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RESEARCH ARTICLE

About wrongly assigned Afrotropical *Dichaetomyia* specimens resembling *Dichaetomyia ovata* (Stein) (Diptera: Muscidae), with descriptions of four new species

Eberhard Zielke

Abstract

For the identification of many Afrotropical muscids, the keys drawn up by Emden have primarily been used over the past 80 years. Thus, in the course of time, various *Dichaetomyia* specimens have also been assigned to *Dichaetomyia ovata* (Stein) using this key. However, a comparison of eleven *D. ovata* specimens from different origins with the only extant syntype of this species revealed that all specimens not only showed a different combination of taxonomic characters than the syntype, but also differed significantly from one another in some cases. Although they all looked very similar at first glance and, like the syntype, were mostly yellow or brownish yellow in colour, they differed in morphology, chaetotaxy and colouration. Four new species, native to Liberia, Madagascar, Nigeria and Tanzania, have been identified from within this small pool of specimens previously assigned to *D. ovata*. Apparently, the only available identification key was not sufficiently differentiating for *D. ovata* to assign these specimens to different species. To prevent future misidentifications, *D. ovata* is redescribed in detail based on the syntype. The new species, *Dichaetomyia libovata* **sp. n.**, *Dichaetomyia malovata* **sp. n.**, *Dichaetomyia niovata* **sp. n.** and *Dichaetomyia tanovata* **sp. n.**, are described, major differences from *D. ovata* are discussed and each new species is compared to the closest similar species in the group. A key to distinguishing *D. ovata* from the newly described species previously assigned to *D. ovata* is also presented.

Keywords: identification key, Madagascar, pitfall traps, redescription, Subsaharan Africa, taxonomy.

Zusammenfassung

Für die Bestimmung vieler afrotropischer Musciden wurden in den letzten achtzig Jahren überwiegend die von Emden erstellten Bestimmungstabellen benutzt. So wurden im Laufe der Zeit auch diverse Exemplare von *Dichaetomyia* auf Basis des Bestimmungsschlüssels der Art *Dichaetomyia ovata* (Stein) zugeordnet. Ein Vergleich von elf Exemplaren von *D. ovata* unterschiedlicher Herkunft, darunter dem einzigen noch existierenden Syntype dieser Art ergab jedoch, dass alle Exemplare nicht nur eine andere Kombination von taxonomischen Merkmalen aufwiesen als der Syntype, sondern dass sich einige auch deutlich voneinander unterschieden. Obwohl sie auf den ersten Blick alle sehr ähnlich aussahen und wie der Syntype meist überwiegend gelb oder bräunlich-gelb gefärbt waren, unterschieden sie sich in Morphologie, Chaetotaxie und auch in ihrer Färbung. Vier neue Arten, die aus Liberia, Madagaskar, Nigeria und Tansania stammen, wurden aus dieser kleinen Gruppe früher *D. ovata* zugeordneten Exemplare identifiziert. Offensichtlich war der einzig verfügbare Bestimmungsschlüssel für *D. ovata* nicht ausreichend differenzierend, um die Exemplare verschiedenen Arten zuzuordnen. Um zukünftigen Fehlidentifikationen vorzubeugen, wird *D. ovata* basierend auf dem Syntype neu charakterisiert. Die gefundenen neuen Arten, *Dichaetomyia libovata* **sp. n.**. *Dichaetomyia malovata* **sp. n.**, *Dichaetomyia niovata* **sp. n.** und *Dichaetomyia tanovata* **sp. n.**, werden beschrieben, wesentliche Unterschiede zu *D. ovata* werden diskutiert und jede neue Art wird mit der nächstähnlichen Art in der Gruppe verglichen. Ein Schlüssel zur Unterscheidung zwischen *D. ovata* und den früher *D. ovata* zugeordneten Arten wird ebenfalls vorgestellt.

Introduction

When studying Madagascan Muscidae, type material of several species was used for comparison and confirmation of identifications. Among the type material received for investigations on Madagascan *Dichaetomyia* Malloch, 1921 was also one of the two syntypes of *Dichaetomyia ovata* (Stein, 1918), kindly loaned by the Museum für Naturkunde, Berlin (ZMB) to the Institute of Biodiversity and Ecosystem Research, Sofia, Bulgaria (IBER). The species, which belongs to the subgenus *Panaga* Curran, 1928, was first reported from Uganda and is according to Pont (1980) widespread from W Africa to the Congo Basin, Madagascar and Tanzania.

The species was described by Stein (1918) as *Mydaea ovata*, based on two females. The description was fairly short, and the body length of 10 to 11 mm was pointed out as a significant distinguishing feature. In the same pub-

lication, Stein also presented *Mydaea rutila* Stein, 1918 as another new species, based on five female syntypes. These flies also belong to *Dichaetomyia* and originated from the same area, possibly even from the same locality, as *D. ovata*, but were significantly smaller, with a body length of 6–7 mm. In addition to the smaller body size, Stein also cited the direction of the inner vertical setae and a row of discal setae on tergite 5 as distinguishing features from *D. ovata*. Curran (1935) treated *D. ovata* and *D. rutila* as distinct species whereas, without any comments, Emden (1942) included both taxa, with the characters defined by Stein, in the identification key to African *Dichaetomyia* species, as "*ovata* s. str." and "*ovata*, var. *rutila* Stein". He also added, without further explanation, some additional taxonomical features not mentioned by Stein for the two *D. ovata* "variants", and which partly contradicted the original description. However, since the publication of the Catalogue of Afrotropical Muscidae (Pont 1980), these two species have been regarded as conspecific. Accordingly, the statements made by Pont, and later by Couri et al. (2006), on the occurrence of *D. ovata* are based on findings belonging to both species.

When using the identification key to Malagasy *Dichaetomyia* species (Couri et al. 2006), a contradiction between the description of *D. ovata* given there and the female syntype became apparent. In the identification key, the species is characterized as "General body colour uniformly yellow, not shining; male flagellomere yellow". However, Stein wrote "thorax and scutellum shining.... abdomen as well shining" and, regarding the female antenna, "clay brown, 2nd segment and basis of 3rd paler"; this description by Stein corresponds exactly to the available female type. The male of *D. ovata* does not seem to have been described so far, but apparently the authors had a corresponding specimen with a yellow postpedicel. In the chapter "Material Examined" of Couri et al.'s publication on Madagascan Muscidae, two males and three females of *D. ovata* were listed along with their localities of collection and California Academy of Sciences (CAS; San Francisco, USA) registration numbers. The request to be allowed to examine these specimens was kindly granted by CAS, and the two males and two of the three females as well as other specimens of *D. ovata* and "*D. ovata rutila*" from the collection were made available for comparative investigations. The Staatliches Museum für Naturkunde Stuttgart, Germany (SMNS) contributed another female identified as *D. ovata* to the study, and two specimens identified as "*D. ovata rutila*" were found in the IBER entomological collection. The comparison of the flies, which at first glance looked very similar and were mostly uniformly yellow or brownish yellow in colour, quickly resulted in a surprise: all specimens examined clearly differed from the syntype of *D. ovata* on the basis of taxonomic characteristics. In addition, several specimens were also clearly distinguished from one another by various other taxonomic characteristics. Apart from *Dichaetomyia ovata*, four species were identified among the small group of previous "*ovata*" specimens. Another female previously identified as "*D. ovata rutila*" was found not to be an *ovata* specimen. It could also not be assigned with certainty to one of the new taxa. However, due to poor condition of the body, it is not described as a new species herein.

In the present contribution, *D. ovata* is first redescribed in detail based on the syntype. Then the newly-found species are described, essential differences from *D. ovata* are discussed, and each new species is compared with the most similar species in the group. Finally, a key to the species of the here discussed "*D. ovata* group" is added.

Material and methods

The current study is based on twelve specimens; the syntype of *Mydaea ovata* Stein, 1918, lent to IBER by the ZMB, a female identified and recorded by Paterson (1956) as *D. ovata* was made available by the SMNS, two specimens identified as "*D. ovata rutila*" and stored in the entomological collection of IBER and eight specimens identified as *D. ovata* and "*D. ovata rutila*" from CAS. One of the latter specimens proved to be a female *Dichaetomyia crassirostris* Emden, 1942 and was excluded from further investigations.

The material was studied using a Zeiss Stemi SV6 stereomicroscope and images were created by means of a Zeiss Discovery 8 stereomicroscope combined with an AxioCam ERc5s camera. Morphological terminology follows McAlpine (1981), but "postpedicel" (Stuckenberg 1999) is used instead of "first flagellomere", as proposed by McAlpine. The lateral width of the postpedicel of the antenna is called "depth" and refers to the greatest depth of the postpedicel. Information about the width of the frons refers to the shortest distance between the margins of the eyes. The anterior width of the frons is measured directly at the upper margin of the lunule. The intra-alar setae of the presutural part of the mesonotum are named posthumeral and presutural seta, respectively. When the length of setae or hairs of the femur is compared to the depth of femur, the depth always refers to the point of insertion of the seta or hair. Body length was measured in millimetres (mm) using an eye piece.

For identification, the key to African *Dichaetomyia* species published by Emden (1942) was almost exclusively used; however, the key in Curran (1935) and publications by Stein (1918), Paterson (1953) and Couri et al. (2006) were occasionally consulted. Frequent reference is made to the key by Emden (1942) as well as to the publication on Madagascan Muscidae by Couri et al. (2006). For the sake of simplicity, the former is sometimes only referred to as "Emden", the latter as "Couri et al.". Likewise, Emden's key is referred to simply as "the key" in places. Furthermore, *D. ovata* and the newly described species are referred to in this publication as "*D. ovata*-group", without intending to implement a formal taxonomic group.

The inscriptions on the locality labels of the specimens of the wrongly assigned species have been transferred verbatim to the corresponding new taxa. The holotypes of the newly described species carry a red label bearing the inscription "Holotype", whereas the paratypes carry a yellow label with the inscription "Paratype".

Results

Common characteristics applicable to each of the four described new species

The description of a new species should be as comprehensive as possible, so that it can be used for comparison with other species. Therefore, taxonomic characters that may not be relevant to differentiation at the time of species description should also be considered, because they may be of importance in future comparisons with other species. The species described below were originally all assigned to *Dichaetomyia ovata* s. l. Many of their taxonomic features are very similar or even identical, and therefore have practically no use in distinguishing these species from one another. However, they must be taken into account in the species description. In order to avoid the redundant listing of almost identical features without instantaneous diagnostic value, the common taxonomic characters are compiled in this section, which is therefore an integral part of each of the subsequent individual descriptions of the four new species.

The new species treated in this work key out as *Dichaetomyia ovata* in Emden's identification key because they all have the following identical taxonomic features: greater ampulla with several dark but not golden-yellow setulae, anepimeron pale below the greater ampulla, three postsutural dorsocentral setae, sides of scutellum with setulae near the lower margin, all tibiae predominantly yellow, tarsi wholly yellowish, fore tibia without a median posterior seta, the last two abdominal segments without spots confined to the posterior angles and prementum not abnormally bulbous. Other common features are:

Females: Head. Dichoptic; eyes practically bare, facets of about equal size. Parafacial distinctly tapering; in profile, upper mouth margin in line with profrons. Arista predominantly yellow, about 2.5 times as long as postpedicel, longest hairs of arista at least twice as long as depth of postpedicel. Anterior half of fronto-orbital plate with four setae, the anterior seta strong, the next one only half as long and the uppermost ones distinctly shorter and weaker, at midlength one or two very small hair-like setae, in upper half at level of anterior ocellus a strong reclinate orbital seta with another orbital seta slightly below, about half as long as the upper one. Parafacial and facial ridge bare. Vibrissal setae strong and at least 1.5 times as long as the longest surrounding peristomal setae.

Both sexes: Thorax. In dorsal view, postpronotum and notopleuron pale yellow, somewhat contrasting to the yellowish or brownish yellow mesonotum. Posterior spiracle with dark setae at the lower margin. Acrostichals 0+1, usually at most half as long as posterior dorsocentral seta; dorsocentral setae 2 + 3, the anterior presutural seta somewhat shorter than the other dorsocentrals; postpronotal setae 2, the outer one clearly longer than the inner seta; anterior notopleural seta slightly longer than posterior one; two long intra-alar setae; supra-alar setae 2; postalar setae 3; katepisternal setae 1+2, the lower seta clearly closer to the posterior upper seta. Suprasquamal ridge, proepimeral area, meron and katepimeron bare. Scutellum with long apical and lateral setae.

Wing. Membrane hyaline, with a yellowish to brownish tinge; cross-veins and surrounding membrane not infuscate. Tegula and basicosta yellow. Costal spine at least twice as long as adjacent bristles but not very prominent. Radial node dorsally and ventrally bare, ventral part of vein R_{4+5} with few small setae. Vein M somewhat diverging from vein R_{4+5}, but slightly curved forward toward R_{4+5} before reaching wing margin. Cross-vein r-m slightly basad from the point where vein R_1 enters costa; distal cross-vein dm-cu almost sinuous and somewhat oblique. Lower calypter about 1.5 times as long as upper calypter.

Legs. Coxae, trochanters, femora yellow. Hind coxa bare on posterior surface. Pulvilli and claws well developed but at most half as long as the corresponding tarsomere. Fore femur with complete rows of posterodorsal, posterior and posteroventral setae, the posterodorsals and posteriors about as long as depth of femur, posteroventrals slightly longer. Mid tibia with two strong posterior setae, longer than diameter of tibia. Hind femur with complete row of anterodorsal setae about as long as depth of femur.

