

# Biological Sciences Section

Pak. j. sci. ind. res., vol.37, no. 12, December 1994

## A REVISION OF THE GENUS *TOLUMNIA* STÅL (PENTATOMIDAE: PENTATOMINAE: CARPOCORINI) FROM THE INDO-PAKISTAN SUB-CONTINENT

RAEES HUSSAIN ZAIDI

Department of Zoology, University of Karachi, Karachi-75270, Pakistan

(Received October 2, 1991 ; revised July 29, 1993)

The genus *Tolumnia* Stål from the Indo-Pakistan subcontinent is revised. Five species are keyed and described with special reference to their metathoracic scent gland complex, male and female genitalia and their relationships within the tribe Carporcorini Stål is also briefly discussed.

**Key words:** Genus *Tolumnia* Stål, Revision, Indo-Pakistan Sub-continent.

### Introduction

The distribution of the genus *Tolumnia* Stål, of the tribe Carporcorini Stål is Oriental and Palaearctic. Here the five species of the Indo-Pakistan subcontinent have been re-described, with special reference to their metathoracic scent gland complex and male and female genitalia. The above species have been keyed and are described in detail. The technique of Ahmad [1] for the inflation of aedeagi and the conventional techniques of Zaidi and Ahmad [2] for the dissection of female spermatheca, descriptions, measurements and diagrams were generally followed. Measurements are given in millimeters and diagrams to the given scales. The following abbreviations are used for the museums, Natural History, Museum, London (NHM), National Insect Museum, Pakistan Agricultural Research Council, Karachi (NIM) and Oxford Museum, London (OM). The authorities of above mentioned museums are acknowledged to loan their specimens for the present study.

*Tolumnia* Stål. *Tolumnia* Stål [3] : 499; [4]: 162; Stichel [5] : 752; Ahmad and Hasan [6] ; 2.

**Types species.** *Tolumnia trinotata* (Westwood). **Head.** Usually broader than long; clypeus usually as long as paraclypei, antecular distance usually as long as the remainder of head; labium always passing beyond hind coxae.

**Thorax.** Anterior angles of pronotum toothed; metathoracic scent gland ostiole large, peritreme elongate; membrane of hemelytra longer than abdomen.

**Abdomen.** Usually longer than broad or almost as long as broad; connexiva usually exposed at repose.

**Male genitalia.** Pygophore broader than long, outer margin of paramere with or without tooth-like structure; inflated aedeagus with one or two pairs of membranous conjunctival appendages.

**Female genitalia.** First gonocoxae broadly wide apart, posterior margin of 8th paratergites sinuate; spermathecal bulb with or without finger-like processes.

**Comparative note.** This genus is closely related to *Manoriana* Ahmad and Kamaluddin in general, body shape and antecular region are equal to the remainder of the head but it can easily be separated from the same by anterior half of pronotum smooth and labium with basal segment shortest reaching to 3rd abdominal venter.

**Key to the species of the genus *Tolumnia* Stål.** Head shorter than pronotum; scutellum almost as long as broad.....2.

Head almost equal or slightly longer than pronotum, scutellum always longer than broad.....3.  
Head longer than broad, labium with 4th segment shortest; outer margin of paramere without tooth like structure .....*trinotata* (Westwood).

Head broader than long, labium with 3rd segment shortest, outer margin of paramere with tooth-like structure...  
.....*immaculata* Distant.

Lateral margins of paraclypei reflexed, humeral angles produced.....*antennata* Distant.

Lateral margin of paraclypei not reflexed, humeral angles not produced.....4.

Labium with 2nd segment as long as 3rd; 9th paratergites passing beyond the fused posterior margin of 8th paratergites; spermathecal bulb without finger-like processes.....*maxima* Distant.

Labium with 2nd segment longer than 3rd; 9th paratergites not reaching to fused posterior margin of 8th paratergites; spermathecal bulb with two finger-like processes .....  
*latipes* Dallas.

*Tolumnia antennata* Distant. *Tolumnia antennata* Distant [7]: 168; [8]:155; [9]: 45.

**Colouration.** Body ochraceous except antennae and excluding luteous apical joints, lateral spots on sternal segments, subapical spots on femora, tarsi black.

**Material examined.** 1 Male, India : Malabar leg. Distant at NHM, London.



**Comparative note.** This species is closely related to *latipes* in having the head almost as long as broad, but it can easily be separated from it in having the lateral margins of the paraclypeus reflexed and the humeral angles of the pronotum produced\*.

