



***Apiformyia*, a new genus of Australian bee flies (Diptera: Bombyliidae, Bombyliinae) with affinities to the New World *Heterostylum* Macquart**

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Abstract

Apiformyia **gen. nov.** (Diptera: Bombyliidae) is described based on a large series of specimens from the Northern Territory of Australia. The specimens represent a single new species *A. australis* **sp. nov.** The genus belongs to the Bombyliinae, and has remarkable anatomical affinities to the New World genus *Heterostylum* Macquart. In particular, the head of *Apiformyia* has a sinuous posterior eye margin, but lacks a line bisecting the facets as found in most Anthracinae that also share such an eye margin. A sinuous posterior eye margin is uncommon in the subfamily Bombyliinae, being only found in *Heterostylum* and four other genera found in the New World, Afrotropical and Palaeartic regions. Additionally, *Apiformyia* shares with *Heterostylum* alone an unusual wing venation, with cell R_5 closed, and the apex of cell dm-cu meeting the fork of M_1 and M_2 , there being no stem of M_{1+2} . The male genitalia of *Apiformyia* are generalized bombyliine in form, and do not share the particular unique features of *Heterostylum* such as the large recurved epiphallus and the gonostylus with apical beak-like process. The female genitalia of *Apiformyia* lack the sand chamber, acanthophorite spines and presents spermathecae with elongated bulbs, spermathecal ducts more than twice as long as sperm pump and sclerotized collars well developed, also differentiating the genus from *Heterostylum*.

Keywords: *Apiformyia*, new genus, Bombyliidae, Bombyliinae, Australia

Introduction

Faunal connections between the Nearctic and Australia are surprising, and lack a straightforward biogeographic explanation. Some striking examples include the scorpionfly family Meropeidae, and among the asiloid Diptera, the Apsilocephalidae and Apioceridae. The bombyliid *Apiformyia* **gen. nov.** described in this paper joins this intriguing group, with very close morphological similarities to the Nearctic and Neotropical genus *Heterostylum* Macquart, belonging to the subfamily Bombyliinae. *Heterostylum* has 14 described species in western North America, the Caribbean, Mexico, and South America east of the Andes (Cunha *et al.* 2007).

The appropriate division of the Bombyliinae into tribes remains incomplete (Yeates 1994), and beyond the scope of this study. *Apiformyia* has a bare laterotergite (metapleuron), so belongs to the Dischistini according to Bowden's (1985) reevaluation of characters used to distinguish the Bombyliini and "Dischistini". The "Dischistini" so circumscribed is paraphyletic (Yeates 1994, Greathead 1995). The most striking similarity between *Heterostylum* and *Apiformyia* is the sinuous posterior eye margin. Both genera lack a line bisecting the eye facets associated with the sinuous posterior eye margin as found in most Anthracinae. Such an eye margin is uncommon in the subfamily Bombyliinae, being only found in *Heterostylum* and four other genera (*Eurycarenum* Loew, 15 spp., Afrotropical and Oriental; *Triploechnus* Edwards, 8 spp., Nearctic and Neotropical; *Efflatounia* Bezzi, 2 spp., Palaeartic; *Karakumia* Paramonov, 1 sp., Palaeartic). The development of this