

EXTERNAL MORPHOLOGY OF *OIDES NEOBENGALENSIS* RIZVI AND KAMALUDDIN (COLEOPTERA:CHRYSOMELIDAE)

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Abstract

The external morphology of Galerucinae beetles *Oides neobengalensis* of the family Chrysomelidae is carried out with detail description of sclerites of head, thorax, and abdomen and their appendages.

Introduction

The representatives of the genus *Oides* including the beetles of *O. neobengalensis* are recorded by Rizvi and Kamaluddin (2011) as a pest of potato, fruits and grains, they also feed upon the leaves resulting in the loss of yield in Pakistan.

Lefroy and Howlatt (1909) reported only one species *O-bipunctata* F., widely distributed in forest localities and occasionally in the plains of tropical India with reference to its very brief color patterns of adults and larvae and feeding habitat of its larvae.

Bowditch (1914) described four new species of the genus *Oides* from Austro-Malayan region on superficial characters. Maulik (1936) described eleven species of the genus *Oides* *Weber* with reference to their brief external, morphological characters and also keyed out all these species from Oriental region. Hashmi and Tashfeen (1992) listed five species of the genus *Oides* *Weber* viz. *bipunctata* f., *affinis* jacoby, *centilleta* hope., *flava* oliver and *innacua* Cabor, in their checklist Coleptera of Pakistan, recorded from National Museum Karachi (NMK) and University of Agriculture, Faisalabad (UAF). Kamaluddin and Hashmi (1999a) revised the genus *Carabus*. Medvedev (2000) studied Chrysomalidae of Nepal Himalayas and listed the distribution of only one species of *Oides scutellta* (Hope).

Kalaichelvan and Verma (2005) gave a checklist of leaf beetles of Bhilai-Durg and included only one species *Oides bipunctata* fabricius collected from *Vitis trifolia* plant giving the remarks that active in rainy season, diapause in winter which continues up to summer. Aston (2009) described and keyed out two species *Oides brownigi* Baly and *Oides decempunctata* Billborg under the tribe Luprini of the sub-family Galerucinae with reference to their external morphological characters, habitat and their distributional ranges. Rizvi and Kamaluddin (2011) described genital complex of *Oides neobengalensis*, however no work has been conducted to explore its external morphology. Therefore in this paper we are presenting external morphology of this beetle in detail.

Materials and Methods

The specimen of *Oides neobengalanses* of the family Chrysomalidae were collected from Rawlakot, Azad Kashmir. The specimen were boiled in 10% KOH solution for 3-5 minutes. For the study of external morphology abdomen was removed from base and was warmed in 10% KOH on bench lamp for about 10 minutes. Then washed specimen with tap water and were dissected and inflated under Leitz binocular microscope in the same medium. Then diagrams were made by placing these mouth parts and other parts on cotton threads with drops of glycerin. In last components of different external parts of beetle were preserved in micro vials with drop of glycerin and pinned with specimen.

Results and Discussion

Species examined: *Oides neobangalansis* (Rizvi and Kamaluddin), (Fig. 1-22)

Eyes (Fig.1. entire dorsal view and 3 Mandible, dorsal view): Eyes are prominent, semi-spherical with finally and clearly faceted, slightly less marked as on dorsal side. (Fig. 2).

Head (Fig.2. Labrum,dorsal view and 3 Mandible, dorsal view): Head globular (Fig. 2) much broader than long, antero-medially depressed followed by out-growth, front convex, behind and beneath the eyes genae present, lateral margins above the eyes concave, the gular suture is wanting.

Labrum (Fig.4 Maxila dorsal view): The labrum is generally rectangular in shape with antero-median groove, while as beneath side it has two longitudinal thorn-like processes, posterior side is sinuated.

