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Melting the iceberg: A new *Megaselia* Rondani species (Diptera: Phoridae) from Mali with the most striking wing ornament

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ABSTRACT

Megaselia guentermuelleri sp. n. with a remarkable wing pattern is described from Mali. The new species readily differs from all other *Megaselia*, including those with ornamented wings, by the presence of a large pigmented swelling in its wing, among other features.

KEY WORDS: Afrotropical, Diptera, Phoridae, *Megaselia*, scuttle flies, new species, wing ornament.

RÉSUMÉ

Megaselia guentermuelleri sp. n. avec un remarquable motif de l'aile est décrit en provenance du Mali. La nouvelle espèce facilement diffère de tous les autres *Megaselia*, y compris ceux avec des ailes ornées, par la présence d'un grand pigmenté gonflement dans son aile, entre autres caractéristiques.

MOTS CLÉS: Région afrotropicale, diptères, phorides, *Megaselia*, espèce nouvelle, ornement de l'aile.

INTRODUCTION

It is needless to re-iterate statements on the size and taxonomic complexity of the enormously large genus *Megaselia* (cf. Hartop & Brown 2014), while life histories of its constituent species are covered in the fundamental treatment of the Phoridae by Disney (1994) and in a score of his subsequent publications.

Afrotropical species of *Megaselia* are covered patchily (Meunier 1905, 1910; Beyer 1960, 1965; Disney 1978, 1980, 1982, 1989, 1991, 2004a, b, 2005, 2006a–c, 2007, 2010; Disney *et al.* 2013) and grossly insufficiently. The present communication reports on a new *Megaselia* member with the most remarkable wing ornament. Compared to some other scuttle fly genera (e.g. Kung & Brown 2000), patterned wings occur in *Megaselia* very infrequently (*M. leleupi* Beyer, 1960; *M. maculifera* Beyer, 1965; and *M. dickoni* Wakeford & Disney, 1994). Recently, another amazing *Megaselia* of this sort has been described from a tropical forest in Costa Rica (Hartop & Brown 2014).

MATERIAL AND METHODS

The material was collected in Kéniéroba (south-western Mali) and preserved in 70% ethanol. The only paratype of the new species was dissected for description and mounted in Berlese Fluid on slide (as per Disney 1983).

Hartop and Brown (2014) suggested a ground-breaking method of description for *Megaselia* species, which has been accepted in the present paper. They thoroughly discussed characters that should be used, but excluded some as being seemingly subjective. Thus, colours have been omitted from their template. One cannot help but totally agree that precise, or numerical, description of absolute colours is the most ungratifying task. Still those are useful tools in species recognition and have been success-

fully used as such for decades, even centuries, without reference to colour palettes. Human languages possess sufficient vocabularies for description of colours that occur in nature, with one of the richest being found in English (e.g. Kay & McDaniel 1978). There are certain differences in colour perception across cultures (e.g. Regier & Kay 2009); nevertheless, eager students should be able to find most appropriate words for their observations. Hartop and Brown's suggestion to replace 'verbose' descriptions with 'a well taken habitus photo' is not always achievable, for this requires professional equipment and software that may not be readily available to a taxonomist. Moreover, results of such exercises depend on other variables, e.g. light source colour temperature and the researcher's experience.

Other characters like those of the abdomen are also included in the template, as they will undoubtedly prove useful for automated identification of *Megaselia* species in the future.

The types are deposited in the collection of the Steinhardt Museum of Natural History and Israel National Center for Biodiversity Studies, Tel Aviv University (TAU).

