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## ***Brianmyia stuckenbergi*, a new genus and species of Prosopochrysini from South Africa (Diptera: Stratiomyidae)**

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### ABSTRACT

A new genus and species of Stratiomyidae, *Brianmyia stuckenbergi* gen. et sp. n., are described from the Drakensberg, KwaZulu-Natal, South Africa. The new genus is placed in the tribe Prosopochrysini of the subfamily Stratiomyinae and is the first genus and species of this tribe known from southern Africa.

**KEY WORDS:** Stratiomyidae, *Brianmyia*, soldier flies, Afrotropical, South Africa, Drakensberg, new genus, new species.

### INTRODUCTION

The tribe Prosopochrysini of the subfamily Stratiomyinae is one of the few groups that have been recognised at the tribal level in the Stratiomyidae (Woodley 2001). When first proposed by James (1942) (as Myxosargini), the tribe contained six genera and was characterised by a combination of rather generalised characters. Woodley (1985) briefly reviewed these characters, and suggested that the sinuate  $A_1$  vein and the recurvedly arcuate  $CuA_1$  vein were possible synapomorphic character states for the tribe. The addition of three more genera to the tribe over the years (Woodley 2001, for summary), has complicated the situation, as some of these lack one (*Cyphoprosopa* James, 1975), or both (*Exochostoma* Macquart, 1842), of the putative synapomorphic character states. Woodley (2011) transferred six additional Afrotropical genera (*Goetghebueromyia* Lindner, 1938; *Keiseria* Lindner, 1966; *Lampetiopus* Lindner, 1936; *Madagascar* Lindner, 1936; *Madagascarina* Lindner, 1967 and *Pachyberis* James, 1975), to the Prosopochrysini, based on all of them possessing an antennal flagellum with six flagellomeres, an elongate body form, and two scutellar spines. These genera had previously been placed in the Pachygastrinae, based on their lacking vein  $M_3$ , a widely homoplasious character state in the stratiomyids.

The only molecular phylogenetic study of relationships within the Stratiomyidae (Brammer & von Dohlen 2007) suggested that the Prosopochrysini are most closely related to the Raphiocerinae, which would render the subfamily Stratiomyinae as recognised by Woodley (2001) paraphyletic. In the molecular study the tribe Oxycerini was the sister group to Prosopochrysini + Raphiocerinae. When one looks at a broad range of genera within these three higher taxa, the boundaries between them begin to blur. It may be that a single taxon composing the Oxycerini + Prosopochrysini + Raphiocerinae combined, which would be the sister group to the Stratiomyini, should be recognised. It is also possible that this grouping could be a paraphyletic grade from which the Stratiomyini arose.

In the Afrotropical Region, at a pragmatic level, the Prosopochrysini can be recognised from other Stratiomyidae by having six antennal flagellomeres, an elongate body form, with the abdomen distinctly longer than wide, and two scutellar spines. The Oxycerini are the group that is most similar to prosopochrysines, but they have a more compact

body form with the abdomen about as long as wide. In the Afrotropical Region, genera assigned to the Prosopochrysini are known only from central Africa and Madagascar. The new genus described below is the first prosopochrysine known from southern Africa.

#### MATERIAL AND METHODS

The specimens used in this study were borrowed some years ago from the KwaZulu-Natal Museum, Pietermaritzburg, South Africa (NMSA). Male terminalia were removed from the holotype specimen, cleared in hot KOH, and neutralised in dilute acetic acid. The terminalia are stored in a micro-vial on the pin of the specimen. Photographs were captured with a Visionary Digital BK Lab System. Morphological terminology follows McAlpine (1981), except “phallic complex” is used instead of “aedeagal complex”, following Sinclair *et al.* (1994).

#### TAXONOMY

##### Genus **Brianmyia** gen. n.

**Etymology:** The generic name is composed of the first name of Brian Stuckenberg, with the addition of the suffix *-myia*, meaning fly. Feminine gender.

