J. Exp. Zool. India Vol. 15, No. 2, pp. 503-504, 2012 *ISSN 0972-0030*

MORPHOLOGICAL STUDY OF MALE GENETALIA ORGANS OF INDIAN BACK SWIMMER INSULATA KIRBY (HEMIPTERA : HETEROPTERA : NOTONECTIDAE)

Dinesh Kumar, Devendra Pal Singh* and Mahesh Verma

P.G. Department of Zoology, Barielly College, Barielly -
*Department of Zoology , J.V.College, Baraut, Baghpat-

(Accepted 20 January 2012)

ABSTRACT – The present study deals with the external genital organs of Indian back swimmer. The Notonctidae are well known most interesting and fascinating of all the aquatic insect of tropic and subtrophic. They are medium sized back swimmers which are found in fresh and brackish water. The male external genitalia includes a pygophore which encloses the invaginated phallic organ.

Key words : Genitalia organs, *Anisops sardea.*

INTRODUCTION

The Indian back swimmer, Notonecta insulata kirby are found in fresh and brackish water. They are admirably fitted in form in structure for a subqueous life. They are attached to aquatic plant and objects beneath the surface of water. The adults fly readily and are often not only annoying because of their presence around light but even invade open air, swimming pools and freely bite the bathers. These bugs sweep all sorts of organic ooze, including both animal and plant matter. They also break the cell walls and extract the contents of spirogyra and other water plants.

The back swimmer, Notonecta insulata kirby is very voracious and feeds upon aquatic insects. Which fall into the water. They have also been observed to feed upon the ova of the fishes. At time several insects collectively capture and feed if the Prey is to large for one bug. They capture and kill the prey by piercing with their rostrum. Sometime several insects collectively capture and feed if the prey is too large for one bug. They capture and kill the prey by pierching with their rostrum. Sometime, they have been found to eat the dead insects as well.

Economically the back swimmer, Notonecta insulata kirby is of great importance to the human being as they destroy the egg of fishes of water tanks. They have also been observed to destroy the eggs, larvae pupae and the adults of Anapheles, Culex and Aedes Mosquitoes as these are predated by them and thus keep a check on the population of such greatly harmful mosquitoes.

MATERIALS AND METHODS

The Indian back swimmer, Notonecta Insulata kirby were collected from the various pond at Bareilly. They are usually found in groups and were easily collected with the help of aquitic net. The male genetalia were overted by sub merging the bugs in 0.5% KOH Solution and applying gentle pressure to the posterior part of abdomen with the help of a forcep. Genitalia were also examined in situ in living back surmeer. The measurement were made by using the eye piece micrometer.

RESULTS AND DISCUSSION

The Pygophore forming the ventro-lateral wall of the genital chamber is the fusion product of ninth coxite. It enclosses the invaginated phallic organs. The pygophore (PYG) is dorsally fused at its base and forms a narrow sclerotized bridge. The ninth tergite is in the form of a distinct suranal plate (SUPL) and it bears apically the anus. The basal plate is attached laterally to the pygophore. The paremeres (PAR) arising from the place of attachment of the basal plate with the pygophore are very small. The phallotheca lies in the genital cavity. During the copulation the phallotheca is raised and pushed backward and then down, transcribing almost a complete circle. The phallotheca (PHLT) in the back swimmer,

APPL	=	Apical plate
APSEN	=	Apical sclerotized partg of endosoma
BPL	=	Basal plate
END	=	Endosoma
LPL	=	Lateral plate
PAR	=	Paramere
PHLT	=	Phallotheca
PYG	=	Pygophore
SUPL	=	Suranal plate of ninth segment
VPL	=	Ventral plate

