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## A REVISION OF THE GENUS *BRACHYNEMA* MULSANT AND REY (PENTATOMIDAE: PENTATOMINAE: CARPOCORINI) FROM PAKISTAN

Raees Hussain Zaidi and Imtiaz Ahmad

Department of Zoology, University of Karachi, Karachi-32

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The genus *Brachynema* Mulsant and rey is redescribed from Pakistan with the species *virens* Klug and *cinctum* (fabricius) with special reference to their metathoracic scent complex and male and female genitalia. A key is provided to species and their relationships are briefly discussed.

*Key words:* Revision, *Brachynema* Pakistan.

### INTRODUCTION

Kirkaldy [1] catalogued 13 species of *Brachynema* Mulsant and rey from Ethiopian and Palaearctic regions but he did not report any from Pakistan. Hoberlandt [2, 3] listed *B. cinctum* (fabricius) and *B. virens* Klug from Iran. Later Hoberlandt [4] also listed *B. virens* from Ankara, Turkey. Miyamoto [5] also recorded *B. virens* from Iran and Afghanistan. Fuente [6] in his key included *B. cinctum* and abbasi [7] gave dorsal view diagram, and described and illustrated metathoracic scent complex and genitalia of *B. cinctum* but his diagrams of aedeagus showed it only partially inflated. Later Ahmad *et al.* [8] and Ahmad [9, 10] listed the above species along with their distribution, food plants, time of emergence and depositories but the structure of the inflated aedeagus remained unknown.

The genus *Brachynema*, together with the species from Pakistan are redescribed with special reference to their metathoracic scent gland complex, male and female genitalia. The methods of Ahmad for the inflation of aedeagus, the dissection of the female spermatheca, measurement description and diagrams, [12] were generally followed. All the measurements are given in millimetres and all the diagrams are to the given scales. For the abbreviation of Natural History Museum, Department of Zoology, University of Karachi. "NHMUK" is used.

*Brachynema* Mulsant and Rey 1852

*Brachynema* Mulsant and rey [13]:141; Puton [14]:52; Kirkaldy [1]:92; Hoberlandt [2]:511; Linnavuori [15]:92; (16):17; Stichel [17]:756; Pushkov [18]:222; Fuente [6]:188; Ahmed *et al.* [8]:37; Ahmad [9]:47; [10]:136.

*Type species Brachynema cinctum* (Fabricius)

*Head.* Shorter than its width; paraclypei greatly elongate,

enclosing clypeus in front; antecular distance slightly longer than remainder of head, antenniferous tubercles not visible from above; labium reaching to middle or hind coxae, basal labial segment not reaching to apex of head, 1st and 2nd almost equal, 4th shortest; ocelli prominent, closer to eyes than to each other.

*Pronotum.* Anterior margin lunate, as broad as width of head across eyes; callosities raised, closer to anterior margin; scutellum longer than broad, apical lobe distinct with narrow apex; metathoracic scent gland complex with large ostiole, peritreme with narrow apex, evaporatoria distinct.

*Abdomen.* Longer than broad, lateral angles of sternum acute.

*Male genitalia.* Pygophore broad, anterior opening moderately round, dorsoposterior margin sinuate, lateral lobes with hairs, ventroposterior margin sinuate; paramere slender, T-shaped, blade broad; inflated aedeagus with elongate theca, penial lobes "v" or usually H-shaped, vesica short.

*Female genitalia.* First gonocoxae broad close to each other, fused posterior margin of 8th paratergites straight or slightly convex; 9th paratergites not reaching to fused posterior margin of 8th paratergites; distal spermathecal duct longer than pump region and distinctly shorter than proximal spermathecal duct.

*Comparative note.* This genus is closely related to *Holcostethus* Fieber in having paraclypei always longer than clypeus and enclosing it in front but it can easily be separated from the same by its elongate body, antecular distance slightly longer than remainder of head, metathoracic scent complex with small peritreme and paramere T-shaped in contrast to body ovate, antecular distance distinctly longer than remainder of head, metathoracic scent complex with long peritreme and paramere usually F-shaped in *Holcostethus*.

Key to the species of the genus *Brachynema*

1. Body long (12.30-13.95), 2nd antennal segment longest, labium reaching to hind coxae, peritreme elongate, spermathecal bulb with two finger-like processes *virens* Klug. Body short (8.7-9.5), 5th antennal segment longest, labium reaching to middle coxae, peritreme short, spermathecal bulb without any process *cinctum* (Fabricius)

*Brachynema cinctum* (Fabricius) (Figs. 1-9)

*Cimex cinctum* Fabricius (19):712.

