

*This contribution is published
to honor Dr. Amnon Freidberg,
a scientist, a colleague and a friend,
on the occasion of his 75th birthday.*

Discovery of *Udzungwomyia* Grichanov in South Africa and definition of a new tribe Udzungwomyiini (Diptera: Dolichopodidae)

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ABSTRACT

New material for the Afrotropical genus *Udzungwomyia* Grichanov, 2018 has been recently found and identified. *Udzungwomyia simoni* n. sp. from South Africa is described and illustrated. This new species differs from the other representative of the genus in morphology of the male hind leg and genitalia mainly. A new record is given for the known Tanzanian species, *U. morogoro* Grichanov, 2018. A new tribe Udzungwomyiini, n. trib. is also proposed for *Udzungwomyia*, *Maipomyia* Bickel, 2004 and *Neomedetera* Zhu, Yang & Grootaert, 2007.

KEYWORDS: Medeterinae, Udzungwomyiini, Afrotropical, South Africa, identification key, long-legged flies, new tribe, new species, taxonomy.

INTRODUCTION

The Afrotropical genus *Udzungwomyia* Grichanov, 2018 was recently described by Grichanov (2018) for a new species *Udzungwomyia morogoro* Grichanov. The species was collected from the Udzungwa Mountains National Park in the Morogoro Region of Tanzania. The new genus has been associated with a peculiar group of mainly medeterine genera with symmetrical male postabdomen or nearly so, with epandrial foramen positioned basally. None of those genera was placed in one of the three tribes created earlier in the subfamily Medeterinae. A careful sorting of material from two museum collections in Copenhagen and Tel Aviv has revealed new material showing rather wide distribution of this group in tropical Africa. No *Udzungwomyia* material has been found in the collections of other African and European museums.

In this paper, a new species *Udzungwomyia simoni* n. sp. from South Africa is described. The present research gives also a new record for the type species, *U. morogoro* Grichanov, 2018. Now two *Udzungwomyia* species are found in South Africa and Tanzania. A new tribe Udzungwomyiini is also proposed for *Udzungwomyia*, *Maipomyia* Bickel, 2004 and *Neomedetera* Zhu, Yang & Grootaert, 2007. The third genus was described from Oriental China, and *Maipomyia* from Chile.

MATERIALS AND METHODS

The holotype of the new species is housed in the Steinhardt Museum of Natural History, School of Zoology, Tel Aviv University, Israel (SMNH-TAU). The other material cited in this work is housed in the Natural History Museum of Denmark, Zoological Museum, University of Copenhagen (ZMUC). The holotype has been studied and photographed with a ZEISS Discovery V-12 stereo microscope and an AxioCam MRc5 camera. Genitalia preparation has been photographed with a ZEISS Axiostar stereo microscope and an AxioCam ICc3 camera. Morphological terminology and abbreviations follow Cumming & Wood (2017) and Grichanov & Brooks (2017). The relative lengths of the antennomeres and podomeres should be regarded as representative ratios and not measurements. Body length is measured from the base of the antenna to the tip of abdominal segment 6. Wing length is measured from the base to the wing apex. The figures showing the hypopygium in lateral view are oriented as it appears in the intact specimens, with the morphologically ventral surface of the genitalia facing upwards, dorsal surface downwards, anterior end facing left and posterior end facing right.

TAXONOMY

Subfamily Medeterinae Lioy, 1864

Tribe **Udzungwomyiini** n. trib.

LSID: urn:lsid:zoobank.org:act:CA5ECF2C-195B-4C43-AC45-17A91346876B.

Type genus: *Udzungwomyia* Grichanov, 2018, here designated.

Diagnosis: The tribe comprises three genera, the monotypic Oriental *Neomedetera*, Neotropical *Maipomyia* with two species, and Afrotropical *Udzungwomyia* with two species. Bickel (2004), Zhu *et al.* (2007) and Grichanov (2018) gave reasons for associating the genera with the Medeterinae rather than Peloroepodinae. The tribe members have the following synapomorphic features: small species with body length 2–3 mm; face narrow, usually narrowing in middle; facial suture distinct at eye borders; posterior third of mesonotum distinctly flattened; mesonotum with 1 long notopleural, 1 humeral, 1 sutural, and 1 postalar bristles; 4–6 pairs of strong dorsocentral bristles in regular rows; mid and hind femora with anterior preapical bristles; epandrial foramen positioned basally or basoventrally, somewhat shifted to left side, or left laterally (*Maipomyia*); hypandrium short, bifurcated, or reduced (*Maipomyia*). The acrostichal setae are absent (*Udzungwomyia*, *Maipomyia*) or present, biseriate (*Neomedetera*, *Maipomyia*).

