Bonn zoological Bulletin 68 (2): 209–273
2019 · Stuke J.-H. & Clements D.K.
https://doi.org/10.20363/BZB-2019.68.2.209

ISSN 2190–7307
http://www.zoologicalbulletin.de

Reasearch article
urn:lsid:zoobank.org:pub:70A02482-0040-4136-ABB0-9C840A4D771A

New conopid records from the Afrotropical Region (Diptera) – Part 3: Physocephalini

Jens-Hermann Stuke[1,*] & David K. Clements[2]

[1] *Roter Weg 22, D-26789 Leer, Germany*
[2] *7 Vista Rise, Llandaff, Cardiff, CF5 2SD, U.K.*

* *Corresponding author: Email: jstuke@zfn.uni-bremen.de*

[1] urn:lsid:zoobank.org:author:27ED8CBD-9201-4983-8FE3-698FB499A0E0
[2] urn:lsid:zoobank.org:author:18B2580D-BA69-4BAC-95BE-A519F880D9B3

Abstract. The tribe Physocephalini in the Afrotropical Region is now taken to include only the genus *Physocephala*: both *Pseudophysocephala* Kröber, 1940 and *Dacops* Speiser, 1923 are herewith treated as junior subjective synonyms of *Physocephala* Schiner, 1861. Some 45 *Physocephala* species are recorded in the region. Three species are new to science, comprising *P. guillarmodi* spec. nov. (Burundi, Lesotho, South Africa), *P. ssymanki* spec. nov. (Namibia) and *P. goergeni* spec. nov. (Togo). Eighteen new synonyms are introduced: *P. antiqua* (Wiedemann, 1830) = *P. maculipes* (Bigot, 1887) syn. nov. = *P. madagascariensis* Kröber, 1915 syn. nov. = *P. gracilia* Kröber, 1915 syn. nov. = *P. minutissima* Kröber, 1933 syn. nov.; *P. larvata* (Speiser, 1911) = *P. similis* Kröber 1915 syn. nov.; *P. abyssinica* Kröber, 1915 = *P. fumivena* Camras, 2001 syn. nov. = *P. longitheca* Camras, 2001 syn. nov. = *P. atronata* Camras, 2001 syn. nov.; *P. digitata* (Speiser, 1909) = *P. simplex* Kröber, 1915 syn. nov. = *P. ugandae* Kröber, 1915 syn. nov. = *P. bequaertorum* Camras, 1962 syn. nov. = *P. lineifrons* Camras, 1962 syn. nov. = *P. ethiopica* Camras, 1962 syn. nov.; *P. microvena* Brunetti, 1925 = *P. nigritarsis* (Kröber, 1939) syn. nov.; *P. vitripennis* Curran, 1928 = *P. intermedia* Kröber, 1936 syn. nov. = *P. bouvieri* (Séguy, 1936) syn. nov. = *P. meii* Camras, 2001 syn. nov.; *P. nigrita* (Camras, 1962) = *P. brevivertex* (Camras, 2001) syn. nov. *Physocephala nigerrima* Kröber, 1915 is treated as an unrecognised taxon (nomen dubium). Lectotypes are designated for *Physocephala pubescens* Brunetti 1925 and *P. curta* Kröber, 1936. *Physocephala kroeberi* (nom. nov.) is introduced for *Pseudophysocephala annulips* Kröber, 1939, the latter being a junior secondary homonym of *Conops annulipes* Wiedemann in Meigen 1824. *Physocephala acroschista* (Speiser, 1911) is treated as valid species (status rev.). Diagnostic keys are presented for the Afrotropical *Physocephala* together with new faunistic records for 33 species.

Key words. Diptera, Conopidae, *Physocephala*, *Pseudophysocephala*, *Dacops*, new species, primary types, new synonyms, type species, lectotype designations, nomen dubium, nomen nov.m, status review, faunistic records, identification key.

INTRODUCTION

This is the third and final part of a work presenting new faunistic records of the Diptera family Conopidae from the Afrotropical Region. The first part dealt with the subfamilies Myopinae and Stylogastrinae (Stuke 2015a), and the second part with all of the Conopinae except for the Physocephalini (Stuke in press). The present paper deals with the latter. As in the two previous papers, the original aim of the project was primarily to present new faunistic information, but this has necessitated extensive revisionary work in order to clarify the diagnosis of several of the species. As a result, new keys for all Afrotropical *Physocephala* species have had to be prepared, comprising a key to the nine species-groups currently recognised in the region as well as keys to the individual species in each group. The three publications together give a detailed overview of all of the valid Conopidae recognised in the region at the present time, as well as summarising the known distribution.

MATERIALS AND METHODS

As in the previous two parts of this series, the morphological terminology used in the species descriptions is mainly adopted from Cumming & Wood (2009). The terminology used to describe the postabdomen is additionally illustrated in Figs 5, 8 and 22–23. Since Kotrba (2000) concluded that sternite 9 is absent in the Cyclorrhapha, the structure referred to as 'syntergite 8+9' in the previous papers is henceforward termed 'tergite 8' and the structure referred to as 'sternite 9' in the previous papers is henceforward termed 'sternite 8'. The structures referred to as 'sternite 8' in the previous papers is not identified yet and henceforward termed 'ventral sclerotisation' (Londsdale, personal communication). The term

Received: 09.08.2019
Accepted: 27.11.2019

Corresponding editor: X. Mengual
Published: 11.12.2019

'hair' is discarded in favour of 'setula' since it is often impossible to distinguish between the two. Numbers of setae refer to one side of the body only. Any form of 'microtomentosity' is referred to by the more common term 'dusting'.

The historically important collections held by MRAC, ZMHB and NHML were revisited and the material contained therein almost completely re-identified by JHS. In the NHML, however, there were many specimens held under '*Physocephala bimarginipennis*' and '*Physocephala maculigera*' which could not all be re-identified in detail due to time constraints.

Where new synonyms are introduced, the affected species names are given with the original combination in square brackets.

Faunistic records previously published elsewhere by JHS are not repeated here, other than where these require correction. Faunistic data is relayed from the specimen labels with as few changes as possible. A few locations have been altered to more commonly used names, and in a few cases provinces or an interpretation of the location have been added, all in square brackets. Locations which could not be found with an internet search, or abbreviations or characters which could not be resolved, are given in quotation marks. Coordinates are only included where these were present on the labels.

For primary type material, the labels are rendered as citations. The labels are listed and numbered in the order found, commencing with the uppermost. Line-breaks are indicated by a slash-mark [" / "] and where there are actual slash-marks on the labels themselves these are included without spaces before and after. Where text on labels could not be deciphered with certainty this is indicated by "[?]". Persons mentioned on the labels of primary type material are given in small caps. Determination labels are also cited to assist in the interpretation of identifications given by previous researchers.

Abbreviations used for collections referred to in the text

AMGS = Albany Museum, Grahamstown, South Africa, Cape Province
BMSA = National Museum Bloemfontein, South Africa
CAS = California Academy of Sciences, San Francisco, USA
CULSP = Czech University of Life Sciences Prague, Czech Republic
FMNH = Field Museum of Natural History, Chicago, USA
IITA = International Institute of Tropical Agriculture, Abomey-Calavi, Benin
ISNB = Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium
MNHN = Muséum National d'Histoire Naturelle, Paris, France
MRAC = Musee Royal de l'Afrique Centrale, Tervuren, Belgium
MZLU = Lund University, Lund, Sweden
NHML = The Natural History Museum of London [formerly the British Museum (Natural History) BMNH], London, UK
NHRS = Naturhistoriska Riksmuseet, Stockholm, Sweden
NMKE = National Museum of Kenya, Nairobi, Kenya
PASS = priv. coll. Axel Ssymank (Germany, Bonn)
PCFK = priv. coll. Christian F. Kassebeer (Germany, Damlos)
PHJF = priv. coll. Hans-Joachim Flügel (Germany, Knüllwald)
PJHS = priv. coll. Jens-H. Stuke (Germany, Leer)
PMHA = priv. coll. Martin Hauser (USA, Sacramento)
PMME = priv. coll. Maurizio Mei (Italy, Rome)
RMNH = Nationaal Natuurhistorische Museum ("Naturalis"), Leiden, Netherlands
SMNS = Staatliches Museum für Naturkunde, Stuttgart, Germany
SMTD = Staatliches Museum für Tierkunde, Dresden, Germany
SMWN = National Museum of Namibia, Windhoek, Namibia
TAUI = Tel Aviv University, Tel Aviv, Israel
UCDC = R.M. Bohart Museum of Entomology, University of California, USA
USNM = Smithsonian Institution National Museum of Natural History [formerly the United States National Museum], Washington DC, USA
ZFMK = Zoologische Forschungmuseum Alexander Koenig, Bonn, Germany
ZMHB = Museum für Naturkunde der Humboldt-Universität, Berlin, Germany
ZSM = Zoologische Staatssammlung, München, Gemany

Duplicates of newly designated type material are retained in the collection of JHS for further research.

The nomenclature used in this work is based on that given in the world checklist of Stuke (2017a), which listed all synonyms, type specimen depositories and representative faunistic records known at the time, together with relevant sources and literature references etc. Herewith we therefore include only new, additional or amended information on these matters where this is relevant to the Afrotropical Region.

RESULTS

CONOPINAE Macquart, 1834

The genera of Afrotropical Conopinae can be identified using the key of Stuke (in press).

Physocephalini Smith & Peterson, 1987

To date three Afrotropical genera have been placed in the tribe Physocephalini, two of which (*Dacops*, *Pseudophysocephala*) are endemic or almost endemic to the region (Stuke 2016). The cladistic analysis of Gibson & Skevington (2013) concluded that Physocephalini is monophyletic, a position which has not been rejected since the tribe was introduced by Camras (1965) and subsequently defined by Smith & Peterson (1987).

Kröber (1939) differentiated the genus *Pseudophysocephala* only within a key, based on the characters "Kurze, gedrungene Arten mit grossem, flachem Kopf und mit lackartig glänzendem Einschnitt am Hinterrand des Auges" [short, stocky species with large, flat head and with shining depression at hind margin of eye]. The genus *Pseudophysocephala* was subsequently only referred to in publications by Camras (1962b, 2001), where he distinguished the genus using almost the same character set: "Head short (flat). Front, face, and cheek relatively narrow. Front usually not higher than eye. Indentation and triangle of eye large. Terminal female abdominal segments moderately to very aberrant." Camras (1962b) stated that "By using the head characters, *Pseudophysocephala* has been maintained, although the intergradation of any one character is complete". All of the diagnostic characters used by both Camras and Kröber are variable within both *Physocephala* and *Pseudophysocephala*, however, and although it is possible to recognise some distinct species-groups with obvious characters such as an aberrant theca or characteristic setae on tarsi, legs or pleura, none of the diagnostic characters mentioned by these two authors, nor any combination of these characters, is actually suitable to differentiate two genera. The type species of the genus *Pseudophysocephala, Conops platycephalus* Loew, 1853, is particularly intermediate and indeed very hard to identify at all. This difficulty has resulted in many problems in species identification given that the separation of *Physocephala* and *Pseudophysocephala* is the starting point in the recent keys of Camras (1962b, 2001). *Pseudophysocephala* and *Physocephala* fall together in the phylogenetic tree of Gibson & Skevington (2013). In their analysis, however, only two *Pseudophysocephala* species were included, both of which are treated in this paper as synonyms and neither of which reflects the huge morphological variability present within the genus. Only one character was mentioned by these authors to distinguish *Pseudophysocephala* and *Physocephala*: [95-1] "Narrow female abdominal segments 5–7 present". This character does not in fact distinguish the only species they used in their analysis from many *Physocephala* species, however, and is absent in several other *Pseudophysocephala* species. As a result, we herewith treat *Pseudophysocephala* Kröber, 1940 as a junior synonym of *Physocephala* Schiner, 1861 (**syn. nov.**).

Both of the known *Dacops* species are characterised by a single synapomorphy – ♀ postabdomen with a unique ventral spoon-shaped structure (Fig. 3) – and they are therefore without doubt sister species. No synapomorphic character has ever been found to show *Physocephala* to be monophyletic when excluding *Dacops*, however. Gibson & Skevington (2013) argued that *Physocephala* (including *Pseudophysocephala*) was monophyletic by virtue of one apomorphic character: [51-1] "metafemur distinctly broadened basally". This character is suitable for diagnosing the tribe Physocephalini, but the slightly broadened hind femur of *Dacops* also falls within the variability found in this tribe. It may be that *Physocephala* without *Dacops* is paraphyletic, but no character has been found which consistently separates the two genera, and no taxonomic revision or phylogenetic study has so far considered enough species to cover the full range of variation. We therefore synonymise *Dacops* Speiser, 1923 with *Physocephala* Schiner, 1861 herewith (**syn. nov.**).

With the introduction of these new synonyms only the genus *Physocephala* remains in the Afrotropical Physocephalini. There are clearly distinct species-groups within this genus, as previously described by Camras (2001) and as indicated in Key 1, and it is possible that in future at least some of these will be found to be monophyletic, but probably not all. A full and detailed phylogenetic analysis which includes most of the Afrotropical species, and which follows the important comments made by Borkent (2018: 113), will be necessary in the future in order to fully clarify the position and, where necessary, allow the rational division of *Physocephala* into well-supported genera and/or subgenera.

Physocephala Schiner, 1861

= *Pseudodacus* Kröber 1915, homonym of *Pseudodacus* Hendel, 1914 [Tephritidae]
= *Dacops* Speiser, 1923 (**syn. nov.**)
= *Archiphysocephala* Kröber, 1939 [Camras 1957, Smith & Cunningham-van Someren 1970]
= *Pseudophysocephala* Kröber, 1940 (**syn. nov.**)

Although *Physocephala* species are among some of the most conspicuous and beautiful Conopidae the identification of species is very difficult due to high infraspecific variation and the lack of stable characters to divide the genus in groups. Key 1 presents a new attempt to distinguish species-groups but we are very aware that this re-

mains problematic. In many cases it will not be possible to identify single specimens of difficult species without comparative material. Much patience is necessary, and no little frustration encountered, when identifying Afrotropical *Physocephala*!

It should be noted that the species-groups given below are not intended to represent natural monophyletic groupings but are merely an attempt to provide a starting point for the identification of species within this large genus. Where our species-groups are identical to those previously identified by Camras (2001) we have retained the same species-group name, but where they are constituted or interpreted differently we have used a different name in order to minimise confusion in the future.

Key 1 – Identification of Afrotropical *Physocephala* species-groups

1. Mediotergite with distinct setae (e.g. Fig. 148); tibiae may have black setulae arranged to form a dorsal line (e.g. Fig. 140); vertex occupying almost half length of frons (except in *brevivertex*); semi-circular, setose and may have distinct ocellar scar (e.g. Figs 129, 131); apical aristomere may be extremely long in some species, twice as long as first aristomere including ventral projection (e.g. Figs 132, 149); wing completely covered with microtrichia; cell r_{2+3}, basal cell and basal medial cell completely dark brown to black (e.g. Fig. 142); facial carina medially black to brown..... ***P. pubescens* species-group**

– Mediotergite at most with some barely visible short setae; tibiae lack black setulae arranged in dorsal lines; vertex clearly shorter than half length of frons; other characters variable (e.g. Fig. 15); apical aristomere never extremely long, much less than twice length of first aristomere including ventral projection; wing in some species with areas lacking microtrichia; wing less darkened in some species; facial carina completely yellow in some species **2**

2. Knob of haltere at least partly velvety black (e.g. Fig. 67); arista three-segmented (e.g. Fig. 39); pleura lacks vertical dusting stripe..... **3**

– Knob of haltere at most with some obscure darkening but never velvety black; arista with two or three distinct aristomeres; pleura may have vertical dusting stripe (e.g. Fig. 25) **4**

3. Frontoclypeal tubercle larger than adjoining lateral facial groove, dorsally rounded and lacking keel (Fig. 37); hind margin of eye lacks a shining triangular indentation; scape shorter, about 2.5 times as long as high, apical aristomere as shown in Fig. 39; vertex short, and with longitudinal grooves (Fig. 38); wing as in Fig. 41: basal cell and basal medial cell completely brown and covered with microtrichia; vena spuria starts in middle of crossvein rm and reaches the hind margin of cell r_{4+5}, therefore separating off a narrow triangular area; ♂ with distinctly pointed tip to abdomen in side view (Fig. 40); larger species, abdomen not so obviously narrow and elongated (Fig. 40); wing length 15–20 mm..... ***P. bimarginipennis* species-group**

– Frontoclypeal tubercle smaller than adjoining lateral facial groove, dorsally with sharp keel (e.g. Fig. 66); hind margin of eye has distinct shining triangular indentation (e.g. Fig. 80); scape long, about four times as long as broad (e.g. Fig. 66), apical aristomere elongated; vertex not obviously short and at most with a few longitudinal grooves; wing as e.g. Fig. 70: basal cell and basal medial cell partly hyaline and partly without microtrichia; vena spuria starta close to hind margin of cell r_{4+5}, therefore not separating off any distinct area; ♂ abdomen with rounded tip in side view (i.e. lacking distinct point; e.g. Fig. 67); smaller species with very narrow and elongated abdomen reaching well beyond wing tips (e.g. Fig. 67); wing length 7–10 mm ..... ***P. halterata* species-group**