TAXONOMY

Genus *Megaselia* Rondani, 1856

***Megaselia guentermuelleri* sp. n.**

Figs 1–6; Table 1

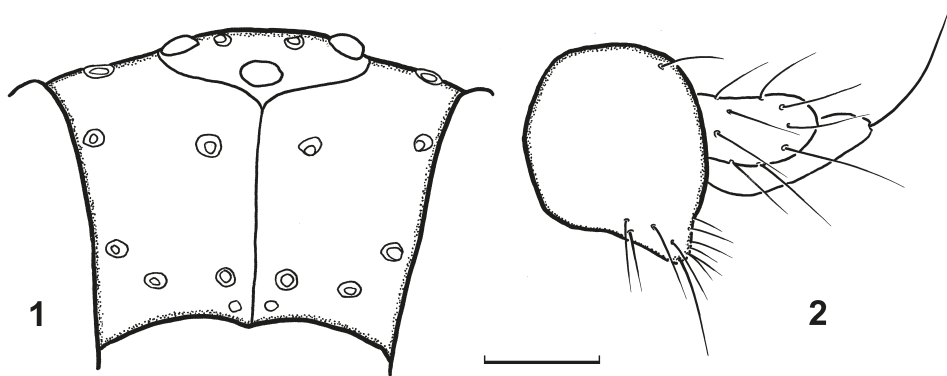
Etymology: The species is dedicated to Dr Günter C. Müller, whose organizational skills and collecting efforts in Mali resulted in the discovery of this remarkable species.

Description:

Male.

Body length: 2.5 mm.

Colour: Frons dark brown, antenna brown, palpus pale yellow; scutum and scutellum yellow and slightly ochreous, pleura light yellow except for brown to black posterior part of metapleuron; all legs are yellow except for darkened apex of hind femur; abdominal tergites uniformly brown, abdominal sternites unsclerotised except for S6 represented by paired pigmented patches; epandrium brown, paired hypandrial lobes light brown, anal tube pale yellow.



Figs 1, 2. *M. guentermuelleri* sp. n., frontal setation (1) and left side of hypopygium (2). Scale bar = 0.1 mm.

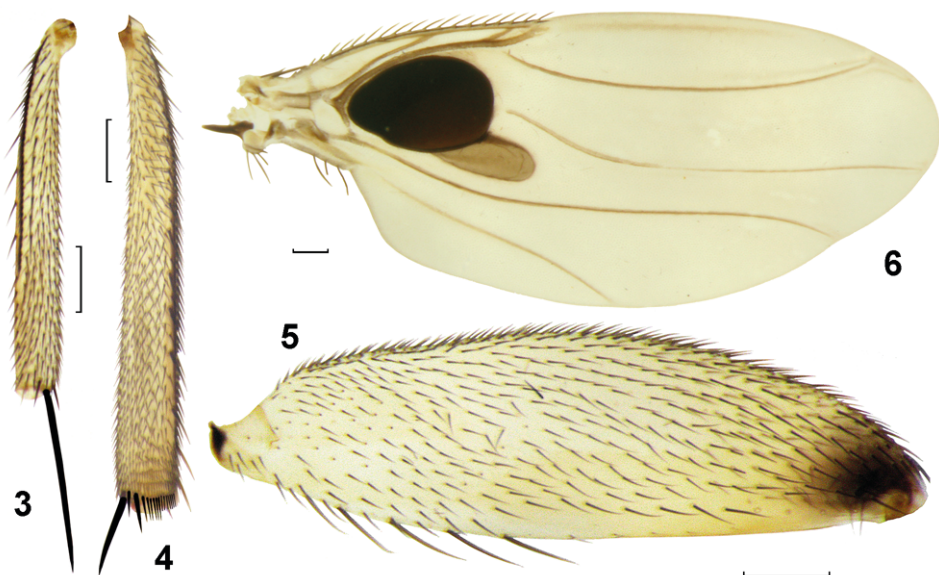
TABLE 1
Description of *Megaselia guentermuelleri* sp. n.

