

A Description of the First Instar Larva of *Eupompha imperialis* and *E. edmundsi*

(Coleoptera: Meloidae) ¹

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The genus *Eupompha* (Lyttnini: Eupomphina) consists of eight distinctive species, all confined to southwestern North America. The first instar larva of three of these, *E. elegans* (LeConte), *E. histrionica* (Horn) and *E. schwarzi* (Wellman) were described by MacSwain (1956, as *Calospasta*). Because background information on larval anatomy is needed for a forthcoming paper on the courtship behavior of *Eupompha*, descriptions of two additional species, *E. imperialis* and *E. edmundsi* are presented at this time.

To facilitate species comparisons, descriptions conform, insofar as possible, to the terminology employed by MacSwain (1956).

EUPOMPHA IMPERIALIS (Wellman)

(Fig. 1)

Body very light brown; heavy, spiniform setae on both dorsum and venter, some of those on thoracic and abdominal tergites curved upward at apex. Head wider than long, narrowing slightly to base; six setae between clypeus and frons (first row behind labrum); gula as long as wide, setae inserted on anterior margin. Eves large, about 15% greater in diameter than mesothoracic spiracles. Antennae with segment I subrectangular, twice as wide as long; segment II 60% longer than wide, twice as long as I; segment III twice as long as wide, 30% shorter than II; sensory organ slightly wider than and subequal in length to III; terminal seta twice as long as III. Mandibles slender, gradually widened basally, entire to feebly crenulate; apical seta almost 4× as long as basal seta. Maxillae with about five weak setae at apex of mala; segment III of palpi 40% longer than wide, lateral margin 30% longer than medial margin, sensory area with about 20 papillae, two-segmented appendix not evident. Labium with setae of first prementum long, setae of second prementum minute; segment II of palpi longer than I, two-segmented appendix at apex of II very small. Thorax with line of dehiscence confined to pro- and mesonotum, and extreme apex of metanotum; 24 stout, elongate setae on pronotal disc. Abdomen with posterolateral margin of tergites abutting against pleurites; spiracles placed in membranous area between pleurites and anterolateral margin of tergites; first spiracle with diameter about 20% less than that of mesothoracic spiracle and twice the diameter of second spiracle, spiracles on segments II–VIII gradually decreasing in diameter; tergites with posterior marginal row of setae about $\frac{2}{3}$ tergite length; sternum poorly sclerotized,

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no evidence of sclerotization on segments I–VI, VII–IX each with a poorly defined medial sclerite. Legs slender, hind claw long, about $\frac{3}{4}$ as long as hind tibia; claws with their two setae separated at base by about $\frac{1}{10}$ claw length, longer seta not approaching apex of claw (as in Fig. 3). Body length 1.30 mm; caudal setae .58 mm.²

Material Studied. Larvae from a mass of 180 eggs laid and hatching on 17 and 25 April, respectively (at 26°C). Adults collected 16 April 1974; Imperial County, California, ca. 12 mi W Calexico, adjacent to International Boundary; feeding on flowers of *Coldenia palmeri* Gray (Boraginaceae).

