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A new species in the genus *Pseudorhyncomyia* Peris, 1952 and the identity of *P. deserticola* Zumpt and Argo, 1978 (Diptera, Rhiniidae)

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Abstract

The genus *Pseudorhyncomyia* Peris, 1952 is re-described and shown to have two valid species: *P. braunsi* (Villeneuve, 1920) and *P. aethiopica* **sp. nov.** The latter is described on the basis of a single male specimen captured near Ado, Ethiopia, in 1953. Nominal species *P. deserticola* Zumpt and Argo, 1978 is transferred to *Zumba* Peris, 1951, where it is placed as a junior synonym of *Z. antennalis* (Villeneuve, 1929), **syn. nov.**

Key words: Diptera, Rhiniidae, *Pseudorhyncomyia*, Afrotropical Region, new species, new synonym

Introduction

The genus *Pseudorhyncomyia* was erected by Peris (1952) for *Rhyncomyia braunsi* Villeneuve (1920: 153), which was designated as type species. The genus remained monotypic until Zumpt and Argo (1978) described a second nominal species, *P. deserticola*, from Namibia, and was catalogued with these two nominal species by Pont (1980).

During work on Rhiniidae for the Manual of Afrotropical Diptera Project (<http://afrotropicalmanual.net/>) I received for study a large sample of material from the KwaZulu-Natal Museum, Pietermaritzburg, South Africa (NMSA), among which were two specimens belonging to *Pseudorhyncomyia*. One was a female of *P. braunsi* (Villeneuve, 1920) (NMSA-DIP 19836). The second specimen, which was accompanied by a slide of the dissected genitalia, had been placed in the collection and was listed in the spreadsheet of the received material under the name *P. deserticola* (NMSA-DIP 61637). However, it immediately became apparent that the latter specimen did not fit the description of *P. deserticola* and represented a new species in *Pseudorhyncomyia*. This new species is described herein.

The statement by Zumpt and Argo (1978: 35) to the effect that *P. deserticola* “is quite different from *P. braunsi*” was rather puzzling, and it seemed that the description of *P. deserticola*, which is rather cursory, might not apply to a species of *Pseudorhyncomyia* at all. To investigate this problem the holotype of *P. deserticola* from Namibia (Gobabeb) was also examined.

Below, the genus *Pseudorhyncomyia* is diagnosed and described in detail, with explicit reference to the two included species. The new species is diagnosed briefly and the features by which it can be distinguished from *P. braunsi* are summarized in a key.

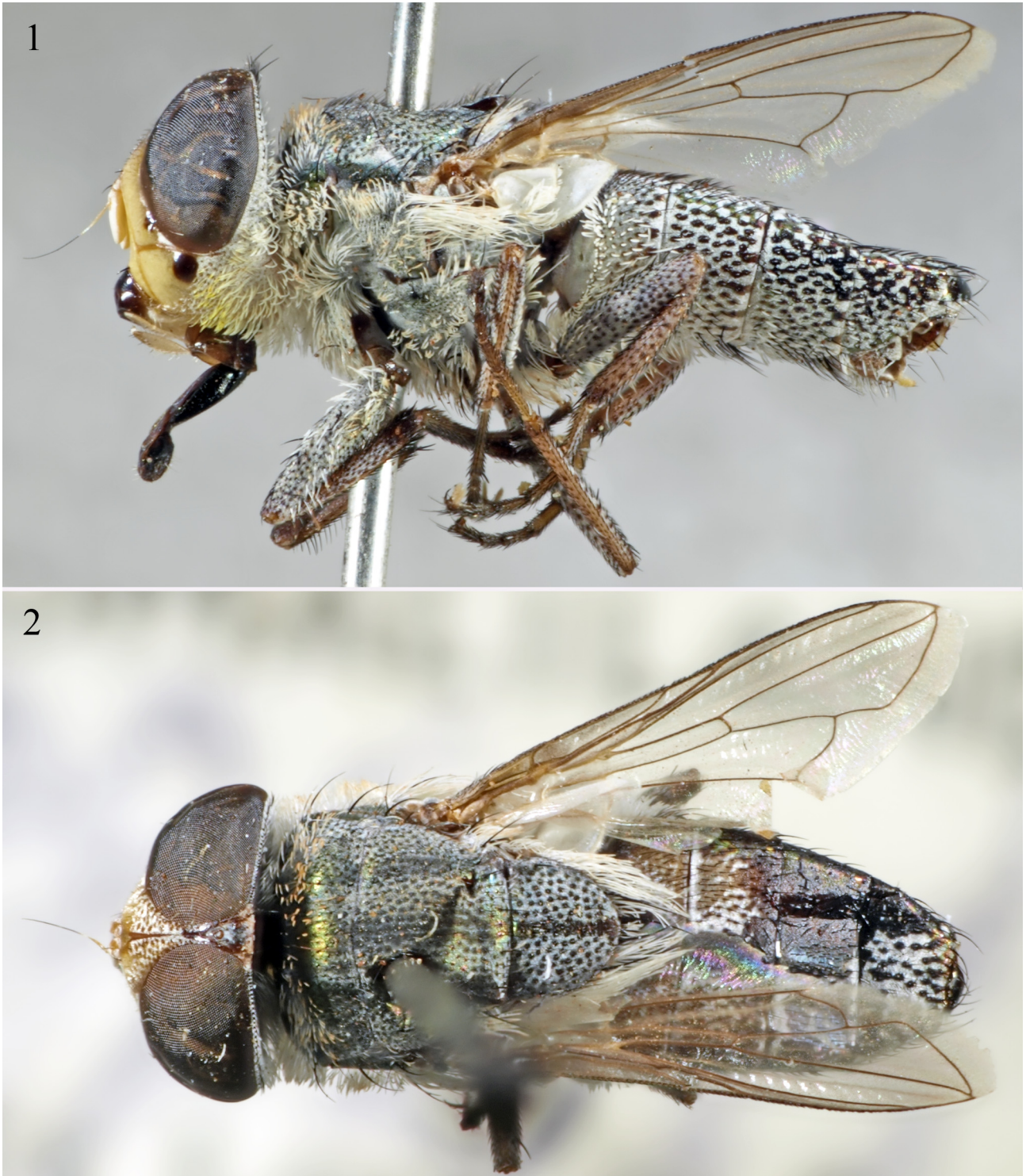
Finally, the features by which the holotype of *P. deserticola* agrees with other material of *Zumba antennalis* (Villeneuve) from Namibia (Gobabeb) in the Zoological Museum, Natural History Museum of Denmark, University of Copenhagen, Copenhagen, Denmark (ZMUC) are discussed and illustrated.

Methods

Acronyms for depositories

BMNH Natural History Museum, London, UK

NMSA KwaZulu-Natal Museum, Pietermaritzburg, South Africa
SAMC Iziko Museums of South Africa, Iziko South African Museum, Cape Town, South Africa
ZMUC Zoological Museum, Natural History Museum of Denmark, University of Copenhagen, Copenhagen, Denmark



FIGURES 1–2. *Pseudorhyncomyia aethiopica* sp. nov. (from holotype in NMSA). **1.** Habitus, left lateral view. **2.** Habitus, dorsal view.

Abbreviations, terminology and photography

These are explained in Rognes (2009, 2012), but some modifications have been introduced in the photographic methods. The habitus photographs were made, as previously, from stacks of images taken with a Vivitar Series 1:1

105mm f 1:2.5 macro telephoto lens in combination with an old Olympus OM2 25mm extension tube mounted on an Olympus E-410 / E-420 camera. However, the manually driven Manfrotto focusing rail used previously was replaced by the stepper-motor driven StackShot™ macro rail of Cognisys, Inc. (<http://www.cognisys-inc.com/stackshot/stackshot.php>), which produced very accurate, stable and reproducible results. It was set to Automatic Step Mode, with 30 steps between beginning and end positions, and used in combination with a universal infrared shutter trigger. The stacks were subsequently treated in Helicon Focus Lite (version 5.3.4) and Photoshop Elements 9 (version 9.0.3). Most of the labels were photographed with an Olympus Tough TG-2 Stylus camera with a Super Macro setting for close-ups.