4. Vena spuria in cell r_{4+5} usually well developed, starting in anterior half of radial-medial crossvein and therefore distinctly separated from media at least in basal ⅓ of cell r_{4+5} (e.g. Fig. 118). In occasional specimens where the radial-medial crossvein is reduced, this character may not be distinct; cell r_{4+5} hyaline between media and vena spuria (e.g. Fig. 118, 122) and sometimes lacking microtrichia there; dark species lacking distinct colour pattern (e.g. Fig. 108, 122); scutum and scutellum black to brown, tergites 1–3 dark brown to reddish-brown, tergites 3–6 black to dark brown (except in *P. rufa*, which is principally reddish-brown); abdomen lacks obvious dense dusting, only tergite 3 may have posterolateral silver-grey dusted spots (e.g. Fig. 108, 122); anterior part of abdomen obviously narrow and elongated (e.g. Fig. 122); hind margin of eye with distinct shining triangular indentation, and occiput obviously bulging forward at this point; scape elongated, at least as long as protruding part of face; gena very narrow, not broader than maximum width of proboscis; frons with darker black or brown mark, or indistinct light brown marking; mediotergite usually has some barely visible short setae; ♀ fore tarsi sometimes obviously broad and/or with unusual structures such as long setae (e.g. Fig. 114) or long and narrow or spine-like pulvilli (e.g. Fig. 120); hind tarsi sometimes extremely short (e.g. Fig. 111); ♀ theca reduced, aberrant and not protruding far ventrally (e.g. Figs 110, 115, 124); ♂ sternite 5 sometimes v-shaped or u-shaped posteriorly ..... ***P. pilitarsis* species-group**

– Characters never in the above combination; vena spuria in cell r_{4+5} sometimes indistinct or missing (e.g. Fig. 100); cell r_{4+5} sometimes completely brown between media and vena spuria, if vena spuria is developed at all; several species are paler and have a distinct colour pattern, e.g. orange scutum with black markings; abdomen usually with obvious dusting, tergites 3–4 with densely dusted hind margin and at least tergites 5–6 with obvious golden dusting; nterior part of abdomen sometimes wider and shorter (e.g. Fig. 57); if hind margin of eye has a distinct shining triangular indentation, then occiput usually less obviously bulging forward at this point;scape sometimes shorter than protruding part of face; gena sometimes wider than maximum width of proboscis; frons may lack dark marking; mediotergite lacks any short setae in several species; ♀ tarsi lacking unusual characters; ♀ theca in almost all species normally developed and obviously protruding ventrally; ♂ sternite 5 straight-edged or only slightly concave posteriorly **5**

5. ♀ postabdomen ventrally with unique protruding spoon-shaped structure (e.g. Fig. 3), theca absent; ♂ abdomen slightly pointed in side view (e.g. Fig. 2); epandrium long, small cerci reaching only about 1/4 of the length of epandrium (e.g. Fig. 4); hypandrium sheath narrow and elongated; distiphallus elongated and aedeagus may therefore be obviously extruded (e.g. Fig. 5); cell r_{2+3} only dark in apical half (e.g. Fig. 1) or cell r_{4+5} completely dark (e.g. Fig. 6) .... ***P. abdominalis* species-group**

– ♀ postabdomen ventrally lacks protruding spoon-shaped structure, but has theca; ♂ abdomen not pointed in side view but rounded (e.g. Fig. 66, 71); epandrium smaller and therefore cerci reaching more than 1/4 of the length of epandrium; hypandrium sheath different (as far as is known) and distiphallus less elongated; wing pattern may be different, or same as above..... **6**

6. Arista extremely short, appearing as if broken (e.g. Figs 16, 32); aristomeres all shorter than height of basal aristomere; in most species only two visible aristomeres; scape in most species shorter, about twice as long as high (e.g. Fig. 13); shining triangular area at hind margin of eye barely developed or absent; vertex anteriorly with more or less distinct longitudinal groove (e.g. Fig. 15); radial-medial crossvein usually not obviously short and never completely reduced (e.g. Figs 12, 20, 21); basal cell may be partially bare of microtrichia (e.g. Figs 9, 10); anepimeron may have setulae; ♂ sternite 8 slightly to distinctly bulging over protandrium; typically with very fine black setulae (distinctly smaller than the scattered setulae on protandrium) arranged in distinct line at border between protandrium and sternite 8; ♂ epandrium as e.g. Figs 7–8, 22–23: blackish teeth on posterior margin of epandrium with more or less broad blackened bases; epandrium with long setulae anteromedially and dorsally; in lateral view large apically and almost semi-circular; postgonite evagination on inner side with broad-based spines giving this structure a fish-scaled appearance (may be hard to see in strongly macerated specimens, character not proven in all species); ♀ postabdomen lacking obvious reductions or aberrant theca (e.g. Fig. 14, 19), tergite 6 always large and elongated (e.g. Fig. 19) **7**

– Arista usually longer and v-shaped (e.g. Figs 48, 65), both aristomeres distinctly longer than high; scape sometimes more than twice as long as high (e.g. Figs 47, 66); distinct shining triangular area at hind margin of eye (e.g. Figs 72, 80); vertex lacks anterior longitudinal groove in some species (e.g. Figs 84, 85, 87); radial-medial crossvein sometimes very short or absent (e.g. Fig. 100); basal cell completely covered with microtrichia; anepimeron lacks setulae; ♂ shining sternite 8 not usually bulging over protandrium; border between protandrium and sternite 8 usually lacks line of fine black setulae; ♂ epandrium sometimes different to above (but is unknown in some species); ♀ postabdomen may have obvious reductions or an aberrant theca, tergite 6 sometimes very small (e.g. Fig. 55) **8**

7. Hind coxa not dusted, or at least not more densely dusted than middle and fore coxae; pleura usually lacks dense dusting; if dusting stripe is present it starts at a point clearly separated from middle coxa and becomes narrower before reaching notopleuron; typically, mediotergite dorsally lacks dense dusting connecting with dense dusted spot on katatergite; costal cell and subcostal cell always hyaline, obviously paler than base of cell $r_{2+3;}$ cell r_{2+3} typically hyaline distally, with isolated spot around vein R_{4+5}+M_1..... ***P. vittata* species-group**

– Hind coxa more densely dusted than middle and fore coxae (e.g. Fig. 14); pleura usually with dusting stripe running vertically from middle coxa and often reaching notopleuron without narrowing; typically, mediotergite dorsally with dense dusting connecting with dense dusted spot on katatergite; wing with different colour pattern..... ***P. antiqua* species-group**

8. Ventral projection of basal aristomere towers over apical aristomere (e.g. Figs 48, 50, 58); radial-medial crossvein always distinct; vena spuria in cell r_{4+5} distinct, starting at radius R_{4+5} and usually fused with or closely approximated to media; wing membrane between vena spuria and media hyaline (e.g. Fig. 49); scutum usually with two sublateral dusting stripes

starting at inner side of postpronotum and fused before scutellum (e.g. Fig. 42); ♀ theca normally developed but usually depressed towards or against the abdomen (i.e. not projecting perpendicularly, e.g. Fig. 54); ♀ abdomen obviously short, tergites 5 and 6 much shorter than tergite 4 (e.g. Figs 55, 57) ....***P. caenoneura*** **species-group**

– Apical aristomere usually longer than ventral projection of basal aristomere (e.g. Fig. 79); radial-medial crossvein sometimes reduced or absent (e.g. Fig. 100); vena spuria in cell r_{4+5} absent, or if developed then membrane between vena spuria and media not hyaline (e.g. Fig. 83); scutum may lack sublateral dusting stripes; ♀ theca sometimes very reduced, or projects more perpendicularly from abdomen (e.g. Fig. 77, 102); ♀ abdomen may be short or long .....***P. microvena*** **species-group**

Physocephala abdominalis **species-group**

Species of the *Physocephala abdominalis* group were previously placed in the genus *Dacops*. Females are easily recognised by the unique spoon-shaped structure which projects ventrally at the apex of the abdomen, and the lack of any theca (Figs 2, 3). The precise morphological derivation of the spoon-shaped structure is not obvious to us, and does not appear to have been established elsewhere, but given the scarcity of the available material we have not carried out any dissections as the structure is clearly visible without. Males are much more difficult to diagnose because all of the characters used in Key 1 are variable, and atypical forms occur. Males of *Physocephala kaplanae* may occasionally have a reduced radial-medial crossvein and barely developed vena spuria, making them easy to misidentify as a member of the *microvena* group, although the characteristic male postabdomen shape, as described in Key 1, should nevertheless allow these to be safely assigned. All members of the *abdominalis* species-group are confined to the Afrotropical Region.

Key 2 – Identification of the *Physocephala abdominalis* species-group

1. Basal cell completely hyaline and not covered with microtrichia (Fig. 1); wing between costa and radius R_{2+3} hyaline (Fig. 1); black colouration on scutum not reaching hind margin; overall appearance reddish-brown, but may sometimes be brownish to blackish ***P. abdominalis*** **(Kröber, 1915)**

– Basal cell completely or almost completely dark, and completely covered with microtrichia (Fig. 6); wing between costa and radius R_{2+3} dark (Fig. 6); black colouration on scutum may reach to hind margin; overall appearance black ..... ***P. kaplanae*** **(Camras, 2001)**

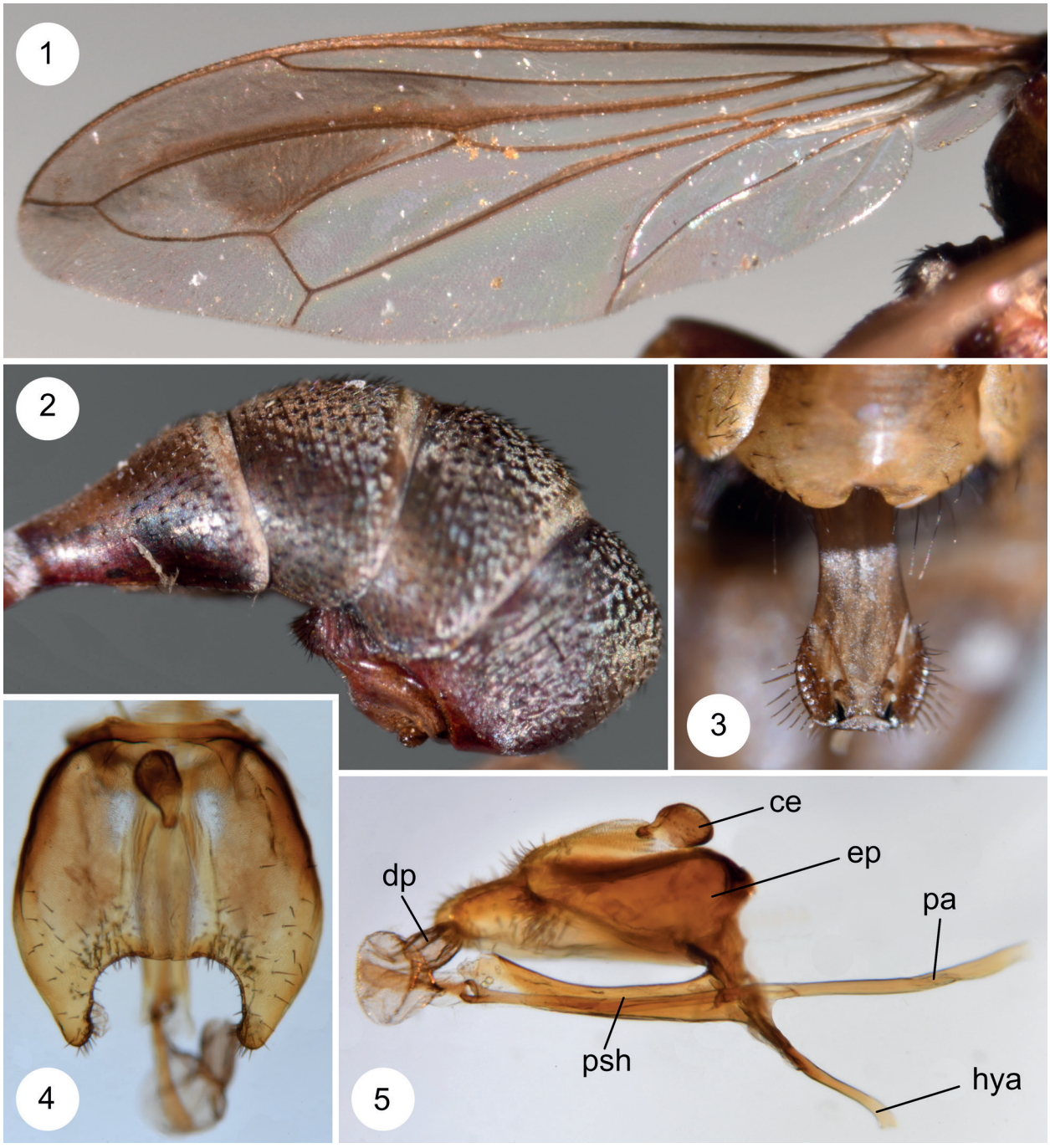
P. abdominalis **(Kröber, 1915)**
(Figs 1–5)
Pseudodacus abdominalis Kröber 1915
= *Pseudodacus apicalis* Kröber, 1915
= *Physocephala fascipennis* Brunetti, 1925
= *Conops patelliformis* Séguy, 1933

Primary type material examined. 1♂ syntype of *Physocephala fascipennis* Brunetti, 1925: (1) "Syn - / type"; (2) "12.II.11 / Caia / Zambesi / Dhawar / H. Swale."; (3) "Pres. by / Impl. Bureau Ent. / 1915 - 164"; (4) "*Physo*. / *fascipennis* / Brun. Type ♂ / Det. E. Brunetti 1924"; (5) "BMNH(E)# / 249047"; coll. NHML.

1♀ syntype of *Physocephala fascipennis* Brunetti, 1925: (1) "Syn - / type"; (2) "Nyasaland / Cholo / R. C. Wood"; (3) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924 - 306"; (4) "*Physo*. / *fascipennis* / Brun. Type ♀ / Det. E. Brunetti 1924"; (5) "BMNH(E)# / 249048"; coll. NHML.

Additional material. BENIN: 1♀, vi.2002, Pénéssoulou, forest area [09°15'58.26″N 01°33'04.81″E], leg. G. Goergen, coll. IITA; 1♂, 28.i.2018, Togbota, leg. G. Goergen, coll. IITA; DEMOCRATIC REPUBLIC OF CONGO: 1♂, iv.1913, Congo da Lemba, det. as P. *fascipennis* by Brunetti 1925, leg. R. Mayné, coll. MRAC; 1♂, 1942, Bas-Congo, Mayidi, leg. P. Van Eyen, coll. ISNB; 1♀, 1945, ditto; ETHIOPIA: 1♀, iii.1969, Bahir Dar, leg. Schäuffele, coll. SMNS; 2♂♂, 30.–31.v.2015, Sof Umer [6°54′N 40°51′E], 1200 m, leg. J. Halada, coll. CULSP; KENYA: 1♂, xi.1948, Garissa-Bura, Tana River, det. as *D. abdominalis* by Camras 1999, leg. van Someren, coll. NHML [NHMUK010922084]; 1♂, 12.x.1998, Morigat, leg. F. Kaplan, A. Freidberg, coll. TAUI; 1♀, 12.–26.ii.2005, Nyanza Province, Ungoye Field Station [0°36.91′S 34°05.52′E], 1147 m, leg. R. Copeland, coll. NMKE; MALAWI: 1♂, 11.v.1916, Nyasaland, Ruo Valley, 1000–2000 ft, des. as syntype of *P. fascipennis,* leg. R. C. Wood, coll. NHML [NHMUK010922076]; MOZAMBIQUE: 1♀, 19.–30.iv.2015, Sofala pr., Gorongosa Park, small lake [18°56′39″E 34°26′35″E], 30 m, Malaise trap, leg. M. Hauser, A. Rung, coll. PMHA; SOUTH AFRICA: 1♂, i.2000, Mondl Forest, Hilton, KZN, leg. Lyawb, coll. PMHA; 1 specimen, i.–iii.1927, Natal, Weenen, det. as *D. abdominalis* by Kröber 1930, leg. H. P. Thommaset, coll. NHML [NHMUK010922090]; 1♀, xii.1923, Natal, Weenen, det. as *D. fascipennis* by Brunetti 1924, leg. H. P. Thommaset, coll. NHML [NHMUK010922093]; 1 specimen, 2.x.1915, Umbilo, Durban, Natal, des. as syntype of P. *fascipennis,* [collector unknown], coll. NHML [NHMUK010922077]; 1♂, iv.1955, Cape Province, Grahamstown, det. as *D. fascipennis* by Smith 1957, leg. Allison, coll. NHML [NHMUK010922088]; 1♂, 26.xi.1958, Cape Province, Grahamstown, leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 2.xii.1958, ditto; 1♀, 17.xi.1961, Cape Province, Grahamstown, leg. E. McC Callan, coll. AMGS; 1♂,

19.xii.1971, Cape Province, Grahamstown, det. as *D. abdominalis* by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922085]; 1♀, 26.ii.1987, Cape Province, Grahamstown, leg. P. E. Hulley, coll. AMGS; 1♂, 7.vii.2002, Cape Province, Grahamstown [33.17°S 26.31°E], leg. H. V. Lewis, coll. AMGS; 1♀, 15.ix.2006, Cape Province, Grahamstown [33°23′S 26°29′E], leg. A. McClure, coll. AMGS; 1♂, 4.iv.1981, Cape Province, Grahamstown [33°19′S 26°31′E], leg. G. T. Lloyd, coll. AMGS; 1♀, 10.iii.1981, Cape Province, Grahamstown, 200 Dept. window [33.19S 26.32E], leg. E. Nieman, coll. AMGS; 2♂♂, 22.i.1970, Cape Province, Grahamstown,



Figs 1–5. *Physocephala abdominalis* (Kröber, 1915). **1**. Wing, dorsal view (♂, Belmont Valley); **2**. Tip of ♂ abdomen, lateral view (♂, Belmont Valley); **3**. Spoon-shaped structure of ♀ postabdomen (♀, Zambesi Valley); **4**. Epandrium, dorsal view (♂, Grahamstown); **5**. Postabdomen, lateral view (♂, Grahamstown). ce = cercus; dp = distiphallus; ep = epandrium; pa = phallapodeme; hya = hypandrial arm; psh – phallus sheath.

