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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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MZUSP	Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil
NMSA	KwaZulu-Natal Museum South Africa, Pietermaritzburg, South Africa
SAMC	Iziko South Africa Museum, Cape Town, South Africa
NHM	Natural History Museum, London, United Kingdom
MNHN	Muséum National d'Histoire Naturelle, Paris, France

Mohelia Matile

Mohelia Matile, 1979: 270. Type-species, *M. nigricauda* Matile (orig. desig.).

Diagnosis. Matile's description of the genus *Mohelia* (1979) is detailed and well illustrated. The type species, *M. nigricauda*, and four additional species (three herein described) were analysed and their morphological features compared with the original description. Some minor points are worth comment in order to improve the genus diagnosis. The labrum is elongated, almost twice the length of the clypeus, and triangular in shape. The labella is also elongated, almost equal to the height of the head.

Identification key to world species of *Mohelia*

1. Abdominal tergites completely brown (Figs. 2, 4) 2
- Abdominal tergites brown and yellow (Figs. 1, 3) 3

2(1). Hind femur yellow (Fig. 2). Inner projection of the gonocoxite absent; gonostyle weakly sclerotized; ventral projection elongated, thin, with a line of setae (Fig. 11) . . . . . *Mohelia matilei* **sp.n.**

- Hind femur brown apically (Fig. 4). Gonocoxite with inner digitiform projection well sclerotized, with a long, medially-directed, bristle; gonostyle well sclerotized, ventral projection with a medially-directed, bifid and well sclerotized projection (Fig. 13) . . . . . *Mohelia chandleri* **sp.n.**

3(1). Tergites 1–2 yellowish, T3 with posterior brown maculae, T4 with large posterior brown maculae, sternites 1–4 brown on their posterior portion; tergite 9 with long bristles posteriorly; dorsal projection of the gonostylus elongated (e.g. Matile, 1979: figs. 35, 36) . . . . . *Mohelia nigricauda* Matile

- Tergites 1–3 yellow with triangular brown maculae anteriorly, T4 brown anteriorly and yellow posteriorly, T5-6 brown, and T7 yellowish (Fig. 3), sternites 1–3 yellow, S4 yellow with a brown maculae posteriorly; tergite 9 with long and well sclerotized bristles on lateral margins; dorsal projection of the gonostylus well sclerotized, square at apex, bare (Fig. 12) . . . . . *Mohelia amorimi* **sp.n.**

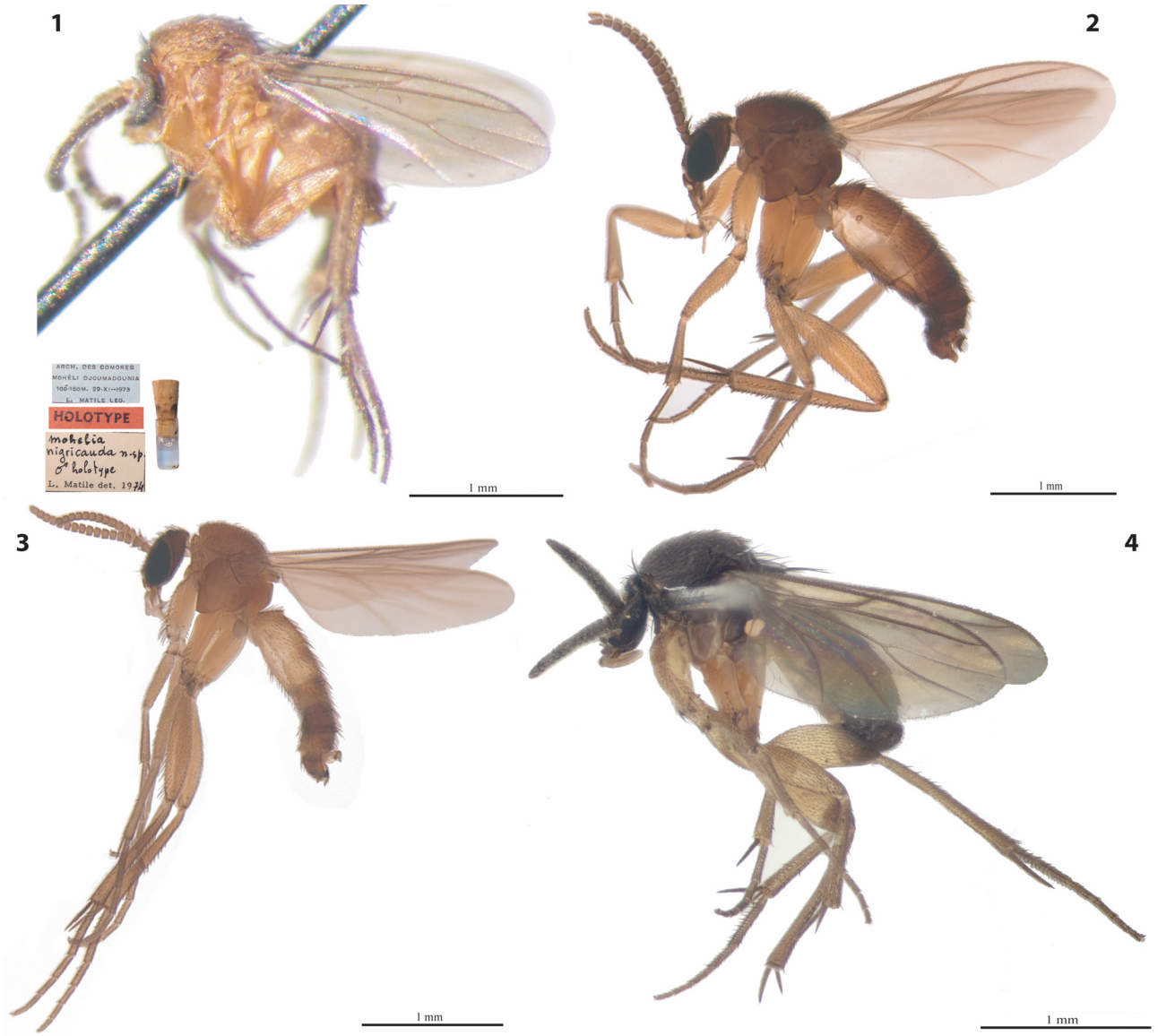
Mohelia nigricauda Matile
(Figure 1)

Material examined. Holotype, one male and one female paratypes (Matile, 1979), (pinned, MNHN).

