



**A New Halyine Species Of *Halys* Fabricius (Hemiptera, Pentatomidae, Pentatominae)
From Miani Forest, Sindh, Pakistan**

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Abstract: A new species of the Genus *Halys* Fabricius on Babur (*Acacia arabica* Wild) is described from Miani forest, Pakistan with special reference to metathoracic scent gland ostiole and male and female genitalia and compared it with its close allied species *H.serrigera* (Westwood 1837). The description is supported by illustration.

Keywords: - *Halys spinosus*, Miani forest, Sindh, Pakistan male and female genitalia

1. INTRODUCTION

Since one hundred years researchers are working on the genus *Halys* Fabricius (1775). But as the description of old workers was based on external characters only so from very beginning the synonymization and transformation of *Halys* species within the genus and to the other genera has been carried out from time to time by different workers. But a quite first major work on Asian species has been done by Chopra (1974), in which he included two new species *H. magnus* and *H. parvus* both from India along with the re description of *H. dentatus* (Fabricius 1775) based on lectotype. Ghauri (1988), who did a thorough and detailed work on Asian species of the genus *Halys* based on type material in which he synonymized many species such as *H. dentatus* with *H. serrigera* (Westwood 1837) but Memon *et al.*, by disagreeing Ghauri maintained their independent status. He synonymized *H.magnus* *H. qadri* Abbasi (1975) with *H. salcatus* (Thunberg 1783) and *H.parvus* with *H. serricollis* (Westwood 1837). Ahmed and Memon (1998) accepted the synonymy of *parvus* with *serricollis* but transferred it to the genus *Neohalys* Ahmed and Parveen (1982) on the basis of the shape of paramere. Ghauri also stated that *H.neelgiriensis* Distant (1893), *H. rugosus* (1921) and *H. persa* Bergroth (1919) are not *Halys*. In addition he also described his new species *H. shaista* from South India. Therefore till 1988 only four species are on the record of genus *Halys*. After twenty years Memon *et al.*, (2006) described a polymorphic new species *H. sindellus* from Hyderabad, Sindh, Pakistan, which was a first new species of *Halys* recorded from Pakistan. They also

for the first time used DNA sequencing for the species limits of their polymorphic new species which was even first work of any species of the tribe Halyini. Presently here we have described a new species from Miani forest on Babur (*Acacia arabica* Wild) on the basis of male and female genitalia in order to compare it with its close allied species *H. serrigera*. The locality also appears to be a new record in the existing literature and a second new species from Pakistan.

2. MATERIALS AND METHODS

We used pinned specimens from Miani forest for taxonomical work. We dissected the genitalia of male and female. The abdomen was dipped for 2 to 3 minutes in hot water than pygophore (male genitalia) removed from abdomen with the help of fine pointed forceps. The male pygophore was boiled in 10% KOH for 25-30 minutes following the methods described in Ahmad (1986) and Ahmad & McPherson (1998). After eliminating KOH with tap water, the paramere (clasper) and aedeagus were removed from pygophore and then aedeagus were inflated with the help of fine pointed forceps under the dissecting microscope.

For examining the female genitalia, the pinned specimen were dipped into hot water for 2 to 3 minutes, the abdomen was removed and boiled in 10% KOH for 15 minutes, and the spermatheca was exposed by partially removing the terga as described in Ahmad *et al.*, (2003). All measurements are in millimeters. The measurements of various parts of the body were taken with the help of an ocular micro

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millimeter following the technique of Memon and Ahmed (2002). All illustrations were made by using ocular graph on the dissecting microscope.

***Halys spinosus*, new species (Figs. a – i)**

Coloration

Head dull ochraceous, thickly punctured with black tinge, antennal segments ochraceous except half of the fourth and fifth segment darker, eyes dark brown, ocelli light pink; pronotum ochraceous brown with light and dark vertical stripes and punctured with black tinge; scutellum ochraceous brown with light and dark vertical stripes; corium ochraceous with some dark patches; each connexivum ochraceous at middle; veins dark brown.

Head

Head distinctly longer than broad, paraclypei a little shorter than clypeus, lateral lobe gradually tapering upward, ante-ocular region longer than remainder of head, ante-ocular distance 3.6 mm, remainder of head 1.4 mm, length of head 5.0 mm, width across eyes 3.25 mm, interocular distance 2.1 mm, interocellar distance 1.1 mm, antennae five segmented, basal segment not reaching apex of head, antenniferous tubercles visible from above, length of antennal segments: I 1.0 mm, II 2.05 mm, III 2.3 mm, IV 2.05 mm, V 1.7 mm, third longest second and fourth subequal; baculae a little longer than first labial segment; labium long extended to half of the sixth abdominal segment, length of labial segments: I 4.0 mm, II 4.3 mm, III 3.6 mm, IV 2.6 mm.