Characters	States	Remarks
Head		
SA ratio	0.57	
ANT (VIF) position	normal	
SPS vesicles	absent	
Palpal setae length	long	5 long setae + hairs ventrally
Labellum spinosity	sparse	minute hairs
Thorax		
Mesopleuron (anepisternum)	bare	
Relative halter colour	darker	brown knob
<i>npl</i> setae	2+1	2 bristles and 1 fine hair between them
<i>npl</i> cleft	absent	
Scutellar setae	2+2	
Leg		
ts1 palisade	1–5	
tb2 palisade	0.68	
tb3 comb bifurcate	absent	
tb3 setulae	PD	short, less than tibia width a mid-length
fm3 basal setae	B>AV	
fm3 basal setae differentiation	present	
Wing		
Wing length (mm)	1.90	
Wing width (mm)	0.83	
Sc	incomplete	very short
Hair at base of R	short	clearly shorter than costal cilia
R ₂₊₃	present	
Costal index	0.42	
Costal ratios (C3=1)	3.8:2.6:1	
Costal setae length (mm)	0.06–0.08	
Alular setae	3	
Alular setae length (mm)	0.10	
Wing colour	lightly infusate	
Abdomen		
T	complete	
T setation	normal hairs	on lateral and rear margins, longer on T6
S setation	normal hairs	progressively longer on S3–S6
Spiracles	normal	
Genitalia		
AT length	AT=E	
E setation, left side	hairs + bristles	
right side	hairs	
Relative posterior setation	T6<E<C<H	

Wing: Large heavily pigmented sclerotised bean-like swelling exists below RS at base of 2nd thin vein, with a paler extension protruding between 2nd and 3rd thin veins.

Female. Unknown.

Comparison: Having a relatively long costa, two strong scutellar bristles, only postero-dorsals on the hind tibia and ‘Flügel mit ausgedehnter brauner Makel’, the new species runs immediately to *M. leleupi* Beyer, 1960 in Beyer’s (1965: 53) key. However, it



Figs 3–6. Middle (3) and hind (4) tibiae, hind femur (5) and wing (6) of *M. guenthermuelleri* sp. n. Photographs may not reflect true colours observed in specimens; bristles of the tb3 apical comb are enhanced. Scale bars = 0.1 mm.

readily differs from the latter, which has been described from female only, in being larger (2.5 vs 1.8 mm) and in having yellow pleura (black in *M. leleupi*), shorter both costa (CI 0.42 vs 0.53 in *M. leleupi*) and costal cilia (0.07 vs 0.16 in *M. leleupi*), and different costal ratios (3.8:2.6:1 vs 2.4:2.0:1 in *M. leleupi*). If one ignores this option and proceeds further with Beyer's key, identification of the specimens on hand becomes confusing. From the Neotropical *M. shadeae* Hartop & Brown, 2014 with a large, bubbled and pigmented wing spot, the new species easily differs by the position and shape of its wing ornament, shorter costa and narrower RS fork, among other features (cf. Hartop & Brown 2014).

Holotype (in ethanol): ♂ MALI: Kénieroba [12°06'26"N 08°19'58"W], 330 m, 27.vii.2014, G. Müller & V. Kravchenko, fogging (TAU).

Paratype (dissected, on slide): ♂ same data as for holotype, but vii.2014, sweeping (TAU).

Remark: In the absence of corresponding females it would be premature to draw any definite conclusion on the function of the wing ornament in this species. Most probably this is a case of sexual dimorphism, although some role in the flight aerodynamics cannot be ruled out completely.

