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## A review of the Afrotropical genus *Aristobatina* Verbeke (Diptera: Micropezidae: Taeniapterinae), with descriptions of four new species from the Eastern Arc Mountains of Tanzania

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### ABSTRACT

*Aristobatina* Verbeke is redefined and reviewed, and four new species, namely *A. melasma*, *A. metamelasma*, *A. morogoro* and *A. udzungwa* from the Eastern Arc Mountains of Tanzania are described. The diagnosis of *Aristobatina* is expanded to include species with outer vertical setae. *Aristobatina* is compared to *Tanypomyia* Verbeke and the latter genus is removed from synonymy with *Mimegralla* Rondani.

**KEY WORDS:** *Aristobatina*, *Tanypomyia*, Diptera, Micropezidae, Taeniapterinae, Afrotropical Region taxonomy, new species, identification key.

### INTRODUCTION

*Aristobatina* Verbeke, 1951, an endemic Afrotropical genus of two known species, was diagnosed by Verbeke (1951) and Barraclough (1996) primarily on the basis of a brick-red thorax and the absence of an outer vertical (lateral vertical) seta. The four *Aristobatina* species described here from the Eastern Arc Mountains of Tanzania lack these diagnostic characters, having both outer and inner vertical setae and having at most only the posterior half of the scutum dark brick-red. These species resemble previously described *Aristobatina* spp. in having the abdominal base somewhat to strongly petiolate, the first fore tarsomere elongate, the scutum elevated postsuturally, and three spermathecae (one very small, two large) with elongated basal ducts characteristically studded with numerous prominent outgrowths. Known males (of two new species described herein as well as the two described species) share distinctive postabdominal synapomorphies, including a basiphallus that is extended far beyond the base of the distiphallus. The spermathecal and internal male terminalia structures, especially the unique basiphallus-distiphallus junction, provide strong evidence for the monophyly of this group.

If Verbeke's 1951 key to Afrotropical genera of Micropezidae is used, the characters of the new Tanzanian *Aristobatina* species lead to *Tanypomyia* Verbeke, a genus synonymized with *Mimegralla* Rondani, 1850 by Steyskal (1980). *Tanypomyia* was described for two species with postocellar setae, both species having been considered by Verbeke (1951) to be very closely related to *Aristobatina*. As Verbeke cogently argued, the Afrotropical endemic genera *Glyphodera* Enderlein, 1922, *Cephalosphen* Hennig, 1934, *Erythromyiella* Hennig, 1935, *Aristobatina* Verbeke, 1951 and *Tanypomyia*, appear to form a clade characterized by male terminalia very different to those occurring in *Mimegralla* and related genera. All of these endemic Afrotropical genera have a peculiar recurved, membranous distal distiphallus section that usually terminates in a swollen and spinulose head or "glans". Furthermore, all representatives of these genera that were known to Verbeke have unequally developed postgonites, with the left longer than the

right. These characters contrast sharply with those of Afrotropical species of *Mimegralla* (including the Afrotropical species placed in *Cyclosphen* Frey, 1927 by Verbeke), which also almost always differ from other Afrotropical Micropezidae in lacking postocellar setae. Steyskal (1980) thus erred in synonymizing *Tanypomyia* with *Mimegralla*, and *Tanypomyia* is here reinstated.

#### MATERIAL AND METHODS

In view of the similarity between *Aristobatina* and *Tanypomyia*, both species of *Tanypomyia* were borrowed from the RMCA in order to compare them with the redefined *Aristobatina*. The types of *Tanypomyia venusta* (Enderlein, 1922) were also examined; during a visit to ZMHB in 2002. *Aristobatina* and *Tanypomyia* can be distinguished by use of the key presented below.

Descriptions follow in alphabetical order. *Aristobatina rufithorax* is redescribed as previous descriptions were based on partial material. *Aristobatina principalis* was redescribed and illustrated by Barraclough (1996) and is thus not included below.

Photographs of living specimens were taken in the field with a Nikon 300S camera, 105 mm macro lens, and hand-held flash. Terminalia were prepared for study and photography by maceration in potassium hydroxide; temporary mounts in glycerine were photographed using a Nikon Coolpix mounted on a Zeiss compound microscope.

A list of institutional abbreviations used in the text is provided below.

- CNCI – Canadian National Collection of Insects, Ottawa, Canada;  
 ZMUC – Zoological Museum, University of Copenhagen, Copenhagen, Denmark;  
 RMCA – Musée Royal de l'Afrique Centrale, Tervuren, Belgium;  
 DEBU – University of Guelph Insect Collection, School of Environmental Sciences,  
 University of Guelph, Ontario, Canada;  
 ZMHB – Museum für Naturkunde, Berlin, Germany.

#### TAXONOMY

Key for the separation of the genera *Tanypomyia* and *Aristobatina*

1. Outer vertical seta present; frontal vitta with large, black, swollen or convex area more than  $\frac{1}{2}$  as wide and  $\frac{1}{2}$  as high as entire frons (Fig. 29). Fore tarsus entirely white or distal tarsomeres slightly brownish; mid tibia alternately banded with brown and orange or yellow (Figs 28, 30); hind femur flattened, with distinct groove or sulcus. Neither basiphallus nor postgonite extending far beyond base of distiphallus (Fig. 31). Base of each spermatheca with scale-like sculpturing (Fig. 32) ..... ***Tanypomyia*** Verbeke
- Outer vertical seta absent or present. If present, then frontal vitta with relatively small, dark, swollen area restricted to upper part of frons, lower part of frons broad and orange. Fore tarsus dark distally; mid tibia usually predominantly black, with contrasting orange distal area; if brown with yellow annuli, then outer vertical seta absent; femora and tibiae cylindrical, not distinctly flattened, without longitudinal groove. Basiphallus (of known males) extending far beyond base of distiphallus (Fig. 5). Base of each spermatheca with prominent lobes (Figs 15–17) ..... ***Aristobatina*** Verbeke

Genus *Aristobatina* Verbeke

*Aristobatina*: Verbeke 1951: 57. Type species: *Aristobata principalis* Frey, 1929, by original designation.