*Tolumnia immaculata distant.* (Figs. 1, A-G). *Tolumnia immaculata* Distant [7]: 168; [8]: 150; Kirkaldy [9]: 45.

**Colouration.** Body brassy ferruginous, except black head, ocelli red and antennae and legs yellowish brown.

**Head.** Shorter than pronotum, length of antennal segments I: 0.4-0.5, II: 0.75-0.80, III: 0.6, IV: 0.75-0.80, V: 1.0-1.05; length of labial segments I: 1.2-1.3, II: 1.5, III: 0.5, IV: 0.8; length anteocular distance: 0.8, length remainder of head: 0.8, width: 1.7-1.85; interocular distance: 1.1-1.15; intercellular distance: 0.85-0.90.

**Thorax.** Width of the pronotum distinctly more than 2x wider than its length; length of the pronotum: 1.8-1.9; width: 4.65-4.9; length of the scutellum: 2.9-3.0; width: 3.0; metathoracic scent gland ostiole (Fig. 1B) large, ovate, peritreme elongated with narrow apex, evaporatoria distinct; length base scutellum apex clavus: 2.5; apex clavus-apex corium: 1.6-1.8; apex corium-apex abdomen including membrane: 1.9-2.0; apex scutellum-apex abdomen including membrane: 2.8-2.9.

**Abdomen.** Slightly longer than broad, 7th abdominal sternum rounded; total body length male: 9.2; female: 9.3.

**Male genitalia.** Pygophore (Fig. 1C) broader than long, paramere (Fig. 1D) F-shaped; inflated aedeagus (Fig. 1E) with a dorsal membranous conjunctival appendage; a pair of ventral membranous conjunctival appendages, vesica short not reaching the margin of ventral membranous conjunctival appendages.

**Female genitalia.** (Fig. 1F): First gonocoxae broad; 9th paratergites hump-like, reaching the fused posterior margin of the 8th paratergites; spermatheca (Fig. 1G) with pump region much shorter than distal spermathecal duct.

**Material examined.** Holotype, South India: Nilgiri hills leg Hampson in NHM other materials 1 male, 1 female Srilanka: Colombo 29.3.1929 in the same museum as holotype.

**Comparative note.** This species is closely related to *trinitata* in general body shape, but it can easily be separated from it in having the head broader than long and the labium with 3rd segment shortest.

*Tolumnia latipes* (Dallas). (Figs. 2, A-D) *Pentatoma latipes* Dallas [10]: 238. *Pentatoma trispila* Walker [16]: 302. *Dalpada obtusicollis* Ellenrieder [12]: 143. *Tolumnia latipes*

\* Unfortunately the author was failed to procure the specimen from the museum where the type is lodged, so the description is based on the literature existing only.

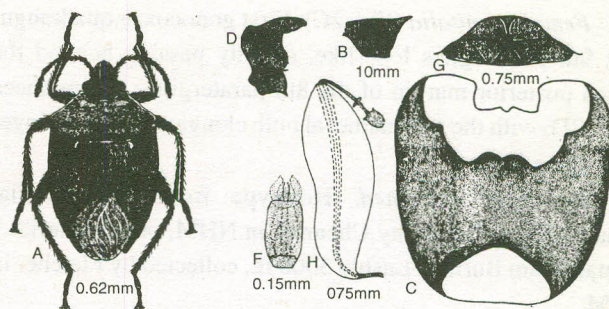


Fig. 1A-G. A. *Tolumnia immaculata distant*, dorsal view; B. Scent gland, ventral view; C. Pygophore, dorsal view; D. Paramere, inner view; E. Aedeagus, dorsal view; F. Female terminalia, ventral view; G. Spermatheca, dorsal view.

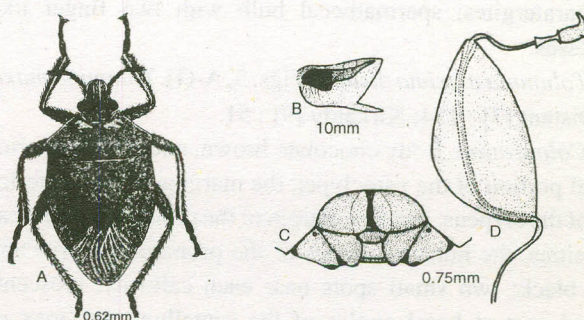


Fig. 2A-D. A. *Tolumnia latipes* (Dallas), dorsal view; B. Scent gland, ventral view; C. Female terminalia, ventral view; D. Spermatheca, dorsal view.

