THORACOCHAETA CUBITA (DIPTERA: SPHAEROCERIDAE), A NEW SPECIES OF SEAWEED FLY FROM CALIFORNIA[1]

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ABSTRACT: The puparium and adult of *Thoracochaeta cubita* n.sp. are described from specimens collected in Marin Co., California.

Marshall (1982) revised the North American species of *Thoracochaeta* Duda, then recognized as a subgenus of *Leptocera* Olivier. Using his key, specimens with 4 pairs of dorsal mid tibial bristles, a mid-ventral mid tibial bristle, and costal sector 2 longer than sector 3, will key out to *Thoracochaeta arnaudi* Richards. *T. arnaudi* occurs along the Pacific coast from Mexico to British Columbia. *Thoracochaeta cubita* n.sp. keys to *T. arnaudi* and was collected from coastal California, but it differs markedly from *T. arnaudi* in the shape of its surstylus (Figs. 1 and 3), paramere, and distiphallus. Additionally, these species differ in size (*arnaudi* is over 2.2 mm), male sternite 5 (*arnaudi* has fewer stout bristles), katespisternal setation (*arnaudi* has only one bristle), and wing venation (in *arnaudi* the second costal sector is twice as long as the third). Despite these differences, the basic structure of the surstylus, sternite 5, head, and midleg suggest that these two species are very closely related.

Thoracochaeta cubita n.sp.

Description (male): Body length 2.0 mm. Light brown, pruinoise.

Head: Interfrontal area 0.8x as high as wide, bordered by 3-4 equal interfrontal bristles (usually 3, one paratype has 4 on one side), 2 lower interfrontal setulae, and 2 setulae lateral to interfrontal bristles. Interfrontal height 1.6x interocellar distance. Antennae widely separated, interantennal distance equal to interfrontal width. Eye height 2.0x genal height. Vibrissa and anterior genal bristle stout, subequal, both 2.0x as long as subvibrissa, gena setulose along margin and with 4 small bristles behind anterior genal bristle.

Thorax: 4 pairs of dorsocentral bristles, anterior pair inclinate and preceded by small inclinate setae. Acrostichal setulae in 8 or 9 irregular rows, prescutellar acrostichal bristles as long as prescutellar dorsocentral bristle, prescutellar acrostichal setulae present between these bristles. Scutellum usually with 4 marginal bristles as in congeners, but one specimen with an additional minute basal pair. Katepisternum with long posterodorsal bristle reaching three-quarters of way to wing base, one or two small anterodorsal bristles less than one-third as long as

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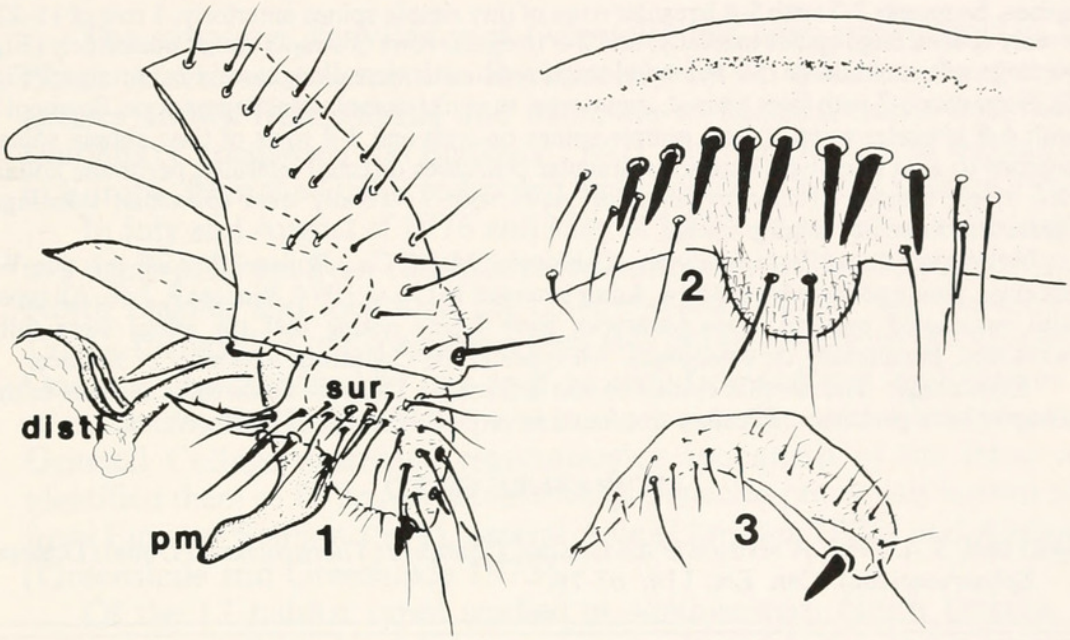
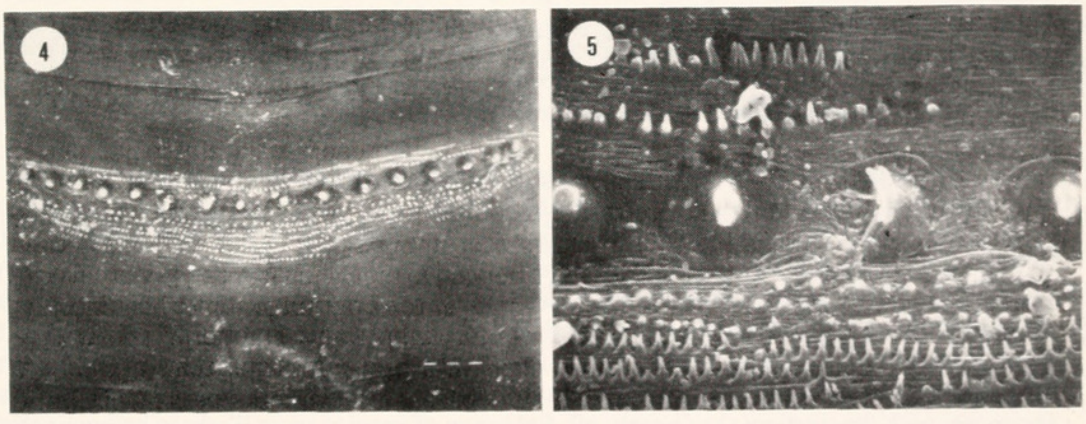
posterodorsal, strongly setulose ventrally and with a few weak anterior setulae. Mid tibia with 4 pairs of dorsal bristles, strong apical bristle and strong mid ventral bristle. Hind tibia with short, straight, stout apicoventral spur, otherwise with only short, uniform setulae. Wing with second costal sector 1.4x as long as third; crossvein r-m very short, separated from crossvein dm-cu by 3.0x length of dm-cu.