## Diagnosis:

Relatively large Taeniopterinae (11–16 mm), with abdomen strongly to weakly petiolate. *Head*: Arista bare; clypeus strongly convex, entirely microsetulose; palpus parallel-sided, densely microsetulose, with a few small setulae, but lacking outstanding setae; lower frons flat, projecting slightly anterior to eyes, supra-antennal shelf distinct; frontal vitta with small, elevated area restricted to upper  $\frac{1}{2}$ ; lower  $\frac{1}{2}$  of frons flat with straight margin; 2 pairs of fronto-orbital setae, posterior pair usually at or behind level of ocelli. *Thorax*: Legs cylindrical, without longitudinal grooves on tibiae or femora; tarsomere 1 of foreleg white, longer than remaining tarsomeres combined; postpronotum with a few minute setulae only; 1 distinct dorsocentral seta, 2 notopleural setae, 1 supra-alar and 1 postalar seta. *Wing*: Anal cell short, broad, bare. *Female postabdomen*: 2 large spermathecae with prominently studded ducts and single smaller spermatheca of similar shape and ornamentation. Bursa copulatrix simple, ventral receptacle small and widely separated from the separate spermathecal ducts. *Male terminalia*: Genital fork (sternite 5) of known males with medial surface densely clothed in stout, short setae; phallus characteristically shaped, with distally bifid basal distiphallus and strongly recurved distal distiphallus terminating in a spinulose swelling (“glans”); known males with basiphallus extending beyond base of distiphallus.

Key to the species of *Aristobatina* Verbeke

- 1 Outer vertical seta absent (Fig. 19); notum brick-red in colour (Figs 18, 20) .....2
- Outer vertical seta present (Fig. 22); notum predominantly dark brown to black in colour.....3
- 2 Mid femur dark in basal  $\frac{2}{3}$ , orange distally (Fig. 20); male with ejaculatory apodeme extremely large, much larger than epandrium (Fig. 13) .....  
..... **rufithorax** (Enderlein) (Tanzania)
- Mid and hind femora brown, with 2 yellow rings; male with ejaculatory apodeme very small, much smaller than epandrium .....  
..... **principalis** (Frey) (Malawi, Mozambique and Zimbabwe)
- 3 Wing with macula or fascia; fore femur predominantly orange; overall length 12–14 mm; usually with small intrapostalar seta present (between postalar and presutural dorsocentral setae).....4
- Wing uniformly infusate; fore femur black (Fig. 27); overall length more than 15 mm; without intrapostalar setae (between single postalar and dorsocentral setae) .....  
..... **udzungwa** sp. n. (Tanzania)
- 4 Wing with discal band reduced to a circular patch (Figs 2, 23); mid femur uniformly orange, except apically.....5
- Wing with extensive discal band, extending from  $R_1$  to  $CuA_1$  (Fig. 26); mid femur either predominantly black or banded in pale brown and orange. ....  
..... **morogoro** sp. n. (Tanzania)
- 5 First 2 tarsomeres of hind leg white (Fig. 21). Paired spermathecae short, with a striate surface (Fig. 16)..... **melasma** sp. n. (Tanzania)

- Second tarsomere and at least distal  $\frac{1}{3}$  of first tarsomere of hind leg dark (Fig. 2). Paired spermathecae elongate, with a smooth surface (Fig. 1). .....metamelasma sp. n. (Tanzania)

### **Aristobatina metamelasma sp. n.**

Figs 1–6

**Etymology:** From the Greek words *meta* (near) and *melasma* (black spot), referring to the distinctive discal macula on the wing of this and the closely related *A. melasma*.

**Description:**

**Length** (head to wing tip): 13–15 mm.

**Colour:** Head orange anteriorly, reddish brown posteriorly, swollen part of frontal vitta dark reddish brown; thorax dark reddish brown; abdomen shiny blue-black; fore femur orange in basal  $\frac{2}{3}$ , brown distally; mid and hind femur uniformly orange except for a small dark area at apex; mid tarsus dark brown or black; basal  $\frac{1}{2}$  of tarsomere 1 of hind leg pale, tarsus otherwise dark brown to black; abdominal pleurae grey on pinned types.

**Head:** Scape bare except for marginal ring of short setae; pedicel short and setose, with some longer ventral apical setae; frontal vitta with strongly convex elongate oval area surrounding ocelli and extending half the distance from anterior ocellus to anterior margin of frons; 2 pairs of fronto-orbital setae, 1 large and above level of ocelli, 1 smaller below; postocellar, outer and inner vertical setae well-developed.

