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On Afrotropical *Mohelia* Matile (Diptera, Mycetophilidae): new species and phylogenetic comments

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Abstract

Mohelia was originally described by Matile for *M. nigricauda*, from the Comoros. Three new Afrotropical species of *Mohelia* are described. The male and female terminalia of *M. matilei* **sp.n.**, *M. amorimi* **sp.n.**, and *M. chandleri* **sp.n.** are illustrated. An additional species, not formally described, is commented on. An identification key is also provided, as well as a distribution map for the genus. The differences between *Mohelia* and *Aphrastomyia* Lane & Coher are also discussed.

Key words: taxonomy, systematics, descriptions, illustrations, key, biodiversity

Introduction

Mohelia Matile is a monotypic genus of the subfamily Leiinae (Mycetophilidae). The type species, *Mohelia nigricauda*, was described by Matile (1979) based on specimens from Mohéli, Djoumadounia, Comoros.

The genus *Mohelia* was considered to be related to the Neotropical *Aphrastomyia* Coher & Lane, as well as being similar to *Megophthalmidia* Dziedzicki (Matile, 1979). Jaschhof & Kallweit (2004), following Matile's ideas, remarked on the apparent relationship between *Mohelia* and *Aphrastomyia*, as sister taxa, and of both with *Megophthalmidia*. In a recent Leiinae phylogeny these genera compose a monophyletic group and *Megophthalmidia* is the sister group of (*Mohelia* + *Aphrastomyia*) (Oliveira, 2013), corroborating previous ideas. Kerr (2014), in a study on Nearctic *Megophthalmidia*, calls into question the morphological distinction between the three genera, or at least between *Mohelia* and *Megophthalmidia*. Hence, further species exploration, and eventual new species description, is required to further the understanding of synapomorphies present in this group and the resulting relationships.

In a study of *Mohelia* from South Africa, Malawi, and Mauritius Island, four species were recognized, of which three are described here. It is the first record of the genus from continental Africa.

Material and methods

Preparation of specimens, photographs, and illustrations follow Oliveira & Amorim (2012). The holotype of *Mohelia nigricauda* Matile, housed at the MNHN, was photographed with a Sony Optical Steady Shot DSC-W730. The holotype of *Mohelia chandleri* **sp.n.**, housed at the NHM, was photographed with a Canon EOS 550D - EOS Utility software attached to stereo microscope Leica M125 and photos were combined using Helicon Focus 5.3. Terminology for morphology and wing venation mainly follows Søli (1997), Amorim & Rindal (2007), and Oliveira & Amorim (2012). For species with more than one specimen available, measurements in the descriptions correspond to average values.

The distribution map, including all known species of *Mohelia*, was prepared following Kurina & Oliveira (2013).

Specific collection deposition information is provided in the species accounts, in square brackets after the transcribed specimen label data. The following acronyms were used for depositories:

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likely be related to *Megophthalmidia*. Hippa *et al*. (2005), in a phylogenetic study of Manotinae, recovered *Mohelia* (an indet. specimen from South Africa) as sister group to *Aphrastomyia*. Jaschhof & Kallweit (2009), however, proposed that *Aphrastomyia* and *Mohelia* should be removed from the Leiinae but retained *Megophthalmidia* in that subfamily. Kerr (2014), in a study limited to Nearctic *Megophthalmidia*, calls into question the morphological distinction between the three genera, or at least between *Mohelia* and *Megophthalmidia*, and highlights that further material could alter our understanding on the relationships between *Aphrastomyia*, *Mohelia*, and *Megophthalmidia*.

Oliveira (2013) performed a phylogenetic analysis of Leiinae and her result indicates that *Aphrastomyia* and *Mohelia* are sister groups and both related to *Megophthalmidia*. The synapormorphies of the clade (*Megophthalmidia* (*Aphrastomyia* + *Mohelia*)) are: clypeus bare; labrum elongate and longer than the clypeus; mouthparts forming an elongated proboscis; R_1 curved toward the wing margin; and the terminal region of the abdomen (including the male terminalia) is dorsally flexed. The monophyly of *Megophthalmidia* is supported by the presence of antennal flagellomeres wider than long, and the monophyly of *Aphrastomyia* by the presence of laterally compressed antennal flagellomeres, features not present in *Mohelia*.

The current morphological study of *Mohelia* also revealed some differences between this genus and *Aphrastomyia*, especially regarding the elaborate outline of tergite 9 and associated structures, as well as the gonostylus with dorsal and ventral projections, which appear intriguing and are not present in *Aphrastomyia* (see Jaschhof & Kallweit (2004) for illustrations of male Neotropical *Aphrastomyia*). Furthermore, a detailed analysis of the wing venation reveals some important differences between the genera. *Mohelia* (Figs. 8–10) has M_1 straight, parallel to M_2, and bare only on its basal 1/6 (just after the bifurcation of M_{1+2}); M_{1+2} straight, bare; basal radial cell triangular; M_4 and CuA setose on both sides of the wing. Conversely *Aphrastomyia* (Fig. 17) has M_1 sinusoidal, not parallel to M_2, and both M_1 and M_2 are bare at the point of bifurcation between M_1 and M_2 (on their basal 1/2); M_{1+2} concave relative to the front of the wing, bare; basal radial cell quadrilateral, with Rs forming the shortest side; M_4 and CuA setose only close to the wing margin, on both sides of the wing. I consider these morphological differences distinct enough to keep *Mohelia* and *Aphrastomyia* as separate genera, as originally proposed. Further taxonomic revisions and morphological studies of Neotropical *Aphrastomyia* and *Megophthalmidia*, will help clarify our understanding of the relationships between *Aphrastomyia*, *Mohelia*, and *Megophthalmidia*.

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