Belmont Valley, on flowering *Foeniculum vulgare* Mill., leg. F. W. Gess, coll. AMGS; 2♂♂, 23.i.1970, Cape Province, Grahamstown, Belmont Valley, on flowering *Foeniculum vulgare* Mill., leg. F. W. Gess, coll. AMGS; 2♂♂, 26.i.1970, Cape Province, Grahamstown, Belmont Valley, on flowering *Foeniculum vulgare* Mill., leg. F. W. Gess, coll. AMGS; 1♂ 1♀, 25.i.1972, Cape Province, Grahamstown, Belmont Valley, leg. F. W. Gess, coll. AMGS; 1♂, 6.i.1977, Cape Province, Grahamstown, Hilton [-33.310629 26.525595], on *Acacia karroo* flowers, leg. D. W. Gees, coll. AMGS; 1♂, 2.xii.1979, Cape Province, Grahamstown, Hilton [-33.310629 26.525595], leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 6.–14.i.1972, Cape Province, Grahamstown, Howison´s l′oort, leg. F. W. Gess, coll. AMGS; 1♀, 19.–22.xi-1971, ditto; 1♂, 8.–9.iv.1979, Cape Province, Salt Vlei, Port Alfred, leg. A. E. Mel. Collan, coll. AMGS; 1♂, 19.xi.1999, Eastern Cape Province, 37 km nw of Steytlerville [33°11′S 24°10′E], 695 m, leg. M. Hauser, coll. PMHA; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *D. abdominalis* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922087]; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *D. abdominalis* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922089]; 1♀, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *D. abdominalis* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922092]; 1♀, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *D. abdominalis* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922094]; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *P. platycephala* by Kröber, 1938, det. as *P. rufitarsis* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922157]; 1♂, 26.ix.2010, Free State Province, Bloemfontein, 10 Jan Venter Street [29°06′12″S 26°08′42″E], leg. R. J. Nuttall, coll. BMSA; 1♀, 26.ix.2010, Free State Province, Bloemfontein, 10 Jan Venter Street [29°06′12″S 26°08′42″E], on window, leg. R. J. Nuttall, coll. BMSA; 1♂, xii.2009, Free State Province, Bloemfontein, National Museum Library [29°6′54.35″S 26°13′9.72″E], leg. L. Coetzee, coll. BMSA; 1♀, 13.xii.2012, KwaZulu-Natal Province, Pietermaritzburg, Kwela Lodge, 940 m, leg. B. Lechner, coll. PASS; 1♂, 22.–25.xi.2003, Mpumalanga Province, 30 km ne Lydenbrug near Ohrig, leg. J. Halada, coll. CULSP; 1♀, no date, Natal Province, Howick, des. as syntype of *P. fascipennis,* leg. J. P. Gregor, coll. NHML [NHMUK010922078]; 1♂, 14.i.1953, Natal Province, St. Michaele, det. as *D. fascipennis* by Smith 1957, on flowers of *Scutia myrtina*, leg. E. McC Callan, coll. NHML [NHMUK010922086]; 1♂, 28.iv.2002, Western Cape Province, Nature Valley, 33 23 DC, leg. L. de Wet, coll. AMGS; TANZANIA: 1♂, 10.v.1956, Old Shinyanga, Block 9, det. as *P. caenoneura* by Emden 1950, leg. E. Burtt., coll. NHML [NHMUK010922143]; ZIMBABWE: 1♀, 13.iii.1936, Salisbury [= Harare] [17.84 31.05], leg. W. L. Williams, coll. NHML [NHMUK010922091]; 1♂, 24.vii.1958, Salisbury [= Harare] [17.84 31.05], leg. A. D. Graham, coll. AMGS; 1♀, ii.1987, Zambesi Valley, Rekometjie [16°10′S 29°25′E], leg. S. Gußmann, coll. ZFMK; UNKNOWN LOCATION: 1♀, 27.xii.1937, [characters illegible], det. as *D. abdominalis* by Kröber 1938, leg. A. I. Bevis, coll. NHML [NHMUK010922095].

***P. kaplanae* (Camras, 2001)**
(Fig. 6)
Dacops kaplanae Camras 2001

Material. CENTRAL AFRICAN REPUBLIC: 1♀, 17.xii.2008, 45 km e Nola [03°40′N 16°26′E], 570 m, leg. J. Halada, coll. CULSP; DEMOCRATIC REPUBLIC OF CONGO: 1♂, 1968, Tshuapa, Bamanya, leg. P. Hulstaert, coll. MRAC; ETHIOPIA: 1♀, 4.xi.2018, Bahir Dar [11.597292°N 37.355696°E], leg. G. Goergen, coll. IITA; 1♀, 11.xii.2014, Bonga, Straßensaum, 1955 m [07°14′09″N 036°16′36″E], leg. H.-J. Flügel, coll. PHJF; 1♂, 20.ix.2012, Chencha, 1916 m [06°09′N 37°34′E], leg. A. Pauly, coll. ISNB; 1♂, 1912, Harar, leg. S. V. Kris-

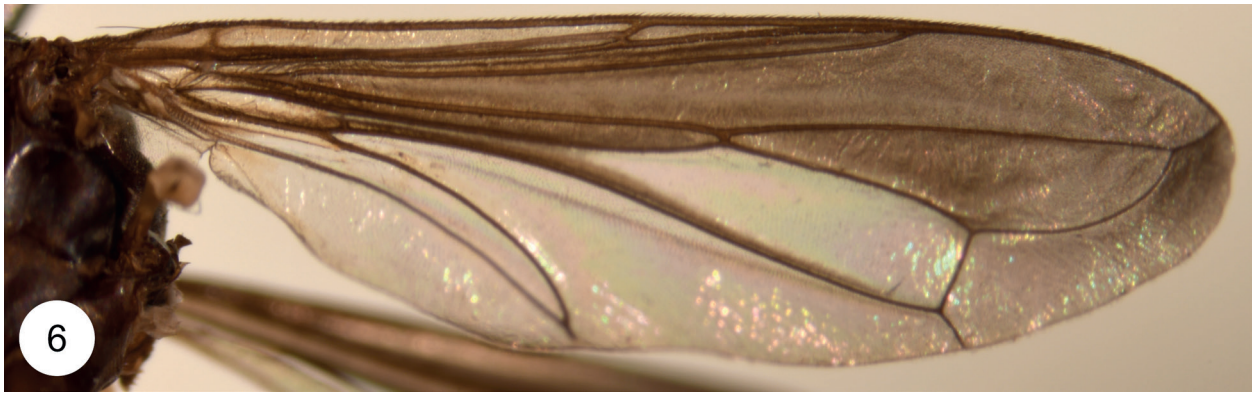


Fig. 6. *Physocephala abdominalis* (Kröber, 1915). **1**. Wing, dorsal view (♂, Belmont Valley); **2**. Tip of ♂ abdomen, lateral view (♂, BelmoWing of *Physocephala kaplanae* (Camras, 2001), dorsal view (Monts de Christal).

tensen, coll. ZMHB; 1♀, 18.x.1957, near Axum, paratype of *P. kaplanae*, det. as *D. abdominalis* by Smith 1969, leg. D. J. Greathead, coll. NHML [NHMUK010922075]; GABON: 1♂, 11.–12.iii.1990, Wolen-Ntem, Monts de Christal, Tchimbelé, 600 m [00°37′N 10°24′E], leg. J. J. Wieringa, coll. RMNH.

It is possible that *P. kaplanae* is nothing more than a darker form of *P. abdominalis*, although we are not aware of any intermediates and therefore accept the validity of this species.

***Physocephala antiqua* species-group**

All of those species which Camras (2001) placed in his *maculipes* and *similis* species-groups are herewith included within the *antiqua* species-group. The segregation of the Camras species-groups is difficult or impossible due to the extreme variability of the characters used to separate them, and it is therefore more convenient to combine them. In general, members of the *antiqua* species-group have a very typical *Physocephala* habitus lacking any atypical characters other than an extremely short arista. Careful evaluation of the character combination set out in Key 1 is necessary to distinguish members of this group, however, especially males. Several species of this group are restricted to the Afrotropical Region but others have a wider distribution which reaches into southern and central Europe, with some also reaching eastwards as far as China and Mongolia. The species-group also contains several Palaearctic species which are not currently known from the Afrotropical Region.

Key 3 – Identification of the *Physocephala antiqua* species-group.

1. Basal cell completely covered with microtrichia, and usually brownish in colouration **2**
– Basal cell almost completely (or at least centrally) bare of microtrichia and hyaline **4**

2. Wings obviously reduced in length, not reaching beyond apex of tergite 3 (Fig. 11) .... ***P. brevipennis* Camras, 1962**
– Wing not obviously reduced, about as long as abdomen or at least extending beyond apex of tergite 3 ..... **3**

3. Cell r_{2+3} completely brown (Fig. 21); subcosta light yellow to yellowish-brown, obviously different in colour from radial veins (Fig. 21); legs orange-brown, lacking a blackish ring on hind femur or darkened tarsi (Fig. 14); scutum orange-brown with black central stripe and small two lateral black spots which may sometimes fuse with mid-stripe (Fig. 17); scutellum orange-brown (Fig. 17); larger species, wing length 6.3–7.6 mm.... ***P. guillarmodi* spec. nov.**
– Cell r_{2+3} hyaline apically (Fig. 36); subosta dark brown, same as radial veins (Fig. 36); at least hind femur with black markings, and apical tarsi black; scutum and scutellum sometimes blackish; smaller species, wing length 3.7–5.3 mm (based on 3 known Afrotropical specimens only) .... ***P. pusilla* (Meigen, 1804)**

4. Anepimeron with long setulae, about as long as maximum width of tibiae; dusting stripe on pleura distinct, narrow at anepisternum and broader when reaching notopleuron (Fig. 34), obviously contrasting with shining anterior half of anepisternum and anepimeron (Fig. 34) ..... ***P. ssymanki* spec. nov.**
– Anepimeron at most with short setulae; any dusting stripe on pleura reaching notopleuron without widening, and sometimes indistinct. **5**

5. 3 aristomeres, the basal one minute and easily overlooked; scape usually about three times as long as high (Fig. 28); gena black, and parafacia above gena mainly yellow (Fig. 28); frons with black longitudinal stripe reaching from vertex to base of antennae (Fig. 26); black facial stripe divided ventrally and reaching to mouth edge (Fig. 28); abdomen longer (Fig. 25), ratio of combined dorsal length of tergites 2+3 : dorsal length of tergite 4 in ♂ >3.8 ..... ***P. larvata* (Speiser, 1911)**
– 2 aristomeres (e.g. Fig. 28); scape usually only about twice as long as high; gena and frons lack black markings; abdomen shorter, ratio of combined dorsal length of tergites 2+3: dorsal length of tergite 4 in ♂ < 3.5 ..... **6**

6. Wing completely hyaline (Fig. 12) .... ***P. claripennis* Becker, 1923**
– Wing with distinct brown to blackish markings (Figs 9, 10) ..... ***P. antiqua* (Wiedemann, 1830)**

***P. antiqua* (Wiedemann, 1830)**
(Figs 7–10)
Conops antiqua Wiedemann 1830
= *Conops maculipes* Bigot, 1887 **syn. nov.**
= *Conops interrupta* Bezzi, 1901
= *Conops erythraspis* Bezzi, 1901
= *Physocephala flavifacies* Kröber, 1915
= *Physocephala limbata* Kröber, 1915
= *Physocephala rubicunda* Kröber, 1915
= *Physocephala madagascariensis* Kröber, 1915 **syn. nov.**
= *Physocephala gracilia* Kröber, 1915 **syn. nov.**
= *Physocephala decisa* Brunetti, 1925
= *Physocephala brevistylata* Kröber, 1931
= *Physocephala minutissima* Kröber, 1933 **syn. nov.**
= *Physocephala nigroscutellata* Kröber, 1933

Primary type material examined. ♀ holotype of *Conops maculipes* Bigot, 1887: (1) "Holo - / type"; (2) "S. Africa: / Cape of Good Hope. / ex coll. J. Bigot / ex coll. G. H. Verrall / B.M. 1914-500 [strikethrough]"; (3) "*C. maculigera* ♀ / Cap. B. Hop."; coll. NHML.

♂ holotype of *Physocephala rubicunda* Kröber, 1915: (1)"3055"; (2) "Type"; (3) "*Physocephala* ♂ / *rubicunda* Krb. / O. Kröber det. 1914"; coll. ZMHB.

♂ syntype of *Physocephala decisa* Brunetti 1925: (1) "Syn- / type"; (2) "N. E. Rhodesia. / Upper Luangwa R. / 27 July 13 Aug. 1910. / S. A. Neave"; (3) "*Physocephala* / *decisa* / Brun. Type ♂ / Det. E. Brunetti 1924"; (4) "BMNH(E)# / 249074"; coll. NHML.

♀ syntype of *Physocephala decisa* Brunetti 1925: (1) "Syn- / type"; (2) "N. E. Rhodesia. / Upper Luangwa R. / 27 July 13 Aug. 1910. / S. A. Neave"; (3) "*Physocephala* / *decisa* / Brun. Type ♀ / Det. E. Brunetti 1924"; (4) "BMNH(E)# / 249077"; coll. NHML.

♀ syntype of *Physocephala decisa* Brunetti 1925: (1) "Syn- / type"; (2) "Rusapi / S. Rhodesia / 19.12.1920 / Rhodesi / Museum"; (3) "Pres. by. / Imp. Bur. Ent. / Brit. Mus. / 1924-306"; (4) "*Physocephala* / *decisa* / Brun. / Type ♀ / Det. E. Brunetti 1924"; (5) "BMNH(E)# / 249075"; coll. NHML.

♂ holotype of *Physocephala minutissima* Kröber, 1933: (1) "1" "Holo- / type"; (2) "Type"; (3) "8.6.16 / Ruo / Nyasaland / 200 ft / R. C. Wood / 601."; (4) "Pres. by. / Imp. Inst. Ent. / Brit. Mus. / 1931-480"; (5) "*Physocephala* / *minutissima* / ♂ Krb"; (6) "BMNH(E)# / 249071"; coll. NHML.

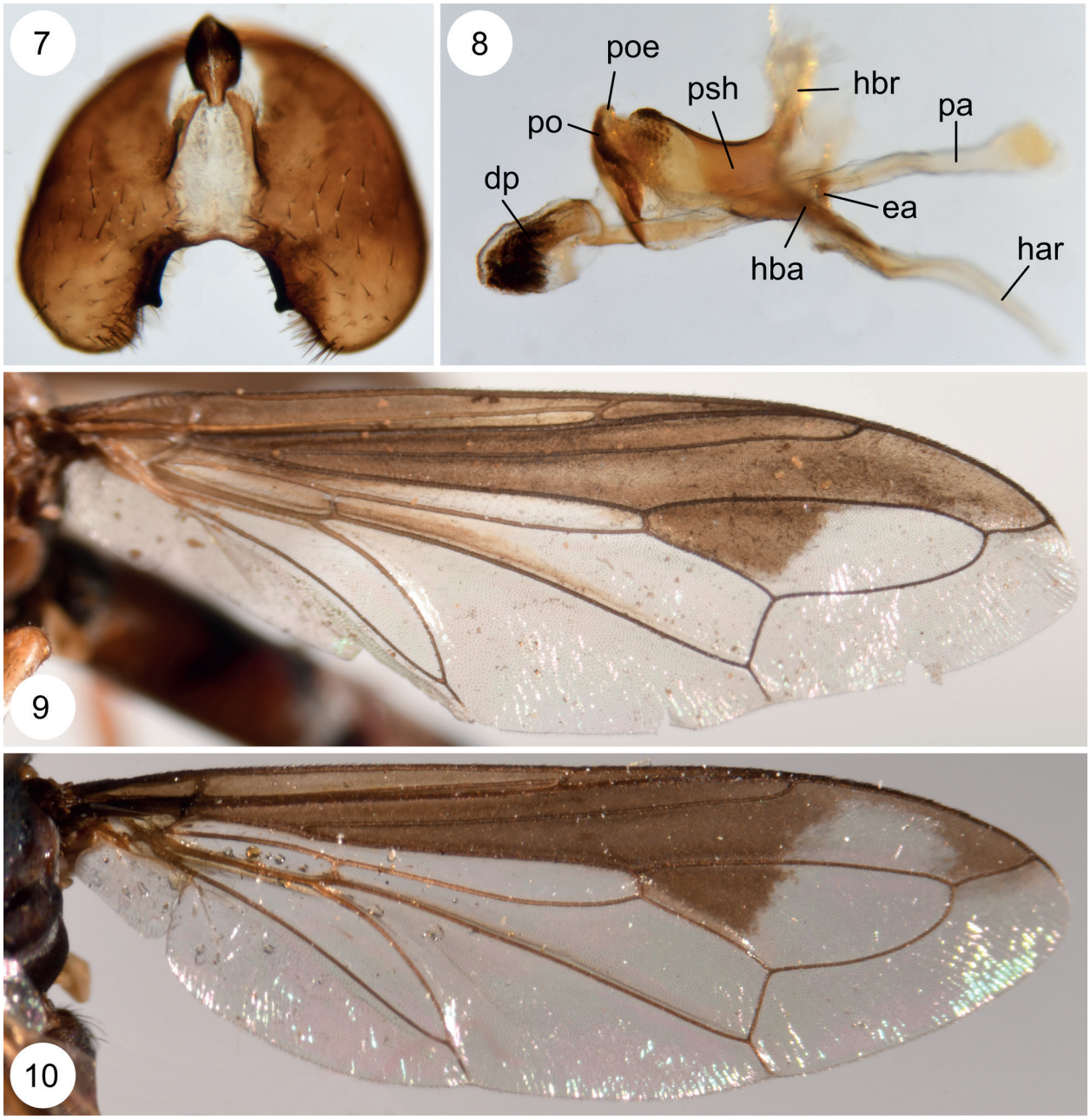
♀ holotype of *Physocephala nigroscutellata* Kröber 1933: (1) "Holo- / type"; (2) "Type"; (3) "Lady Grey / 1 Feb. 1924 / R. I. Nel"; (4) "Pres. by / Imp. Inst. Ent. / Brit. Mus. / 1932-143."; (5) "*Phsocephala* / *nigroscutella* [sic] / ♀ Krb / det. Kröber 1931"; (6) "BMNH(E)# / 249072"; coll. NHML.