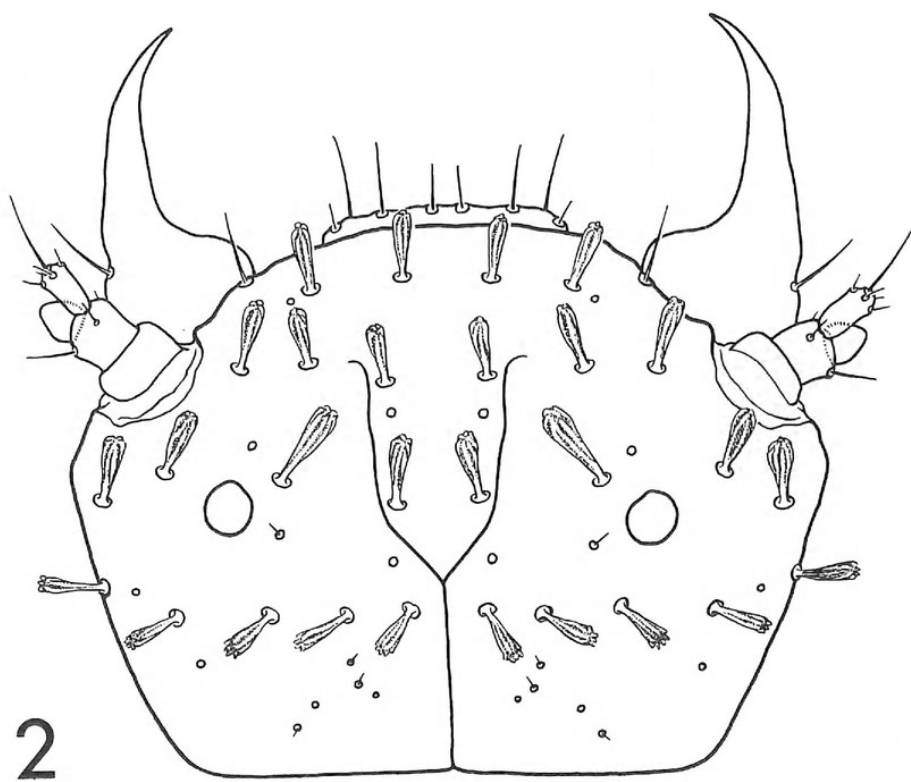
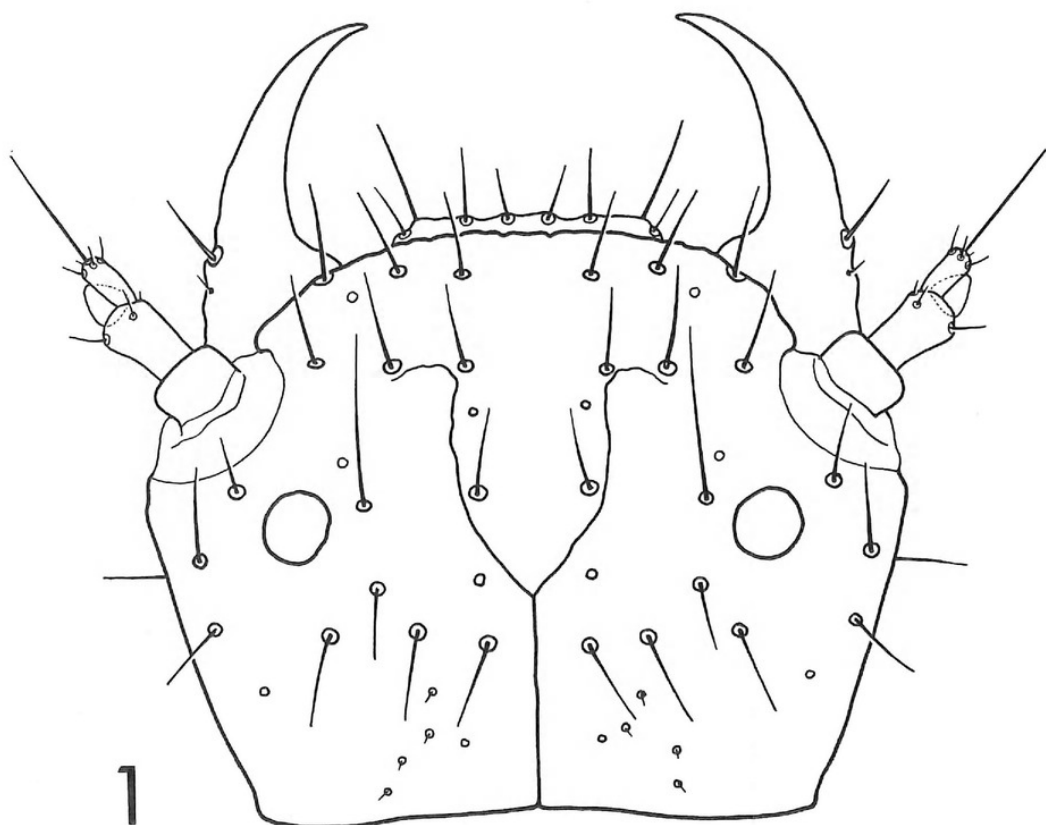
EUPOMPHA EDMUNDSI (Selander)

