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Haromyia, a new genus of long-legged flies from Dominica (Diptera: Dolichopodidae)

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Abstract

The new micro-dolichopodid genus *Haromyia* **gen. nov.** and the type species *H. iviei* **sp. nov.** are described from the island of Dominica in the Lesser Antilles. Males and females of *Haromyia* are distinguished by the large setae on a bulging clypeus, minute size, and wing veins that are nearly straight and evenly diverging from wing base. *Haromyia* does not fit readily into any contemporary dolichopodid subfamily, although it superficially resembles the Enliniinae and Achalcinae. *Haromyia* should be regarded as *incertae sedis* until the dolichopodid subfamilies can be refined, particularly to better incorporate the tropical diversity of this large family.

Key words: Neotropical, micro-dolichopodid, *Enlinia, Harmstonia,* West Indies, Achalcinae, clypeal setae

Introduction

Robinson's monograph of the Dolichopodidae of Dominica (Robinson 1975), a product of the multi-year Bredin-Archbold-Smithsonian Biological Survey, documented 113 species in 30 genera from the island. Three new genera, *Cryptopygiella* Robinson, *Dominicomyia* Robinson, *Micromedetera* Robinson, and 69 new species were described in that work (Robinson 1975). Only one genus and species has been added to the dolichopodid fauna of Dominica in the subsequent 40 years: an undescribed species of *Chimerothalassius* Shamshev & Grootaert identified by Brooks & Cumming (2011).

Here, I describe a new genus and species of minute Dolichopodidae from Dominica based on six specimens collected in a Malaise trap in 2011. This fly belongs to the group informally referred to as 'micro-dolichopodids', a diverse and interesting component of the Nearctic and Neotropical dolichopodid fauna (Robinson 1969; Bickel 2009; Runyon & Robinson 2010). These species are 1.5 mm long or less and belong to several probably unrelated genera including: *Enlinia* Aldrich, *Harmstonia* Robinson, *Hurleyella* Runyon & Robinson, *Microchrysotus* Robinson, *Microcyrtura* Robinson, and *Micromedetera*. The diversity, distributions, and hypothesized relationships of the micro-Dolichopodidae were discussed in Runyon & Robinson (2010). Due to their small size, micro-dolichopodids are often overlooked and there is little doubt that many species await collection, something exemplified by the discovery of *Haromyia* on the well-collected, small island of Dominica.

Material and methods

Structural terminology follows McAlpine (1981), except for genitalia which follow Cumming *et al.* (1995) and Sinclair & Cumming (2006). The postabdomen on intact specimens is rotated approximately 180° and lateroflexed to the right, but in descriptions "dorsal" and "ventral" refer to the true morphological positions (e.g., "up" on genitalia of intact specimens is ventral). Legs are designated by roman numerals (e.g., Leg III = the hindleg). Genitalia were cleared using KOH and mounted in glycerin for examination and illustration; two whole specimens

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of *H. iviei*, one male and one female, were cleared and permanently slide mounted. Density of pruinescence is characterized as in Runyon & Hurley (2003) and Hurley & Runyon (2009).

Genus *Haromyia* Runyon, gen. nov.

Type species. *Haromyia iviei*, **sp. nov.** Male and female habitus (Figs 1, 2).

Diagnosis. *Haromyia* can be distinguished from other Dolichopodidae by the combination of small body size (1.0–1.5 mm), bulging clypeus with six large setae (Figs 1, 3), and wing veins that evenly diverge from base to tip (Fig. 4). *Haromyia* keys to *Achalcus* Loew and *Australachalcus* Pollet or *Enlinia* and *Harmstonia* in Nearctic and Neotropical keys (Robinson 1964; Robinson & Vockeroth 1981; Bickel 2009). On Dominica, *Haromyia* could be confused with *Enlinia* or *Harmstonia* to which it keys in Robinson (1975). The presence of six large setae on a bulging clypeus separates *Haromyia* from all of these. The only other New World dolichopodids I know of with clypeal setae are female *Harmstonia*, which lack acrostichal setae and have a dorsal arista; the coastal species *Nanomyina barbata* (Aldrich), which has a dorsal arista, yellow setae, and wing veins R_{2+3}, R_{4+5} and M_1 nearly parallel; some *Discopygiella* Robinson which have fore tibia with a row of setae on distal half, R_{4+5} and M_1 nearly parallel, and hypopygium enlarged, disc-like and laterally flattened; and some Nearctic *Gymnopternus* Loew which have setae on the dorsal surface of antennal scape.

Etymology. *Haromyia* is named to honor the botanist and entomologist, Harold E. Robinson, in recognition of his many contributions to the study of Dolichopodidae, especially describing the Dominica fauna and for his unequaled work on the micro-dolichopodids.

Haromyia iviei Runyon sp. nov.

Description. **Male**. Small yellow and brown species, body length: 1.3 mm, wing length: 1.2 mm. Habitus (Fig. 1). **Head***:* dark brown with sparse gray-silver pruinescence. Face dark brown, wide, broadest at antenna and narrowing slightly to clypeus; clypeus parallel-sided, somewhat bulbous, usually more yellow in color, bearing 6 large black setae in 2 rows (largest setae subequal in size to dorsocentral setae) (Figs 1, 3). Dorsal postcranium strongly concave. Eyes with short hairs between facets (ommatrichia). Vertical setae large, not on elevation or tubercle; paravertical setae half size of vertical setae; ocellar setae divergent, subequal in size to vertical setae; postocellar setae half size of paravertical setae. Postocular setae sparse, in single row, dorsal-most 4–5 black, thicker, remaining ventral about 10 setae more slender, hair-like, brown. Ventral postcranial hairs (beard) and gena absent. Palpus small, ovate, not ornamented, dark brown with some gray-silver pruinescence, with small hairs and large black seta near apex. Proboscis brown to yellow with silver-gray pruinescence, not ornamented, somewhat sclerotized, shiny, with short brown hairs near apex; each labellar lobe with 6 geminately sclerotized pseudotracheae. Antenna (Fig. 3) with all segments short, scape yellow, without dorsal setae; pedicel yellow, rather round, slightly projecting on inner side, with apical ring of setulae; first flagellomere brown, globular, kidney-shaped in lateral view and nearly round in anterior view, arista apical, very long (length twice height of head), with short but evident setulae. **Thorax***:* yellow, scutum with only slightly flattened posterior slope. Setae of thorax black; 5 dorsocentral setae; approximately 10 small acrostichal setae in 2 rows; 2 notopleural setae; 1 humeral seta and usually 1 or more very small hairs; 1 presutural, 1 sutural, and 1 postsutural intra-alar setae; 1 presutural and 1 postsutural supra-alar setae; 1 large postalar seta; scutellum with 1 large marginal seta and one very small lateral hair per side; lower proepisternum with 1 large seta, upper proepisternum with 1 small seta (< half size of larger seta), no additional hairs. Pleura yellow with black small area (katatergite) in front of halter. **Legs***:* yellow, becoming slightly brownish distally, not ornamented (Figs 1, 2). Coxae concolorous with pleura. Coxa I with rather sparse black anterior hairs, longer setae at apex and longer anterodorsal seta near 2/3. Coxa II with black anterodorsal seta near 1/2 and black setae along apex. Coxa III with black lateral seta near 1/2. Femora II and III with anterior preapical setae (Fig. 1). Tibia I without noticeable setae. Tibia II with anterodorsal seta near 1/3, smaller posterodorsal seta near 1/3, and normal ring of setae at apex. Tibia III with anterodorsal seta near 1/3, 3–4 posterodorsal setae scattered along length of tibia, and 2–3 setae at or near apex. First tarsomere of leg III short, less than half length of second tarsomere, ventrally with ring of setulae near apex and 1–2 short but noticeable

setae. Approximate ratios of tibia:tarsomeres for leg I: 6–3–2–2–1–1; for leg II: 7–4–2–2–1–1; for leg III: 9–2–5–3–2–1. **Wing** (Fig. 4): hyaline, evenly rounded, with veins R_1, R_{2+3}, R_{4+5}, M_1, and CuA_1 nearly straight and evenly diverging for most of their lengths; vein R_{2+3} slightly bent anteriorly near apex; vein M without evident *bosse alaire*, slight flexion and wing indentation typically on vein M distal to crossvein dm-cu, present in many dolichopodids; crossvein dm-cu about half as long as last part of CuA_1. Vein A_1 absent. Calypter small, yellow-brown with a few very short brown setae. **Abdomen***:* brown with intersegmental membranes yellow, with black setae, 6 setose tergites visible, with apex rather abruptly narrowed and capped by hypopygium. Hypopygium (Fig. 5) somewhat bulbous, not pedunculate; epandrium longer than wide, asymmetrical in ventral view, apically with ventral and dorsal lobes bearing setae; hypopygial foramen left lateral, placed rather far posteriorly; hypandrium (Fig. 5B) partially fused to base of epandrium, nearly symmetrical, slightly offset to left to accommodate phallus; surstylus small, attached to apex of epandrium, with 2 slender lobes bearing setae; with thin, bilobed inner appendage (Fig. 5C), symmetrical, placed immediately below cerci and associated with subepandrial sclerite (latter could be hypoproct or postgonites); phallus simple, noticeably sinuous on apical third. **Female**. Habitus (Fig. 2). Body length 1.2–1.4 mm, wing length 1.3 mm. Setae on clypeus, antenna, thorax, legs, and wings as in male. Abdomen pale yellow except terga 1 and 5 and sternite 5 which are brown (Fig. 2). Acanthophorites of terminalia with approximately 6 strong spines.

FIGURE 1. *Haromyia iviei* **gen. nov.** *et* **sp nov.** male habitus of holotype. Note large setae on face and divergent wing venation.

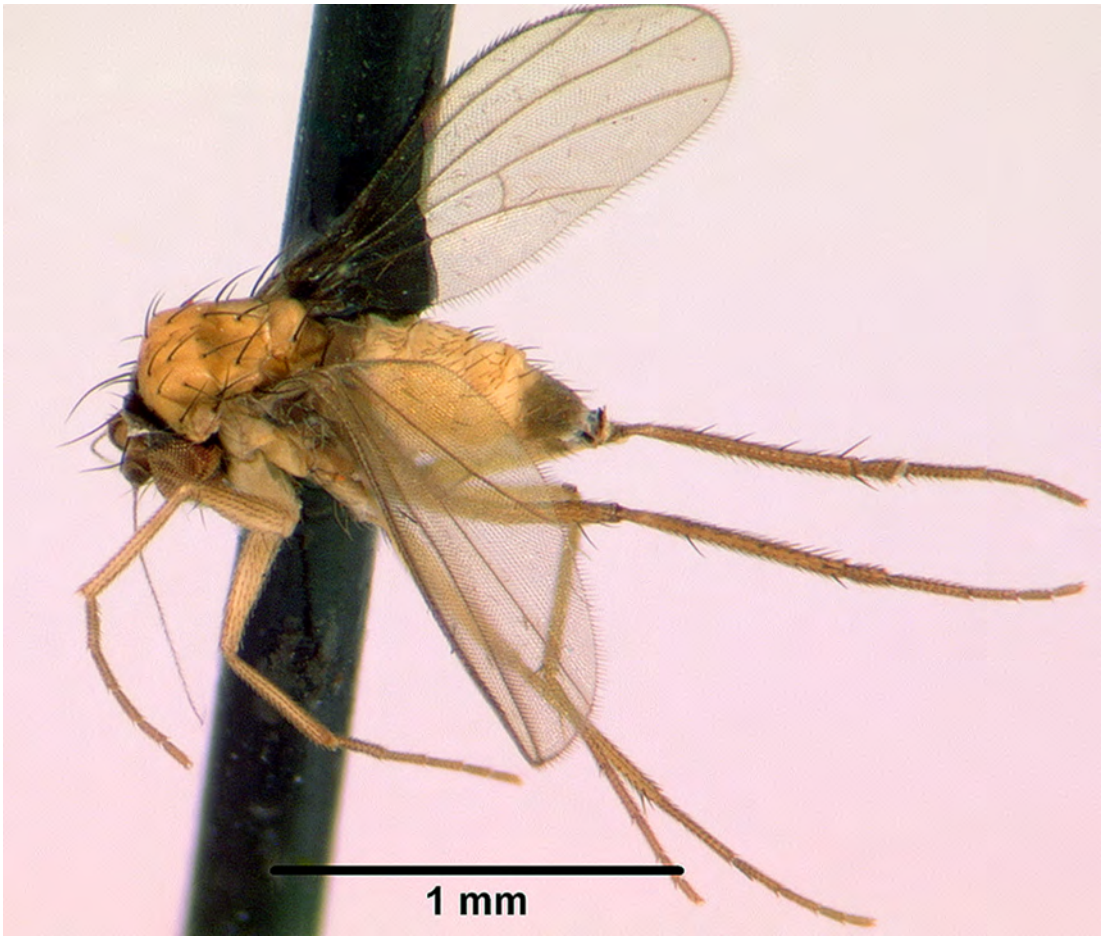

FIGURE 2. *Haromyia iviei* **gen. nov.** *et* **sp nov.**, female habitus.

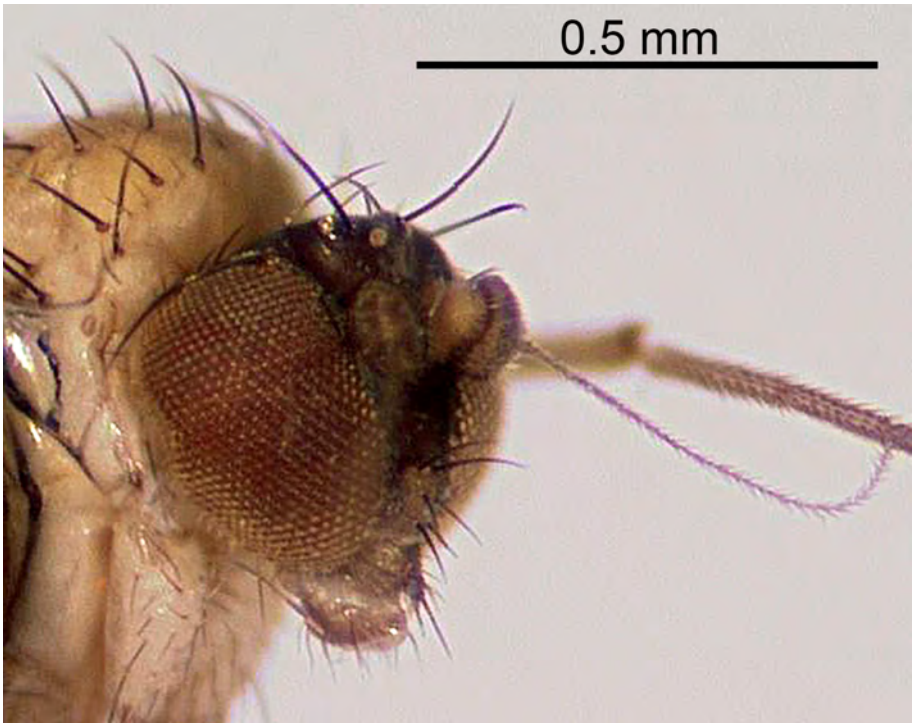

FIGURE 3. *Haromyia iviei* **gen. nov.** *et* **sp nov.**, anterolateral view of male head showing setae on bulging clypeus and anterior and lateral view of antennae. Female face and antenna is identical to the male.

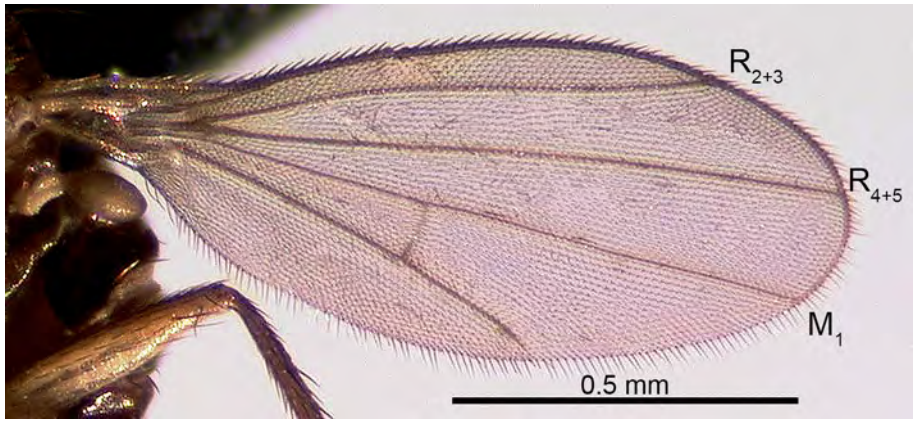

FIGURE 4. *Haromyia iviei* **gen. nov.** *et* **sp nov.**, wing of male holotype. Female wing is identical to the male.

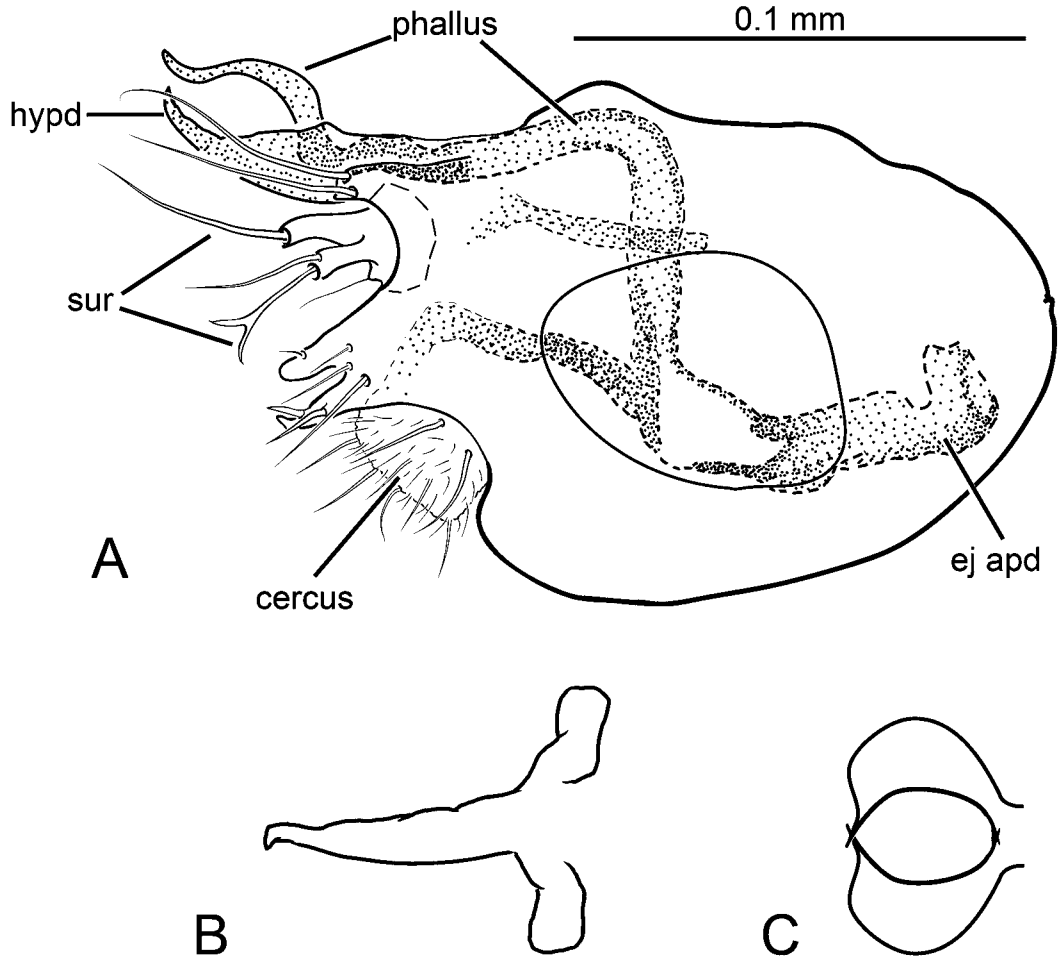

FIGURE 5. *Haromyia iviei* **gen. nov.** *et* **sp nov.**, male. **A**, hypopygium, left lateral view; **B**, hypandrium, ventral view; **C**, inner appendage immediately below cerci (probably the hypoproct or postgonites), ventral view, not illustrated in **A**. Abbreviations: ej apd—ejaculatory apodeme, hypd—hypandrium, sur—surstylus.

Etymology. This species is named for the distinguished coleopterist Dr. Michael Ivie (Montana State University) who provided the only known specimens of this interesting species.

Type material. **HOLOTYPE** ♂, DOMINICA: St. David Parish, ca. 1 km NE Ponte Casse, Waitukubuli National Trail, 15.381490º N, 61.340138º W, 31MAY-05JUNE 2011, malaise over dead tree. Deposited: National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM). **PARATYPES**: 2 ♂, 3 ♀, same

data as holotype (1 ♀, USNM; 2 ♂, 2 ♀, Montana Entomology Collection, Montana State University, Bozeman). One male and one female specimen were permanently slide mounted.

Remarks. All known specimens were collected in a Malaise trap placed on a downed tree and lumber pile at approximately 540 m in elevation (1800 ft).

Discussion

The phylogenetic relationship of *Haromyia* with other dolichopodids is at present unclear. In Robinson's (1970) classification of Nearctic and Neotropical subfamilies, *Haromyia* keys to the Enliniinae based on wing venation and small size. Such divergent wing venation (Fig. 4) is unusual in the Dolichopodidae and shared only with the Enliniinae (*Enlinia*, *Harmstonia*) and some Achalcinae (*Achalcus*, *Australachalcus*, some *Xanthina* Aldrich). *Haromyia* differs from both of these subfamilies in having well sclerotized pseudotracheae (Enliniinae and Achalcinae have unsclerotized or weakly sclerotized pseudotracheae), a characteristic that is seemingly of phylogenetic importance in some Dolichopodidae (Grootaert & Meuffels 1997). The hypopygium of *Haromyia* also differs significantly from Achalcinae, whose genera possess complex but quite similar genitalia, in lacking a dorsal process of the epandrium, a ventral process of the epandrium, and obvious postgonites (Grootaert & Meuffels 1997; Pollet & Cumming 1998; Pollet 2005). The hypopygium of *Haromyia* more closely resembles some *Enlinia* and *Harmstonia*, but the extreme amount of hypopygial variation in these genera (Robinson 1969, 1975) makes comparison difficult. Interestingly, *Enlinia* and *Harmstonia* are themselves quite different genera, and in many respects, differ from each other as much as from *Haromyia.*

The large clypeal setae are the most distinctive features of *Haromyia* (Figs 1, 3). Clypeal setae occasionally appear in various dolichopodid subfamilies including Enliniinae (females of *Harmstonia*) (Robinson 1964), Peloropeodinae (*Nanomyina*, some *Acropsilus* Mik, and some *Discopygiella*) (Robinson 1964; Robinson 1965; Bickel 1998), Dolichopodinae (*Setihercostomus* Zhang & Yang and some Nearctic *Gymnopternus*) (Robinson 1964; Zhang & Yang 2005), and rarely in some female Sympycninae (*Sympycnus* Loew and *Syntormon* Loew) (Bickel 1998). This character is thus almost certainly homoplasious and of little phylogenetic value for higher-level relationships. The number and size of the clypeal setae in *Haromyia iviei* appear to be unmatched by any other dolichopodid species.

The present conclusion is that *Haromyia* does not fit into any established dolichopodid subfamily, but most resembles the Enliniinae in small body size and wing venation. Contemporary dolichopodid subfamilies were developed based in large part on the Palearctic and Nearctic faunas (Robinson 1970; Ulrich 1981), and it is perhaps not surprising that these classifications are incomplete given that most of the dolichopodid diversity occurs in the tropics, and much of it is yet to be discovered. A more complete census of tropical dolichopodids, especially the smaller species, is needed to revise and better define subfamilies and to find *Haromyia*'s place among the Dolichopodidae.

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