Comments. Matile's description of *M. nigricauda* (1979) is detailed and well illustrated and is therefore not reproduced here. However, a photo of the holotype habitus and labels is provided to highlight its preservation condition (Fig. 1).

Mohelia matilei sp.n.
(Figures 2, 5–8, 11, 14, 16)

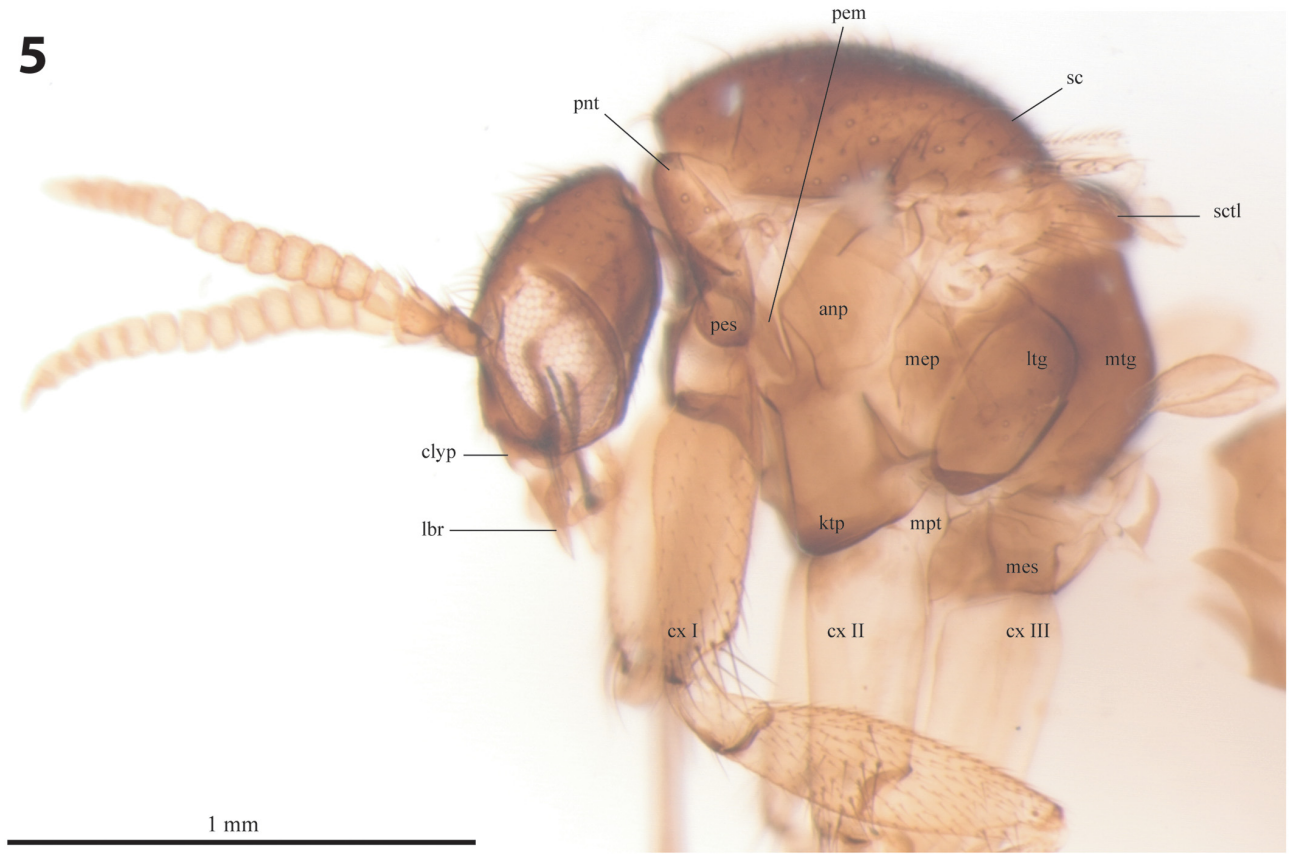
Differential diagnosis. Body brown with yellow legs. Dorsal projection of gonostylus rounded, with long seta directed medially; ventral projection elongated, thin, with a line of setae. The brown body and yellow legs differentiate this species from the other *Mohelia* species. However, the general morphology of the male terminalia resembles both *M. nigricauda* (see Matile's illustrations, 1979: 271, Figs 35–36), especially in the weakly sclerotized gonostylus, with some sparse setae, and *M. amorimi* **sp.n.** because of the long and well sclerotized bristles on the margins of tergite 9.



FIGURES 1–4. *Mohelia* habitus, lateral view. **1.** *M. nigricauda*, ♂ holotype. **2.** *M. matilei* **sp.n.**, ♂ paratype. **3.** *M. amorimi* **sp.n.**, ♂ paratype. **4.** *M. chandleri* **sp.n.**, ♂ holotype.

Material examined. Holotype, adult male. SOUTH AFRICA, KwaZulu Natal, Louwsburg, Sanyati Farm, 27°34'S 31°17,9'E, 1090 m, 1–24.iii.2006, Malaise trap, M. Mostovski coll. NMSA-DIP 57724 (in alcohol, NMSA). Paratypes: same data as holotype (2♂ one on slide, other in alcohol, MZUSP; 6♂, 1♀ in alcohol, NMSA); same data as holotype except NMSA-DIP 57723 (2♂ in alcohol, MZUSP; 5♂ in alcohol, NMSA); same data as holotype except NMSA-DIP 57725 (7♂ 2♀ in alcohol, NMSA). Northern Cape, Avontuur Farm, 16 Km NW Nieuwoudtville, 764 m, 31°16.249'S 19°02.900'E, 15.vii–27.viii.2009, Malaise trap, Bokkeveld Sandstone Fynbos, S. van Noort leg., GL07-FYN1-M126 (2♂ in alcohol, MZUSP; 2♂, 1♀ in alcohol, SAMC). Western Cape, Fynbos Estate Dragonridge, 33°34.092'S 18°47.680'E, 635 m, 30.vii–28.ix.2010, Malaise trap, Boland Granite Fynbos, Simon van Noort leg., DRA09-FYN1-M04 (1♂ 2♀ on slides, MZUSP; 1♂, 3♀ in alcohol, SAMC).

