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A PECULIAR NEW SPECIES OF *MADIZA* (DIPTERA: MILICHIIDAE) FROM TANZANIA

BRAKE, I.[1] and PAPP, L.[2]

[1]*Department of Entomology, The Natural History Museum*
Cromwell Road, London SW7 5BD, UK. E-mail: i.brake@nhm.ac.uk
[2]*Department of Zoology, Hungarian Natural History Museum*
and Animal Ecology Research Group of the Hungarian Academy of Sciences
PO. Box 137, H-1431 Budapest, Hungary
E-mail: lpapp@nhmus.hu

A new species, *Madiza africana* sp. n. of the subfamily Madizinae is described from Tanzania. The peculiarities of the new species are discussed.

Key words: Milichiidae, *Madiza*, taxonomy, new species, Tanzania

INTRODUCTION

The milichiid material accumulated in the Hungarian Natural History Museum was sorted to genus level recently. While sorting LP found two males and four females of a species, with a *Desmometopa*-like habitus, but other characters identifying it as a *Madiza* species (see discussion). The genus *Madiza* FALLÉN, 1810 is a rather small genus for 5 Palaearctic and Nearctic species. Formerly no species was known from the Afrotropical region (SABROSKY 1980, BRAKE 2000).

MATERIALS AND METHODS

Specimens are double mounted on minuten pins. Abdomina of the specimens (except for the holotype) were prepared with hot sodium hydroxide and lactic acid, carefully washed in water and stored in a plastic microvial with glycerine pinned below the specimen.

The type specimens are deposited in the Diptera Collection of the Department of Zoology, Hungarian Natural History Museum, Budapest (HNHM) and in the Natural History Museum, London (NHM).

Terminology follows BRAKE (2000). The authors of this paper have been listed alphabetically. Drawings were prepared by LP.

Madiza africana sp. n.
(Figs 1–13)

Holotype male (HNHM): Tanzánia, Lake Natron, 1988. II. 6., leg. VOJNITS. Paratypes: 1 male 4 female (HNHM, 1 female in NHM): with the same label data.

Measurements in mm: body length 2.20 (holotype), 2.48 (paratype male), 2.91–3.52 (paratype females), wing length 2.20 (holotype), 2.59 (paratype male), 3.03–3.52 (paratype females), wing width 0.95 (holotype), 1.03 (paratype male), 1.29–1.37 (paratype females).

A comparatively large-bodied fly of Madizinae. Body and legs dark grey microtomentose.

Head. Cheek, prefrons and pregena greyish yellow. Palpus mainly dirty yellow, with apical and ventral margins grey, on outer surface this colour occupies 0.06–0.07 mm.