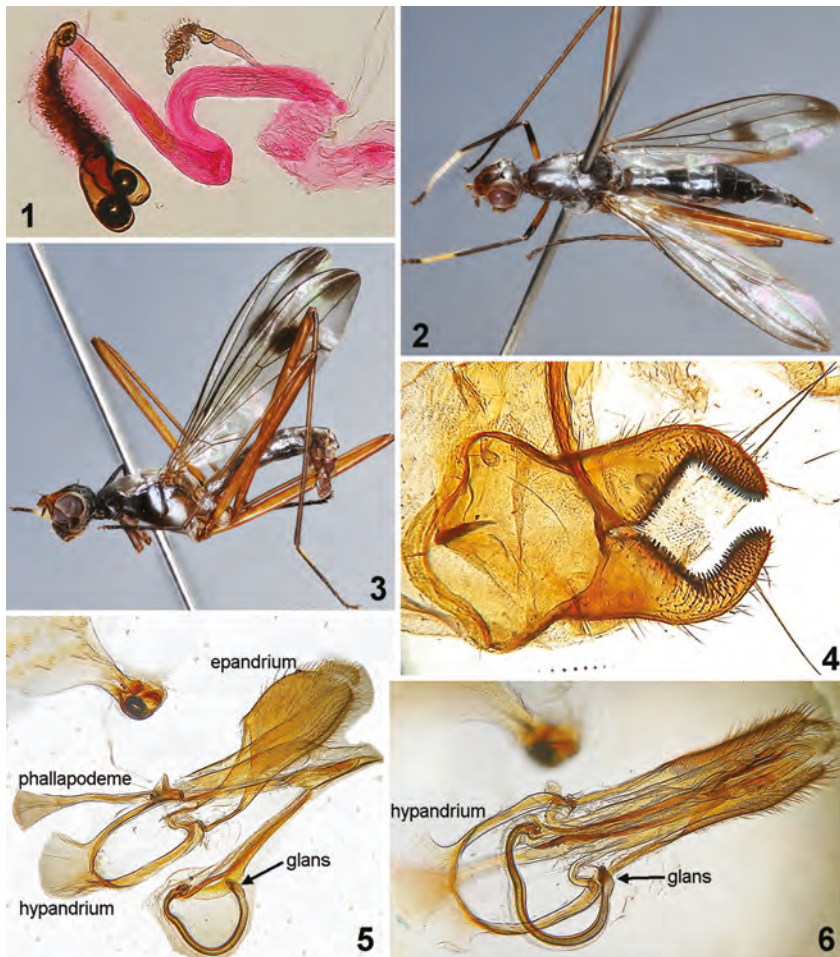
**Thorax:** Cervical sclerite flat, dull, microtrichose; proepisternum with a few long marginal ventral setae on posterior  $\frac{1}{2}$ ; katepisternum with double row of thin black setae, anterior row with only 5 setae, barely overlapping with lower end of posterior row; scutellum with 1 pair of marginal setae only, 1 small to minute seta between postalar and dorsocentral setae.

**Wing:**  $CuA_2$  virtually at right angle to and in line with  $bm-cu$ , wing membrane with a distinctly infuscated tip and a small, circular discal macula extending from just anterior to  $R_{4+5}$  to  $M$ ; tegula, basicosta and stem vein brown, similar to adjacent wing base, stem vein dorsally microsetulose at base; wing base with 3 long costagial setae, inner one very long and inclinate.

**Female abdomen:** Paired spermathecae elongate egg-shaped,  $1.9\times$  as long as wide, with a constriction in basal  $\frac{1}{3}$ , surface otherwise smooth, spermathecal duct densely covered with knob-like processes beyond the division of the common duct into 2 straight branches (Fig. 1). Single spermatheca on a much shorter and smaller duct, body densely covered with processes much like the paired spermathecal ducts.

**Male abdomen:** Pleuron with large dome-like differentiated area on segment 4 (occupying approximately ventral  $\frac{3}{4}$  of pleuron 4); hypandrium with a very short anterior plate and strong posterodorsal arms connecting to phallic plate, dorsolateral margin of posterodorsal arm with a prominent lobe (Fig. 5). Basiphallus elongate and tapered posteriorly, extending well beyond base of distiphallus; postgonites equal, small and finely spinulose ventrally; distiphallus with tubular basal part bifurcating before transition into strongly dextrally recurved membranous distal part, apex with a finely spinulose glans (Fig. 6); ejaculatory apodeme slightly larger than epandrium; genital fork (sternite 5)





Figs 1–6. *Aristobatina metamelasma* sp. n.: (1) spermathecae and bursa copulatrix; (2) female, dorsal view; male: (3) lateral view; (4) sternite 5; (5) terminalia, dorsolateral view; (6) terminalia, ventral view. Not to scale.

with gap Y-shaped at base (Fig. 4), inner surfaces of arms densely spinose and with a right-angled bend in the middle.

Holotype ♂ and 3 ♀ paratypes: TANZANIA: Uluguru Mountains: “Tanganyika, Uluguru Mts, 1500–1800m” (CNCI).

Comments: This species is closely related to *A. melasma*, from which it differs in spermathecal shape and sculpturing and in the pigmentation of the hind tarsus.

### ***Aristobatina melasma* sp. n.**

Figs 16, 21–23

Etymology: From the Greek for “black spot” referring to the distinctive discal macula that characterizes this and the closely related *A. metamelasma*.

**Description:**

*Length* (head to wing tip): 11–15 mm.

*Colour*: Head orange anteriorly, reddish brown posteriorly, swollen part of frontal vitta dark reddish brown; thorax reddish brown; abdomen shiny blue-black; fore femur orange in basal  $\frac{2}{3}$ , brown distally; mid femur uniformly orange except for black apex; hind femur orange at base and apex, but brown medially; basal 2 tarsomeres of fore and hind legs white, tarsomere 3 darker, tarsomeres 4 and 5 black; mid tarsus dark brown or black; abdominal pleurae entirely black in life (Fig. 21), grey on the pinned holotype (same individual as in Fig. 21).

*Head*: Scape bare except for marginal ring of short setae; pedicel short-setose, with some longer ventral apical setae; frontal vitta with strongly convex circular area surrounding ocelli, extending  $\frac{1}{2}$  distance from anterior ocellus to anterior margin of frons; 2 pairs of fronto-orbital setae, 1 large above level of ocelli, 1 smaller below; postocellar, outer and inner vertical setae well-developed.