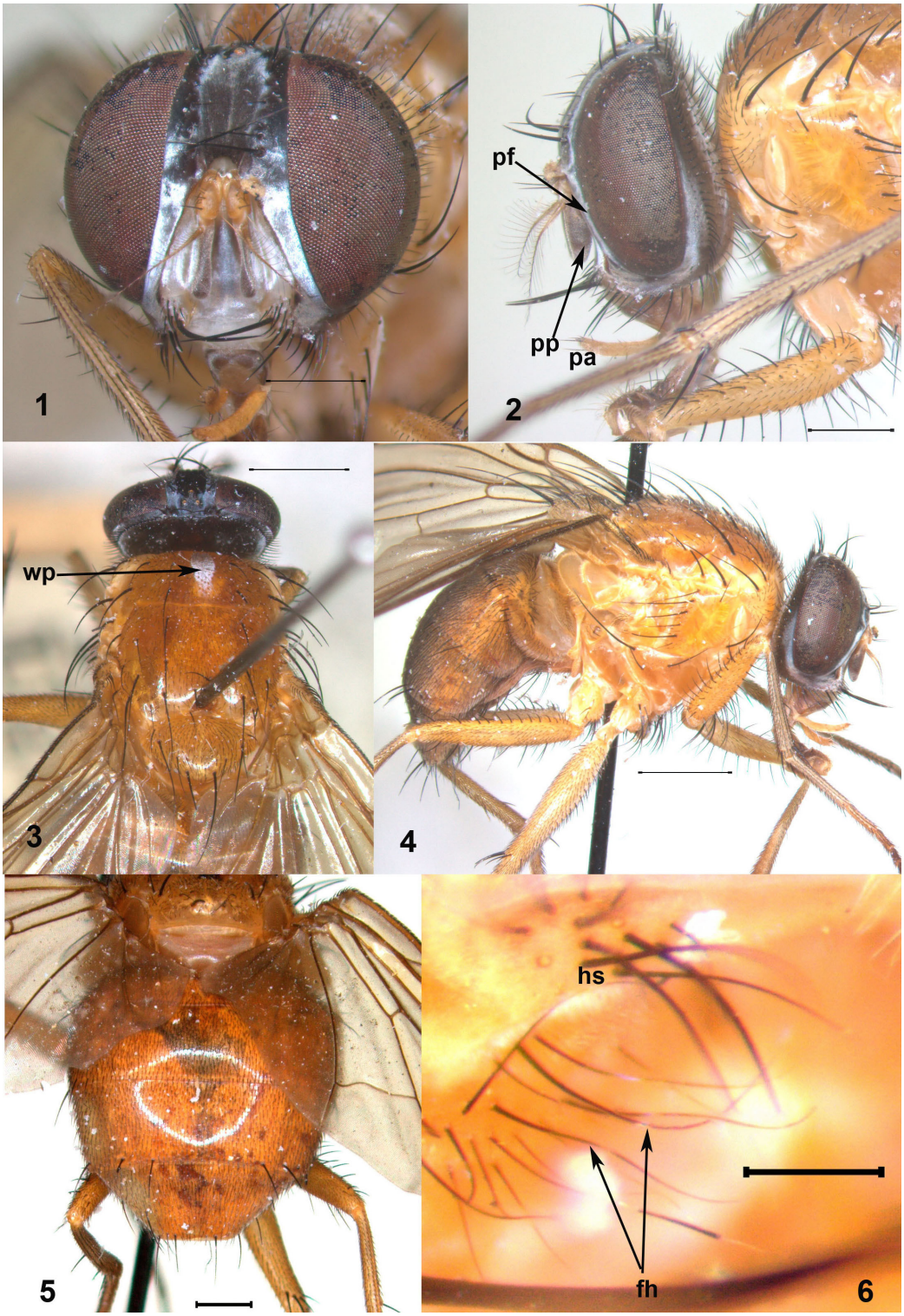
Abdomen. Without specific pattern and dusting independent of viewing angle. Ventral parts of tergites and sternites practically concolourous with dorsal surface of tergites.

If a characteristic is described differently from this compilation in the description of a species, it overrides the general statement of this compilation for that species.

Dichaetomyia ovata (Stein, 1918) (Figs. 1–6, 26)

History

When Curran published the identification key to the Afrotropical species of the genus *Dichaetomyia* and the subgenus *Panaga* in 1935, he also pointed out that some species of this genus are probably still to be found in other genera, since various specimens of this genus had been assigned to other genera in previous years, before Malloch introduced the genus *Dichaetomyia* in 1921. In 1942, Emden then published an identification key which contained the already known Afrotropical *Dichaetomyia* species and, above all, the large number of new species he had discovered. This key has been used for the last 80 years to assign *Dichaetomyia* specimens of the Afrotropical Region to the appropriate taxa. The key also included the



Figs. 1–6. *Dichaetomyia ovata* (Stein), syntype ♀. **1**. Head, anterior view. **2**. Head, lateral view; yellow palpi (pa); visible greyish-white parafacial (pf); predominantly dark postpedicel (pp). **3**. Thorax, dorsal view. Mesonotum shiny brownish yellow, presutural part with one median white stripe-like patch (wp), tapering towards the transverse suture. **4**. Lateral view. Pleura of thorax entirely yellow, shiny; abdomen more brownish; legs yellow; wings with a brownish shine. **5.** Dorsal view of abdomen. **6**. Lateral view of anepimeron. Upper part with a tuft of strong hair-like setae (hs), the surface below with several scattered fine hairs (fh) about as long as or longer than the hairs of the tuft. Scales bars: 1, 2, 5: 1 mm; 3, 4: 2 mm; 6: 0.2 mm.

two similar species *Dichaetomyia ovata* and *Dichaetomyia rutila*, described by Stein (1918). Although Stein mentioned a white median spot on the anterior mesonotum for both species in the descriptions, *D. rutila* and *D. ovata* were distinguished in Curran's identification key only by the absence or presence of a white spot on the presutural mesonotum, respectively. Emden, on the other hand, wrote for *D. ovata* var. *rutila* in his key: "Median dusted vitta often less distinct". Also, like Stein, he pointed to the almost complete row of anteroventral setae on the hind femur of female *D. ovata* as a distinguishing feature. While Stein only mentioned two longer anteroventrals on the hind femur of females of *D. rutila*, Emden mentioned, for *rutila*, 2–5 setae for both sexes. However, increasing the number to five possible setae minimized the importance of this distinguishing feature, since in the female syntype of *D. ovata* the row of anteroventrals on the hind femur consists of only six strong setae. The larger number of setae and the inclusion of both sexes of *D. rutila* in the key was by no means supported by the species description, which was based on five females but no males. Thus, a key feature for distinguishing the two taxa had lost importance with Emden's definition, and a reliable assignment of specimens to one of the two taxa was no longer possible. Since one of the two female syntypes of *D. ovata* (Pont & Werner 2006) and all five female types of *D. rutila* in the Budapest Museum were destroyed by fire in 1956 (Pont 2013), a detailed comparison of the two species was no longer possible. In addition, Stein's descriptions of the two species did not provide sufficient evidence that they are different taxa, and neither Curran nor Emden indicated in the supplementary characterizations of *D. ovata* and *D. rutila* that these were based on investigations of the type material. The two taxa have therefore been considered conspecific since the publication of the Catalogue of Afrotropical Muscidae (Pont 1980).

Using Emden's identification key, *D. ovata* specimens identified before 1980 were assigned to either *D. ovata* or "*D. ovata rutila*", apparently without questioning the feebleness of the characters used to distinguish the two "taxa". Corresponding examples can be seen also on the identification labels of specimens in the entomological collections of the Natural History Museum, London and of the Californian Academy of Sciences, San Francisco. In addition, some specimens of *D. rutila* are labelled by Emden himself in 1942 as *D. ovata rutila*. Only the recently conducted comparison of Malagasy *Dichaetomyia* material with type specimens of various taxa revealed a number of misidentifications (Zielke 2020). A similar phenomenon has now also been found in the widespread *D. ovata*. Some predominantly brownish yellow coloured specimens had, due to their similarity, been assigned to this species on the basis of the available identification keys. However, they are herein assessed as belonging to other species based on their specific combination of morphological characteristics.

Material examined

Syntype (♀) from Uganda (ZMB), with five small labels bearing the following inscriptions: 1. "Uganda Katona"; 2. "Mujenje 1913.VIII."; 3. "Type 4. *Mydaea ovata* sp. n."; 5. "Zool. Mus. Berlin".

Remarks. According to Pont & Werner (2006), this is one of the two syntypes on which Stein based his description. The female is in excellent condition.

Redescription

Female. Head. Ground colour mainly dark brown, depending on the incidence of light, with some parts greyish or densely silvery-white dusted (Fig. 1). Dichoptic; eyes practically bare, facets of about equal size. Frons slightly dilated towards the anterior margin, distance between eyes at vertex 0.27 times as wide as maximal width of head, at level of anterior ocellus about 4 times and at anterior margin of frons about 5.3 times as wide as the distance between the outer margins of the posterior ocelli. Fronto-orbital plate at midlength of frons almost as broad as distance between the outer margins of the posterior ocelli; frontal vitta slightly oval-shaped, at midlength about 3 times as wide as fronto-orbital plate, frontal triangle barely reaching middle of frons. Parafacial distinctly tapering, at level of base of antenna at least 1.5 times as wide as depth of postpedicel, at lower end about 1.5 times as wide as anterior ocellus. In profile, upper mouth margin in line with profrons; parafacial visible throughout its entire length; genal depth below lowest eye margin barely as broad as width of postpedicel (Fig. 2). When viewed anteriorly, fronto-orbital plates predominantly dark brown to black and more or less densely whitish-dusted depending on incidence of light, frontal vitta contrasting velvet dark brown, frontal triangle and ocellar tubercle dark, at some angles somewhat whitish-dusted, parafacial and anterior part of gena densely silvery-white dusted, ground colour of face pale yellow, at certain viewing angles densely white-dusted. Basal segments of antenna and base of postpedicel until insertion of arista strikingly yellow (Fig. 1), remaining part of postpedicel dark brown and greyish-dusted (Fig. 2). Postpedicel clearly longer than 3 times its depth and about twice as long as pedicel. Arista predominantly yellow, at least twice as long as postpedicel, longest hairs of arista about 1.5 times as long as depth of postpedicel. Anterior half of fronto-orbital plate with 4 setae, the anterior seta strong, the next one only half as long and the uppermost ones distinctly shorter and weaker, at midlength one or two very small hair-like setae, in upper half at level of anterior ocellus a strong reclinate orbital seta with another orbital seta slightly below it, about half as long as the upper one. Between eye margin and frontal and orbital setae some small proclinate setulae. Parafacial

and facial ridge bare. Vibrissal setae strong and at least twice as long as the longest surrounding peristomal setae. Lateral surface of gena dark brown, at lower margin pale brown, weakly dusted and bare, margin of gena with a row of strong dark setae, post-occipital surface more greyish dusted and only sparsely covered with dark setulae. Proboscis slender, prementum yellowish brown and depending on incidence of light slightly whitish-dusted or shiny, labella almost twice as long as greatest depth of proboscis; palpus yellow (Fig. 2), slender, weakly clavate and about 1.5 times as long as prementum.

Thorax. Predominantly yellowish to brownish yellow (Figs. 3, 4). Mesonotum brownish yellow without dark pattern, depending on viewing angle shiny or partially whitish-dusted; in dorsal view postpronotum and notopleuron pale yellow, somewhat contrasting with brownish yellow mesonotum (Fig. 3). Presutural part of mesonotum with a median white-dusted stripe (Fig. 3), when viewed posteriorly tapering toward the transverse suture but not reaching it. Scutellum of about the same colour as mesonotum. Pleura shiny pale yellow, somewhat contrasting with darker yellow mesonotum (Fig. 4), when viewed directly anteriorly, partly whitish-dusted. Anterior and posterior spiracles pale yellow, posterior spiracle with dark setae at the lower margin. Mesonotum and dorsal lateral surfaces of scutellum covered with rather short black setulae, pleura predominantly bare or very sparsely covered with setulae. Acrostichals 0+1, at most half as long as the posterior dorsocentral seta; dorsocentral setae 2+3, the anterior presutural seta somewhat shorter than the other dorsocentrals; postpronotal setae 2, the outer seta clearly longer than the inner seta; notopleuron with about 3 small and fine setulae, anterior notopleural seta slightly longer than posterior one; prealar seta slightly shorter than posterior notopleural seta; 2 long intra-alar setae; supra-alar setae 2; postalar setae 3. Greater ampulla with several dark setulae, suprasquamal ridge bare. Prosternum with some dark hair-like setae; anepimeron in the upper part with a tuft of slightly longer, darker hairs and with a few scattered hairs on the lower part, about as long as or longer than the hairs of the tuft (Fig. 6); proepimeral area, meron and katepimeron bare. Katepisternal setae 1+2, the lower seta clearly closer to the posterior upper seta; anepisternal setae 1+5, all black and strong, dark interstitial hairs much weaker and about half as long as the setae. Scutellum with long apical and lateral setae, basal and preapical setae distinctly shorter but clearly distinguishable from ground hairs, ventral surface bare.

Wing. Membrane hyaline, with a brownish tinge (Fig. 4), cross-veins and surrounding membrane not infuscate. Stem vein yellow and somewhat contrasting with the subsequent brown parts of the veins, tegula and basicosta yellow. Costal spine at least twice as long as adjacent bristles but not very prominent. Radial node dorsally and ventrally bare, ventral part of vein R_{4+5} with few small setae. Vein M somewhat diverging from vein R_{4+5}, but slightly curved forward toward R_{4+5} before reaching wing margin. Cross-vein r-m slightly basad from the point where vein R_1 enters costa; distal cross-vein dm-cu almost sinuous and somewhat oblique. Both calypters yellowish shiny transparent, margins yellowish, lower calypter about 1.5 times as long as upper calypter. Stem and knob of haltere yellow.

