Short Communication

Morphometry and Morphology of *Batocera rufomaculata* De Geer (Coleoptera: Cerambycidae)

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ABSTRACT

Batocerarufomaculata (Coleopteran: Cerambycidae) is a polyphagous pest causing irreparable damage to the host plants. It is found throughout the Jammu division of Jammu and Kashmir State. Being nocturnal the beetle is very occasionally observed during day time and its infestation goes unnoticed till the death of host plants. Resemblance of the beetles makes its identification difficult and in order to overcome the anomaly, the present study was proposed to carry out the morphometric analysis of the beetle. Besides, morphological features are also reported in the paper.

Keywords: *Batocera rufomaculata*, morphological notes, morphometric analysis

INTRODUCTION

The Cerambycid beetle, *Batocera rufomaculata* De Geer commonly called red spotted longicorn beetle, is a polyphagous pest attacking more than 50 deciduous tree species in Oriental region (Duffy, 1968). It has been reported from Burma, Ceylon, Israel, Pakistan, West Indies and East Africa (Hussain and Khan, 1940; Beeson, 1941). Hussain *et al*. (2009) reported it as a serious pest of mulberry plants in Jammu and Kashmir. Cerambycid borers cause wide spread mortality among deciduous broadleaf tree species in China (Yang *et al*., 1995). Characteristically *B. rufomaculata* populations repeatedly attack mulberry plants, causing serious damage to host plants in terms of quality and quantity of leaf as well as the vigour of host plants. The inaccessibility of grubs in woody hosts made it difficult to study their biology and population dynamics in field conditions and least control programs are available to check their population (Nielson, 1981). The Cerambycid beetle is a nocturnal insect species and can be occasionally noticed by experienced persons during the day time. Further it is very difficult to identify the beetle due to its resemblances to other related species. In order to identify the beetle in question, preliminarily

investigations on its morphometry and morphology were carried out in the present study.

Description

The morphometric measurements and the morphological features of various stages of the longicorn beetle are given as:

Egg: Eggs are oval, 5.93 ± 0.11 mm (mean ± SE; N=10) in length and 1.96 ± 0.06 mm (mean ± SE; N=10) in diameter; micropylar end slightly thicker; dirty white when laid, but changes to brown before eclosion; chorion thick and leathery (Fig. 1(a)).

Larva: Newly hatched larva creamy white in colour with dark brown head; soft; cylindrical, thickest at the thoracic region, gradually tapering towards the posterior end; 7.98 ± 0.099 mm (mean ± SE; N=10) in length and 2.69± 0.082 mm (mean ± SE; N=10) broad at the thorax; mandibles strong and dark in colour; body covered with numerous minute spines (Fig. 1(b)). Mature larva (9th instar larva) is light yellow in colour, elongate, 72.20 ± 1.22 mm (mean ± SE; N=10) long and 15.55 ± 0.425 mm (mean ± SE; N=10) broad across the thorax, tapering behind the 8th abdominal segment. Head prognathous, mandibles dark brown, stout and articulate with head by a single condyle; maxillae lie behind mandibles, maxillary palpi three segmented; galea clothed with large number of sensory setae. Pronotum rectangular with margins covered with setae; lateral margins of mesonotum and metanotum have thick setae; minute tubercles and denticles arranged on the thorax and abdominal segments. Thoracic legs rudimentary, extremely small, encircled with sharp minute bristles. Nine pairs of spiracles, just like oval pits, situated on prothoracic and 1st to 8th abdominal segments (Fig. 1(c)).

Pupa: Pupa 47.70 ± 0.817 mm (mean ± SE; N=10) long and 21.40 ± 0.686 mm (mean ± SE; N=10) broad across the thorax; newly transformed pupa light yellow, but latter change to pale brown; head slightly deflected, antenna very long, pass along the thorax on each side and then make a spiral over the respective meta-leg; first two pairs of legs folded over the wing pads and the meta legs folded below the tips of wing pads; pronotum shield shaped and bears one protuberance on each side. Abdominal tip is tapering and curved upwards (Fig.1 (d)).