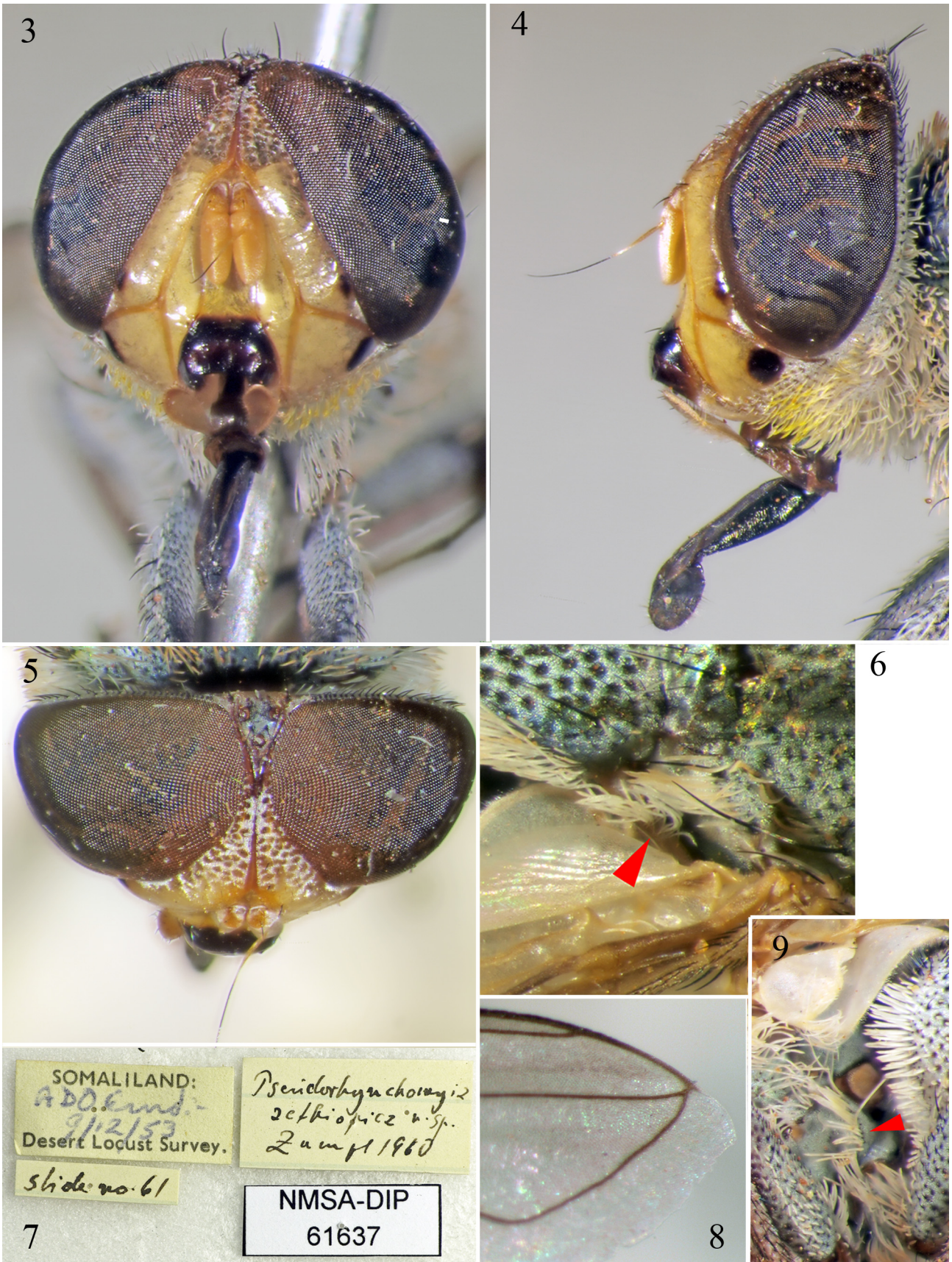
Genus *Pseudorhyncomyia* Peris

Pseudorhyncomyia Peris, 1952: 58. Type species: *Rhyncomyia braunsi* Villeneuve, 1920, by original designation.
Pseudorhyncomyia: Zumpt 1958: 122; Pont 1980: 783.

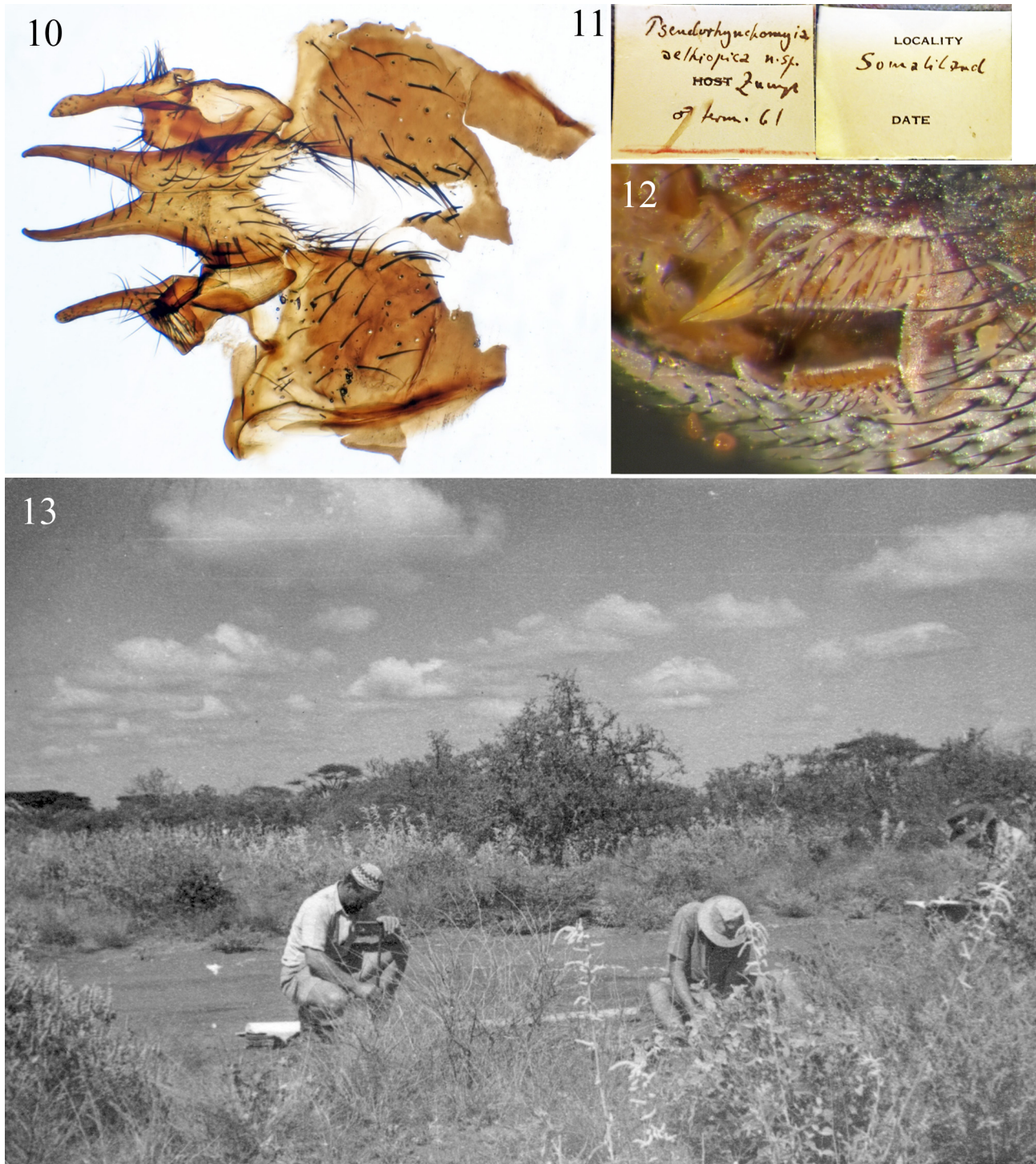
This exclusively Afrotropical genus includes two valid species, i.e., *Pseudorhyncomyia braunsi* (Villeneuve, 1920) and *P. aethiopica* sp. nov. *Pseudorhyncomyia braunsi* is known from South Africa, Namibia and Tanzania (Pont 1980, Kurahashi & Kirk-Spriggs 2006) and has been described in detail by Peris (1952: 58) and Zumpt (1958: 122), the latter of whom selected a lectotype. *Pseudorhyncomyia aethiopica* is known from a single specimen from Ethiopia and is described below. The nominal species *P. deserticola* Zumpt and Argo, 1978 does not belong in this genus and is transferred to the genus *Zumba* Peris, 1951, where it is a junior synonym of *Z. antennalis* (Villeneuve, 1929) (see separate section for this species, below).