Additional material. BENIN: 1♀, ix.2006, Adohoun [06°39'27.55″N 01°39'09.76″E], light trap, leg. G. Goergen, coll. IITA; 1♂, v.2007, Athiémé [06°14'20.00″N 01°40'00.00″E], leg. G. Goergen, coll. IITA; 1♂, viii.2006, Athiémé [06°14'20.00″N 01°40'00.00″E], sweep netting, leg. G. Goergen, coll. IITA; 1♀, 14.vi.2006, Calavi, sweep netting, leg. G. Goergen, coll. IITA; 1♂, 7.viii.2006, Calavi, campus [06°26'15.00″N 02°19'42.00″E], sweep netting, leg. G. Goergen, coll. IITA; 1♀, 25.x.2007, ditto; BURUNDI: 1♀, 24.viii.1957, Kisenyi, leg. F. J. François, coll. ISNB; 1♀, 22.i.1950, Rumonge, 780 m, det. as *P. nigroscutellata* by Janssen 1954, leg. F. J. François, coll. ISNB; 1♂, 9.iii.1952, Bubanza Province, 7 km s de Gihanga, 850 m, det. as P. *nigroscutellata* by Janssen 1954, leg. F. J. François, coll. BMSA; CAMEROON: 1♀, 24.iv.1914, Uamgebiet, Bossum, leg. G. Tessmann, coll. ZMHB; 1♀, 12.v.1914, Uamgebiet, Bossum, det. as *P. interrupta* by Kröber, leg. G. Tessmann, coll. ZMHB; CENTRAL AFRICAN REPUBLIC: 1♀, 14.v.2009, 45 km ssw Bamingui [07°15′N 20°03′E], leg. J. Halada, coll. CULSP; 1♂, 20.iv.2010, Reserve Koukorou Bamingui [07°15′N 20°03′E], 440 m, leg. J. Halada, coll. CULSP; DEMOCRATIC REPUBLIC OF CONGO: 1♀, i.–ii.1913, Congo da Lemba, det. as *P. decisa* by Brunetti 1925, leg. R. Mayné, coll. MRAC; ETHIOPIA: 1♂, 24.v.2015, 10 km nw Mega [04°08′N 38°16′E], 1670 m, leg. J. Halada, coll. CULSP; 8♂♂, 11.–13.v.2015, 20 km se Konsa [05°15′N 37°32′E], 850 m, leg. J. Halada, coll. CULSP; 1♂ 2♀♀, 14.v.2015, 40 km w Konso [5°19′N 37°04′E], 600 m, leg. J. Halada, coll. CULSP; 1♂, 10.v.2015, 45 km ne Arba Minch [6°17′N 37°47′E], 1200 m, leg. J. Halada, coll. CULSP; 1♀, 21.iv.2016, Arsi [7°49′06″N 40°31′52″E], 886 m, leg. J. Halada, coll. CULSP; 1♀, 22.v.2015, Wachile env. [04°32′N 39°03′E], 1070 m, leg. J. Halada, coll. CULSP; GAMBIA: 1♂, 4.xi.1977, Bakau at tropic Bungalow [UTM 28PCK1790], swept in meadow rich in flowers, at the beach, leg. Cederholm, Daniellson, Hammarstedt, Hedqvist, Samuelsson, coll. MZLU; 1♀, 16.x.1999, Kiang West National Park, headquarter, leg. W. Schacht, coll. ZSMC; IVORY COAST: 1♀, 9.xi.1983, Badenous Mbingué [9.50°N 5.50°W], leg. R. Summkeller, coll. ZFMK; KENYA: 1♂, 27.iv.2008, Nguni, n of Ngomeni, hand net, leg. M. Snížek, coll. PMME; 2♂♂, 29.iv.1995, Tsavo East, leg. R. Copeland, coll. NMKE; 1♂, 10.vi.1998, Tsavo East National Park, near Athi River [2°37′S 38°22′E], leg. R. Copeland, coll. NMKE; 1♂, 22.v.2006, Coast Province, Tsavo East National Park, near Galana River [UTM UTM 37 m 503352 9665277], 246 m, hand net, leg. P. Cerretti, D. Avesani, G. Carpaneto, G. Nardi, coll. PMME; 1♀, 26.–29.vi.1999, Eastern Province, at Athi river [2°38.51′S 38°21.98′E], Malaise trap, leg. R. Copeland, coll. IITA; 1♂, 17.–31.viii.2005, Nyanza Province, Ungoye, ICIPE Field Station [0.61325°S 34.08908°E], 1127 m, leg. R. Copeland, coll. NMKE; 1♂, 26.vi.–10.vii.2007, Rift Valley Province, Sumburu Nature Reserve, near Ewaso Ng′iro River [0.56797°N 37.53563°E], 874 m, Malaise trap, riverine forest next to headquarter, leg. R. Copeland, coll. NMKE; 1♂, 12.–26.vi.2006, ditto; 1♂, 10.iv.1998, Samburu District, Samburu Serena Lodge, leg. R. Copeland, coll. NMKE; LESOTHO: 1♂, 1.xi.1949, Mamathes [-29.136617 27.845796], leg. C. Jacot-Guillarmod, coll. AMGS; MADAGASCAR: 1♀, 8.xi.2003, Anteninde, Sakahara [22°53′57″S 44°28′12″E], 395 m, leg. A. Ssymank, coll. PASS; 1♂, v.1937, Bekily, leg. A. Seyrig, coll. MNHN; 1♂, iv.1937, ditto; 1♂, v.1937, ditto; 1♂ 1♀, iv.1942, Bekily, det. as P. *madagascariensis* by Camras 1960, leg. A. Seyrig, coll. MRAC; 2♂♂, 9.iv.1994, Berenty reserve 80 km w of Port-Dauphin [25°00′S 46°18′E], leg. M. Wasbauer, coll. UCDC, PMHA; 1♀, 6.xi.2003, Ihasofotsy-Flussufer, ca 10 km wsw Ihosy [22°25′16″S 46°00′14″E], 1000 m, leg. A. Ssymank, coll. PASS; 1♂, 19.iii.1994, Isalo, Analalava, leg. A. Pauly, coll. MRAC; 1♀, 25.ii.–3.iii.1968, Majun-

ga s. l., det. as P. *madagascariensis* by Camras 2000, leg. K. M. G. & P. D., coll. NHML [NHMUK010922098]; 1♂, i.1992, Morarano-Chrome [17°45′S 47°59′E], leg. A. Pauly, coll. MRAC; 1♂, no date, Sambirano, leg. [?], coll. ZMHB; 1♀, no date, Tananarivo, det. as *P. madagascariensis* by Camras 1960, [collector unknown], coll. MRAC; 1♀ 1 specimen, i.1952, Tzimbazaza-Tananarive, det. as P. *madagascariensis* by Camras 1960, leg. R. Benoist, coll. MRAC; 1♀, 28.vii.–vi.viii.2001, Diego-Suarez (Antsiranana), Sakalava Beach, malaise across sandy trail in dwarf littoral forest [12°15′46″S 49°23′51″E], 10 m, leg. R. Harin′Hala, coll. CAS; 1♂, 4.i.2007, Mahayanga Province, 20 km nw Borinziny [15°27.07′S 47°36.85′E], 37 m, hand netted in tropical dry forest on white sand, leg. M. E. Irwin, F. D. Parker, R. Harin′Hala, coll. CAS; 1♀, 1.xi.1993, Tamatave (Toamasina), Analmalotran Tamatave, leg. C. F. Kassebeer, coll. PCFK; 1♀, 12.xii.1991, Tuléar (Toliara), Ampanihy, leg. A. Pauly, coll. MRAC; 1♀, 6.–16.i.2003, Tuléar (Toliara), Andohaela National Park, Parcel II, Tsimela, malaise trap in transitional forest, 175 m [24°56.21′S 46°37.60′E], leg. M. E. Irwin, F. D. Parker, R. Harin′Hala, coll. CAS; 1♂, 12.iv.1968, Tuléar (Toliara), Bevilany, 300 m, det. as *P. madagascariensis* by Camras 2000, leg. K. M. G. & P. D., coll. NHML [NHMUK010922097]; 1♀, 8.–18.vi.2002, Tuléar (Toliara), Beza Mahafaly Reserve, malaise in dry deciduous gallery forest, 165 m [23°41.19′S 44°35.46′E], leg. R. Harin′Hala, M. E. Irwin, coll. CAS; MALI: 1♀, 20.viii.1991, 10 km s Mopti, leg. M. Schwarz, coll. PMHA; 1♂, 20.viii.1991, 10 km s Mopti, sweep netting, leg. M. Schwarz, coll. PMHA; 1♂, 31.vii.1991, 40 km sw Segou, sweep netting, leg. M. Schwarz, coll. PMHA; MOZAMBIQUE: 2♂♂, 12.–20.xii.2003, Manica Province, 45 km nw Chimoio, leg. J. Halada, coll. CULSP; NAMIBIA: 1♀, 28.i.1993, 100 km sw Rundu, leg. M. Schwarz, coll. PMHA; 2♀♀, 16.i.1993, 125 km sw Rundu, leg. M. Schwarz, coll. PMHA; 2♀♀, 16.i.1993, ditto; 2♂♂, 4.ii.1993, 15 km e Swakopmund, sweep netting, leg. M. Schwarz, coll. PMHA; 2♂♂, 29.iii.2000, 18 km se Stamprieton C15 to Gochas [24.28°S 18.30°E], visiting pink flowers of *Galenia*, leg. F. W. Gees, S. K. Gees, coll. AMGS; 2♂♂, 4.ii.1990, 30 km e Windhoek, sweep netting, leg. M. Schwarz, coll. PMHA; 1♂, 12.iii.2014, 35 km w Gobabis [22°23′S 18°39′E], 1480 m, leg. J. Halada, coll. CULSP; 1♂, 16.ii.1990, 40 km w Witvlei, leg. M. Schwarz, coll. PMHA; 1♂, 16.ii.1990, 40 km w Witvlei, sweep netting, leg. M. Schwarz, coll. PMHA; 1♂, 11.iii.–9.iv.1985, 6 km n Arandis, Damaraland [22°22′S 14°59′E], leg. J. Irish, H. Rust, coll. SMWN; 1♀, 21.i.1993, 60 km E Rundu, leg. M. Schwarz, coll. PMHA; 1♂, 13.ii.1990, 73 km s Mariental, sweep netting, leg. M. Schwarz, coll. PMHA; 3♀♀, 25.ix.1997, e Oranjemund 28 km from checkpoint to Sendelingsdrif [29.26°S 16.42°E], on yellow flowers of Deverradenudata (Viv.) Pfisterer & Podl., leg. F. W. Gees, S. K. Gees, coll. AMGS; 2♂♂, 20.xii.1995, Etosha National Park, 50 km ne Okaukuejo, "Salvado" [18.9°S 16.5°E], leg. C. Schmid-Egger, coll. PMHA; 1♀, 16.–19.i.2007, Gobabeb, Kuiseb-Tal, at light, leg. Mey, Ebert, coll. ZMHB; 1♀, 11.ii.1993, Okahandja, leg. M. Schwarz, coll. PMHA; 1♀, 7.iii.1999, Karas Mountains, 6 km s on 201 from 26 [27.09°S 19.01°E], on yellow flowers of *Vahlia capensis* (L. f.) Thunb., leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 25.iv.1972, Karasburg, Warmbad, SE 2818 Ba, [collector unknown], coll. SMWN; 1♂, 17.–19.v.1978, Khowarib, R., SE 1914 Ac, Kackoland, leg. S. Louw, M.-L. Penrith, coll. SMWN; 1♂, 12.–14.iv.1974, Mukorob 14, Namaland, SE 2918 Ac, [collector unknown], coll. SMWN; 1♂, 15.iii.1997, near Aus on road to Helmeringhausen [26.37°S 19.20°E], visiting white flowers of *Psilocaulon göareosum* (Berger) Dinter & Schwantes, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 10.–13.ii.1972, Otjikoko-Sud 61, Omaruru, SE 2116 Ad, [collector unknown], coll. SMWN; 1♂, 4.–5.iii.1972, Plateau 38, Luderitz, SE 2616 Cb, [collector unknown], coll. SMWN; 1♂, 27.iv.1972, Rotegab 95, Keetmanshoop, SE 2718 Ad, [collector unknown], coll. SMWN; 1♀, 11.iv.1998, Swakop River bed on road to Goanikontes [22.41°S 14.35°E], on white flowers of *Psilocaulon salicornioides* (Pax) Schwantes, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 11.iv.1998, Swakop River bed on road to Goanikontes [22.41°S 14.35°E], visiting deep pink flowers of *Gelenia papulosa* (Eckl. & Zeyh.) Sond., leg. F. W. Gees, S. K. Gees, coll. AMGS; 2♂♂, 11.iv.1998, Swakop River bed on road to Goanikontes [22.41°S 14.35°E], visiting white flowers of *Psilocaulon salicornioides* (Pax) Schwantes, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 11.iv.1998, Swakop River bed on road to Goanikontes [22.41°S 14.35°E], visiting yellow flowers of *Zygophyllum simplex*, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♀, 16.iii.1999, Swakopmund, Swakop River at bridge [22.42°S 14°32°E], on white flowers of *Zygophyllum stapffii* Schinz, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 13.iv.2002, Walfisbay, Swakopmundvia Dune 7 [22.55°S 14.36°E], leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♀, 20.–23.xii.1974, Windhoek, Wasservallei [22°55′S 16°22′E], [collector unknown], coll. SMWN; 1♀, 6.–8.ii.2001, Gobabis District, Somerkoms 521 [22°01′59″S 19°57′22″E], leg. A. H. Kirk-Spriggs, coll. SMWN; 1♀, 20.iii.2014, Harda Province, 15 km s Rehobot [23°28′S 17°07′E], 1400 m, leg. J. Halada, coll. CULSP; 2♂♂, 16.ii.1990, Omaheke Region, Gobabis, 40 km w Witvlei, leg. M. Schwarz, coll. PMHA; 1♀, 25.–27.iii.2003, Rundu District, Mile 46 [18°18′39″S 19°15′29″E], leg. A. H. Kirk-Spriggs, coll. SMWN; SENEGAL: 1♂, 27.vi.2004, 60 km s Velingara, sweep netting, leg. M. Halada, coll. CULSP; SOUTH AFRICA: 1♂ 2♀♀, 8.–12.ii.1982, Sandveld Nature Reserve, Hoopstad, SE 2725 Da, leg. Entomology Department, coll. BMSA; 1♂, xii.1956, [?] "Snoot Rivien", leg. Martin, coll. AMGS; 1♂, 3.–8.x.1989, Cape Province, 15 km n of

