Pakistan J. Sci. Ind. Res., Vol. 15, No. 3, June 1972

THE IMMATURE STAGES OF THE MANGO FRUIT WEEVIL, STERNOCHETUS FRIGIDUS FABRICIUS (COLEOPETRA: CURCULIONIDAE)

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(Received August 24, 1971; revised November 30, 1971)

Abstract. The immature stages of the mango fruit weevil, *Sternochetus frigidus* Fabricius, are described and illustrated in this paper.

Mango fruit weevil, *Sternochetus frigidus* Fabricius and the mango nut weevil, *Sternochetus* (*Cryptorhynchus*) *mangiferae* (Fabricius) were recorded as major and minor pests respectively of mango in East Pakistan.[3] Fortunately, the pests have a very limited distribution (recorded from Dacca[4]), and only certain varieties of mango are attacked. Alam[2,3] described the life history and control measures of these weevils. The damage is done by the larvae which, after hatching out of the eggs, feed by tunnelling through the ripe fruit pulp. But, while the larva of *S. frigidus* pupates in the pulp, that of *S. mangiferae* reaches the hard stone (nut) in which pupation takes place. In both the cases, adults emerge by cutting their way out of the fruits which are thus rendered unfit for human consumption. The weevils have only one generation during the fruit season and no alternate host plants have been recorded.

Detailed morphological study of these weevils does not appear to have been made. Also, their immature stages have not been described. The outline drawings published[3] in connection with studies of the life history do not have sufficient detail to be of taxonomic value.

During the 1968 and 1969 mango seasons, a number of adults, larvae and pupae of *S. frigidus* were collected from Gouripur, Mymensingh. Since the two species of *Sternochetus* in question are very similar in appearance and feeding habits, a comparative study of their stages should prove interesting. It was with this end in view that a study was undertaken. The external morphology of the adult of *S. frigidus* was described earlier.[1] Present paper deals with the descriptions of its immature stages. It is hoped that these stages of *S. mangiferae*, when available, will be described and the taxonomic relationships of the two species then discussed.

Descriptions are based on entire specimens and clear microscopic preparations. The terminology used for larval descriptions is essentially that proposed by Anderson[5] for weevil larvae. Burke's[6] terminology was followed for descriptions of the pupae.

Mature larva (Figs. 1–8)

Body. Nearly cylindrical, moderately curved (Fig. 8); white to creamy white 7.5–8.5 mm in length. Asperites very small, generally distributed over the whole body.

Head. Free, light yellowish brown; slightly longer than wide (Figs. 1 and 3). Width of head capsule averaging 1.0 mm. Basal article of antenna (Ant) bearing a subconical appendage (acap) and two or three minute setae. Anterior ocelli (oc) present. Epicranial suture (ES) slightly more than half as long as head capsule. Endocarina (Enc) less than half as long as frons (Fr). Frontal seta (Fs) 1 absent, 2 and 3 short, subequal, 4 moderately long, 5 long. Dorsal epicranial setae (des) 1 and 4 long, subequal, 2 and 5 about as long as frontal seta 4, 3 short. Lateral epicranial seta (les) 2 longer than seta 1. Ventral epicranial setae (ves) short, 1 shorter than 2. Four minute posterior epicranial setae (pes) present. Clypeal seta (Fig. 4, Cls) 2 distinctly longer than 1 which is located close to anterior margin of frons. Labrum about twice as wide as long, its anterior margin showing a slight median lobe and posterior margin extending into the clypeal zone; labral setae (Lms) 1 and 2 moderately long, 3 short. Epipharynx (Fig. 5) bearing four anteromedian setae (ams), three anterolateral setae (als) on each side, and four median spines (msp); labral rods (LmR) united posteriorly. Mandibles (Fig. 2) stout, bifid at tip; mandibular setae (Mds) 1 slightly longer than 2. Basal article of maxillary palpus much longer than apical article (Figs. 6, 7); stipital setae (Sts) 1 and 3 long, equal, 4 slightly shorter, 2 short; mala bearing five dorsal (dsMa) and four ventral setae (vsMa). Labial palpus (LbP) consists of two articles; premental sclerite with a distinct posteromedian extension; premental setae (PrMs) moderately long; glossa bearing two setae (Gls); postmental seta (PMs) 1 longer than 3, seta 2 longest.

