

THE LARVA AND PUPA OF
CARPELIMUS DEBILIS CASEY
(COLEOPTERA: STAPHYLINIDAE)*

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On a number of occasions *Carpelimus debilis* Casey has been found to be numerous at a marine salt marsh at La Salina, near La Misión de San Miguel, Baja California Norte, Mexico. This salt marsh was described in some detail by Moore (1964) and its Coleoptera discussed, a key was given by Moore for the separation of larvae of some of the Staphylinidae found there but no detailed descriptions or illustrations were presented, nor were pupae mentioned. We are now taking this opportunity to describe and illustrate the larva and pupa of one of those insects.

In July and August, 1971, a very large colony of *C. debilis* was found in an area about two meters square in Moore's Zone One. The substrate was a mixture of sand and mud of a consistency which would support the weight of a person with slight sinking. Present with the *Carpelimus* but in much lesser numbers were *Tachys vittiger* Le Conte, *Thinobius frizzelli* Hatch and *Ochthebius* sp. and large numbers of larvae, almost entirely *Carpelimus*. Thousands of adult *C. debilis*, hundreds of larvae and three pupae were collected. The pupae were staphylinid pupae of about the size of *Carpelimus* so it seems very likely that we have properly assigned them. A few meters away in Zone One was another small area of similar material but too wet to support the weight of a person. That area contained large numbers of the same species of *Ochthebius* but few, if any, other insects. Insects were collected in these areas by the water flotation method in which a shovel of substrate is placed in a pail of water and the insects removed as they surface (Moore, 1954). This method brings adults and some active larvae to the surface but the inactive pupae probably do not surface readily, so few were encountered.

Carpelimus is a large genus of world-wide distribution with several species often found together. Over 352 species were described

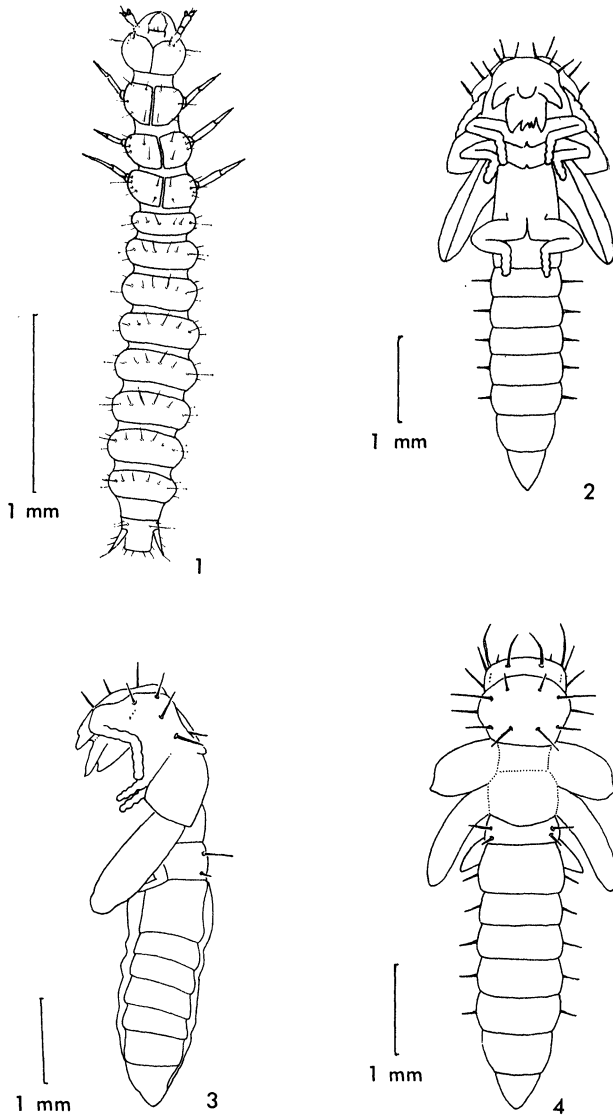
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through 1969. Because of their small size and generally uniform appearance, members of the genus are difficult to identify. Larvae of Staphylinidae are notoriously difficult to associate with adults except in rare circumstances such as the present one. They are not easy to rear, the larvae often being cannibalistic when confined in close quarters. Only twice before have larvae of this genus been made known. Paulian (1941) described and illustrated the larva of the Holarctic species *C. bilineatus* Stephens and Kasule (1968) illustrated parts of a British species (as *Trogophloeus* sp.). No pupa of the genus has been described.