Key to tribes of Medeterinae and genera of Udzungwomyiini

- 1 Mid and hind femora with anterior preapical bristles; male epandrial foramen positioned basally or basoventrally, rarely left laterally; hypandrium short, bifurcated, or reduced (Udzungwomyiini n. trib.).....2
- Mid and hind femora bare of major anterior preapical bristles; male epandrial

- foramen usually left lateral, rarely positioned basally (“micromedeterine” genera); hypandrium usually long and simple (Medeterinae *s.s.*) 4
- 2 Vein R_{4+5} reaching costa closer to R_{2+3} than to M_1 ; M_1 distinctly weaker than other veins; 5–6 pairs of strong dorsocentral bristles; epandrial foramen positioned left laterally; hypandrium reduced *Maipomyia*
- Vein R_{4+5} reaching costa closer to M_1 than to R_{2+3} ; M_1 not weaker than other veins; 4 pairs of strong dorsocentral bristles; epandrial foramen positioned basally or basoventrally, somewhat shifted to left side; hypandrium short, bifurcated 3
- 3 Acrostichal setae absent; lateral scutellars present, hair-like; distal part of vein M_1 weakly curved, subparallel to R_{4+5} ; hind basitarsus distinctly shorter than next tarsomere; male segments 6 and 7 bare, segment 7 reduced; segment 8 well-developed, setose *Udzungwomyia*
- Acrostichal setae present, biseriate; lateral scutellars absent; distal section of wing vein M_1 arched anteriorly, distinctly converging with R_{4+5} ; hind basitarsus about 2 times longer than next tarsomere; male segments 6 and 7 subequal in length, setose; segment 8 reduced, bare *Neomedetera*
- 4 Veins R_{4+5} and M_1 subapically bowed; distal sector of veins R_{4+5} and M_1 with flexion; thorax with posterior pair of acrostichal setae often distinctly larger than preceding pair and off-set laterally; usually 6 strong dorsocentral setae; antenna sexually dimorphic, male postpedicel elongate; male terminalia with abdominal segment 7 with tergite and sternite distinct; epandrium and hypandrium immovably fused; female terminalia with tergite 10 divided medially into 2 hemitergites, each bearing a row of 4 spines Systemini Robinson
- Veins R_{4+5} and M_1 subparallel or convergent; vein M_1 without flexion; thorax with acrostichal setae absent, or aligned in 2 rows; usually 5, or fewer dorsocentral setae; antenna usually similar in male and female, or sometimes dimorphic; male terminalia with abdominal segment 7 with tergite and sternite fused, or sternite greatly reduced; hypandrium free and movable; female hemitergites usually without spines 5
- 5 R_{4+5} and M_1 behind mid wing parallel to apex; acrostichal setae present; hind coxa with 2 lateral setae; body coloration usually bright metallic green Thrypticini Negrobov
- R_{4+5} and M_1 convergent, at most subparallel at apex; if those veins parallel behind mid wing to apex, then acrostichal setae absent or hind coxa with one lateral seta; body coloration usually dark Medeterini Lioy

Genus *Udzungwomyia* Grichanov, 2018

Type species: *Udzungwomyia morogoro* Grichanov, 2018 (original designation).

