INT. J. BIOL. BIOTECH., 7 (4): 379-381, 2010.

REDESCRIPTION OF *CAYSTRUS NURISTANUS* LINNAVUORI (HEMIPTERA: PENTATOMIDAE: PENTATOMINAE: CAYSTRINI) FROM AFGHANISTAN WITH SPECIAL REFERENCE TO ITS SEVERAL UNKNOWN CHARACTERS OF HEAD, THORAX, THEIR APPENDAGES AND THEIR OF MALE GENITALIA AND THEIR BEARING ON ITS PHYLOGENY

Muhammad Zahid[1] and Imtiaz Ahmad[2]

[1]*Federal Urdu University of Arts, Science and Technology, Gulshan-e-Iqbal, Karachi, Pakistan*
[2]*M. A. H. Qadri Biological Research centre, University of Karachi, Karachi-75270, Pakistan*

ABSTRACT

The caystrine stink bug species *Caystrus nuristanus* Linnavuori is presently redescribed with special reference to its male genitalia including pygophore, paramere and some important characters of head, thorax and appendages and in this light its phylogenetic relationship is also briefly discussed.

Key-words: Hemiptera, Redescripion *Caystrus nuristanus*, Afghanistan, phylogeny

INTRODUCTION

Linnavuori (1974) described his species *nuristanus* 25Km from N. Barikot, Nuristan, in Afghanistan under the genus *Caystrus* Stål but several of its important characters including those of head, thorax, abdomen and their appendages and their measurements incluing some very important characters of its male genitalia such as pygophore and paramere remained unknown. The present second author got an opportunity to visit Natural History museum Vienna, Austria (NHMV) to examine Linnavuori's collection in that museum and examined the present species of *Caystrus* Stål. In the light of these characters the phylogenetic relationships of *C. nuristanus* is briefly discussed.

MATERIAL AND METHODS

The second author examined the holotype which is deposited in the Natural History museum Vienna (NHMV) during his visit of that museum. The male genitalia was dissected after softening it following the techniques of Ahmad (1986) and Ahmad and McPherson (1990 and 1998). The specimen boiled in a beaker for 3-5 minutes. When the specimen got softened, its pygophore was removed under a binocular microscope. The pygophore was boiled in 10% KOH at 40-45^{0}C for 10 minutes. After illustrations of pygophore and paramere were made and then the components of the genitalia were transferred into a microvial with a drop of glycerine and pinned with the insect. For the measurements of the parts and description generally the techniques of Ahmad and Afzal (1989) were followed.

RESULT

Caystrus nuristanus Linnavuori
(Figs. 1-3)

Caystrus nuristanus Linnavuori 1974: 400-401.

Coloration and general shape:

Body pale ochraceous darkly punctuate, punctures of head very closely to each other; eyes pale grey; ocelli red; membrane grayish; body broadly ovate.

Head: Head distinctly broader than long; paraclypei broad and longer than clypeus, lateral margins in front of eyes shallowly insinuated; antennae gracile, proportion between segments 14:26:26:32:38 antennal formula 1<2<3<4<5; labium slightly beyond mesocoxae.

Thorax: Pronotum 2.3x broader than its length, lateral margins distinctly curved humeral angles blunt; scutellum 1.26 x longer than broad, lateral margins of elytra distinctly curved, connexiva slightly exposed.

Male genitalia:

Pygophore (Fig. 1) quadrangular shaped, dorsomedian surface deeply concave, lateral lobe subrounded, ventromedian surface medially inpushed bilobed; paramere (Fig. 2) some what F-shaped, outer margins distinctly convex, apex of blade sharply beak like pointed, a bunch of hairs present at inner process.

Location of type:

Holotype male, Afghanistan, 25 km N. Barikot, Nuristan, NHMW.

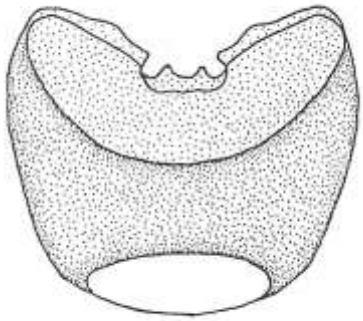

Fig. 1. *Caystrus nuristanus*: Pygophore, dorsal view.

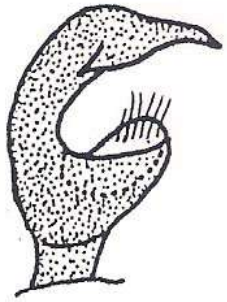

Fig.2. Paramere, inner view.

Comparative note:

This species is most closely related to *C. ventralis* in having lateral margins of pronotum convex and costal margins of hemelytra distinctly curved but it can easily be separated from the same in having head more elongated 1.3 x as broad as long and tibia and tarsi with dark spots.