Thorax

Pronotum more than twice as wide as long and distinctly shorter than head length, anterior half of lateral margins distinctly dentate, posterior half sinuate, humeral angles sub-acute, length of pronotum 4.0 mm, width 8.5 mm; scutellum distinctly longer than wide, broad at base become narrow at apex, apical lobe U shaped, length of scutellum 7.1 mm, width 4.6 mm, distance apex scutellum - apex abdomen 3.1 mm; metathoracic scent gland ostiole with an ovate aperture, peritreme sickle shaped, shorter than outer margin of evaporatia; membrane of hemelytra equal to abdomen.

Abdomen

Abdomen with distinct sulcation, posses a long labium; connexiva well exposed at repose.

Length of body

Body size, ♂ holotype 19.3 mm, ♀ allotype 19.4 mm

Male Genitalia

Pygophore (Fig. 2 c and d) with dorso-posterior margin with much shallow cavity, median lobe broad and excavated at middle, lateral lobe subround,

ventro-posterior margin with deep cavity, median lobe broad and bifid at apex, a pair of lateral lobe broad sinuate and little tapering inward; paramere (Fig. 2 e) with very small stem, blade broad with apical margin a little produced than apical spine, inner margin much wavy like a balloon shaped, inner triangular spine prominent; aedeagus (Fig. f and g) with highly sclerotized theca, a pair of dorsal membranous conjunctival appendages long, indistinctly lobed at apex, a pair of ventral membranous conjunctival appendages attached with dorsal membranous conjunctival appendage, a pair of highly sclerotized penial lobes, a tube like vasica shorter than penial lobes

Female genitalia

First gonocoxae (Fig. 2h) somewhat quadrate, posterior margin wavy, inner and outer angles little produced; second gonocoxae on posterior margin little concave; triangulin fully visible; eighth paratergite triangular, posterior margin convex, depressed at middle; ninth paratergite very short than eighth, apex sub round; spermathecal bulb (Fig 2i) oval shaped with four finger like processes, two of equal size comparatively thin, smaller than third, fourth thick, longer than remaining three

Material Examined

1 holotype, ♂: 1allotype, ♀: Miani forest, Sindh, Pakistan, leg. By A. Manan, 07-03-2005 on (Babur) *Acacia arabica* Wild deposited at Natural History Museum, Department of Zoology, University of Sindh. 12 ♂ and 2 ♀ paratype with same data deposited at Natural History Museum, Department of Zoology, University of Sindh, and Memon's collection.

Comparative note

It is closely related to *H. serrigera* in general body coloration, shape of body, male pygophore with ventromedian projection broad, apical margin of paramere broad, dorsal membranous conjunctival appendages lobed at apex, . However it can easily be separated from *H. serrigera* by having paraclypei a little shorter than clypeus, different antennal ratio that is second and fourth antennal segment sub-equal, third longer, membrane of hemelytra longer than abdomen, peretreme sickle shaped, ventro-median lobe of pygophore bifid at apex, ventrolateral lobe relatively broad and tapering inward, paramere with apical margin a little produced than apical spine and almost straight, a little tapering to down side, inner margin swollen but wavy. In female genitalia posterior margin of the first gonocoxae wavy and inner and outer angles acutely

