

THE LARVA OF *CATANA CLAUSENI* CHAPIN, AND  
ITS COMPARISON WITH THE LARVA OF *DELPHASTUS*  
*PUSILLUS* (LEC.)

(COLEOPTERA, COCCINELLIDAE)

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With interest again being focused upon the citrus blackfly, *Aleurocanthus woglumi* Ashby, its predators and parasites, a description of the larva of one of the predators might well be in order.

The predator in question, a coccinellid, was formerly described by Clausen and Berry (1932) as *Cryptognatha* sp. According to their report, the species, although found only in two localities in Malaya during their investigations, contributed materially to the control of the blackfly in these areas, and in Cuba, after its introduction there, proved an excellent control in some instances. Chapin (1940) re-described the adult and named the species *Catana clauseni*.

In view of added knowledge concerning other species, the description of the larva of *C. clauseni* as given by Clausen and Berry is inadequate for practical taxonomic purposes. A more detailed description is herewith presented, with notes comparing it with the larva of *Delphastus pusillus* (Lec.). The comparison of the larvae of the two species is presented since the two species are to be found in Cuba, both feed upon the citrus blackfly, and the larvae closely resemble one another.

Larval specimens were made available by Dr. W. H. Anderson, Bureau of Entomology and Plant Quarantine, U.S.D.A., through the courtesy of the U. S. National Museum. The nine specimens of *C. clauseni* studied were taken by C. P. Clausen at Nedan, Sumatra, while the three specimens of *D. pusillus* were collected by S. C. Bruner at Wajaj, Habana, Cuba. Reared and associated adults were determined by Dr. E. A. Chapin, U. S. National Museum, Washington, D. C.

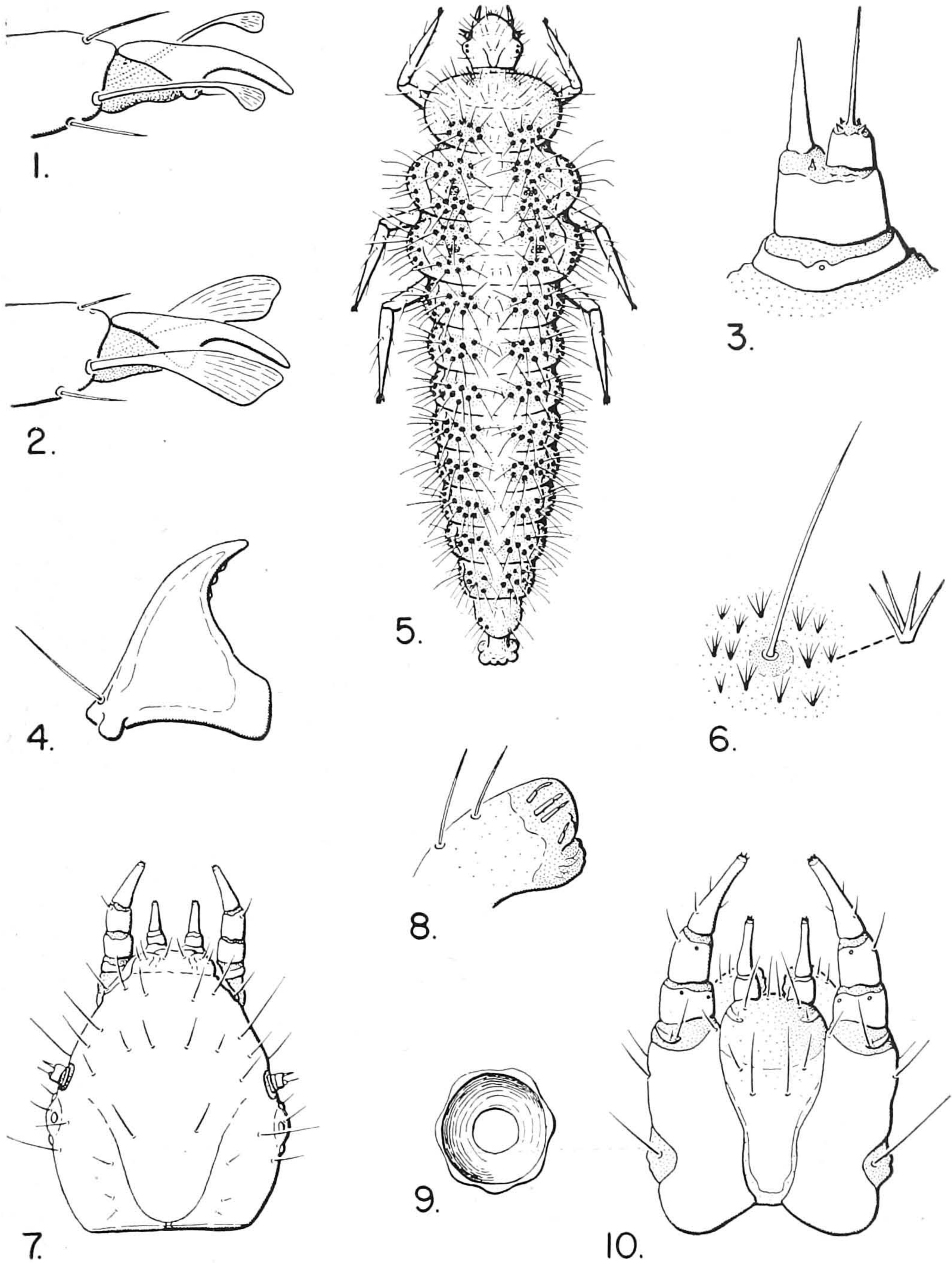
*Catana clauseni* Chapin

Mature larva (Fig. 5) 4.5 to 5 mm. in length, fusiform, with greatest width at metathorax, setiferous, weakly sclerotized, without distinct sclerites; grey to brownish-grey, with broad light line extending length of body, coloration due to brown circular areas about bases of individual setae and density of asperities (Fig. 6); asperities simple or with two to four branches. Prothorax oval, broader than long, unevenly and indistinctly divided transversely by linear depression, anterior margin with small concentration of fine setae on each side of midline, principal setae of posterior margin rising from two dorsolateral pigmented areas, one on each side; mesothorax and metathorax each subrectangular, broader than long, laterally rounded, each with two dorsolateral seti-

ferous areas on each side, separated by small dark spot and transverse linear depression; mesopleura and metapleura each rounded, lightly pigmented and with few setae; abdominal segments 1-8 subequal in length, each approximately one-half length of thoracic segment, successively narrower posteriorly, each with large brownish setiferous area dorsolaterally on each side; abdominal pleura less setiferous and pigmented than dorsal areas; ninth abdominal segment subconical, longer than broad, posteriorly rounded, with small setiferous, lightly pigmented area on each side; uropod present. Spiracles (Fig 9) round, depressed or cuplike, rim nodulose. Legs long, slender, sparsely setiferous; femur one and one-half times longer than coxa; tibia completely sclerotized, without ventral setiferous membranous area or "sole," terminally with two, gradually and broadly expanded, flat, paddlelike setae, one ventrolaterally on each side of claw (Fig. 2); claw simple.

Head (Fig. 7) slightly less than one-half width of pronotum, weakly sclerotized, faintly pigmented, mottled; oval, with greatest width through ocelli, gradually converging anteriorly; three ocelli laterally on each side of head, slightly posterior to transverse plane passing through center of the midline; antenna laterally on each side of head, anterior to same plane; frontal sutures posteriorly distinct, gradually separating anteriorly, obliterated toward antennae; frons with two parallel longitudinal shallow depressions extending anteriorly from middle of head. Antenna (Fig. 3) three-segmented; second segment longer but narrower than first, anterior area of segment with elevation bearing long, stout, colorless, acute sensory process; third segment small, conical, terminally with several minute, acute sensory papillae and single, long, acute sensory process.

Labrum subrectangular, approximately twice as broad as long, anterior margin trilobed, middle lobe short and broad. Mandible (Fig. 4) apically simple, curved, inner cutting edge weakly toothed; base rectangular, expanded; molar area produced; retinaculum lacking. Maxillary palpus (Fig. 10) long, slender, weakly sclerotized and faintly pigmented, three-segmented and with distinct but small palpiger; segments 1 and 2 subequal in length, third segment slender, approximately two and one-half times as long as width at base, terminally with several minute, slender, acute sensory papillae; stipes of each maxilla distinct, weakly sclerotized and faintly pigmented. Mala (Fig. 8) conical, terminally membranous and with several sensory spines. Labial palpus (Fig. 10) long, slender, slightly more than one half as long as maxillary palpus, two-segmented, each palpus with short, weakly sclerotized and nonpigmented premental sclerite at base; terminal segment of palpus long, slender, about two and one-half times as long as width at base, terminally with several, small, acute sensory papillae. Submental area (Fig. 10) distinct from stipites, weakly sclerotized and faintly pigmented, with two pairs of setae located anterolaterally, anterior pair short, widely separated, posterior pair long, less widely separated, mesal and posterior to first pair.



EXPLANATION OF PLATE 18

Fig. 1. Tarsal claw and terminal setae of tibia, *Delphastus pusillus* (Lec.). Figs. 2-10. *Catana clauseni* Chapin. Fig. 2. Tarsal claw and terminal setae of tibia. Fig. 3. Antenna. Fig. 4. Mandible. Fig. 5. Habitus. Fig. 6. Seta and asperities. Fig. 7. Dorsal view of head. Fig. 8. Mala. Fig. 9. Abdominal spiracle. Fig. 10. Ventral mouthparts. (Drawings by author.)

## COMPARATIVE NOTES ON LARVAE

Except for minor details the habitus drawing given for *C. clauseni* could be used for either of the two species under consideration, *C. clauseni* or *D. pusillus*. The larvae of both species closely resemble one another, being similarly setiferous and pigmented and alike in body outline. They can be differentiated, however, by a number of distinguishing characteristics. The comparative lengths and sizes of the mature larvae of the two species in all specimens studied are distinctive. The larva of *C. clauseni* is stouter than that of *D. pusillus*, and the comparative lengths are from 4.5 mm. to 5 mm. and approximately 3 mm., respectively. The overall coloration of *C. clauseni* is of a darker brown than that of *D. pusillus* since the former species is more setiferous and possesses approximately 20 to 30 conspicuous setae arising individually from circular pigmented spots located dorsolaterally on each side of each body segment. In *D. pusillus* there are approximately 10 conspicuous setae similarly arising individually from pigmented spots. In *C. clauseni* there are two small concentrations of fine setae on the anterior margin of the pronotum, one on each side of the midline. In *D. pusillus* these concentrations are lacking or indistinct.

The head of *C. clauseni* (Fig. 7) is oval and larger in proportion to the body than that of *D. pusillus* which is smaller and elongate-oval. Although the head of both species possesses two parallel, longitudinal, shallow depressions on the frons, the frontal sutures are distinct posteriorly only on the head of *C. clauseni*. They are lacking on the head of *D. pusillus*. Viewed from above, the ocelli of *C. clauseni* are slightly posterior to a plane drawn through the center of the midline of the head, while in *D. pusillus* they are slightly anterior to the same plane.

The most striking and distinctive characters are to be found in the shape of the terminal setae of the tibia. The setae are two in number in each species, one located ventrolaterally on each side of the claw. In *C. clauseni* (Fig. 2) each seta is gradually and broadly expanded distally into a flattened, paddlelike seta, while in *D. pusillus* (Fig. 1) the setae are capitate, the terminal expansion being abrupt and small.

## LITERATURE CITED

- Clausen, Curtis P. and Paul A. Berry 1932. The Citrus Blackáy in Asia, and the Importation of Its Natural Enemies into Tropical America. U. S. D. A. Tech. Bull. No. 320:1-59, 19 figs.
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