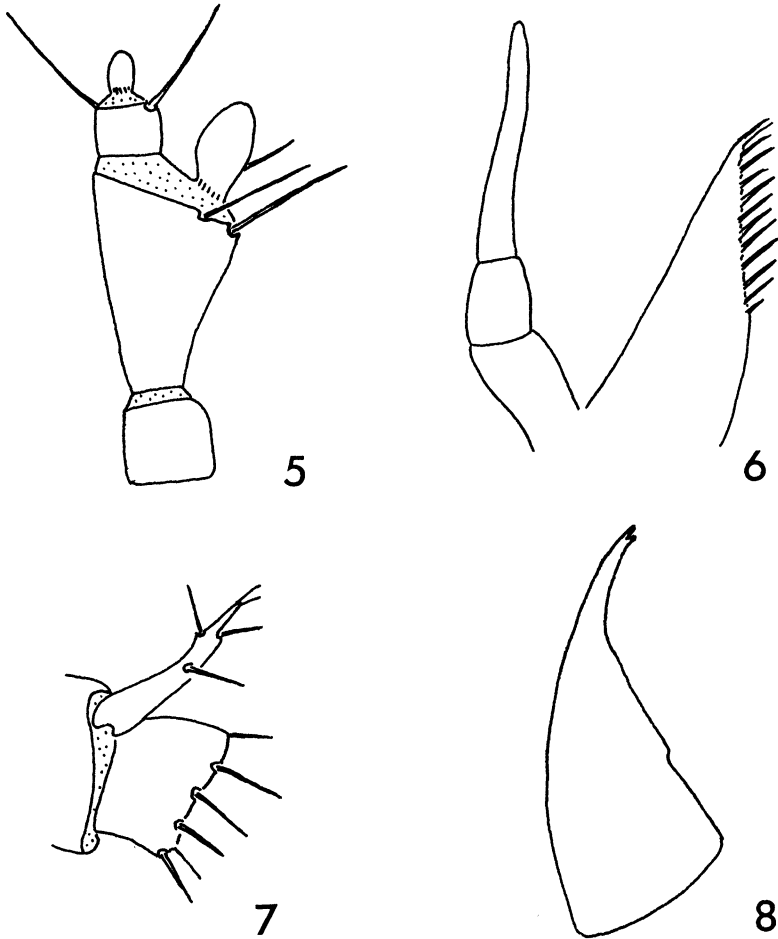
Larva of Carpelimus debilis Casey

Length 3.25 mm. (largest spms.). Body elongate, somewhat convex, parallel, pale cream-colored with the sclerites pale piceus and the extremities somewhat darker. Head oval, about as wide as long; with three ocelli in an uneven row on each side; epicranial suture about one-half the length of head. Labrum longer than wide, narrowed and truncate in front. Antennal fossae located at sides of head above bases of mandibles. Antennae three-segmented; first segment about as long as wide; second segment a little wider than first and about twice as long as wide with the modified acorn seta near the apex nearly as large as third segment, born at an obtuse angle; third segment less than half as wide as second, about as long as wide, with a small modified acorn-like seta at apex. Mandibles arcuate, with three small equal teeth arranged in a triangle at apex. Maxillary palpi three-segmented; first segment about twice as long as wide; second segment a little narrower than first, narrowed from base to pointed apex. Lacinia triangular, widest at base, spinose on inner edge. Labial palpi two-segmented; first segment longer than wide; second segment narrower than first, about as long as wide. Pronotum, mesonotum and metanotum wider than long, the last two each wider than preceding. Abdominal tergites each wider than metanotum, more than twice as wide as long, fifth tergite widest, pseudopod subcylindrical, slightly longer than wide, slightly narrowed from base to apex. Urogomphus one-segmented, pointed, slightly longer than pseudopod. Many specimens, La Salina, Baja California Norte, Mexico, Salt Marsh, August 3, 1971, Ian Moore collector.

The only noticeable difference between this larva and Paulian's description of that of *C. biliniatus* is that in *debilis* the apex of the mandible is formed of three small teeth arranged in a small triangle whereas in *biliniatus* Paulian's illustration shows two small subequal



Figures 1-4. *Carpelimus debilis*. Fig. 1, larva; Fig. 2, venter of pupa; Fig. 3, side of pupa; Fig. 4, dorsum of pupa.



Figures 5-8. *Carpelimus debilis*. Fig. 5, antenna of larva; Fig. 6, maxilla of larva; Fig. 7, urogomphus and pseudopod of larva; Fig. 8, mandible of larva.

teeth, one before the other, with a minute denticle between, and his description states that the apex of the mandible is bidentate.

The pupae of Coleoptera are so poorly known that it is difficult to choose with certainty characters which will be of diagnostic value. However, studies by Jerome Rozen (1959, 1963a, 1963b) indicate that location of tuberculate setae on various parts of the body, length and shape of elytra, wings and urogomphus are probably most useful; so those characters have been given the most attention in the following description.

Pupa of *Carpelimus debilis* Casey

Pupa exarate, elongate, pale, not chitinized in any part; various parts of the body with long slender setae, each arising from a surface so slightly elevated that it can hardly be said to be tuberculate. Head ventrally reflexed so that only a small part is visible from above; with three ocelli in a row on each side; on each side with two setae at front margin, one discal seta and three setae at lateral margin. Pronotum irregularly ovoid, on each side with two setae at front margin, one at lateral margin and two at posterior margin. Elytra very little longer than wide, standing at right-angles to body, posterior margin, when viewed from above, with an obtusely angulate projection in the middle, without setae. Wings narrower than and about twice as long as elytra, held away from the body at an angle of about 45 degrees, without setae. Mesothorax and metathorax without setae. First abdominal segment on each side with one discal and one lateral seta. Abdominal segments two through six on each side with a single lateral seta. Urogomphus minute, with a tuft of hair at apex.

Three specimens from La Salina, Baja California Norte, Mexico, Salt Marsh, August 3, 1971, Ian Moore collector.

Acknowledgments

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