Bredden [13]: 298; Distant [8]: 154; Kirkaldy [9]: 51; Stichel [5]: 752; Miyamoto [14]: 228.

**Colouration.** Body blackish brown, except clypeus, longitudinal strip from base to apex and numerous spots on pronotum; a large spot on each basal angle of scutellum, a small spot in the middle of anterior margin and apex of scutellum yellowish brown, antennae slight brown, ocelli pink.

**Head.** Slightly longer than pronotum, length of antennal segments I: 0.5, II: 1.05, III: 1.15, IV: 1.16, V: 1.45, length of labial segments I: 1.3, II: 1.4, III: 1.15, IV: 0.85, length anteocular distance: 1.1, length remainder of head: 1.1; width 2.1; interocular distance: 1.1; intercellular distance: 0.7.

**Thorax.** Width of the pronotum distinctly more than 2x wider than its length; length of pronotum: 2.15, width: 5.5; length of scutellum: 3.7, width: 3.5; Ostiole of metathoracic scent gland (Fig. 2B) broad, peritreme elongated with narrow apex; length base scutellum-apex clavus: 3.0; apex clavus-apex corium: 2.4; apex corium-apex abdomen including membrane: 1.4; apex scutellum-apex abdomen including membrane: 2.7.

**Abdomen.** Slightly longer than broad; 7th abdominal sternum crescent-shaped shape, total body length the female 11.25.



**Female genitalia** (Fig. 2C). First gonocoxae quadrangular; 9th paratergites lobe-like, slightly passing beyond the fused posterior margin of the 8th paratergites; spermatheca (Fig. 2D) with the spermathecal bulb elongate with two finger like processes.

**Materials examined.** Holotype from North India, Khasi hills, collected by Chennell in NHM, other material 1 female from Burma: Lashio 3000 ft., collected by Fletcher in NIM.

**Comparative note.** This species is closely related to *maxima* in general body shape but it can easily be separated from it in having the labium with the 2nd segment longer than the 3rd, 9th paratergites not reaching the posterior margin of the 8th paratergites: spermathecal bulb with two finger like processes.

*Tolumnia maxima distant* (Figs. 3, A-G). *Tolumnia maxima* Distant [7]: 154; Kirkaldy [9]: 51.

**Colouration.** Body chocolate brown, except the anterio-lateral portion of the paraclypei, the margins of the posterior half of the clypeus, anterior margin of the pronotum, spot near callosities, the humeral angles of the pronotum, clavus and tibia black; two small spots near each callosity, crescent-shaped spot at basal angles of the scutellum and apex of scutellum yellowish; ocelli red; legs light brown.

**Head.** Almost as long as pronotum; length of antennal segments I: 0.5-0.6, II: 1.2-1.3, III: 1.3, IV and V mutilated; length of labial segments I: 1.4, II: 1.5, III: 1.5, IV: 1.0-1.1; length anteocular distance; 1.1-1.2; length of the remainder of the head 1.1-1.2, width: 2.3-2.4; interocular distance: 1.2-1.4; inter ocellar distance 0.8.

**Thorax.** Width of pronotum more than 2 1/2x wider than its length, length of the pronotum: 2.3-2.4, width: 6.0-6.1; length of scutellum: 4.5-4.6, width: 3.8-3.75; metathoracic scent gland ostiole (Fig. 3B) large, ovate, peritreme elongate with pointed apex not reaching the margin of evaporatoria; length base scutellum-apex clavus: 3.6-4.0; apex clavus-apex corium: 2.0-2.5; apex corium-apex abdomen including membrane: 2.0-2.5; apex scutellum-apex abdomen including membrane: 2.7-3.3.

**Abdomen.** Distinctly longer than broad; 7th abdominal sternum crescent shaped; total body length of male: 11.1, female; 12.3.

**Male genitalia.** Pygophore (Fig. 3C) slightly longer than broad, paramere (Fig. 3D) L-shaped, blade with broad apex, outer margin without tooth-like structure; inflated aedeagus (Fig. 3E) with a pair of nod-like thecal appendages, dorsal membranous conjunctival appendages, a pair of ventral membranous conjunctival appendages, a pair of lateral conjunctival appendages, vesica short not reaching the margin of the ventral membranous conjunctival appendages.