Abdomen: Fifth sternite with horizontal row of 7-8 stout bristles anterior to setulose, tab-like, posteromedial process with 2 thin bristles (Fig. 2). Epandrium uniformly short-setose. Cercus simple, setulose, with single long bristle. Hypandrium very broad, flat. Surstylus



Figs. 1-3. 1. Terminalia of male *T. cubita,* left lateral; 2. Detail of sternite 5 of male *T. cubita;* 3. Left surstylus of *T. arnaudi.* Abbreviations: disti-distiphallus; pm-paramere; sur-surstylus.



Figs. 4-5. Puparium of *T. cubia.* 4. Abdominal segment 6 ventral creeping welt. 5. Abdominal segment 3 large median spines. Left bar = 10 μm.

concave ventrolaterally, with setose lateral ridge, long, thin, pointed anterior lobe, and broad, blunt posteroventral lobe with short stout bristle; anterior lobe with long basal bristles and small dorsal setulae (Fig. 1) Paramere S-shaped, with abrupt bend in distal half, usually visible below surstylus (Fig. 1). Basiphallus short, frame-like. Distiphallus long and slender basally, distally expanded into ring-like sclerite supporting membranous mass (Fig. 1). Ejaculatory apodeme well developed.

Puparium: Length 3.8-4.0 mm.

Thorax: Anterior spiracle palmate, parallel to body, with 8-9 papillae. Mesothorax with only minute spinules (not visible using light microscope); metathorax bare ventrally.

Abdomen: Segment 1 with ventral creeping welt of 5-8 irregular rows of tiny, simple spines. Segments 2-7 with 5-8 irregular rows of tiny simple spines anteriorly, 1 row of 15-22, evenly spaced large spines medially, and 2-3 irregular rows of simple spines posteriorly (Fig. 4); large spines of middle row blunt and single pointed to more elongate and 2-3 pronged (Fig. 5). Segments 2-7 with faint, paired, transverse, scar-like dorsolateral depressions. Segment 8 with 4-6 irregular rows of tiny, simple spines on welt and 3-4 rows of tiny, simple spines anterior to anal opening. Posterior spiracular processes directed laterally; peritreme collar-like, deep, almost circular in posterior view, with 3 broadly oval spiracular openings. Spiracular hairs not readily visible.

Holotype: ♂ and 3 ♂ paratypes, California, Marin Co., Bolinas Pt. (1.6 mi. due W. Bolinas), pupae collected 9.vi.1974. Adult emerged 15/16.vi.1974, Vincent F. Lee. All types with associated puparia. Two paratypes have labels noting that the wings were fully developed, presumably on emergence. All types in the California Academy of Science.

Etymology: The specific epithet *cubita* is from the Latin for elbowed, and refers to the abruptly bent paramere, a feature not found in any other known *Thoracochaeta.*

LITERATURE CITED

Marshall, S.A. 1982. A revision of the nearctic *Leptocera* (*Thoracochaeta* Duda) (Diptera: Sphaeroceridae). Can. Ent. 114: 63-78.

BOOK REVIEW

A FIELD GUIDE TO THE MOTHS OF EASTERN NORTH AMERICA. Charles V. Covell, Jr. Houghton Mifflin Co., Boston, 1984. I-XV, 1-496 pp. 64 plates (32 color, 32 black and white - all photographs), 74 text line drawings. $13.95,

This is the newest volume in the Peterson Field Guide series, and, in all respects, lives up to the standard of excellence associated with that series. It is the first general, comprehensive work on our moths to appear since publication of *The Moth Book* by W.J. Holland in 1903. While not as complete in its coverage of our North American fauna, it brings forward by a quantum leap the quality of illustration, and knowledge of the biology, distribution, and taxonomy of the moths found from northern Canada to the Rio Grande in Texas east of the 100th meridian. All families known to occur within the area are represented, and more than 1300 species are treated: description of imago, larval food plants, distribution, flight season and more, with illustration(s) of nearly all. Selection of species most likely to be encountered has taken precedence over more local, rarer, less noticeable species in many cases, and families and other groupings of the larger and more popular moths among collectors have been

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