

## Taxonomic Significance of External Genitalia and Last Tergum in Females in Stink Bugs (Pentatomidae: Pentatominae)

M. Nayyar Azim, M. Shafi Bhat and Ajaz Hassan Rather

P. G. Department of Zoology; University of Kashmir; Srinagar-190006, J&K, India.

### ABSTRACT

In the present study taxonomic significance of external genitalia and last tergum in females in some tribes and genera of pentatomid bugs has been shown.

**Key words:** Taxonomic significance female genitalia last tergum stink bugs

### INTRODUCTION

Many workers have studied female genitalia in pentatomid bugs such as Leston (1953a, 1953b, 1954), McDonald (1963, 1966) and Ghauri (1975a, 1975b, 1977) but none of them has shown taxonomic significance of various plates found in female genitalia in the classification of these bugs. Pendergrast (1957) for the first time has shown taxonomic significance of reproductive organs in heteropterous bugs and Azim (2000) has shown suprageneric significance of spermathecae in pentatomid bugs.

A careful study of genitalia and last tergum in females in some genera of the subfamily pentatominae reveals that these structures do possess some characters which have taxonomic significance of genus group taxa. These characters are described and illustrated. The genera studied are arranged under the respective tribes.

### MATERIAL AND METHODS

To study the female genitalia and last tergum the apical end of the female body was removed and boiled in a test tube containing 10% KOH solution till the material became transparent. This was later washed thoroughly with water for complete removal of KOH. Later, the normal process of dehydration was adopted and clearing was done in clove oil. Then, the genitalia and last tergum were separated and placed over a drop of Canada balsam to prepare the permanent slides. The slides were examined under the microscope. Drawings were made with the help of Camera Lucida.

### RESULTS AND DISCUSSION

#### *Tribe Gynenicini*

Genus *Gynenica* Dallas (Fig. 1): Female genitalia lacinate type with two elongated plates converging apically, which are not distinguishable into 1<sup>st</sup> gonocoxae, 8<sup>th</sup> and 9<sup>th</sup> paratergites. Last tergum (Fig. A) triangular

pointed apically. These characters are not found in any other tribe of the subfamily pentatominae. So these characters have suprageneric significance.

***Tribe Strachiini***

Genus *Eurydema* Laporte (Fig. 5): 1<sup>st</sup> gonocoxae speculate type; paratergites 8<sup>th</sup> triangular, 9<sup>th</sup> oblong not reaching beyond apex of abdomen. Last tergum (fig. E) quadrate anterior margin almost straight, posterior margin convex, lateral angles acute.

Genus *Bagrada* Stal (Fig. 6): 1<sup>st</sup> gonocoxae very large and broad; paratergites 8<sup>th</sup> and 9<sup>th</sup> very small. Last tergum (fig. F) with anterior margin moderately convex, posterior margin with a notch medially, lateral angles obtuse.

***Tribe Sciocorini***

Genus *Sciocoris* Fallen (Fig. 7): 1<sup>st</sup> gonocoxae; paratergites 8<sup>th</sup> and 9<sup>th</sup> triangular, paratergites 9<sup>th</sup> very small not reaching up to apex of abdomen. Last tergum (fig. G) with anterior margin slightly concave, posterior margin convex, lateral angles acute.

***Tribe Eysarcorini***

Genus *Eysarcoris* Hahn (Fig. 8): 1<sup>st</sup> gonocoxae broadly triangular; paratergites 8<sup>th</sup> elongated and triangular, 9<sup>th</sup> oblong not reaching up to apex of abdomen. Last tergum (fig. H) with anterior margin almost straight, posterior margin convex, lateral angles acute

Genus *Stollia* Ellenrider (Fig. 9): 1<sup>st</sup> gonocoxae broad and triangular; paratergites 8<sup>th</sup> and 9<sup>th</sup> triangular, paratergites 9<sup>th</sup> not reaching up to apex of abdomen. Last tergum (fig. I) with anterior and posterior margins convex, lateral angles acute.

Genus *Hermolaus* Distant (Fig. 10): 1<sup>st</sup> gonocoxae broad and triangular, acutely produced laterally; paratergites 8<sup>th</sup> triangular; paratergites 9<sup>th</sup> oblong small not reaching up to apex of abdomen. Last tergum (fig. J) anterior and posterior margins convex, anterior margin with a cleft on each side, lateral angles sub acute.

***Tribe Halyini***

Genus *Halyis* Fabricius (Fig. 11): External plates punctate; 1<sup>st</sup> gonocoxae broad and triangular; paratergites 8<sup>th</sup> large, triangular, 9<sup>th</sup> oblong, small not reaching up to apex of abdomen. Last tergum (fig. K) with anterior and posterior margins much convex, lateral angles acute.