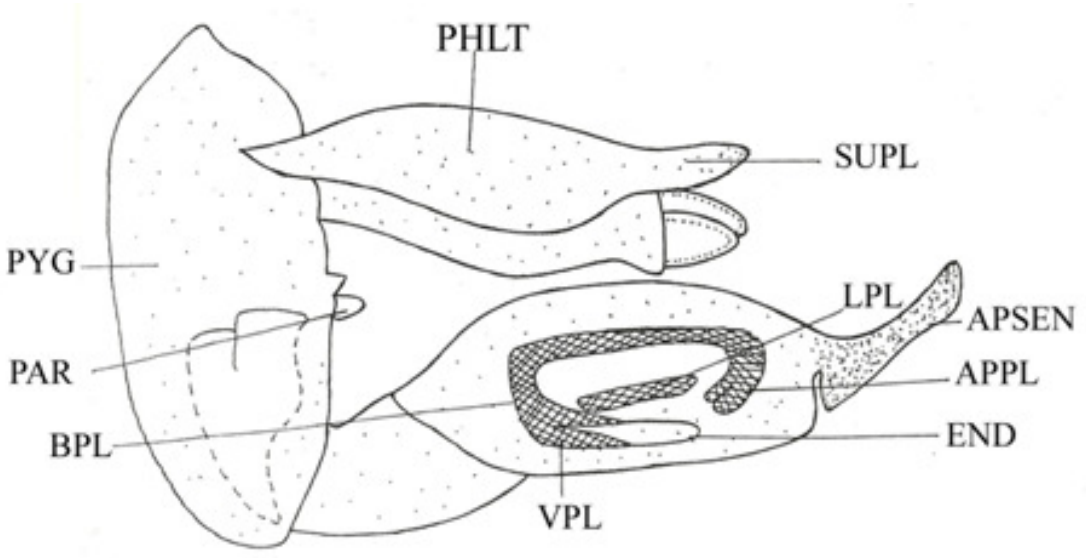

Fig.1 : External genitalia (male) lateral view

Notonecta insulata kirby is peculiar as it contains the invaginated endosoma within. The endosoma (END) is devisible in to the proximal and distal membranous segments and the conjunctiva between the two. The phallotheca (PHLT) surrounds and encloses the endosoma (END) and conjunctiva. The phallotheca is somewhat barrel shaped and open at its distal end for the extrusion of the endosoma. The distal segment of the endosoma is provided with three pairs of sclerotized plates vix. The median dorsal plate (DPL), the ventral plates (VPL) and the lateral plates (LPL). The median dorsal plate (DPL) is formed by the fusion of a pair of plates and exhibits a clear bifurcation apically.

The male external genitalia includes a pygophore which encloses the invaginated phallic organ. The parameres are very small. The phallotheca is peculiar in containing the invaginated endosoma with three pairs of sclerotized plates, the median dorsal plate, ventral plate and the lateral plate.

The morphologists have generally considered the tenth segment or the tenth tergum as the suranal plate (Peytoureau, 1985, Heymons 1899, Ekbiom 1926 etc.). Bonhag and Wick (1953), however, considered the ninth tergum to be the suranal plate in Oncopeltus. The present investigations on the back swimmer, Notonecta insulata kirby supports the findings of Bonhag and Wick (1953).

REFERENCES

Bonhag P F and Wick J R (1953) The functional anatomy of the male and female reproductive systems of milk weed bug, *Oncopeltus fasciatus* (Dallas) (Heteroptera: Lygaeidae). *J. Morph*. **93**, 173-283.

Crampton G C (1922) The genitalis of the males of certain Hemiptera, Heteroptera & Homptera. *Bull. Brooklyn. Ent. Soc*. New York. **17,** 46-55.

Dupuis C (1963) Progres recents de petude des genitalia des Heteropteres (Etude bibliographique critiqu) These a faculte des science de I' Universite, Paris, 100 p. Mus. Nat. Hist. Nature Paris. Ed. Paris.

Ekbiom T (1926) Morphological and biological studies of Hemiptera: Heteroptera. *Zool Bidrag. Fran. Uppsala.* **10,** 31-180.

Gilbert J J and Burns C W (1999) Some observations on the diet of the back swimmer, Anisops wakefieldi (Hemiptera: Notonectidae). *Hydrobiologia* **412,** 111-118.

Heymons R (1899) Bietrage Zur Morphologie and Ent Wicklungs geschichte der Rhynchoten Abhandl. dev. leopoid, Carol Deutsch. *Akad. der Nature*. **74**, 355-456.

Kaushik S C (1970) Anatomy and histology of the male and female internal reproductive organs of the giant water bug, *Belostoma indicum* Lep. & serv. (Heteroptera: Belostomatidae). *Bull. Ent.* **11**, 169-180.

Marks F P (1951) Comparative studies of the male genitalia of the Hemiptera (Hemiptera: Heteroptera). *J. Kans. Ent. Soc.* **24**, 134-141.

Tay E B (1968) Morphology of the external genitalia of some Pentatomidae (Heteroptera). *Univ. Queens. Pap. Dep. Entomol.* **2,** 75-84.

Truxal F S (1952) The comparative morphology the male genitalia of the Notonectidae. *J. Kansas. Ent. Sco.* **25**, 30-38.