Additional material examined (not included in paratypes due to poor quality of material)**.** SOUTH AFRICA, KwaZulu Natal, Louwsburg, Sanyati Farm, 27°34'S 31°17,9'E, 1090 m, 1–24.iii.2006, Malaise trap, M. Mostovski coll. NMSA-DIP 57724 (1♀ in alcohol, NMSA); same data except NMSA-DIP 57723 (3♂ in alcohol, NMSA). Northern Cape, Avontuur Farm, 16 Km NW Nieuwoudtville, 764 m, 31°16.249'S 19°02.900'E, 15.vii–27.viii.2009, Malaise trap, Bokkeveld Sandstone Fynbos, S. van Noort leg., GL07-FYN1-M126 (3♂, 1♀ in alcohol, SAMC). Western Cape, Fynbos Estate Dragonridge, 33°34.092'S 18°47.680'E, 635 m, 30.vii–28.ix.2010, Malaise trap, Boland Granite Fynbos, Simon van Noort leg., DRA09-FYN1-M04 (6♀ in alcohol, SAMC).



FIGURES 5–8. *Mohelia matilei* **sp.n.**, paratypes. **3.** ♀ thorax, lateral view. **4.** ♂ head, frontal view. **5.** ♂ tibia III. **6.** ♂ wing. Abbreviations: anp, anepisternum; clyp, clypeus; cxI, fore coxa; cxII, mid coxa; cxIII, hind coxa; ktp, katepisternum; lbr, labrum; ltg; laterotergite; mes, metepisternum; mep, mesepimeron; mpt, mesopleurotrochantin; mtg, mediotergite; pem, proepimeron; pes, proepisternum; pnt, antepronotum; sc, scutum; sctl, scutellum.

Description. **Male** (Fig. 2)**.** Total length 3.8 mm (n=6).

Head (Figs. 2, 5–6). Head brown, triangular. Vertex with scattered setae. Three ocelli forming a straight line, median ocellus smaller, lateral ocelli more than twice their diameter from the eye margin. Frons covered with setulae. Face bare, narrowly rectangular, larger than clypeus; clypeus bare, almost triangular, not protruding below the ventral margin of the head; labrum triangular, elongated, almost twice length of clypeus. Labellum yellowish, elongate, almost the same as head height. Maxillary palp with four segments, fourth segment yellowish, almost twice the length of third, first and second segments shorter and rounded, strongly fused. Scape shorter than pedicel, rounded; scape and pedicel with dense setae on their apicodorsal margin; antennal flagellomeres petiolate, longer than broad, covered with setulae. **Thorax** (Fig. 5). Thorax brown, legs yellow. Pronotum light-brown, two strong setae dorsally. Scutum covered with short scattered setae and bearing supra-alar bristles. Scutellum with four bristles. Proepisternum light brown, setose at margins; proepimeron light brown, bare. Propleuron yellowish,

FIGURES 9–10. *Mohelia* wings. **9.** *M. amorimi* **sp.n.**, ♀ paratype. **10.** *M. chandleri* **sp.n.**, ♂ paratype.

meso- and metapleuron brown, entirely bare, except laterotergite bearing some setae on its posterior half. Haltere whitish, setose. Foreleg smaller than mid- and hind legs. Tibia notably enlarged at apex. Tibial setae arranged in regular longitudinal rows on mid- and hind tibia, hind tibia with a posterior line of spines (Fig. 7), spurs 1:2:2, almost twice length of tibial diameter at apex. Hind tibia apex bearing many regularly arranged setae. **Wing** (Fig. 8). Length: 2.2 mm, width: 1 mm. Membrane without macrotrichia, hyaline; sc-r absent; C extending well beyond apex of R_5, almost reaching wing tip; Sc short, free, inclined toward R. R_1 as long as r-m, reaching C at medial third of wing; Rs perpendicular to R_5; R_5 reaching C well before wing tip, almost straight; r-m transverse, about five times length of base of Rs. M_{1+2} almost three times longer than r-m, as long as the medial fork; M_1 and M_2 parallel; cubital fork as long as basal segment of CuA; A_1 inconspicuous. M_1, M_2, M_4, and apical third of second sector of CuA with macrotrichia apically, on both side of the wing. **Abdomen** (Fig. 2). Abdomen brown. **Terminalia** (Fig. 11). Terminalia brown. Tergite 9 broader than long, setose, with long and well sclerotized bristles at its lateral margins, connected laterally with the gonocoxite by a lateral projection, bare; gonocoxite with extensions

posterodorsal to the base of the gonostylus, rounded distally, setose; gonostylus with two main projections, dorsal projection rounded, with long seta in median region, ventral projection elongated, thin, with a line of setae; ejaculatory apodeme rounded at apex and bifid at base; parameres well developed, enclosing the aedeagus; cercus rounded, covered with setulae.

Female. As males, except as follows. **Head.** Antennal flagellomeres smaller, shorter than the males. **Wing.** Length: 2.6 mm, width: 1 mm. **Abdomen.** Tergite and sternite 7 yellowish. **Terminalia** (Fig. 14)**.** Terminalia yellowish, covered with scattered setae. Posterior margin of sternite 8 rounded, with three apical bristles, anterior margin depressed; S8 almost as long as the cercus; first cercus elongated, longer than the oval second cercus.

Biology. Unknown.

Distribution (Fig. 16)**.** South Africa (KwaZulu Natal, Northern Cape, Western Cape).

Etymology. The species name is a masculine genitive, named in honour of Loïc Matile (1938-2000, MNHN) to mark his marvellous work with Mycetophiliformia, including the description of *Mohelia*.

