5 (1.5 - 1.8), II 1.5 (1.5 - 1.8), III 1.1 (1.1 - 1.3), IV 1.3 (1.3 - 15), labial formula 1 = 2 >4 >3; length anteocular distance 1.0; length remainder of head 0.7 (0.6 - 0.7); interocular distance 1.0 (1.0 - 1.2).

Thorax and abdomen:

Width of the pronotum distinctly more than 1½x of its length, anterior angles of pronotum sub-rounded, lateral margins sinuate, length of pronotum 2.3 (2.2 - 2.5), width 3.3 (3.3 - 3.9); scutellum distinctly broader than long, length of scutellum 0.9 (0.9 - 1.2), width 1.3 (1.3 - 1.5); metathoracic scent gland ostiolar peritereme lobe-like, apex narrowed and posterior side border with long lobe like process (**Fig. 2F**); distance base scutellum apex calvus 2.3 (2.3 - 3.1), apex calvus-apex corium 2.7 (2.7 - 3.6), apex corium-apex abdomen including membrane 2.3 (2.3 – 2.8), apex scutellum-apex abdomen including membrane 6.5 (6.5 – 8.5), Total length male 11.4, female 13.9.

Male genitalia:

Pygophore (**Fig. 2A & B**) somewhat conical, ventral apical margin greatly prolonged into a conical process, terminally bifurcated; parameres (**Fig. 2E**) selender shaft curved into a neck head with hook like transverse projection, directed opposite side of apical spur, apical spur small, some what triangular, distal spur long, slender, obtuse; inflated aedeagus (**Fig. 2C &D**) with pair of broad terminally folded 3rd conjunctival appendages, pair of large slender 2nd conjunctival appendages, pair of small conical 1st conjunctival appendages, and pair of conical

membranous conjunctival process.

Female genetalia:

First gonocoxae (**Fig. 2G**) large with subrounded distal margin; 9th paratergites somewhat rounded and much longer than 8th paratergites; 2nd gonocoxae well separated with convex posterior margin; proctiger with posterior margin concave; spermatheca (**Fig.2H**) with prominent proximal flange, bulb somewhat rounded, pump region tube like, spermathecal duct much longer and highly convoluted, accessory gland, tube like.

Material examined:

1 male, Nyeri 29-ix-3y on sida leg. Schimperiana, H. Wilkinson, Bit. Mus. 1538-59 Det. W. E. China 1955 and 2 female, Van Someran, Nyeri (S.), Kenya 12 - 48, Leg. V. G. L. Someren, Bit. Mus. 1959-468; Brit. E. Africa, S. Foot & slopes of Mt. Elgon, 5000 – 5800ft., 1912193, leg S. A. Neave, det : june 8 – 13 – 1911., Lodged at BMNH.

Comparative note:

This species is most closely related to *D. intermedius* Distant for similar shape of paramere and spermethecal duct with accessory gland but it can easily be separated from *intermedius* in having pygophore with ventral apical process, deeply bifurcated.

DISCUSSION

Freeman (1947) synonymised variety *pulchara* Schouteden (1910) of *orientalis* because he on the basis of observing a long series of 100 specimens confirmed that black thoracic pleura (a sound character of *pulchara* as per Schouteden) appeared as a complete gradation from forms in which almost all the red and yellow on the ventral surface and femora is replaced by black to femora almost completely lacking black ventrally and with red anterior and middle femora. *D. orientalis* belongs to the sub genus *Neodysdercus* Stehlik with *D. intermedius* as type species having synapomorphy of the presence of ventral apical process in the pygophore alongwith *D. haemorrhoidalis* Signoret and *D. pretiosus* Distant. *D. orientalis* although appears most closely related to *intermedius* on the basis of synapomorphies of similar shape paramere and long spermathecal duct but later character is also shared by *D. haemorrhoidalis*. In the later however the paramere in contrast is remarkbely similar to that of *D. pretiosus* which has a short spermathecal duct. On the other hand *D. haemorrhoidalis* and *D. orientalis* have ventral apical process of pygophore deeply bifurcated.

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