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REDESCRIPTION OF A GONOCERINE SQUASH BUG OF UTMOST ECONOMIC IMPORTANCE AND CONFUSED TAXONOMIC STATUS *CLETUS PUNCTIGER* (DALLAS) FORM MUREE HILL (HEMIPTERA:HETEROPTERA) AND ITS CLADISTIC RELATIONSHIPS

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ABSTRACT

Gonocerus punctiger Dallas which remained confused with *Homoeocerus minax* Walker, a serious pest of rice in East Asia as *Cletus punctiger* is redescribed here with reference to its ignored characters of metathoracic scent, auricles and male genitalia including inflated aedeagus and female genitalia including spermatheca. In this light its cladistic relationships are also briefly discussed.

Key words: Heteroptera, Coriedae, *Cletus punctiger* (Dallas), redescription, economic importance

INTRODUCTION

Ito (1982) and Mitchell (2000) have described *Cletus punctiger* (Dallas) as a rice pest in East Asia. This potential pest of rice in upper Punjab specially distributed in Muree Hill tracts remained confused in the literature as *Gonocerus punctiger* by its original author Dallas (1852) and also described as *Homoeocerus minax* by Walker (1871). Distant (1902) removed this confusion and synonymised the later with the former and transferred *punctiger* in its present genus *Cletus* Stal but its important taxonomic characters like metathoracic scent, auricles and male genitalia including inflated aedeagus and female genitalia including spermetheca remained unknown in the literature to date. In the present study *C. punctiger* is redescribed here in detail with reference to its above important taxonomic features and its cladistic relationships in its group of species are also briefly discussed.

MATERIALS AND METHODS

The specimens were identified following the description and keys provided by Distant (1902), Ahmad *et al.* (1977) and Ahmad (1979). The measurements were taken by micromillimeter slide, of atleast ten males and ten females which are given in millimeters. For the study of male genitalia particularly for the inflation of the aedeagus the techniques of the second author (1986) and those of Ahmad and McPherson (1990 and 1998) were generally followed. For the inflation of aedeagus the pinned dry specimen was plunged into boiling water in a beaker, for 4-5 minutes. The genital capsule (pygophore) was removed and placed in 10% KOH and was warmed at 40^0C for 5-10 minutes in a cavity block. The capsule was washed in a depression dish thoroughly. The phallotheca was widened very carefully and then vesica was pulled out gently by the help of fine forceps in tap water. For the dissection of the female spermatheca, the 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. The components of male and female genitalia were preserved in glycerin in microvials and pinned with specimen. The female abdomen after it was thoroughly dried with a filter paper was glued with the specimen. For description and finalizing illustrations the conventional techniques specially those described by Ahmad *et al.* (2000) were generally followed. All the materials examined were deposited at the Natural History Museum, Department of Zoology, University of Karachi (NHMUK).

Description

Cletus punctiger (Dallas) (**Fig.1**)
Gonocerus punctiger Dallas 1852, 2: 494; variety, Distant 1879:8.
Homoeocerus minax Walker, 1871, 4: 99, 26.
Cletus punctiger, Distant 1902, 1:393

Colouration:

Body pale ochraceous and thickly punctate except antero-lateral margins of pronotum, grayish; corium, clavus

and antennae reddish.

Head:

Somewhat quadrangular; clypeus triangular, pointed anteriorly; anteocular distance equal to remainder of head, anteocular distance 0.6, length remainder of head 0.6; width of head 1.5; interocular distance 0.9; interocellar distance 0.4; antennae with basal segment equal to 3rd and distinctly shorter than 2nd, length of antennal segments I 1.6, II 2.0, III 1.6, IV 1.3, antennal formula IV<I=III<II; labium reaching between middle and hind coxae, with basal segment equal to 2nd and ½ again longer than 3rd, length of labial segments I 1.0, II 1.0, III 0.5, IV 0.6, labial formula III<IV<I=II.

Thorax and Abdomen:

Pronotum almost 2x broader than long, length of pronotum 2.2, width 4.4, humeral angles spinose and forwardly produced, anterolateral margins slightly concave, postero-lateral margins dentate, posterior lobes prominent with markedly concave surfaces; scutellum triangular, slightly longer than broad, length of scutellum 1.5; width 1.6; connexiva exposed at repose; distance base scutellum-apex clavus 2.4; apex clavus-apex corium 2.0; apex scutellum-apex abdomen including membrane 5.3. Total length male 10.1; female 10.4. Metathoracic scent ostiole large, rectangular, with an inwardly pointed tail, anterior part of scent auricle with an outer triangular portion posteriorly pointed, inner portion surrounding the ostiole inwardly bilobed, posterior part with an outer elongately oval portion and inner portion lip like with posterior margin convex.

Male genitalia:

Pygophore longer than broad, ventro-posterior margin medially slightly inpushed, lateral margins almost straight, dorso-posterior margin markedly convex, pair of tooth like truncated processes present at inner dorso-lateral margin; paramere large, thick, without anteriorly blunt end, outer and inner margins markedly sinuate, outer and inner margins above base convex, medio-inner margin and inner margin of stem with setae; inflated aedeagus asymmetrical with 3 ventro-lateral conjunctival appendages, pair of small spindle shaped and one dagger-shaped, comparatively large appendage present on conjunctival membrane; vesica thread-like, enclosed in sclerotized uncoiled, tube-like structure and not convoluted at the middle.

Female genitalia:

Terminalia with first gonocoxae triangular not wide a part, apices rounded, lateral margins almost straight; 2nd gonocoxae apically round; 8th paratergites with posterior margins slightly concave; 9th paratergites apically round, markedly wide a part; spermatheca with spermethecal bulb lobed, downward, median dilation with flange cup-like, large, proximal spermethecal duct sinuate.

Material Examined:

Holotypes of *punctiger* Dallas and that of *minax* Walker were examined by the second author at Natural History Museum, London (BMNH); 10 males, 10 females; Pakistan: Punjab, Muree; on *Rumex hastatus* 25-06-1970, 16-04-1971, 06-07-1975; leg. Ahmad, I. and Khan, A.A., lodged at NHMUK and Ahmad's Collection.

Comparative note:

This species is most closely related to *C. feanus* Distant in having remarkably stout and much elongate body, length usually exceeding 10.0 (10-12, Distant,1902) and pronotal spines produced upward and forward but it can easily be separated from the same in having head without spine, apical antennal segment fuscous, body length usually much exceeding 10.0 to 12.0 as compared to head with short but distinct anterolateral spines, apical antennal segment pale ochraceous, body length not more than 10.0 in *C .feanus* Distant.

DISCUSSION

The present species *C .punctiger* appears to play a sistergroup relationship with *C.feanus* as is obvious in its comparative note and the two together appear to play out group relationship with *trigonus* (Thunberg). The later plays sister group relationship with *hoplomachus* Breddin (Siddiqui, 2002). The entire *trigonus* Clade has robust pronotum with pronotal angles about half body length. Their stout body also appears to be their synapomorphy. *C. punctiger* and *C. feanus* appear to be bound in sister group relationship with much elongated body with length up to or exceeding 10.0 (10-12, Distant, 1902) and pronotal spines directed upward. The present species of *Cletus* i.e. *C.*

punctiger has bizarre outapomorphy of much robust body with length distinctly exceeding 10.0. Their fuscous apical antennal segment also probably exhibit their autapomorphy.