*Thorax*: Cervical sclerite flat and dull, with lateral indentation and small anterolateral vertical carina; proepisternum with a few long marginal ventral setae on posterior  $\frac{1}{2}$ ; katepisternum with double row of thin black setae, anterior row with only 5 setae, barely overlapping with lower end of posterior row; scutellum with 1 pair of marginal setae only, 1 small to minute seta between postalar and dorsocentral setae.

*Wing*:  $CuA_2$  virtually at right angle to and in line with  $bm-cu$ , wing membrane with a small circular discal macula extending from just anterior to  $R_{4+5}$  to  $M$  and having a distinctly infuscated tip; tegula and basicosta brown, similar to adjacent wing base, but base of stem vein black and dorsally microsetulose; wing base with 3 long costagial setae, inner one very long and inclinate.

*Female abdomen*: Paired spermathecae short,  $1.2\times$  as long as wide, with a transversely striate surface (Fig. 16); spermathecal duct densely covered with knob-like processes beyond the division of the common duct into two straight branches. Single spermatheca not observed.

*Male*: unknown.

Holotype ♀: TANZANIA: Morogoro Region, Udzungwa Mts Nat. Park, 07°50'35"S 36°49'49"E, 11–13. xi.2009, 1000 m, T. Pape & S.A. Marshall (DEBU#00323614, deposited in ZMUC).

*Comments*: This appears to be a close sister species to *A. metamelasma* from the Uluguru Mountains.

***Aristobatina morogoro* sp. n.**

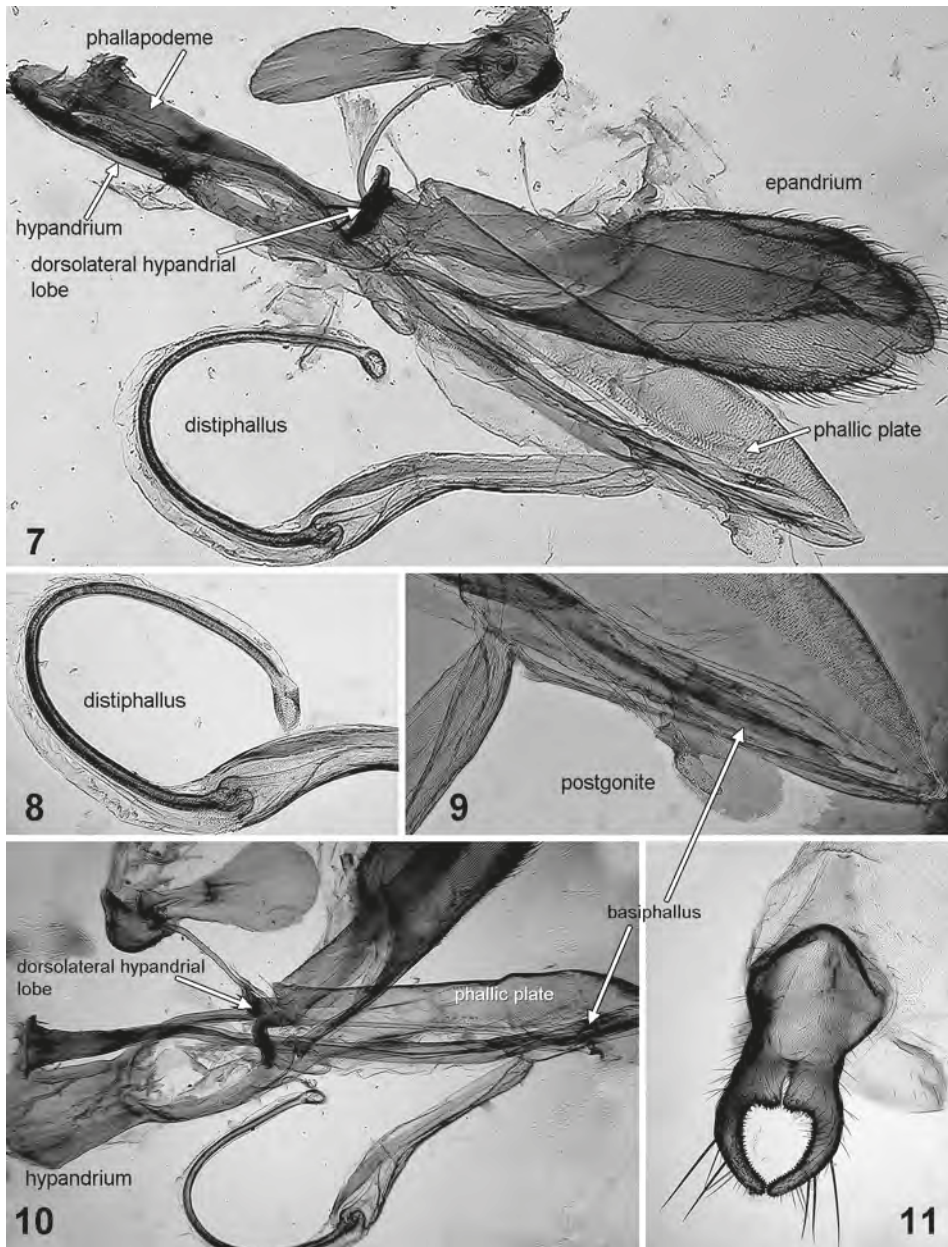
Figs 7–11, 24–26

*Etymology*: The specific epithet refers to the region in which all type material was collected.

**Description:**

*Length* (head to wing tip): 13 mm.