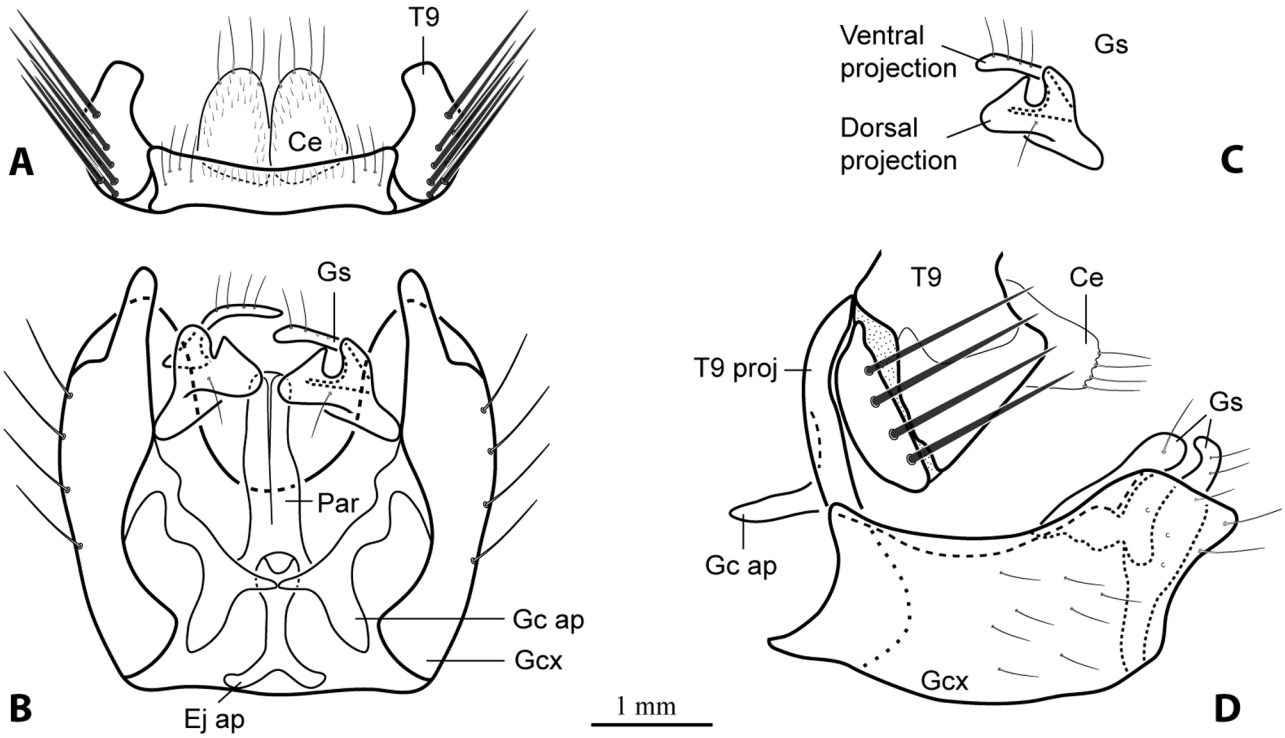


FIGURE 11. *Mohelia matilei* **sp.n.**, ♂ paratype, terminalia. **A.** Tergite 9 and cerci, dorsal view. **B.** Dorsal view, T9 and cerci removed. **C.** Gonostylus, dorsal view. **D.** Lateral view. Abbreviations: ce, cercus; ej ap, ejaculatory apodeme; gc ap, gonocoxal apodeme; gcx, gonocoxite; gs, gonostyle; par, parameres; T, tergite; T9 proj, T9 projection.

***Mohelia amorimi* sp.n.**
(Figures 3, 9, 12, 15–16)

Differential diagnosis. Brown and yellow abdominal tergites. Dorsal projection of gonostylus well sclerotized, square at apex, bare, ventral projection elongate at apex, with a line of setae on surface and a line of short and weakly sclerotized spines on the inner margin. This species is very similar to *M. nigricauda* in general body coloration. *M. nigricauda* has tergites 1–2 yellowish, T3 with posterior brown maculae, T4 with large posterior brown maculae, sternites 1–4 brown on their posterior margin. The main difference in the male terminalia is the well sclerotized dorsal projection of the gonostylus (Fig. 12).

Material examined. Holotype, adult male. SOUTH AFRICA, KwaZulu Natal, Louwsburg, Sanyati Farm, 27°34'S 31°17,9'E, 1090 m, 1–24.iii.2006, Malaise trap, M. Mostovski coll. NMSA-DIP 57723 (in alcohol, NMSA). Paratypes: same data as holotype (2♂ in alcohol, MZUSP; 3♂ in alcohol, NMSA); same data as holotype except NMSA-DIP 57724 (2♂ 1♀ on slide and alcohol, MZUSP); same data as holotype except NMSA-DIP 57725 (2♂ in alcohol, MZUSP; 7♂ in alcohol, NMSA).

Additional material examined (not included in paratypes due to poor quality of material)**.** SOUTH AFRICA, KwaZulu Natal, Louwsburg, Sanyati Farm, 27°34'S 31°17,9'E, 1090 m, 1–24.iii.2006, Malaise trap, M. Mostovski coll. NMSA-DIP 57723 (2♂ on slide, NMSA); same data except NMSA-DIP 57725 (3♂ in alcohol, NMSA).

