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LARVAE OF NEOTROPICAL COLEOPTERA. II: RHYSODIDAE

SERGIO A. VANIN¹
CLEIDE COSTA²

ABSTRACT

A description of the larva of Clinidium costatum (Chevrolat, 1829) is provided with illustrations. The larvae were collected from partially rotten wood in São Paulo, Brazil. Larvae and adults collected together in the same log and one mature larva reared up to adult permitted the identification. Biological notes are given. A comparison with the previously described larvae of Rhysodidae is included.

INTRODUCTION

The general aspect of the adults led former coleopterists to place the Rhysodidae close to the Polyphaga families Colydiidae and Cucujidae. Peyerimhoff (1903: 81) described the first larva of the group and recognized Rhysodidae as belonging to the Caraboidea (Adephaga). However, the taxonomic position of this family in the Adephaga is still not very clearly established, having been discussed several times. Crowson (1955) considered Rhysodidae as the most primitive Adephaga, whereas Bell & Bell (1962) regarded the group as "a specialized offshoot of Carabidae" (l.c.: 106).

Larvae of 3 species of Rhysodidae are known: *Clinidium sculptile* Newman, 1838 (Böving & Craighead, 1931), *Rhysodes malaicus* Arrow, 1901 (Peyerimhoff, 1903) and *R. germari* Ganglbauer, 1892 (Grandi, 1956).

The present is the first contribution to the knowledge of the Rhysodidae larvae from the Neotropical Region, including some new morphological larval data.

1. Departamento de Zoologia, Instituto de Biociências, Universidade de São Paulo, Caixa Postal 20520, 01000 São Paulo.

2. Museu de Zoologia, Universidade de São Paulo.

DESCRIPTION OF LARVA

Mature larva (figs. 1-2). Total length (1 specimen) 6.8 mm, width 1.3 mm (maximum pronotal width). Body orthosomatic and subcylindrical, each segment constricted at the base and apex (moniliform). Head testaceous; thorax and abdomen yellowish-white, legs pale testaceous; prothoracic tergum with two contiguous, transverse, testaceous bands; meso-, metathoracic and abdominal terga of segments 1 to 6 with such bands very smaller; asperities dark brown forming a transverse and interrupted ridge near the base of abdominal tergites of segments 1 to 7. Meso-, metathorax and abdominal segments with rounded, isolated, dorsal and lateral projections. Vestiture consisting of erect setae of various sizes and lengths on head capsule and especially arising from the body projections.

Proportions: head length/head width (greatest) 0.46; thorax length (median)/head length 3.33; thorax length/thorax width (greatest) 1.13; abdomen length/thorax length 2.93; abdomen length/abdomen width (greatest) 4.00.

Head (figs. 1-2 and 6-7) prognathous, retracted into thorax; feebly sclerotized, lightly pigmented, darker on mandibles and in a narrow, sclerotized belt, on the basal margin of dorsal and ventral head capsule. Epicranium separated into two halves by the frons. Epicranial suture present, its shape as shown in fig. 7. Epicranial stem absent. Endocarina absent. Ocelli absent. Nasale blunt, rectangular, approximately twice wider than long. Two gular sutures present. Gula very elongate, reaching the basal margin of the head capsule, bisetose at apex. Antennae (fig. 3) 4-segmented, inserted close to the articulation of mandibles, with the basal articulating membrane almost as long as the first segment; length/head length 0.55; 3rd segment bearing an oval, transverse, sensory-like area near the apex; 4th segment setose at apex bearing a single flattened seta (fig. 3a). Hypostomal rods absent. Mouthparts, especially maxillae and labium, deeply retracted in an emargination of ventral head capsule. Mandible (figs. 9-10) moveable, nearly symmetrical, falcate, with a recurved apex and a lobate retinaculum; two sensory-like pits on dorsal surface. Mola absent. Labrum (figs. 11-12) small, symmetrical, fused with head capsule, almost trapezoidal, at base partially hidden below the nasale, apex and lateral sides regularly curved. Maxillae (fig. 8) palpiform; mala rudimentary, fused to the bisetose stipes; cardo reduced, bearing a single seta; palpifer present; maxillary palp 3-segmented. Labium (fig. 8) with ligula and mentum fused into a single anteriorly bilobed piece, each lobe bearing a flattened seta and two slender setae at apex; labial palpi 1-segmented, very small, papilliform, but well visible (63X).