Nieuwoudtville on road to Loeriesfontein, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♀, 4.i.2010, Cape Province, 25 km n Jansenville [32°49′S 24°44′E], 600 m, leg. J. Halada, coll. CULSP; 1♀, xii.1922, Cape Province, Aliwal North, det. as *P. brevistylatus* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922102]; 1♀, 3.xii.1986, Cape Province, Bloutoring [33°28′40″S 20°19′15″E], leg. F. W. Gess, coll. AMGS; 1♀, 24. xii.1960, Cape Province, Grahamstown, leg. E. McC Callan, coll. AMGS; 1♀, 27.xi.1981, Cape Province, Grahamstown, [?] "Olakwater", leg. F. W. Gess, coll. AMGS; 1♀, 13.i.1986, Cape Province, Grahamstown, Clifton, leg. R. W. Gees, coll. AMGS; 1♀, 12.–30.i.1970, Cape Province, Grahamstown, Hilton [-33.310629 26.525595], Malaise trap, leg. F. W. Gess, coll. AMGS; 1♂, 3.iii.1978, Cape Province, Grahamstown, Hilton [-33.310629 26.525595], on flowers of *Melolobium candicans* in sandpit, leg. F. W. Gess, coll. AMGS; 1♂, 3. iii.1978, Cape Province, Grahamstown, Hilton [-33.310629 26.525595], leg. S. K. Gess, coll. AMGS; 1♂, 2.xii.1989, Cape Province, Grahamstown, Hilton [-33.310629 26.525595], leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♀, 22.x.1981, Cape Province, Grahamstown, Lynton, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 12.ii.1967, Cape Province, Grahamstown, Strowahn, leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 19.–24. iii.191[?], Cape Province, Grahamstown, Table Farm, leg. F. W. Gess, coll. AMGS; 1♂ 1♀, 2.–13.iii.2008, Cape Province, Grahamstown, Three Chimneys Farm [33°18.542′S 26°29.846′E], leg. A. H. Kirk-Spriggs, coll. AMGS; 1♂, 11.x.1994, Cape Province, Hamaqual and Kamieskroon / Sors Sors, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 17.–21. & 24.ix.1995, Cape Province, Richtersveld National Park, Koeroegabvlakte [28.11°S 17.03°E], visiting deep pink flowers of *Hermbstaetia glauca* (Wendl.) Reichb. ex Steud., leg. F. W. Gess, S. K. Gess., R. W. Gess, coll. AMGS; 1♂, 15.ix.1996, Cape Province, Richtersveld, Pachtviel [28.33°S 16.34°E], leg. F. W. Gess, S. K. Gess., R. W. Gess, coll. AMGS; 1♂, 16.xi.1994, Cape Province, Tierberg [33.10°S 22.16°E], visiting cream flowers of *Asclepias buchenaviana* Schinz, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 26.xi.–5. xii.1987, Cape Province, Tierberg, research station [33°7′42″S 22°16′24″E], leg. F. W. Gess, S. K. Gess., R. W. Gess, coll. AMGS; 1♀, 26.xi.–25.xii.1987, Cape Province, Tierberg, study site [33°10′S 22°16′24″E], on flowers of *Asclepis buchenaviana* Schinz, leg. F. W. Gess, S. K. Gess., R. W. Gess, coll. AMGS; 6♂♂, 26. xi.–5.xii.1987, Cape Province, Tierberg, study site [33°10′S 22°16′24″E], visiting flowers of *Asclepias buchenaviana* Schinz, leg. F. W. Gess, S. K. Gess., R. W. Gess, coll. AMGS; 1♀, 1.-9-xii.1988, Cape Province, Vanwyksfontein, 8 km w of Norvalspont, leg. R. W. Gees, coll. AMGS; 1♀, 12.i.2004, Eastern Cape Province, Grahamstown, [33°16′00″S 26°28′60″E], 629 m, leg. C. Hepburn, coll. AMGS; 1♂, 10.x.1992, Eastern Cape Province, Grahamstown, Hoowisonspoort, 3326 BC, leg. T. Doubel, coll. AMGS; 1♂, 28.ii.2004, Eastern Cape Province, Thomas Baines Nature Reserve [33°23′02′S 26°29′01″E], leg. C. C. Robertson, coll. AMGS; 1♀, no date, Eastern Cape Province, Willowmore, leg. Brauns, coll. PJHS; 1♂, xii.1907, Eastern Cape Province, Willowmore, det. as *P. interrupta*, leg. H. Brauns, coll. MRAC; 1♀, no date, Eastern Cape Province, Willowmore, det. as *P. interrupta*, leg. H. Brauns, coll. MRAC; 1♂, 25.i.1902, Eastern Cape Province, Willowmore, leg. Brauns, coll. PJHS; 1♀, 25.–29.x.2010, Free State Province, Brandfort, Florisbad Res. Stat. [28°46.039′S 26°04.234′E], leg. A. H. Kirk-Spriggs, coll. BMSA; 2♀♀, 8.–12.ii.1982, Free State Province, Hoopstad, Sandfeld Nature Reserve, SE 2725 Da, leg. Entomology Department, coll. BMSA; 1♀, 13.xii.1995, Mpumalanga Province, Blyderevierspoort NP [24°39′S 30°50′E], leg. F. Koch, coll. ZMHB; 1♂, 1.x.1997, Northern Cape, 60 km e Springbok [29.28°S 18.26°E], visiting cream flowers of *Asclepias buchenaviana* Schinz, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 10.x.2000, Northern Cape, Pachtvlei, e Alexander Bay [28.33°S 16°34′E], visiting yellow flowers of *Lebeckia*, leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 20.xi.1999, Western Cape Province, 7 km n of Avontuur [33°40′S 23°09′E], sweep netting, leg. M. Hauser, coll. PMHA; 1♀, 11. iv.2006, Western Cape Province, Stellenbosch [33°55′S 18°51′E], leg. E. Mostert, coll. AMGS; SUDAN: 1♂, 14.vi.1996, Blue Nile, Wad Medani, leg. G. G. M. Schulten, coll. RMNH; 1♂, 1935, Sangha près Bandiagara, leg. M. Griaule, coll. MNHN; TANZANIA: 1♀, 16.i.2007, Pwani Province, 15 km e Utete [08°03′S 38°53′E], 75 m, leg. J. Halada, coll. CULSP; TOGO: 2♀♀, 7.iv.2008, Mono riverside s Ahassomé [7°11′14″N 01°28′52″E], 90 m, leg. A. Ssymank, coll. PASS; ZAMBIA: 1♀, 27.vii.–13.viii.1910, Upper Luangwa River, des. as syntype of P. decisa, leg. S. A. Neave, coll. NHML [NHMUK010922107]; 5♂♂, 20.v.–29.vii.1988, Zambesi Valley [16°18′S 30°16′E], leg. J. Weyrich, coll. ZFMK; ZIMBABWE: 1♂ 4♀♀, 18.–19.xii.2011, 60 km nnw Bulawayo [19°41′S 28°21′E], 1200 m, leg. J. Halada, coll. CULSP; 1♀, 14.xii.1919, Bulawayo, des. as syntype of *P. decisa*, [collector unknown], coll. NHML [NHMUK010922108]; UNKNOWN LOCATION: 1♀, 24.i.1928, "Rersolution", leg. A. Walton, coll. AMGS; 1♀, 1893, "Shitlesia", leg., coll. AMGS; 1♂, no date, "T287", [collector unknown], coll. ZFMK; 1♂, no date, "T426", [collector unknown], coll. ZFMK.

Stuke (2015b) concluded that *P. antiqua* is an outstandingly variable species and as a result several new synonyms were recognised in the Palaearctic Region. While reviewing the large amount of material available it became evident that most of the commonly occurring Afrotropical *Physocephala* specimens also belong to the *antiqua* species-group. It cannot be excluded that factors



Figs 7–10. *Physocephala antiqua* (Wiedemann, 1830). **7**. Epandrium, dorsal view (♂, Namaqualand and Kamieskroon); **8**. Hypandrium and phallus, lateral view (♂, Namaqualand and Kamieskroon); **9**. Wing, darker form, ventral view (♀, Clifton, Grahamstown); **10**. Wing, paler form, ventral view (♀, Badenou s Mbingué). dp = distiphallus; ea = ejaculatory apodeme; har = hypandrial arms; hba = hypandrial bars; hbr = hypandrial bridge; pa = phallapodeme; po = postgonite; poe = postgonite evagination; psh = phallus sheath.

such as DNA-sequencing, newly discovered morphological characters or the host ranges of larvae may eventually necessitate the splitting of *P. antiqua* as defined herewith but at the present time the consistent separation of distinct species within this highly variable taxon is not possible using the morphological characters which are currently available, or which have been used in the past. We could not find any consistent differences in the male postabdomen or female theca within the various morphs, for example, and the Afrotropical material is highly variable in respect of characters such as wing pattern and microtrichiation, size and shape of the vertex, dusting

and setulae on the pleura, body size, and colouration of the legs, abdomen and thorax. Dark-winged specimens with the basal cell almost completely covered with microtrichia (although never completely covered!) appear remarkably distinct, but we also found intermediates. Such specimens could potentially be incorrectly assigned to the newly described *P. guillarmodi* (see below) although the dark brown subcosta of *P. antiqua* (light orange-brown or yellow in *P. guillarmodi*) and the more or less black scutellum (orange in *P. guillarmodi*) are good characters for separating these two species. *Physocephala antiqua* specimens with a shortened radial-medial crossvein appear very similar to species of the *microvena* species-group, but always lack a distinct shining indention at the hind margin of the eye and have a different male postabdomen. Specimens in which the pleural dusting stripe is indistinct, such as in old specimens or specimens which have been wetted, could very easily be misidentified as belonging to the *vittata* species-group.

Physocephala maculipes has previously been described as a very variable species (Camras 2001). We cannot find any differences to distinguish Afrotropical specimens previously reported as *P. maculipes*, nor the examined holotype, from Palaearctic specimens which have been identified as *P. antiqua*. Therefore, *Physocephala* [*Conops*] *maculipes* Bigot, 1887 is herewith placed as a junior synonym of *Physocephala* [*Conops*] *antiqua* Wiedemann, 1830 (**syn. nov.**). Consequently, all previous synonyms of *P. maculipes* are also now placed as synonyms of *P. antiqua* (see Stuke 2017a).

Physocephala madagascariensis Kröber, 1915 is the only species of the genus reported from Madagascar to date. This is also described as being a very variable species (Camras 1962a) and in our view cannot be distinguished from *P. antiqua*, and therefore it is also herewith placed as a junior synonym to *Physocephala* [*Conops*] *antiqua* Wiedemann, 1830 (**syn. nov.**). This is the only species known from Madagascar, so there should be no doubt concerning the identification of specimens.

Kröber (1939) had previously assumed that his *P. minutissima* was no more than a small, dark morph of *P. interrupta* Bezzi, 1901 (= *P. antiqua*). We examined the male holotype, hitherto the only known specimen of this species, which is in very bad condition with both wings and abdomen lost. We also have specimens of small and dark Afrotropical *P. antiqua* which fit completely with the original description of *P. minutissima*, as well as with the remaining parts of the holotype. *Physocephala minutissima* Kröber, 1933 is therefore also herewith placed as a junior synonym to *Physocephala* [*Conops*] *antiqua* Wiedemann, 1830 (**syn. nov.**).

Physocephala gracilia Kröber, 1915 has so far only been known from two syntype specimens. Camras (2001) considered that *P. gracilia* might be synonym of *P. mac-*

Fig. 11. Habitus of *Physocephala brevipennis* Camras, 1962 (holotype).

ulipes Bigot, 1887 (= *P. antiqua*) and in fact almost all the characters given both in the original description and in the additional information provided by Camras (2001) fall within the variability of *P. antiqua*. We also have other specimens to hand which fit completely with the original description. The only anomalous characters in the original description are the short proboscis, completely black claws and shining tergites 1–3, which have not been found to date in material of *P. antiqua*. These characters were not mentioned in the key of Kröber (1915), however, nor in the subsequent comments of Camras (2001), and are not evident in any the material which we have to hand. One syntype is probably destroyed (Stuke 2017a) whilst the second is held at the Museo Civico di Storia Naturale "Giacomo Doria" but was not available for examination. In the absence of better information we therefore believe the best current solution for this cryptic taxon is to place *Physocephala gracilia* Kröber, 1915 as a junior synonym of *Physocephala* [*Conops*] *antiqua* Wiedemann, 1830 (**syn. nov.**).

***P. brevipennis* Camras, 1962**
(Fig. 11)
Physocephala brevipennis Camras, 1962

Primary type material examined. ♂ holotype of *Physocephala brevipennis* Camras, 1962: (1) "Ngutu, / Zululand / III-21-1951 / A. L. Capener"; (2) "*Physocephala* / *brevipennis* / Camras"; (3) "Holotype ♂ / *Physocephala* / *brevipennis* / Camras"; (4) "FMNHINS / 3130492 / Field Museum / pinned"; coll. FMNH.

The first impression when looking at this strange specimen is that it is perhaps an aberrant example of *Physocephala antiqua* with exceedingly shortened wings. Until further material becomes available, however, we have retained this taxon.

***P. claripennis* Becker, 1923**
(Fig. 12)
Physocephala claripennis Becker 1923

Primary type material examined. ♂ holotype of *Physocephala claripennis* Becker, 1923: (1) "El Obeid / 13.–14. III"; (2) "Aegypt. Sudan / Ebner, 1914"; (3) "*Ph. claripenis* [sic] / Beck. / det. Becker"; (4) "Holotype / *Physocephala* / *claripennis* / Becker / det. Camras, 2000"; (5) "J. Skevington / Specimen # / 45425"; coll. NMW.

This may only be an extremely pale specimen of *P. antiqua* with completely hyaline wings, but until further material becomes available we have retained this taxon.

***P. guillarmodi* spec. nov.**
(Figs 13–24)
urn:lsid:zoobank.org:act:8F911A66-CF42-4A60-837F-708FA78B1E9C

Holotype ♀. (1) "Mamathes / Basutoland / 28-XII-1959 / C. Jacot / Guillarmod"; (2) "? *Physocephala brevistylata* / Kröber ♀"; (3) Holotypus / *Physocephala guillarmodi* / spec. nov. ♀ / 2018". Holotype is deposited in AMGS. The specimen is pinned and in perfect condition.

Paratypes. BURUNDI: 1♀, 18.xi.1949, Bururi Province, Bururi, 1950 m, Orée dela forêt, leg. F. François, coll. ISNB; LESOTHO: 1♂, 26.xii.1946, Bokong, leg. A. Jacot Guillarmod, coll. AMGS; 1♀, 28.xii.1947, Leribe, Hensley′s Dam, leg. A. Jacot-Guillarmod, coll. AMGS; 1♀, 16.xii.1950, Mamathes, leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 28.xii.1959, ditto; SOUTH AFRICA: 1♂, 3.–7.x.1988, Cape Province, Clanwilliam

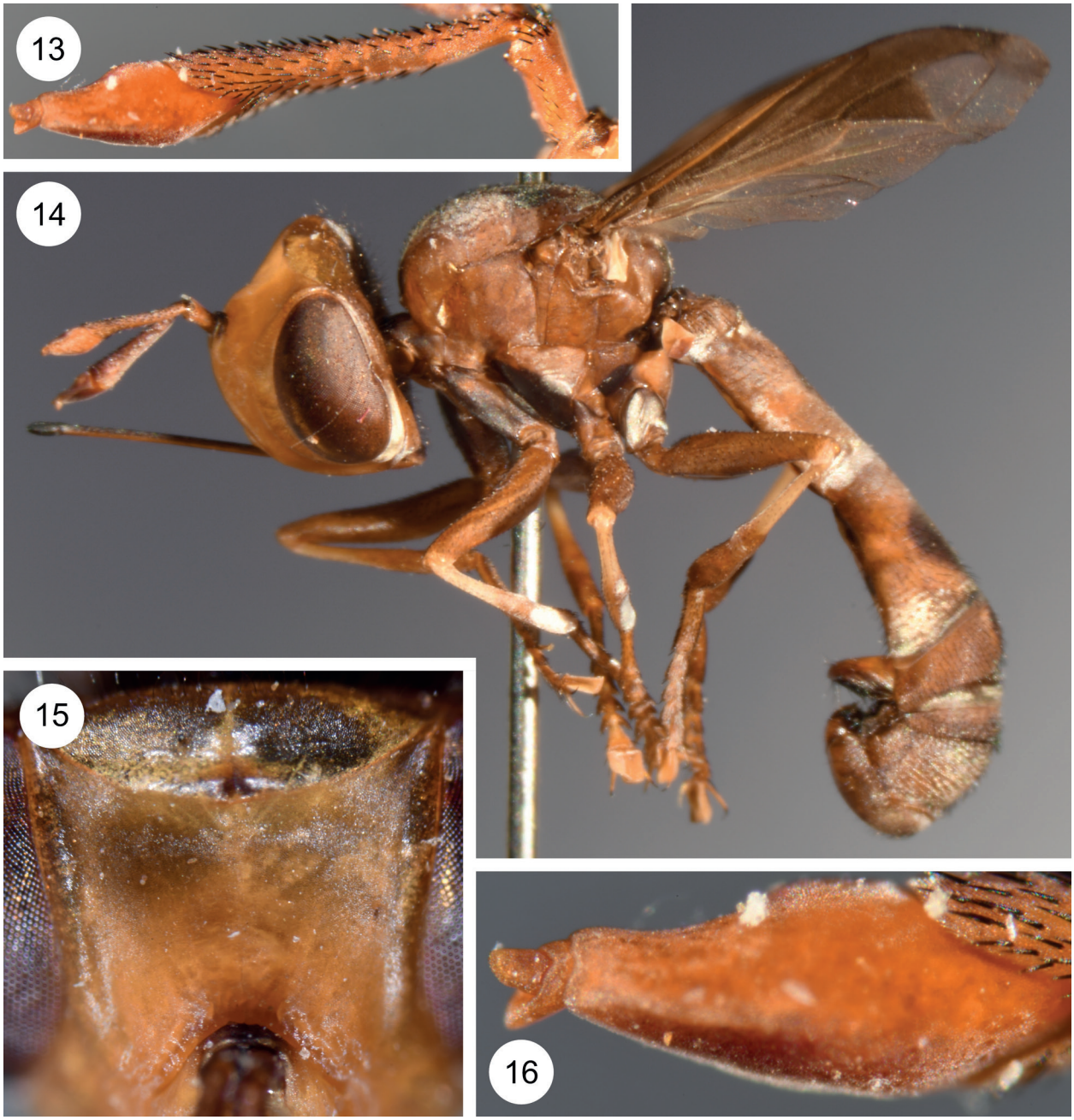
Fig. 12. Wing of *Physocephala claripennis* Becker, 1923 (holotype).

Dam [32°11′30″S 18°53′42″E], on flowers of *Aspalathus desertorum* Bol., leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂, 5.xii.1980, Cape Province, Grahamstown, Hilton, *Senecio*, leg. D. W. Gees, coll. AMGS; 1♀, 8.–13.x.1987, Cape Province, Klein Alexandershoek, Clanwilliam District [32°20′20″S 18°46′E], leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♂ 1♀, 28.ix.1985, ditto; 1♂, 4.–8.x.1994, Cape Province, Koornplanskloof 10 km s Citrusdaal [32°40′S 19°01′E], 200–270 m, leg. R. Danielsson, coll. MZLU.

Description of holotype (female)

Length 9.6 mm; Wing-length 7.6 mm; Head-height 2.9 mm.