Legs. Coxae, trochanters, femora, tibiae and tarsi yellow. Hind coxa bare on posterior surface. Pulvilli and claws well developed but at most half as long as the corresponding tarsomere. Fore femur with complete rows of posterodorsal, posterior and posteroventral setae, the posterodorsals and posteriors about as long as depth of femur, posteroventrals slightly longer. Fore tibia without a median posterior seta but with a distinct black short median anterodorsal seta. Basal half of mid femur with a row of about 4 dark ventral setae about half as long as depth of femur and a row of short bristle-like setae (Fig. 26) in the upper half of anterior surface, preapically with a row of about 6 short posteroventral seta-like hairs and 4 strong posterior to almost dorsal setae and a distinct anterodorsal seta. Mid tibia with 2 strong posterior setae, longer than diameter of tibia. Hind femur with an irregular but complete row of anterodorsal setae about as long as depth of femur, in apical half 3 anteroventral setae slightly longer than depth of femur, in basal half 2 anteroventral and 2 posteroventral setae and in addition a median anteroventral seta, all setae barely as long as depth of femur (Fig. 26), preapically a short row of seta-like posteroventral hairs barely half as long as depth of femur and 2 strong posterodorsal to dorsal setae. Hind tibia without a long posterodorsal seta, in distal half with an anterodorsal seta slightly longer than diameter of tibia and a shorter anteroventral seta barely as long as diameter of tibia, in addition with a short but clearly distinguishable posterodorsal seta about opposite to anteroventral seta.

Abdomen. Without specific pattern (Fig. 5) apart from anterior yellow part of syntergite 1+2 uniformly yellowish brownish without any dusting independent of viewing angle, in general somewhat darker than the thorax. Ventral parts of tergites and sternites practically concolourous with dorsal surface of tergites. Tergites densely covered with small black setulae, syntergite 1+2 and tergite 3 with a few longer marginals laterally, tergites 4 and 5 with a few marginals also dorsally but not in the median area, tergite 5 in addition with a few discal setae dorsolaterally but not as a complete row. Sternite 1: not only the margin but also parts of the surface anterior to the margin covered with dark setulae.

Genitalia not investigated.

Measurements. Body length 10.0 mm; wing length 9.5 mm.

[Male unknown.]

Dichaetomyia libovata **sp. n.**
(Figs. 7–10, 29)

Type material

H o l o t y p e ♂ from Liberia, with two labels: 1. The locality label "Liberia, Monrovia, VII-5-57, E. S. Ross & R. E. Leech collectors" and 2. The identification label "*Dichaetomyia ovata rutila* St. det E. Zielke 1972".

P a r a t y p e : 1 ♂ with three small labels: 1. The registration number "CASENT8085403", 2. The locality label "Liberia, 8 or 6 [not clearly readable] mi NW Fisebu, 12-VIII-1966 E. S. Ross & K. Lorenzen", and 3. The identification label "*Dichaetomyia ovata rutila* St. det E. Zielke 1972".

Remarks. The holotype is in very good condition; the paratype is missing the left mid leg, the right wing and several major setae. The holotype, with the registration number CASTYPE20352, and the paratype will be deposited in CAS.

Etymology

The species epithet was formed by combining the first three letters of its country of origin with "ovata", referring to the new species' former affiliation with *D. ovata*.

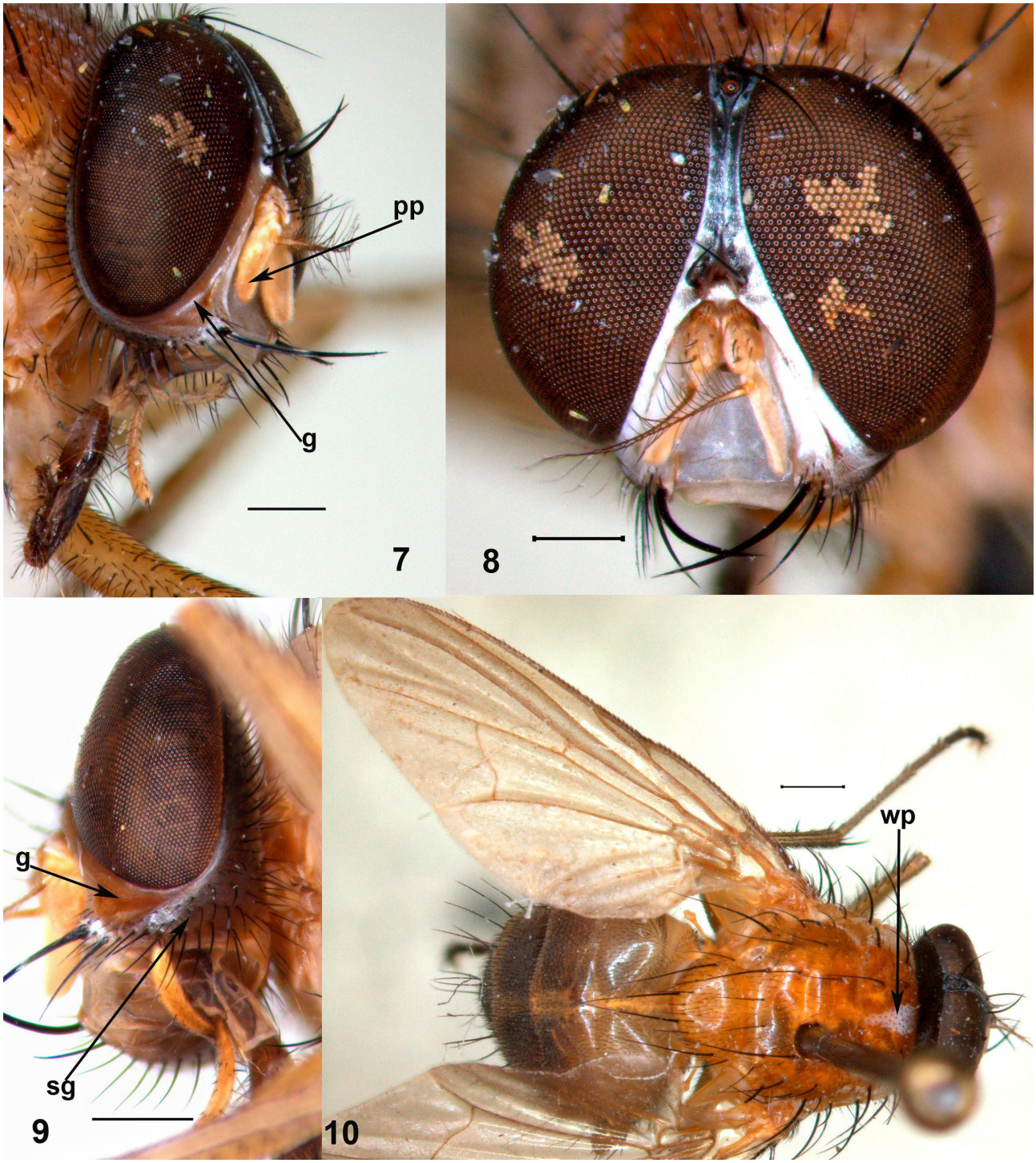
Description

[See also section on common characteristics.]

Male. Head. Ground colour yellow to reddish brown depending on the incidence of light, densely silver-white dusted in parts or uniformly (Figs. 7, 8). Holoptic; eyes with few microscopic hairs, facets close to frons clearly enlarged. Frons at midlength almost twice as wide as anterior ocellus, fronto-orbital plates touching throughout the length of the frons, only separated shortly above lunule and directly by the ocellar triangle (Fig. 8), fronto-orbital plate at narrowest part of frons about as wide as anterior ocellus. Parafacial at level of base of antenna about 1.5 times as wide as depth of postpedicel, further downwards almost parallel-sided, slightly wider than anterior ocellus. Facial ridge in lower half about 1.5 times as wide as parafacial. In profile, upper mouth margin in line with profrons and genal depth below lowest eye margin about one third as wide as depth of postpedicel (Fig. 7). When viewed anterodorsally, fronto-orbital plate, parafacial and facial ridge densely silvery-white shiny, only at certain viewing angles fronto-orbital plate dark and parafacial and facial ridge pale yellow, peristomal area and anterior part of gena predominantly yellow to reddish brown (Fig. 7), under certain light conditions densely silver-white dusted, subgena shiny dark brown with some white pollinosity and contrasting with the much lighter anterior part of gena (Fig. 9). Antenna predominantly yellow, under some incidences of light apical half of postpedicel dark yellow, only sparsely dusted (Figs. 7, 8). Postpedicel about 3 times as long as deep and about twice as long as pedicel. Arista in basal third predominantly yellow, apical part yellowish brown, about twice as long as postpedicel, longest hairs of arista at least twice as long as depth of postpedicel. Anterior fourth of fronto-orbital plate with a strong anterior seta at least as long as postpedicel, and a much weaker seta barely half as long as the anterior seta, followed by a much shorter interstitial hair, upper part of frons bare apart from a small reclinate seta-like hair at level of anterior tip of ocellar triangle, not much longer than twice the diameter of the anterior ocellus. Ocellar setae well developed, about 1.5 times as long as anterior fronto-orbital seta. Inner and outer vertical setae not half as long as ocellar seta. Parafacial and facial ridge bare apart from the group of setulae in the lower facial corner. Vibrissal setae strong and about 1.5 times as long as the longest surrounding peristomal setae. Lateral surface of gena reddish brown, weakly dusted and bare, margin of gena with a row of strong dark setae, post-occipital surface more brown and greyish-dusted, with dark seta-like hairs. Proboscis with prementum brown and depending on the incidence of light slightly whitish-dusted or shiny, labella at least twice as long as greatest depth of proboscis; palpus strikingly yellow, clearly somewhat longer than prementum, slender, clavate and slightly flattened.

Thorax. Predominantly yellowish to brownish yellow (Fig. 10). Mesonotum brownish yellow without any dark pattern, depending on viewing angle shiny or partially whitish-dusted; presutural part of mesonotum with a median white-dusted longitudinal stripe tapering toward the transverse suture (Fig. 10). Scutellum purely concolourous with mesonotum, under certain incidences of light more yellow. Pleura yellow, shiny, at certain viewing angles pale yellow, almost whitish in places, somewhat contrasting with the darker mesonotum, partly whitish-dusted when viewed directly anteriorly. Anterior and posterior spiracles yellowish white, posterior spiracle with dark setae at the lower margin. Mesonotum and dorsal lateral surfaces of scutellum covered with rather short and not very strong black setulae, pleura predominantly bare or very sparsely covered with small black hairs. Acrostichals 0+1, more than half as long as the posterior dorsocentral seta; notopleural setae 2, very few short setulae around the anterior and posterior setae; prealar seta shorter than half as long as posterior notopleural seta. Prosternum yellow, with fine hairs along the margin; anepimeron in the upper part with a tuft of dark hairs and a few scattered fine hairs on the lower part; anepisternal setae 1+5 all black and strong, dark interstitial hairs clearly shorter and distinctly weaker than the setae but longer than the ground hairs. Scutellum with basal and preapical setae distinctly shorter than apical and lateral setae but clearly distinguishable, in addition three or four discal setae close to and almost as long as preapical setae, dorsal surface densely covered with dark setulae.

Wing. Stem vein yellow but practically not contrasting with the subsequent predominantly yellowish-brownish vein parts. Radial node and vein R_{4+5} ventrally with some small setulae. Upper calypter yellowish hyaline, mar-



Figs. 7–10. *Dichaetomyia libovata* **sp. n.**, holotype ♂. **7**. Head, lateral view. Yellowish-brownish anterior part of gena (g); predominantly yellow postpedicel (pp). **8**. Head, anterior view. Predominantly white anterior part of fronto-ocellar plate, parafacial and facial ridge. **9**. Head, lateroventral view. Reddish (yellowish-brown) anterior part of gena (g) and contrasting brown subgena (sg). **10**. Dorsal view. Mesonotum yellow with a brownish shine, presutural part with one median white stripe-like patch (wp), tapering towards the transverse suture; posterior tergites of abdomen predominantly brownish; tergites with a poorly demarcated yellowish median stripe. Scales bars: 7, 8, 9: 0.5 mm; 4: 1 mm.

gin distinctly yellowish, lower calypter and margin more whitish yellow. Haltere: stem yellow, knob pale yellow.

Legs. Pulvilli and claws somewhat enlarged, about as long as the corresponding tarsomere. Fore tibia with a short but distinct black median anterodorsal seta. Mid femur in apical half with a complete row of strong dark posteroventral setae not half as long as depth of femur (Fig. 29) and in basal half two posteroventral setae about half as long as depth of femur; no row of distinct anterior bristle-like setae; preapically three strong posterior to posterodorsal setae and one distinct anterodorsal seta. Hind femur in apical half with 3 apical anteroventral setae about as long or longer than the depth of the femur and 0–3 setae at most half as long as the apical ones; a row of dark posteroventral setae about half as long as depth of femur in apical half or two thirds, in basal third 1 or 2 posteroventrals distinctly shorter and weaker; preapically two strong posterodorsal to dorsal setae. Hind tibia without a long posterodorsal seta, in middle third with a strong anterodorsal seta distinctly longer than diameter of tibia and two somewhat shorter anteroventral setae.

Abdomen. Ground colour brownish yellow. Syntergite 1+2 and anterior half of tergite 3 uniformly translucent yellow, posterior half of tergite 3 and the two posterior tergites predominantly brown with a brassy tinge under certain incidences of light (Fig. 10), in almost direct posterior view a poorly defined median yellowish longitudinal stripe on anterior four tergites. Tergites without any significant dusting independent of viewing angle. The brown colouration in the paratype limited mainly to tergites 4 and 5, the median longitudinal stripe more pronounced. Tergites densely covered with small black seta-like hairs, all tergites with rows of marginals, the anterior tergites with mainly short marginals but with a few long ones laterally, tergite 4 with a row of long and strong marginals and with long and strong discals laterally and dorso-laterally, tergite 5 with complete rows of long discals and marginals. Margin of sternite 1 with several dark hairs.

Genitalia. Hypopygium barely perceptible. The male of *D. libovata* is clearly distinguishable from the other males of this group. Therefore, it was deemed wiser not to extract the genitalia, to avoid inflicting damage on one of the so far only two available specimens of the new species.

Measurements. Length of body 8.4 mm; length of wing 8.9 mm.

[Female unknown.]