Diagnosis: This generic diagnosis is based on males and females of two included species, and lists features considered to be of generic importance. Body generally brown-black, weakly pollinose; face in middle about as wide as postpedicel height;

antenna about as long as head height, black; postpedicel about as large as pedicel, semiglobular, with indistinct apex; stylus preapical; mesonotum with 1 long and 1 short notopleural, 1 supra-alar bristles; acrostichal setae absent; lateral scutellars present, hair-like; mid and hind legs with short, but distinct black major bristles; hind basitarsus shorter than next segment; distal section of vein M_1 weakly curved, R_{4+5} and M_1 slightly converging on distal half, subparallel at wing apex; crossvein $dm-m$ positioned at wing midlength, shorter than maximum distance between R_{4+5} and M_1 veins; postabdomen nearly symmetrical, with epandrial foramen positioned basally; male segments 6 and 7 bare, segment 7 reduced, devoid of setae; segment 8 well-developed, setose; genitalia mostly exposed; hypandrium midventral, bifurcated from base, with two long and thin arms; phallus simple; surstylus strongly developed and distinctly divided, with ventral arm fused to epandrium, and dorsal arm free. Female terga 9+10 divided medially into 2 hemitergites, each bearing one thick spine and several long simple setae.

Key to species of *Udzungwomyia* (males)

- 1 Hind tibia with 2 thick golden apicals; hind tarsus 1.5 times longer than hind tibia; hind basitarsus with row of short ventrals, nearly as long as diameter of tarsomere; body length about 3 mm (Tanzania) *U. morogoro*
- Hind tibia with 2 thick black apicals; hind tarsus about as long as hind tibia; body length about 2 mm (South Africa) *U. simoni* n. sp.

Udzungwomyia simoni n. sp.

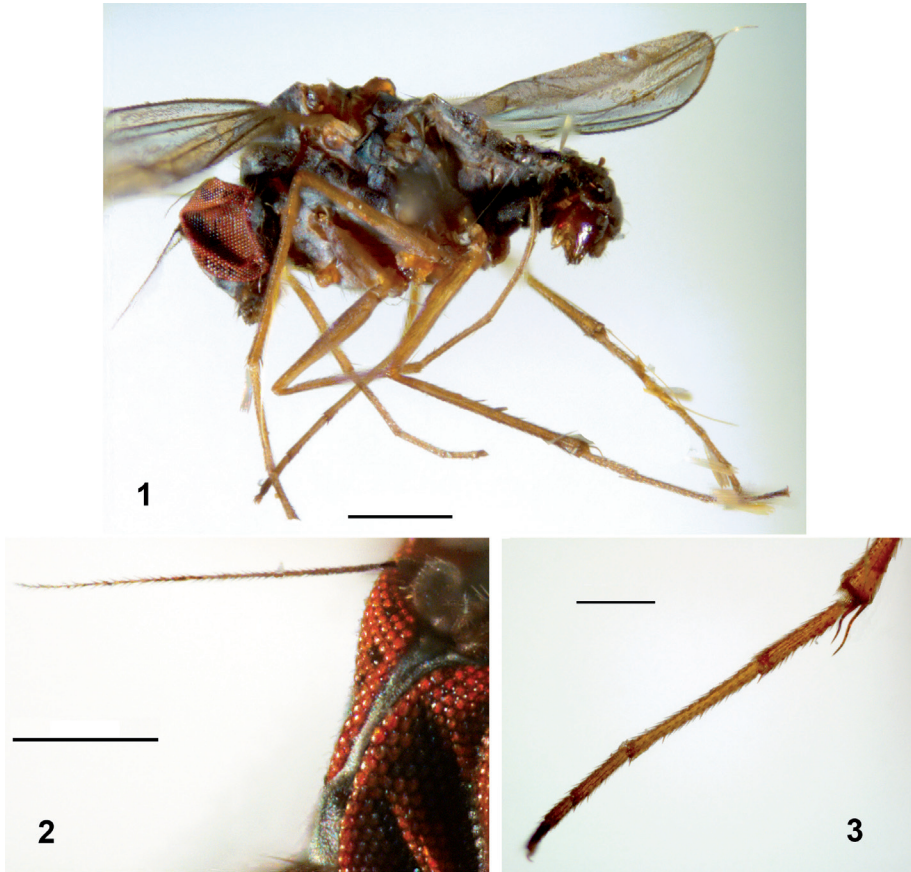
(Figs 1–8)

LSID: urn:lsid:zoobank.org:act:3B99522F-5983-46FA-B641-BBD3223E9670.

Etymology: The species is named after the Israeli entomologist Dr Dany Simon, the collector of the type specimen.