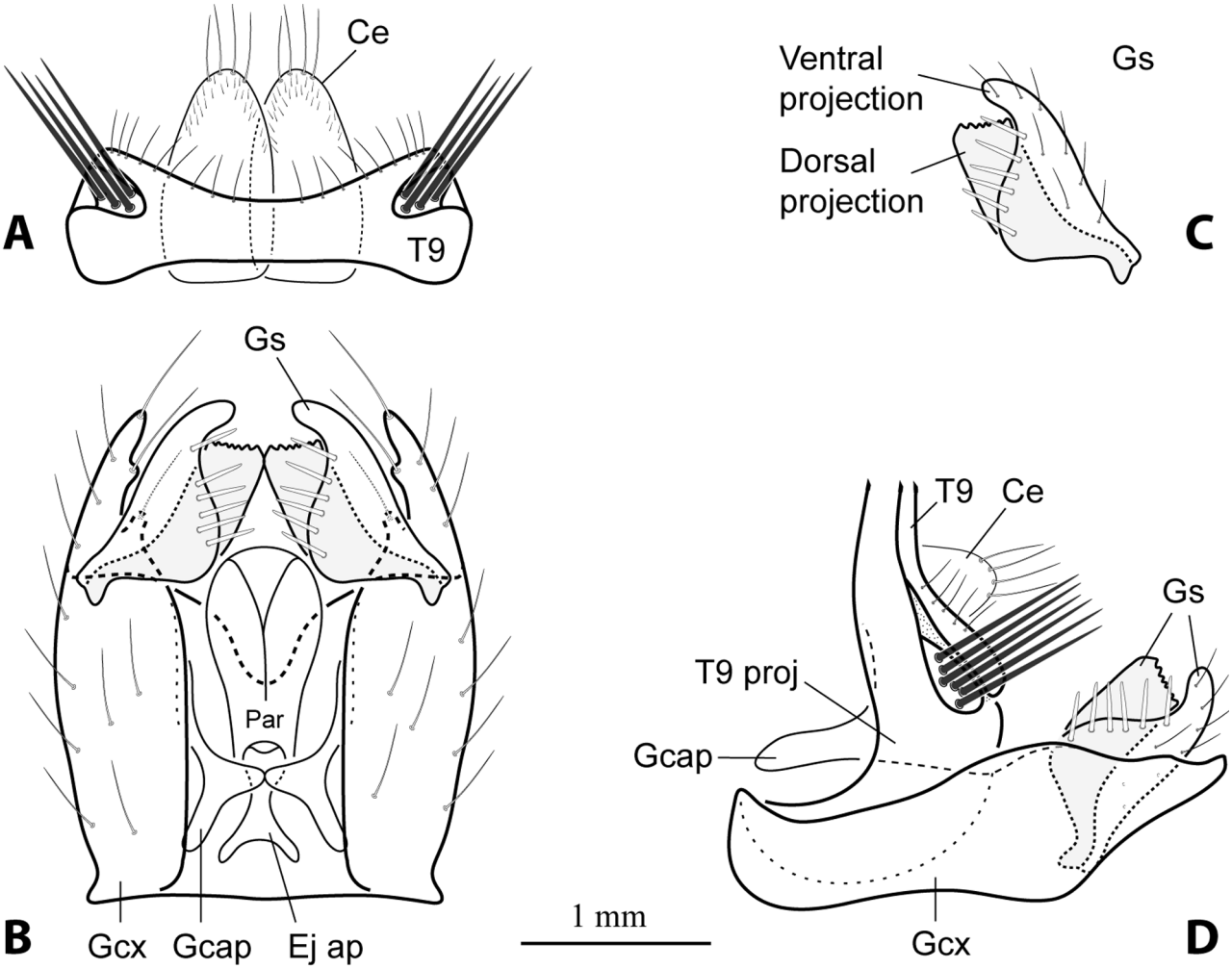


FIGURE 12. *Mohelia amorimi* **sp.n.**, ♂ paratype, terminalia. **A.** Tergite 9 and cerci, dorsal view. **B.** Dorsal view, T9 and cerci removed. **C.** Gonostylus, dorsal view. **D.** Lateral view. Abbreviations: ce, cercus; ej ap, ejaculatory apodeme; gc ap, gonocoxal apodeme; gcx, gonocoxite; gs, gonostyle; par, parameres; T, tergite; T9 proj, T9 projection.

Description. **Male** (Fig. 3)**.** Total length 2.9 mm (n=7).

Head (Fig. 3)**.** Head brown, triangular. Vertex with scattered setae. Three ocelli forming a straight line, median ocellus smaller, lateral ocelli more than twice their diameter from the eye margin. Frons covered with setulae. Face bare, narrowly rectangular, larger than clypeus; clypeus bare, almost triangular, not protruding below the ventral margin of the head; labrum triangular, elongated, almost twice length of clypeus. Labellum yellowish, elongate, almost the same as head height. Maxillary palp with four segments, fourth segment yellowish, almost twice the length of the third, first and second segments shorter and rounded, strongly fused. Scape shorter than pedicel, rounded; scape and pedicel yellowish, with dense setae on their apicodorsal margin; antennal flagellomeres petiolate, yellowish, longer than broad, covered with setulae. **Thorax** (Fig. 3)**.** Thorax light brown, legs yellow. Pronotum yellowish, two strong setae dorsally. Scutum covered with short scattered setae and bearing supra-alar bristles. Scutellum with four bristles. Proepisternum yellowish, setose at margins; proepimeron yellowish, bare. Propleuron yellowish, meso- and metapleuron light-brown at their margins and yellowish medially, entirely bare, except the laterotergite bearing some setae on its posterior margin. Haltere whitish, setose. Foreleg smaller than mid- and hind legs. Tibiae notably enlarged at apex. Tibial bristles arranged in regular longitudinal rows on mid- and hind tibia, hind tibia with a posterior line of spines, spurs 1:2:2, almost twice length of tibial diameter at apex. Hind tibia apex bearing many regularly arranged setae. **Wing.** Length: 2 mm, width: 1 mm. Membrane without

macrotrichia, hyaline; sc-r absent; C extending well beyond apex of R_5, almost reaching wing tip; Sc short, free, inclined toward R. R_1 as long as r-m, reaching C at medial third of wing; Rs perpendicular to R_5; R_5 reaching C well before wing tip, almost straight; r-m transverse, about five times length of base of Rs. M_{1+2} almost 3.5 times longer than r-m, as long as the medial fork; M_1 and M_2 parallel; cubital fork almost as long as basal segment of CuA; A_1 inconspicuous. M_1, M_2, M_4, and apical third of second sector of CuA with macrotrichia apically. **Abdomen** (Fig. 3)**.** Tergites 1–3 yellow with triangular brown maculae at their bases, T4 brown at its basal region and yellow distally, T5–6 brown, and T7 yellowish; sternites 1–3 yellow, S4 yellow with a brown maculae posteriorly, S5–6 brown, and S7 yellowish. **Terminalia** (Fig. 12)**.** Terminalia brown. Tergite 9 broader than long setose, with long and well sclerotized bristles at its lateral margins, connected laterally with the gonocoxite by a lateral projection, bare; gonocoxite with extensions posterodorsal to the base of the gonostylus, rounded distally, setose; gonostyle with two main projections, dorsal projection well sclerotized, square at apex, bare, ventral projection elongate at apex, with a line of setae on surface and a line of short and weakly sclerotized spines on the inner margin; ejaculatory apodeme rounded at apex and bifid at base; parameres well developed, enclosing the aedeagus; cercus rounded, covered with setulae.

Female. As males, except as follows. **Head.** Antennal flagellomeres smaller, shorter than the males. **Wing** (Fig. 9)**.** Length: 2.1 mm, width: 1 mm. **Terminalia** (Fig. 15)**.** Terminalia yellowish, covered with scattered setae. Posterior margin of sternite 8 rounded, with three apical bristles, anterior margin depressed; S8 almost as long as the cercus; first cercus elongate, longer than the rounded second cercus.

Biology. Unknown.

Distribution (Fig. 16)**.** South Africa (KwaZulu Natal).

Etymology. The species name is a masculine genitive, named after the great Brazilian dipterist Dalton de Souza Amorim (Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto, Universidade de São Paulo, Brazil). He has long studied the Mycetophilidae fauna in the Neotropical region, and taught me the idiosyncrasies and curiosities of taxonomy.

Mohelia chandleri sp.n.