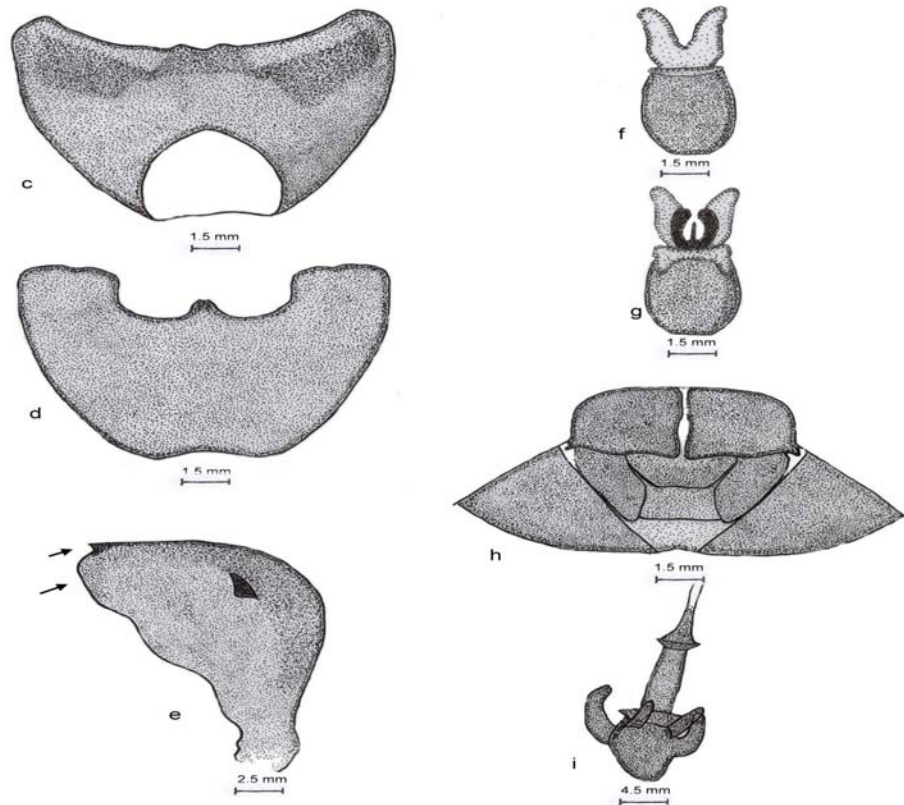


Fig. a Entire body dorsal view Fig. b Metathoracic Scent gland complex ventral view

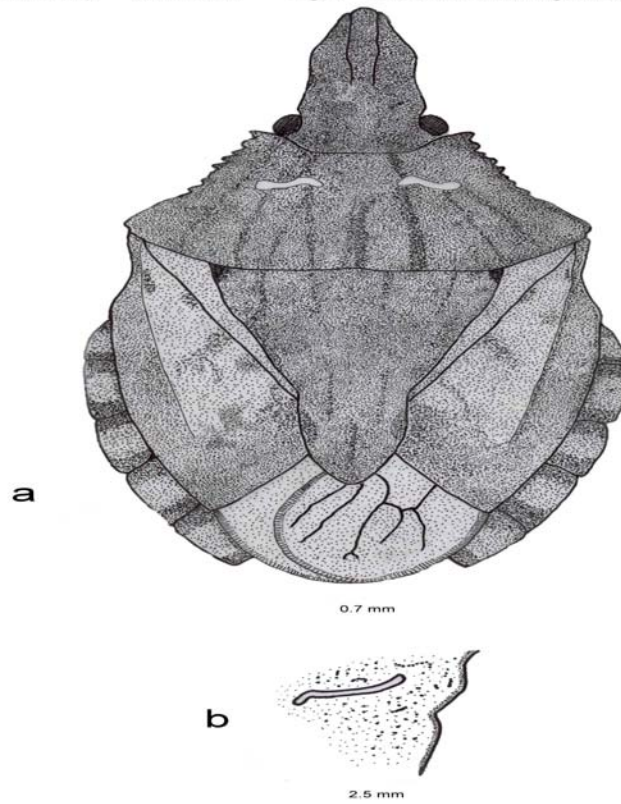


Fig. c. Pygophore dorsal view Fig. d. Pygophore ventral view Fig. e. Paramere lateral view
 Fig. f. Aedeagus dorsal view Fig. g. Aedeagus ventral view Fig. h. Female terminalia Fig. i. Spermathecal bulb

produced, spermathecal bulb oval shaped with four, finger - like processes. While in *H. serrigera* second and third antennal segment sub-equal, paraclypei distinctly shorter than clypeus, membrane of hemelytra shorter than abdomen,, peretreme sword shaped, ventromedian projection of pygophore broad but not bifid, ventrolateral lobes broad and tapering out side, paramere with apical margin concave with both apices acute. In female genitalia first gonocoxae with posterior margin quite smooth, spermathecal bulb spherical with three sub-equal processes and other characters noted in description.

3. **RESULTS AND DISCUSSION**

Present new species *H. spinosus* is a new record from Miani forest, Sindh, Pakistan. Although it has phylogenetic relationship with both *H. salcatus* (Thunberg) and *H. serrigera* (Westwood) in the characters of same body coloration, ratio of paraclypei with clypeus and basal antennal segment not reaching to the apex of head but it is more close to *H. serrigera* in having male pygophore with median lobe broad at apex, apical margin of paramere broad and dorsal membraneous conjunctival appendages lobed at apex but it is remarkably unique from all *Halys* species in general and specially from both of them by having membrane of hemelytra longer than abdomen, peretreme sickle shaped and in male genitalia, apical margin remarkably produced than apical spine and almost straight, a little tapering to down side and unlike *serrigera* and like *sulcatus* its inner margin is swollen but wavy, in female genital character inner and outer angles of first gonocoxae acutely produced, spermathecal bulb with four finger like processes, while all other species have three finger like processes mostly sub-equal expect *H. sindillus* Memon *et al.*, (2006) shows variation in processes of spermathecal bulb.

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