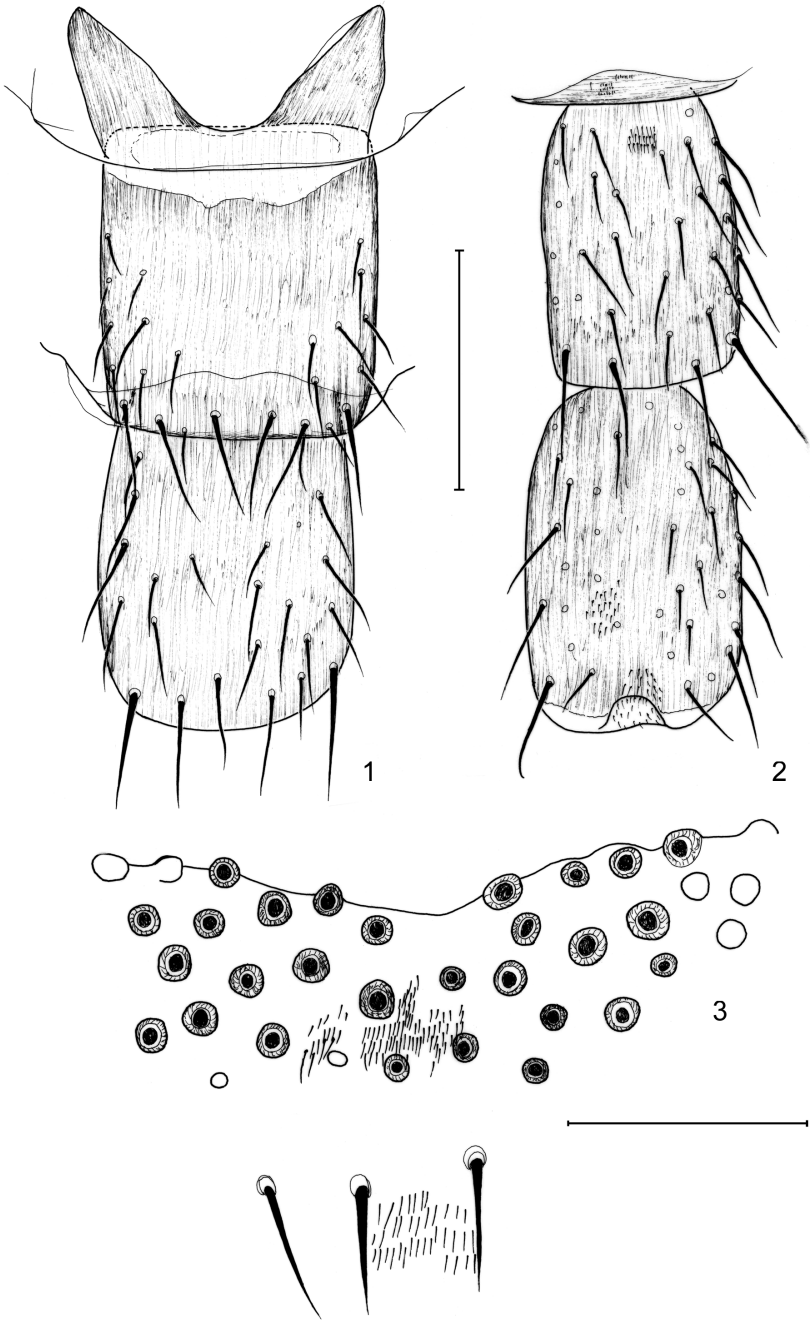
Two pairs of mesoclinate frontal setae anteriorly, 2 lateroreclinate anterior orbital setae and a slightly mesoclinate very long posterior orbital seta (0.24 mm long). A very large (0.20 mm long) parallel postocellar pair present. Ocellar, outer and inner vertical pairs rather long. Some small additional setulae lateral to frontal setae down to cheeks. Frons without interfrontal stripes, i.e. without an M shaped area. 4 pairs of medium-long interfrontals, and an additional similarly long seta present between anterior interfrontal and frontal seta. Lunule not extended ventrally as a flat plate between antennae, with 1 pair of distinct setae. Prefrons concave, below antennae not much more deepened; no carina. Clypeus very small, but Π-shaped rather than U-shaped anteriorly, slightly protruding before the protruded prefrons. Vibrissa inserted at level of lower eye margin, 2 large upcurved peristomals, other 2 large ventrally directed peristomals and some shorter peristomals. Gena below eye 0.08 mm broad. Genal setae on postgenal border (or on postgena) only. Postocular setae short.

Antenna short, pedicel with a long dorsal apical seta. First flagellomere globular, arista c. 0.4 mm long, basal aristomeres thickened. Aristal cilia somewhat longer than 0.01 mm. Palpus short, broad with several medium-long but thick setae. Proboscis without labella 0.33 mm, labella 0.275 mm long.

