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First Record of the Family Xylomyidae (Insecta: Diptera) in the Hawaiian Islands[1]

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Xylomyids, or wood soldier flies, are worldwide in distribution and can be found almost everywhere except Oceanic islands and New Zealand. Immatures are associated with dead and dying wood and adults are most often collected near such habitats. The vast majority of the 138 known species of xylomyids (Woodley 2012) are those in the genus *Solva* Walker. Little revisionary work has been conducted on the genus with most species described being based on one or a few species from collections or based on collecting expeditions to various parts of the world. The record here of its introduction marks the first time the genus and the family have been reported from the Hawaiian Islands. It presence here does not pose any particular threat to the environment since the immatures are scavengers in rotting wood (Woodley 2012). All specimens examined are vouchered in the entomological collection of the Bishop Museum (BPBM).

Diptera: **Xylomyidae**

***Solva* sp.** **New State Record**

(Figs.1–2)

Four females of an undetermined species of *Solva* were recently collected and photographed at localities in central O'ahu and the North Shore of O'ahu. Species in the genus typically have swollen and armed hind femora and are roughly 4–6 mm in length. Determination to species is difficult as there are no keys to all species in the genus and the genus is known from 100 species worldwide (Woodley 2012). It is presumed (but there is no guarantee) that the species derives from the Oriental Region since that is the region of highest diversity for the genus (58 of 100) and many introductions of Diptera to Hawai'i derive from that region. Since the immatures breed in dead and dying wood, it is possible that the species here in Hawai'i was brought in as immatures with rotting timber or bamboo.

Photographs and a detailed description [format and terminology following Woodley (2004)] are presented here in hopes it will eventually assist in identifying this to species level.

Description

Female. *Lengths*: body: 5.2–6.5 mm; wing 5.5–6.2 mm. *Head*. Black, 1.5 times higher than long; slightly dichoptic, eye bare, notched medially just above antennae, ommatidia uniform in size; ocellar tubercle slightly prominent; vertex with short silvery tomentum; face convex; frons slightly concave, narrow, as wide as ocellar tubercle dorsally, gradually widening ventrally; postgena silvery gray tomentose, densely shaggy gray pilose; semi-appressed golden tomentum medially on frons, laterally with dull yellow erect hairs; other areas of head bare; antenna 2.5 times length of head, ratio of segments: 5:5:25 [35:10:12:12:12:12:15:12], scape and pedicel brownish yellow, first flagellomere

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Fig. **1**. *Solva* sp., female, anterolateral view showing detail of head and legs. Photo: © Lowell Tyler.

brownish black, yellowish mesally, flagellomeres 2–8 black, segments 2–5 yellowish brown mesally at base; hair of scape and pedicel blackish with some pale hairs ventrally, longest dorsolaterally; palpus yellowish white to yellow, second segment linear-ellipsoid, about 3.5 times as long as first; both palpal segments with pale hairs, second segment bare apically; proboscis yellowish brown to yellow.

Thorax. Scutum and pleura black; scutellum, postpronotal lobe, and notopleural stripe yellow; integument of scutum and pleura densely and finely punctate; prosternum, anepimeron, mediotergite, and laterotergite with sparse, inconspicuous, pale tomentum; scutum and scutellum with dense yellowish white, semi-appressed pilosity, sparse golden tomentum laterally above base of wing; pilosity of pleura most conspicuus on propleuron and upper part of katepisternum; meron bare except for small patch of dense short hairs on front part of anterior depression; anepimeron mostly bare; anepisternum with short, inconspicuous yellowish white pilosity; halter yellowish white.

Wing. Hyaline; costa ending just beyond vein R_5; R_{2+3} ending in wing margin beyond junction of R_4 and R_5; r-m crossvein at basal one-third of cell dm; fourth posterior cell closed before wing margin and without a stalk, base of cell with short stalk; vein closing cell dm at midpoint of fourth posterior cell; anal cell closed before wing margin with a stalk, length of which is slightly shorter than vein closing cell dm; wing margin indented at end of vein A_1 + CuA_2.

Legs. Vestiture of all legs short and dense, yellowish to white; fore and mid coxae creamy yellow with brown at extreme base; fore and mid femora and tibiae creamy yellow; fore and mid tarsi with basitarsi subequal in length to tibiae, yellowish, remainder of tarsomeres very short, brownish, claws black; hind coxa yellow on apical half, shining

Fig. **2**. *Solva* sp., female, dorsolateral view showing wing venation and thoracic vestiture. Photo: © Lowell Tyler.

black on basal half; hind femur swollen, finely punctate, with broad shining black stripe lateroventrally along entire length, with short black denticles ventrally, hind tibia curved, yellow basally, brownish black on apical one-third, tarsomeres as in fore and mid legs, claws black.

Abdomen. Tergite I extensively membranous, white; remainder of abdominal tergites black, lateral margins of tergites VII–VIII yellowish brown; tergites sparsely punctate, sternites brown; pilosity of tergites brownish, short, semi-appressed, a few longer, pale hairs along lateral margins, especially tergite I; tomentum sparse. Genitalia not dissected; cercus yellowish, segments about equal in length, first segment thicker than second.

Material Examined: **O'AHU**: 2♀, Dillingham Field, 5–30 ft [1.5–9 m], 14 May 2014, D.A. Yee & W.D. Perreira; 1♀, Kealia Trail, 200 ft [61 m], 21 June 2015, W.D. Perreira (all BPBM).

Material Photographed: 1♀, **O'AHU**: Wahiawa, 6 Oct 2015, L. Tyler (specimen not collected).

Remarks. Using the key in Yang & Nagatomi (1993) these specimens key to *S. yunnanensis* Yang & Nagatomi from southern China, but the hind leg patterning is different. The species doesn't key out at all using the keys in Brunetti (1923), Nagatomi & Tanaka (1971), Adisoemarto (1973) or Daniels (1976). It appears close in appearance to two specimens of an undetermined species from Kalimantan in Borneo in the BPBM. Woodley (2004) described a species from Borneo (from Sabah) and Enderlein (1921) described two species from Borneo, but the species at hand is clearly different from those species. The genus is poorly known in the Orient and many undescribed species await description (roughly 200 specimens from New Guinea and SE Asia sit undetermined in the BPBM collections alone). The species here in Hawai'i may in fact be new, but am reluctant to

describe a new species based on specimens introduced to Hawai‘i when its native provenance is unknown.

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