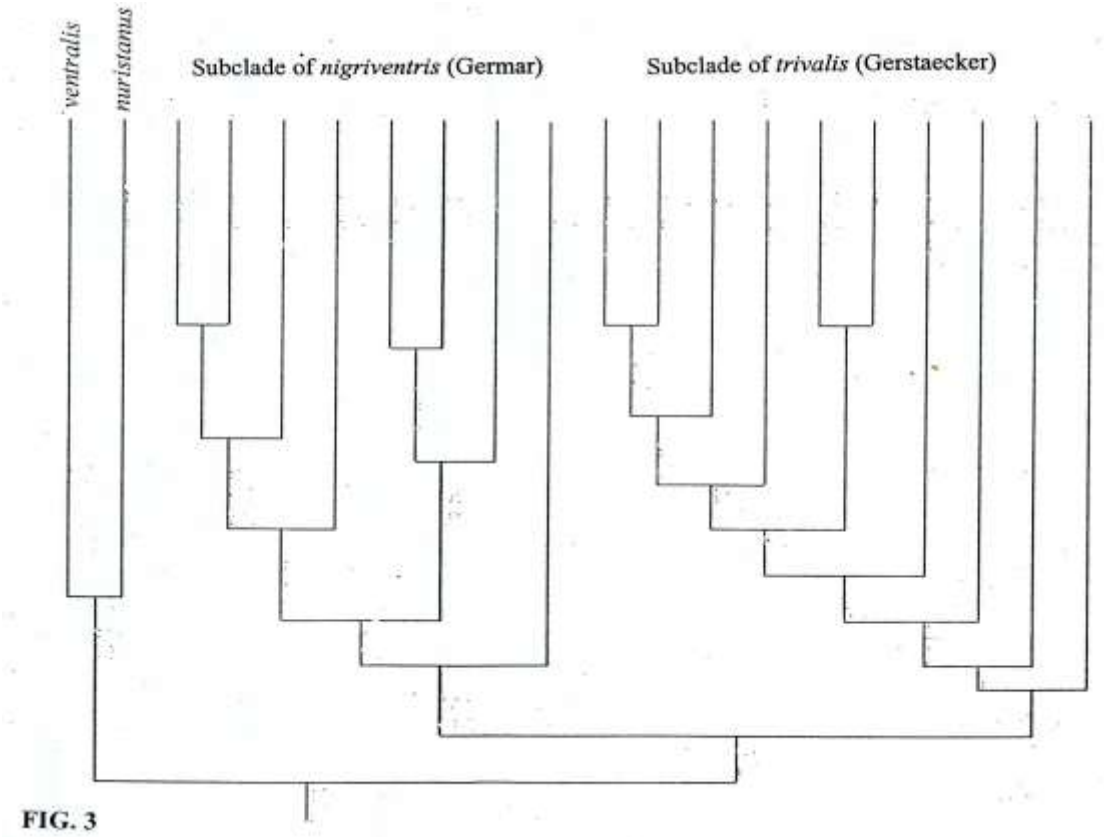

Fig. 3. Cladogram showing phylogenetic relationship of *nuristanus* related species.

DISCUSSION

Phylogenetic relationships:

Recently Ahmad and Zahid (2005) and Ahmad and Zahid (2009) have recognized two very important subclades of a major subclade *C. nigriventris* Germar within the genus *Caystrus* Stål i.e., *C. trivalis* (Gerstacker) and *C. nigriventris* (Germar). The present species *C. nuristanus* also appears to belong to this large subnclade sharing the Synapomorphies of paraclypeal lobes obscure or slightly developed in front of eyes and lateral margins of pronotum convex, concave or straight. The present species *C. nuristanus* however appears to form a separate subclade with its sister group species *C. ventralis* Distant (Zahid, 2006) in having lateral margins of pronotum markedly convex and costal margins of hemelytra distinctly curved playing out group relation ships with already described two above larger subclades of *C.nigriventris* Germar main subclade. However it is markedly distinct from its sister group species *C.ventralis* in having autapomorphies of head more elongate about 1.3X as broad as long and tibiae and tarsi with dark spots missing in *C.ventralis* its sister group species. (Fig. 3).

REFERENCES

Ahmad, I. (1986). A fool-proo ftechnique for inflation of male genitalia in Hemiptera (Insecta). *Pak*istan *J. eentomol. Soc. Kar.* 1 (2) 111-112.

Ahmad, I. and M. Afzal (1989). A revision of Myrocheini (Pentatomidae: Pentatominae) from Indo-Pakistan area. *Oriental Insect, (USA),* 23:243-267.

Ahmad, I. and J.E. McPherson (1990). Male genitalia of the type species of *Corimelaena* White, *Cydnoides* Malloch and *Galgupha* Amyot and Serville (Hemiptera: Cydnidae: Coriomelaeninae) and their bearing on classification. *Ann. Entomol. Soc. Am.* 83 (2): 162- 170.

Ahmad, I. and J.E. McPherson (1998). Additional information on male and female genitalia of *Parabrochymena* Lariviere and *Brochymena* Amyot and Serville (Hemiptera: Pentatomidae). *Ann. Entomol. Soc. Am*., 91 (6): 800-807.

Ahmad, I. and M. Zahid (2009). Resurrections and Redescription of *Caystrus marginiventris*

(Stål), *C. trivalis* (Gerstaecker) and *C. pseudobrunnescens* Linnavuori (Hemiptera: Pentatomidae: Pentatominae), key to this complex and their cladistric ralationships. *Pakistan. J, Zool*, 41(4) 305-312.

Ahmad, I., M. Zahid and S. Kamaluddin (2005). Biodiversity in stink-bug *Caystrus nigriventris* Germar (Pentatomidae:Pentatominae:Caystrini) *Int. J. Biol. Biotech.*, 2 (1): 1-4.

Zahid, M. (2006). *A revision of the Caystrini (Stål) and Myrocheini Stål (Heteroptera: Pentatomidae:Pentatominae) with a revision of the type genera Caystrus Stal and Myrochea Stal of the world with special reference to their cladistic analysis*. Ph.D. thesis. Department of Zoology, University of Karachi, Karachi, Pakistan.

(*Accepted for publication September 2010*)