*Colour*: Head orange anteriorly, reddish brown posteriorly, swollen part of frontal vitta dark reddish brown; body black; fore femur orange basally and brown distally; mid and hind femora black in basal  $\frac{2}{3}$ , orange in distal  $\frac{1}{3}$ ; basal 2 tarsomeres of fore leg



Figs 7–11. *Aristobatina morogoro* sp. n., male: (7) terminalia, lateral view; (8) apical part of distiphallus; (9) basiphallus-distiphallus junction and left postgonite; (10) terminalia, dorsolateral view; (11) sternite 5. Not to scale.

white, other tarsomeres black; abdominal pleurae mostly white, darkened with dark microsetulae on segments 1–2, with an elongate, oval, convex and differentiated area just below tergite 1–2 in male.



**Head:** Scape bare, except for marginal row of short setae; pedicel short-setose, with 3–5 longer, distal, ventral setae; face membranous and narrow; lower  $\frac{1}{2}$  of frons orange, swollen part of frontal vitta teardrop-shaped, dark reddish brown, surrounding ocelli, separated from anterior margin of frons by more than its length; 2 pairs of fronto-orbitals, 1 very large posterior pair at level of ocelli and a very small anterior pair at midpoint of vitta; postocellar, outer and inner vertical setae well-developed.

**Thorax:** Cervical sclerite of females flat and dull, with lateral indentation and small anterolateral vertical carina; males have a slightly convex cervical sclerite, without indentation; proepisternum with a few long, marginal ventral setae in posterior  $\frac{1}{2}$ ; katepisternum with double row of thin black setae, anterior row of 8 setae lower than posterior row; scutellum with 1 pair of marginal setae and 4 small dorsal setae; with small but distinct seta between postalar and dorsocentral setae.

**Wing:**  $CuA_2$  virtually at right angle to and in line with  $bm-cu$ ; wing membrane dark, with broad discal fascia extending from  $R_{4+5}$  to  $Cu$ , and an apical infuscation; tegula and basicosta dark brown, similar to adjacent wing base, which has 3 long costagial setae, inner one very long and inclinate.

**Female abdomen:** Spermathecae oblong,  $2.1 \times$  as long as wide, with transverse striations, spermathecal duct densely covered with knob-like processes beyond the division of the common duct into two straight branches. Single spermatheca uniformly studded. (Fig. 15).

**Male abdomen:** Pleuron with large, dome-like, differentiated area on segment 4; hypandrium with elongate anterior plate and strong posterodorsal arms connecting to phallic plate, dorsolateral margin of posterodorsal arm having a prominent spur (Fig. 7). Basiphallus elongate, extending well beyond base of distiphallus; postgonites equal and unmodified (Fig. 9); distiphallus with tubular basal part bifurcating before transition into strongly recurved membranous distal part, apex with a finely spinulose glans (Fig. 8); ejaculatory apodeme about  $\frac{1}{3}$  as large as epandrium (Fig. 7); genital fork (sternite 5) with gap T-shaped at base (Fig. 11), inner surfaces of arms densely spinose.

Holotype ♂: TANZANIA: Morogoro Region, Udzungwa Mts Nat. Park,  $07^{\circ}50'35''S$   $36^{\circ}49'49''E$ , 11–13.xi.2009, 1000 m, T. Pape & S.A. Marshall (ZMUC).

Paratypes: 2♂2♀ same data as holotype (ZMUC, DEBU).

**Comments:** Although this species is externally very distinct from previously described *Aristobatina*, the remarkable male and female internal terminalia and the unusual membranous dome on male pleuron 4 indicate that it belongs in a monophyletic *Aristobatina*.

### *Aristobatina rufithorax* (Enderlein)

Figs 12–14, 17, 18–20

*Tanypoda rufithorax*: Enderlein 1922: 198.

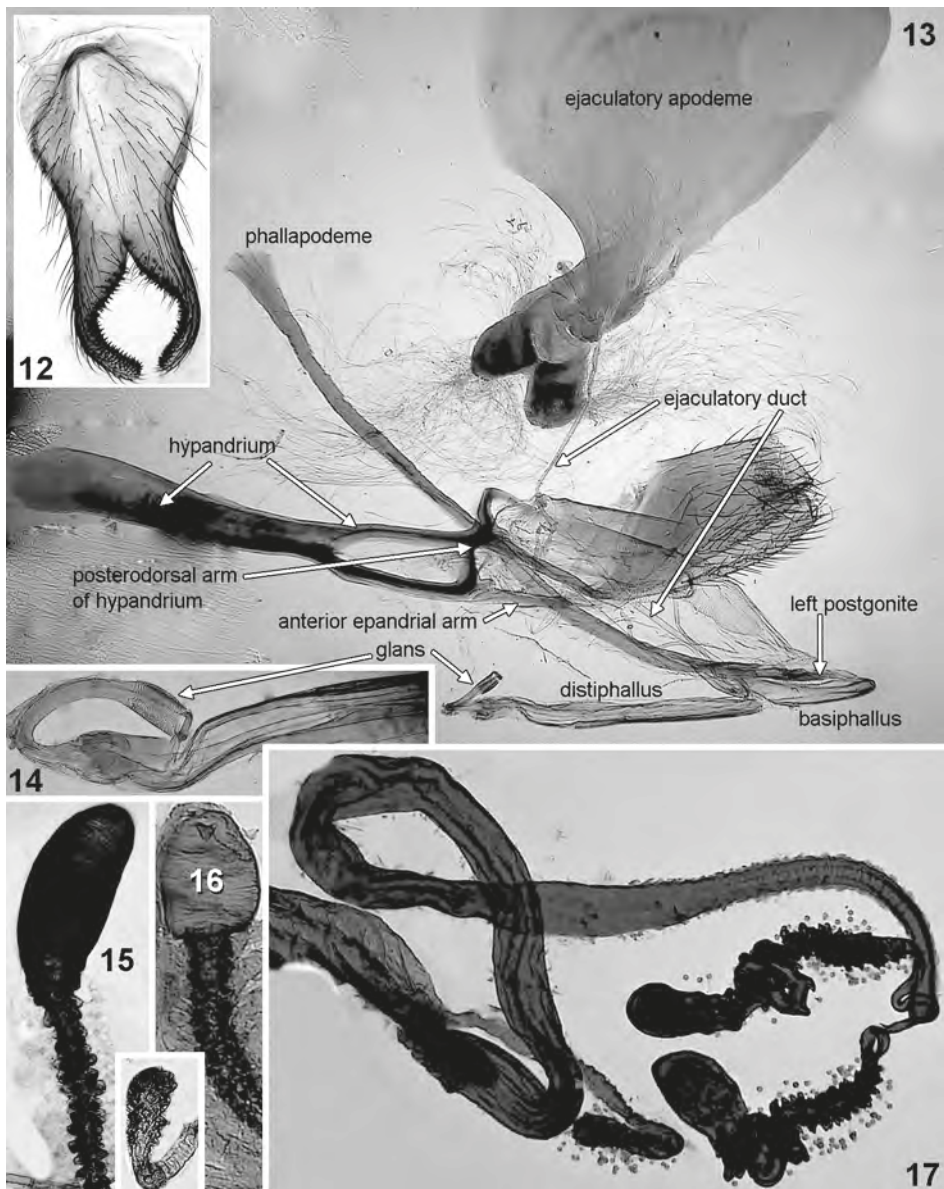
*Aristobata rufithorax*: Hennig 1935: 68.