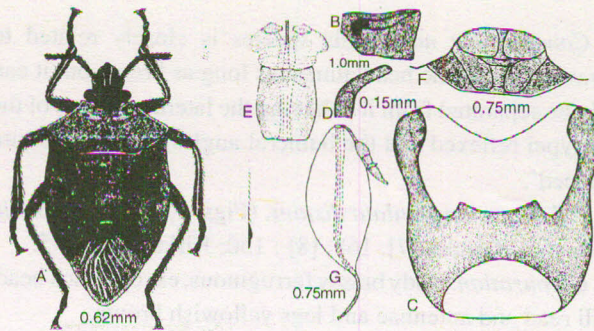


Fig. 3A-G. A. *Tolumnia maxima distant*, dorsal view; B. Scent gland, ventral view; C. Pygophore, dorsal view; D. Paramere, inner view; E. Aedeagus, dorsal view; F. Female terminalia, ventral view; G. Spermatheca, dorsal view.

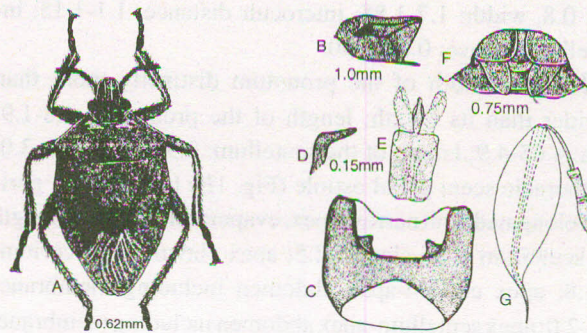


Fig. 4A-G. A. *Tolumnia trinotata* (Westwood), dorsal view; B. Scent gland, ventral view; C. Pygophore, dorsal view; D. Paramere, inner view; E. Aedeagus, dorsal view; F. Female terminalia, ventral view; G. Spermatheca, dorsal view.

**Female genitalia** (Fig. 3F). First gonocoxae quadrangular; 9th paratergites elongated not reaching fused posterior margin of the 8th paratergites; spermatheca (Fig. 3G) with pump region distinctly more than shorter than the distal spermathecal duct.

**Material examined.** Holotype from India, Tanasserin, Myitta collected by Doherty in NHM, London, other material 1 male and 1 female, from Sarawak, 1907, 1909, leg. E.J. Brooks in the same museum as holotype.

**Comparative note:** This species is closely related to *latipes* in general body shape but it can easily be separated from it in having the labium with the 2nd segment as long as the 3rd, and 9th paratergites passing beyond the posterior margin of the 8th paratergites.

*Tolumnia trinotata* (Westwood). (Figs. 4, A-G), *Pentatoma trinota* Westwood [15]: 41. *Tolumnia trinotata* Kirkaldy [9]: 51; Ahmad and Hasan [6]: 6.

**Colouration.** Body pale, ochraceous, except the anterior half of the paraclypei, the anteriolateral margins of the pronotum, the margins of exposed connexiva, the anterior half of the 4th antennal segments black; the clypeus; numerous spots on pronotum; large spot on each basal angle of the



scutellum and apex of the scutellum yellow; scutellum dark brown; antennae and legs light brown; ocelli red.

**Head.** Slightly longer than the pronotum, length of the antennal segments I: 0.5, II: 1.2, III: 1.3, IV and V segments mutilated; length of labial segments I: 1.25-1.30, II: 1.3-1.4, III: 1.0-1.1, IV: 0.8-0.9, length of the antocular distance: 0.9-1.05, length of the remainder of the head: 1.00-1.15; head width: 1.9-2.05; interocular distance: 1.0-1.1; interocular distance 0.70-0.75.

**Thorax.** Width of the pronotum more than  $1\frac{3}{4}$ x wider than its length, length of the pronotum: 1.7-2.1, width: 4.8-5.3; length of the scutellum: 3.1-3.6, width: 2.9-3.5; metathoracic scent gland ostiole (Fig. 4B) large, elongate, peritreme elongate with narrow apex; length base scutellum-apex clavus: 2.8-3.0; apex clavus-apex corium: 1.6-1.8; apex corium-apex abdomen including membrane: 1.6-1.7; apex scutellum-apex abdomen including membrane: 2.5-2.7.