**Type species:** *Brianmyia stuckenbergi* sp. n.

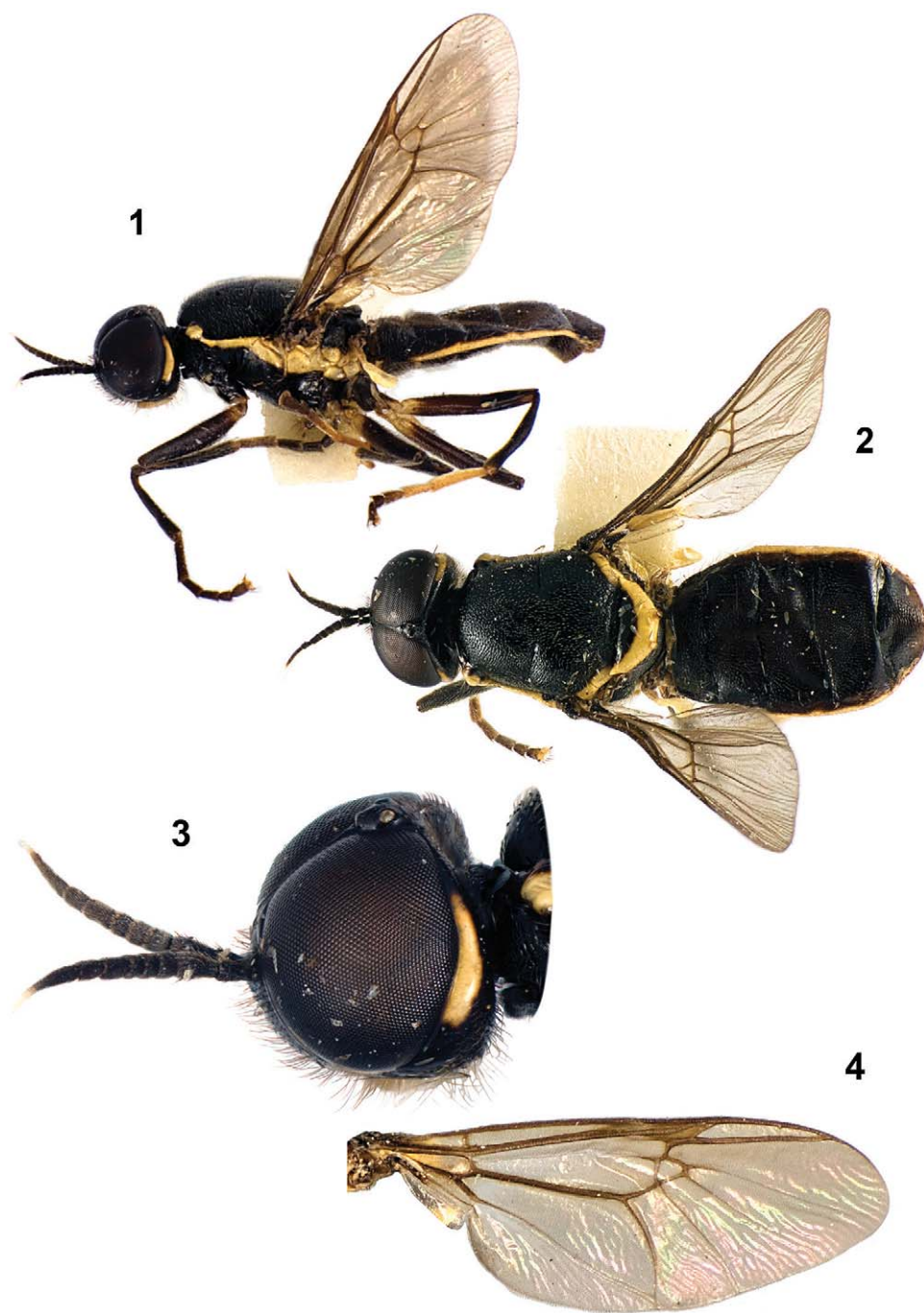
**Diagnosis:** *Brianmyia* gen. n. may be separated from other Afrotropical Prosopochrysini by lacking ventral tooth-like processes on the mid- and hind femora, which are not thickened (both states present in *Lampetiopus*, *Madagascara* and *Madagascarina*), having the sixth antennal flagellomere about as long as flagellomeres 1–5 combined (sixth distinctly longer than 1–5 in *Cyphoprosopa*, *Goetghebueromyia* and *Pachyberis*), and having the sixth flagellomere distinctly narrowed apically (not narrowed apically in *Keiseria*).