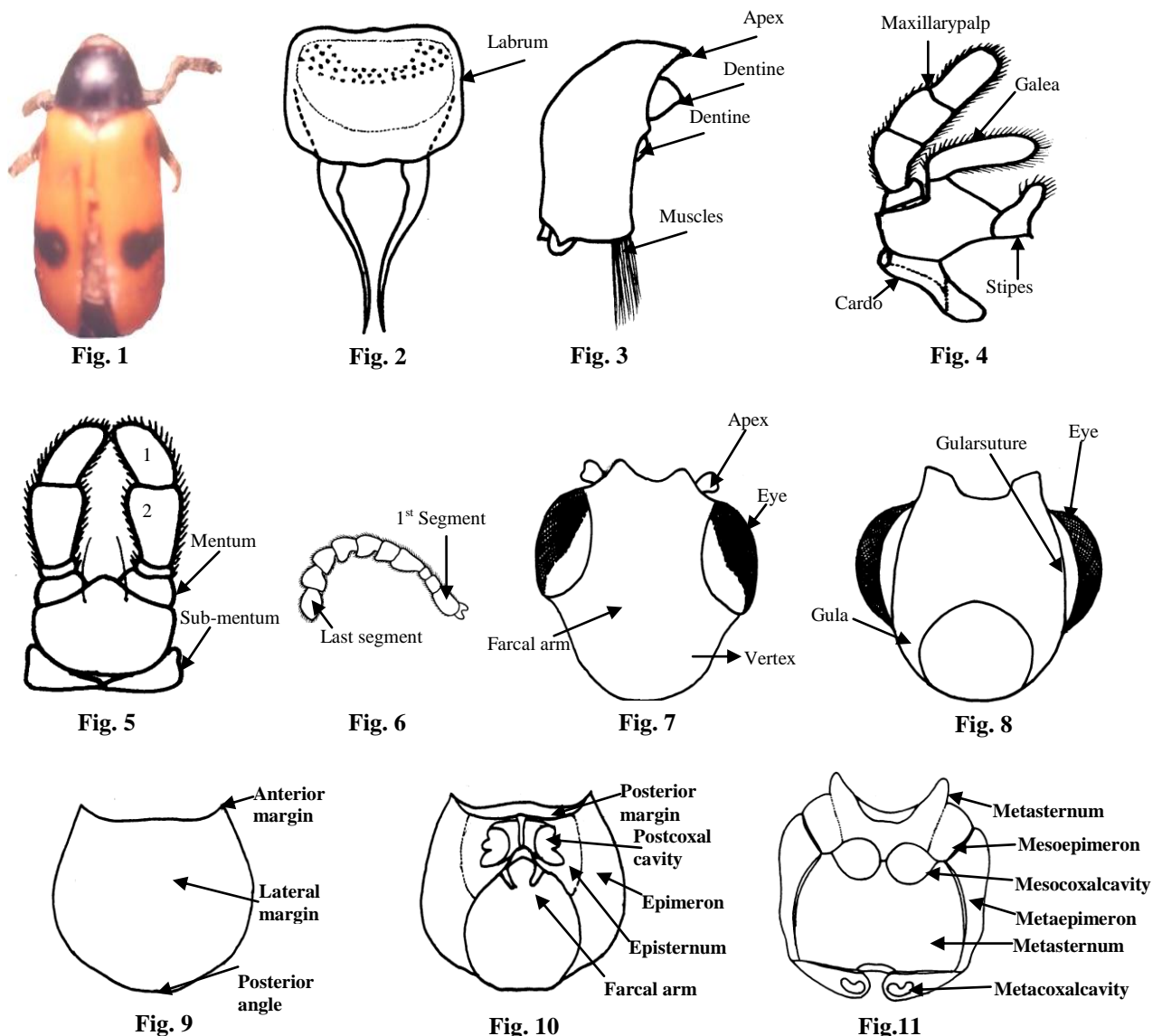
Mandible (Fig.5. Labium dorsal view): The mandible or outer jaws are wide at base with muscles, apex acute with three dentine, distally very large, median short and proximally moderate, at basal side small semi-circular outgrowths with projections.

Maxilla (Fig.6. Antennae): Each maxilla or inner jaws attached to head by cardo, consists of stripes and galea, lacinea is wanting. The maxillary palpus 3-segmented and attached to the base by stripes, distal and proximal segment equal and larger than second segment.

Labium (Fig.7. Head dorsal view): The labium or maxilla consists of two parts, the mantum postero-medially produced distally with a pair of large hair, palpi are 3-segmented, basal very short, ring-like, second longest and broadest, apical segment with rounded apex beset with hairs, sub-mantum small divided into two triangular parts.