Diagnosis. Rhiniidae with bare arista; normally developed mouthparts; anterior part of head not swollen; anteroposterior length of eye much larger than length of profrons in lateral view; parafacial plate without strong frontal setae, but with numerous piliferous dots with short black setulae, these setae become larger towards frontal vitta and may be interpreted as very small frontal setae; lower part of parafacial and anterior part of gena each with a large black spot; lower facial margin shining black and shaped like a rounded strong protrusion; proepisternal depression bare; proepimeral setae absent; suprasquamal ridge posteriorly with a bundle of white setulae; meron without black setae, these replaced by long white setae in a few densely set rows; pleura covered by long densely set white setulae; wing cell r_{4+5} open or closed and petiolate; abdomen with mostly black ground colour, areas where yellow colour is shining through present anteriorly on dorsal side, dense white microtrichosity, numerous black piliferous dots and short black ground setulae dorsally; ventrally and anteriorly also with long white setae.

Description. *Head.* Male frons narrow, at narrowest point varying from a little narrower than anterior ocellus to twice as wide; i.e., a little narrower than ocellar triangle. Female frons at vertex about as wide as eye seen from above. Frontal vitta in both sexes reduced to a thin orange line, for most of its length narrower than the anterior ocellus (male) or about as wide (female), slightly widening out towards lunula. Lunula bare, shining dark brown to black (*P. braunsi*) or yellow (*P. aethiopica*). Antennal pedicel and first flagellomere black (*P. braunsi*) or yellow (*P. aethiopica*) in ground colour with a thin layer of microtomentum; first flagellomere 3 (*P. aethiopica*) or 4–5 times (*P. braunsi*) longer than wide. Arista bare, yellow basally, dark distally. Fronto-orbital plate with yellow ground colour; with white microtomentum; without strong frontal and orbital setae, with numerous piliferous dots each carrying a small black setula in center; these latter setae a little stronger near frontal vitta and may be considered to represent frontal setae. Parafacial with yellow ground colour, broad, with (*P. braunsi*) or without (*P. aethiopica*) microtrichosity, in latter case the parafacial is shining waxy yellow (*P. aethiopica*); a shining black spot present in lower part close to the eye, sometimes a shining glossy yellow spot in upper part of parafacial (*P. braunsi*). Facial membrane with yellow ground colour, with a thin layer of whitish microtomentum (*P. braunsi*) or bare and shiny waxy yellow (*P. aethiopica*). Lower facial margin a large rounded shining black protrusion, curved in a half-circle and rounded in anterior view, shining black, without (*P. aethiopica*) or with a wedge-shaped area of microtomentum (*P. braunsi*) on anterodorsal surface. Protrusion more pronounced in *P. braunsi* than in *P. aethiopica*. Gena in male one-third to one-fourth of eye height in profile view, in females (*P. braunsi* only) almost one-half of eye-height (female *P. braunsi*) in lateral view. Genal dilation with yellow ground colour, darkening towards hind end; posterior half microtrichose with small piliferous dots and long white densely set setae; anterior half shining waxy yellow (*P. aethiopica*) or with a thin layer of white microtrichosity sprinkled with large



FIGURES 3–9. *Pseudorhyncomyia aethiopica* sp. nov. (from holotype in NMSA). **3.** Head, anterior view. **4.** Head, left lateral view. **5.** Head, dorsal view. **6.** Right suprasquamal ridge, red arrow points to bundle of white setulae. **7.** Original labels on holotype. **8.** Apex of wing. **9.** Area around meron and posterior thoracic spiracle on left side, red arrow points to white meral setae.



FIGURES 10–13. *Pseudorhyncomyia aethiopica* sp. nov. (from holotype in NMSA). **10.** Genitalia, from slide 61. **11.** Labels on slide 61. **12.** ST5, *in situ*. **13.** Type locality (courtesy of Sarah Gess).

piliferous dots (*P. braunsi*); a black shining spot present in anterior part, close to eye margin. In one species (*P. aethiopica*) many of the white long setae on the posterior part of the genal dilation are yellow at the tip (Figs. 3, 4). No black setae along lower edge of gena. Postgena with yellow ground colour, white microtrichosity and long white setae. Facial ridge broad, low, with yellow ground colour, shiny yellow (*P. aethiopica*) or with a thin layer of whitish microtrichosity (*P. braunsi*). A small black vibrissa present. No supravibrissal vestiture. No black subvibrissal setae, in *P. braunsi* a row of white subvibrissal setulae; in *P. aethiopica* no subvibrissal vestiture at all. The wedge-shaped area between anterior end of genal dilation and lower facial margin and below lower end of

facial ridge yellow in ground colour, shiny yellow (*P. aethiopica*) or with thin layer of whitish microtrichosity with piliferous dots (*P. braunsi*). Mouthparts normal, mentum and palpus longer than antenna; mentum shining black. Palpus 3–4 (*P. aethiopica*) or 7–8 times (*P. braunsi*) longer than broad, yellow with slight microtomentum, slightly darkened apically (*P. aethiopica*, female *P. braunsi*), or dark in apical third (male *P. braunsi*). Occipital region of head concave, black in ground colour except for the medial occipital sclerite which is yellow; white microtrichose all over the black area except for a black shining submarginal band without microtomentum, black occipital part also with white occipital setulae.

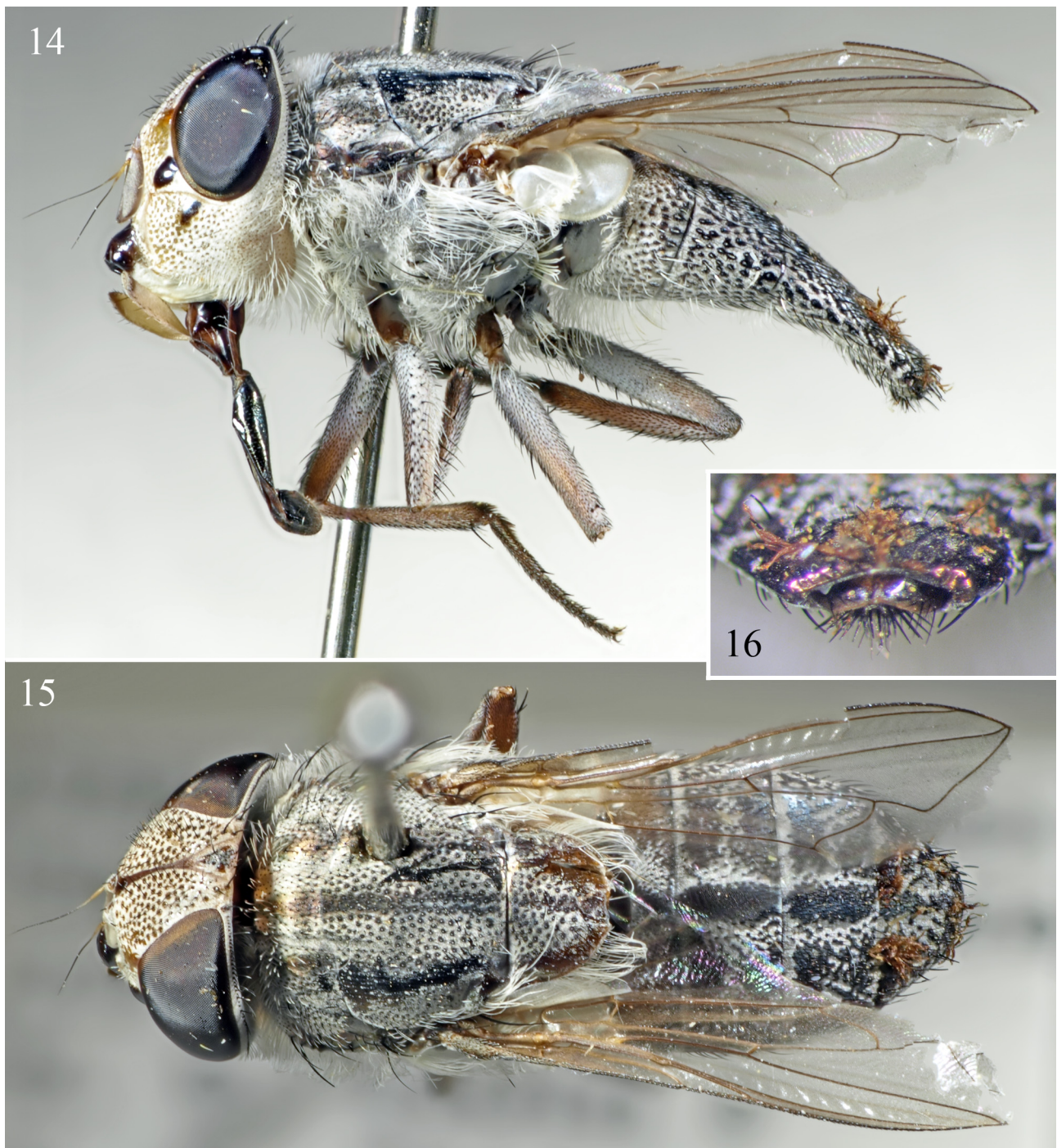
Thorax. Dorsum with black ground colour and white microtrichosity and numerous rather large piliferous dots. Five obscure vittae, the three medial ones partly microtrichose and reaching scutellum; the outermost vitta quite shining, without microtrichosity, and encompassing almost all of the notopleuron, the extreme upper part of the anepisternum and the outer half of the postpronotal lobe (humeral callus). Green bronze metallic ground colour shining through the microtrichosity. The anterior slope of prescutum, anterior surface of the postpronotal lobe, parts of notopleuron, postalar callus and lateral margin of scutellum with long white densely set often wavy setae; the remainder of the dorsum with short erect black or white very short setulae (male *P. aethiopica*, male *P. braunsi*) or black obliquely set setulae (female *P. braunsi*) originating from piliferous dots. In one species the white setae on the anterior slope of the thorax are yellow at the tip (*P. aethiopica*). White setulae also on underside of tip of scutellum. Suprasquamal ridge with white setulae in posterior part. Postalar wall bare. Pleura with black ground colour, with greenish or bronze metallic colouring hardly shining through the microtomentum, whitish microtrichosity and with small piliferous dots, carrying long white setae. Lateral surface of the postpronotal lobe, all of anepisternum, except for narrow area at uppermost part, posterior half of anepimeron, katepisternum and katepimeron with numerous, long, densely set white setae (in *P. aethiopica* some pleural setae with yellowish tips). Coxopleural streak present. Meron bare except for meral setae which are white and long. Metakatepisternum and katatergite bare. Proepisternal depression bare (very difficult to observe). Anterior thoracic spiracle yellowish, posterior thoracic spiracle yellowish brown (*P. aethiopica*) or brown (*P. braunsi*).