Diagnosis: Body length about 2 mm; hind tibia with 2 thick black apicals; hind tarsus about as long as hind tibia; surstylus with dorsal arm narrow, with strong middorsal seta; ventral arm 2 times wider than dorsal arm, fused to epandrium, with strong midventral seta; 1 seta between arms of surstylus.

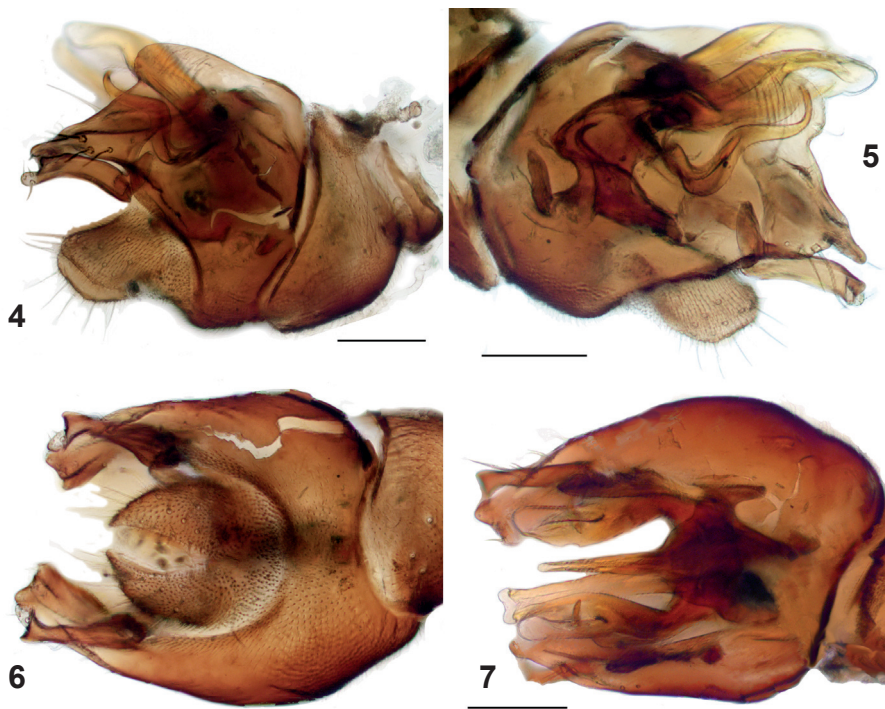
Description: Male (Fig. 1). *Head* (Fig. 2; shrunken): Vertex and frons black, grey pollinose, with black major bristles; face black, whitish pollinose; vertical bristle black, strong and long, positioned on anterior slope of head; short postvertical seta as a linear continuation of postocular setal row; one pair of strong ocellar bristles with adjacent pair of hairs; single row of fine white simple postoculars decreasing in size upward; few upper postoculars black; eyes with short hairs between facets below, with microscopic hairs above; face under antenna and clypeus about 2× as wide as postpedicel height, narrowing at middle; face 10× as high as face width in middle; facial suture distinct; antenna (Fig. 2) about as long as head height, black; scape and pedicel small, simple; pedicel with ring of apical setulae of approximately



Figs 1–3: Male *Udzungwomyia simoni* n. sp.: (1) habitus; (2) antenna and anterior part of head, lateral view; (3) hind tarsus. Scale bars: 0.5 mm in Fig. 1, 0.2 mm in Figs 2, 3.

equal length; postpedicel slightly larger than pedicel, semiglobular, with indistinct apex, as long as high, white pubescent; stylus preapical, filiform, shortly haired, with its 1st segment being very short; lengths of scape, pedicel, postpedicel, stylus (segments 1 and 2), 0.05/0.05/0.07/0.04/0.52; palpus brown, as long as clypeus, oval, light haired, with black apical seta; proboscis thick, projected, light haired.