Thorax. Pronotum (Fig. 8, PN) bearing seven setae. Thoracic spiracle (Sp) bicameral, its air-tubes small. Prodorsal seta (PrDs) short. Postdorsal setae (PDs) 1 and 3 shorter than 2 and 4. Spiracular area bearing one long and one short setae (Sps). Each epipleural lobe bears one seta (Epls). One long pleural seta (Pls); pedal area bearing one long, two short to moderately long and one very short setae (Pds); one short sternal seta (STs) present.

Abdomen. Abdomen bearing eight pairs of bicameral spiracles with the air-tubes directed slightly dorsad. Abdominal segments I to VII each with three dorsal folds, first fold extended laterally. Segment VIII with two folds only. Segments I to VIII each bearing one short prodorsal seta and a row of four postdorsal setae of which 1 and 3 shorter than 2 and 4. Spiracular seta 2 longer than seta 1. Epipleural seta 1 longer than seta 2. One pleural seta, one pedal seta and two minute eusternal setae present.

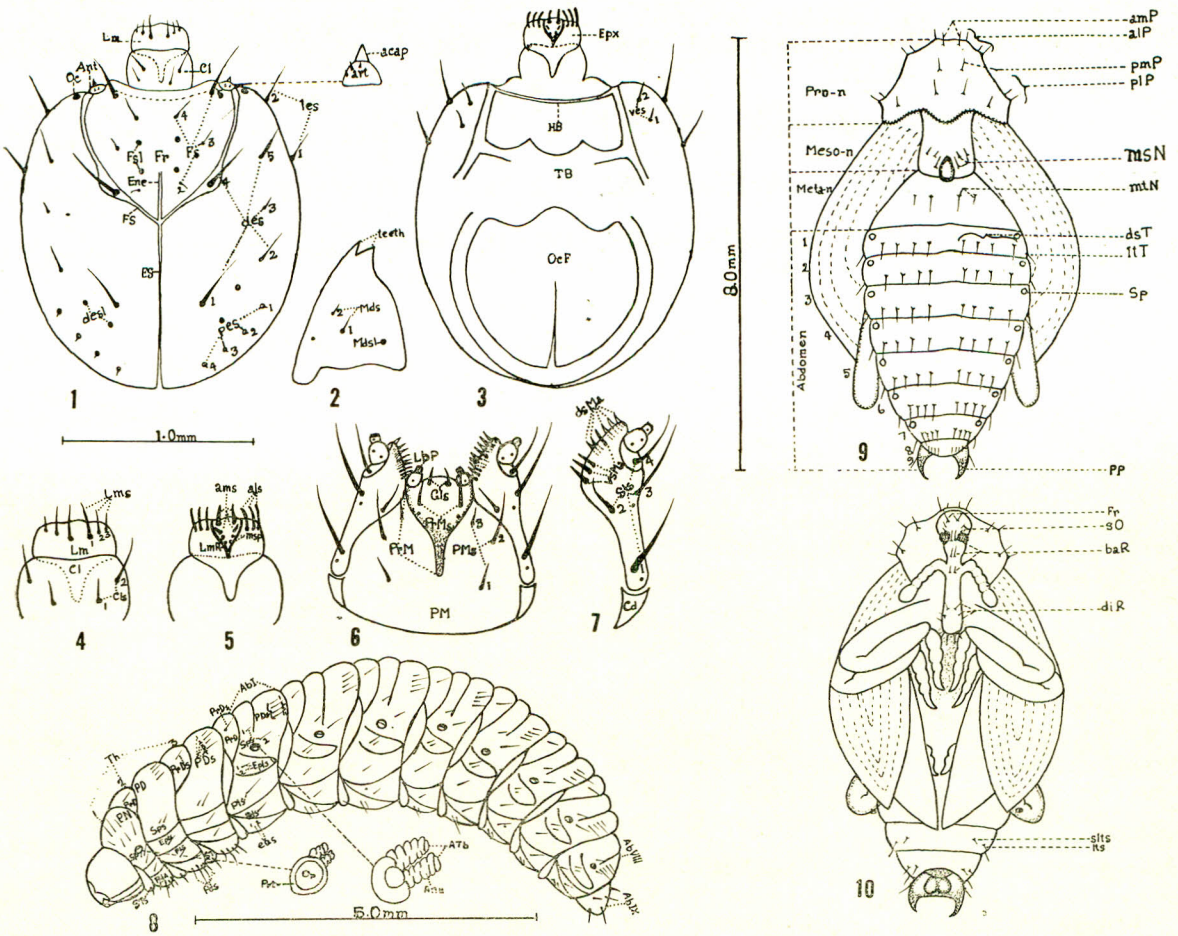

Fig. 1. Dorsal view of head capsule; Fig. 2. Dorsal view of left mandible; Fig. 3. Ventral view of head capsule; Fig. 4. Dorsal view of clypeus and labrum; Fig. 5. Epipharynx; Fig. 6. Ventral view of labium and maxilla; Fig. 7. Ventral view of left maxilla; Fig. 8. Lateral view of larva; Fig. 9. Dorsal view of pupa; Fig. 10. Ventral view of pupa.

Abdominal segment IX bearing a few short setae. Anus terminal.

Pupa (Figs. 9 and 10)

Body. Robust, white with the exception of eyes which are dark brown, and setae which are reddish brown; the tip of the posterior processes pale black; 7.5–8.0 mm in length.

Head. Eye cases prominent. Two pairs of supraorbital setae (sO) borne on rounded tubercles. One pair of frontal setae (Fr) gradually tapering from base to apex.

