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## LARVA OF *NEALCIDION BICRISTATUM* (BATES, 1863) (CERAMBYCIDAE, LAMIINAE, ACANTHOCININI)

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### ABSTRACT

*The larva of Nealcidion bicristatum (Bates, 1863) is described and illustrated. Biological notes and a comparison with N. bispinum (Bates, 1863) are also presented.*

KEY-WORDS: Coleoptera; Gall; Immature; Solanaceae.

### INTRODUCTION

The tribe Acanthocinini includes 149 genera and more than 950 species in the Neotropical region (Monné, 2005, *apud* Monné & Monné, 2007). The genus *Nealcidion* Monné, 1977 is composed by 57 species distributed by Neotropical region (Monné & Monné, 2009).

The most important contribution on the immatures of this tribe was carried out by Duffy (1960), who described the larvae and/or pupa of 25 species of this tribe, recorded from Hawaii (Honolulu), Guatemala, Puerto Rico, Trinidad, Guyana, Brazil and Chile. He presented besides the descriptions, the distribution, host plants, biology and control for each species. According to him, the larvae of Acanthocinini are usually subcortical. In relation to *Nealcidion* (treated as *Alcidion*), he described the larva and pupa of *Nealcidion bispinum* (Bates, 1863) from Brazil (recorded also from Argentina) and the biology of *N. deletum* (Bates, 1880). He also presented a distribution and

host plant of *N. privatum* (Pascoe, 1866) and *N. deletum* and for *N. bicristatum* also the description of the adult and its economical importance.

More recently, Francesco (2001) described the larvae of *Chaetanes fleutiauxi* Villiers, 1980 and *Leptostyloides assimilis* (Gahan, 1895), from Guadalupe.

According to Duffy (1960), larvae of Acanthocinini are characterized especially by having (differences observed in *N. bicristatum* parenthesized): antennal foramen open or closed posteriorly (closed); gula with two-six setae (four); six epistomal setae; one pair of stemmata; mentum distinct from submentum (indistinct); antennae with two antennomeres and bearing a conical hyaline process; maxillary palpi with two or three palpomeres (three); posterior area of pronotum variable (with transverse micro-spiculate band); abdomen with ampullae variable, from tuberculate and glabrous to non-tuberculate and micro-spiculate (tuberculate ampullae); tergite IX sometimes bearing a spine or sclerotized process (without

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spine or process); epipleura protuberant, at least on abdominal segments VII-IX; pleural tubercles each with a pair of sclerotized pits; spiracles oval to circular (oval).

### Biological data

Duffy (1960) stated that the larvae of *N. bicristatum* bore the stems of egg plant (*Solanum melongena* L.) (Pyenson, 1938) and the adults damage leaves of tobacco plants (Blanchard, 1945), although it is not clear if the plants are infested with larvae. *S. melongena* was also recorded as host plant of *N. deletum*. The host plant of *N. bispinum* is *Theobroma* (pods) and the *N. privatum* and *N. cereicola* (Fischer, 1935) is *Cereus* sp.

Related to *N. deletum*, Duffy (*l.c.*) stated that both, larvae and adults injured the stems of egg-plants. The eggs are deposited often singly (sometimes two or three) under the bark of stem, usually close to the nodes. The incubation period vary from three to seven days. In laboratory, the larval period varied from 36-77 days. Mature larvae destroy the entire pith in the areas of the stem they occupy; they feed on the pith by excavating longitudinal galleries. Before pupation, the larva blocks the gallery both above and below itself with tightly compacted fibrous strands torn from the walls; the interior of cell is smooth and ovoid. The pupal stage lasts from 6-8 days and the adult remain within the stem for a further 2-10 days. In emerging the adult gnaws a circular hole. The adults feed mainly on young tender shoots.

Di Iorio *et al.* (1998) also stated that the habit to develop boring plant living tissues was recorded several times to *Nealcidion bicristatum* and *N. cereicola*.