Thorax: relative lengths of thoracic segments 1.5 : 1 : 1. Prothorax longer (1.5 X) and shortly wider than meso- and metathorax; meso- and metathorax subequal in lengths. Tergum: prothorax with two contiguous, transverse, testaceous bands, feebly sclerotized; meso- and metathorax with smaller, transverse, pale testaceous bands, bearing dark microscopic projections closely placed. Thoracic spiracles annular, situated in metathoracic laterotergite. Legs (figs. 13-14) well developed, weakly sclerotized, about equal length, 5-segmented; coxa with sclerotized area ring-shaped, trochanter, femur, tibia and tarsus

which bears a single claw; all segments with sword-shaped setae arising from prominent sockets; intercoxal distance (measured relative to coxa diameter) 2.0 diameter (prothorax) and 1.6 diameter meso- and metathorax; hypopleura present as a sclerotized area in all legs.

Abdomen cylindrical, moniliform, 10-segmented, 9 segments visible from above, the 10th reduced, located ventrally; membranous, with sclerotized areas lightly pigmented, bearing dark microscopic projections (fig. 5), reduced to interrupted basal bands on tergites of segments 1 to 6, located just behind asperities; asperities conspicuous on tergites 1 to 7, backwardly directed, forming an interrupted ridge near the base of tergites. Annular spiracles (fig. 4) of similar size present on anterior margins of laterotergites 1 to 8. Urogomphi absent. Anal opening ventrad segment 10.

Pupa: adectica, exarata, without gin traps or other peculiar features.

Material examined. BRAZIL. *São Paulo*: Caraguatatuba, 13.XI. 1976, Cylo Torres col., 1 last instar larva, reared to adult; Parana-
piacaba, 30.IX.1974, Exped. MZSP col., 2 last instar larvae and 4 adults collected in the same log and 1 immature larva, collected in other log.

BIOLOGICAL DATA

Rhysodids are considered as relatively rare insects, probably due to their retired, subcortical life history, both larvae and adults living in decaying wood. Larvae and adults exhibit a gregarious behaviour (Grandi, 1956; Bell, 1970).

We have reared to adult one larva collected by Cylo Torres at Caraguatatuba, São Paulo; the pupal phase required 15 days and the newly emerged adult took about 10 days to develop full coloration.

Little is known on the feeding habits of the larvae. In the laboratory we have observed that one larva fed on partially rotten wood.

Two mature larvae and 4 adults were found together in a fallen trunk on the forest floor, at Paranapiacaba, São Paulo, and a few adults on the bark of dead trees, at Boracéia, Salesópolis, São Paulo.

DISCUSSION

The larva of *Clinidium costatum* is very similar to that of *Rhysodes germari* thoroughly described and illustrated by Grandi, 1956. The following differences, observed in *C. costatum* and probably also in *C. sculptile* (as referred in the bibliography) should be pointed out: labial palpi more reduced; gula more elongate; different shape of labium; different and characteristic shape of the epicranial suture and frons.

The presence or absence of a true labrum in the larva of the Rhysodidae has already been discussed. This character was emphasized by Crowson (1955: 5) to separate this group from the Carabidae. Peyerimhoff (1903: 82) referring to this character said:

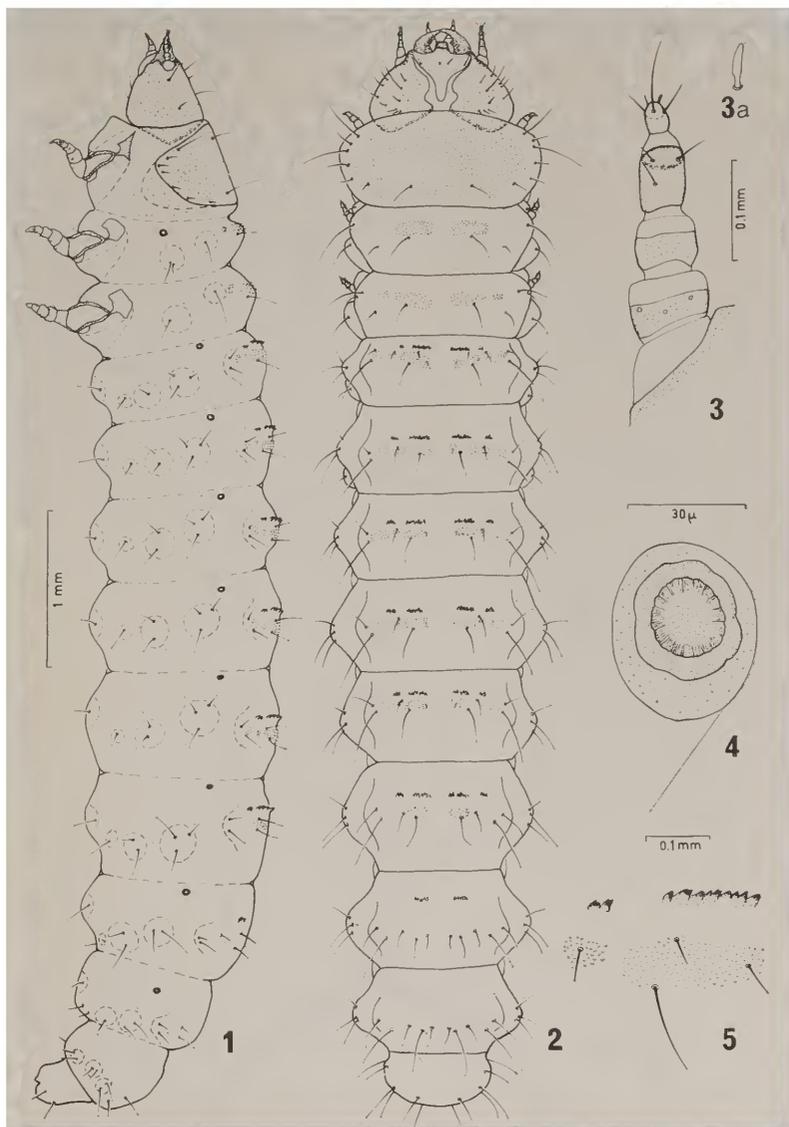
“un appendice trapézoidal, corné, qui parait correspondre au labre”. Böving & Craighead (1931, plate 3, fig. A) illustrated a similar structure in *Clinidium sculptile* and considered it as the epipharynx. Based on the above mentioned illustration of this structure, Bell & Bell (1962: 99) interpreted it as “an apparently membraneous protuberance”. Grandi (1956: 191) studying the larva of *Rhysodes germari* described “una laminetta rigida di probabile origine palatina (epifaringea *sensu auct.*), enquanto no la si voglia considerare più comprensivamente come una trasformazione del labro superiore”.

Clinidium costatum presents a sclerotized structure, fused to the frons, with the ventral apex and sides thickened. It seems to be more logical to assume this structure as a transformed, reduced labrum, than interpret it as “an independent development, not homologous to a true labrum” (Bell & Bell, 1962: 99).

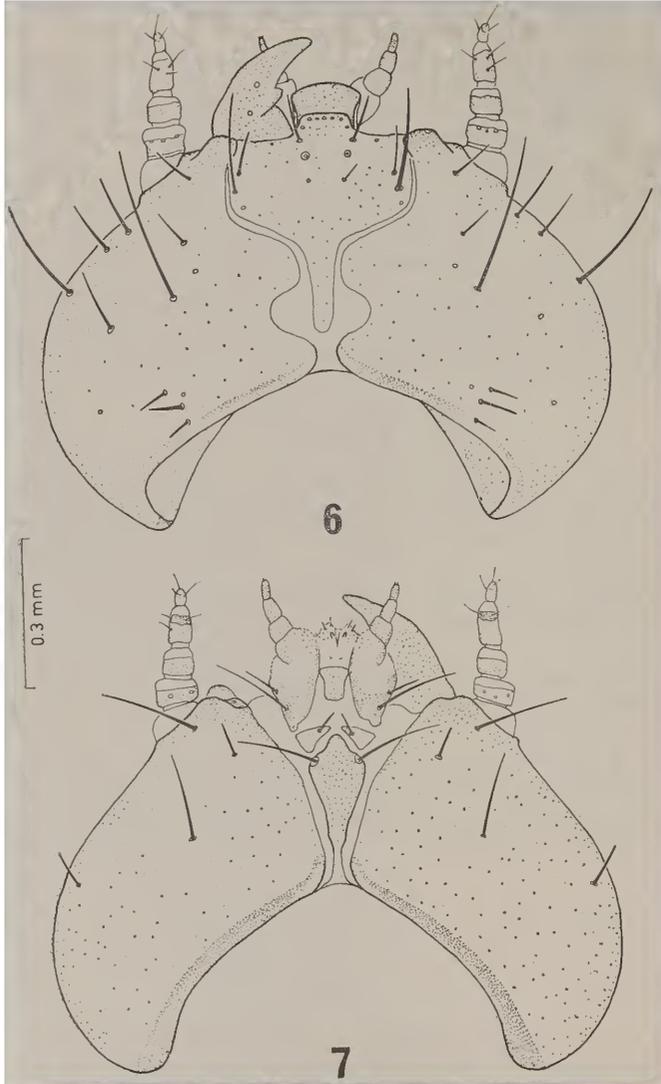
On the other hand, the larvae of Rhysodidae differ from those of the Carabidae by following characters: labrum present; labial palpi 1-segmented, very small; mentum and ligula fused into a single, anteriorly bilobed piece; maxillae and labium deeply retracted into a ventral emargination of the head capsule; urogomphi absent.