Head. Antenna orange-brown (Fig. 13). Arista very short stylus-like, with 2 aristomeres situated at tip of first flagellomere (Fig. 16). Both aristomeres minute, length of apical aristomere shorter than height. Scape about twice as long as maximum width, apically and laterally with black setae. Pedicel about five times longer than maximum width, covered with black setae. Pedicel lack-

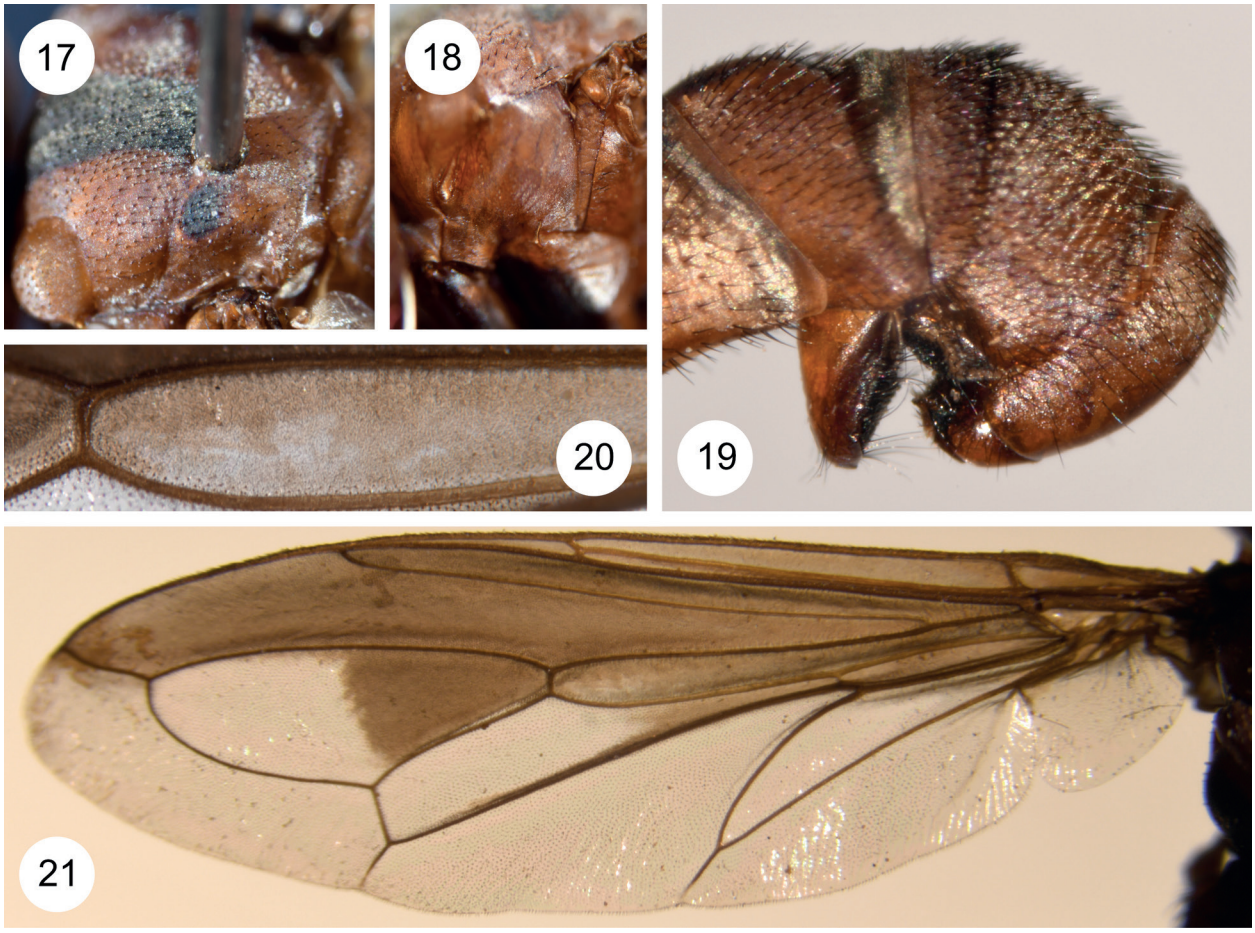


Figs 13–16. *Physocephala guillarmodi* spec. nov. (holotype). **13**. Antenna, lateral view; **14**. Habitus, lateral view; **15**. Frons, dorsal view; **16**. Arista, lateral view

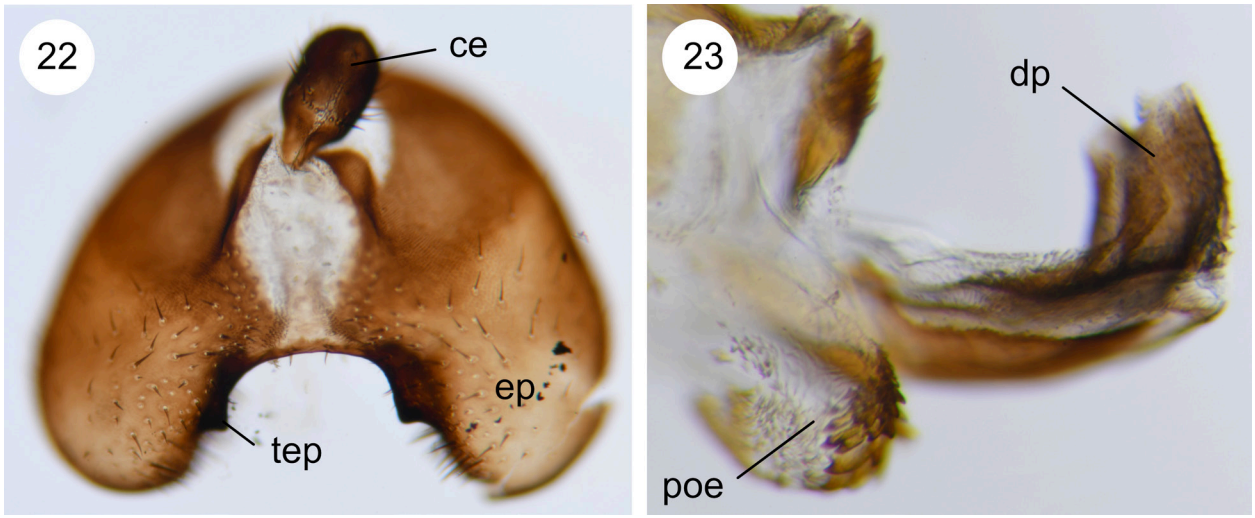
ing any ridge at base, and expanded towards apex. First flagellomere long and conical, about two times as long as high, pointed, and ventrally with an indistinct membranous area. Lunule between base of antennae and ptilinal suture distinctly developed, shorter than width of scape. Eyes brown, lacking ommatrichia, facets all of about the same size. Posterior margin of eye lacking any shining indentation. Gena height / eye height (measurements taken from head in lateral view) = 0.3. No ocellar tubercle, no ocelli and no ocellar triangle evident. Frons (Fig. 15) yellow, somewhat broader than long, concave, slightly projecting above eyes posteriorly and lacking any setulae. Anterior margin of frons concave. No frontofacial spot. Frons with indistinct dusting all over, subshining laterally. Vertex as broad as frons, separated from latter by a more or less distinct ridge. Vertex shining, and in posterior half covered with black setulae. Vertex apically with an indistinct depression. Ridge of vertex lacking longitudinal grooves. Face yellow, with brown facial keel. Face lacks dusting except for some very narrow silver dusting along eye margin. Gena yellow, lacking setae. Distinct facial grooves reaching mouth edge. Distinct facial carina reaching from base of antennae to a distinctly broadened and outstanding frontoclypeal tubercle. Ptilinal suture extending well beneath antennal bases on either side. Oral cavity tapers dorsally. Postcranium not obviously invaginated, yellow to light brown. Whole postcranium lightly dusted, with dusting adjacent to posterior eye margin obviously denser. Occiput and postgena covered with long black setulae. Postgena not widened and not delimited from occiput. Bottom portion of postcranium clearly delimited and less setulose. Proboscis reddish-brown, labellum black. Frontoclypeal membrane long, light orange-brown and barely delimited from orange-brown clypeus. Palps absent. Labium distinctly longer than head-length, distinctly thickened basally, anterior section completely fused and tubular. Labrum not visible in type specimen. Labellum short, completely divided, hardly broader than adjacent haustellum, and covered with very short setulae only.

Thorax mainly orange-brown, with mediotergite, katepisternum and meron mainly black. Scutum with large medial black spot and small lateral black spots (Fig. 17). Thorax grey dusted all over. Pleura as in Fig. 18. Distinct dusting stripe on pleura reaching from middle coxa to notopleuron. The dusting stripe depends on the viewing angle and is best seen in dorsal view – care is required as it may be hard to see with the wrong viewing angle (Fig. 18). Anterior half of anepimeron shining to subshining. Presternum distinct, narrow. Basisternum broad, ventrally narrowed to a point, and with scattered setulae. Proepisternum lacks setae or setulae. Notopleuron with a few slightly stronger setae. Postalar callus with a few strong short setae flanked laterally by several curved setulae. Katepisternum with 13–15 setae posterodorsally and no setae ventrally. Metakatepisternum lacks setae. Anepimeron with 8–10 small setulae. Mediotergite convex, with minute and hardly visible black setae. Subscutellum inconspicuous. Scutum covered with scattered small black setulae and with no outstanding setae. Wing as Fig. 21: Fore-margin tinged brown, with brown membrane between subcosta and media M. Cell r_{4+5} hyaline apically and discal-medial cell dm brown basally. Veins brown, subcosta paler brown than radial veins. Wing mostly covered with microtrichia, but anal lobe partly lacking microtrichia. Radial-medial crossvein rm small but complete (Fig. 20). Basal-medial-cubital crossvein incomplete. Radius R_1 and R_{2+3} terminate close together in costa, well beyond end of subcosta. Radius R_{4+5} with shallow, even curve in distal section which is directed towards fore-edge of wing. Cell r_{4+5} pedunculate, with vein R_{4+5}+M_1 distinctly longer than radial-medial crossvein. Basal cell lacks any thickening. Cubital cell cup elongated, distinctly longer than vein A1+CuA_2, and pointed distally (i.e. cubitus CuA_2 and anal vein A_1 meet at an acute angle). Vein A_1+CuA_2 not reaching hind margin of wing. Cubital veins CuA_1 and basal-medial-cubital crossvein distinctly separated. Upper and lower calypters yellowish-white to brown, margin of upper calypter with short white setulae. Alula slightly shorter than broad, lacking setulae on posterior margin. Venae spuriae pronounced in cell r_{4+5}, cubital cell cup and indistinctly in cubital cell cua_1. Haltere light yellowish-white with brown base and reddish knob. Knob of haltere with brown setulae. Legs orange with fore coxa mainly black. Legs with inconspicuous silver dusting to shining, hind coxa densely silver-dusted. Posterior surfaces of fore and middle tibiae with obvious silver-dusted fields distally. Legs with short, adpressed black setulae. Base of fore and middle femora lacking denser black setulae. Areas of dense black to brown setulae anteroventrally at tip of fore tibia, and ventrally and posteriorly at tip of hind tibia. Middle femur lacking a distinct row of regularly arranged setulae. Hind femur lacks outstanding setulae. No preapical setae dorsally and no setae ventrally on tibiae. Femora ventrally lacking rows of short black setae. Coxae with several setulae but lacking outstanding setae. Hind femur slightly thickened in basal half. All tibiae thickened in apical half. Each metatarsus with 2 stronger setae ventrally at base. Pulvilli yellowish-white. Claws brown, with narrow black tips. Empodium light brown, about as long as pulvilli.

Abdomen orange to dark brown, with diffuse dark markings dorsally on tergites 1–4. Abdomen with short black setulae all over, those on tergite 2 very small. ♀ abdomen completely silver-dusted, although the impression of dusting depends on viewing angle. Denser dusted hind margins of tergites are not obvious. Tergites 1–3 fused but remain distinct from each other. Maximum width of abdomen at segment 4. Length : maximum width of tergite 2 = 2.0; length : maximum width of tergite 3 = 1.9. Tergite 5 and sternite 5 not completely fused laterally.



Figs 17–21. *Physocephala guillarmodi* spec. nov. (holotype). **17**. Scutum, dorsolateral view; **18**. Pleura, lateral view; **19**. Theca, lateral view; **20**. Radial-medial crossvein, dorsal view; **21**. Wing, dorsal view.



Figs 22–23. Postabdomen *Physocephala guillarmodi* spec. nov. (♂, Hilton, Grahamstown). **22**. Epandrium, dorsal view; **23**. Postgonite evagination, ventral view. ep = epandrium; dp = distiphallus; poe = postgonite evagination, tep = tooth on posterior margin of epandrium; ce = cercus.

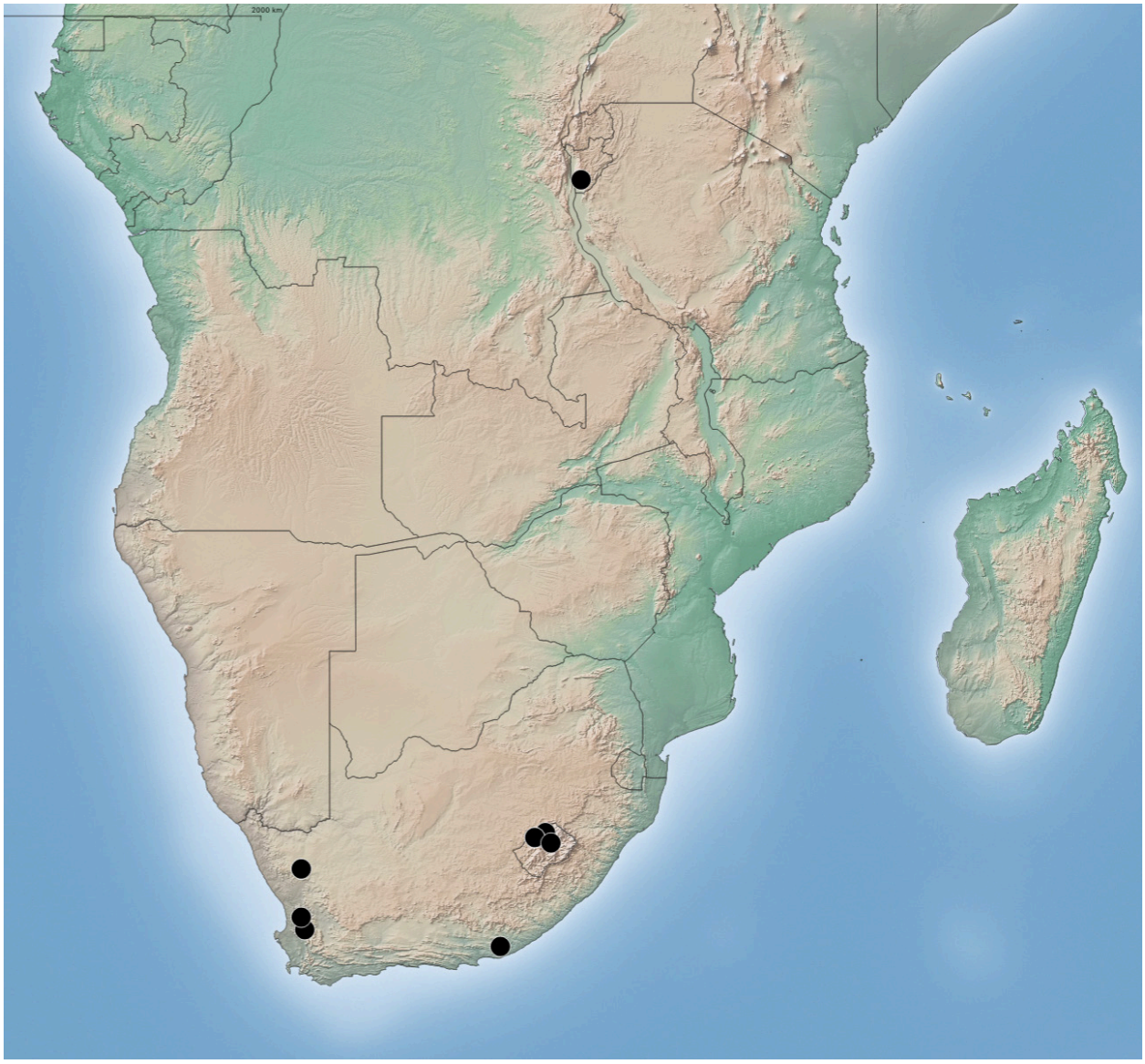


Fig. 24. *Distribution of P. guillarmodi* spec. nov.

Shape of theca as shown in Fig. 19. Anterior surface of theca apically with a few long setulae. Posterior surface of theca almost completely covered with close-set long blunt spicules, arranged in about 12 horizontal lines. Tergite 7 bends distinctly ventrally, with an indistinct longitudinal gap, and with a minute protruding tooth at middle of posterior margin.

Female characters added from one dissected paratype Sternites 1–2 fused. Sternites 3–4 not protruding ventrally, posterior parts of sternites inconspicuous. Tergites 3 and 4 lack evaginations. Sternite 5 anteriorly lacking any elongation. Sternite 6 almost completely covered with long blunt spicules which are mainly arranged in close-set, broken horizontal lines. Sternite 7 longer than broad, anteriorly pointed, posterior margin with two patches of dense long black setae. Ventral sclerotisation fused with tergite 8 and therefore connecting at sides. Tooth on tergite 8 distinct, its base elongated anteriorly. Sternite 8 bulging posteriorly, covered with strong long black setae and with obvious long setulae on posterior margin. Paired cerci distinct. Sack-like ventral protrusion of vagina with distinct annular sclerotisation. Opposite the annular sclerotisation the ventral protrusion is hardly sclerotised and is covered with short, broad microtrichia giving the ventral protrusion a roughened surface. No ob-

vious sclerotisation at base of either the accessory glands or the spermathecal ducts. Sack-like ventral protrusion of vagina lacks any additional sclerotisation. 2 pairs of spherical spermathecae, the spermathecal ducts fusing shortly after leaving the spermathecae. Spermathecal ducts are sclerotised at the spermathecae, this sclerotised part of the duct being sinuous.

Description of male

♂ abdomen strongly dusted from posterior half of tergite 3 to tip (in anterior view) and almost shining laterally on tergites 1–3. No obvious dusting at hind margin of tergites. Tergite 1 with obvious black setulae laterally on bulbous lateral projections. Tergite 2 distinctly elongated, about 5 times as long as width at posterior margin. Tergite 2 lacking lateral tufts of setulae. Tergite 3 obviously longer than broad and widened posteriorly, anteriorly about 2.8 times as wide as posteriorly. Sternites 1, 4 and 5 present, sternites 2 and 3 reduced. Tergite 5 and sternite 5 separate. Sternite 4 almost square, minute and not clearly delimited from membrane, with about 4 minute setulae. Sternite 5 apically with small field of thick setae and several long black setulae laterally. Protandrium broader than epandrium and therefore projecting over it. Sternite 8 delimited from protandrium. Line of minute black setulae at border of protandrium and sternite 8. Lateral edges of protandrium fused ventrally by a narrow sclerotised strip, which is not medially broadened. Paired cerci distinct, completely sclerotised and covered with scattered black setulae. Epandrium as shown in Fig. 22, not fused behind cerci but with a slightly sclerotised connection on both sides of the epandrium. Within this connection there is an elongated sclerotisation. Posterior margin of epandrium with small black setulae, and an obvious short black tooth with a broad blackish base. Epandrium distinctly concave laterally. No hypoproct evident and no remains of surstyli recognised. No obvious strong black setae nor long black setulae which would mark the base of a surstylus. Subepandrial plate not sclerotised nor covered with microtrichia, and therefore not distinct. Dorsal hypandrial bridge developed. No hypandrial lobe evident. Hypandrial bars fused distally, hypandrium ending in a hypandrial arm. Hypandrial membrane almost absent, lacking microtrichia. Phallus sheath fused dorsally, lacking any evagination or setulae. Postgonite distinct. Postgonite evagination not sclerotised, and not projecting above distiphallus. Lateral side of postgonite evagination with indistinct microtrichia, the medially directed surface with broad and overlapping microtrichia (Fig. 23). No plate at postgonite evagination. Ring sclerite between phallapodeme and distiphallus indistinct. No epiphallus recognised. Distiphallus shorter than epandrium, entirely covered with microtrichia, some of which are black and arranged in lines. Distiphallus dorsally with large lightly sclerotized plate (Fig. 23) but lacking evaginations. Phallapodeme longer than hypandrium arm. Ejaculatory apodeme elongated, lacking distinct attachment to sperm sac.