*C. forskahlii* Gmelin (20):2150.

*C. purpureomarginatus* Rambur, (21):121.

*C. tarsatus* klug (22):44.

*Brachynema cincta* Fieber (23):340

*B. cinctum* Puton [13]:60; Kirkaldy [1]:92; Stichel [17]:756; Hoberlandt [2]:132; Pushkov [18]; 268 Fuente [6]:192; Ahmed *et. al.* [8]:37; Ahmed [9]:47; [10]:136.

**Colouration.** Body green except lateral margins of pronotum and ocelli pink; lateral margins of hemelytra pale; apex of scutellum distinctly yellowish green; tibia, tarsi and eyes brown.

**Head.** Lateral margins of paraclypei sinuate; 2nd antennal segment more than 1.25xs longer than 3rd, length of antennal segments I 0.52-0.55, II 0.80-0.95, III 0.5-0.7, IV 0.80-0.95, V 0.90-1.05; antennal formula  $1 < 3 < 4 < 2 < 5$ ; labium reaching to middle coxae, 3rd segment more than 0.5xs shorter than 2nd, length of labial segment I 0.9-1.1, II 0.9-1.2, III 0.5-0.8, IV 0.5-0.6; labial formula  $4 < 3 < 1$ ; antocular distance 0.9-1.0; length remainder of head 0.80-0.95; width 2.25-2.5; interocular distance 1.4-1.5; interocellar distance 0.9-1.0.

**Thorax.** Width of pronotum distinctly more than 2.5xs wider than its length; anterior angles toothed, directed anteriorly, humeral angles subacute, lateral margins sinuate, length of pronotum 1.6-1.8, width 4.5-4.8; scutellum longer than broad, more than 1.5xs longer than head length with apical lobe distinct, apex subround, length of scutellum 2.85-3.2, width 2.3-2.7; metathoracic scent gland ostiole (Fig. 2) large, round, peritreme short, directed anteriorly, not reaching to 0.5xs length of evaporatoria; membrane of hemelytra longer than abdomen; length base scutellum-apex calvus 2.3-2.5; apex clavus-apex corium 1.7-1.8; apex corium-apex abdomen including membrane 1.3-1.6; apex scutellum-apex scutellum-apex abdomen including membrane 2.3-2.7.

**Abdomen.** Connexiva exposed at repose; 7th female abdominal sternum medially straight; total body length 8.07-9.10, female 8.7-9.5

**Male genitalia.** Pygophore (Fig. 3) broader than long, lateral lobes prominent and round, paramere (Fig. 4) somewhat T-shaped, apex of blade acute, outer margin sinuate, inner margin medially concave; inflated aedeagus (Figs. 5, 6, 7) with a dorsal membranous conjunctival appendage and a pair of ventral membranous conjunctival appendages, penial lobes angular, V-shaped.

**Female genitalia** (Fig. 8). First gonocoxae lobe-like; 2nd gonocoxae almost as long as broad; 8th paratergites triangular with posterior margin slightly convex; 9th paratergites elongate, not reaching to fused posterior margin of 8th paratergites; spermatheca (Fig. 9) with proximal spermathecal duct almost 2xs longer than distal spermathecal duct, pump region almost 2.5xs shorter than distal spermathecal duct, spermathecal bulb ovate, without finger-like proc-

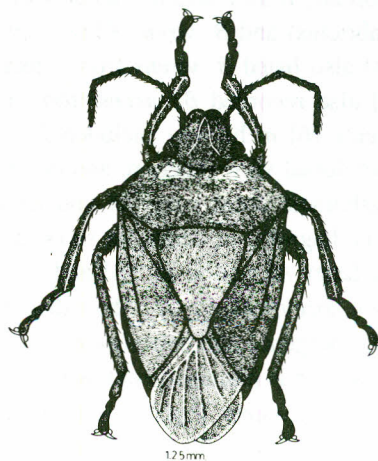


Fig. 1. *Brachynema cinctum* (Fabricius) (dorsal view)

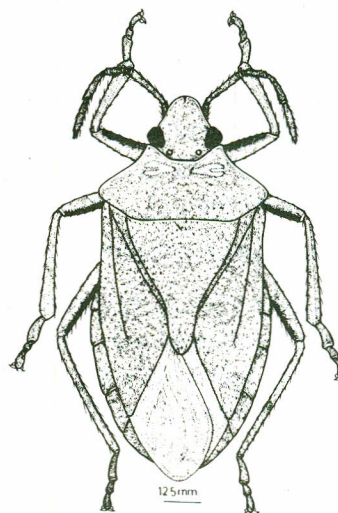


Fig. 10. *Brachynema virens* (Klug.) (dorsal view)