Chaetotaxy of black thoracic setae. Proepisternal and proepimeral setae absent. 0 *prst acr* (*P. aethiopica*, female *P. braunsi*) or 1 weak *prst acr* (male *P. braunsi*). 1–2 *post acr* (the prescutellar). 0 *prst dc* (or 2 very inconspicuous ones?) + 1 *post dc* (the prescutellar) (*P. aethiopica*) or 2 weak *prst dc* + 1–2 *post dc* (*P. braunsi*). 0 *prst ia* (or 1 weak?) + 1 *post ia* (*P. aethiopica*) or 0 *prst ia* (or 2 weak on right side?) + 2 *post ia* (*P. braunsi*). 1 *prst*. 1 *h* (+ 1 very weak beside it) (*P. aethiopica*) or 2 *h* (*P. braunsi*). 1 inner and 1 outer *ph* (absent on right side) (*P. aethiopica*) or 1 inner and 1 outer *ph* strong (*P. braunsi*). The outer *ph* is very much to the outside of the *prst*. 2 *npl*, otherwise notopleuron with black (*P. aethiopica*) or black and white setulae (*P. braunsi*), short in females. 2 strong *sa*. 2 strong *pa*. Anepisternum with 1–2 upper and 1 lower black setae among the bundle of densely set long white anepisternal marginal setae, the short uppermost seta very close to the posterior notopleural seta. 1 + 1 *kepst*. Anepimeron without black setae. No black meral setae present, all are white and set in a couple of rows. Scutellum with three black marginal setae: apical, subapical and basal pairs; distance between subapicals almost the same as distance between subapical and basal (*P. aethiopica*; the *P. braunsi* female available has the tip of scutellum partly destroyed).

Wing. Tegula brownish-yellow, basicosta yellow. Subcostal sclerite yellow, without setulae, only with pale microtomentum. Veins yellow, darkening somewhat distally. No costal spine. Node at base of vein R_{2+3} and R_{4+5} bare below (*P. aethiopica*) or with 0–2 black setulae below (*P. braunsi*); with 1–2 black setulae above (*P. aethiopica*) or with 1–4 black setulae above (*P. braunsi*). Stem vein with 2–3 inconspicuous white setulae in *P. aethiopica*, 5–7 in *P. braunsi*. Cell r_{4+5} petiolate (*P. aethiopica*), or open (*P. braunsi*). Vein M with a very shallow curve (*P. aethiopica*) or more angulate (*P. braunsi*). Calypters white, lower one with inner edge diverging from axis of fly.

Legs. Shorter and stouter in *P. aethiopica* than in *P. braunsi*. Coxa, trochanter and femur with dark, tibia and tarsus with yellowish ground colour on all legs. White setulae on legs more numerous and shorter and thicker in *P. aethiopica* than in *P. braunsi*. Coxae and trochanters with numerous white setae. In *P. aethiopica* basal half or more of all femora with white setulae posteriorly, hind femur also with white setulae on anterior side. In *P. braunsi* long white hairs present on posterior side of fore femur; long white setulae present on posterior side of mid femur in male, but only a few short adpressed white setulae on posterior side of mid femur in female; and an *ad* row of white long setae along basal half of hind femur. Fore tibia with 0 *ad* and 1 *pv* (*P. aethiopica*) or with 4 *ad* and 1 *pv* (*P. braunsi*). Mid tibia with 1 *ad*, 1 *p*, 1 *pv* (*P. aethiopica*) or with 1 *ad*, 2–3 *p*, 1 *pv*, 1 *v* (*P. braunsi*, both sexes). Hind

tibia of *P. aethiopica* with few setae differentiated from rather strong ground setulae: 1 *av* and 1–2 *pd* visibly different. In *P. braunsi* the setae are much stronger: 1 *av*, 3–4 *ad* among a row of strong *ad* ground setulae, 3 *pd*.



FIGURES 14–16. *Pseudorhyncomyia braunsi* (Villeneuve) (from female in NMSA). **14.** Habitus, left lateral view. **15.** Habitus, dorsal view. **16.** Abdominal tip. The reddish outgrowths on T5 are fungi of the order Laboulbeniales, so far unidentified as to species.

Abdomen. The abdomen in both species dorsally and ventrally with large piliferous dots; dorsally more or less confluent, leaving a black mid-dorsal vitta bounded by densely white microtomentum of varying width. In *P. aethiopica* abdomen with one large yellowish spot dorsally on each side of midline affecting T1+2 and most of T3; in *P. braunsi* the yellow spots are confined to T1+2. T1+2 with black ground vestiture on most of dorsal surface; laterally with densely set white setae in several rows, among which are 3 black lateral discal setae in *P. braunsi*, but no discal setae in *P. aethiopica*; ventrally with shorter and more sparse white vestiture. T3–T5 dorsally and laterally



FIGURES 17–22. *Pseudorhyncomyia braunsi* (Villeneuve) (17, 19, 21 from male in BMNH “... Graaf Reinet ...”; 18, 20, 22 from female in NMSA). 17–18. Head anterior view. 19–20. Head, left lateral view. 21–22. Head, dorsal view.

with short black setulae only, no white setae; with weak marginal setae, the ground setulae becoming stronger also along side of abdomen. Ventral surface of remaining tergites with black ground setulae and with additional white vestiture as follows: T3 ventrally with white setae on most of anterior half, posterior half with mostly black setae. T4 ventrally with white setulae along anterior third. T5 ventrally with white setulae along anterior margin. ST1 only with densely set white setae all over. ST2 with 2 strong erect black marginal setae in *P. aethiopica* and numerous short white setae on disc; the black marginal setae are lacking in *P. braunsi*. ST3 in *P. aethiopica* with 4 strong black marginal setae, a few smaller black and many white setae on disc; in *P. braunsi* ST3 with only extreme hind end visible, this part carries 2 black marginal setae. In *P. aethiopica* ST4 with 4 black marginal black setae, disc not visible. In *P. braunsi* ST4 not visible in the female examined, in the male the extreme hind end visible and carrying a pair of black setae. Male ST5 in *P. aethiopica* with long yellowish lobes which carry a number of long white hairs, a few of which are yellow apically. Male ST5 in *P. braunsi* with longer, greyish tomentose lobes with black setulae only. Female ST5 in *P. braunsi* with 4 short black marginal setulae.