Remarks and diagnosis

Using Emden's key, the specimens run to "*D. ovata*, var. *rutila* Stein" due to the body size, the limitation of anteroventral setae to the apical part of the hind femur, and the long discal setae on tergite 5. *Dichaetomyia libovata* **sp. n.** is the only species of this group of new species characterized just by one median white longitudinal stripe on the presutural part of the mesonotum, similarly as found on the female syntype of *D. ovata*. This similarity also leads to the question of whether these two specimens might be the *D. ovata* males not described so far. Aside from the difference in size, however, both species also differ in several taxonomic characters that cannot only be explained by the specimens belonging to different sexes. Especially since in most *Dichaetomyia* species sex differences are not very pronounced, apart from the morphology and chaetotaxy of the head.

Dichaetomyia ovata and *D. libovata* **sp. n.** can be clearly distinguished by the almost uniformly dark brown subgena and anterior part of gena in *D. ovata* vs. the dark brown subgena of *D. libovata* **sp. n.**, which is in striking contrast with the yellowish or reddish anterior part of the gena in the new species (Fig. 9). The mid femur of *D. ovata* is marked by three or four strong ventral setae in the basal half, a preapical row of about 6 short posteroventral seta-like hairs and by 4 strong preapical posterior to dorsal bristles; in *D. libovata* **sp. n.** there are two posteroventral setae in the basal half of the mid femur, a complete row of strong dark posteroventrals in the apical half (Fig. 29), almost half as long as the depth of the femur, and only three posterior to dorsal preapical bristles. The hind femur of *D. ovata* differs from that of *D. libovata* **sp. n.** by a complete but slightly irregular row of six anteroventral setae, three in the basal half and three in the apical third, all about as long as the depth of the femur, and posteroventral surface without any distinct hairs or setae apart from a short row of short hairs preapically; in *D. libovata* **sp. n.** there are no long anteroventral setae in the basal half but a complete row of well-developed dark posteroventrals in the apical half to two thirds, the setae about half as long as the depth of the femur.

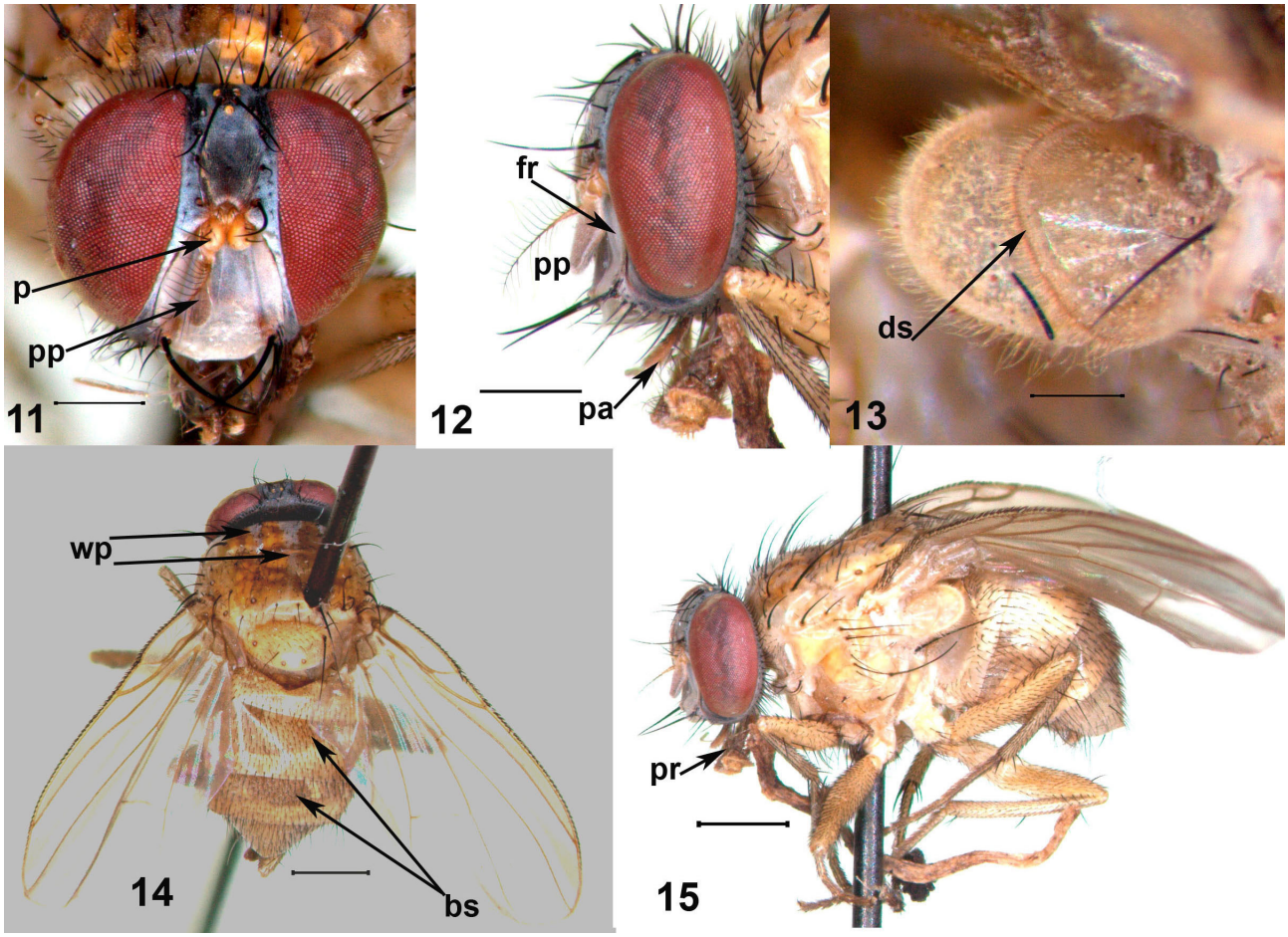
Dichaetomyia malovata **sp. n.**

(Figs. 11–17, 27, 28)

Material examined

Holotype ♀ from Madagascar; marked with three labels with the following inscriptions: 1. CASENT 3009165", 2. "Madagascar: Mahajanga Province, Parc National de Baie de Baly, 12.4 km 337° NNW Soalala, elev. 10 m 26-30 Nov 2002", and 3. "16°00′36″S 045°15′54″E coll. Fisher, Griswold et al., California Acad. of Sciences, pitfall trap in tropical dry forest, coll. code: BLF6815".

Paratypes. 1 ♂ with the registration label "CASENT 3009147" and with the same locality labels as the holotype; 1 ♂ with three labels: 1. The registration number "CASENT 3009707", 2. "Madagascar: Toliara Prov., Antafoky elev. 55 m, 23°28′43″S 44°3′51″E 25-28 January 2002", and 3. "Calif. Acad. of Sciences, collectors: Frontier Project, Malaise trap, gallery forest, collection code: MGF003"; 1 ♀ from Madagascar with three labels: 1. The registration number "CASENT 3009178", 2. The locality label "Toliara Province, Foret Classée d'Analavelona, 29.2 km 343° NNW Mahaboboka, elev. 1100 m, 18-22 Feb 2003", and 3. "22°40′30″S 044°11′24″E coll. Fisher, Griswold et al. California Acad. of Sciences, pitfall trap, in montane rainforest, code: BLF7817".



Figs. 11–15. *Dichaetomyia malovata* **sp. n.**, holotype ♀. **11**. Head, anterior view. Strikingly yellow pedicel (p); predominantly brownish postpedicel (pp). **12**. Head lateral view. Facial ridge (fr) fairly wide, parafacial not visible in lateral view; palpi predominantly brown with a yellow apex in certain point of viewing (pa); predominantly dark postpedicel (pp). **13**. Lateral view of calypters. Upper calypter with a dark seam (ds). **14**. Dorsal view. Mesonotum dark yellow, partially brownish, presutural part with one median and two paramedian greyish-white stripe-like patches (wp), tapering towards the transverse suture; yellow tergites of abdomen with transverse shifting brownish band-like areas in anterior part (bs). **15**. Lateral view. Proboscis (pr) fairly small; pleura of thorax whitish-yellow, more matt than shiny; legs yellow; wings with a brownish shine. Scales bars: 11, 12: 0.5 mm; 13: 0.2 mm; 14, 15: 1 mm.

Non-type material: 1 ♀ with the labels 1. "Madagascar: Ankarafantsika (Forest Reserve) near Marovoay, 12-I-1959", 2. "E. S. Ross, collector", and 3. "*Dichaetomyia* ♀ *ovata rutila* (St.) det. Zielke 1972". [Specimen glued with right side of thorax on a piece of card; fore tibia and tarsi and mid leg of that side lacking, body otherwise in good condition.]

Remarks. The holotype, with the registration number CASTYPE20353, is in good condition; the paratype CASENT 3009147 will be deposited in CAS, whereas the paratypes CASENT 3009707 and CASENT 3009178 will remain in IBER.

Etymology

The species epithet was formed by combining the first three letters of its region of origin, the Malagasy Region, with "ovata", referring to the new species' former affiliation with *D. ovata*.

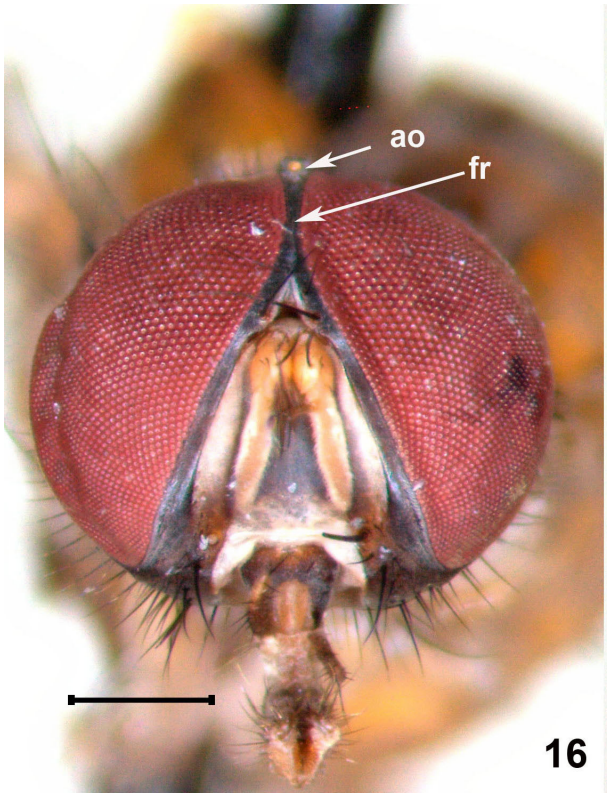
Description

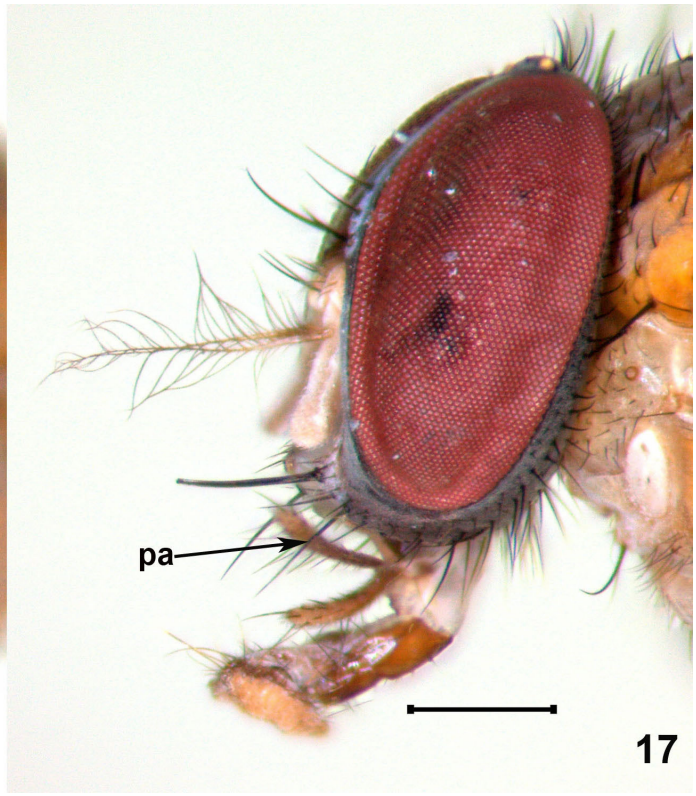
[See also section on common characteristics.]

Female. Head. Ground colour of upper half mainly dark, lower half somewhat paler, densely dusted greyish-white in parts depending on the incidence of light. Frons almost parallel-sided (Fig. 11), only very slightly dilated towards the anterior margin, distance between eyes at vertex 0.26 times as wide as maximal width of head, at level of anterior ocellus about 3.2 times and at anterior margin of frons about 3.8 times as wide as the distance between the outer margins of the posterior ocelli. Fronto-orbital plate at midlength of frons about two thirds as wide as distance between outer margins of posterior ocelli; frontal vitta slightly oval-shaped, at middle about 3.3 times as wide as fronto-orbital plate at that level, anterior tip of

frontal triangle slightly exceeding midlength of frons. Parafacial at level of base of antenna about as broad as depth of postpedicel and at the level where the facial ridge and parafacial separate at most barely half as wide as anterior ocellus. In profile: parafacial not visible (Fig. 12) and genal depth below lowest eye margin about half as wide as depth of postpedicel. In anterodorsal view, frontal vitta and upper half of fronto-orbital plates predominantly dark to blackish, sparsely greyish-dusted, frontal triangle greyish, somewhat shiny and ocellar tubercle dark, lower part of fronto-orbital plates and parafacial whitish grey dusted (Fig. 11), anterior part of gena brownish, only sparsely greyish-dusted, ground colour of face in anterior view greyish, under some viewing angles greyish white dusted; facial ridge greyish white with a strong yellowish brown tinge in upper part, in lower part about as wide as depth of postpedicel. Basal segments of antenna and base of postpedicel until insertion of arista strikingly yellow (Fig. 11), apical part of postpedicel greyish brown or brownish depending on incidence of light, sparsely whitish-dusted. Postpedicel about 3 times as long as broad and about 2.8 times as long as pedicel. Arista yellow only at base, predominantly brownish, about 2.5 times as long as postpedicel, longest hairs of arista at least twice as long as depth of postpedicel. Anterior half of fronto-orbital plate with 2 setae only and 1 or 2 very small interstitial seta-like hairs, the anterior seta about twice as long as the posterior one. An almost complete row of small proclinate setulae between the eye margin and the frontal and orbital setae. Ocellar setae well developed, almost reaching anterior margin of frons, inner vertical seta longer than outer vertical seta but not as long as ocellar seta. Lateral upper surface of gena dark brownish, barely dusted and bare, margin of gena with a row of strong dark setae, post-occipital surface uniformly greyish-dusted and with few short dark seta-like hairs, setae of post-ocellar row well developed. Proboscis fairly short (Fig. 12), prementum pale brownish with a strong yellow tinge in places, predominantly shiny, labella up to 1.5 times as long as greatest depth of proboscis; palpus predominantly brown, apical part under certain light conditions somewhat paler (Fig. 12), slender, weakly clavate and at most marginally longer than prementum.