(Figures 4, 10, 13, 16)

Differential diagnosis. Brown body with yellow legs. Hind femur brown apically. Gonocoxite with inner digitiform projection well sclerotized, with a long bristle medially, directed towards the gonostylus. Ventral projection of gonostylus with a medial bifid projection, well sclerotized, directed towards the inner gonocoxite. Dorsal projection ovoid. This species is very similar to *M. matilei* **sp.n.** regarding the general body coloration and to *M. nigricauda* because of the tergite 9 with long marginal bristles not well sclerotized and the digitiform gonocoxite projection.

Material examined. Holotype, adult male. MAURITIUS, Black River, upper mountains, 17.vi.1971, A.M. Hutson, B.M. 1971-346, BMNH(E)# 1240863 (double-pinned, NHM). Paratypes: same data as holotype, BMNH(E)# 1240864 (1♂ double-pinned, NHM); same data as holotype, except La Pouce, 10.vi.1971 BMNH(E)# 1240865-75 (2♂ double-pinned, MZUSP; 11♂ double-pinned, NHM).

Description. **Male** (Fig. 4)**.** Total length 2.9 mm (n=7).

Head (Fig. 4)**.** Head brown, triangular. Vertex with scattered setae. Three ocelli forminga straight line, median ocellus smaller, lateral ocelli more than twice their diameter from the eye margin. Frons covered with setulae. Face bare, narrow rectangular, larger than clypeus; clypeus bare, almost triangular, not protruding below the ventral margin of the head; labrum triangular, elongated, almost twice length of clypeus. Labellum yellowish, elongate, almost the same as head height. Maxillary palp yellowish, with four segments, fourth segment almost twice the length of third, first and second segments shorter and rounded, strongly fused. Scape shorter than pedicel, rounded; scape and pedicel brown, with dense setae on their apicodorsal margin; antennal flagellomeres petiolate, brown, longer than broad, covered with setulae. **Thorax** (Fig. 4)**.** Thorax brown, legs yellow. Pronotum brown, two strong setae dorsally. Scutum covered with short scattered setae and bearing supra-alar bristles. Scutellum with four bristles. Proepisternum brown, setose at margins; proepimeron brown, bare. Pro-, meso- and metapleuron brown, entirely bare, except the laterotergite, bearing some setae on its posterior margin. Haltere whitish, setose. Foreleg smaller than mid- and hind legs. Hind femur brown apically. Tibia notably enlarged at apex. Tibial setae arranged

in regular longitudinal rows on mid- and hind tibia, hind tibia with a posterior line of spines, spurs 1:2:2, almost twice length of tibial diameter at apex. Hind tibia apex bearing many regularly arranged setae. **Wing** (Fig. 10)**.** Length: 2 mm, width: 1.1 mm. Membrane without macrotrichia, hyaline; sc-r absent; C extending well beyond apex of R_5, almost reaching wing tip; Sc short, free, inclined toward R. R_1 1.5 times the r-m length, reaching C at medial third of wing; Rs perpendicular to R_5; R_5 reaching C well before wing tip, almost straight; r-m transverse, about five times length of base of Rs. M_{1+2} almost 4.5 times longer than r-m, as long as the medial fork; M_1 and M_2 parallel; M_1 insconspicuous at its base; cubital fork twice the length of basal segment of CuA; A_1 inconspicuous. M_1, M_2, M_4, and apical third of second sector of CuA with macrotrichia apically. **Abdomen** (Fig. 4)**.** Tergites 1–7 brown; sternites 1–5 yellowish, S6–7 brown. **Terminalia** (Fig. 13)**.** Terminalia brown. Tergite 9 broader than long, setose, with long bristles at its lateral margins, connected laterally with the gonocoxite by a lateral projection, bare; gonocoxite with extensions posterodorsal to the base of the gonostylus, digitiform distally, setose; gonocoxite with inner digitiform projection well sclerotized, with a long, medially-directed, bristle; gonostylus with two main projections, dorsal projection ovoid, with setae at its margins, ventral projection well developed with a medially-directed, bifid and well sclerotized projection towards the inner gonocoxite, with a line of setae at surface, three spine-like setae and a long bristle at inner apical margin; ejaculatory apodeme rounded at apex and bifid at base; parameres well developed, enclosing the aedeagus; aedeagus elongated and thin; cercus rounded, covered with setulae.

Female. Unknown.

Biology. Unknown.

Distribution (Fig. 16)**.** Mauritius Islands.

Etymology. The species name is a masculine genitive, named after the English dipterist Peter Chandler (Melksham, UK). He has been studying the Mycetophilidae fauna in Palaearctic region and is always pleasant in helping me with taxonomic questions, species identification, and the English language.