### MATERIAL

The studied material of *N. bicristatum* was received by URM for identification. He received some dried branches, probably of a Solanaceae, presenting some galls from which emerged four adults (Figs. 17-18). The adult emergence was noted by presence of external circular holes (Fig. 19). The galls were opened (Figs. 19-20) some days after and two larvae (one died) were found. The living larva was killed in hot water and both were kept in alcohol 70% and housed at "Museu de Zoologia da Universidade de São Paulo" (MZSP).

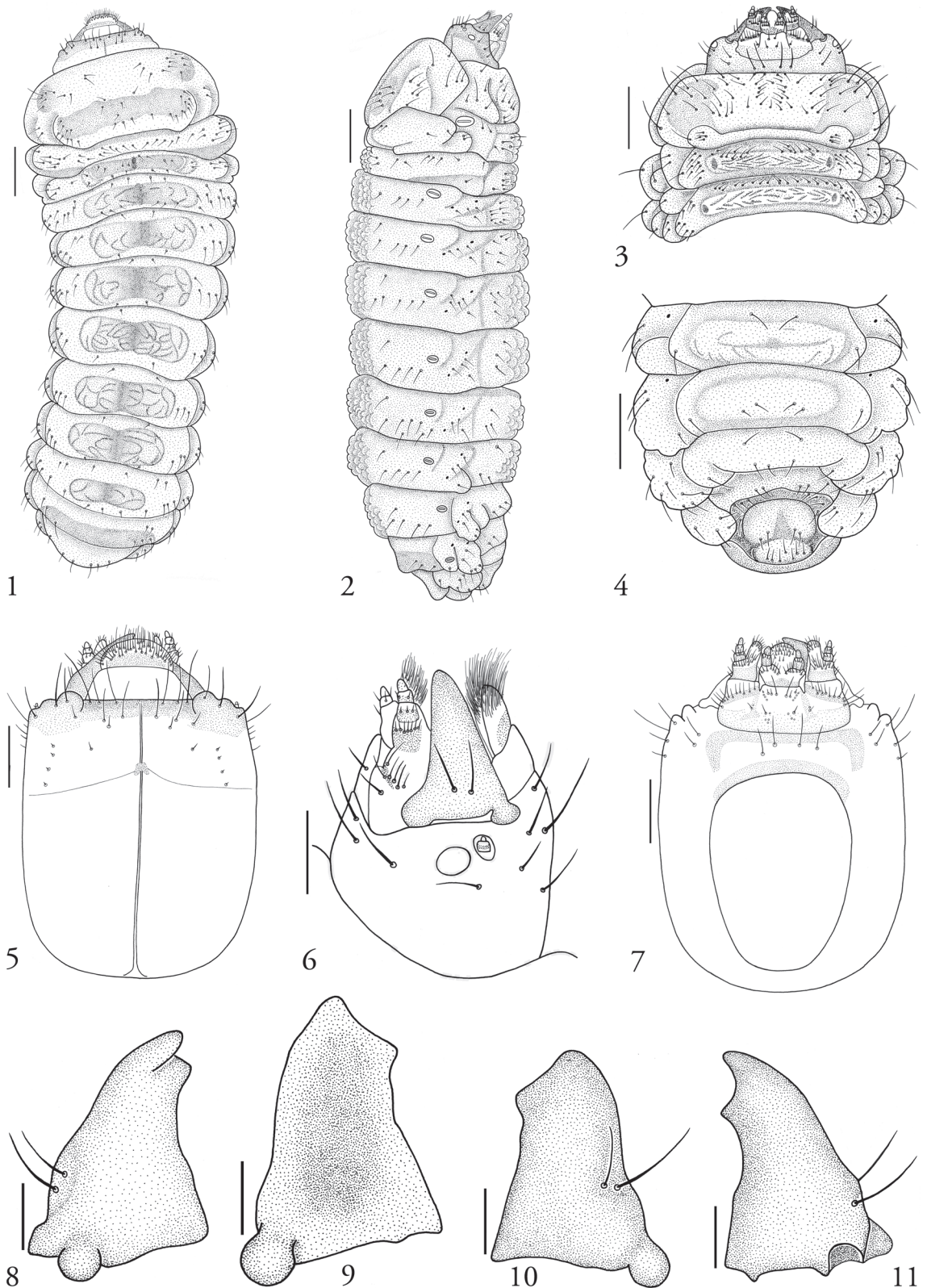
## RESULTS

### *Nealcidion bicristatum* (Bates, 1863)

*Length*: 10.4 mm; width of prothorax: 4.2 mm.