Thorax (shrunken): Matt, black, grey pollinose, with black setae; anterior slope of mesonotum shortly haired; 4 strong dorsocentrals; acrostichals absent; scutellars broken; 1 long and 1 short white propleural setae above fore coxa. *Legs*: Long and slender, mainly dirty yellow; setae and setulae black except as noted; fore coxa brown; mid and hind coxae black except orange apex; femora brown on basal half; fore and mid coxae with short simple anterior cilia; hind coxa with 1 strong lateral bristle at middle; claws on all legs small and black, pulvilli small and white; fore



Figs 4–7: Male *Udzungwomyia simoni* n. sp., hypopygium, left lateral (4), right lateral (5), ventral (6), and dorsal (7) views. Scale bars, 0.1 mm.

leg devoid of bristles, but fore tibia with 2–3 short apical setae; mid femur simple, with short fine anterior preapical seta; mid tibia with 1 short anterodorsal and 3–4 short apical setae; tarsomeres 1–4 with short apicals; hind femur simple, with anterior preapical seta, as long as diameter of femur; hind tibia slightly swollen at apex, with 2–3 short dorsals behind middle and 2 long curved black apicals of unequal length (Fig. 3); hind basitarsus with basiventral process; tarsomeres 1–4 with short apicals (Fig. 3); tibia and tarsomere (from first to fifth) length ratios: fore leg: 0.73:0.41:0.28:0.16:0.1:0.09, mid leg: 0.97:0.52:0.26:0.13:0.09:0.1, hind leg: 1.07:0.28:0.4:0.18:0.1:0.11. *Wing*: Hyaline, with brown veins; R_{2+3} and R_{4+5} gradually diverging to wing apex; R_{4+5} and M_1 slightly converging on distal half, subparallel at wing apex. M_1 almost straight, joining costa beyond wing apex; ratio of part of costa between R_{2+3} and R_{4+5} to this between R_{4+5} and M_1 to $dm-m$ to distal part of M_4 (in mm), 0.2:0.14:0.2:0.27; crossvein $dm-m$ almost straight, forming right angles with M_4 and with M_1 longitudinal veins, about as long as maximum distance between R_{4+5} and M_1 veins; anal vein fold-like; narrow anal lobe present; alula absent; posterior wing margin between convex immediately before M_4 ; lower calypter yellow, with light setae; haltere brownish.

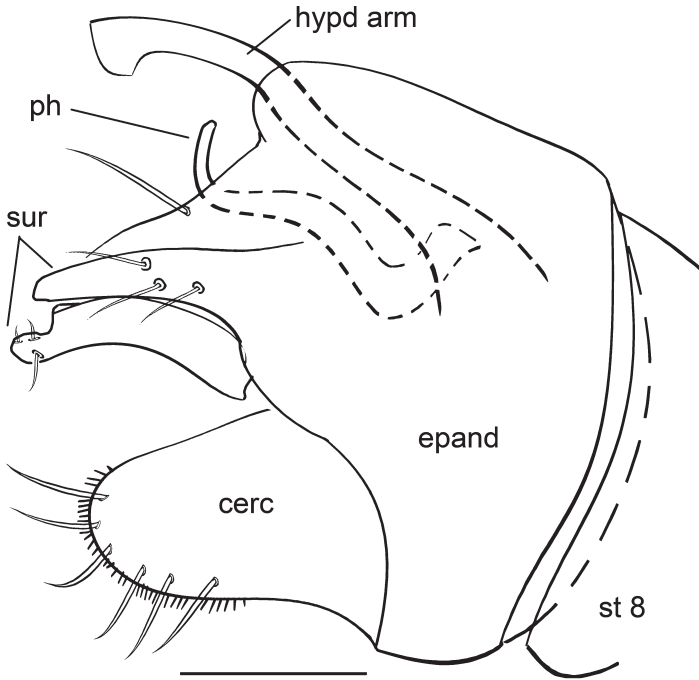


Fig. 8: *Udzungwomyia simony* n. sp., details of hypopygium, left lateral view, schematic. Abbreviations: cer – cercus, epand – epandrium, hypd arm – hypandrial arm, ph – phallus, st 8 – sternite 8, sur – surstylus. Scale bar, 0.1 mm.