Genitalia. Male TST7+8 in *P. aethiopica* mostly lost, although a small fragment is still in place behind T5. The fragment is shining black with a slight greenish tinge, and has some microtrichosity on the left side. In *P. braunsi* TST7+8 is shining green metallic with numerous white setae except for a central area (Fig. 26). Ovipositor with straight spines at tip, when known (Fig.16).

Key to species of *Pseudorhyncomyia*

1. Wing cell r_{4+5} petiolate (Fig. 8). Vein M with a very shallow curve (Fig. 2). Parafacial and anterior half of genal dilation bright waxy yellow without piliferous dots (Figs. 3–4). Black spot in lower part of parafacial much smaller than black spot on gena (Fig. 1). Facial membrane without tomentum (Fig. 3). Lower facial margin projecting forward slightly beyond a vertical line through antennal pedicel in profile view; without microtomentum on anterodorsal surface (Fig. 3). Yellow area dorsally on each side of base of abdomen affecting T1+2 and T3 (Fig. 2). White setae usually rather thick and short, sometimes yellowish distally (Figs. 1, 2, 4, 12). *Pseudorhyncomyia aethiopica* sp. nov.
- Wing cell r_{4+5} open (Fig. 15). Vein M angulate (Fig. 15). Parafacial and anterior half of genal dilation with white microtomentum over yellow ground colour and with distinct piliferous dots (Figs. 17–20). Black spot in lower half of parafacial larger than black spot in anterior half of gena (Figs. 17–20). Facial membrane with greyish-white tomentum (Figs. 17, 18). Lower facial margin projecting forward far beyond a vertical line through antennal pedicel in profile view, with a triangular area of white microtrichosity on anterodorsal surface (Fig. 22). Yellow area dorsally on each side of base of abdomen affecting T1+2 only (Fig. 15). White setae thin and slender, not yellowish distally. *Pseudorhyncomyia braunsi* (Villeneuve)

Pseudorhyncomyia aethiopica sp. nov.

Figs. 1–13.

Holotype male, Ado, Somali province, Ethiopia (NMSA), here designated. For details, see Material examined below.

Etymology. The specific epithet is a Latinized adjective, gender feminine in the nominative singular, derived from the name of the African country Ethiopia where the type locality is located. The name was introduced by Zumpt on the label of the holotype.

Diagnosis. *Male.* Length 8 mm (n=1). Frons width at narrowest point / head width ratio: 0.06 (n=1). Cell r_{4+5} petiolate. Parafacial, facial membrane and anterior half of genal dilation bright shining waxy yellow without tomentum. Black spot in lower part of parafacial much smaller than black spot on gena. Thorax with green metallic colour shining through the layer of microtomentum dorsally. Yellow area dorsally on each side of base of abdomen affecting T1+2 and T3. Cerci with tapering, slightly curved prongs, but the strong divergence seen in Fig. 10 may be an artifact caused by Zumpt's preparation technique, unduly flattening preparations. Surstyli enlarged distally, with bundle of black setae basally.

Female. Unknown.

Description. The generic description above includes an explicit account of specific features.

Material examined. Type material. Holotype: adult male, labelled (1) SOMALILAND [printed] // Adoland / / 9 / 12 / 53 [both lines handwritten by D. Greathead: a conclusion based on independent opinions of Annette Greathead and Neal Evenhuis] // Desert Locust Survey [printed]; (2) slide no. 61 [handwritten by Zumpt]; (3)

Pseudorhyncomyia / *aethiopica* n. sp. / Zumpt 1960 [handwritten by Zumpt]; (4) NMSA-DIP / 61637 [printed] (Fig. 7); (5) My holotype label. The specimen had been dissected by Zumpt and slide 61 carries a circular coverglass with the epandrial complex and two loose unidentifiable fragments; aedeagus and gonites are absent. The slide is labelled: (top of slide) *Pseudorhyncomyia* / *aethiopica* n.sp. / Zumpt / ♂ term. 61 [handwritten by Zumpt]; (bottom of slide) LOCALITY [printed] / Somaliland [handwritten by Zumpt] / DATE [printed] (Fig. 11). The type locality is shown in Fig. 13. The ST5 is intact *in situ* (Fig. 12), like a small fragment of the TST7+8 (Figs. 1, 2). Part of the abdomen has a darkening on the right side apparently caused by application of a fluid used for softening the abdominal tip before removing the genitalia directly from the pinned specimen. During the study the abdomen fell off, possibly because of a weakness in the thorax-abdomen junction. The abdomen was glued back to a card on a separate pin given copies of the original labels.

Distribution. Ethiopia (Somali province).

Biology. Unknown. Possibly *P. aethiopica* has a similar life habit to *P. braunsi*, see below.

Discussion. *Locality and collector of P. aethiopica holotype.* The locality label on the holotype does not mention the name of the collector. However, it was likely David Greathead, who worked for the Desert Locust Survey in what was Somaliland at the time (Murphy & Cock 2007, Clitheroe & Villet 2011, Sarah Gess in e-mail of 27 August 2013, Annette Greathead in e-mail of 28 August 2013). Greathead's connection with the "Adoland" locality is documented by Roffey (1958) who listed observations of *Trox procerus* Harold (Coleoptera) in association with egg-fields of the Desert Locust made in several countries. Therein on p. 451, bottom row, is an entry with several columns (here separated by slashes) which read "Ethiopia / Ado / 7°19' N / 45°10' E / 24–25.xi.1953 / ..." and the last column lists "D.J.Greathead" as observer. In addition, a photograph of the Ado locality taken in December 1953 kindly made available to me by Sarah Gess (David's sister), shows him doing fieldwork with two colleagues (Fig. 13). It is labelled "At the Ado egg field, Bob Hall, self [David Greathead] and George Popov". According to Annette Greathead (David's wife), George Popov was the senior member of the team working in "Somaliland" and he may have been the one to forward the specimen to Zumpt. The only correspondence her husband had with Zumpt was in 1960 and 1961 relating to species of *Blaesoxipha* and *Sarcophaga*, not to other Diptera. The date 9/12/53 on the label is consistent with all of this. *Name.* The name *aethiopica* was originally an unpublished MS-name introduced by Zumpt on the label of the holotype. Zumpt must have recognized the specimen as a new species, cf. the "n.sp." on the label he wrote in 1960 (Fig. 7), but he may have forgotten all about it, for he never published the name. In 1978 he even described (together with Dorothee Argo) a "second species" in the "so far monotypic" genus *Pseudorhyncomyia* Peris, i.e., *P. deserticola* Zumpt and Argo from Namibia ("South West Africa"). No mention was made then or at any other time about *P. aethiopica*. The name is herewith made available from the date of publication of the present paper.

***Pseudorhyncomyia braunsi* (Villeneuve)**

Figs. 14–28.

Rhyncomyia braunsi Villeneuve, 1920: 153. Lectotype male (South Africa, Cape province, Willowmore, NMSA), by designation of Zumpt (1958: 124) (not examined).

Rhyncomyia (Eurhyncomyia) braunsi: Cuthbertson 1935: 18.

Pseudorhyncomyia braunsi: Peris 1952: 59; Zumpt 1958: 22; Pont 1980: 783; Kurahashi and Kirk-Spriggs 2006: 94.

Diagnosis. The species has been adequately diagnosed and described by Peris (1952) and Zumpt (1958). *Male.* Length 8–13 mm (n=2). Frons width at narrowest point / head width ratio: 0.02–0.04 (n=2). TST7+8 shining greenish-black except for a narrow tomentose area close to the epandrium, with pale setulae only, hind central half quite bare (Fig. 26). No strong black setae on disc of TST7+8. ST5 lobes grey tomentose, with black vestiture (Fig. 26). Male genitalia figured by Zumpt (1958: 124 fig. 40). *Female:* Length: 11 mm (n=1). Frons width at vertex / head width ratio: 0.30 (n=1). Ovipositor with straight spines at tip (Fig. 16).