*Aristobatina rufithorax*: Verbeke 1951: 59; Steyskal 1980: 579.

**Redescription:**

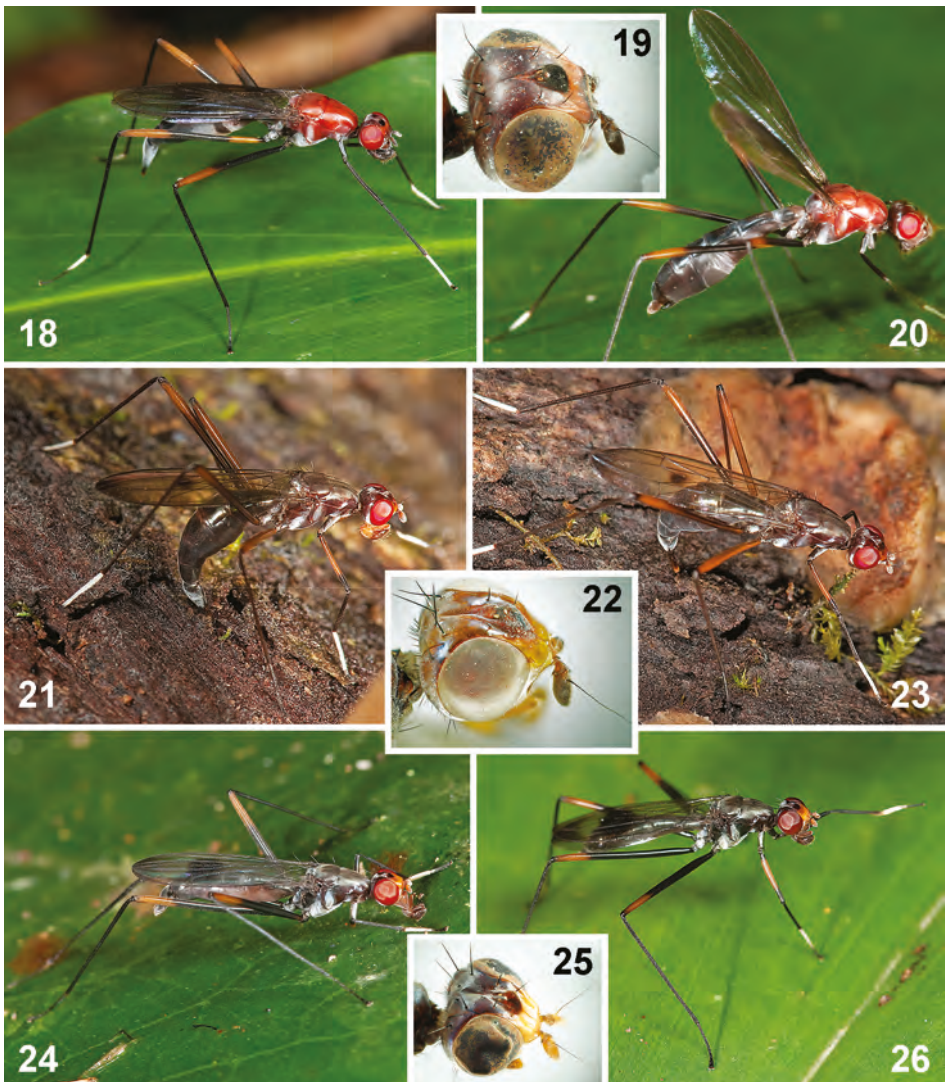
**Length** (head to wing tip): 14–16 mm.

**Colour:** Head orange, except for black palpus and swollen part of frontal vitta; notum and upper pleuron brick-red; foreleg black, except tarsus; tarsomeres 1–3 white, distal



Figs 12–17. *Aristobatina* spp.: (12–14) *A. rufithorax* male: (12) sternite 5; (13) terminalia; (14) apical part of distiphallus; (15–17) spermathecae and associated ducts: (15) *A. morogoro* sp. n., single small spermatheca and one of the paired large spermathecae; (16) *A. melasma* sp. n., spermatheca, one of pair; (17) *A. rufithorax*, bursa copulatrix, spermathecae and spermathecal ducts. Not to scale.

tarsomeres dark; mid femur black with orange apex, mid femur orange at base and apex; abdomen black, except for extreme base and white fasciae across pleuron on segments 2 and 3 (Fig. 18).