Abdomen (shrunken): Matt, black, laterally grey pollinose, with black hairs and setae along tergal margins; tergum 1 with longish light marginal setae; terga 1–6 and sterna 2–6 well-developed; tergum 5 forming ventral hood posteriorly; sternum 6 bare, covered with microtrichia; tergum 7 semicircular, very narrow, symmetrically lying along posterior margin of tergum 6, bare, ending laterally with minute plates (sternum 7) covered with microtrichia; segment 8 large, rounded, with short ventral process, covering basal side of epandrium, covered with microtrichia and sparse setae. *Hypopygium* (Figs 4–8) including cerci entirely black, with light cilia; epandrium globular, basally asymmetrical, as long as high (lateral aspect), with symmetrical appendages; foramen large, positioned basally, but slightly shifted towards left side; hypandrium midventral, bifurcated from base, with two short pointed curved arms; parameral sheath strongly projected and sclerotised, bifurcated, with additional hook on both arms; phallus simple, short and thin distally; epandrial lobe broad, projected, fused with ventral side of epandrium, with strong apical seta; surstylus projected, bilobate, with subequal in length dorsal and ventral arms, covered with short apical setae; dorsal arm narrow, with strong middorsal seta; ventral arm 2× wider than dorsal arm, fused to epandrium, with strong midventral seta; 1 seta between arms

of surstylus; cercus small, ovate, with blunt apex, covered with small hairs, bearing several simple setae dorsally and apically; cerci not fused.

Measurements (mm): Body length 2.1, antenna length 0.7, wing length 1.8, wing width 0.6.

Female. Unknown.

Holotype: ♂ **South Africa:** *Limpopo:* Louis Trichardt [23°03'S 29°54'E], 9.ii.1988, D. Simon (SMNHSTA).

Udzungwomyia morogoro Grichanov, 2018

Udzungwomyia morogoro Grichanov, 2018: 12.

New records: **Tanzania:** 5♂ 4♀, Morogoro Region, Udzungwa Mountains National Park, 7°50'35"S 36°49'49"E, 1000 m, 11–13.xi.2009, T. Pape & S.A. Marshall (ZMUC); 1♂, Udzungwa Mountains, Chita Forest Reserve, 750 m, 28.x.1984, M. Stolze & G. Petersen (ZMUC).

Distribution: The species is only known from Tanzanian Udzungwa Mountains.

DISCUSSION

In the present study, a new species *Udzungwomyia simoni* n. sp. is described by a single holotype collected at the Louis Trichardt town, which is nested in the Soutpansberg mountain range in the Limpopo Province of South Africa. In contrast to other provinces of the country, Limpopo is largely undercollected, and the type was apparently accidentally caught together with many other insects. Louis Trichardt is remarkably far from the type locality of *U. morogoro* in the well-studied Tanzanian Udzungwa Mountains, being separated by some 2000 km. There are many poorly studied mountain ranges in East Africa between Tanzania and South Africa, so that we can anticipate discovery of more *Udzungwomyia* species in future.

The subfamily Medeterinae as a whole numbers 29 genera (Grichanov 2017). Cosmopolitan Systemini with four extant genera and Thrypticini with two genera are most probably monophyletic tribes. Ten genera are associated currently with the tribe Medeterini, being mainly close relatives with the specious Cosmopolitan genus *Medetera* Fischer von Waldheim, 1819. The position and relations of 12 more medeterine genera (including some “micromedeterines”) are uncertain and need further study. I propose here a new tribe Udzungwomyiini for *Udzungwomyia*, *Maipomyia* and *Neomedetera*, differing from all other medeterines in such striking apomorphy as anterior preapical bristles on the mid and hind femora. The two genera (*Udzungwomyia* and *Neomedetera*) are also remarkable in the male epandrial foramen positioned basally or basoventrally, and the hypandrium being short and bifurcated, or reduced in *Maipomyia*. In Dolichopodidae, there are four more medeterine genera in addition to *Babindella* Bickel, 1987, with epandrial foramen positioned basally or nearly so (Grichanov 2018). However, they cannot be included into Udzungwomyiini due to great difference in wing or hypopygium morphology. At present, members of the new tribe inhabit tropics of Africa, South America and Asia.

It is worth noting that *Udzungwomyia* and *Neomedetera* go to some genera of the subfamily Peloropeodinae in general keys to dolichopodid genera (e.g., Bickel 2009; Grichanov & Brooks 2017). Nevertheless, peloropeodine species differ from *Udzungwomyiini* in many characters, first of all in short robust legs bearing strong major bristles; indistinct facial suture; postpedicel usually subtriangular, much larger than pedicel, with usually dorsal arista-like stylus; genitalia often mostly concealed; postabdomen asymmetrical, with left lateral epandrial foramen.

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