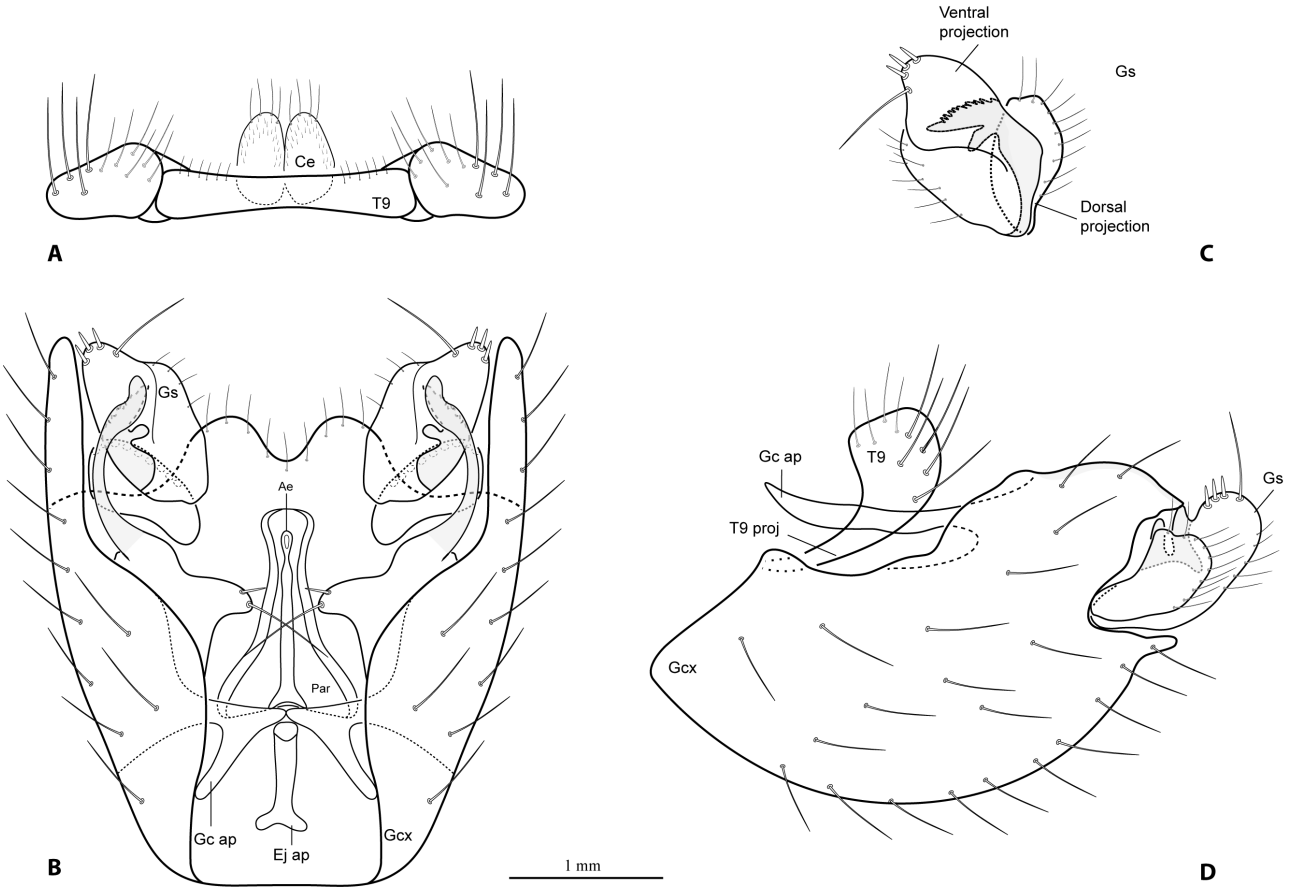
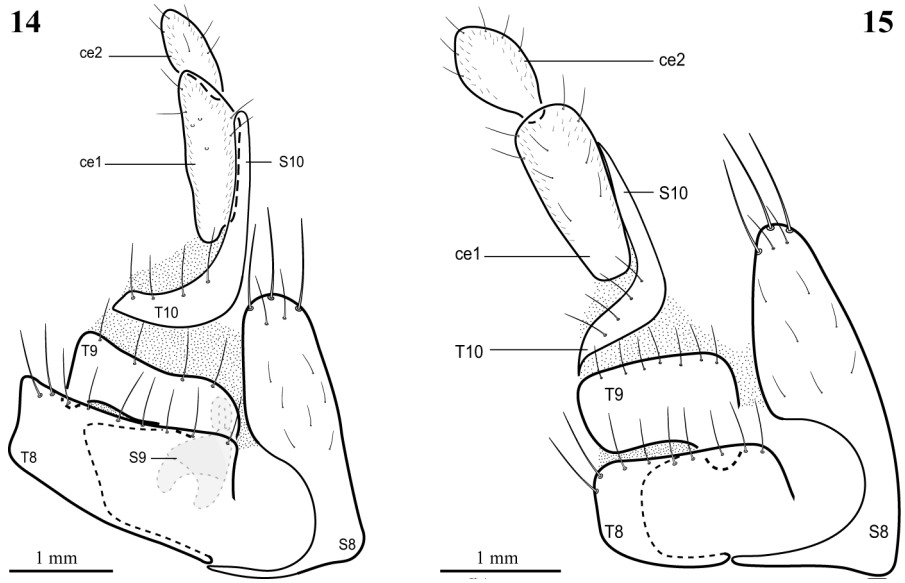


FIGURE 13. *Mohelia chandleri* **sp.n.**, ♂ paratype, terminalia. **A.** Tergite 9 and cerci, dorsal view. **B.** Dorsal view, T9 and cerci removed. **C.** Gonostylus, ventral view. **D.** Lateral view. Abbreviations: ae, aedeagus; ce, cercus; ej ap, ejaculatory apodeme; gc ap, gonocoxal apodeme; gcx, gonocoxite; gs, gonostyle; par, parameres; T, tergite; T9 proj, T9 projection.



FIGURES 14–15. *Mohelia* paratypes, ♀ terminalia, lateral view. **14.** *Mohelia matilei* **sp.n. 15.** *Mohelia amorimi* **sp.n.** Abbreviations: ce1, first cercus of female terminalia; ce2, second cercus of female terminalia; S, sternite; T, tergite.