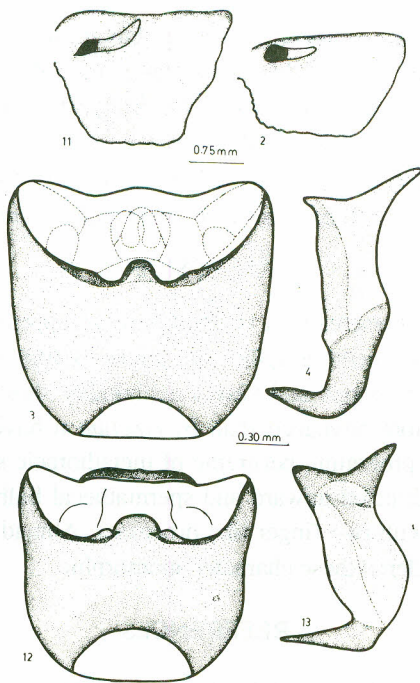


Fig. 2. Scent gland (ventral view)  
 Fig. 3. Pygophore (dorsal view)  
 Fig. 4. Paramere (inner view)  
 Fig. 11. Scent gland (ventral view)  
 Fig. 12. Pygophore (dorsal view)  
 Fig. 13. Paramere (inner view)

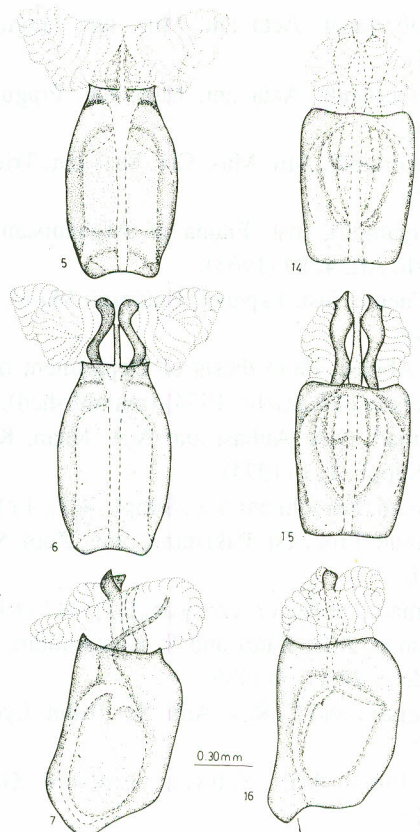


Fig. 5. Aedeagus (dorsal view)  
 Fig. 6. Aedeagus (ventral view)  
 Fig. 7. Aedeagus (lateral view)  
 Fig. 14. Aedeagus (dorsal view)  
 Fig. 15. Aedeagus (ventral view)  
 Fig. 16. Aedeagus (lateral view)

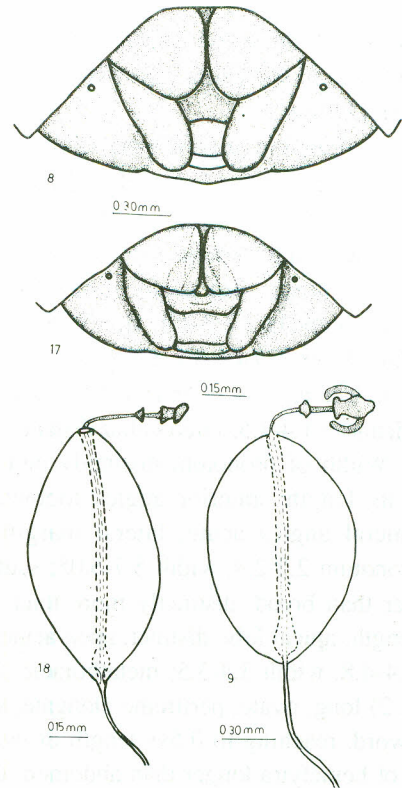


Fig. 8. Female terminalia (ventral view)  
 Fig. 9. Spermatheca (dorsal view)  
 Fig. 17. Female terminalia (ventral view)  
 Fig. 18. Spermatheca (dorsal view)

esses.

*Material examined.* 31 males and 41 females Pakistan (NWFP), Ayubia; (Punjab), Lahore, Sargodha; (Sind), Karachi, Thatta, Makli, Sujawal, Moenjadaro; (Baluchistan), Sibi, 7.4, 20.9.1969, 8.11.1970, 11.9.1974, 15.3, 21.9, 19.10.1975, 11.6, 16.9, 22.10.1976, 29.5, 6, 30.9.1977, 20, 26.5, 25.7.1978, 23.6, 5.9.1979, 1.11.1983, leg. M. Aslam, M. Moizuddin, M.U. Shadab, I. Ahmad, N.A. Rana, A.A. Khan and M. Rahim in NHMUK.