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REFERENCES

- BEYER, E.M. 1960. Diptera Phoridae. Mission zoologique de l'I.R.S.A.C. en Afrique orientale. (P. Basilewsky et N. Leleup, 1957). *Annales du Musée Royal du Congo Belge Tervuren (Belgique), Serie 8, Sciences Zoologiques* **81**: 412–432.
- 1965. Phoridae (Diptera Brachycera). *Exploration du Parc National Albert, Mission G.F. De Witte (1933–1935)* **99**: 1–211.
- DISNEY, R.H.L. 1978. A new species of Afrotropical *Megaselia* (Diptera: Phoridae), with a re-evaluation of the genus *Plastophora*. *Zeitschrift für angewandte Zoologie* **65** (3): 313–319.
- 1980. A remarkable scuttlefly, *Megaselia senegalensis* n. sp. (Diptera: Phoridae). *Insect Systematics & Evolution* **11** (1): 94–96.
- 1982. Two new species of Afrotropical *Megaselia* (Diptera: Phoridae). *Entomologist's Monthly Magazine* **118**: 189–193.
- 1983. Scuttle flies – Diptera Phoridae (except *Megaselia*). *Handbooks for the Identification of British Insects* **10** (6): 1–81.
- 1989. Two new species of *Megaselia* (Dipt., Phoridae) reared from termite-mound fungus in Nigeria. *Entomologist's Monthly Magazine* **125**: 45–48.
- 1991. Scuttle flies from Zimbabwe (Diptera, Phoridae) with the description of five new species. *Journal of African Zoology* **105**: 27–48.
- 1994. *Scuttle flies: the Phoridae*. London: Chapman & Hall.
- 2004a. Rescue of *Megaselia piliventris* (Schmitz) (Dipt., Phoridae). *Entomologist's Monthly Magazine* **140**: 27–29.
- 2004b. The distinctive *Megaselia deltomera* Schmitz, 1924 (Diptera: Phoridae) belongs to a complex of sibling species. *Annales zoologici* **54** (4): 687–695.
- 2005. Phoridae (Diptera) of Madagascar and nearby islands. *Studia dipterologica* **12**: 139–177.
- 2006a. Eight new species of *Megaselia* Rondani (Diptera: Phoridae) from the United Arab Emirates, Oman, and Yemen. *Zootaxa* **1371**: 1–21.
- 2006b. Nine new species of *Megaselia* Rondani (Diptera: Phoridae) from the Seychelles. *Zootaxa* **1210**: 1–25.
- 2006c. Two new sibling species of *Megaselia consueta* (Collin) (Dipt., Phoridae) from Arabia and the Seychelles. *Entomologist's Monthly Magazine* **142**: 115–125.
- 2007. A new species of *Megaselia* Rondani (Dipt., Phoridae) from Aldabra. *Entomologist's Monthly Magazine* **143**: 55–57.
- 2010. The type series of *Megaselia mediterranea* Schmitz (Diptera: Phoridae) comprises two species. *Israel Journal of Entomology* **40**: 113–115.
- DISNEY, R.H.L., KURINA, O., TEDERSOO, L. & CAKPO, Y. 2013. Scuttle flies (Diptera: Phoridae) reared from fungi in Benin. *African Invertebrates* **54** (2): 357–371.
- HARTOP, E. & BROWN, B. 2014. The tip of the iceberg: a distinctive new spotted-wing *Megaselia* species (Diptera: Phoridae) from a tropical cloud forest survey and a new, streamlined method for *Megaselia* descriptions. *Biodiversity Data Journal* **2**: e4093 [1–17]. [doi: 10.3897/BDJ.2.e4093]
- KAY, P. & MCDANIEL, CH.K. 1978. The linguistic significance of the meanings of basic color terms. *Language* **54** (3): 610–646.
- KUNG, G.-A. & BROWN, B.V. 2000. The patterned-wing species of *Coniceromyia* (Diptera: Phoridae). *Contributions in Science* **484**: 1–10.
- MEUNIER, F. 1905. Nouvelles recherches sur quelques diptères et hyménoptères du copal fossile «dit de Zanzibar». *Revue scientifique du Bourbonnais et du Centre de France* **18**: 204–216.
- 1910. Contribution à la faune des Phoridae du copal sub-fossile de Zanzibar, récent de Zanzibar, de Madagascar et d'Accra. *Le Naturaliste* **32**: 5–7, 18–20.
- REGIER, T. & KAY, P. 2009. Language, thought, and color: Whorf was half right. *Trends in Cognitive Sciences* **13** (10): 439–446. [doi: 10.1016/j.tics.2009.07.001]
- WAKEFORD, T. & DISNEY, R.H.L. 1994. A Cuban *Megaselia* species (Diptera: Phoridae) with wing-spots. *Insect Systematics & Evolution* **25** (2): 227–230.