(Figs. 2, 3, 5–8)

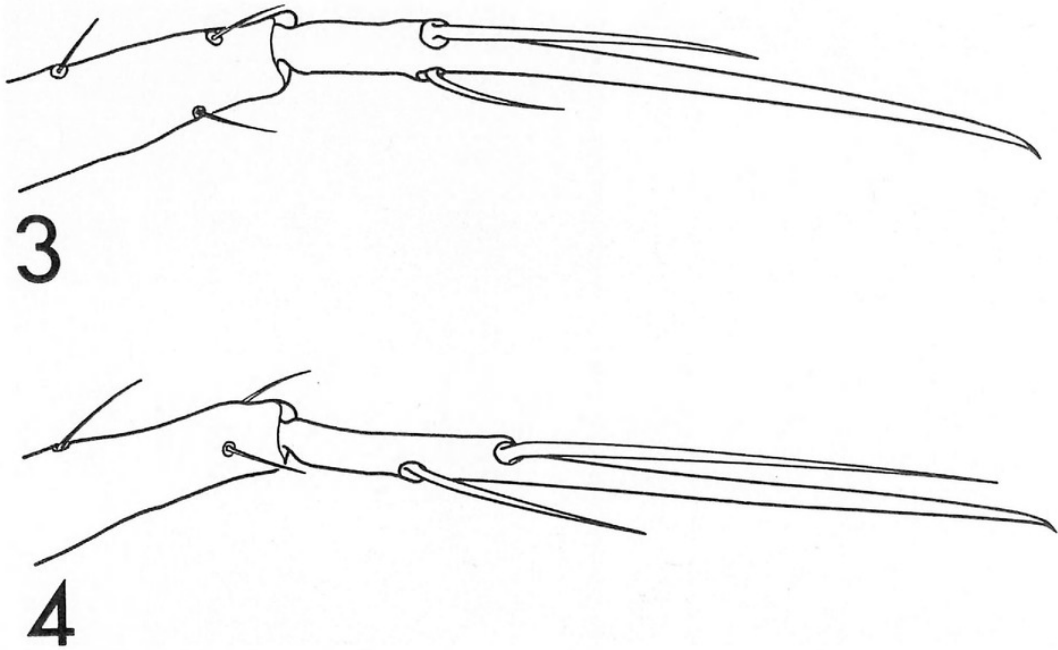
Body very light brown, venter with normal, elongate, spiniform setae throughout; dorsum with both very short, stout setae, and highly modified, elongate, clavate, costate setae which are elliptical in cross-section; costae on thoracic and abdominal setae with apical projections; modified setae somewhat shorter than unmodified homologues in other species. Modified setae distributed as follows. Head capsule: widespread except on labrum, also, lateral-most seta on first setal row behind labrum, seta posteromedial to eye, and those on occiput normal; thorax: on lateral margin of pronotum only; and on lateral and posterior margin of meso- and metanotum; abdomen: on posterior margin of tergites only. Unmodified dorsal setae much shorter than homologues in other species.

Head wider than long, narrowing to base; six setae between clypeus and frons (first row behind labrum); gula as long as wide, setae inserted on anterior margin. Eyes subequal in diameter to mesothoracic spiracles. Antennae with segment I subrectangular, twice as wide as long; segment II as wide as long, 30–40% longer than I; segment III twice as long as wide, subequal in length to II; sensory organ slightly wider and shorter than III; terminal seta short, subequal in length to III. Mandibles slender apically, abruptly widened at base, entire to feebly crenulate; apical seta twice as long as basal seta. Maxillae with about 5 weak setae at apex of mala; segment III of palpi 50% longer than wide, lateral margin almost twice as long as medial margin, sensory area with about 25 papillae, two-segmented appendix not evident. Labium with setae of first prementum long, setae of second prementum minute; segments I and II of palpi subequal in length, two-segmented appendix at apex of II very small. Thorax with line of dehiscence confined to pro- and mesonotum, and extreme apex of metanotum; 26 setae on pronotal disc. Abdomen with posterolateral margin of tergites abutting against pleurites; spiracles placed in membranous area between pleurites and anterolateral margin of tergites; first spiracle subequal in size to mesothoracic spiracle and twice the diameter of second spiracle, spiracles on segments II–VIII gradually decreasing in diameter; tergites with posterior marginal row of setae less than $\frac{1}{2}$ tergite length; sternum poorly sclerotized, no evidence of sclerotization on segments I–VI, VII–IX each with a poorly defined medial sclerite. Legs slender, hind claw long, about $\frac{7}{10}$ as long as hind tibia; claws with their two setae basally adjacent, longer seta not approaching apex of claw. Body length 1.22 mm; caudal setae .60 mm.²

² Means based on the measurement of five slide-mounted specimens.