*Comparative note.* This species is closely related to *virens* in general body shape and colour but it can easily be separated from the same by its remarkably small size, head slightly longer than pronotum, 5th antennal longest and spermathecal bulb without processes in contrast to larger size, head shorter than pronotum, 2nd antennal longest and spermathecal bulb with two finger-like processes in *B. virens*.

*Brachynema virens* Klug (Figs. 10-18)

*Brachynema virens* Klug (22):5; Puton [14]:65; Kirkaldy [1]:93; Hoberlandt [2]:132; [3]: 511; [4]:41; Ahmad *et al.* [8]:37; Ahmad [9]:47; [10]:136. *B. germari* Pushkov. (8):268.

**Colouration.** Body green except lateral margins of pronotum and apex of scutellum yellowish green; ocelli and eyes black; tarsi brown.

**Head.** Lateral margin of paraclypei straight; 2nd antennal segment more than 1.5xs longer than 3rd, length of antennal segment I 0.5-0.6, II 1.5-1.8, III 0.8-1.0, IV 0.95-1.35 V 1.2-1.3; antennal formula  $1 < 3 < 4 < 5 < 2$ ; labium reaching to hind coxae, 3rd segment shorter than 2nd, length of labial segment I 1.3-1.4, II 1.35-1.5, III 0.9-1.0, IV 0.5-0.8; labial formula  $4 < 3 < 1 = 2$ ; antocular distance 1.05-1.15; length remainder of head 1.0-1.1; width 2.3-2.45 interocular distance 1.4-1.5; interocellar distance 0.9-1.1.

**Thorax.** Width of pronotum distinctly more than 2xs wider than its length; anterior angles toothed, directed laterad, humeral angles acute, lateral margins sinuate, length of pronotum 2.2-2.4, width 5.7-6.05; scutellum distinctly longer than broad, distinctly more than 2xs longer than head length, apical lobe distinct, apex acute/ length of scutellum 4.4-4.8, width 3.4-3.5; metathoracic scent gland ostiole (Fig. 2) long, ovate, peritreme elongate, sword-like, directed upward, reaching to 0.5xs length of evaporatoria; membrane of hemelytra longer than abdomen; length base scutellum-apex clavus 3.4-4.0; apex clavus-apex corium 2.4-3.1; apex corium-apex abdomen including membrane 1.9-2.8; apex scutellum-apex abdomen including membrane 3.6-4.2.

**Abdomen.** Connexiva exposed at repose; 7th female abdominal sternum medially concave; total body length male 12.30-12.55; female 13.50-13.95.

**Male genitalia.** Pygophore (Fig. 12) longer than broad, lateral lobes prominent and subround; paramers (Fig. 13) somewhat T-shaped, apex of blade narrow, posterior margin sinuate, inner margin convex; inflated aedeagus (Figs. 14, 15, 16) with a prominent dorsal membranous conjunctival appendage, a pair of ventral membranous conjunctival appendages, penial lobes H-shaped.

**Female genitalia** (Fig. 17). First gonocoxae broad, almost quadrangular; 2nd gonocoxae distinctly broader than long; 8th paratergites triangular with fused posterior margins concave; 9th paratergites elongate, not reaching to fused posterior margins of 8th paratergites; spermatheca (Fig. 18) with proximal spermathecal duct almost 3xs longer than distal spermathecal duct, pump region shorter than distal spermathecal duct, spermathecal bulb elongate with two finger like processes.

**Material examined.** 1 male and 8 females Pakistan, (Baluchistan), Hunna lake, Noshki, 20.6.1982, 25.7.1983 leg M. Moizuddin, M. Rahim, in NHMUK.

**Comparative note.** This species is related to *cinctum* in general colour and body shape but it can easily be separated

from the same by its large size and labium reaching to hind coxae, head shorter than pronotum, 2nd antennal longest and spermathecal bulb with two finger-like processes in contrast to small size, labium reaching to middle coxae, head shorter than pronotum, 5th antennal segment longest and spermathecal bulb without any process in *cinctum*.

## DISCUSSION

The representatives of *Brachynema* appear advanced sharing the synapomorphies of ostiolar peritreme reduced, paramere T-shaped and vesica remarkably short. *B. virens* appears more advanced than *B. cinctum* having shorter head than pronotum, peritreme of metathoracic scent gland complex directed upward and spermathecal bulb in female genitalia with two finger like processes. Ahmad *et al.* [24] also considered these character apomorphic.

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