Adult: Large, elongate, robust, dark brown longicorn beetle; ventro-lateral sides with a white strip running length wise (Fig.1(e)); scutellum white; males 45.20 ± 1.30mm (mean ± SE; N=10) in length and 14.75±0.38 mm (mean ± SE; N=10) in breadth and females 48.70 ± 0.99 mm (mean ± SE; N=10) and 15.83 ± 0.44 mm (mean ± SE; N=10) in length and breadth respectively. Well-developed hypognathous head with prominent mouth parts, powerful mandibles black in colour, labium and labrum reddish brown. Antenna long, measuring 63.20±1.10 mm (mean ± SE; N=10) and 48.00 ±

0.92 mm (mean ± SE; N=10) in length in males and females respectively; dark brown in colour; 11 jointed, first joint swollen, embedded in a socket, 2nd thickest, 3rd joint longest with a row of small teeth on inner edge, remaining segments are of equal size, apical segment laterally compressed. Antenna in males is 39.82% longer than the body; however in females it is shorter than the body (Fig. 1(f)). Pronotum with two kidney shaped orange-yellow spots, projecting into a sharp stout tooth/spine on either side in the middle; elytra with a variable number (usually 3-6 on each elytrum) of light yellow spots and its cephalic region has numerous black tubercles and one small, sharp tooth on each shoulder; lateral margins of elytra dark. Elytra cover the whole abdomen in males whereas in females last abdominal segment project behind elytra (Fig.1 (f)). All the tree pairs of legs are more or less equal in shape and size; coxae swollen; trochanter small, triangular in shape; femur thick clothed with pubescence; tibia slightly longer and thinner than femur; tarsi four segmented, first three bilobed, dorso-ventrally flattened, fourth segment a bit longer, project into a pair of bluish black claws.

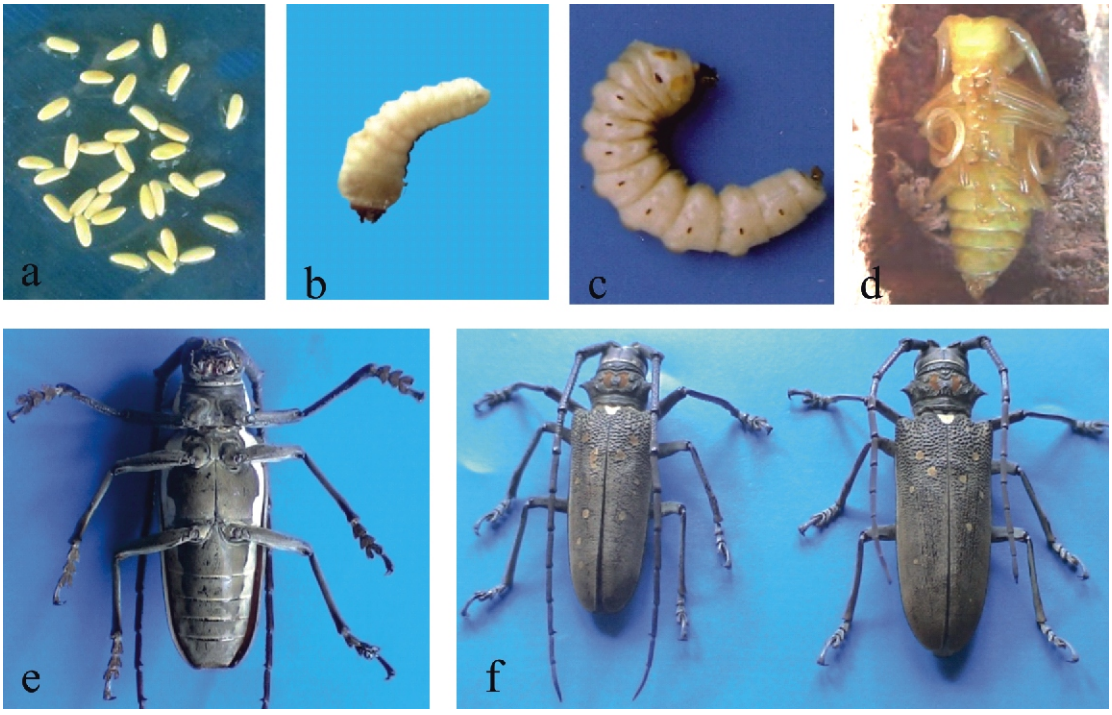

Fig. 1.Developmental stages of B.*rufomaculata* (a) Eggs (b) First instar larva (c) 9th instar larva (d) Pupa in pupal cell(e) Ventral side of adult beetle showing white strip along ventro-lateral side of the body (f) Adult beetles, left: male-antennae longer than the body and abdomen covered by elytra; right: female, antennae shorter than body and last abdominal segment project behind elytra

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