

Larvae of Fruit Flies. IV
Dacus dorsalis (Oriental Fruit Fly) (DIPTERA: TEPHRITIDAE)¹
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INTRODUCTION: The oriental fruit fly, Dacus dorsalis Hendel, originally described from Taiwan, is one of the most destructive fruit fly pests of east Asia and the Pacific, second only to the Mediterranean fruit fly, Ceratitis capitata (Wiedemann). It ranges from Pakistan and India to southern Japan (Ryukyus), Indonesia to Micronesia and the Marianna Islands, and has been introduced into Hawaii. Recent outbreaks have occurred in southern California. Weems (1964) and Hardy (1969) summarized adult morphology and distribution ranges. The oriental fruit fly is known to attack over 150 kinds of fruits, being particularly destructive to mangoes, avocados, and papaya, as well as citrus.

LARVAL DESCRIPTION: Larva white; typical fruit fly shape (cylindrical-maggot shape, elongate, anterior end narrowed and somewhat curved ventrally, with anterior mouth hooks, ventral fusiform areas and flattened caudal end); last instar larvae of average size for family, 7-11 mm in length; venter with fusiform areas on segments 4-11; anterior buccal carinae relatively short and slender, usually 9-10 in number (Fig. 1); anterior spiracles (Fig. 2) nearly straight on distal edge, with tubules averaging 9-11 in number, somewhat globose in appearance.

Cephalo-pharyngeal skeleton (Fig. 3) with large convex, sharply pointed mouth hook each side, each hook about 2X hypostome length; hypostomium with prominent, semi-rounded subhypostomium; post-hypostomial plates curved gradually to dorsal bridge, fused with sclerotized rays of central area of dorsal wing plate but with a semi-articulated area between; parastomium prominent; dorsal wing plate with posterior ray split; dorsal bridge anterior with a sclerotized point; pharyngeal plate about 25% longer than dorsal wing plate, with median area below dorsal bridge relatively unsclerotized, and a prominent hood.

Caudal end (Fig. 4) with paired dorsal papillules (D1 and D2) diagonally dorsad to each spiracular plate; intermediate papillules (I1-2) as widely-separated pair on a large raised and curved elevation diagonally ventrad of each spiracular plate, with a remote I3 at about 45° from the I1-2 elevation; L1 on the median edge of the caudal end; a pair of ventral papillules (V1-2) approximately ventrad of I2 near the latero-ventral edge of the caudal end (V2 indistinct); posterior spiracles (Fig. 5) as three elongated (ca. 3X width) oval openings on each kidney-shaped spiracular plate, with dorsal and ventral spiracles angled to the caudal end center, and the median spiracle relatively straight; interspiracular processes (hairs) numerous, at 4 sites on each plate, latero-distal to spiracles, and the tips usually bifurcate; anal lobes (Fig. 6) entire and prominent.

DISCUSSION: The larva of the oriental fruit fly is quite similar to that of the Mediterranean fruit fly (Berg, 1979; Hardy and Adachi, 1956; Pruitt, 1953). The following characters in particular distinguish larvae of the oriental fruit fly from the medfly (see Heppner, 1985): the anterior spiracles are aligned with a straighter distal margin than in the medfly and the tubules (9-11) are noticeably bulbous; the cephalo-pharyngeal skeleton has a distinct sclerotized area between the post-hypostomial plates and the dorsal bridge; the caudal end has papillules I1-2 as distinct points, widely separated, on a raised margin, and D1-2 are less approximate; and the posterior spiracles are not as elongated (only about 3X width compared to 4-5X width in the medfly).

Larvae examined in verified samples from Hawaii (in immatures collection of the Florida State Collection of Arthropods).

REFERENCES:

- Berg, G. H. 1979. Pictorial key to fruit fly larvae of the family Tephritidae. San Salvador: Org. Internac. Reg. Sanidad. Agropec. 36p.
- Hardy, D. E. 1949. Studies in Hawaiian fruit flies (Diptera, Tephritidae). Proc. Ent. Soc. Wash. 51:181-205.
- _____. 1969. Taxonomy and distribution of the oriental fruit fly and related species (Tephritidae, Diptera). Proc. Hawaiian Ent. Soc. 20:395-428.
- _____, and M. Adachi. 1956. Diptera: Tephritidae. Insects Micronesia (Honolulu), 14(1):1-28.
- Heppner, J. B. 1985. Larvae of fruit flies. II. Ceratitis capitata (Mediterranean fruit fly) (Diptera: Tephritidae). Fla. Dept. Agric. Consum. Serv., Ent. Circ. 273:1-2.
- Pruitt, J. H. 1953. Identification of fruit fly larvae frequently intercepted at ports of entry of the United States. Univ. Fla. (Gainesville), MS thesis. 69p, 17 pl.
- Weems, Jr., H.V. 1964. Oriental fruit fly (Dacus dorsalis Hendel) (Diptera: Tephritidae). Fla. Dept. Agric. Consum. Serv., Ent. Circ. 21:1-2.