**Description:**

*Male.*

Head slightly narrower than thorax in dorsal view (Fig. 1); eyes bare, holoptic, contiguous at median part of upper frons (Figs 2, 3), ommatidia largest anterodorsally, but no distinct demarcation between upper and lower ommatidia; ocellar tubercle slightly prominent; lower frons triangular, with very fine median groove; face with margins continuous with those of lower frons, diverging ventrally, receding; gena narrowly visible in lateral view (Fig. 3), contiguous with postgena that is wide in lateral view, merging evenly with postocciput which gradually becomes much narrower toward vertex; antenna (Fig. 3) 1.4× length of head, scape slightly shorter than pedicel, flagellum 3.3× length of scape + pedicel, elongate conical with 6 flagellomeres, first three subequal in length, flagellomeres 4 and 5 slightly longer, and sixth flagellomere about as long as flagellomeres 1–5 combined, gradually narrowed toward apex; palpus apparently two-segmented (not dissected), small and slender.

Thorax with scutum convex; scutellum slightly convex, trapezoidal, with 2 marginal spines that are about half the length of scutellum; post-tegula usually without hair-like setae (one seta present on one side in one specimen); legs unremarkable, without modifications, without tibial spurs; wing (Fig. 4) evenly set with microtrichia, except posterobasally, alula bare, except for a narrow band of microtrichia along anterior



Figs 1–4. *Brianmyia stuckenbergi* gen. & sp. n., holotype: (1) dorsal view; (2) lateral view; (3) head and antenna, lateral view; (4) wing.

margin; costal vein extending slightly beyond apex of  $R_{4+5}$ , ending before wing apex;  $R_{2+3}$  originating distal to  $r-m$  by slightly more than the length of  $r-m$ , about even with distal margin of discal cell, and ending in costa;  $R_4$  absent; discal cell small, almost triangular; vein  $M_1$  weak beyond base;  $M_3$  absent; crossvein  $dm-cu$  very short to absent;  $CuA_1$  straight, extending to wing margin (although weakened distally);  $A_1$  slightly sinuate; alula narrow, nearly parallel-sided in apical half, narrowly rounded apically.

Abdomen (Fig. 2) about as wide as maximum thoracic width, about  $1.5\times$  longer than wide, elongate ovoid, dorsally nearly flat, ventrally slightly convex.

*Female.* Unknown.

### **Brianmyia stuckenbergi** sp. n.

Figs 1–8

**Etymology:** The species name is formed using the last name of Brian Stuckenberg, in honour of his contributing so much to Afrotropical dipterology.

**Description:**

*Male.*

Head shiny black, except for elongate pale yellow mark near middle of posterior margin of eye (Fig. 3); head without evident tomentum, ventral part of lower frons, face and gena with dark hair-like setae about as long as scape, becoming longer ventrally, a few short dark hairs present behind ocellar tubercle; ventral part of lower frons and face, except medially and along eye margins, with fine punctation; antenna black, with apical half of last flagellomere white (Figs 2, 3); scape and pedicel with short, black hair-like setae; flagellum with velvety vestiture; palpus pale brownish; proboscis yellowish with some erect, pale hair-like setae.