Thorax. Basic colour predominantly yellowish. In dorsal view, mesonotum yellow, only weakly shiny, under certain conditions of light with a brownish grey tinge in some places, shifting with changing light conditions; presutural part of mesonotum with a broad median whitish grey longitudinal stripe (Fig. 14), somewhat shiny, tapering towards the transverse suture and continued in the postsutural part as a stripe half as wide and almost reaching





Figs. 16–17. *Dichaetomyia malovata* **sp. n.**, paratype ♂. **16**. Head, anterior view. Frons (fr) barely as wide as anterior ocellus (ao). **17**. Head, lateral view. Antenna predominantly yellowish; palpi predominantly brown (pa). Scales bars: 0.5 mm.

the scutellar suture. Outside and along each of the rows of presutural dorsocentral setae another whitish grey longitudinal stripe, not as wide as the median stripe, strongly tapering to the transverse suture and extending in the postsutural part as a very narrow stripe barely reaching the median dorsocentral seta. Postpronotum and notopleuron translucent whitish, somewhat contrasting with the yellow mesonotum. Scutellum about the same colour as mesonotum, in general less brownish. Pleura pale yellow, slightly shiny, under certain light conditions intersegmental membranes strikingly white (Fig. 15); when viewed directly anteriorly, weakly whitish-dusted in places. Anterior and posterior spiracles purely white. Mesonotum and scutellum covered with rather short black strong setulae, pleura predominantly bare or very sparsely covered with short fine black hairs. Notopleuron with very few short and fine setulae; prealar seta somewhat shorter than posterior notopleural seta; prosternum yellow, with several hair-like setae; anepimeron in upper part with a tuft of dark hairs and a few scattered fine hairs in lower part; anepisternal setae 1+6, all black and strong, dark interstitial hairs much weaker, most barely one third as long as the long setae. Scutellum with basal and preapical setae distinctly shorter than apical and lateral setae but stronger and clearly distinguishable from hairs on the scutellum.

Wing. Membrane with a brownish tinge (Fig. 15); veins including basal parts yellowish brown, costal spine almost three times as long as adjacent bristles but not very pronounced. Upper calypter almost hyaline, margin with a narrow dark brown seam (Fig. 15), lower calypter whitish hyaline, margin broad and white. Stem and knob of haltere whitish, at most with a very weak yellowish tinge under certain viewing angles.

Legs. Coxae, trochanters, femora and tibiae yellow, tarsi somewhat darker yellow (Fig. 15). Fore tibia without anterodorsal setae. Mid femur without any long hairs or setae (Fig. 27), only at base with a posteroventral hair slightly longer than half the depth of the femur, and with one anteroventral row and one posteroventral row of short setae in apical third, setae not as long as half the depth of the femur, preapically with 3 posterior to almost dorsal setae and one distinct anterodorsal seta. Hind femur in apical third with 2 anteroventral setae slightly longer than depth of femur, a third distinctly shorter seta basad to the 2 others may be present (Fig. 27), a short row of posteroventral seta-like hairs about one third as long as depth of femur in apical fourth, preapically 2 strong posterodorsal to dorsal setae. Hind tibia with a median anterodorsal seta slightly longer than diameter of tibia and a shorter anteroventral seta barely as long as diameter of tibia and without any other posterodorsal seta apart from the apical seta.

Abdomen. Ground colour yellow, mainly in front half of tergites faint brownish grey transverse bands shifting under changing light conditions (Fig. 14), front part of syntergite 1+2 translucent glossy white. Tergites densely covered with small black setulae, all tergites with a complete row of marginal setae, usually rather short dorsocentrally and distinctly longer laterally, with the exception of tergite 5 with longer marginals and a few distinct discal setae. Lateral margin of sternite 1 with a few strikingly small dark setulae in clear contrast with the seta-like hairs of the subsequent sternites.

Genitalia not investigated.

Measurements. Body length 5.5–6.0 mm, wing length 5.5 mm.

Male. Head. Ground colour brown to dark brown. Holoptic; eyes with very few microscopic hairs, facets close to frons clearly enlarged. Frons at midlength barely as wide as diameter of anterior ocellus (Fig. 16), fronto-orbital plates touching throughout the length of the frons, only separated shortly above lunule and directly in front of anterior tip of ocellar tubercle. Fronto-orbital plate at narrowest part of frons about one third as wide as anterior ocellus. Parafacial at level of base of antenna as wide as anterior ocellus and practically parallel-sided further downwards throughout its length. Facial ridge in lower half almost as wide as depth of postpedicel. In profile, upper mouth margin in line with profrons; parafacial somewhat visible throughout its length; genal depth below lowest eye margin about as wide as depth of postpedicel (Fig. 17). In anterodorsal view, upper third of fronto-orbital plate dark, the anterior two thirds and parafacial densely white-dusted, under certain viewing angles these parts darker and sparsely greyish-dusted; facial ridge whitish except for base with a more or less distinct brownish tinge independent of the incidence of light. Antenna with all segments yellow, pedicel an intense yellow, postpedicel pale yellow, under certain qualities of light somewhat whitish-dusted. Postpedicel almost 4 times as long as deep and about 3 times as long as pedicel. Arista predominantly brownish, only in basal third somewhat yellowish, about twice as long as postpedicel, longest hairs of arista at least 2.5 times as long as depth of postpedicel. Anterior fifth of fronto-orbital plate with one stronger anterior seta almost as long as postpedicel and another subsequent seta about half as long as the anterior seta, followed by a much shorter interstitial hair, upper part of frons bare apart from a small reclinate seta-like hair at level of anterior tip of ocellar triangle, not much longer than twice the diameter of the anterior ocellus, and an even smaller reclinate setula shortly below. Ocellar setae well developed, about 1.5 times as long as anterior fronto-orbital seta, inner vertical seta somewhat shorter than outer vertical seta, both distinctly shorter than ocellar setae. Parafacial and facial ridge bare apart from the group of setulae in the facial corner adjacent to the peristomal area. Vibrissal setae distinctly stronger, but not much longer than the

longest surrounding peristomal setae. Lateral surface of gena brown to brownish grey, sparsely dusted under certain incidences of light, surface directly below lower eye margin bare, lower margin with strong dark setae, postoccipital surface brownish and densely greyish-dusted, with dark short setae. Proboscis with prementum shiny brown, a weak yellow shine under certain viewing angles, labella about 1.5 times as long as greatest depth of proboscis; palpus brown (Fig. 17), under certain viewing angles apical part with a yellowish tinge, somewhat clavate and about as long as prementum.

Thorax. Very similar to that of female. Ground colour yellow, the brownish grey tinge in more or less shifting places more intense. The longitudinal stripes more distinct in posterodorsal view, the paramedian stripes not as long as in female and in their posterior part less clearly demarcated. In dorsal view a very thin brown line, partly very faint, connecting the bases of the dorsocentral setae. Pleura more intense yellow than in females, the white intersegmental membranes more strongly contrasting under certain light conditions. Chaetotaxy similar to that of female, but prealar seta much shorter than posterior notopleural seta; posterior strong long intra-alar seta not detectable; prosternum with rather short fine dark hairs; scutellum with less strong basal and preapical setae, not clearly distinguishable from longer hairs on disc of scutellum.

Wing predominantly as in female. Only one of the four examined wings with 2 setulae on the basal ventral part of vein R_{4+5}, all others bare. Margin of lower calypter with a yellow tinge under certain viewing angles.

Legs. Similar to legs of female (for example mid femur, Fig. 28), but pulvilli and claws almost half as long as the corresponding tarsomere. [Fore femora missing.] Hind femur with one median posteroventral seta-like hair, somewhat shorter than depth of femur, some of the setae of the apical posteroventral row about as long as depth of femur. One of the four examined hind tibiae of the two males with an additional short anteroventral seta.

Abdomen. Ground colour in general as in female, the yellow colour more intense and slightly more shiny. The marginals of tergites 4 and 5 somewhat stronger than in female.

Genitalia. Like all sternites, sternite 5 also pale yellow; hypopygium light yellow and not prominent.

Measurements. Body length 6.5 mm, wing length 6.0 mm.

Remarks and diagnosis

The males and females of this new species were originally identified and listed by Couri et al. as *D. ovata*. Apparently, the male characteristics of *D. ovata* mentioned in Couri et al.'s identification key are based on these specimens, which turned out to contradict the characteristics of the female syntype, triggering this comparative investigation. Of the specimens studied here, those belonging to *Dichaetomyia malovata* **sp. n.** are certainly those least similar to *D. ovata*. In Emden's key, however, they key out as *D. ovata* var. *rutila*. When compared to the 10 mm large female syntype of *D. ovata*, the small body size (5.5–6.5 mm) of the five specimens of *D. malovata* **sp. n.** is immediately noticeable. In addition, the specimens of the new species are not very shiny and mostly pale yellow in colour, with a more or less strong whitish tinge depending on the lighting. The whole body of *D. ovata*, on the other hand, appears glossy and is predominantly yellow to brownish yellow in colour. Other distinguishing features are the almost uniformly brown palpi of *D. malovata* **sp. n.** (Figs. 12, 17), the three white elongated spots or stripes on the anterior mesonotum (Fig. 14), extending up to the second postsutural dorsocentral seta under certain light conditions, and the very thin brown line between the setae of the dorsocentral row in some specimens, particularly the males. In *D. ovata* the palpi are strikingly yellow (Fig. 2), there is only one median elongated white spot on the mesonotum (Fig. 3), which under certain viewing angles may extend to the transverse suture, and there is no brown line between the dorsocentral setae. The calypters of *D. malovata* **sp. n.** are predominantly matt whitish hyaline and the margin of the upper calypter is marked by a narrow dark brown seam (Fig. 15), whereas the calypters of *D. ovata* are transparent yellowish and the margin of the upper calypter is, as in all other species of this group, without a dark frame. While the abdomen of *D. malovata* **sp. n.** is marked in addition to the yellow colouration also by shifting, slightly brownish grey band-like areas (Fig. 14) depending on the incidence of light, the abdomen of *D. ovata* is predominantly brownish in colour (Fig. 5). The chaetotaxy of the legs also differs significantly in the females of both species. Whereas *D. malovata* **sp. n.** has no median setae on the fore tibia and no distinct setae on the mid femur (Fig. 27) apart from three preapical posterior to dorsal bristles, *D. ovata* is characterized by a short but distinct anterodorsal seta in the distal half of fore tibia, by ventral and anterior setae in the basal half of the mid femur (Fig. 26) and by four strong apical posterior to dorsal bristles. The hind femur of *D. malovata* **sp. n.** has only two strong anteroventral setae in the apical third (Fig. 27) and one anterodorsal and one anteroventral seta at the middle third of the hind tibia, while *D. ovata* has an irregular row of anteroventrals throughout the length of the femur (Fig. 26) and the hind tibia has one anterodorsal and two anteroventral setae.

Males of the five species treated herein are known only for *D. libovata* **sp. n.** and *D. malovata* **sp. n.** They differ in several features. The palpi of *D. libovata* **sp. n.** are purely yellow (Fig. 7), the subgena is dark brown and the anterior part of the gena is of a contrasting yellow to

brownish yellow (Fig. 9), while in *D. malovata* **sp. n.** the palpi are predominantly brownish (Fig. 17) and the subgena and anterior part of the gena are almost uniformly brown. The presutural part of the mesonotum of *D. libovata* **sp. n.** has only one median longitudinal white stripe (Fig. 10), and there is no brown line between the setae of the dorsocentral row; whereas *D. malovata* **sp. n.** is characterized by a broad median and two narrow paramedian longitudinal white stripes depending on the incidence of light, the stripes extend up to the middle of the postsutural part of the mesonotum, and in addition each row of dorsocentral setae is marked by a more or less distinct brown line between the setae. At least the last two tergites of the abdomen of *D. libovata* **sp. n.** are predominantly dark brownish (Fig. 10), while in *D. malovata* **sp. n.** they are predominantly yellow to greyish yellow. The hind femur of *D. libovata* **sp. n.** is marked in the apical half or two thirds by a row of dark posteroventral setae almost as long as the depth of the femur, and in the basal third by one or two distinctly shorter and weaker posteroventrals; the hind femur of *D. malovata* **sp. n.** has only one median posteroventral seta-like hair, somewhat shorter than the depth of the femur, and in apical fourth a short row of posteroventral seta-like hairs, some of which are as long as the depth of the femur.

Dichaetomyia niovata **sp. n.**
(Figs. 18–21)

Type material

Holotype ♀ from Nigeria; the locality label bears the inscription "Nigeria, Kabba, II.20.1949, B. MALKIN", and an identification label reads "*Dichaetomyia ovata rutila* St. det. E. ZIELKE 1972".

Remarks. The holotype lacks the left mid and hind legs and the tarsi of the left fore leg, but is otherwise in good condition. It will be deposited in CAS with the registration number CASTYPE20354.