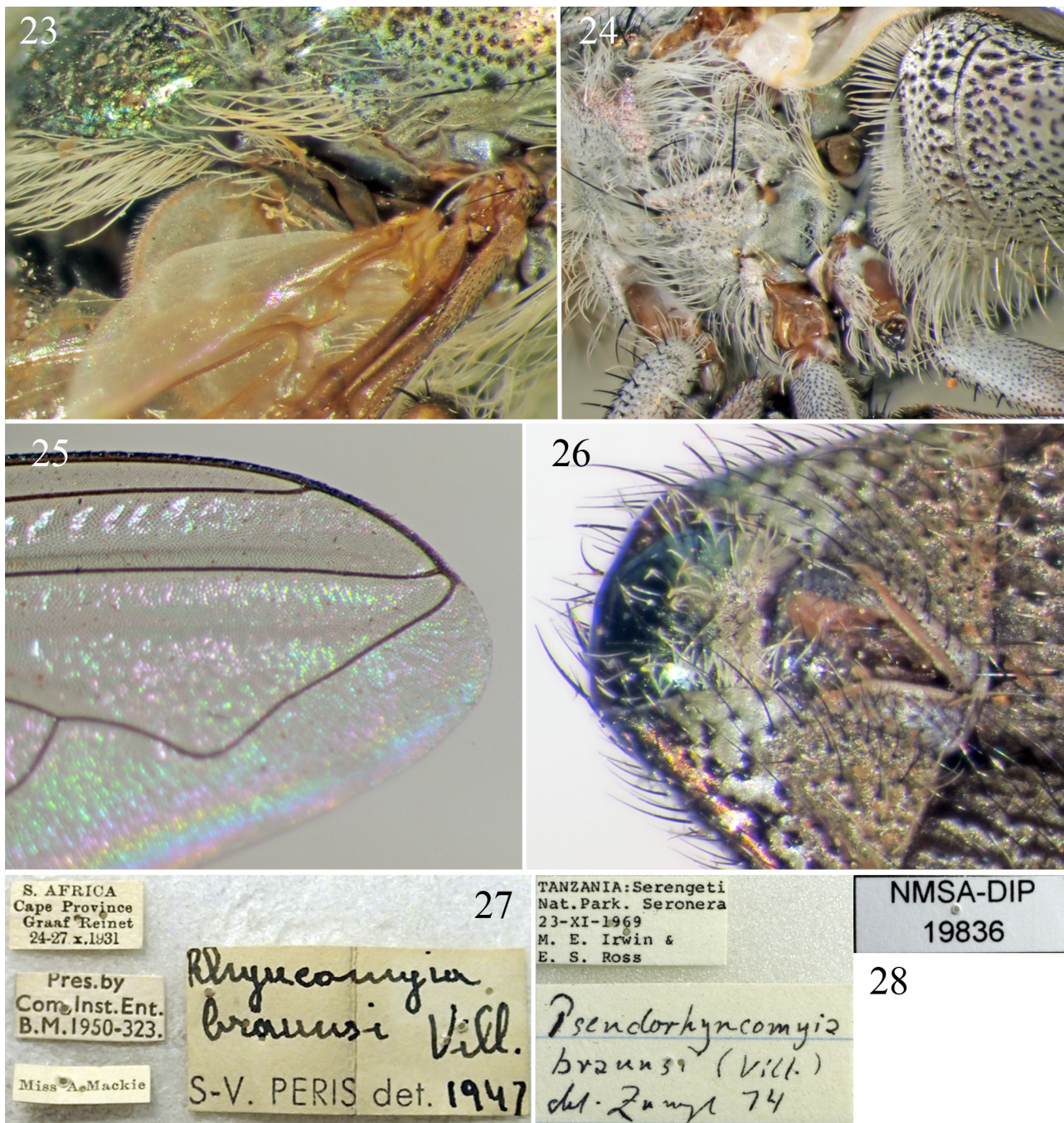
Description. The generic description above includes an explicit account of specific features.

Material examined. BMNH: 1 male labelled (1) S. AFRICA / Cape Province / Graaf Reinet / 24-27.x.1931 [printed]; (2) Pres. By / Com.Inst.Ent. / B.M.1950-323. [printed]; (3) Miss A.Mackie [printed]; (4) *Rhyncomyia* / *braunsi* Vill. / S-V. PERIS det. 1947 [handwritten, last line printed, except for year] (Fig. 27). • 1 male [staged on yellow celluloid plate] labelled (1) Cape Colony: / King William's / Town district. / Miss Barrett. / B.M.1899-77.

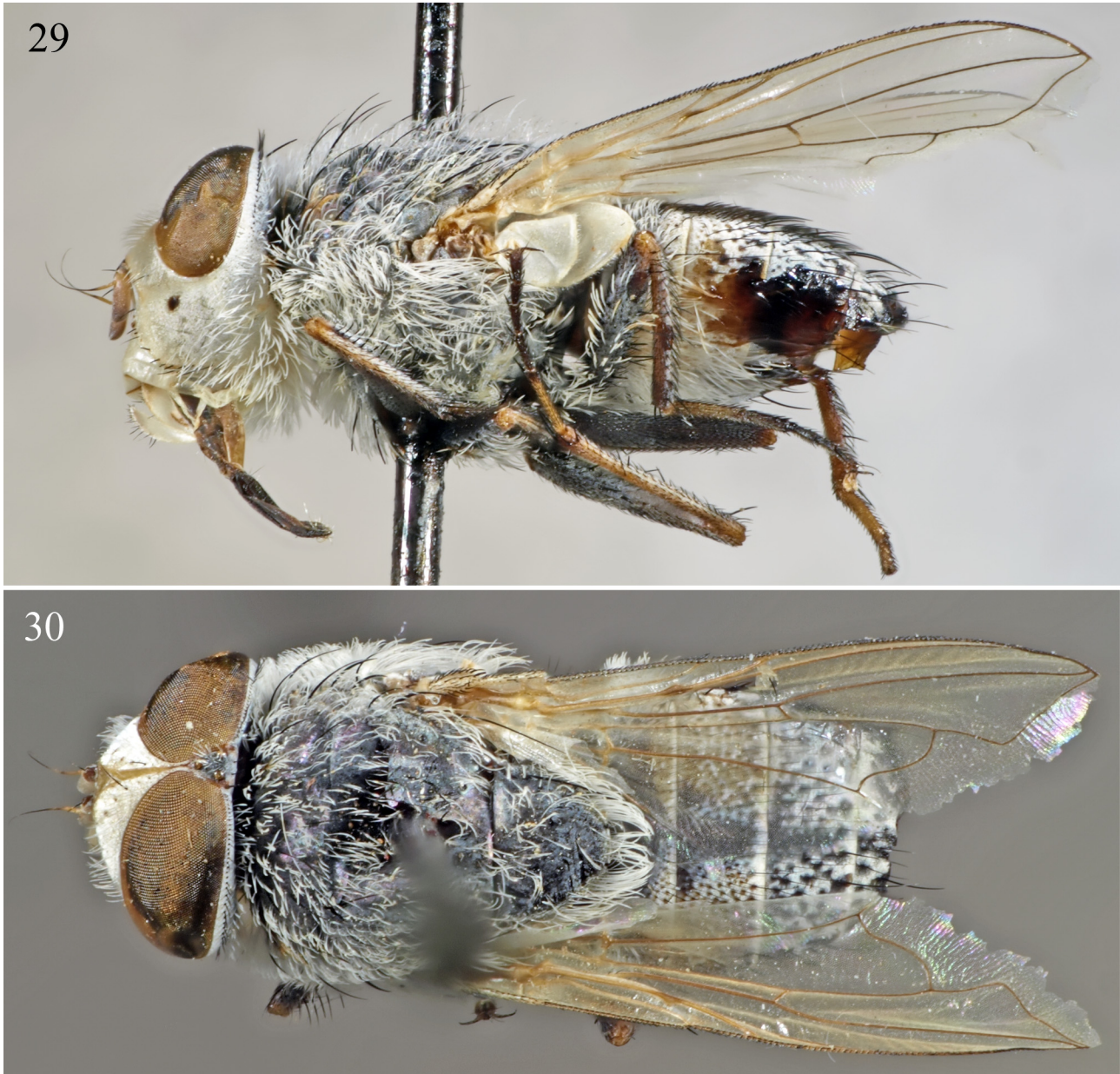
[printed]; (2) *Pseudorhyncomyia braunsi* Vill. 1920 / S-V. PERIS det. 1948 [handwritten, last line printed, except for year]. Both specimens are mentioned by Peris (1952: 59). **NMSA:** 1 female labelled (1) TANZANIA: Serengeti / Nat. Park. Seronera / 23-XI-1969 / M. E. Irwin & / E. S. Ross [printed]; (2) *Pseudorhyncomyia braunsi* (Vill.) / det. Zumpt 74; (3) NMSA-DIP / 19836 [printed] (Fig. 28). I have not dissected the genitalia of any of the specimens.

