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ADDITIONAL INFORMATIONS AND CONFIRMATION OF NEW SPECIFIC STATUS OF STINK BUG *CAYSTRUS QUADRIMACULATUS* LINNAVUORI (PENTATOMIDAE: PENTATOMINAE: CAYSTRINI) EARLIER DESCRIBED AS *C. MARGINIVENTRIS QUADRIMACULATUS* LINNAVUORI WITH CLADISTIC RELATIONSHIPS

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ABSTRACT

Caystrus marginiventris quadrimaculatus Linnavuori is redescribed with additional informations on its newly raised specific status by its original author with reference to its male genitalia. In this light its cladistic relationships with in its genus *Caystrus* Stål is also briefly discussed.

Keywords:- *Caystrus quadrimaculatus* Linnavuori, Hemiptera, Pentatomidae, Cladistic relationships.

INTRODUCTION

Linnavuori (1974) established the independent specific status of subspecies *Caystrus marginiventris quadrimaculatus* but considered it similar to *Caystrus pseudobrunnescens* in having lateral margins of the pronotum and hemelytra more or less curvate. His illustrations of male pygophore of the above species also appear more or less the same because he has shown some variations in this structure in *C. pseudobrunnescens*. Presently therefore these structures in the three species i.e., *C. pseudobrunnescens*, *C. marginiventris* Stål and *C. quadrimaculatus* are compared with redescription of the later for throwing light on its cladistic relationships. A key is also given to separate the above three species from Ethiopian region.

MATERIALS AND METHODS

Authentically determined specimens of *C. marginiventris*, *C. pseudobrunnescens* were borrowed by the courtesy of the authorities of Natural History Museum Stockholm, Sweden and the holotype of *C. quadrimaculatus* was examined by the 2nd author at American Museum of Natural History New York, USA (AMNH) by the courtesy of Dr. R. Schuh, Director Entomology of that Museum. We followed the techniques of Ahmad and Kamaluddin (1985) and Ahmad and Afzal (1989) for measurements, illustrations and description. For inflation of aedeaqus and examination and illustration of male genitalia the techniques of Ahmad (1986) and Ahmad and McPherson (1990 and 1998) were generally followed.

RESULTS

C. quadrimaculatus Linnavuori
(Figs. 3A-D)

C. marginiventris quadrimaculatus Linnavuori 1972: 405; *C. quadrimaculatus* Lannavuori 1974: 403; 1982: 76.

Colouration:

Body dark brownish; pronotum with four distinct callose whitish spots behind callal area; lateral margins of venter pale.

Body:

Body of moderate size measuring 10.5-11.5 mm.

Head:

Head (♂) is narrower, 1.35 x as broad as long; eyes smaller; ocular index about 3:0; proportion between antennal segments 15: 20: 27:35: 38.

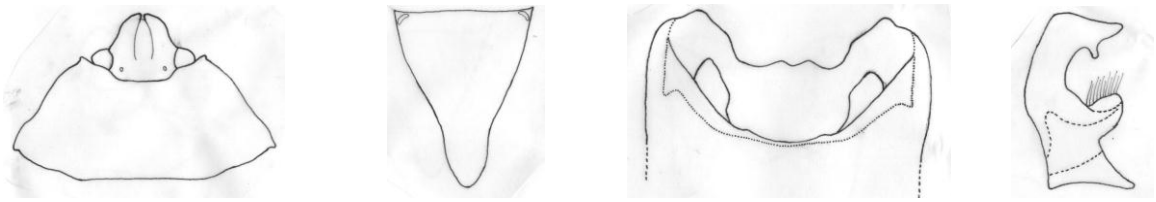

Fig. 1. *Caystrus marginiventris;* A. Head and pronotum, B. Scutellum, C. Pygophore (dorsal view), D. Paramere

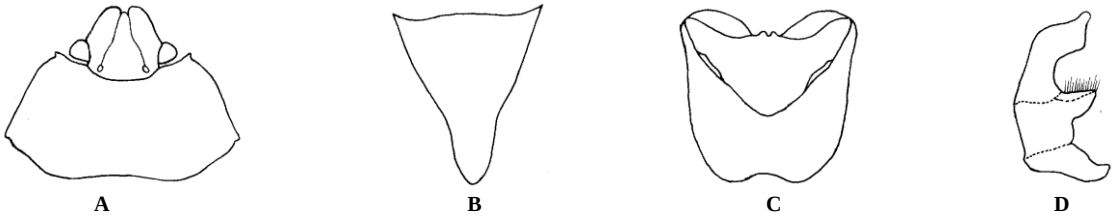

Fig. 2. *C. pseudobrunesceus;* A. Head and pronotum, B. Scutellum, C. Pygophore (dorsal view), D. Paramere

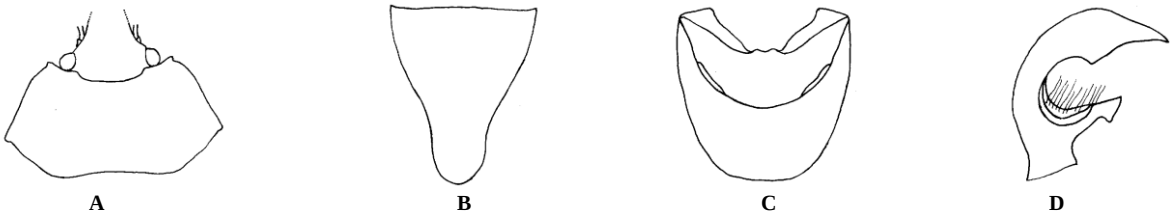

Fig. 3. *C. quadrimaculatus;* A. Head and pronotum, B. Scutellum, C. Pygophore (dorsal view), D. Paramere

Thorax:

Lateral margins of the pronotum and hemelytra more or less curvate; scutellum shorter and apically broad.