Etymology

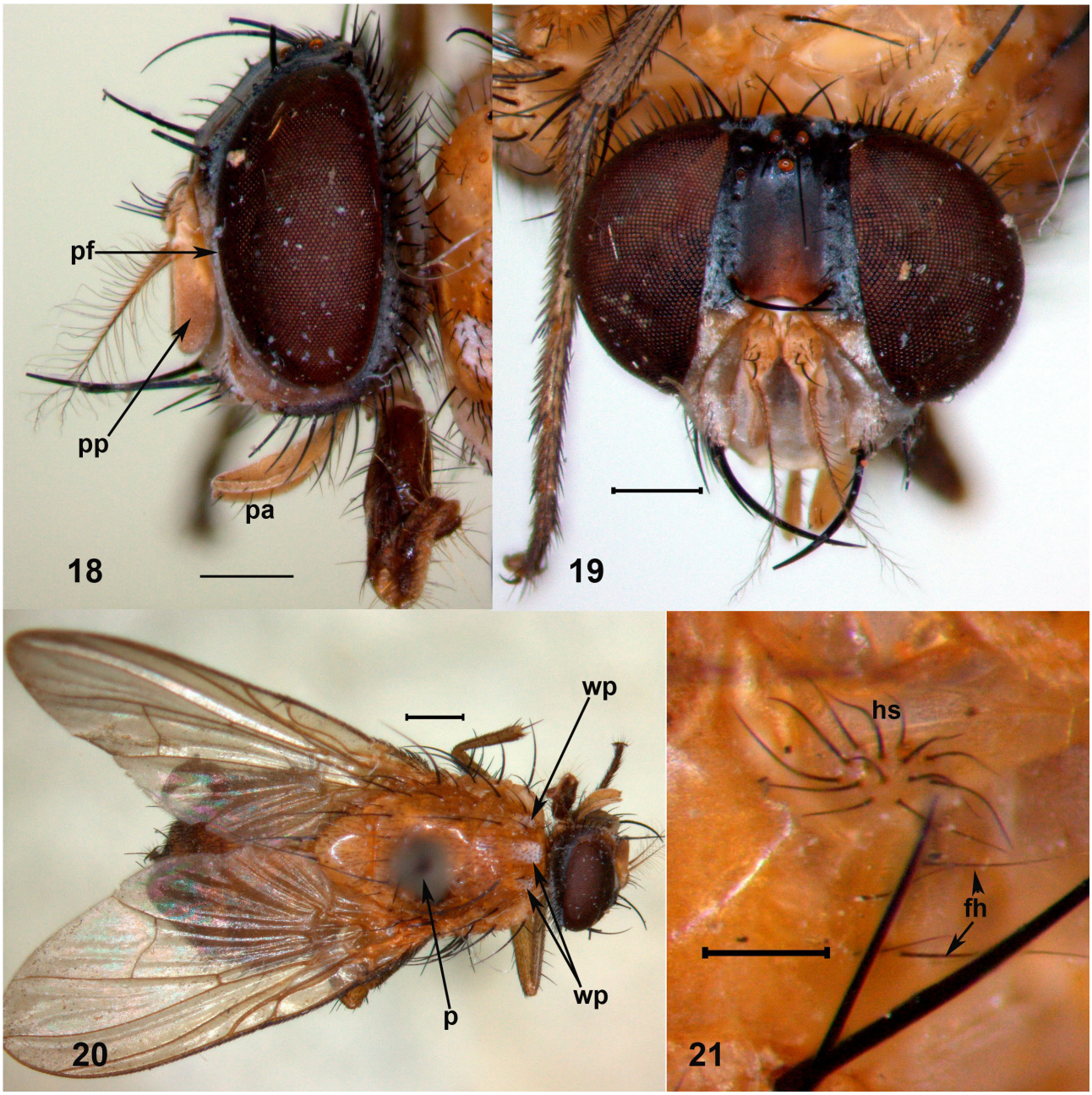
The species epithet is formed by combining the first two letters of its country of origin with "ovata", referring to the new species' former affiliation with *D. ovata*.

Description

[See also section on common characteristics.]

Female. Head. Ground colour of frons mainly dark, lower parts of head yellow to brownish yellow, some parts densely silvery-white dusted depending on the incidence of light (Fig. 19). Frons dilated towards anterior margin, distance between eyes at vertex 0.27 times as wide as maximal width of head, at level of anterior ocellus about 3.2 times and at anterior margin of frons 4.1 times as wide as distance between outer margins of posterior ocelli. Fronto-orbital plate at midlength of frons about two thirds as wide as distance between outer margins of posterior ocelli; depending on viewing angle, frontal vitta practically subparallel or slightly oval, at middle about 3 times as wide as width of fronto-orbital plate, frontal triangle poorly demarcated, either reaching anterior margin or midlength of frons depending on incidence of light. Parafacial at level of base of antenna almost as wide as depth of postpedicel and at the lower end about as wide as anterior ocellus. Facial ridge in lower half about twice as wide as parafacial. In profile, parafacial visible throughout the entire length; genal depth below lowest eye margin about half as wide as depth of postpedicel (Fig. 18). When viewed anteriorly, fronto-orbital plates dark and in lower half predominantly greyish-dusted, frontal vitta contrasting dark, in lower third reddish brown, partly dusted depending on viewing angle, frontal triangle and ocellar tubercle dark, under some viewing angles somewhat greyish-dusted. Parafacial and facial ridge pale yellow or densely silver-white or whitish dusted depending on incidence of light; anterior part of gena predominantly yellow, partly with a brownish tinge, under certain conditions of light densely silvery-white dusted, ground colour of face pale yellow, under some viewing angles densely white-dusted. Basal segments of antenna and basal half of postpedicel strikingly yellow, distal half more or less darkened depending on light conditions (Fig. 18), only sparsely dusted. Postpedicel about 3.2 times as long as deep and about 2.8 times as long as pedicel. Arista about twice as long as postpedicel, longest hairs of arista almost twice as long as depth of postpedicel. Anterior half of fronto-orbital plate with a strikingly strong anterior seta almost as long as the length of the arista, followed by 3 inclinate seta-like hairs much shorter than the anterior seta, only about half the length of the longest arista hairs; between the eye margin and the frontal and orbital setae some small proclinate setulae. Vibrissal setae strong and about 3 times as long as the longest surrounding peristomal setae. Lateral surface of gena sparsely dusted and bare, yellowish brown and practically in no clear contrast with the somewhat browner subgena, which also has a yellowish tinge under certain light conditions, margin of gena with a row of strong dark setae, post-occipital surface more brown and greyish-dusted, only sparsely covered with dark seta-like hairs. Proboscis short and strong, prementum brown and slightly whitish-dusted or shiny depending on incidence of light, labella at least twice as long as greatest depth of proboscis; palpus strikingly yellow (Fig. 18), slightly clavate and flattened, about 1.5 times as long as prementum.

Thorax. Predominantly yellowish to brownish yellow. Mesonotum yellow with a brownish tinge, without a dark pattern, shiny or partially whitish-dusted depending on viewing angle; presutural part of mesonotum with a median white-dusted patch and a white paramedian patch on each side between the anterior presutural dorsocentral seta and the posthumeral seta (Fig. 20), when viewed pos-



Figs. 18–21. *Dichaetomyia niovata* **sp. n.**, holotype ♀. **18**. Head lateral view. Yellow palpi (pa); visible greyish parafacial (pf); predominantly yellowish postpedicel (pp). **19**. Head, anterior view. Anterior part of frontal vitta reddish-brown. **20**. Dorsal view. Mesonotum brownish-yellow, presutural part with one median and two paramedian greyish-white stripe-like patches (wp); dark spot (p) head of pin. **21**. Lateral view of anepimeron. Upper part with a tuft of strong hair-like setae (hs), the surface below with very few scattered fine hairs (fh), about as long as or longer than the hairs of the tuft. Scales bars: 18, 19: 0.5 mm; 20: 1 mm; 21: 0.2 mm.

tero-dorsally the patches appear as white stripes tapering toward the transverse suture. Scutellum of about the same colour as mesonotum. Pleura of a shiny pure yellow or even pale yellow, somewhat contrasting with the somewhat darker mesonotum, when viewed directly anteriorly, partly whitish-dusted. Anterior and posterior spiracles pale yellow. Mesonotum and dorsal lateral surfaces of scutellum covered with rather short black setulae, pleura predominantly bare or with a few small black hairs. Notopleuron with a few fine setulae around the anterior and posterior seta; prealar seta slightly shorter than posterior notopleural seta; prosternum with a few black hair-like

setae; upper part of anepimeron with a tuft of dark hairs and a few fine hairs on the posterior surface, the hairs about as long as the hairs of the tuft (Fig. 21); anepisternal setae 1+5, all black and strong, dark interstitial hairs much weaker and at most a quarter as long as the setae. Scutellum with basal and preapical setae distinctly shorter than apical and lateral setae, but clearly distinguishable from the ground hairs.

Wing. Stem vein yellow, not strongly contrasting with the subsequent brownish yellow parts of the veins. Upper calypter shiny yellowish hyaline, margin yellowish, lower calypter matt whitish and margin more whitish. Stem of haltere pale yellow, knob yellow.

Legs. Fore tibia with a short but very distinct black median anterodorsal seta. Mid femur with a complete row of dark ventral to anteroventral setae about one third as long as depth of femur, in basal half a row of short anterior bristle-like setae; in apical third a row of posteroventral setae about half as long as depth of femur, preapically with 3 strong posterior to posterodorsal setae and a distinct anterodorsal seta. Hind femur in apical third with 3 or 4 anteroventrals, some of which are slightly longer than the depth of the femur, in basal third 2 anteroventral setae, one strong and long, the more basad one distinctly shorter, in addition 1 distinct seta-like posteroventral hair somewhat longer than depth of femur, in middle third 2 strong and long posteroventral setae about as long as depth of femur, apical two fifths with a row of dark posteroventral setae about half as long as depth of femur, preapically 2 strong posterodorsal to dorsal setae. Hind tibia without a posterodorsal seta, in middle third with an anterodorsal seta slightly longer than diameter of tibia and 2 weaker and shorter anteroventral setae barely as long as diameter of tibia.

Abdomen. Syntergite 1+2 and tergite 3 uniformly translucent yellow, the two posterior tergites yellowish brownish, appearing clearly darker than the thorax, without any significant dusting independent of the viewing angle. Tergites densely covered with small black setulae, syntergite 1+2 and tergite 3 with a few longer marginals laterally, tergites 4 and 5 with a row of stronger marginals, both tergites additionally with a few discal setae laterally, but no complete row of discal setae detectable. Margin of sternite 1 densely covered with several dark setulae.

Genitalia not investigated.

Measurements. Body length 8.6 mm; wing length 8.0 mm.

[Male unknown.]

Remarks and diagnosis

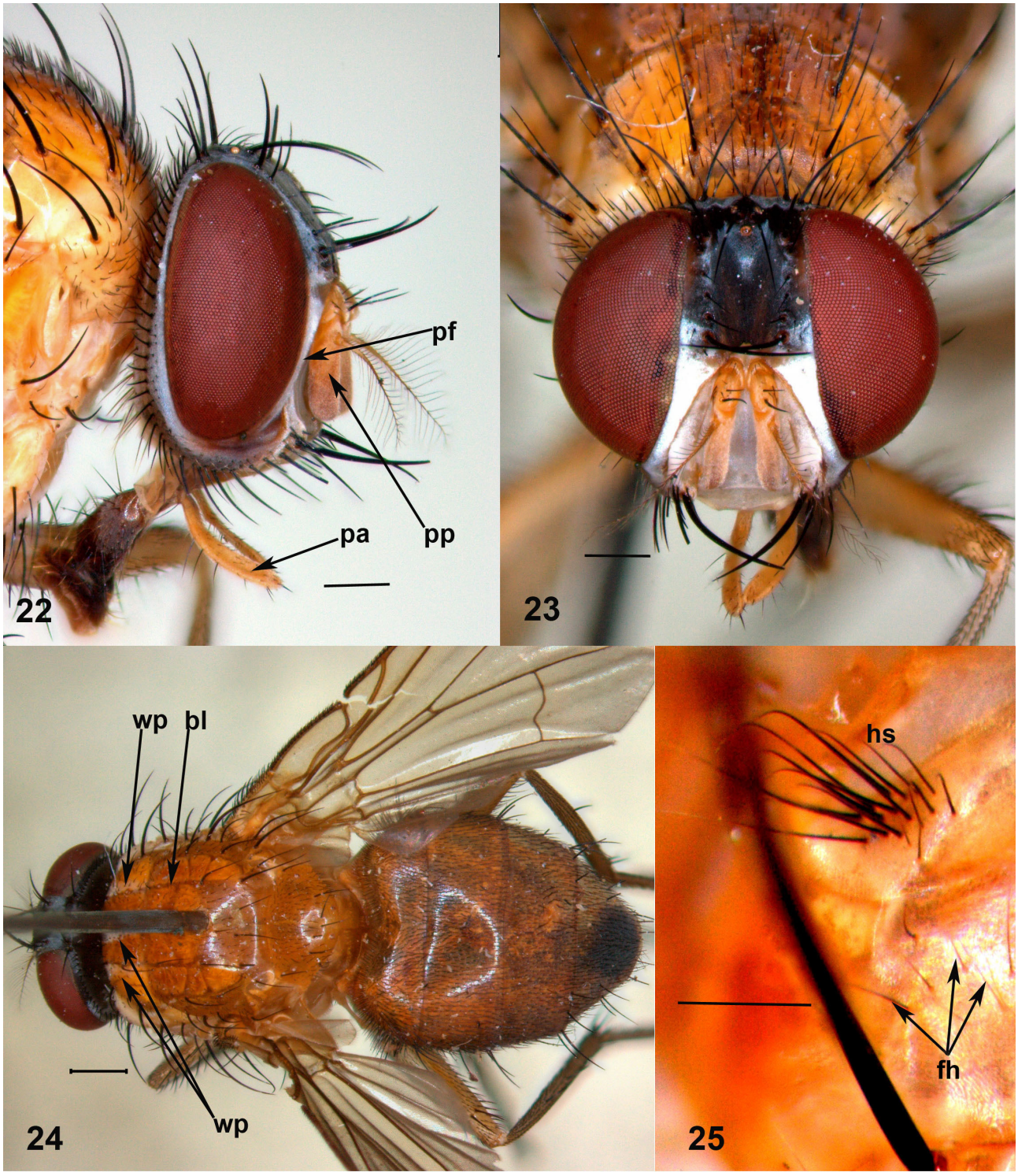
Using EMDEN's identification key, the female holotype of *D. niovata* **sp. n.** was originally identified as *D. ovata rutila* due to its body size and morphological characteristics. However, *D. niovata* **sp. n.** is characterized on the anterior mesonotum by three oblong white-dusted patches (Fig. 20) extending up to the transverse suture under certain light conditions, whereas *D. ovata* has only the median white marking on the anterior part of the mesonotum (Fig. 3). The mid femur of *D. niovata* **sp. n.** has a complete row of dark ventral setae about one third as long as the depth of the femur and preapically three strong posterior to posterodorsal bristles; *D. ovata* has in the basal half of the mid femur only three or four ventral setae almost half as long as the depth of the femur, and four apical posterior to dorsal bristles. The hind femur of *D. niovata* **sp. n.** is marked in its apical two fifths with a row of dark posteroventral setae about half as long as the depth of the femur, whereas such a row is lacking in *D. ovata*.