Distribution. Namibia, South Africa and Tanzania.

Biology. The life habit has been described by Villeneuve (1920), and subsequently repeated in various versions by Cuthbertson (1935), Ferrar (1987) and Kurahashi and Kirk-Spriggs (2006). The larvae live in the heap of debris around the nests of termites of the genus *Hodotermes* Hagen and attack and suck the contents of living termites (Villeneuve 1920, citing account by Brauns). The pupae are found below the heaps of debris. Brauns succeeded in breeding the larvae to the adult stage by feeding them on live termites.



FIGURES 23–28. *Pseudorhyncomyia braunsi* (Villeneuve) (23, 25–27 from male in BMNH “... Graaf Reinet ...”; 24, 28 from female in NMSA). **23.** Right suprasquamal ridge. **24.** Much of pleura and base of abdomen, left lateral view. **25.** Apex of wing. **26.** Tip of abdomen, ventral view. **27.** Labels of male. **28.** Labels of female.



FIGURES 29–30. *Zumba antennalis* (Villeneuve) male (from holotype of *Pseudorhyncomyia deserticola* Zumpt and Argo). **29.** Habitus, left lateral view. **30.** Habitus, dorsal view.

***Zumba antennalis* (Villeneuve)**

Figs. 29–43.

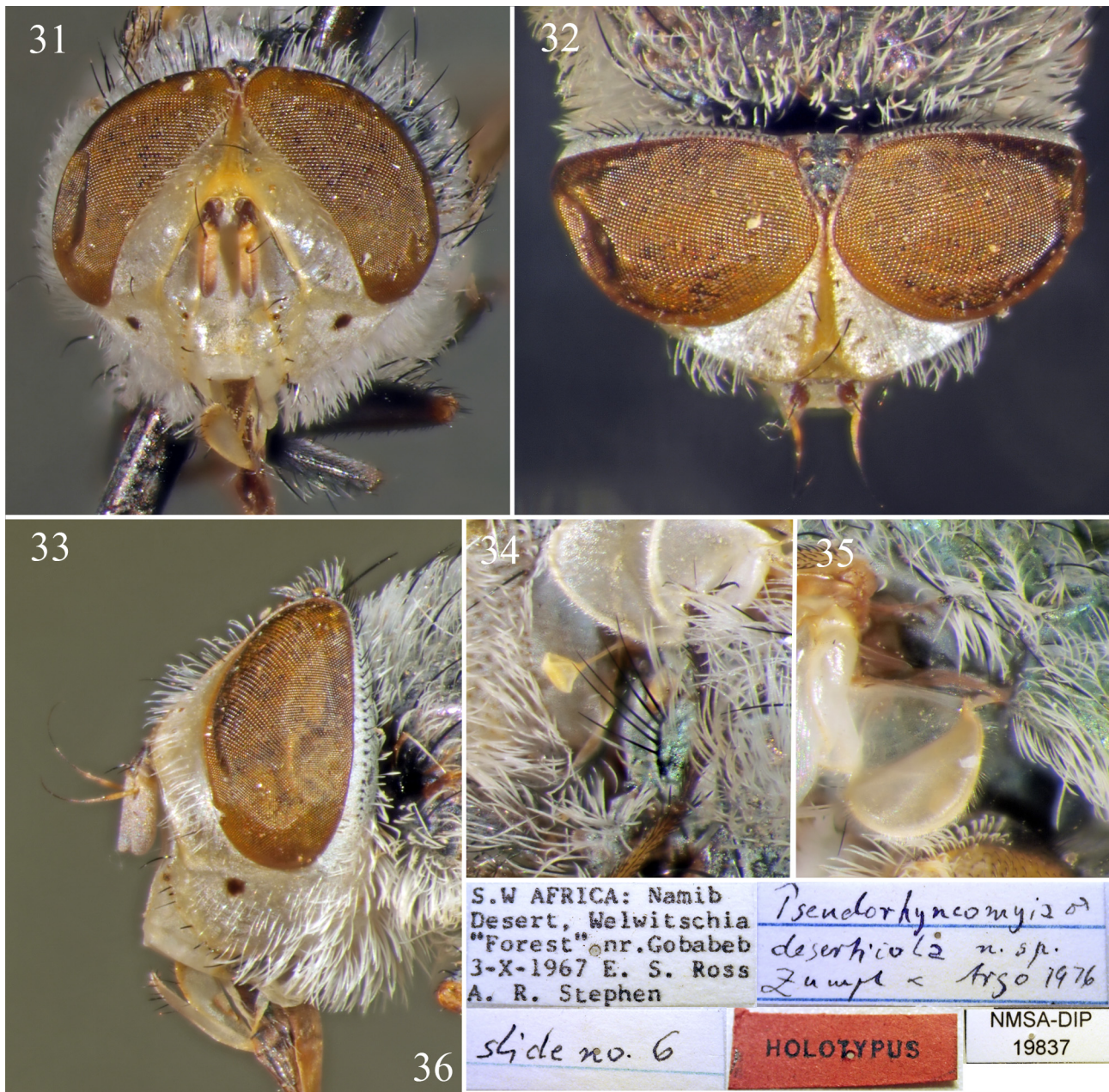
Rhyncomyia antennalis Villeneuve, 1929: 185. Lectotype male (Namibia, Ohangwena Province, Mafa, SAMC), by designation of Zumpt (1958: 195) (photographs of specimen and labels seen).

Note. The species was originally described from three syntypes from “Sud-Ouest africain: Mafa [near Omafo, about 17°28'S 15°54'E, in Namibia; see map in Lawrence (1928: 218)] et Namakunde [now = Namacunde in Angola], février 1923, un ♂ et deux ♀”. In SAMC are 1♂ and 1♀ labelled “Mafa / Feb. 1923” [printed on the upper side] and “S.W. Africa / Mus. Exped.” [printed on the reverse side]. The male, which is staged, also carries a label in Villeneuve’s hand reading “Rhyncomyia / antennalis / Typ. Villen.” and a Zumpt identification label reading “Zumba ♂ / antennalis Vill. / det. Zumpt 56”. [See Lawrence (1927: 1) for a brief account of the expedition in 1923.] There is no lectotype label attached, but the male is obviously the specimen Zumpt (1958) designated as lectotype. Both specimens carry a museum number label reading “SAM-DIP-A011283”. Simon van Noort (SAMC) has now affixed a lectotype label on the male specimen.

Rhyncomyia antennalis: Peris 1952: 78.

