

## Phylogeny of the Sciaroidea (Diptera): the implication of additional taxa and character data

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### Abstract

A cladistic analysis of the extant Sciaroidea was made, using re-evaluated morphological characters, with some additional taxa and with or without the Mesozoic Mesosciophilidae in the ingroup. When the new data were incorporated, the conflict between our earlier phylogenies, with extant taxa only and with both extant and fossil taxa in the ingroup, was resolved. The present result is similar to the one we reached earlier with extant + fossil taxa, which showed the Cecidomyiidae as the sister group of all other Sciaroidea, instead of the Cecidomyiidae appearing as the sister group of the Mycetophilidae + Sciaridae. In the new hypothesis, the main clades of the Sciaroidea outside the Cecidomyiidae were as follows: Ditomyiidae + (Diadocidiidae + ((Keroplastidae + (((Bolitophilidae + (((Mesosciophila + (((Starkomyia + rest of Sciaroidea)))))). The placement of the recently described, enigmatic New Zealand genus *Starkomyia* Jaschhof was similar regardless of whether the fossil Mesosciophilidae were included in the analysis or not. The two still-undescribed Neotropical taxa that we included fell in the Rangomaraminae clade within the Sciaridae. Unlike our earlier result with extant taxa only, and similar to our extant + fossil result, the *Ohakunea* + *Colonomyia* clade now appears as the sister group of the Mycetophilidae-Lygistorrhinidae-Sciaridae lineage.

**Key words:** Diptera, Sciaroidea, phylogeny

### Introduction

Great interest has recently been shown in the study of the interrelationships of taxa in the Sciaroidea. New family-group taxa have been proposed (Jaschhof & Didham 2002, Hippa & Vilkamaa 2005), the systematics of a number of enigmatic groups has been discussed (Matile 1990, Chandler 2002, Jaschhof & Hippa 2003, Hippa & Jaschhof 2004), and new groups have been introduced (Blagoderov & Grimaldi 2004; Jaschhof 2004a, b, c;