The new species can be distinguished from *D. malovata* **sp. n.**, another new species with three white longitudinal markings on the mesonotum, by the larger body size (more than 8 mm) and the shiny yellow body colour with distinctly brownish parts of the abdomen (Fig. 20), whereas *D. malovata* **sp. n.** is clearly smaller (about 6 mm) and the body is pale yellow with a whitish tinge in parts, more matt than shiny, and without large brown areas (Fig. 1). In addition, the palpi are completely yellow (Fig. 18), the parafacial is well visible in profile and only a few proclinate setulae are present between the eye margin and frontal and orbital setae in *D. niovata* **sp. n.**, whereas the palpi are predominantly brownish, the parafacial is not visible in profile (Fig. 12) and there is an almost complete row of small proclinate setulae between the eye margin and the frontal and orbital setae in females of *D. malovata* **sp. n.** The margin of the upper calypter of *D. malovata* **sp. n.** is marked by a dark seam (Fig. 13), which is absent in *D. niovata* **sp. n.** The latter is also characterized by fore tibia with a short but very distinct black median anterodorsal seta and by mid femur with a complete row of dark ventral setae about one third as long as the depth of the femur, in addition to a row of short anterior bristle-like setae in the basal half; the fore tibia and mid femur of *D. malovata* **sp. n.** are without such setae. The hind femur of *D. niovata* has in its basal third at least one long anteroventral seta and one distinct seta-like posteroventral hair somewhat longer than the depth of the femur, and in the middle third two strong and long posteroventral setae about as long as the depth of the femur, these setae also not present in *D. malovata* **sp. n.** The lateral parts of the margin of sternite 1 of the latter species bear only a few strikingly small dark setulae; the margin of sternite 1 of *D. niovata* **sp. n.** is broadly and fairly densely covered with numerous hair-like setae throughout the length of the margin.

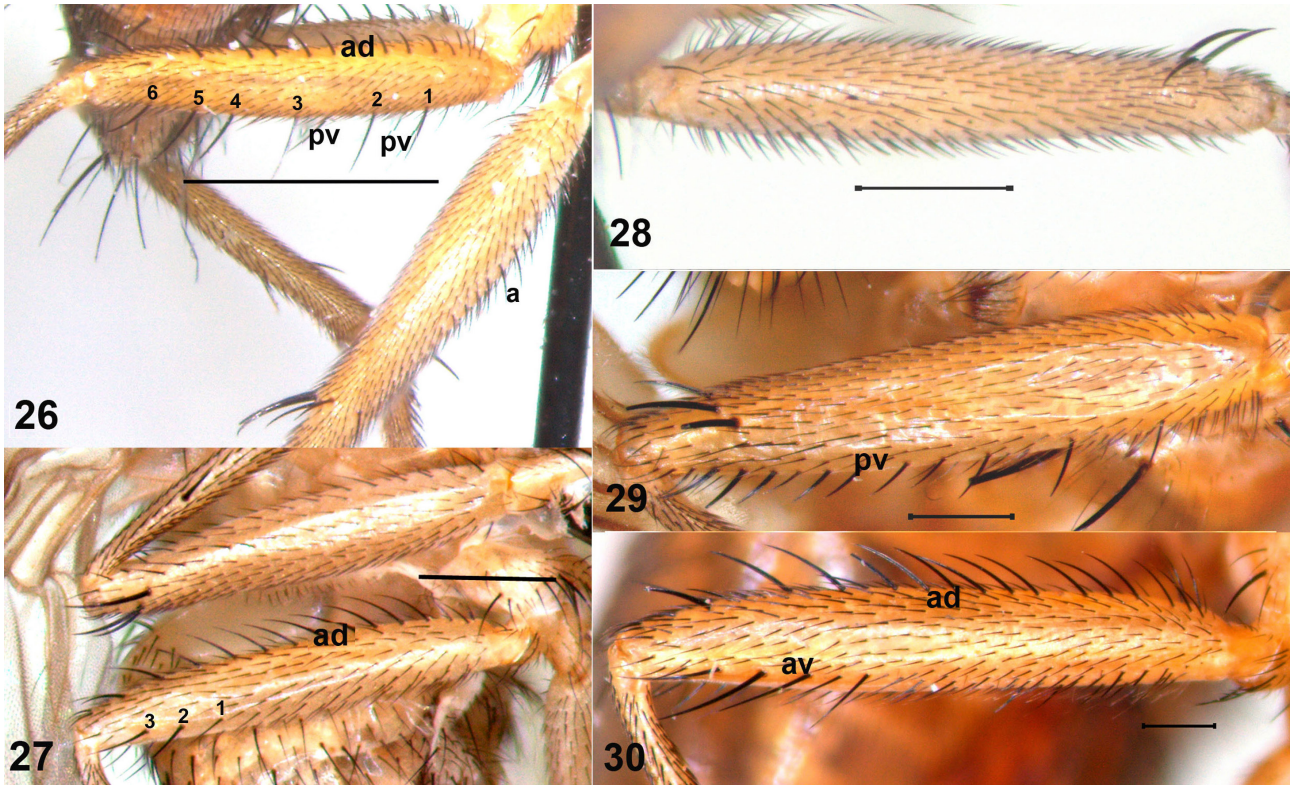
Dichaetomyia tanovata **sp. n.**
(Figs. 22–25, 30)

Type material

Holotype ♀ from Tanzania (SMNS), carrying four small labels bearing the following inscriptions: 1. "Torina 4.-



Figs. 22–25. *Dichaetomyia tanovata* **sp. n.**, holotype ♀. **22**. Head lateral view. Yellow palpi (pa); visible whitish parafacial (pf); predominantly yellowish postpedicel (pp). **23**. Head, anterior view. **24**. Mesonotum reddish-yellow, presutural part with one median and two paramedian greyish-white stripe-like patches (wp); rows of dorsocentral setae marked with a narrow brown line (bl); abdomen predominantly brownish. **25**. Lateral view of anepimeron. Upper part with a tuft of strong hair-like setae (hs), the surface below with few scattered small and fine hairs (fh), barely half as long as the hairs of the tuft. Scales bars: 22, 23: 0.5 mm; 24: 1 mm; 25: 0.2 mm.



Figs. 26–30. Setae of the legs of *Dichaetomyia* species. **26**. *Dichaetomyia ovata* (Stein), syntype ♀. Right hind femur (above) and mid femur (below). Hind femur with a row of anterodorsal setae (ad) and six (1–6) anteroventral setae throughout the length of femur, in addition two posteroventral setae (pv) in basal half; mid femur with a row of distinct anterior bristles (a) in basal half. **27**. *Dichaetomyia malovata* **sp. n.**, paratype ♀. Right mid femur (above) and hind femur (below). Mid femur without any long setae, apart from the preapical setae; hind femur with a row of anterodorsal setae (ad) and two longer anteroventrals (2, 3) and a shorter anteroventral seta (1) in the apical third of femur, basal half without long setae. **28**. *Dichaetomyia malovata* **sp. n.**, paratype ♂. Ventral view of left mid femur. Femur without any long setae apart from the preapical setae. **29**. *Dichaetomyia libovata* **sp. n.**, holotype ♂. Right mid femur. Apical two thirds of femur with a row of distinct posteroventral setae. **30**. *Dichaetomyia tanovata* **sp. n.**, holotype ♀. Right hind femur. Femur with a row of anterodorsal setae (ad) and about five anteroventral setae (av) of different length in apical third no long setae in basal half. Scale bars: 26: 2 mm; 27–30: 0.5 mm.

18.III.1952, D. O. Afrika Exp."; 2. "Torina 15.III.52" [handwritten]; 3. "*Dichaetomyia ovata* (St.) det. Paterson 53; 4. "SMNS_Dip_007136".

Remarks. Neither Paterson's (1956) publication nor the location labels attached to the fly revealed in which East African country the fly was found. A reference to "Torina" in the Serengeti, Tanzania was found on the Internet, and Hans-Peter Tschorsnig (SMNS) kindly confirmed that this is indeed the name of a creek in the Serengeti, on the banks of which Erwin Lindner (formerly SMNS) collected various insects. Apart from a small tear in the basal part of the anterior margin of each wing, the holotype is in excellent condition. It will be returned and deposited in SMNS with the registration number SMNS_Dip_007136, provided by the museum.

Etymology

The species epithet was formed by combining the first three letters of its country of origin with "ovata", referring to the new species' former affiliation with *D. ovata*.

Description

[See also section on common characteristics.]

Female. Head. Ground colour in upper half above lunule almost black, lower half strikingly paler, varying from light yellow to yellowish brown, or under certain incidences of light densely silvery-white dusted (Fig. 23). Frons almost parallel-sided, only slightly dilated towards the anterior margin, distance between eyes at vertex 0.31 times as wide as maximal width of head, at level of anterior ocellus about 4.0 times and at anterior margin of frons about 4.8 times as wide as distance between outer margins of posterior ocelli. Fronto-orbital plate at midlength of frons about two thirds as wide as distance between outer margins of posterior ocelli; frontal vitta slightly oval-shaped, at middle about 4 times as wide as fronto-orbital plate, frontal triangle somewhat shiny, in anterior view reach-

ing at least midlength of frons, the anterior tip extended as a dark-greyish line almost reaching the anterior margin. Parafacial at level of base of antenna about 1.5 times as wide as postpedicel and at the lower end almost twice as broad as anterior ocellus. In profile, parafacial clearly visible throughout its length; genal depth below lowest eye margin almost as broad as depth of postpedicel (Fig. 22). Facial ridge in lower half about as wide as depth of postpedicel. In anterior view fronto-orbital plates predominantly brown anteriorly and dark brown in upper part, with a few small patches of silvery-white dusting, frontal vitta dark and uniformly sparsely greyish-white dusted, frontal triangle more densely dusted than frontal vitta, ocellar tubercle dark. Ground colour of parafacial and face light yellow, anterior part of gena brownish yellow, in anterior view all parts predominantly white-dusted, some yellow spots visible depending on viewing angle. All segments of antenna strikingly yellow, apical third of postpedicel with a brownish tinge under certain viewing angles (Figs. 22, 23). Postpedicel at least 3 times as long as deep and about twice as long as pedicel. Arista about 2.5 times as long as postpedicel, longest hairs of arista almost twice as long as depth of postpedicel. Anterior half of fronto-orbital plate with 4 setae, the anterior seta very strong, the next one less than half as long and the uppermost ones distinctly shorter and weaker, no small setae at midlength, the lower orbital seta slightly below and less than half as long as the upper seta. Only about three small proclinate setulae near anterior frontal seta and one or two near orbital setae, surface of fronto-orbital plate otherwise bare. Vibrissal seta strong and about 1.5 times as long as the longest surrounding peristomal setae. Anterior and lateral surfaces of gena brown, weakly dusted and bare, not contrasting with the brown, slightly dusted subgena, margin of gena with a row of strong dark setae; post-occipital surface greyish-dusted and only sparsely covered with dark, predominantly short setulae. Proboscis not slender, prementum brown and slightly whitish-dusted or somewhat shiny depending on incidence of light, labella about twice as long as greatest depth of proboscis; palpus yellow, slender, weakly clavate and clearly longer than prementum (Fig. 22).

Thorax. Predominantly yellowish. Mesonotum shiny yellow with a brownish tinge under certain viewing angles, in anterior view partially whitish-dusted. In dorsal view presutural part of mesonotum with a white dusted median stripe, when viewed posteriorly, tapering toward and reaching the transverse suture, with two white dusted paramedian oblong patches between the anterior presutural dorsocentral seta and the posthumeral seta, not strongly developed in dorsal view (Fig. 24), in posterior view the patches tapering to a distinct white stripe along the presutural dorsocentrals, almost reaching the transverse suture, additionally with a very narrow brownish line not much broader than the bases of the dorsocentral setae and extending along the row of dorsocentrals (Fig. 24). Scutellum of about the same colour as mesonotum. Pleura shiny pale yellow, somewhat contrasting with the darker yellow mesonotum, when viewed directly anteriorly, partly whitish-dusted. Anterior and posterior spiracles pale yellow. Mesonotum and dorso-lateral surfaces of scutellum covered with rather short black setulae, pleura predominantly bare or with strikingly short setula-like fine hairs. Acrostichals 0+1, more than half as long as the posterior dorsocentral seta; notopleuron with several tiny setulae close to the posterior seta, the setulae significantly smaller than those of the neighbouring pleura; prealar seta slightly shorter than posterior notopleural seta. Prosternum yellow with some yellow hairs difficult to see due to the lack of contrast with the surroundings; upper part of anepimeron with a tuft of dark hairs, the hairs below it are scattered and resemble strikingly small setulae (Fig. 25) or are at most very fine, short hairs; anepisternal setae 1+6 all black and strong but of different lengths, interstitial hairs fairly short. Scutellum with basal setae strongly developed, but not as strong as the two longer pairs of apical and lateral setae, preapical setae clearly weaker but distinct. In addition, a pair of discal setae about as strong as the preapical seta laterad to each preapical seta.

