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Division of Plant Industry

LARVAE OF FRUIT FLIES. II. CERATITIS CAPITATA (MEDITERRANEAN FRUIT FLY) (DIPTERA: TEPHRITIDAE)[1]

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INTRODUCTION: This second in a series of circulars on fruit fly larvae (see Heppner, 1984) describes the Mediterranean fruit fly, Ceratitis capitata (Wiedemann). It is the most destructive of the fruit flies, particularly of citrus and a number of other commercial fruit crops. The species originated in the Mediterranean region of Europe and North Africa and is not known to be established in the United States. It has been detected in Florida and California, especially in recent years, and each infestation necessitated intensive and massive eradication and detection procedures so that the pest did not become established. The entomology circulars by Weems (1962, 1981) provide details of the distribution of the species and adult morphology, as well as listings of known hosts, involving over 260 different kinds of fruits.

LARVAL DIAGNOSIS: The primary diagnostic characters for Mediterranean fruit fly larvae involve the anterior spiracles, the buccal carinae, and the prominent subspiracular tubercles of the caudal end. The anterior spiracles have the tubule edge relatively straight dorsally and the tubule number usually is 9-10, although it can be from 7-11. The buccal carinae number 9-10. The caudal end has two prominent subspiracular tubercles, each with a crescent of irregularly fused papillules (approximately equivalent to I1-2). The anal lobe is either bifid or entire. The pharyngeal skeleton is distinctive in overall configuration, particularly the enlarged subhypostomium of the hypostomium (posterior to each mouth hook). There is a heavily sclerotized dorsal bridge point at the anterior of the dorsal wing plate. The shape of the interior sclerotizations of the dorsal wing plate and the hood of the pharyngeal plate are also distinctive for the species.

LARVAL DESCRIPTION: Larva white with typical fruit fly larval shape (cylindrical maggot-shape, elongate, anterior end narrowed and somewhat recurved ventrally, with anterior mouth hooks, and flattened caudal end); last instar usually 7-9 mm in length, with 8 ventral fusiform areas; anterior buccal carinae (Fig. 1) usually 9-10 in number; anterior spiracles (Fig. 2) usually nearly straight on dorsal edge of tubule row (often more straight than illustrated); usually with 9-10 tubules (may be 7-11).

Cephalo-pharyngeal skeleton (Fig. 3) with large convex mouth hook each side, approximately 2X hypostome length; hypostomium with prominent, rounded subhypostomium; post-hypostomial plates curved dorsally to dorsal bridge, fused with sclerotized rays of central area of dorsal wing plate; parastomium prominent; anterior of dorsal bridge with a prominent sclerotized point; dorsal wing plate nearly as long as pharyngeal plate; median area relatively unsclerotized; pharyngeal plate elongate, with prominent median hood and anterior sclerotized area.

Caudal end (Fig. 4) with bifurcate or paired dorsal papillules (D1 and D2) on small mount of relatively flat plate; intermediate papillules (I1-2) as a line of fused elevations on a very enlarged subspiracular tubercle, plus a remote I3 at approximately 45 degrees from I1-2; L1 on the median edge of the caudal end; V1 not prominent; posterior spiracles (Fig. 5) elongate (4.5-5X width), with dorsal and ventral spiracles angled away from relatively planar median spiracle; interspiracular processes (hairs) usually not branched; anal lobe (Fig. 6) bifid or entire.

DISCUSSION: The features of the larvae of C. capitata, as noted in the description, are variable to some degree as indicated. Most previous illustrations of the cephalo-pharyngeal skeleton of the species have not shown the pharyngeal plate hood, and details of the illustrations also vary among themselves and with Fig. 3 herein (see Greene, 1929; Phillips, 1946). The figure of the cephalo-pharyngeal skeleton in Greene (1929) appears not to be very accurate. The supposed supernumerary lateral papillules of the caudal end, noted by Phillips (1946), are not usually evident in specimens or at most represent only slight plate elevations on the very lateral edge dorsal to L1.

Larvae examined came from verified samples from Florida, Hawaii, and Portugal (all are in the larval collection of the Florida State Collection of Arthropods).