Thorax black, with a pleural band (Fig. 1) of yellowish white extending from most of postpronotal lobe, across upper part of anepisternum, most of anepimeron, lateral part of laterotergite, and katepimeron; postalar callus and broad margin of scutellum also yellowish white (Fig. 2); scutum finely punctate, scutellum smooth; scutum covered with short, dark semi-appressed hair-like setae; proepisternum, anterior and posterior parts of anepisternum, most of katepisternum, anepimeron, and laterotergite with short, semi-erect, whitish hair-like setae; foreleg entirely brownish black, except trochanter, which is more yellowish; midleg and hindleg each brownish black, except for trochanter, base of femur, and first 2 tarsomeres yellowish; legs with short, inconspicuous pilosity; wing almost imperceptibly infuscated, veins brownish, cell  $r_1$  dark yellowish; haltere pale whitish yellow, stem slightly darker than knob.

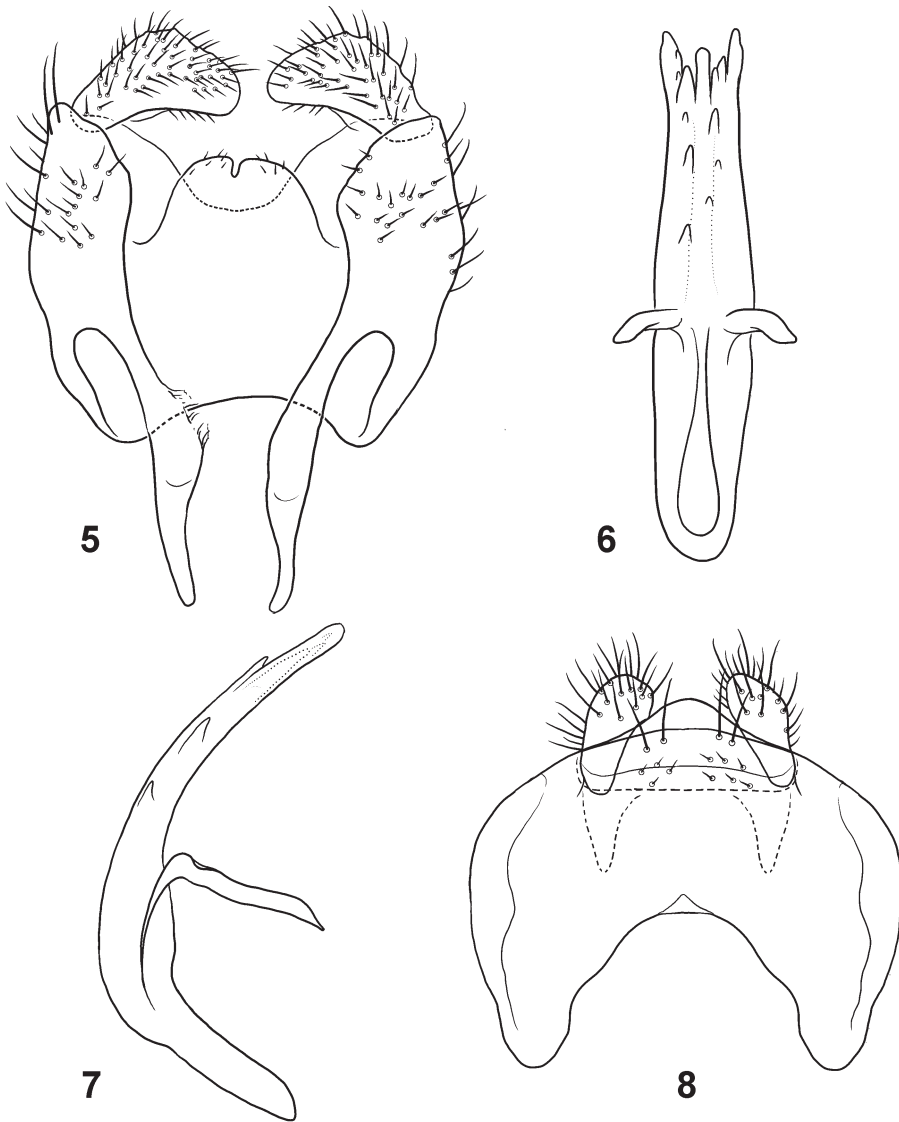
Abdomen with tergites brownish black, with narrow, pale yellow lateral margin (Fig. 2) extending from extreme apical part of tergite 1 to apex of tergite 5; tergites evenly set with short, dense, semi-appressed hair-like setae that are dark brownish to black in colour, a little longer and more erect with a few pale setae intermixed at lateral margins basally; sternites with short, semi-appressed pale hair-like setae, longest on sternite 1.