FIGS. 1-2. Head (dorsal view) of first instar larvae of *Eupompha*. 1. *E. imperialis*. 2. *E. edmundsi*. Illustrations of *E. elegans* are given by MacSwain (1956).



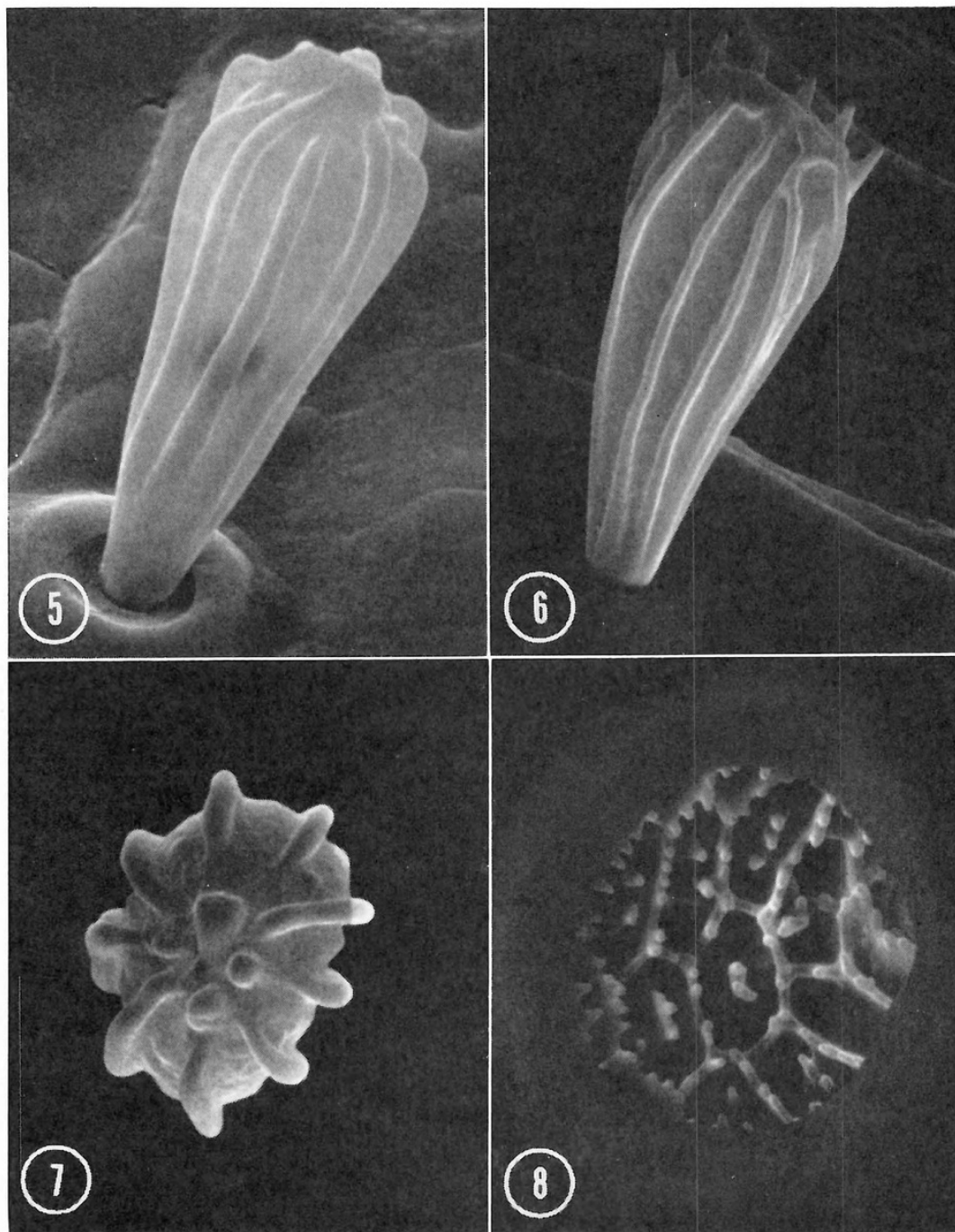
FIGS. 3-4. Hind claw of first instar larvae of *Eupompha* showing relative length and position of the two basal setae. 3. *E. edmundsi*. 4. *E. elegans*.