Variability

Wing length 6.3–7.6 mm. Basal aristomere sometimes black apically. Face, gena, frons and postcranium sometimes more or less black in melanistic specimens. Facial keel sometimes yellow. Extent of black marking on thorax varies somewhat, and scutum sometimes completely orange. Proepisternum may lack setulae. Wing sometimes more extensively brown, with discal-medial cell dm almost completely brown and cubital cell cua1 brown at base. Alula and cubital cell cup may partly lack microtrichia. All coxae sometimes obviously blackish. Hind femur may have an obscure blackish or brown ring.

Diagnosis

Physocephala guillarmodi belongs to the *antiqua* species-group as defined in Key 1. It is easily overlooked amongst the more common and variable *P. antiqua*, but can be differentiated from the latter by the brown basal cell which is completely covered with microtrichia (Fig. 20). With this character *P. guillarmodi* can only be confused within the *antiqua* species-group with dark-winged specimens of *P. antiqua* which may atypically have the basal cell almost (but never completely) covered with microtrichia, or with *P. pusilla*. *Physocephala guillarmodi* can be separated from both of these species by its light yellow to yellowish-brown subosta which is obviously different from the darker radial veins (Fig. 21) and by the characteristic light brown thorax with three black spots (which may be fused) on the scutum (Fig. 17). At a first glance this species resembles *P. schmideggeri* Stuke, 2017 which occurs in the Arabian Peninsula (Stuke, 2017b) but *P. guillarmodi* is distinguished by the complete dusting band which starts immediately above the middle coxa and reaches up to the notopleuron without becoming narrower. In the event that *P. brevipennis* is eventually demonstrated to be an aberrant and misshaped *antiqua* specimen (see above) this will also be distinguished from *P. guillarmodi* by its dark brown subcosta which does not differ in colour from the radial veins.

Etymology

This species is named in honour of Charles Fréderic Jacot Guillarmod (1912–1979), who collected several specimens of this new species and whose collecting activities made a huge contribution to knowledge of the Diptera of South Africa.

Distribution

Physocephala guillarmodi is widely distributed in the Afrotropical Region (Fig. 24).

***P. larvata* (Speiser, 1911)**

(Figs 25–29)

Conops (Physocephala) larvatus Speiser 1911
= *Physocephala similis* Kröber 1915 **(syn. nov.)**

Material. DEMOCRATIC REPUBLIC OF CONGO: 1♂, 30.xii.1952, Nord-Kivu, Kinshasa, Vitshumbi, s Lake Edward, leg. J. Verbeke, coll. ISNB; TANZANIA: 1♂, 1911, Marienhof [=Murutunguru], Ukerewe, leg. Conrads, coll. SMTD; UGANDA: 1♂, 12.viii.1958, Uganda, det. as *P. similis* by Camras 2000, leg. J. Bowden, coll. NHML [NHMUK010922104].

Physocephala similis was distinguished from *P. larvata* by Camras (2001) within his *similis* species-group, but the character which Camras used to identify *similis* ("Face yellow") contradicts the original description of Kröber (1915). Kröber compared *P. similis* with *P. larvata* and stated that *P. similis* "Ist *P. larvata* zum verwechseln ähnlich, hat aber ganz andere Flügelzeichnung" [Is confused with the similar *P. larvata*, but has quite a different wing pattern] although this difference is not obvious when comparing the original descriptions of *P. similis* and *P. larvata*. Both descriptions fit to the wing shown in Fig. 27 and there remains no other difference between these two species. The depository of the holotype is unknown (Stuke 2017a) and therefore *Physocephala similis* Kröber, 1915 is placed as a junior synonym of *Physocephala* [*Conops*] *larvatus* Speiser, 1911 **(syn. nov.)**.

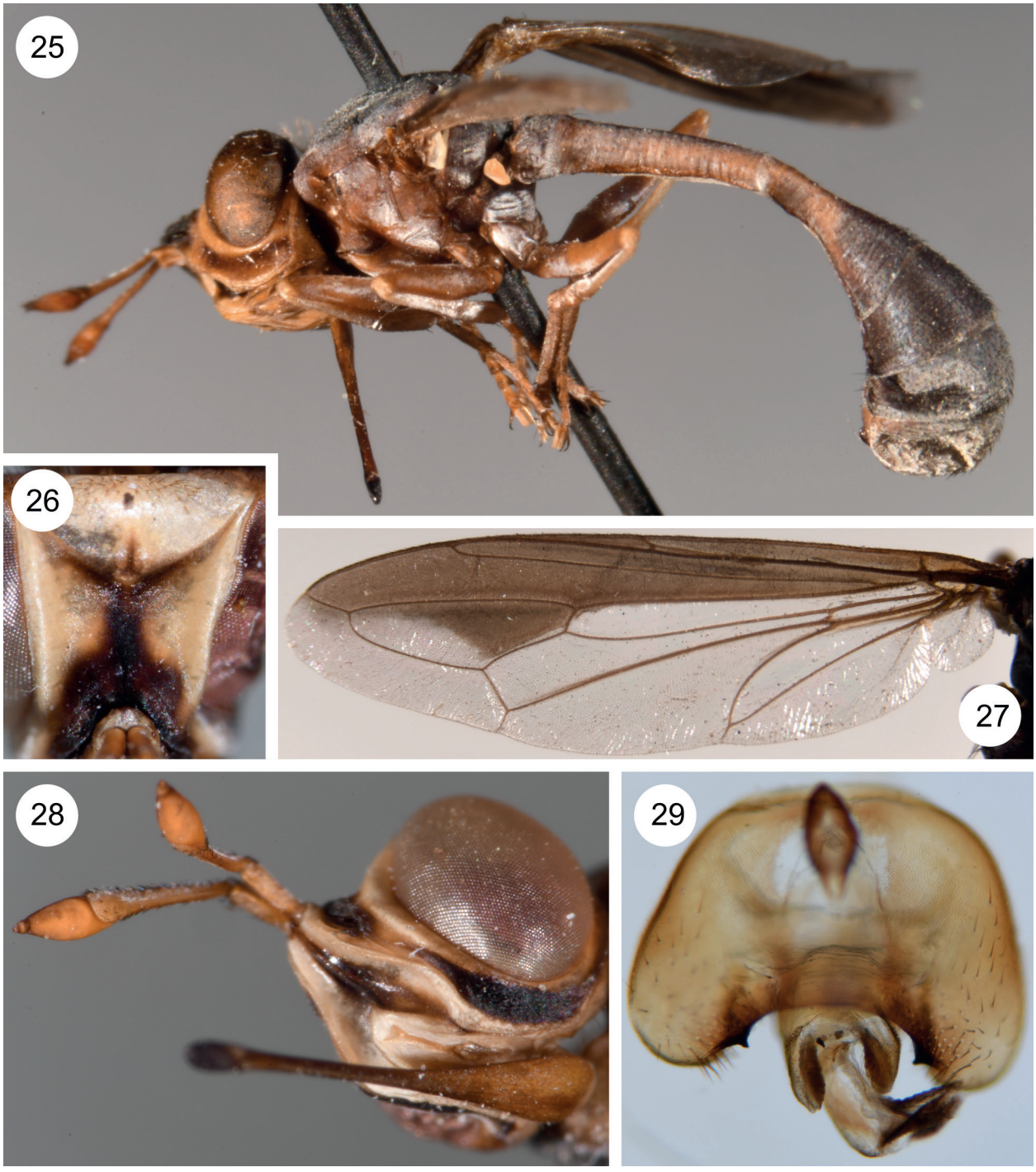
***P. ssymanki* spec. nov.**
(Figs 30–35)
urn:lsid:zoobank.org:act:7476796B-0C67-44D8-AA85-1313BC97B38C

Holotype ♂. (1) "98/99/79"; (2) "visiting white fls / *Brownanthus kuntzei* /(Schinz) Ihlenf. & Bittrich / Aizoeceae: Mesembryanthema"; (3) "Namibia / NW of Cape Cross /21.44S 13.59E/ 14.iii.1999 / F. W. and S. K. Gees; (4) Holotypus / *Physocephala ssymanki* / spec. nov. / 2018". Holotype is deposited in AMGS. The specimen is pinned and in perfect condition.

Description of holotype (male)
Length 11.7 mm; Wing-length 7.0 mm; Head-height 2.6 mm.

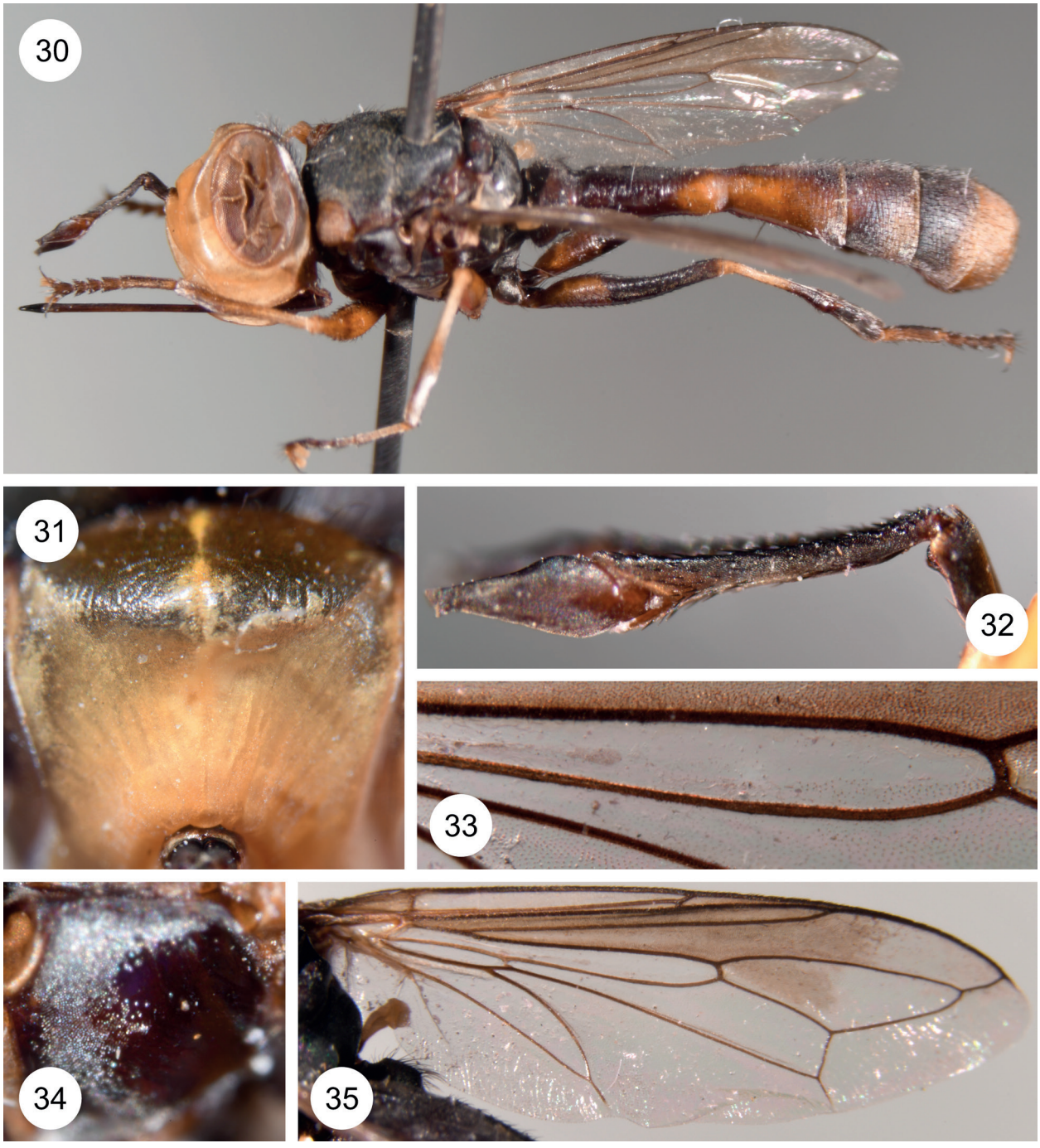
Head. Antenna black, tip of pedicel and base of first flagellomere brown. Arista stylus-like, with 2 aristomeres situated at tip of first flagellomere (Fig. 32). Both aristomeres minute, length of apical aristomere shorter than height. Scape about twice as long as maximum width, apically with black setae. Pedicel about six times longer than maximum width, mainly dorsally and apically covered with black setae. Pedicel lacking any ridge at base, and expanded towards apex. First flagellomere long and conical, about 2.5 times as long as high, pointed, ventrally lacking a membranous area. Lunule between base of antennae and ptilinal suture distinct, shorter than width of scape. Eye brown, lacking ommatrichia, with facets all of about the same size. Posterior margin of eye lacking any shining indentation. Gena height / eye height (measurements taken from head in lateral view) = 0.2. No ocellar tubercle, no ocelli and no ocellar triangle evident. Frons (Fig. 31) broader than long, slightly concave, slightly projecting above eyes posteriorly, and lacking setulae. Anterior margin concave. Frons yellow, with no frontofacial spot and with indistinct dusting all over. Vertex as broad as frons, separated from latter by a more or less distinct ridge. Vertex shining, and in posterior half covered with black setulae; apically with an indistinct depression. Ridge of vertex with minute longitudinal grooves. Face yellow, lacking dusting except for some silver dusting along eye margin. Gena yellow, lacking setae. Distinct facial grooves reaching mouth edge, and facial carina reaching from base of antennae to a distinctly broadened and outstanding frontoclypeal tubercle. Ptilinal suture extending well beneath antennal bases on either side. Oral cavity tapers dorsally. Postcranium not obviously invaginated, black to dark brown. Whole postcranium slightly dusted, with dusting adjacent to posterior margin of eye obviously denser. Occiput and postgena covered with black setulae. Postgena not widened and not delimited from occiput. Bottom portion of postcranium not delimited and not setulose. Proboscis black to reddish-brown, labellum black. Frontoclypeal membrane long, light orange-brown and hardly delimited from orange-brown clypeus. Palps absent. Labium longer than head-length in lateral view, distinctly thickened basally, and with anterior section completely fused into a tube. Labrum not visible in the holotype. Labellum short, completely divided, hardly broader than adjacent haustellum, and covered with very short setulae only.

Thorax mainly black, with pleura black to brown. Postpronotum orange-brown. Thorax grey-dusted all over, with distinct dust-stripe reaching from middle coxa to notopleuron and becoming wider dorsally. Anterior half of anepisternum and posterior half of anepimeron shining (Fig. 34). Presternum distinct, broad. Basisternum broad, ventrally narrowed to a point, lacking setae or setulae. Proepisternum lacking setae or setulae. Scutum covered with small black setae. Notopleuron with several stronger setae. Postalar callus with a few strong, short black setae above several curved setulae. Katepisternum with 2 setae posterodorsally and no setae ventrally. Metakatepisternum lacks setae. Anepimeron with 12 long setulae about as long as maximum width of tibiae. Mediotergite convex, with minute and barely visible black setae. Subscutellum inconspicuous. Scutum covered with scattered small black setae, and with no outstanding setae. Wing as Fig. 35: Fore margin of wing tinged brown, with brown membrane between subcosta and radius R_{4+5}. Cell r_{2+3} hyaline apically and cell r_{4+5} brown basally. Veins brown, subcosta paler brown than radial veins. Wing mostly covered with microtrichia, but with basal cell, basal me-



Figs 25–29. *Physocephala larvata* (Speiser, 1911). **25**. Habitus, lateral view (♂, Vitshumbi); **26**. Frons, dorsal view (♂, Marienhof); **27**. Wing, dorsal view (♂, Vitshumbi); **28**. Head, ventrolateral view (♂, Marienhof); **29**. Epandrium, dorsal view (♂, Marienhof).

dial cell, base of discal-medial cell and base of cubital cell cup lacking microtrichia. Radial-medial crossvein small but complete. Basal-medial-cubital crossvein also complete. Radius R_1 and R_{2+3} terminate close together in costa, well beyond insertion point of subcosta in costa. Radius R_{4+5} with shallow and even curve in distal section directed towards fore-edge of wing. Cell r_{4+5} pedunculate, with vein R_{4+5}+M_1 well expressed and distinctly longer than radial-medial crossvein. Basal cell lacks any thickening. Cubital cell cup elongated, distinctly longer than



Figs 30–35. *Physocephala ssymanki* spec. nov. (holotype). **30**. Habitus, lateral view; **31**. Frons, dorsal view; **32**. Antenna, lateral view; **33**. Basal cell, dorsal view; **34**. Anepisternum, dorsolateral view; **35**. Wing, dorsal view.

vein A_1+CuA_2, and pointed distally (i.e. cubitus CuA_2 and anal vein A_1 meet at an acute angle). Vein A_1+CuA_2 not reaching hind margin of wing. Cubital veins CuA_1 and crossvein distinctly separated. Upper and lower calypters yellowish-white to brown, margin of upper calypter with white setulae. Alula almost square, about as long as broad, lacking setulae on posterior margin. Venae spuriae pronounced in cell r_{4+5} and cubital cell cup. Haltere white, with light brown base. Knob of haltere with brown setulae. Legs orange, with hind femur and hind tibia black

in apical half. Legs with inconspicuous silver dusting or shining, hind coxa densely silver-dusted. Posterior surfaces of fore and middle tibiae with obvious silver-dusted fields distally. Legs generally with short, adpressed black setulae. Base of fore and middle femora basally with denser black setulae. Areas of dense black to brown setulae anteroventrally on tip of fore tibia and ventrally and posteriorly at tip of hind tibia. Middle femur lacking any distinct row of regularly arranged setulae. Hind femur lacking outstanding setulae. No preapical setae dorsally, and no setae ventrally on tibiae. Femora ventrally lacking rows of short black setae. Coxae with several setae, but lacking any outstandingly long ones. Hind femur slightly thickened in basal half. All tibiae thickened in apical half. Each metatarsus with 0–1 stronger seta ventrally at base. Pulvilli yellowish-white. Claws brown, with broad black tips. Empodium light brown, and about as long as pulvilli.