Male genitalia:

Pygophore quadrangular, slightly longer than broad, dorso-median surface deeply concave with an elongated narrower process at inner lateral margin, lateral lobe subacutely produced; ventro-median surface bilobed medially notched; paramere somewhat F-shaped, outer margin curvate, apex truncate with tip acutely pointed, a bunch of hairs present at inner process.

Material examined:

Holotype, Africa: Ivory Coast, Lamto, AMNH, 1 ♀ PT.

Key to close allies of *C. quadrimaculatus*

1. Body ochraceous with brownish punctures, remarkably long (12.15-13.35 mm), dorso-median surface of pygophore shallowly sinuate ……..…….. *C. marginiventris*
- Body pale with thickly brown punctures, of moderate size (10.7-11.85 mm), dorso-median surface of pygophore deeply concave ……..……..…… 2

2. Scutellum with short apical subacute lobe, outer margin of paramere sinuate, curved near apex with round tip ……...……..… *C. pseudobrunnesens*
- Scutellum with short apically rounded lobe, outer margin of paramere roundly curvate, apex of blade sharply truncate but medially slightly concave, distally, acutely spinously produced ……. …….. *C. quadrimaculatus*

Comparative note:

It is most closely related to *C. pseudobrunnescens* and *C. marginiventris* in having lateral margins of the pronotum and hemelytra more or less curvate but it could easily be separated from *C. marginiventris* by its much smaller size i.e., 10.5-11.5 mm as compared to 12.15-13.35 mm. It could also be separated easily from *C. pseudobrunnescens* by its apical lobe of scutellum roundly produced as compared to apical lobe of scutellum subacutely produced. Outer margin of paramere remarkably curved with pointed tip separate this species from both of its both allies i.e., *C. marginiventris* and *C. pseudobrunnescens*.

Table 1. Morphometric data of three species of *Caystrus*.

C. marginiventris **(Figs. 1A-D)**	***C. pseudobrunescens*** **(Figs. 2A-D)**	***C. quadrimaculatus*** **(Figs. 3A-D)**
1. Body of large size (12.15-13.35mm)	Body of moderate size (10.7-11.85mm)	Body of moderate size (10.5-11.5mm)
2. Body ochraceous with brownish punctures	Body pale with thickly brown punctures	Body dark brown
3. Head 1.4 x as broad as long	Head 1.32 x as broad as long	Head 1.35 x as broad as long
4. Proportion between antennal segments 0.5:1.1: 1.35: 1.7:1.85	Proportion between antennal segments 15:20 27:35:38	Proportion between antennal segments 15:25: 32: 36: 42
5. Pronotum with lateral margins distinctly sinuate	Pronotum with lateral margins more or less curvate	Pronotum with lateral margins curvate
6. Scutellum 1.33 x as broad as long with subrounded apical lobe	Scutellum 1.22 x as broad as long with short subacute apical lobe	Scutellum about 1.22 x as broad as long with short and rounded apical lobe
7. Pygophore quadrangular, dorso-median surface slightly concave with a large plate-like process at inner lateral margin, lateral lobe narrowly produced, ventro-median surface shallowly bilobed	Pygophore quadrangular, dorso-median surface deeply concave with a more or less short process at inner lateral margin, lateral lobe truncately produced, ventro-median surface with short median conical processes on either side	Pygophore quadrangular, proximally narrow and broadened distally, dorso-median surface concave with an elongate narrower process at inner lateral margin, lateral lobe subacutely or conically produced, ventro-median surface bilobed, medially notched
8 Paramere with outer margin straight, humped near apex, blade distally truncate and apically unequally bilobed	Paramere with outer margin sinuate, curved near apex later truncated with round tip	Paramere with outer margin roundly curvate, apex of blade sharply truncate but medially slightly concave, distally acutely and spinously produced

DISCUSSION

Linnavuori (1974) raised *C. quadrimaculatus*, his (1972) subspecies *C. margininiventris quadrimaculatus* to independent specific status, but he considered some external characters of *C. quadrimaculatus* similar to *C. pseudobrunnescens*. The present comparative note of *C. quadrimaculatus*, key to the three taxa and comparative external and genitalial characters in tabular from in (Table 1) clearly separate *C. quadrimaculatus*, *C. pseudobrunnescens* and *C. marginiventris*.

C. quadrimaculatus appears most primitive among its complex with remarkably roundly curved outer margin of paramer, simply deeply concave dorso-median surface of pygophore and short and round apical lobe of scutellum. It appears closely related to *C. pseudobrunnescens* which appears slightly advanced in having relatively short and narrow process at inner lateral margin on dorso-median surface of pygophore. Its dentate processes on either side of ventro-median surface of pygophore and sinuate outer margin of paramere with curved near apex and apex narrowly truncate having round tip, all point out in this direction. *C. marginiventris* appears most advanced in this complex with remarkably sinuate lateral margin of pronotum, apical lobe of scutellum subacutely produced, prominent plate-like process at inner lateral margin on dorso-median surface of pygophore and outer margin of paramere truncate, hump-like near apex, truncate, curving laterad with unequal bilobed tips.

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