Body (Figs. 1-2) elongate, cylindrical and slightly flattened, wider at meso- and metathorax, slightly narrowed apicad. After fixation, cream with head slightly darker; anterior region of cephalic capsule reddish-brown; mandibles dark-brown; basal region of labrum, a transverse narrow inclined band of stipes, a wide band of palpiger and of prementum, and labial and maxillary palpi brown; basal region of labium and maxillae yellowish. Integument apparently smooth; two kinds of pubescence: short, fine, moderately sparse and whitish, distributed irregularly [not represented in Figs. 1-4] and moderately long sparse, fine and ferruginous, more concentrate on thorax and laterally on abdomen. Thorax and abdomen bearing dorsally and ventrally, transverse tuberculate ampullae; ampullae, elliptical strongly concave longitudinal medially forming two rounded lobes bearing glabrous small tubercles; median concavity of ventral ampullae weaker and tubercles slightly larger than those of dorsal ampullae.

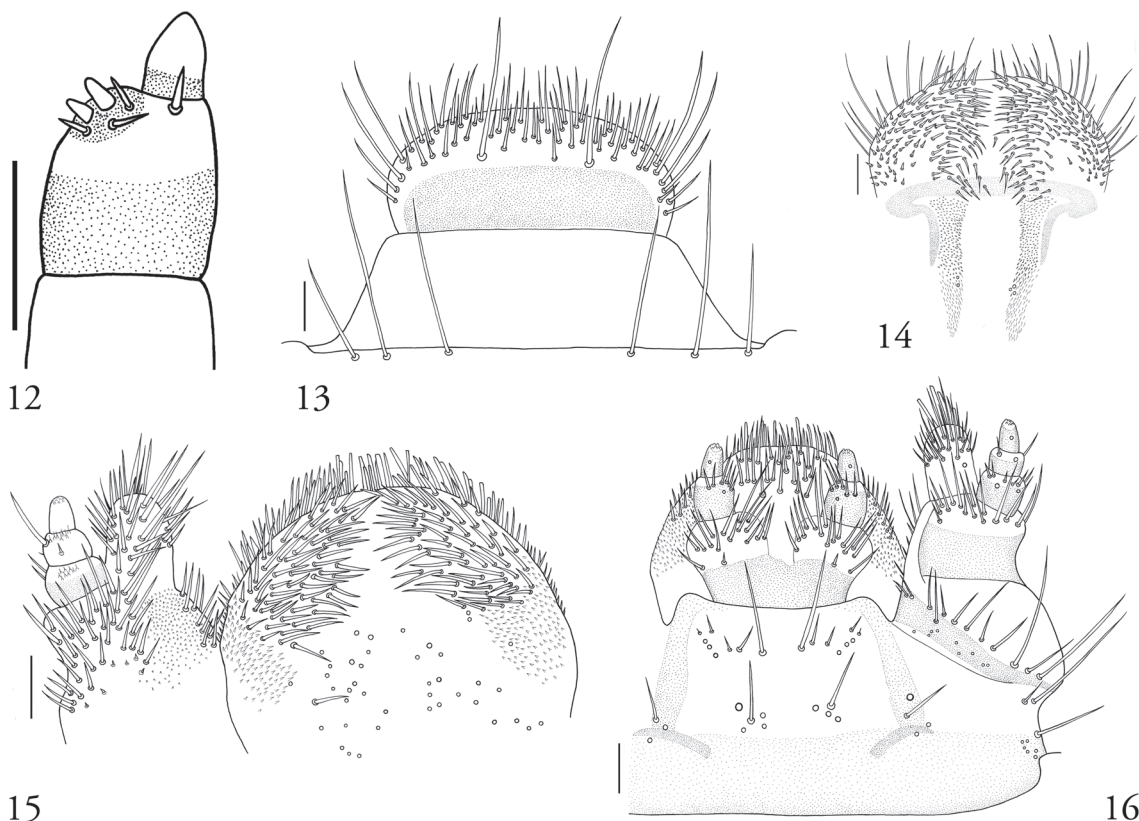
Head (Figs. 1-3, 5-7) extensible, deeply retracted into prothorax; elongate, prognathous, strongly depressed; retracted portion 3/5 of head length, glabrous; occipital foramen entire, anteriorly bordered by transverse sclerite. Head capsule dorsally composed by two epicranial halves. Median suture long, in furrow, continuous with endocarina, almost reaching fronto-clipeal suture; frontal suture indistinct. Frons margin almost straight with a rounded prominence each side; strongly sclerotized; six epistomal setae; each side with three moderately long setae. Each epicranial half with two long and one short setae near frons margin, three long and one short at condylar area, one short near middle and one inclined row of four tiny setae parallel to lateral margins. Ventrally with three setae near each lateral margin and two innerly; gular area with four setae. One translucent well developed stemma each side, near mandible base, ventrally to antenna. Antennal foramen closed posteriorly. Antenna (Fig. 12) very short, inserted dorsally near base of mandibles, above stemma; with two antennomeres: antennomere basal totally retracted into cephalic capsule; antennomere distal slightly longer than wider, membranous at distal half, bearing at apex, a lateroexternal rounded sclerotized area with two wide membranous sensorial appendices and three stout setae, and one stout seta outside of sclerotization, near distal margin; bearing at apex one well developed sensorial