1/Contribution No. 672. Bureau of Entomology.

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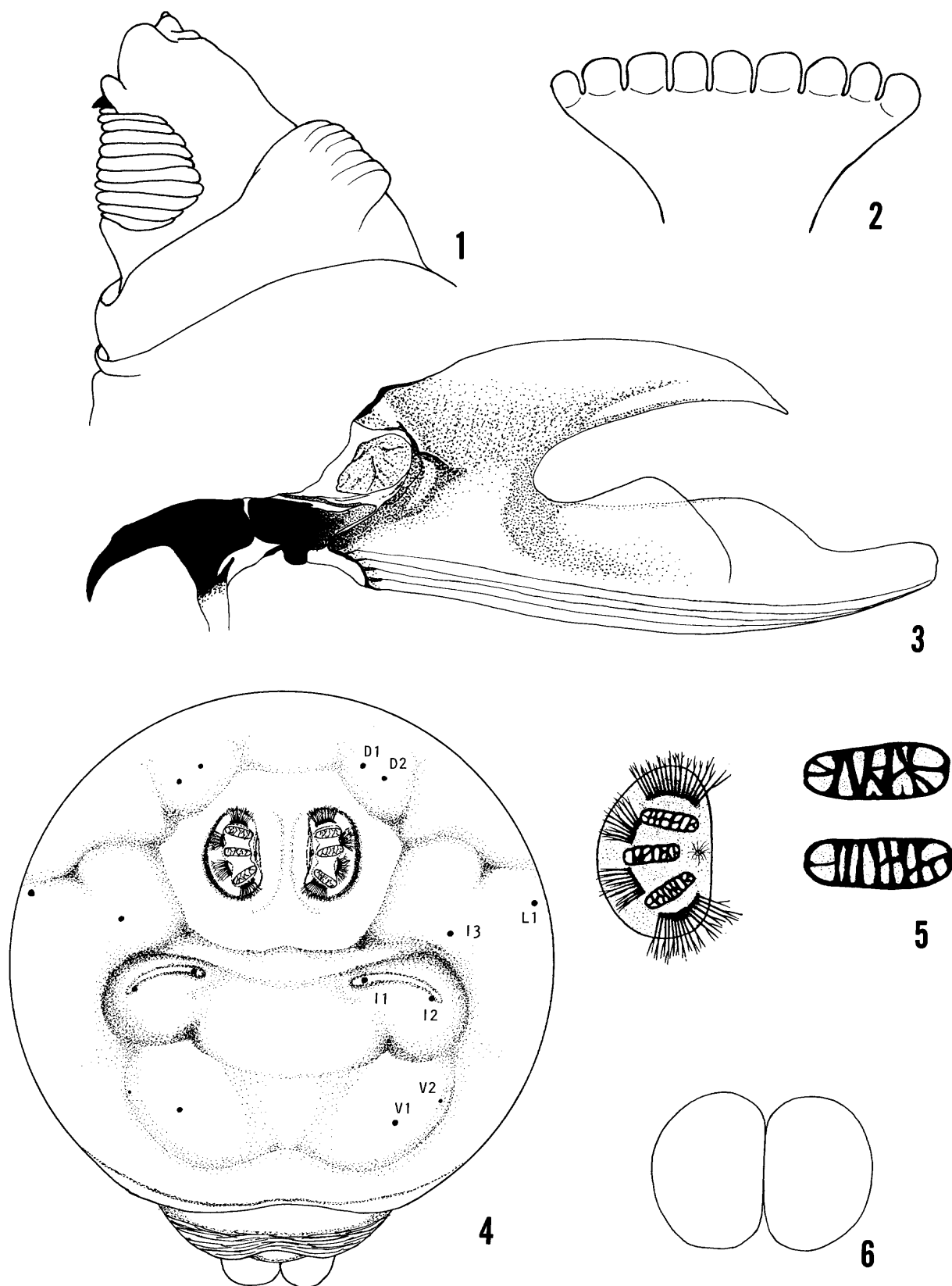


Fig. 1-6. *Dacus dorsalis*: 1, head and buccal carinae; 2, anterior spiracle; 3, cephalo-pharyngeal skeleton (left side); 4, caudal end of larva (last instar); 5, posterior spiracles (left side), with detail of spiracle slits (after Hardy, 1949); 6, anal lobes.