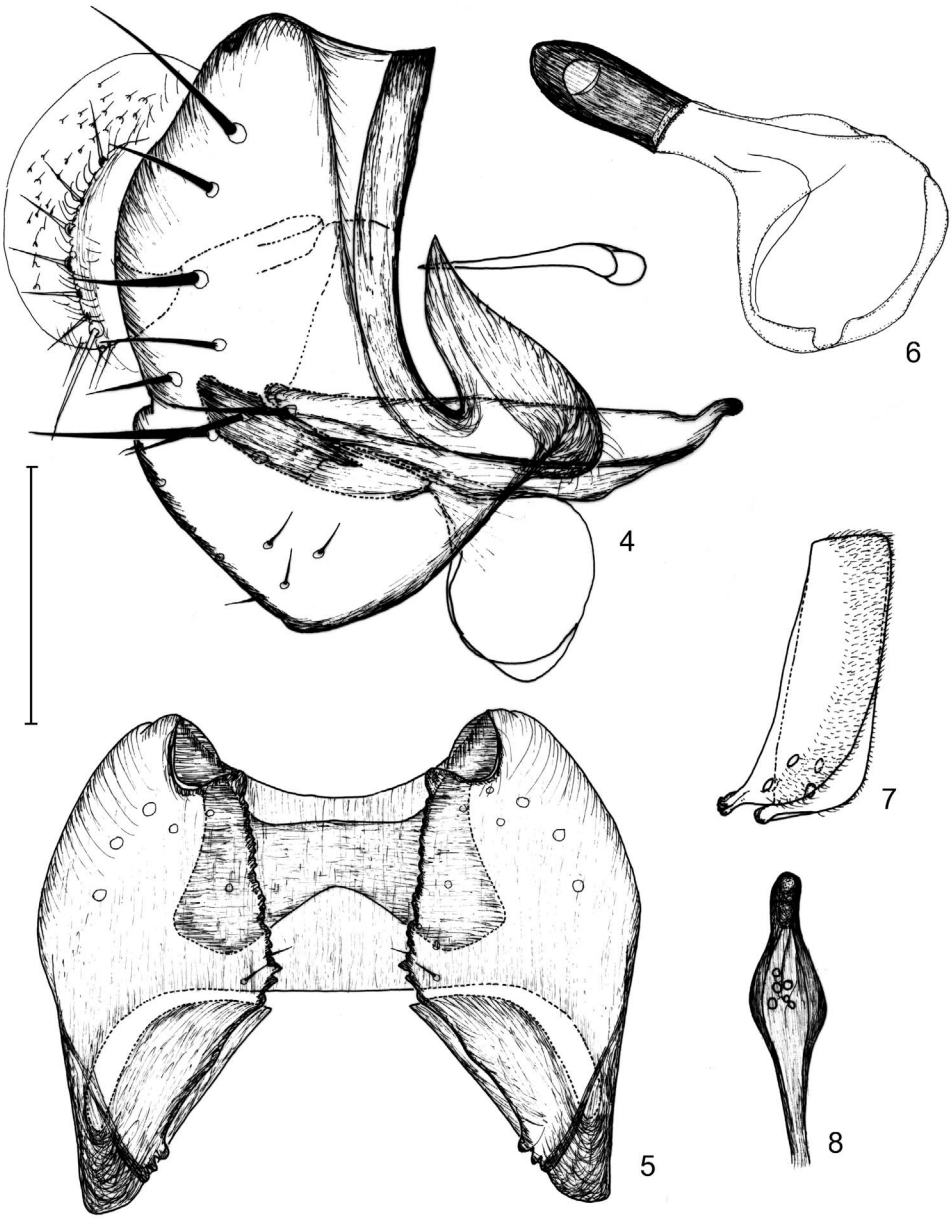
Thorax. Basisternum broadly trapezoid, more similar to that of *Madiza* (BRAKE 2000: Pl. 8B) than to basisternum of *Desmometopa* (BRAKE 2000: Pl. 8A). A pair of small lateral secondary sclerites (0.05 to 0.07 mm broad) also present.

Thoracic chaetotaxy: 1 large postpronotal, 2 notopleural, 1 presutural, 1 short prealar, 1 supra-alar (or, 2 supra-alar pairs), 1 extremely long postalar (0.60 mm), 1 less long medial postalar, 0+3 dorsocentral pairs, anterior pair shorter and aligned with posterior notopleural, 1 prescutellar acrostichal pair. Anepisternum and anepimeron bare. 1 minute supracoxal, 2 long katepisternals plus some short katepisternals anteriorly; no other seta on pleura. Anepisternum anteriorly and ventrally with an obliquely quadratic shiny black spot: 0.20 mm long and 0.07 to 0.09 mm broad (holotype), on a female paratype 0.33 × 0.13 mm. Both ampullae below wing base comparatively large, dorsal one longish, oblique, proclinate, ventral ("greater") one bulbous.