FIGURES 1-11: *Nealcidion bicristatum* (Bates, 1863), larva. 1, 2, dorsal, lateral; 3, head and thorax (ventral); 4, abdominal segments VI-X (ventral); 5-7, head (dorsal, lateral, ventral); 8-11, mandible (ventral, mesal, lateral, dorsal). Bars: figs. 1-4 = 1 mm; 5-7 = 5 mm; 8-11 = 2 mm.

membranous appendix, sclerotized at base. Clypeus (Fig. 13) translucent, glabrous, transverse and trap-ezoidal. Labrum (Fig. 13) translucent with basal half brownish; wider than long with margins strongly rounded, bearing many long setae on distal half. Epipharynx (Fig. 14): anterior half covered by stout setae of varied sizes; basal half with two longitudinal microspined bands, setous on basal third; some campaniform sensilla near base. Mandible (Figs. 8-11) symmetrical, wide and concave at mesal region; penicillus absent; apex wide, declivous, forming two rounded teeth; two lateroexternal setae near base. Maxilla (Figs. 15-16): cardo fused with labium; stipes membranous, transverse, wider near base; lateral margin slightly rounded; basal margin declivous; ventrally with inclined narrow sclerotized band near base; an irregular inclined row of long setae near sclerotized band and several campaniform sensilla on and near band; palpifer with wide and long setae disposed in irregular translucent band near distal margin; maxillary lobe elongate, almost as long as palpus, with rounded apex; many wide and long setae more concentrated ventrally, at distal half; dorsally, palpifer and maxillary

lobe partially covered by long and wide setae; palpifer with short setae near base, irregular band of microspines near internal margin and irregular short row of wide and long setae at margin. Maxillary palpi with three palpomeres: basal palpomere wider than long, bearing ventrally six wide and moderately long setae and two campaniform sensilla near apex and dorsally with some median microspines near distal margin; median palpomere wider than long, narrower than basal, bearing ventrally near apex, one internal wide and moderately long seta and one external campaniform sensillum, and dorsally, one external long and wide seta and several microspines near apex, and one short seta near middle; distal palpomere elongate, narrower than median with one ventral campaniform sensillum and several apical peg-like sensilla. Labium (Figs. 15-16): mentum fused to submentum and cardo; area of mentum transverse, very wide, trap-ezoidal and membranous with two longitudinal lateral oblique sclerites; each side with three wide and long setae (one shorter) and 6 campaniform sensilla near lateral margins (below maxilla) and one wide and long setae and two or three campaniform sensilla