Male terminalia with gonocoxites (Fig. 5) slightly, unevenly rounded laterally, posterior margin of genital capsule slightly produced, with a small medial notch in dorsal view; gonocoxal apodemes long, extending anteriorly well beyond anterior margin of gonocoxites; gonostylus short, slightly arcuate (Fig. 5), slightly concave ventromedially;

phallic complex trifold with the lobes mostly fused anteriorly (Fig. 6), with a few appressed teeth ventrally, strongly arcuate in lateral view (Fig. 7), medial lobe truncate apically, slightly shorter than pointed lateral lobes; epandrium wider than long, more or less evenly rounded laterally and posteriorly (Fig. 8); cerci short, widely separated.

Length 4.5–5.8 mm, wing length 3.8–4.5 mm.

*Female.* Unknown.



Figs 5–8. *Brianmyia stuckenbergi* gen. & sp. n., male terminalia: (5) genital capsule, dorsal view; (6) phallic complex, dorsal view; (7) phallic complex, left lateral view; (8) epandrium and post-genital segments, dorsal view.



Holotype: ♂ SOUTH AFRICA: *KwaZulu-Natal*: Cathedral Peak area, 2829CC [28°57'S 29°12'E], 26–27. xii.1977, R.M. Miller, indigenous forest (NMSA).

Paratype: 1 ♂ SOUTH AFRICA: *KwaZulu-Natal*: Drakensberg Range, valley below Ships Prow Pass [29.104027°S 29.349461°E, max. error 2.2 km], 2100 m, 7.xii.1983, J. Manning, riverine scrub (NMSA).

Remarks: Nothing is known regarding the natural history of *B. stuckenbergi*, except that the species occurs at relatively high elevations on the Drakensberg. It is likely that the larvae are aquatic, or at least occur in some very wet habitat, as do other known species of the Stratiomyinae.

It is with great pleasure, but with sadness at his passing, that I dedicate this new species to Brian Stuckenberg. I only met Brian twice, at the 3<sup>rd</sup> and 4<sup>th</sup> International Congresses of Dipterology in Guelph and Oxford, where he showed tremendous and excited enthusiasm for the study of Diptera when I talked with him. This personal enthusiasm fuelled his own extensive and sometimes landmark studies of various groups of Diptera, and he was very encouraging and helpful to those working on the Afrotropical fauna. For example, most of the Stratiomyidae described by Erwin Lindner from southern Africa (see various references in Woodley 2001), were based on material sent to him and often collected by Brian. Brian's impact on the study of Afrotropical Diptera cannot be overestimated.

#### ACKNOWLEDGMENTS

I am grateful to the late Brian Stuckenberg (KwaZulu-Natal Museum) for loaning the specimens upon which this study is based. Martin Hauser (California Department of Agriculture) kindly provided me with images of numerous types from Muséum national d'Histoire naturelle, Paris, France. Taina Litwak (Systematic Entomology Laboratory) prepared the illustrations of the male terminalia (Figs 5–8). Gary Ouellette (Systematic Entomology Laboratory) took the images for Figs 1–4 and prepared the final plate; I am grateful for their help. Wayne Mathis (Smithsonian Institution) as well as Steven Lingafelter and Allen Norrbom (both of the Systematic Entomology Laboratory) critically reviewed the manuscript. USDA is an equal opportunity provider and employer.

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