Wing. Wing membrane light brown, veins slightly darker but still light brown. Fringe of calypter dark grey. R_1 emargination narrow. Veins R_{2+3}, R_{4+5} and M_1 parallel, stronger costal fringe of 4–5 thornlets occupying only 1/5 of third costal section. Inter-crossvein section of M_1 0.31 mm, dm-cu 0.185 mm, terminal section of CuA_1 0.31 mm. Costagial setae: dorsal 0.22 mm, ventral 0.14 mm (holotype) up to 0.285 mm and 0.23 mm (paratype female). A large costal seta over vein h 0.10 mm (holotype). Anal lobe liguliform, 0.15 mm broad at base. No anal vein distal to anal cell: a rather thick fold running close to wing margin discernible. Haltere brownish grey.



Figs 1–3. *Madiza africana* sp. n., paratype male, abdomen. 1 = sternites 1 to 3, ventral view, 2 = sternites 4 and 5, ventral view, 3 = mid anterior part of tergite 5. Scale: 0.2 mm for Figs 1–2, 0.1 mm for Fig. 3



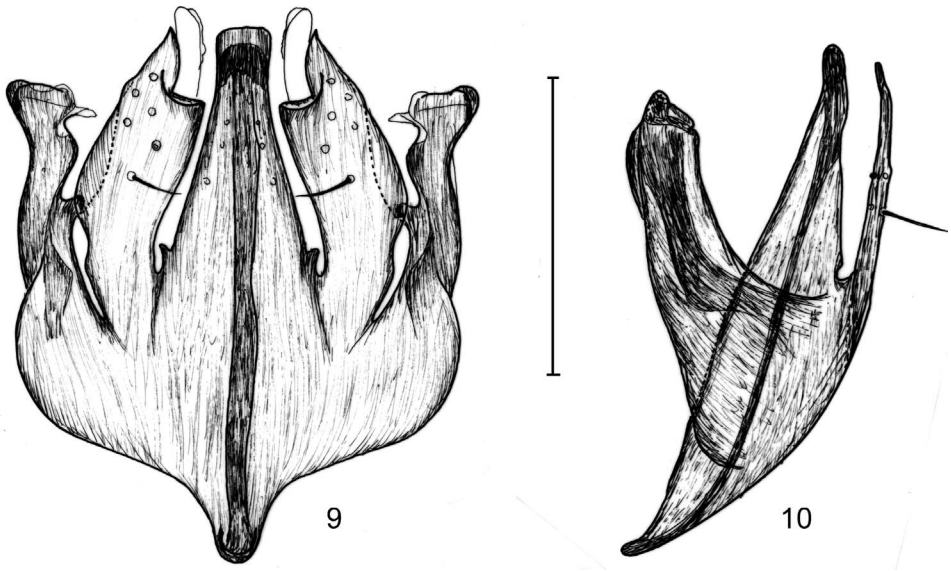
Figs 4–8. *Madiza africana* sp. n., paratype male: 4 = genital complex with epandrium and cercus, lateral view; 5 = epandrium, surstyli and subepandrial sclerite, ventral view; 6 = phallus, basiphallus in ventral view, knob of distiphallus in lateral view; 7 = syntergosternite 7–8 with spiracular openings, lateral view; 8 = ejaculatory apodeme, broadest (ventral) view. Scale: 0.1 mm for all

Legs. Mid tibia with a strong ventroapical seta, no other characteristic setae on legs. Hind tibia without tibial organ. Male hind tibia not enlarged. First tarsomere of hind leg without a posterior comb of ventral setae.