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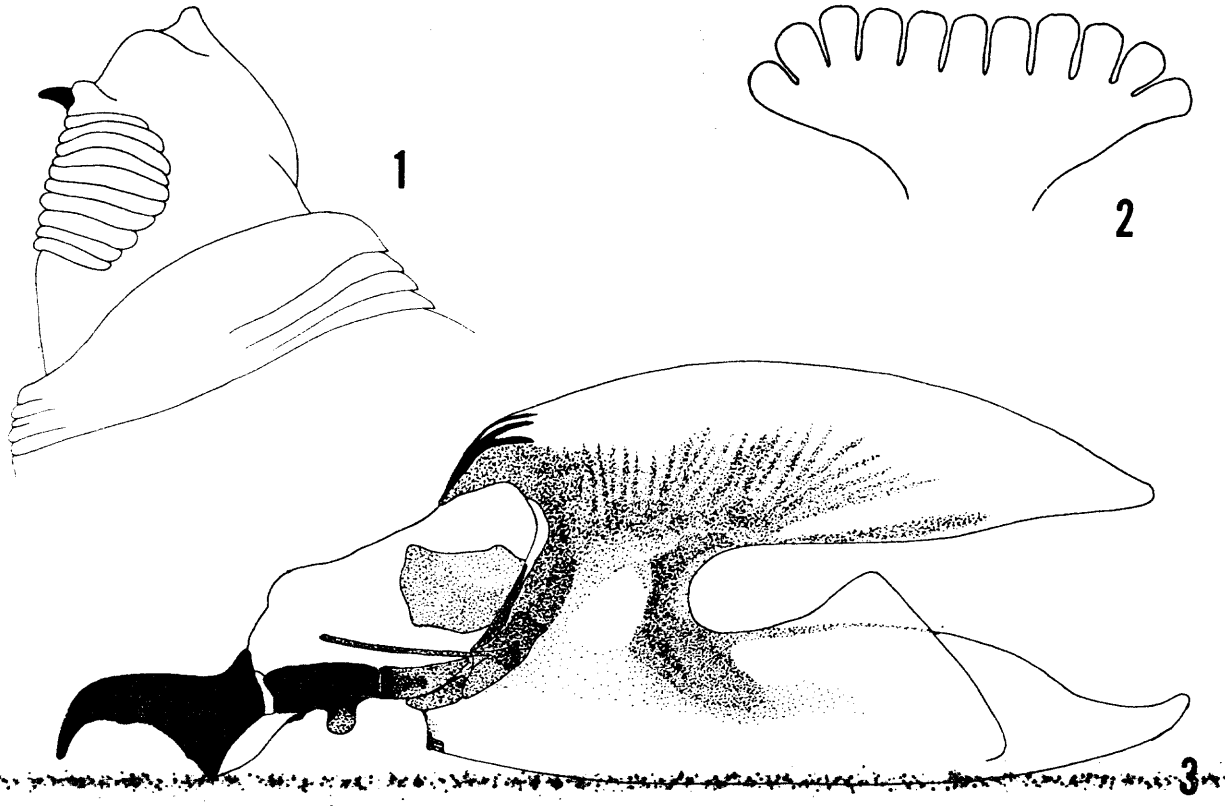

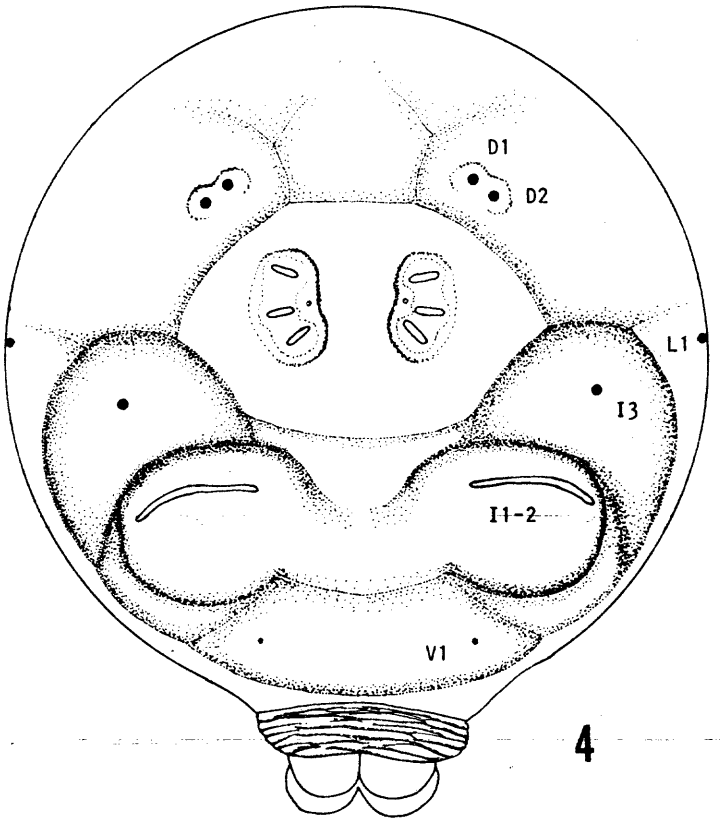

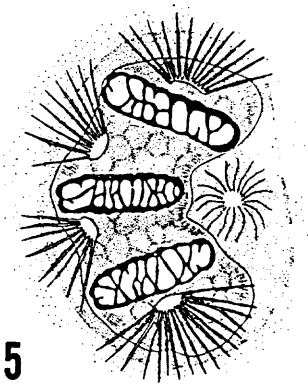

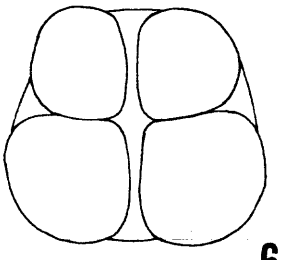

Fig. 1-6. Ceratitis capitata: 1, head and buccal carinae; 2, anterior spiracle; 3, cephalo-pharyngeal skeleton (left side); 4, caudal end of larva; 5, posterior spiracles (left side) (after Phillips, 1946); 6, anal lobes.