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Figs. 1 and 2. *Clinidium costatum*, last larval instar (fig. 1, lateral aspect; fig. 2, dorsal aspect). Fig. 3. Left antenna, dorsal aspect; fig. 3a, flattened seta of 4th antennal segment, enlarged. Fig. 4. Abdominal spiracle. Fig. 5. Dorsal asperities and microscopic projections, enlarged.



Figs. 6 and 7. Head (fig. 6, dorsal aspect; fig. 7, ventral aspect).

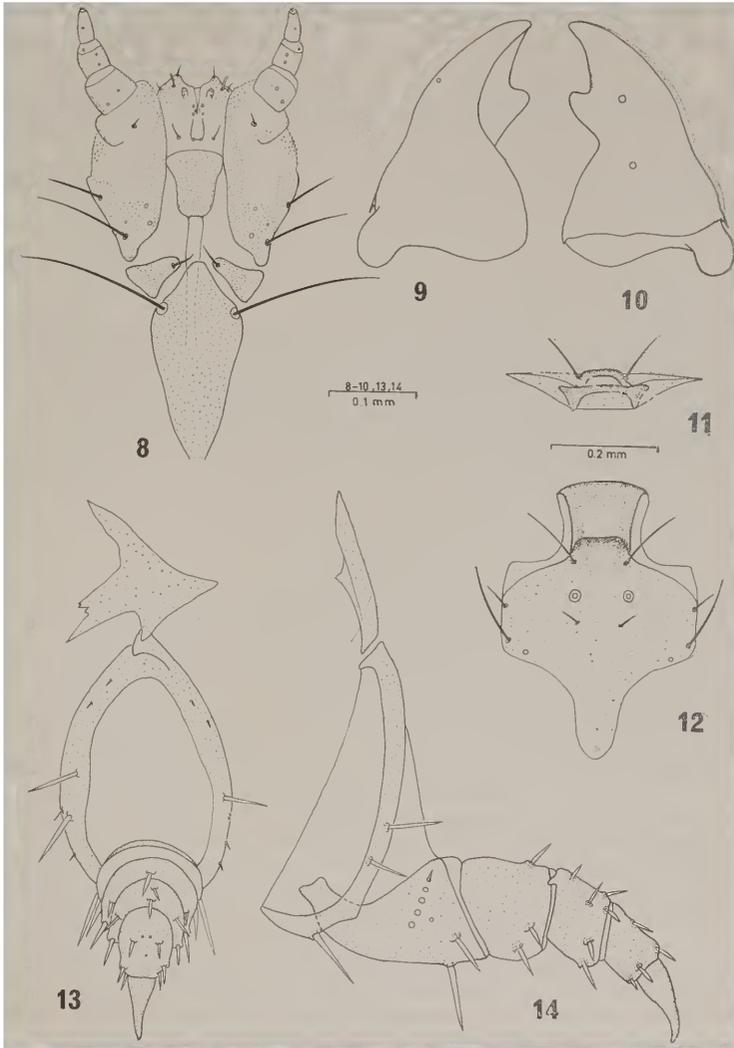


Fig. 8. Labium and maxillae, ventral aspect. Figs. 9 and 10. Right mandible (fig. 9, ventral aspect; fig. 10, dorsal aspect). Figs. 11 and 12. Frons and labrum (fig. 11, frontal aspect; fig. 12, dorsal aspect). Figs. 13 and 14. Left prothoracic leg (fig. 13, frontal aspect; fig. 14, lateral aspect).