Figs 18–26. *Aristobatina* spp.: (18–20) *A. rufithorax*: (18) female; (19) female head; (20) male; (21–23) *A. melasma* sp. n., holotype male: (21, 23) ovipositing; (22) head; (24–26) *A. morogoro* sp. n.: (24) female; (25) female head; (26) male.

**Head:** Pedicel and scape with uniformly short setae only; frontal vitta dull, weakly differentiated from orbits, virtually parallel-sided throughout, slightly raised in front of ocelli, slightly depressed behind ocelli and on anterior  $\frac{2}{3}$ ; 2 pairs of fronto-orbital setae, 1 anterior to level of ocelli, 1 slightly posterior; postocellar and inner vertical setae well-developed, outer vertical setae absent.

**Thorax:** Cervical sclerite convex and dull, with small anterolateral vertical carina; proepisternum with *ca* 7 long, marginal ventral setae over entire length; katepisternum with double row of thin black setae, anterior row  $\frac{1}{2}$  as high as posterior row, mixed



with additional long thin setulae, forming an extensive third row; scutellum with 1 pair of marginal setae and 2 small marginal setulae; 1 small setula between postalar and dorsocentral setae; fore tarsus 1.3× length of remaining tarsomeres combined.

*Wing:*  $CuA_2$  meets anal vein at a distinct angle (about 50°) and almost at the same level as *bm-cu*; wing membrane lightly and evenly infuscated on distal  $\frac{2}{3}$ , clear in basal  $\frac{1}{3}$ ; tegula and basicosta slightly darker than adjacent wing base.

*Female abdomen:* Oviscape black, pruinose, except at apex; spermathecae elongate, twice as long as wide, slightly swollen apically, with transverse striations, base very elongate and sinuate, especially in distal  $\frac{1}{3}$ ; with very prominent lateral processes (Fig. 17).

*Male abdomen:* Pleuron with large, dome-like differentiated area (pleural sac) covering entire ventral  $\frac{1}{2}$  of pleuron 4 (Fig. 20); hypandrium with elongate anterior plate and strong posterodorsal arms connected to phallic plate; basiphallus and left postgonite elongate, extending far beyond base of distiphallus; right postgonite unmodified (Fig. 13); distiphallus with tubular basal part bifurcating before transition into strongly recurved membranous distal part, apex with a finely spinulose glans (Fig. 14); ejaculatory apodeme enormous, several times as large as epandrium (Fig. 13); genital fork (sternite 5) with V-shaped gap at base, inner surfaces of arms densely spinose (Fig. 12).

Type material: Barraclough (1996) examined the types in ZMHB and designated a lectotype female from Tanzania. Although the type material is in very poor condition, the species described above fits the original description and Barraclough's notes on the types.

Additional material examined: 1 ♀ TANZANIA: Morogoro Region, Udzungwa Mts Nat. Park, 07°50'35"S 36°49'49"E, 11–13.xi.2009, 1000 m, T. Pape & S.A. Marshall (ZMUC, DEBU); Uluguru Mountains: "Tanganyika, Uluguru Mts near Morogoro, 700 m, i.1962" (CNCI).

Comments: The large differentiated areas on pleuron 4 of the male look much like the differentiated, apparently thin-walled and inflatable areas ("pleural sacs") often found on pleuron 2 or 2–3 of many other male Taeniapterinae. These structures do not occur on pleuron 4 in other genera of micropezids. Clearly homologous, although less conspicuous, swollen areas are found on pleuron 4 of *A. morogoro* sp. n. and *A. metamelasma* sp. n.