FIGURES 12-16: *Nealcidion bicristatum* (Bates, 1863), larva. 12, antenna (dorsal); 13, clypeus and labrum; 14, epipharynx; 15, 16, maxilla and labium (dorsal, ventral). Bars = 1 mm, except fig. 12 = 0.5 mm.

near base of each longitudinal sclerite; area between sclerites bearing near distal margin one pair of long and wide setae, three pairs of moderately long and one pair of tiny setae and one inclined row with three campaniform sensilla each side, and near middle, two long setae and three or four campaniform sensilla near each seta; pre-mentum membranous, sclerotized at base; palpiger bearing many wide and long setae on translucent area; ligula wide and membranous, with distal margin rounded, bearing many wide long setae

near apex and microspined band laterally. Labial palpi with two palpomeres: basal palpomere elongate with six wide and long setae near apex and one campaniform sensillum near lateral margin; distal palpomere elongate, narrower than basal with one campaniform sensillum near middle and several peg-like sensilla at apex. Hypopharynx bearing anteriorly many wide and long setae, convergent to middle; microspined lateral band near base and many campaniform sensilla at middle.



17



18



19



20

FIGURES 17-20: *Nealcidion bicristatum* (Bates, 1863). 17, branch with gall; 18, adult; 19, 20, opened branch (external, internal).

Prothorax (Figs. 1-3) wider than head, narrower than meso- or metathorax; pronotum wider than long, longer than meso- and metanotum together, narrower anteriorly; lateral margins rounded; basal margin prominent on median 2/4; each side with one rounded concavity near anterior margin and two raised rounded areas forming weak tubercles near basal margin; basal area with transverse and irregular micro-spiculate band giving an yellowish velvety appearance. Prothorax ventrally bearing moderately long setae; sternellum with setae on lateral lobes. Meso- and metathorax slightly wider than prothorax; meso- and metanotum similar, short, band-like; each with two lobes each side: one at lateral margin and other innerly, near lateral margin; metanotum with elliptical narrow ampulla, flattened in an elliptical median area. Meso-thorax with one pair of lateroanterior well developed elliptical spiracles. Meso- and metathorax, ventrally (Fig. 3), bearing many moderately long setae, more concentrate in a transverse irregular anterior row and near lobes; each with transverse ampullae. Legs absent.

Abdominal segments I-VIII transverse, bilobed laterally; ampullae dorsally on segments I-VII and ventrally (Fig. 4) on segments I-VI; segment IX narrower with rounded distal margin; segments I-VIII, each with one pair of lateral elliptical spiracles, smaller than thoracics; segments I-IX with pleural tubercles, each with one pair of sclerotized pits. Anus trilobed.

*Material examined:* BRAZIL. Minas Gerais. Reserva Biológica Unilavras – Boqueirão Ingaí, 11.XI.2010, K. Malves, 2 larvae, 4 adults (MZSP).

## DISCUSSION

According to Duffy (*l.c.*) the larvae of the genera *Nealcidion* and *Hyperplatys* and those of *Lophopoeum timbouvae* Lameere have a unique body shape among the Acanthocinini: cylindrical, short and stout and slightly curved, resembling a bruchid larva. He considered that this unusual shape is characteristic of larvae with specialised habit of infesting seed-pods.

The larvae of *N. bicristatum* were found tunneling branches (Fig. 20). The swollen branches indicated the presence of larvae.

Comparing the larva of *Nealcidion bicristatum* with the description of *N. bispinum* it is verified the following differences (*N. bispinum* parenthesized): palpomere maxillar III longer than II (III shorter than II); sternellum setous laterally (micro-spiculate); abdomen with tuberculate ampullae (glabrous, shining, moniliform tubercles); spiracles with peritreme elliptical (circular).

## RESUMO

*A larva de Nealcidion bicristatum (Bates, 1863) é descrita e ilustrada. Dados biológicos e uma comparação com N. bispinum (Bates, 1863) também são apresentados.*

**PALAVRAS-CHAVE:** Coleoptera; Galha; Imaturo; Solanaceae.

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