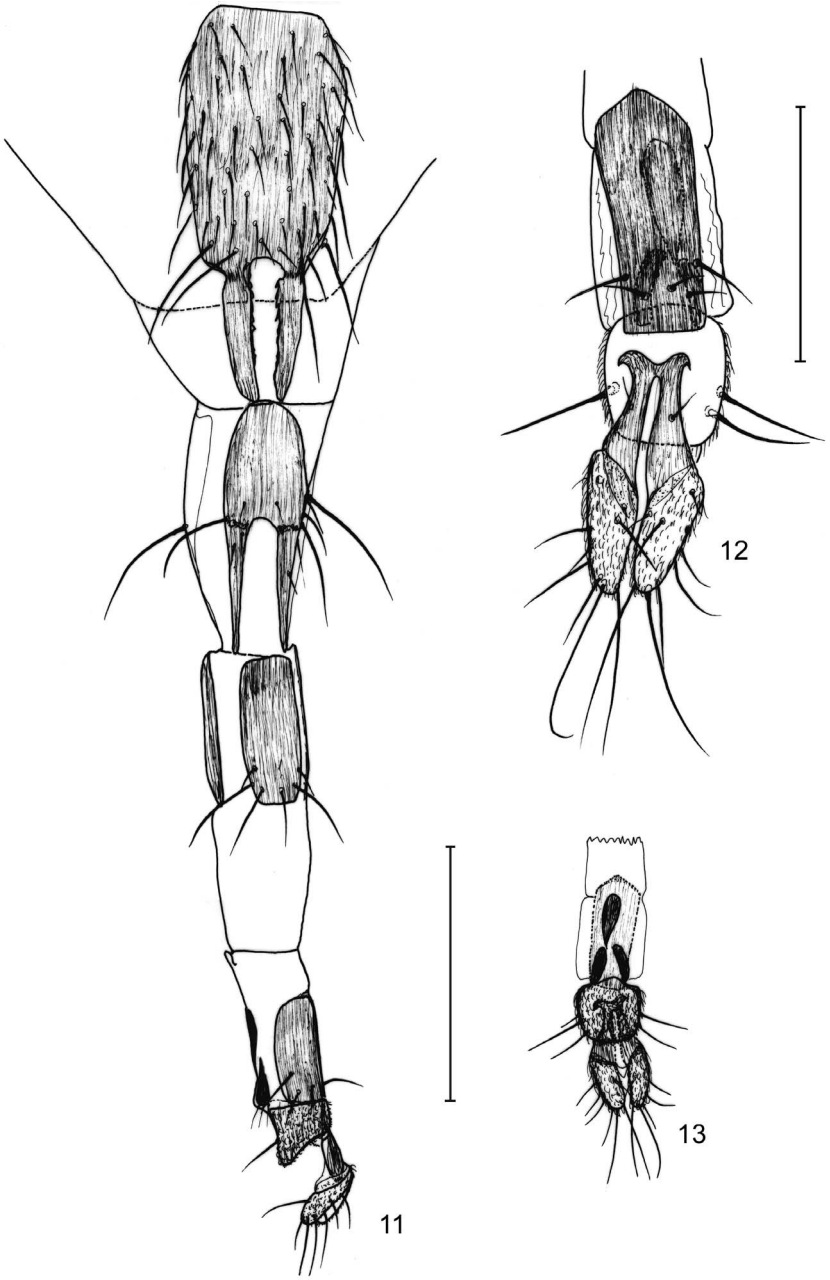
Abdomen. Abdominal tergites of male with dark grey microtomentum. Tergites 1 and 2 with narrow membranous area between them laterally, wholly fused on lateral parts of dorsal surface and with a 0.31 mm broad membranous area medially. Male tergites 4 and 5 with socketed warts anteriorly (Fig. 3). Length of normally setose caudal part of tergite 5 0.42 mm, section with warts medially 0.10 mm, laterally 0.065–0.075 mm long. Tergite 4 with similarly broad warts zone and with 0.35 mm long normal surface. Male sternite 1 in 2 parts, microtrichose only (Fig. 1), sternite 2 quadrate with medium-long setae laterally and with 2 pairs of longer setae caudally. Sternite 3 longer than broad. Sternite 4 and 5 much longer than broad with scattered setae (Fig. 2).

Postabdomen and genitalia. Male syn(tergo)sternite 7–8 not completely symmetrical (Fig. 7). Epandrium (Fig. 4) saddle-shaped dorsally, antero-laterally with a pair of large, well-sclerotised lobes (Figs 4–5) and with robust but not particularly long setae, rather far from medio-caudal margin. Surstylus very large, completely fused to epandrium, with fine setae only (Figs 4–5), medial edge with fine indentations (Fig. 5). Cercus large but weakly sclerotised. Subepandrial sclerite short sagittally (Fig. 5). Hypandrial complex (Figs 9–10) not much longer than broad, hypandrial arms robust, pregonites rather flat (in the horizontal plane). Basiphallus better sclerotised (Fig. 6), distiphallus bulbous membranous. Ejaculatory apodeme (Fig. 8) positioned in the main axis of abdomen, long slightly asymmetrical, in ventral view broadened sub-medially; that extended part with fine holes.

Female sternite 5 much longer than broad, with a pair of particularly strong caudal appendages. Female tergites 4 and 5 without socketed warts anteriorly. Female ovipositor rather long (Fig. 11), sternites 5 and 6 with long introsuscepted caudal apodemes (serving insertion points for muscles



Figs 9–10. *Madiza africana* sp. n., paratype male. 9–10 = hypandrial complex: 9 = ventral view, 10 = lateral view. Scale 0.1 mm



Figs 11–13. *Madiza africana* sp. n., paratype female: 11 = postabdomen with sternite 5 and margin of tergite 5, ventral view, segment 8 twisted, hypoproct, epiproct and cerci in lateral view; 12 = postabdominal sclerites in higher magnification, dorsal view, 13 = terminalia, ventral view, cf. Fig. 12. Scales: 0.4 mm for Figs 11 & 13, 0.2 mm for Fig. 12

Table 1. Comparison between characters present in *Madiza* (*M. glabra, M. nitens*), *M. africana*, and *Desmometopa*.

Madiza africana	*Madiza*	*Desmometopa*
Absent	Absent	Interfrontal stripes (A)
Absent	Tibial organ	Absent
Wart-like structures on male tergite 4 and 5	Wart-like structures on male tergite 5	Absent
Epandrium with antero-lateral lobes	Epandrium with antero-lateral lobes	Absent
Basal tip of phallapodeme acute in lateral view	Basal tip of phallapodeme acute in lateral view	Basal tip of phallapodeme roundish in lateral view
Broad surstylus with serrated edge	Broad surstylus with serrated edge	Narrow surstylus, not serrated
Surstylus fused with epandrium	Surstylus not fused with epandrium	Surstylus not fused with epandrium
Long ovipositor, long cerci	Long ovipositor, long cerci	Short ovipositor, short cerci
Absent	Absent	Secondary ovipositor
Spermathecal duct coil tight	Spermathecal duct coil tight	Spermathecal duct coil loose

when postabdomen inverted). Tergite 8 not divided, sternite 8 in 3 parts (Figs 11–13). Cerci not elongated, with medium-long setae. Spermathecal ducts tightly coiled together, similar to *Madiza glabra* (see BRAKE 2000: Pl. 24E).

DISCUSSION.

The wart-like structures on male tergite 4 and 5 may play a role in spreading pheromones. Similar structures occur also in *Madiza nitens* (MELANDER) (BRAKE 2007) and *M. glabra* (FALLÉN). Tergite 5 (anterior edge sagittally with broad V-shaped emargination) of *Madiza glabra* males has a densely haired anterior section (less sclerotized there). That anterior part of T5 covered by tergite 4 when at rest. The pale hairs are of 0.06–0.07 mm long. The hairy part is largely proportional with the shiny caudal part. The junior author took measurements on three males from Hungary, where the length ratios are as follow: 0.21 : 0.33 mm, 0.275 : 0.41 mm, 0.25 : 0.34 mm. In addition to the wart-like structures there are large, well-sclerotised lobes antero-laterally connected to the epandrium in all three species. In *Madiza glabra* glandular structures were observed to be attached to these lobes.

We are describing the new species in the genus *Madiza* based on characters in the male and female abdomen cited in Table 1. *Madiza africana* differs from

other *Madiza* species in the absence of a tibial organ, the dark grey microtomentose body and *Desmometopa*-like habitus. It is therefore possible that the tibial organ, more or less shiny black colour and *Madiza*-like habitus evolved within the genus after *M. africana* branched off. We do not give a key for the species of *Madiza*; that is reasonable to construct within a worldwide revision of the genus only.

Madiza africana is similar to *Pseudodesmometopa succineum* HENNIG, which was described from a female in Baltic amber. HENNIG's diagnostic characters separating *Pseudodesmometopa* from *Desmometopa* are short labella and long cerci. *Madiza africana* has long cerci even if the labella are not short. This is an indication that *Pseudodesmometopa succineum* might belong to the genus *Madiza*, too.

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