Wing. Membrane with a strong brownish tinge (Fig. 24), stem vein yellowish, subsequent parts of veins brown. Both calypters transparent yellow, margins yellowish to yellow. Stem and knob of haltere yellow.

Legs. Fore tibia without a distinct median anterodorsal seta. Mid femur only with an irregular row of posteroventrals about one third as long as depth of femur, preapically with a row of short but strong posteroventral setae and 3 distinct posterior to almost dorsal setae about as long as depth of femur and a shorter anterodorsal seta. Hind femur in apical third with a row of anteroventral setae, the 3 most apical setae about as long as depth of femur, the others shorter (Fig. 30), in apical fourth or fifth a short row of short but strong posteroventral setae almost as long as depth of femur, preapically two strong posterodorsal to dorsal setae. Hind tibia without a posterodorsal seta, in distal half with anterodorsal seta slightly longer than diameter of tibia and one shorter anteroventral seta barely as long as diameter of tibia, the right tibia with a second anteroventral seta rather close to and barely half as long as the slightly distal seta.

Abdomen. Apart from the more yellowish anterior part of syntergite 1+2, posterior part of abdomen uniformly predominantly brownish with a yellowish tinge, distinctly darker than the thorax (Fig. 24). Tergites densely covered with small black setulae, anterior tergites with distinct but not very long lateral marginal setae, tergite 4 with a row of distinct marginals, the dorsal median ones clearly shorter, tergite 5 with a row of marginals in addition to an incomplete row of discal setae, the dorsal median setae lacking. Margin of sternite 1 with short yellowish hairs.

Genitalia not investigated.

Measurements. Body length 10.7 mm; wing length 10.5 mm.

[Male unknown.]

Remarks and diagnosis

The female holotype and a male from the same locality in Tanzania were originally identified as *D. ovata* and listed with other muscid species from East Africa by Paterson (1956), mentioning that the specimens were about 10 mm long and that the female had "4–5 distinct setae at the apex of the anteroventral surface, while the male has 7 of these setae distinct on the apical half". However, Paterson did not elaborate on this difference compared to the description of *D. ovata*. In order to include an identified male of *D. ovata* in the investigations, SMNS was asked to provide the two specimens for comparative investigations; like the syntype of *D. ovata*, the two specimens originated from East Africa. Unfortunately, the male was not found in the SMNS collection and its whereabouts are unknown, but the female was loaned to IBER. The specimen was even somewhat larger than the female syntype of *D. ovata* and, accordingly, significantly larger than all other so-called "*D. ovata*" specimens included in this study. In a direct comparison with the female syntype of *D. ovata*, however, it turned out that the specimen from Tanzania differed from *D. ovata* not only by a different chaetotaxy of the hind femur, but also by three white-dusted elongated spots on the anterior mesonotum, and not just one median stripe like the syntype of *D. ovata*. Obviously, it was a representative of a hitherto unknown species, described above as *Dichaetomyia tanovata* **sp. n.** The new species is characterized by the ground colour of the lower half of the head varying from light yellow to yellowish brown, by the distance between the eyes at the vertex being almost one third (0.31 times) as wide as the maximum width of the head, and by all segments of the antenna strikingly yellow (Fig. 22); the apical third of the postpedicel, however, shows a slight brownish tinge under certain incidences of light. In *D. ovata*, the ground colour of the head is mainly dark brown, the distance between the eyes at the vertex is about a quarter (0.27 times) as wide as the maximal width of the head, and only the basal segments of the antenna and the base of the postpedicel until the insertion of the arista are strikingly yellow, the remaining part of postpedicel being dark brown and greyish-dusted (Fig. 2). The prosternum of *D. tanovata* **sp. n.** bears some yellow hairs, which are difficult to detect due to the prosternum being yellow as well; the hairs below the very dark tuft of hairs on the upper part of the anepimeron consist of scattered, conspicuously small setulae (Fig. 25) or at most very fine, short hairs; the also yellow prosternum of *D. ovata* has dark hair-like setae, and the hairs below the tuft of strong dark hairs on the anepimeron are about as long as or longer than the hairs constituting the tuft (Fig. 6). The fore tibia of *D. ovata* is marked by a distinct black short median anterodorsal seta, which is lacking in *D. tanovata* **sp. n.** The basal half of the mid femur of *D. ovata* has a row of about four dark ventral setae about one third as long as the depth of the femur and a row of short but distinct anterior bristle-like setae (Fig. 26), and preapically a short row of about six short posteroventral seta-like hairs and four strong posterior to almost dorsal bristles; in *D. tanovata* **sp. n.** the mid femur lacks a row of distinct anterior setae but has a complete irregular row of posteroventrals about one third as long as the depth of the femur, the preapical posteroventrals of the row are fairly strong setae and there are only three preapical posterior to almost dorsal bristles. The hind femur of *D. ovata* differs from the hind femur of *D. tanovata* **sp. n.** by having, in the basal half, two anteroventral and two posteroventral setae and a median anteroventral seta in addition, all setae being almost as long as the depth of the femur (Fig. 26), whereas there are no long setae in the basal half of the hind femur of *D. tanovata* **sp. n.** (Fig. 30); however, the new species is marked preapically by a row of strong posteroventral setae almost as long as the depth of the femur, whereas these posteroventrals are hair-like, much shorter and weaker, in *D. ovata*. The hind tibia of *D. ovata* has two anteroventrals, whereas it has only one anteroventral seta in *D. tanovata* **sp. n.** The margin of sternite 1 of *D. tanovata* **sp. n.** has several blackish setulae, whereas in *D. ovata* not only the margin but also the surface anterior to the margin of sternite 1 are covered with dark setulae.

Compared to two of the other new species described herein, *D. nigovata* **sp. n.** and *D. malovata* **sp. n.**, both of which also have three white markings on the presutural mesonotum, *D. tanovata* **sp. n.** is significantly closer to *D. niovata* **sp. n.** These two species can be distinguished not only by the size of the body (10.7 mm vs. 8.6 mm), but also by the distance between the eyes at the vertex, almost one third as wide as the maximal width of the head in *D. tanovata* **sp. n.** and slightly more than one quarter in *D. niovata* **sp. n.** The vibrissal seta of *D. tanovata* **sp. n.** is about 1.5 times as long as the longest peristomal seta, whereas in *D. niovata* **sp. n.** the vibrissal seta is three times as long. The prosternum of *D. tanovata* **sp. n.** is marked by yellow hairs and the hairs below the tuft of strong dark hairs on the anepimeron are strikingly small setulae or at most very fine, short hairs, whereas in *D. niovata* **sp. n.** the hairs on the prosternum are black and more seta-like, and the fairly few hairs below the tuft of strong dark hairs on the anepimeron are stronger and at least more than half as long as the hairs of the tuft (Fig. 21). The fore tibia of *D. niovata* **sp. n.** is marked by a distinct black short median anterodorsal seta, the hind femur in basal third by two anteroventral setae, one strong and long, the more basad one distinctly shorter, by one distinct seta-like posteroventral hair somewhat longer than the depth of the

femur, and in middle third by two strong and long posteroventral setae about as long as the depth of the femur; all these setae are absent in *D. tanovata* **sp. n.** The abdomen of the latter species is predominantly brownish with a yellowish tinge, distinctly darker than the thorax, whereas the anterior abdominal segments of *D. niovata* **sp. n.** are uniformly translucent yellow and only the two posterior tergites are yellowish brown in parts.

Identification key to species of the "*D. ovata*-group"

The specimens originally identified as *D. ovata* using the available identification keys of EMDEN (1942) and COURI et al. (2006) can be assigned to the appropriate species of the "*D. ovata*-group" by applying the present key.

1 Anterior part of presutural mesonotum with one median white-dusted patch or stripe only, in dorsal view usually shorter than in posterodorsal view; fore tibia with a short but distinct median anterodorsal seta **2**
- Anterior part of presutural mesonotum with one median and two paramedian white-dusted patches or stripes, in dorsal view the paramedian markings usually weak, in posterodorsal view clearly visible as white stripes or patches like the median one; fore tibia with or without a short median anterodorsal seta **3**

2 Subgena and anterior surface of gena practically concolorous dark brown, not strikingly contrasting; basal third of mid femur with three strong ventral setae about half as long as depth of femur and a row of short strong bristle-like anterior setae along the basal half, mid femur preapically with four strong posterior to almost dorsal setae; hind femur with an irregular row of six anteroventral setae, three in basal half and three in apical third, all setae about as long as depth of femur ..... ***D. ovata*** (Stein)
- Subgena dark brown and contrasting with the yellowish to reddish anterior part of the gena; basal half of mid femur with two posteroventral setae about half as long as depth of femur and without a row of distinct anterior bristle-like setae, mid femur in apical half with a complete row of strong dark posteroventral setae almost half as long as depth of femur, preapically with three strong posterior to posterodorsal setae; hind femur without long anteroventral setae in basal half, apical half or two thirds with a row of dark posteroventral setae about half as long as depth of femur ..... ***D. libovata* sp. n.**

3 Yellowish body predominantly shiny; in profile female head with parafacial well visible; no row of proclinate setulae between eye margin and frontal and orbital setae, at most only a few single setulae; palpi purely yellow; upper calypter without a dark seam at the margin; abdomen usually uniformly or in parts distinctly more brownish than mesonotum; sternite 1 with several hair-like setae at least throughout the outer part of the margin; medium-sized to large species (7.5–11.0 mm) (only females known) **4**
- Yellowish body colour predominantly matt, rarely shiny; parafacial not visible in profile in females; an almost complete row of small proclinate setulae between eye margin and frontal and orbital setae; ground colour of palpi predominantly brownish, apex under certain light conditions somewhat paler; upper calypter with a narrow but distinct dark seam at the margin; mesonotum and abdomen predominantly uniformly coloured, abdomen not distinctly browner than thorax; margin of sternite 1 with only a few (2–5) short setulae on each side; distinctly smaller species (5–7 mm) (males and females) ..... ***D. malovata* sp. n.**

4 Vibrissal seta about three times as long as longest peristomal seta; fore tibia with a short but distinct median anterodorsal seta; mid femur in basal half with a row of strong anterior bristle-like setae about one third as long as depth of femur; hind femur in basal half with 2 long anteroventral and three long posteroventral hair-like setae, all about as long or longer than diameter of femur; hairs below tuft of dark hairs on anepimeron at least half as long as the hairs of the tuft ..... ***D. niovata* sp. n.**
- Vibrissal seta barely twice as long as longest peristomal seta; fore tibia without a median anterodorsal seta; mid femur without a row of distinct anterior bristle-like setae; hind femur without distinct anteroventrals and posteroventrals in basal half; hairs below tuft of dark hairs on anepimeron scattered and extremely small and weak, usually only setula-like ..... ***D. tanovata* sp. n.**

Discussion

A recent article (ZIELKE 2020) reported on the misassignment of some Malagasy *Dichaetomyia* specimens with metallic sheen. *Dichaetomyia tristis* (Zielke, 1972) was the first predominantly green-coloured *Dichaetomyia* species with a strong brassy sheen to be described, and several glossy greenish blue specimens were subsequently assigned to this species based on the close similarity in body colour. However, less conspicuous but differing taxonomic characters received little or no attention. Something similar apparently happened to *D. ovata* group of species. This strikingly large fly, with an almost uniformly glossy yellow to brownish yellow body colour, was the first species of this group to be described. Similar-looking specimens had been subsequently identified as belonging to *D. ovata*. This simplified identification process was additionally supported by the available identification keys, which contained little differentiating information about the two similar taxa known until then, *D. ovata* and *D. rutila*, with some of the descriptions in the keys even contradicting the original descriptions. Only a small number of former "*D. ovata*" specimens were checked as part of the present comparative investigation. However, it is expected that additional flies previously identified as *D. ovata* will eventually be assigned to other species, and further, previously unrecognized new species may be detected. In addition, based on the available observations, the distribution of *D. ovata* in the Afrotropical Region has to be reassessed. The area of distribution of *D. ovata* in the region may no longer be as large as previously thought. The previously known localities of *D. ovata*, including *D. ovata rutila*, in the various Afrotropical countries have to be checked for their

validity. For example, until now, *D. ovata* was thought to be among the few *Dichaetomyia* species not endemic to Madagascar. However, the specimens originally identified as "*D. ovata*" from Madagascar proved to be the least similar to *D. ovata*. They are described here as *Dichaetomyia malovata* **sp. n.**; in addition, a female collected in 1959 in Madagascar and identified in 1972 as "*D. ovata rutila*" belongs to this new species as well. It cannot be ruled out that this new species is endemic to the island, like most *Dichaetomyia* species found in Madagascar. On the other hand, the occurrence of *D. ovata* in Madagascar is now questionable and needs confirmation.

Unfortunately, practically nothing is known about the biology of *D. ovata* and the other species in the group. In this context, therefore, it might be of interest that one male and three females of the five specimens *D. malovata* **sp. n.** listed by Couri et al. were found in pitfall traps. These were collected in two provinces of Madagascar, at different times of the year (January and November) and in different biotopes (montane rain forest and tropical dry forest). The second male came from a Malaise trap. Organisms usually found in pitfall traps belong to ground-inhabiting groups like beetles, woodlice, millipedes, centipedes, earwigs, springtails and spiders, but also worms and snails. Muscid specimens are sometimes also collected with pitfall traps. However, the finding of four out of five specimens of a species in this type of trap under different conditions leads to the speculation that specimens of *D. malovata* **sp. n.** may be particularly attracted to the contents of pitfall traps.

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