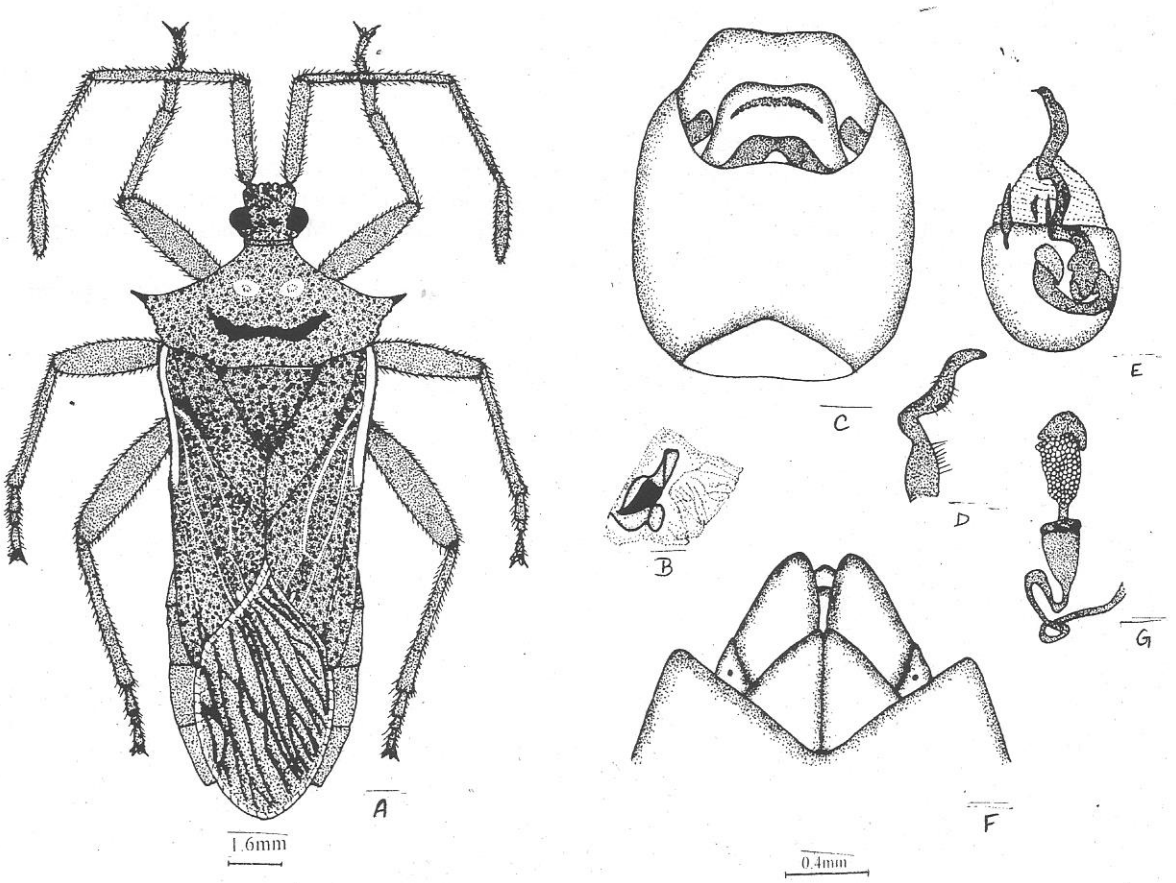

Fig.1. (A to G) C.punctiger; A. Dorsal view diagram; B Metathoracic scent auricle ventral view; C. Pygophore, dorsal view, D. Paramere; E. Inflated aedeagus, ventral view; F. Female terminalia, ventral view; G. Spermetheca, dorsal view.

REFERENCES

Ahmad, I. (1979). A revision of the superfamilies Coreoidea and Pentatomoidea (Heteroptera: Pentatomorpha) from Pakistan, Azad Kashmir and Bangladesh. Part-I. Additions and corrections of coreid and Pentatomid fauna with phylogetic considerations. *Karachi ent. Soc. Suppl.,* 4:1-113.

Ahmad, I. (1986). A fool proof tchnique for inflation of male genitalia in Hemiptera (Insecta). *Pakistan J. Entomol. Karachi* 1: 111-112.

Ahmad, I. and J.E. McPhrson (1990). Male genitalia of the type species of *Corimelaena* White, *Galgupha* Amyot and Serville and *Cydnoides* Malloch (Hemiptera : Cydnidae : Corimelaenidae) and their bearing on classification. *Ann. Entomol. Soc. Am.,* 83: 162-170.

Ahmad, I. and J.E. McPherson (1998). Additional information on male and female genitalia of *Parabrochymena* Larivere and *Brochymena* Amyot and Serville (Hemiptera: Pentatomidae). *Ann. Entomol. Soc. Am.,* 91: 800-807.

Ahmad, I., M.U. Shadab and A.A. Khan (1977). Generic and supergeneric keys with reference to a check-list of coreid fauna of Pakistan (Heteroptera : Coreoidea) with notes on their distribution and food plants. *Kar. Ent. Soc. Suppl.,* 2: 1-49.

Ahmad, I., N. Rab and S. Kamaluddin (2000). A new species of *Cletomorpha* Mayer (Hemiptera : Coriedae) on vegetables from Punjab, Pakistan with a key to the known species of *Cletomorpha* from Indo-Pakistan subcontinent. *Proc. Pakistan Congr. Zool.,*Jamshoro,. 20: 71-76.

Dallas, W.S. (1852). *List of the specimens of hemipterous insects in the collection of the British Museum.* Part II. British Museum, London, 572 pp.

Distant, W. L. (1879). Rhynchota. Pp. 1-15, pl., In: *Scientific results of the second Yarkland mission; based upon the collections and notes of the late Ferdinand Stoliczka*, PhD. Office of the Superintendent of Government Printing, Calcutta.

Distant (1902). *The Fauna of British India including Ceylon and Burma. Rhynchota (Heteroptera)*, Vol. 1: 1-438, Taylor and Francis; London.

Ito, K. (1982). Immigration of *Cletus punctiger* Dallas (Heteroptera : Coreidae) into paddy fields in relation to food plant preference in the adult. *Jpn. J. Appl. Entomol. Zool.*, 26: 300-304.

Mitchell E.L. (2000). Chapter II. Leaf-footed bugs (Coreidae). In: Heterptera of Economic importance (Schaefer, C.W. and Panizziar eds). CRC Press, Boca Raton, London, New York, Washington, D.C.

Siddiqui, N.R. (2002). *Morphotaxonomic studies of the tribe Gonocerini Stal (Hemiptera : Coreidae : Coreinae) form Pakistan, Azad Kashmir and Bangladesh with their cladistic analysis.* M.Phil thesis, Department of Zoology, University of Karachi, Karachi, Pakistan.

Walker, F. (1871). *Catalogue of the specimens of Hemiptera Heteroptera in the collection of the British Museum.* Part IV. E. Newman, London, pp. 1-211.

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