**Abdomen.** Almost as long as broad; 7th abdominal sternum round, total body length of male: 9.2, of female: 10.6.

**Male genitalia.** Pygophore (Fig. 4C) broader than long, paramere (Fig. 4D) L-shaped, inflated aedeagus (Fig. 4E) with a pair of spine-like thecal appendages, a bifurcated dorsal membranous conjunctival appendage, a pair of ventral membranous conjunctival appendages, vesica short, not reaching the margin of the ventral membranous conjunctival appendages.

**Female genitalia** (Fig. 4F). First gonocoxae square-shaped; 9th paratergites lobe-like, reaching the fused posterior margin of the 8th paratergites; spermatheca (Fig. 4G) with pump region distinctly shorter than the distal spermathecal duct.

**Material examined.** Holotype female from Java, 1837 collected by Westwood in Oxford Museum, Paratypes 1 male and 3 females from Java 21, 3, 6, 11, 1937 collected by Westwood in the same museum as holotype.

**Comparative note.** This species is closely related to *immaculata* in general body shape but it can easily be separated from it in having the head longer than broad and the labium with the 4th segment shortest.

**Relationships.** Representatives of the genera *Tolumnia*, *Manoriana* Ahmad and Kamaluddin and Qadriana Ahmad and Rana have sister group relationships within the tribe Carpororini in having the head almost as long as broad. The *Tolumnia* species are considered here more derived within the group in having a pointed apex of the 9th paratergite, which is an uncommon condition in the tribe. *Tolumnia antennata* shows sister group relationships with *T. immaculata* within the genus in having a narrow apex of the paramere, *T. antennata*

is considered more derived, in having the lateral margins of the paraclypei reflexed. *Tolumnia maxima* shows relations with *T. latipes* in having the apomorphic character of the scutellum with an acute apex; *T. trinotata* is isolated within the genus; it has an independent line of evolution and an autapomorphic character of the abdomen broader than long.

**Acknowledgement.** Author would like to express his sincere thanks to his Ph.D. Supervisor Prof. Dr. Imtiaz Ahmad, Department of Zoology, University of Karachi, Karachi for the guidance during this work and author also would like to express his sincere gratitude to Director, M.A.H. Qadri Biological Research Centre, University of Karachi for providing the working facilities.

#### References

1. I. Ahmad, Pakistan J. ent. Kar., **1** (2), 111, (1986).
2. R. H. Zaidi and I. Ahmad, Pak. j. sci. ind. res., **33** (4), 169 (1990).
3. C. Stål, Vet. Akad. Forh., **25** (7), 495 (1867).
4. C. Stål, K. Svenska vet. Akad. Handl., **9**, 1 (1876).
5. W. Stichel, Illustrierte Bestimmungstabellen der Wanzen, II, Europe (Hemiptera: Heteroptera) Berlin 1-4 (11-14), (1960-62).
6. I. Ahmad and S. A. Hasan, Annot. Zool. Bot. Bratislava, **186**, 1 (1987).
7. W. L. Distant, Ann. Mag. nat. Hist., **6** (7), 55 (1900).
8. W. L. Distant, *The Fauna of British India including Ceylon and Burma* (Rhynchota, Tayer and Frances, London, 1902).
9. G.W. Kirkaldy, Catalogue of the Hemiptera (Heteroptera) with Biological and Anatomical References, List of Host Food Plants and Parasites, I. Cinnicidae (Felix Dames Berlin, 1909).
10. W. S. Dallas, List of Specimens of Hemipterous Insects in the collection of the British Museum, London Brit. Mus. Publ., (1851).
11. F. Walker, Brit. Mus. Publ., (1867), pp. 419-519.
12. C.A. Ellenrieder, Archipel. net. Tijdschr. Ned. Ind., **4** (24), 130 (1862).
13. G. Breddin, Hemipteren von Celebes, Abh. Naturforsch. Ges. Halle, **24**, 17 (1900).
14. S. Miyamoto, Spec. Bull. Lep. Soc. Jap., **30** (12), 227 (1965).
15. J. D. Westwood, The Catalogue of Hemiptera in the Collection of F.W. Hope, with short Latin Diagnoses of new Species, Brit. Mus. Publ., (1837).