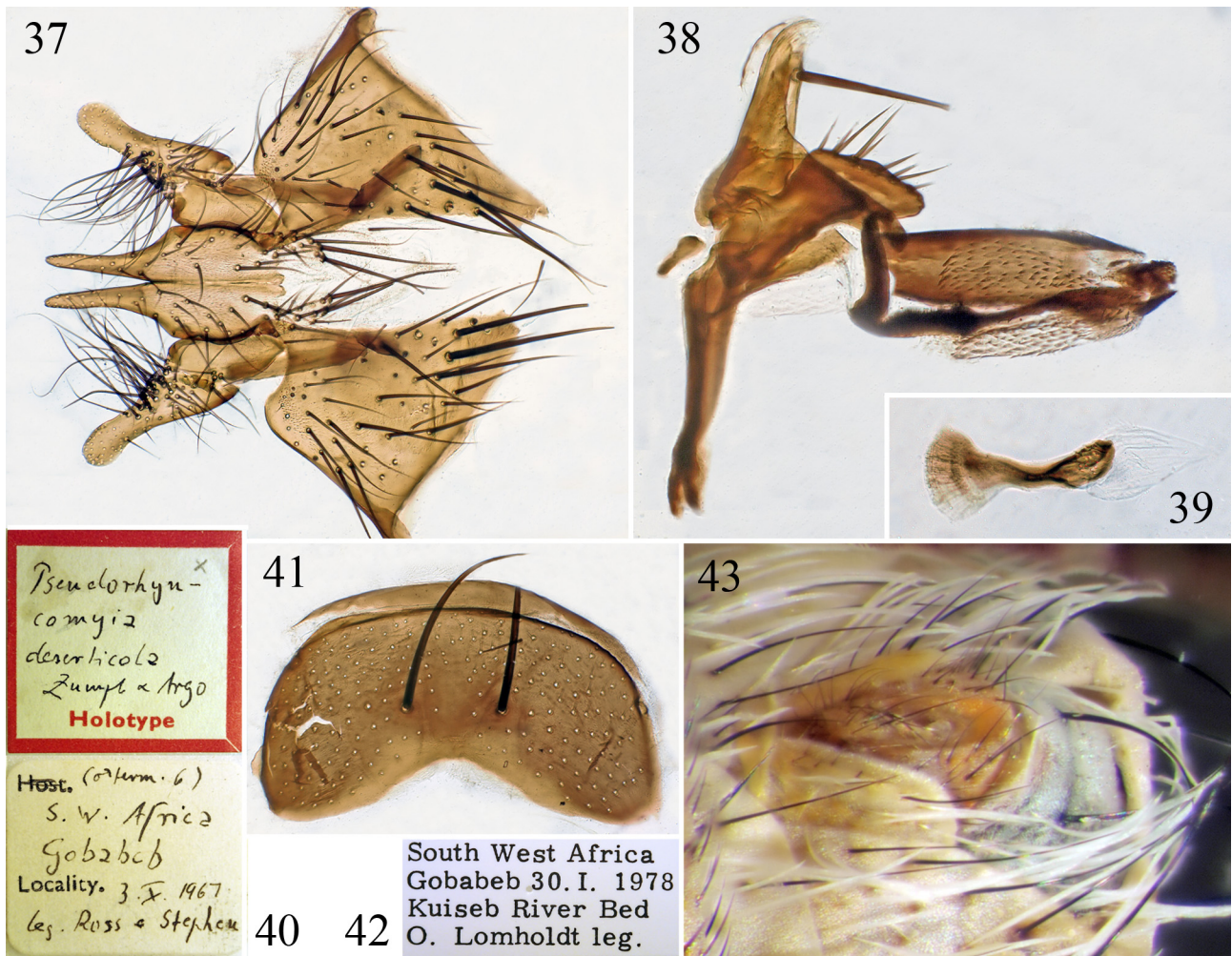
Zumba antennalis: Zumpt 1958: 193; Pont 1980: 787; Kurahashi & Kirk-Spriggs 2006: 92.

Pseudorhyncomyia deserticola Zumpt and Argo, 1978: 35. Holotype male (Namibia, Namib Desert, Welwitschia "forest" nr Gobabeb, NMSA), by original designation. For details, see Material examined below. **Syn. nov.**



FIGURES 31–36. *Zumba antennalis* (Villeneuve) male (31–34, 36 from holotype of *Pseudorhyncomyia deserticola* Zumpt and Argo; 35 from male in ZMUC “... Gobabeb ... Kuiseb River Bed ... 27.I.1978 ...”). **31.** Head, anterior view. **32.** Head, dorsal view. **33.** Head, left lateral view. **34.** Row of meral setae, right side. **35.** Left suprasquamal ridge. **36.** Labels.

Key features of holotype of *Pseudorhyncomyia deserticola*. *Head.* Ground colour yellow. Piliferous dots absent. 4–5 strong black frontal setae. Fronto-orbital plate and parafacial densely and evenly white tomentose with long, thin, white and densely set setae. Facial membrane also white tomentose. Lower facial margin only slightly protruding, whitish yellow. Several black subvibrissal and parastomal setae (Fig. 33). Palpus almost white. *Thorax.* 2 strong black *prst acr.* 2 strong black *prst dc* and 4 strong black *post dc.* 4–5 strong black marginal anepimeral setae among the white main marginal setae. Anepimeron with a single strong black seta near the upper edge. Suprasquamal ridge bare (Fig. 35). Meral setae in a single row, mostly black, even though a few upper and lower setae in the meral row are white (Fig. 34). *Abdomen.* TST7+8 with a pair of strong black discal setae (Fig. 41). *Genitalia.* As in Figs. 37–39.



FIGURES 37–43. *Zumba antennalis* (Villeneuve) male (37–41 from Zumpt and Argo’s slide “... term. 6” prepared from holotype of *Pseudorhyncomyia deserticola* Zumpt and Argo; 42, 43 from male in ZMUC “... Gobabeb 30.I. 1978 Kuiseb River bed ...”). 37. Cerci, surstyli and epandrium. 38. Aedeagus, pre- and postgonites, phallapodeme, and one basal apodeme of the postgonite (small sclerite to the left, at middle). 39. Ejaculatory sclerite. 40. Labels. 41. TST 7+8. 42. Labels. 43. Tip of abdomen, showing ST5, epandrium and TST7+8 with pair of strong black setae.

Material examined. Type material. Holotype of *Pseudorhyncomyia deserticola*. Adult male labelled (1) S.W.Africa: Namib / Desert, Welwitschia / “Forest” nr Gobabeb / 3-X-1967 E. S. Ross / A. R. Stephen; (2) slide no. 6 [Zumpt’s handwriting]; (3) *Pseudorhyncomyia* ♂ / *deserticola* n. sp. / Zumpt & Argo 1976 [Zumpt’s handwriting]; (4) HOLOTYPUS [red label, black print]; (5) NMSA-DIP / 19837 (Fig. 36). The genitalia (Figs. 37–39) had already been removed from the abdominal tip of the holotype when I received it. Slide no. 6 carries the genitalia beneath a circular coverglass; it is labelled: (top of slide, label with thick red frame) *Pseudorhyn-* / *comyia* / *deserticola* / Zumpt & Argo [handwritten by Zumpt] / Holotype [red print]; (bottom of slide) Host. [black print, streaked out] (♂ term. 6) / S. W. Africa / Gobabeb / Locality. [black print] 3.X.1967 / leg. Ross & Stephen [Zumpt’s handwriting] (Fig. 40). Part of the abdomen has a darkening on the left side (Fig. 29) apparently caused by application of a fluid used for softening the abdominal tip before removing the genitalia directly from the pinned specimen. **Comparative material of *Zumba antennalis* (Villeneuve).** ZMUC (7 males, 10 females): 6 males, 7 females labelled (1) South West Africa / Gobabeb [various dates] Kuiseb River Bed / O. Lomholdt leg. [dates are: 25., 26., 27., 29., 30.I.1978, 3., 7. II.1978]. • 1 male 1 female labelled (1) South West Africa / Gobabeb 10.II.1978 Kuiseb River flowing / O. Lomholdt leg. • 2 females labelled (1) South West Africa / Homeb / ESE Gobabeb / 29.I.1978 / Welwitschia valley / O. Lomholdt leg. [all labels printed].

Identity. A comparison of the key features of the holotype of *P. deserticola* with the diagnosis of the genus *Pseudorhyncomyia*, given above, makes it evident that the specimen does not belong to that genus. On the other

hand it fits the genus *Zumba* Peris, 1951 on all accounts and keys to that genus in Zumpt (1958). It clearly belongs to the species *Z. antennalis* (Villeneuve) as described by Villeneuve (1929: 185, as *Rhyncomyia antennalis*), Peris (1952: 78, as *Rhyncomyia antennalis*) and Zumpt (1958: 193) and is conspecific with the numerous other *Z. antennalis* material from the type locality in Namibia (in ZMUC). The TST7+8 agrees with other *Z. antennalis* males in having a pair of strong black discal setae (Fig. 43), a property of *Z. antennalis* unmentioned by earlier authors. The male genitalia do not differ in any significant respects either from those figured by Zumpt (1958: 194 fig. 64) for *Z. antennalis*. According to Kurahashi and Kirk-Spriggs (2006: 93) the species is “exceedingly common in Namibia ... occurring in all Namibian biomes, but principally in the desert and karoo biomes ... [r]ecorded in all months of the year.” On this background the nominal species *P. deserticola* Zumpt and Argo is sunk as a junior synonym of *Z. antennalis* (Villeneuve), **syn. nov.** *Zumba antennalis* is known from Angola, Namibia and South Africa.

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