Genus *Dalpada* Amyot & Serville (Fig. 12): 1<sup>st</sup> gonocoxae rounded, acutely produced laterally; paratergites 8<sup>th</sup> triangular, 9<sup>th</sup> oblong reaching beyond apical margin of abdomen. Last tergum (fig. L) with anterior and posterior margins convex, anterior margin with a cleft on each side, lateral angles acute.

**Tribe Rhynchocorini**

Genus *Rhynchocoris* Westwood (Fig. 13): 1<sup>st</sup> gonocoxae quadrate acutely produced laterally; paratergites 8<sup>th</sup> almost quadrate, pointed apically, 9<sup>th</sup> oblong small not reaching up to apex of abdomen. Last tergum (fig. M) almost rounded; anterior and posterior margins convex, lateral angles rounded.

**Tribe Pentatomini**

Genus *Nezara* Amyot & Serville (Fig. 14): 1<sup>st</sup> gonocoxae small, triangular pointed laterally; paratergites 8<sup>th</sup> almost quadrate, 9<sup>th</sup> oblong reaching up to apex of abdomen. Last tergum (fig. N) quadrate, anterior margin convex, posterior margin straight.

Genus *Acrosfernum* Fieber (Fig. 15): 1<sup>st</sup> gonocoxae small, triangular, pointed laterally; paratergites 8<sup>th</sup> triangular, 9<sup>th</sup> oblong not reaching up to apex of abdomen. Last tergum (fig. O) with anterior margin convex, posterior margin almost straight, lateral angles acute.

Genus *Plautia* Stal (Fig. 16): 1<sup>st</sup> gonocoxae small acutely produced laterally, anterior margin deeply concave, posterior margin rounded; paratergites 8<sup>th</sup> triangular, 9<sup>th</sup> oblong large, reaching beyond abdominal apex. Last tergum (fig. P) with anterior margin convex having cleft on each side, posterior margin convex, lateral angles acute.

**Tribe Tropicorini**

Genus *Menida* Motschulsky (Fig. 17): 1<sup>st</sup> gonocoxae large, triangular, pointed laterally; paratergites 8<sup>th</sup> triangular, small 9<sup>th</sup> oblong reaching up to apex of abdomen. Last tergum (fig. Q) anterior and posterior margins convex, anterior margin with a cleft on each side, lateral angles acute.

Genus *Cresphontes* Stal (Fig. 18): 1<sup>st</sup> gonocoxae large, pointed laterally; paratergites 8<sup>th</sup> triangular, small, 9<sup>th</sup> oblong just reaching unto apex of abdomen. Last tergum (fig. R) anterior and posterior margins convex, anterior margin with cleft on each side, lateral angles acute.

Genus *Piezodorus* Fieber (Fig. 19): 1<sup>st</sup> gonocoxae very small, triangular, pointed laterally; paratergites 8<sup>th</sup> triangular, 9<sup>th</sup> oblong not reaching up to apex. Last tergum (fig. S) with anterior and posterior margins slightly convex, lateral angles acute.

**Tribe Aeliini**

Genus *Adria* Stal (Fig. 20): 1<sup>st</sup> gonocoxae large, triangular, acutely produced laterally; paratergites 8<sup>th</sup> rounded, 9<sup>th</sup> triangular reaching beyond apex of abdomen. Last tergum (fig. T) anterior and posterior margins convex, lateral angles rounded.

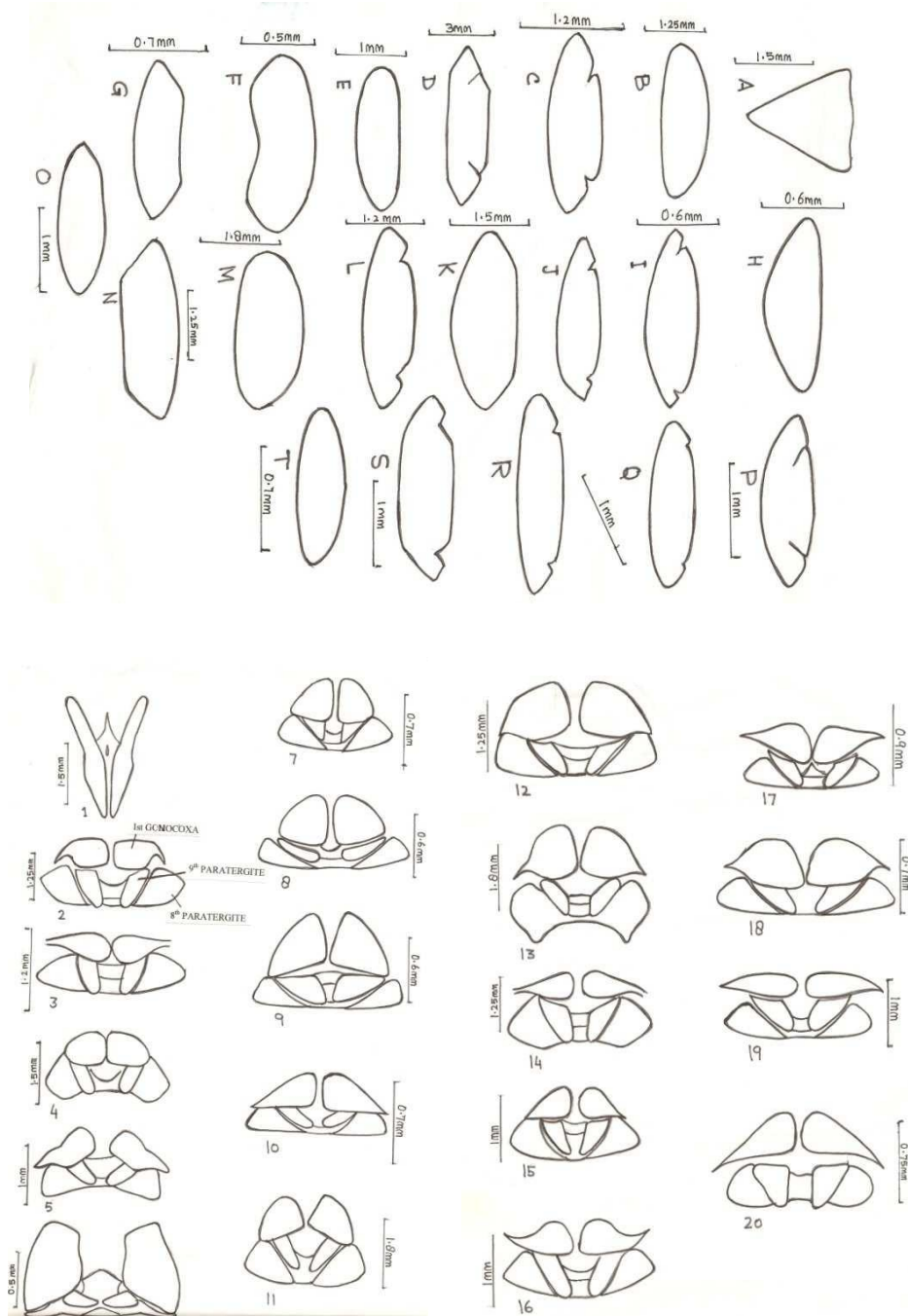


Fig. 1-20

| Genus                               | External genitalia, ♀ | Last tergum, ♂ |
|-------------------------------------|-----------------------|----------------|
| 1. <i>Gynenica</i> Dallas           | Fig. 1                | Fig. A         |
| 2. <i>Carpocoris</i> Kolenati       | Fig. 2                | Fig. B         |
| 3. <i>Dolycoris</i> Mulsant & Rey   | Fig. 3                | Fig. C         |
| 4. <i>Degonetus</i> Distant         | Fig. 4                | Fig. D         |
| 5. <i>Eurydema</i> Laporte          | Fig. 5                | Fig. E         |
| 6. <i>Bagrada</i> Stal              | Fig. 6                | Fig. F         |
| 7. <i>Sciocoris</i> Fallen          | Fig. 7                | Fig. G         |
| 8. <i>Eysarcoris</i> Hahn           | Fig. 8                | Fig. H         |
| 9. <i>Stollia</i> Ellenrieder       | Fig. 9                | Fig. I         |
| 10. <i>Hermolaus</i> Distant        | Fig. 10               | Fig. J         |
| 11. <i>Halys</i> Fabricius          | Fig. 11               | Fig. K         |
| 12. <i>Dalpada</i> Amyot & Serville | Fig. 12               | Fig. L         |
| 13. <i>Rhychocoris</i> Westwood     | Fig. 13               | Fig. M         |
| 14. <i>Nezara</i> Amyot & Serville  | Fig. 14               | Fig. N         |
| 15. <i>Acrosternum</i> Fieber       | Fig. 15               | Fig. O         |
| 16. <i>Plautia</i> Stal             | Fig. 16               | Fig. P         |
| 17. <i>Menida</i> Motschulsky       | Fig. 17               | Fig. Q         |
| 18. <i>Cresphontes</i> Stal         | Fig. 18               | Fig. R         |
| 19. <i>Piezodorus</i> Fieber        | Fig. 19               | Fig. S         |
| 20. <i>Adria</i> Stal               | Fig. 20               | Fig. T         |

## CONCLUSIONS

The structure of various plates of female genitalia and last tergum in females can be used as a suprageneric character to differentiate tribe Gynenicini from other tribes of pentatominae, in the rest of tribes the structure of female genitalia is almost the same, but the shape and size of different plates viz. 1<sup>st</sup> gonocoxae; paratergites 8<sup>th</sup> and 9<sup>th</sup> along with the shape of last tergum in females can be used as a supporting character for genus group taxa.

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