Abdomen orange to dark brown, with diffuse paler markings. Abdomen with short black setulae all over. ♂ abdomen strongly dusted from posterior half of tergite 3 to tip (in anterior view) and almost shining laterally on tergites 1–3. No obvious dusting at hind margin of tergites. Tergites 1–3 fused but remain distinct. Abdomen of holotype not dissected. Tergite 1 with obvious black setulae on bulbous lateral projections. Tergite 2 elongated, about four times as long as smallest width, lacking obvious lateral tufts of setulae. Tergite 3 slightly widened posteriorly, about twice as wide posteriorly than anteriorly. Tergite 5 and sternite 5 separate. Sternite 5 with scattered long black setulae and denser small black setulae forming an indistinct field. Protandrium broader than epandrium and projecting over it. Sternite 8 distinctly delimited from protandrium. Indistinct line of small black setulae at border between sternite 8 and protandrium. Paired cerci distinct, completely sclerotised and covered with scattered setulae. Epandrium not fused behind cerci, but with a slightly sclerotised connection at both sides of epandrium.

Diagnosis
Physocephala ssymanki belongs to the *P. antiqua* species-group and can easily be recognised from the anepimeron, which has several characteristically long setulae which are about as long as the maximum width of the tibiae. The dusting stripe on the pleura obviously contrasts with the shining anepisternum and anepimeron, and becomes wider dorsally (Fig. 34). The hind tibia and femur are black in the apical two-thirds, contrasting with the remaining orange-brown legs (Fig. 30).

Etymology
This species is dedicated to Axel Ssymank (Bonn) who generously loaned numerous Conopidae specimens for this project.

Distribution
To date *P. ssymanki* is only known from the locus typicus on the coast of southern Namibia.

***P. pusilla* (Meigen, 1804)**
(Fig. 36)
Conops pusilla Meigen 1804

Material. CENTRAL AFRICAN REPUBLIC: 1♂ 2♀♀, 4.xii.2010, 60 km w Banibo [3°50′N 16°44′E], 630 m, leg. J. Halada, coll. CULSP.

Afrotropical specimens of this otherwise Palaearctic species have previously caused confusion, and for a long time were suspected of belonging to a different species. Somewhat surprisingly, however, their morphological characters fall within the variability of *P. pusilla* as recently defined by Stuke (2016). *Physocephala pusilla* had not previously been recorded from the Afrotropical Region and was assumed to be a Palaearctic species (Stuke 2017a). Together with *P. antiqua*, *P. vittata* and *Conops elegans* Meigen, 1804, this is the fourth example of a very variable and mainly Palaearctic species with a distribution which extends into the Afrotropical Region.

***Physocephala bimarginipennis* species-group**

Only one distinct Afrotropical species is included in this group, as was also recognised by Camras (2001). *Physocephala bimarginipennis* was previously treated in the genus *Archiphysocephala* Kröber 1939, now synonymised. Identification using the characters given in Key 1 is straightforward.

***P. bimarginipennis* Karsch, 1887**
(Figs 37–41)
Physocephala bimarginipennis Karsch 1887
= *Physocephala gigantea* Kröber, 1936

Primary type material examined. ♀ holotype of *Physocephala bimarginipennis* Karsch, 1887: (1) “Pungo Andongo / A. v. Homayer”; (2) “11031”; (3) “*Physocephala* / *bimarginipennis* / n. sp.”; (4) “Holotypus”; coll. ZMHB.

♂ syntype of *Physocephala gigantea* Kröber, 1936: (1) “Ph. Type / *gigantea*”; (2) “Musée du Congo / Elisabethville / XI-1927 / Dr. M. Bequaert “; (3) “*Physocephala* / *gigantea* / Krb. / det. Kröber 1935”; (4) “R. DÈT / V / 2992”; (5) “Typus”; (6) “RMCA ENT / 000012173”; coll. MRAC.

♂ syntype of *Physocephala gigantea* Kröber, 1936: (1) “Paratype / *Ph. gigantea*”; (2) “Musée du Congo / Kivu: Musingiro / 8-IX-1927 / Ch. Seydel”; (3) “Musinglro [si] / 8 Sept. 1927 / Ch. Seydel”; (4) “*Physocephala* / *gigantea* Krb. / det. Kröber 1935”; (5) “R. DÈT / W / 2992”; coll. MRAC.

Fig. 36. Habitus of *Physocephala pusilla* (Meigen, 1804) (♂, w Banibo).

Additional material. DEMOCRATIC REPUBLIC OF CONGO: 1♀, 8.vii.1937, Bambesa, det. as *P. gigantea* by Janssens 1954, leg. J. Vrydagh, coll. MRAC; 1♀, vi.1932, Eala, det. as *P. bimarginipennis* by Camras 1962, leg. A. Corbisier, coll. MRAC; 1♀, 5.iii.1954, North Kivu Province, Lac Vert, forêt route Goma – Sake, leg. J. Verbeke, coll. ISNB; ETHIOPIA: 1♀, 4.xii.2014, Bonga Waldsaum, 1628 m [07°11.87′N 036°15.13′E], *Bothriocline schimperi*, leg. H.-J. Flügel, coll. PHJF; 1♂, viii.2019, Bonga, Kafa Development Association Guesthouse [7°14’59.14’’N 36°15’12.26’’E], leg. T. Kirschey, coll. PJHS; KENYA: 1♀, 16.xi.1967, Nairobi, ex *Xylocopa flavorufa* found dead 23.ix.1967 Green Office Colony, [collector unknown], coll. NHML; 1♀, 9.–23.v.2006, Coast Province, Shimba Hills National Park, near artificial Ponds [4.22752°S 39.43197°E], 335 m, mixed grass-shrub-land, Malaise trap, leg. R. Copeland, coll. NMKE; SOUTH AFRICA: 1♀, 1.–3.iv.2001, Mpumalanga Province, Blyderevierspoort NP [24°39′S 30°50′E], leg. D. J. Greathead, coll. ZMHB; TOGO: 1♂, ii.2017, Kloto, forest area [6°57’31.66’’N 0°34’29.75’’E], leg. G. Goergen, coll. IITA; 1♀, xii.2016, ditto; 1♀, x.2001, ditto; UGANDA: 1♂, 22.vii.1966, Kwanda, ex ♂ *Xylocapa rufa*, leg. D. J. Greathead, coll. NHML; 1♀, 12.iii.2012, Western Uganda, n Fort Portal Kijura, forest edge [N302540 E004731], leg. Oehlke, coll. PASS.

Physocephala caenoneura species-group

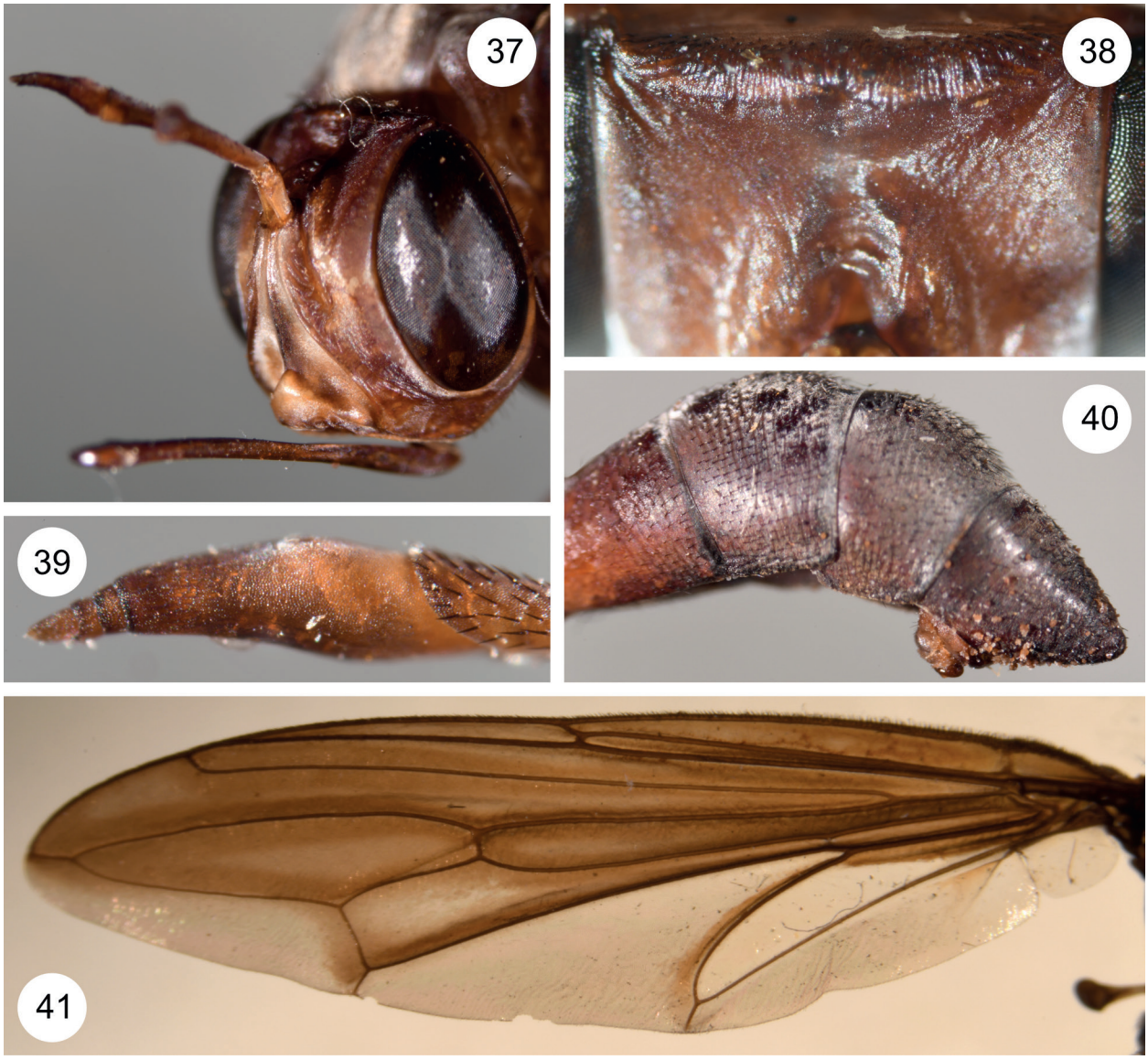
Species belonging to this group were previously included together with other species in the *Pseudophysocephala nigritarsis* species-group of Camras (2001). This caused some confusion because these species may have both a distinct vena spuria which is well separated from radius R_{4+5}, and short apical abdominal segments, thus potentially appearing to fall within his *Pseudophysocephala vitripennis* and *Pseudophysocephala platycephala* species-groups respectively.

Females of the *caenoneura* species-group are easily recognised by the normally developed, usually adpressed theca and short tergites 5 and 6. From outside the *caenoneura* group, only *P. microvena* and *P. pseudomicrovena* share this combination of characters but are easily recognised as belonging to the *Physocephala microvena* species-group by the lack of a vena spuria in cell $r_{4+5,}$ and typically also by the reduced or absent radial-medial crossvein. Males of *caenoneura* group can be more difficult to assign, however, the elongated basal aristomere and less modified wing venation being the only characters which reliably distinguish them from males of the *microvena* species-group. All members of this group are restricted to the Afrotropical Region.

Key 4 – Identification of the *Physocephala caenoneura* species-group

1. Basal cell completely hyaline and almost completely lacking microtrichia, or with only very short microtrichia which are hardly visible and much less obvious than those on the remaining wing (e.g. Fig. 53); base of cell r_{2+3} hyaline; hind femur at most with an indistinct dark spot **2**

– Basal cell at least with some dark colouration and sometimes completely black or brown, and almost completely covered with microtrichia similar to those on the remainder of the wing (e.g. Fig. 59); cell r_{2+3} completely brownish infuscated (e.g. Fig. 59); hind femur may have a distinct blackish ring



Figs 37–41. *Physocephala bimarginipennis* Karsch, 1887 (♂, Kawanda). **37**. Face, frontal view; **38**. Frons, dorsal view; **39**. Arista, lateral view; **40**. Tip of ♂ abdomen, lateral view; **41**. Wing, dorsal view.

which is sharply demarcated from the orange-brown colouration..... **3**

2. Tarsi orange-brown, not contrasting with tibiae; apical aristomere typically less than half length of projection on basal aristomere (Fig. 48); antennae completely orange-brown (Fig. 47); gena usually brownish, contrasting with yellow face (Fig. 47); ♀ theca short in side view, distinctly shorter than wide ..... ***P. braunsi*** **(Kröber, 1931)**

– Tarsi dark brown, contrasting with brown tibiae (Fig. 51); apical aristomere more than half as long as projection on basal aristomere (Fig. 50); antennae black to brown, with a contrasting orange-brown scape (sometimes faded in old specimens) (Fig. 50); gena usually yellow, like the face; ♀ theca long, almost as long as wide (Fig. 54)..... ..... ***P. caenoneura*** **Kröber, 1939**

3. Projection of basal aristomere elongated, about twice as long as apical aristomere (Fig. 58); radial veins dark brown (Fig. 59); basal cell only slightly darkened, obviously paler than cell r_{2+3} (Fig. 59)..... ..... ***P. capensis*** **Kröber, 1931**

– Projection of basal aristomere not as elongated, not much longer than apical aristomere (e.g. Figs 44, 61, 65); radial veins sometimes light orange-brown; basal cell mostly as dark as cell r_{2+3} (e.g. Fig.

45); base of cell r_{4+5} and usually apex of basal cell hyaline, and therefore radial-medial crossvein within a hyaline patch (e.g. Fig. 60)..... **4**

4. Characteristic dark mark at junction of discal medial-cubital crossvein and media (Fig. 60); ♀ theca obviously short, with about 7 interrupted rows of black setae. ..... ***P. fenestralis* (Kröber, 1939)**
– Wing colouration different, lacking dark mark at junction of discal medial-cubital crossvein and media, nor with hyaline spot surrounding radial-medial crossvein; ♀ theca longer, with more than 15 interrupted rows of black setae (e.g. Figs 43, 64) ... **5**

5. At least base of media and subcosta light yellowish-brown; scutum orange-brown, with three elongated blackish spots (Fig. 63); katepisternum orange-brown; ♀ with black setulae on theca less dense, not obscuring underlying surface (Fig. 64) .... ***P. rufitarsis* (Camras, 1962)**
– Veins uniformly dark brown; scutum mainly blackish, with no distinct spots (Fig. 42); katepisternum mainly black; ♀ with black setulae on theca denser, largely obscuring underlying surface (Fig. 43) ....***P. afenestralis* (Camras, 2001)**

***P. afenestralis* (Camras, 2001)**
(Figs 42–45)
Pseudophysocephala afenestralis Camras 2001

Material. SOUTH AFRICA: 1♀, 20.–24.xi.2014, KwaZulu-Natal Province, Royal Natal National Park, Gudu Bush falls [28°40.925′S 28°55.778′E], 1628 m, Malaise trap in indigenous afromontane forest, leg. A. H. Kirk-Spriggs & E. Letsobe, coll. BMSA.

***P. braunsi* (Kröber, 1931)**
(Figs 46–49)
Physocephala braunsi Kröber 1931

Material. SOUTH AFRICA: 1♂, 15.iv.1948, Marieps Mountain, det. as *P. braunsi* by Camras 2000, leg. G. van Son., coll. FMNH; 1♂, xi.1933, Cape Province, Swellendam, det. as *P. platycephala* by Kröber 1938, det. as *P. braunsi* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922151]; ZIMBABWE: 1♀, 7.xii.1976, Salisbury [= Harare] [17.84 31.05], leg. P. E. Hulley, coll. AMGS.

We are not convinced that the characters used to distinguish *P. braunsi* from the very similar *P. caenoneura* merit separate species status, but the few specimens which are available can be segregated using the characters given in Key 4.

***P. caenoneura* (Kröber, 1939)**
(Figs 50–54)
Pseudophysocephala caenoneura Kröber 1939
= *Pseudophysocephala stylata* Kröber 1939

Primary type material examined. ♀ holotype of *Pseudophysocephala caenoneura* Kröber 1939: (1) "Type"; (2) "Nyassa-See / Langenburg / 26.VII.–8.VIII. 98 / Fülleborn S."; (3) "Typus"; (4) "*Pseudophysocephala* / *stylata* Kb. / det. Kröber 1938"; (5) "Zool. Mus. / Berlin"; coll. ZMHB.

1 ♂ holotype of *Pseudophysocephala stylata* Kröber 1939: (1) "Type"; (2) "Nyassa-See / Langenburg / 1.–26. VII.98 / Fülleborn S."; (3) "Typus"; (4) "*Pseudophysocephala* / *stylata* