

Placement of *Cacoceria* and phylogenetic relationships of the xylotine genera of the tribe Milesiini (Diptera, Syrphidae: Eristalinae) based on molecular characters

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Abstract

The phylogenetic relationships of traditional xylotine genera of tribe Milesiini (Diptera, Syrphidae: Eristalinae) were explored using molecular character of a large fragment of the mitochondrial COI and the D2-3 region of the nuclear ribosomal 28S rRNA gene. Of particular interest was the phylogenetic placement of the enigmatic Neotropical genus *Cacoceria*. The ingroup included 48 taxa, and *Cheilosia illustrata* (Rhingiini, Eristalinae) was used as outgroup. Multiple specimens of more common taxa were sequenced for surveying levels of intraspecific variation. The combined dataset was analysed using parsimony and optimisation alignment, using the program POY. *Cacoceria* was resolved within the *Chalcosyrphus* clade. Earlier hypotheses placed the taxon in the tribe Myoleptini or Chrysogasterini, or in Xylotini without stating a closer relationship to any particular xylotine taxon. The representatives of traditional xylotine taxa were resolved as ((*Hadromyia* + (*Brachypalpoidea* + *Blera* + *Lejota*)) + (*Xylota* sg. *Hovaxylota* + *Xylota* sg. *Sterphoides*)) + (*Xylota* (including *Sterphus*)) while *Neplas* and *Brachypalpus* were resolved in the Myoleptini albeit with very low support.

Key words: Milesiini, *Cacoceria*, *Xylota*, *Chalcosyrphus*, molecular phylogeny

Introduction

The Syrphidae (Diptera: Lower Cyclorrhapha), commonly called flower- or hover flies, comprise about 6000 described species (Thompson 2005) and is one of the largest of dipteran families (Thompson & Rotheray 1998). The Syrphidae is classified into three subfamilies, Syrphinae, Microdontinae and Eristalinae. In contrast to the fairly uniform flower-feeding habits of adult syrphids, larvae are found in a very diverse array of habitats. Those of subfamily Eristalinae are saprophagous in dead wood, coprophagous,