Rostrum. About ¼th as long as the body, and slightly broadened at the tip. Two pairs of setae present on the tip of the rostrum, the inner pair longer than the outer pair. Three pairs (occasionally two pairs) of distirostral setae (diR) borne on tubercles; anterior pair very short, inconspicuous. Three pairs of basirostral setae (bR) progressively shorter from base to apex; the first pair arising near the inner margin of the eye and borne on rounded tubercles. pairs of basirostral setae (baR) progressively shorter from base to apex; the first pair arising near the inner margin of the eye and borne on rounded tubercles.

Prothorax. Prothoracic depressions absent. Pronotal setae long, slightly curved to straight and borne on summits of subconical to conical tubercles. One pair of anteromedian setae (amP) borne on tubercles. Three pairs of anterolateral setae (alP), subequal in length, gradually tapering, slightly curved and borne on summits of conical tubercles. Posteromedian setae (pmP) each borne on a small conical tubercle. Four pairs of posterolateral setae (plP) borne on conical tubercles.

Mesonotum. Three pairs of mesonotal setae (msN) placed close to each other; posterior most setae longest and borne on summit of subconical tubercles, middle pair minute.

Metanotum. Two pairs of metanotal setae (mtN), subequal in length and borne on subconical tubercles.

Abdomen. Anterotergal setae absent. Four pairs of slightly curved discotergal setae (dsT); outermost setae longer than others and borne on subconical tubercles. One pair of laterotergal setae (ltT) curved posteriorly. One pair of laterosternal setae (lts) and sublaterosternal setae (slts) present. Spiracles (Sp) present on the first seven segments. Segment 9 bearing a pair of sharply pointed and curved posterior processes (pp), each bearing a seta.

Material Examined. Ten larvae and 7 pupae taken from ripe mangoes, Gouripur, Mymensingh, June, 1968, by M.L. Rahman. Determined by M. Ahmad from associated adults.

References

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