Material Studied. Larvae from masses of 142, 147, and 187 eggs, respectively. Respective oviposition and hatching dates as follows: 27 June-12 July; 28 June-13 July; 3-19 July (at 26°C). Adults collected 27 June 1972; Coconino County, Arizona, 2 mi W Page; feeding on inflorescences of *Helianthus anomalus* S. F. Blake and *Stephanomeria exigua* Nutt. (Compositae).

DISCUSSION

The traits of the two species described here agree with MacSwain's (1956) description of *Eupompha*. The clavate and costate setae on the dorsum of *E. edmundsi* are, so far as known, unique within the Meloidae. Their number, position and relative size correspond to their unmodified homologues in congeners (e.g., compare Figs. 1 and 2).

The larvae of the five species discovered so far fall into two groups with *E. histrionica* and *E. schwarzi* in one, and *E. elegans*, *E. imperialis* and *E. edmundsi* in the other. The latter three can be characterized as follows: six setae present between clypeus and frons, antennal segment II as long as wide or longer, line of dehiscence absent or incomplete on metanotum, and medial margin of maxillary palpal segment III distinctly shorter than lateral margin. In *E. histrionica* and *E. schwarzi* there are eight setae between the clypeus and frons, antennal segment II is wider than long, the line of dehiscence is complete on the metanotum, and the margins of segment III of the maxillary palpi are subequal.



FIGS. 5-8. Scanning electron micrographs of the first instar larvae of *E. edmundsi*. 5. Modified setae on dorsum of head capsule (5000 \times). 6. Modified seta on apical margin of abdominal tergite III (4000 \times). 7. Apical view of a modified seta on head capsule (6000 \times). 8. Spiracle on abdominal segment I (6000 \times).

The larvae of *E. elegans*, *E. imperialis* and *E. edmundsi* are similar, the highly modified setae of the latter notwithstanding. *E. imperialis* is phenetically intermediate. *E. elegans* is distinguished from both *E. edmundsi* and *E. imperialis* by its darker color and more strongly

sclerotized abdominal sterna, the presence of the line of dehiscence in the basal half of the metanotum, the longer apical seta of the claws (Fig. 4), the placement of the gular setae anterior to the gular margin, the smaller eyes (smaller than the mesothoracic spiracles) and the inconspicuous basal mandibular seta. *E. elegans* and *E. imperialis*, on the other hand, are separated from *E. edmundsi* by the unmodified dorsal setae, the longer second segment and terminal seta of the antennae, the longer second segment of the labial palpi, and the less abrupt basal widening of the mandibles.

The phenetic relationships of larvae and adults correlate fairly well. Adults of *E. schwarzi* and *E. histrionica* are more similar to one another than to any other *Eupompha*. *E. imperialis* and *E. elegans* adults also correspond most closely with one another. Adults of *E. edmundsi* are most similar to those of *E. viridis* (Horn), whose larva is unknown. Males of both species lack certain head, antennal and foreleg modifications which are found in all other species. These modifications are epigamic in function (Pinto, MS). Because of their generalized adults, compelling evidence for including *E. edmundsi* and *E. viridis* in *Eupompha* was lacking. The close correspondence of the larva of *E. edmundsi* to those of other *Eupompha*, and to *E. imperialis* in particular, considerably strengthens its position within the genus.

ACKNOWLEDGMENTS

Host plants of *E. edmundsi* were identified by Mr. Oscar F. Clarke (U. C. Riverside Herbarium). Figures 1-4 were prepared by Mr. Carl T. Conley.

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