Antennae (Fig.8. Head ventral view): Antennae 11-segmented, from 1st the basal segment to 11th, basal segment is short and bilobed, second segment much longer with rounded apex, third is shorter than fourth segment, fifth triangular and longer, sixth shorter than fifth, fifth to tenth segment are somewhat equal, the apical segment is two times longer than others with acute apex.

Prothorax (Fig.9. Pronotum dorsal view and 10 Pronotum ventral view): Somewhat rectangular-shaped, anterior angles acute, sharply pointed, humeral angles rounded, lateral margins convex, sternum of prothorax divided in three parts, first part called prosternum, second inner part called epimeron separated by a small suture from a large outer part called epimimeron. Precoxal cavity is formed by prosternum and epimeron.



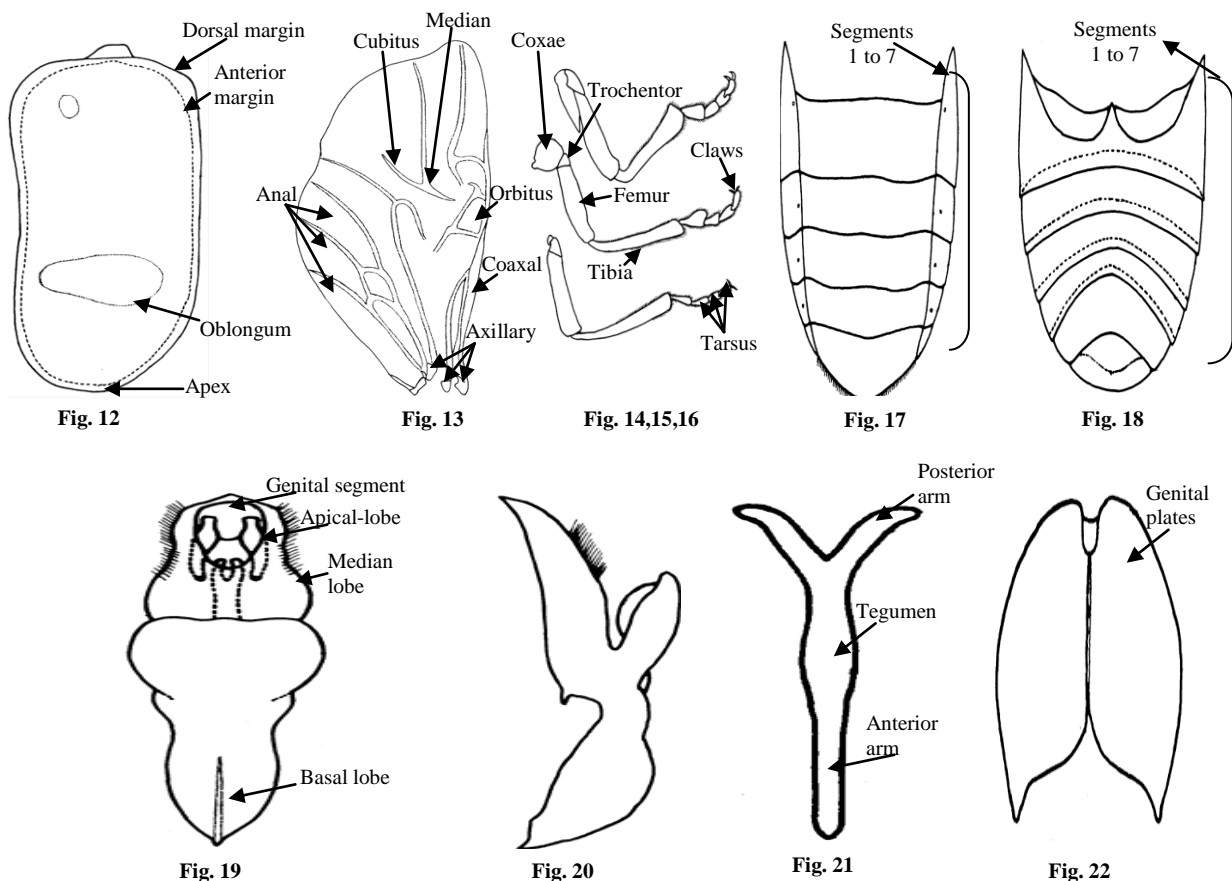
Meso and Metathorax (Fig.11. Meso-metasternum, ventral view): Mesosternum much shorter than metasternum, mesosternum antero medially depressed and antero-laterally produced into lobe, meso-epimeron rectangular-shaped, mesocoxal cavity large formed by meso-sternum, meso-epimeron and metasternum, sternum very large, rectangular-shaped, metaepimeron narrow strip-like, metacoxal cavity small bean-shaped.