### ***Aristobatina udzungwa* sp. n.**

Fig. 27

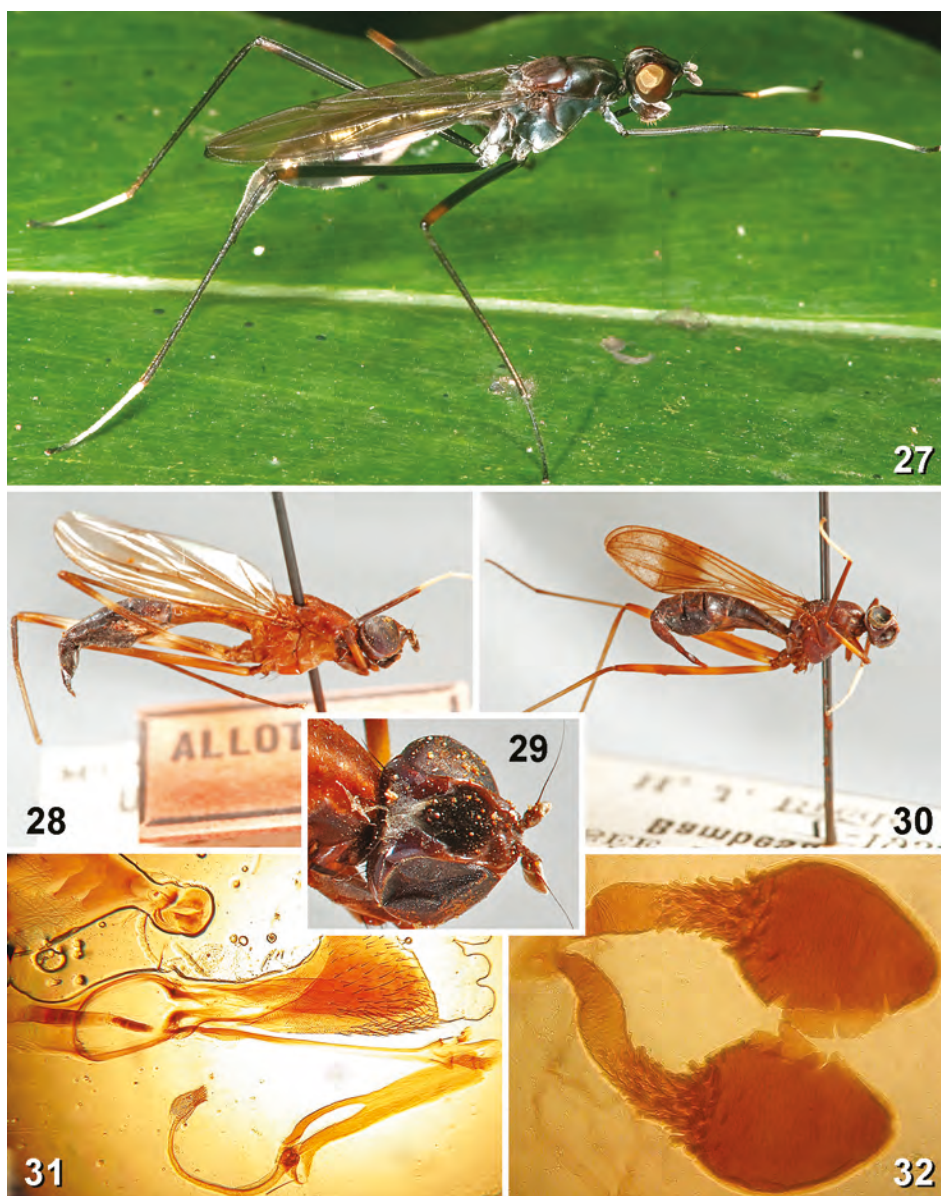
*Etymology:* The specific epithet refers to the type locality.

*Description:*

*Length* (head to wing tip): 16 mm.

*Colour:* Chestnut brown to black, except for reddish postsutural area of notum and orange apices of mid and hind femora, orange area at apex of mid femur extensive, area at apex of hind femur small, not entirely encircling femur; fore and hind tibiae with small distomedial orange patch; basal 2.5 tarsomeres pale on fore and hind legs, white on fore tarsus; distal 2.5 tarsomeres black, mid tarsus entirely black; abdominal pleurae black on segments 5 and 6 and along upper portion of other segments, ventral portions contrastingly white, forming oval white ventral area on segments 2–4.

*Head:* Pedicel and scape with only uniformly short setae; frontal vitta dull, weakly differentiated from orbits, virtually parallel-sided throughout, slightly raised in front of



Figs 27–32. *Aristobatina* and *Tanypomyia* spp.: (27) *A. udzungwa* sp. n., female; (28, 29) *T. elegans* allotype; (30–32) *T. venusta*: (30) female; (31) male terminalia, Verbeke mount; (32) spermathecae, Verbeke mount.

ocelli, slightly depressed behind ocelli and in anterior  $\frac{2}{3}$ ; 2 equal pairs of fronto-orbital setae anterior to level of ocelli; postocellar, outer and inner vertical setae well-developed.

*Thorax*: Cervical sclerite convex and dull, with lateral indentation and small anterolateral vertical carina; proepisternum with a few long, marginal ventral setae on posterior  $\frac{1}{2}$ ; katepisternum with double row of thin black setae, anterior row  $\frac{1}{2}$  as high as posterior



row; scutellum with 1 pair of marginal setae and 2 small dorsal setae; no setae between postalar and dorsocentral setae; fore tarsus  $1.3\times$  length of remaining tarsomeres combined.

*Wing:*  $CuA_2$  distal to *bm-cu* and meeting anal vein at distinct angle (*ca*  $65^\circ$ ); wing membrane lightly and evenly infusate; tegula and basicosta jet-black, contrasting with adjacent wing base.

*Female abdomen:* Oviscape black, pruinose, except at apex; spermathecae similar to those of *A. rufithorax*,  $1.5\times$  as long as wide, more or less parallel-sided, having transverse striations, base sinuate with very prominent lateral processes.

*Male:* unknown.

Holotype ♀: TANZANIA: Morogoro Region, Udzungwa Mts Nat. Park,  $07^\circ50'35''S$   $36^\circ49'49''E$ , 11–13. xi.2009, 1000 m, T. Pape & S.A. Marshall (DEBU#00318741, deposited in ZMUC).

Paratype ♀: Same data as holotype, in 95% alcohol (ZMUC).

Other material examined: TANZANIA: “Tanganyika, W. Usambara Mts, 2100m, Magamba, iii.1962” (1 mouldy and psocid-damaged ♀, CNCI).

*Material remarks:* The non-type material examined is probably the same species as the specimens from the Udzungwa Mountains, but not designated as a paratype because of the poor condition of the specimen and also the disjunct locality. New material is required to either confirm that the distribution of *A. undzungwa* extends to the Usambara Mountains, or whether it is part of a closely related but disjunct pair of Eastern Arc species, like *A. melasma* and *A. metamelasma*.

*Comments:* Despite the dark colour and the outer vertical setae, this species is similar to the previously described species of *Aristobatina*, and is probably more closely related to *A. rufithorax* and *A. principalis* than to the other species described here. The larger size, lack of longer setae on the pedicel, relatively strongly angled  $CuA_2$  and the virtually identical spermathecae all suggest that these three species are closely related, although males are unknown for *A. undzungwa* sp. n. and no data are available on the spermathecae of *A. principalis*.

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