

SEXUAL DIMORPHISM ON MORPHOMETRY IN *LOHITA GRANDIS* GRAY (HETEROPTERA: PYRRHOCORIDAE)

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ABSTRACT : *Lohita grandis* Gray (Heteroptera : Pyrrhocoridae) is a phytophagous bug, adult occur on a number of host plants (*Trewia nudiflora*, *Mallatus phillippensis*, *Putronjiva roxburghii* etc.). Male and female are sexually dimorphic (male 47 and female 35.7 mm). Morphometry of head, thorax, abdomen and their appendage are done, and data are tabulated. On the bases of morphometry and tabulated data it is observe that male and female *Lohita grandis* Gray show a clear sexual dimorphism.

Key words : *Lohita grandis*, morphometry, sexual dimorphism, Heteroptera, Pyrrhocoridae.

INTRODUCTION

Lohita grandis is commonly known as red bug. It is pest of several crops, especially trees, in northeastern India (Joshi and Khan, 1990) and its range extends to the north (Hussey, 1929). It may become locally abundant on host plants like *Trewia nudiflora*, *Mallatus phillippensis*, *Putronjiva roxburghii*, on whose seeds, fruits, shoots and foliage it feeds, retarding its growth and inhibiting seeds germination (Joshi and Khan, 1990; Dhiman and Dhiman, 1986). The bug is notable for its extreme sexual dimorphism: males are 39 to 54 mm long and female 29 to 33 mm (Dhiman and Chatterjee, 1980). This dimorphism begins with the last (fifth) instar (Joshi and Khan, 1990). The male's antennae is 63 mm long and female's 33 mm (Dhiman and Chatterjee, 1980), which renders the male's antennae three time longer than the female then its head and female only 33% longer than her (Ahmad and Abbas, 1985). The oriental *Lohita grandis* is sexually dimorphic, the male having the antennae and abdomen greatly elongated (Imm's, 1993).

MATERIALS AND METHODS

To study the sexual dimorphism on morphometry, adult *Lohita grandis* collected from host plant. Using ten specimen (five of each sex) dissection were made, morphology observed with the help of microscope, for morphometry a simple measurement done with the help of scale. Mean and standard deviation calculated by using the following formula:

$$\text{Mean, } \bar{X} = \Sigma X/n$$

\bar{X} = arithmetic mean.

ΣX = Sum of individual observation of the variable,

n = number of observations.

$$\text{Standard deviation (S.D.)} = \frac{\sqrt{\chi^2}}{n}$$

χ = deviation obtained from mean, n = Total number of observation.

OBSERVATION AND DISCUSSION

The superficial morphological description of *Lohita grandis* Gray with measurements and additional diagnostic features based on observation of specimens (Fig. 1).

Morphological features

Head : Head elongated, medially strongly impressed, eyes laterally protruding, antennae long, four segmented, scape inserted into membranous region of head, mid segment the longest and terminal the shortest.

Thorax : Pronotum broader, pubescent, longer than head, laterally obtusely produced, posteriorly emarginated smaller, emarginated smaller, bulbous anterior pronotal lobe sulcated from strigose, mid dorsally pulvinate posterior lobe scutellum small, conical, scarcely acuminate.

Abdomen : Abdomen elongate, nine segment size of segment gradually decrease anterior to posterior, eighth and ninth segment modified into external genitalia, male longer than female.

Legs : Hind leg longest and mid leg shortest, femur of fore leg thick and red in colour but mid and hind leg blackish. Tarsi three segmented proximal segment longest, distal shortest and bear a pair of backwardly directed claws, formed by pretarsus.



Fig. 1 : Adult male and female *Lohita grandis* Gray.

Table 1 : Morphometric data of head, thorax, abdomen and their appendages of *Lohita grandis* Gray (in mm, n = 5, $\bar{X} \pm S.D.$).

	Head		Thorax		Abdomen	Antennae length			Wing	
	L	WBE	TL	MesW	TL	TAL	TF	F3	F	H
Adult male	4.8±0.836	2.26± 0.286	10.8 ± 1.095	7.8 ± 0.632	31.40 ± 3.781	59.2 ± 9.95	37.2 ± 10.10	4.4 ± 0.547	24.5 ± 1.81	17.4 ± 3.126
Adult female	4.1±0.836	1.96± 1.00	9.8± 0.836	6.8± 0.836	22± 2.127	36.6± 1.817	19.4± 2.610	3.4± 0.547	22.2± 3.962	13.6± 5.36
	Fore leg			Mid leg			Hind leg			Insect length
	TLL	F	T	TLL	F	T	TLL	F	T	
Adult male	29± 4.636	10.8± 1.095	10.8± 1.095	29.2± 2.387	8.6± 2.413	10.2± 1.140	38.6± 4.33	13.6± 1.714	16.2± 1.449	47± 4.358
Adult female	24.4± 2.508	8 ±1.224	9.6±1.923	26.6± 2.190	8.6±0.547	7.6±0.542	32.5± 4.609	11.4± 0.547	12.4± 1.140	35.76± 3.449

Head: L- Length, WBE- width between eyes

Antennae: TAL- total antennae length, TF- total length of flagella , F3- flagellum

Thorax: T L- thorax length, MesW- mesothorax width

Wing: F- fore wing, H- hind wing

Leg: TLL- total length of leg, F- femur, T-tibia.

Wings : Hemelytron large basal part is hard and reddish bear two black spots terminal portion membranous, light black in colour. Hind wing small, transparent, membranous, light black marginal portion. Hemelytra cover the most of abdominal part (about fourth segment in female and third in male).

Average measurement and standard deviation of adult male and female *Lohita grandis* Gray, morphometric data of total body length, abdominal length, thorax length, meso thorax width, head length, head width is between eyes, antennal length, total length of flagella, length of flagellum (F-3), length of forewing, length of hind wing, length of fore leg, length of femur of fore leg, length of tibia of fore

leg, length of mid leg, length of femur of mid leg, length of tibia of mid leg, length of hind leg, length of femur of hind leg, length of tibia of hind leg are tabulated (Table 1).

Morphometry of head, thorax, abdomen and their appendages, total length of body, total length of antennae, length of abdomen show a large difference in male and female *Lohita grandis* Gray. This difference in between the length of various part of body in *Lohita grandis* Gray, make a clear sexual dimorphism. Observation and analysis of tabulated data and morphology of adult *Lohita grandis* Gray revealed that male individual longer than adult.

Imm's (1993) reported the oriental *Lohita grandis*

Gray is sexually dimorphic, the male having the antennae and abdomen greatly elongated. Work of Das *et al* (2008), on *Sphedanolestes himalay* Ensis, Padamlatha and Ranjit Singh (2001) on *Pentalonia nigro* Nervosa, Akbar (1957) on *Laptocorisa variconsis*, Neeraj Kotwal *et al* (2004) on *Lohita grandis* Gray and *Dysdercus cingulatus*, Dhiman and Chatterjee (1980) on sexual diamorphism in *Lohita grandis* Gray, Dhiman and Dhiman (1986) also noted host plant and seasonal occurrence of *Lohita grandis* Gray.

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