Elytra (Fig.12. Elytra dorsal view): The elytra or wing cases cover the whole abdomen, the received part is underside and all the outer lateral sides are called epepleuron, which is slightly wide near the shoulder and narrowed towards apex, proximally elytra have truncated outgrowth, in between each elytra at base there is a small triangular piece called scutulum.

Hind Wing (Fig.13. Hind wing dorsal view): The hind wings are membranous and well developed, the humeral portion of wings with three reduced axillaries, axillary third is largest, costal vein fused with costal margins, radial veins are present. The median vein gives of two median veins towards apical margin, three anal veins (A₁-A₃) present, at base of median vein a rectangular cell present called oblongum.

Legs: Legs are usually for running or walking, consists of coxa, trochanter, femur, tibia and tarsus, all the legs are about similar in shape.

Prothoracic legs (Fig.14. Prothoracic leg lateral view): Coxa is small, nod-like, trochanter somewhat rectangular, femur distally dilated, tibiae, elongated and cylindrical. Tarsi 4-segmented, 1st longest narrowed and 2nd long, and 3rd and 4th short and about equal in length, much claws-simple.



Mesothoracic (Fig.15. Mesothoracic leg lateral view): Coxa somewhat globular with small proximal nod, trochanter triangular shaped as protibiae, first tarsal segment longest distally highly dilated, second tarsal segment shortest.

Metathoracic (Fig.16. Prothoracic leg lateral view): Coxa trochanter triangular, femur distally dilated, tibia elongated distally dilated, first tarsal segment longest, broad, third shortest.

Abdomen (Fig.17-18. Abdomen dorsal and ventral view): Convex beneath dorsally visible six segments, ventrally seven segments visible, 3rd to 6th pleural segment have small spiracles, last segment with rounded apex beset with hairs, 2nd sternite narrow and 6th sternite broadest, depressions with margins, first, second third are equal while as 4th is shortest, 5th is two time much longer than 4th & 6th is rounded from basal side & having segments.

Male genitalia (Fig.19-21. Dorsal, lateral, tegumen and genital plates dorsal view): The external morphological structures of male genitalia of Coleoptera consists of so called phallic structure has been described by S. Kamaluddin in detail (2002). The aedeagus or male genital tube is composed of sclerites & the membranes arranged around the terminal portion of ductus ejaculatorious and the genital segment in which the aedeagus is enclosed in the present species. The aedeagus with medium lobe, broad almost spherical with posterior margin sinuated, basal lobe medially constricted and anteriorly obtusely produced, apical low anteriorly broad, posteriorly narrowed with sub-acute apex, genital orifices oblongated with a pair of lateral appendages and a median appendage, tegumen y-shape medially dilated, anteriorly rod-like, genital plates, somewhat triangular, laterally convex, posterior-laterally produced.

Maulik(1936) described the morphology of *Aulacophora faevicollis lucas* and also attempted the structure of various species of the genus *Agetocera*. Abdullah (1971) discussed the primitive and derivative characters of the families of beetles including the family Chrysomelidae.

Kamaluddin and Hashmi (1999b) attempted external morphology of *Calosoma orientale* Hope of the family *Carabidae*. Atique and kamaluddin (2002) studied of external morphology of *Cybister triumctalis* Oliver of the family *Dysticidae* and Kamaluddin *et al.* (2010) also studies of external.

Morphology of *Cicindeladae histrio* schissherine of the family *Cicindelidae*, and discussed the apomorphies of the above representatives.

The present species *Oides neobengalensis* Rizvi and Kamaluddin plays sister group relationship with *O. bengalensis* and outgroup by its apomorphies like, second antennal segment about 2X the third segment and in male the distal lobe of aedeagus with plate-like appendage. Rizvi and Kamaluddin (2011) discussed the apomorphies of the above species. Therefore external morphological characters of the same species is given here.

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