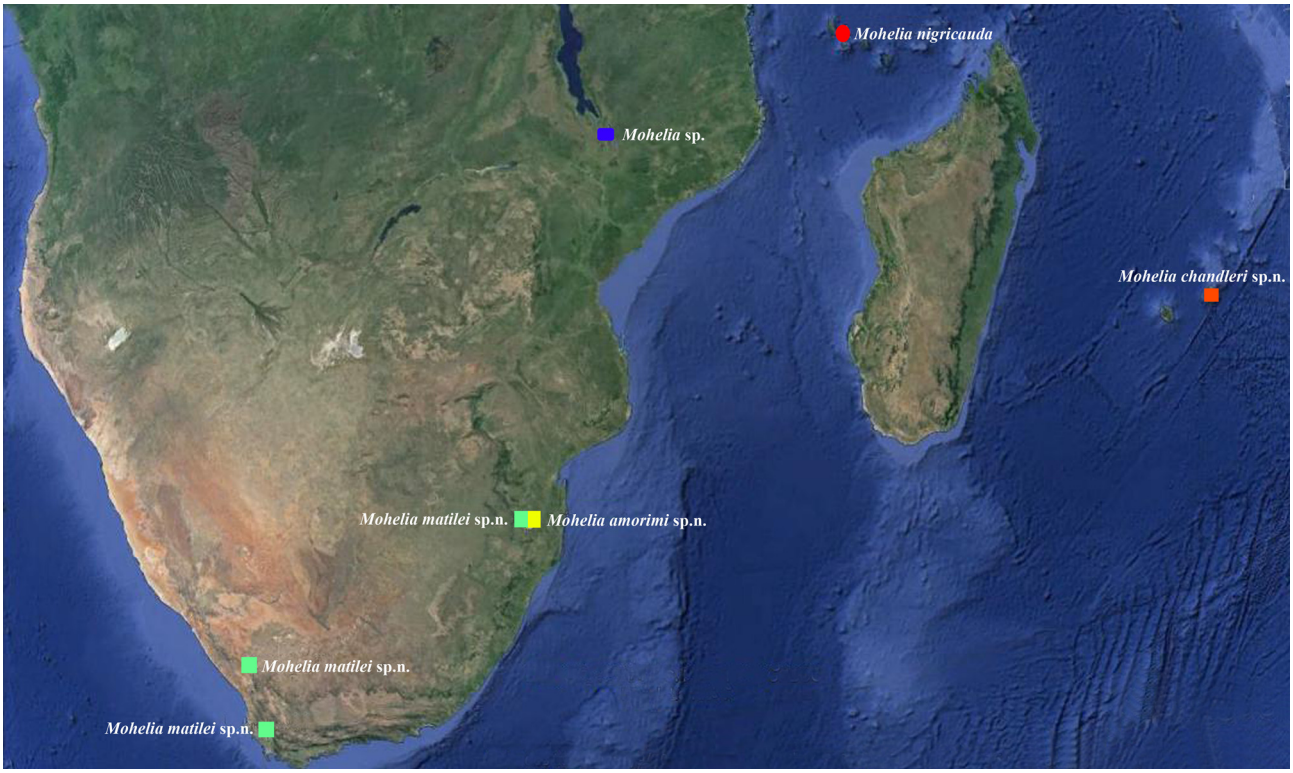


FIGURE 16. Distributional map of *Mohelia* in Afrotropical region.

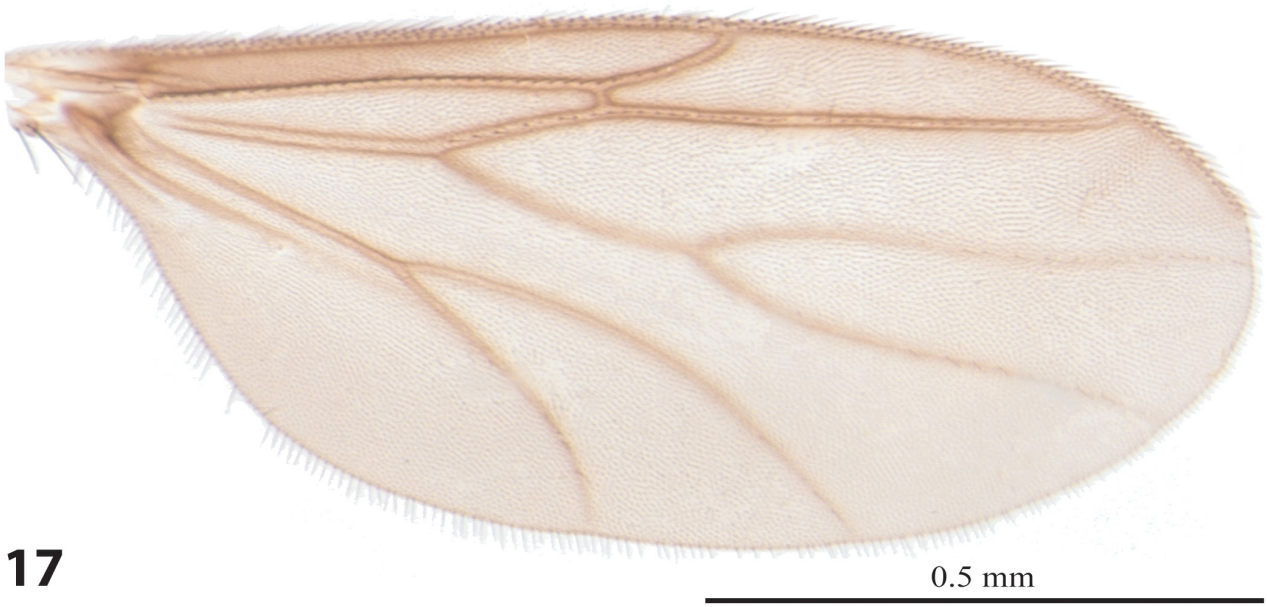


FIGURE 17. *Aphrastomyia shannoni* Lane, ♂ wing. Specimen from Brazil, Amazonas, Ipixuna (INPA—Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil).

***Mohelia* sp.**

Material examined. MALAWI, Zomba Chingwe's Hole, 12–13.iii.1987, J.A. Londt leg. NMSA-DIP 57654 (1♀ on slide, NMSA).

Female. Total length 2.8 mm (n=1). **Wing.** Length: 2.1 mm, width: 1 mm.

Distribution (Fig. 16)**.** Malawi (Zomba).

Comments. Due to the poor quality of the unique specimen from a locality in Malawi, this species is not formally described herein, but its occurrence in a new Afrotropical locality for the genus is documented for future studies. The general morphology resembles *M. matilei* **sp.n.**, but without additional samples, including male specimens, it is impossible to determine its conspecificity at this time.

Phylogenetic comments

The diversity of *Mohelia* in continental Africa is particularly noteworthy. The previously monotypic genus now encompasses five species, and many species still remain to be described (Hippa *et al*., 2005—from South Africa, which could fit one of the species described here, and Søli, pers. com.—from the West Usambara Mountains, Tanzania).

Matile (1979) comments on the similarities between the wings of the Neotropical genus *Aphrastomyia* and *Mohelia*. Both genera have the wing membrane hyaline, without macrotrichia, R_1 curved toward the wing margin, and the medial and cubital forks originating almost in the median region of the wing (figures 5 and 7; see also Matile's illustration, 1979: 271, figure 34). *Mohelia* was distinguished from *Aphrastomyia* by the absence of dorsal setae on the antennal flagellomeres and mouth parts not elongated (Matile, 1979). However, these features are present in *M. matilei* **sp.n.**, *M. amorimi* **sp.n**., *M. chandleri* **sp.n.**, *Mohelia* sp., and *M. nigricauda*.

Coher & Lane (1949), when describing *Aphrastomyia*, positioned that genus in Leiinae, despite its fine tibial setae being arranged in regular longitudinal rows, a feature also present in Mycetophilinae and Mycomyinae. Matile (1979) positioned *Mohelia* in Leiinae, also highlighting the similarities between both genera and *Megophthalmidia.*

A putative clade composed of *Megophthalmidia*, *Aphrastomyia*, and *Mohelia* has been hypothesized by Matile (1979) and Jaschhof & Kallweit (2004). According to them, *Aphrastomyia* and *Mohelia* would be sister groups and

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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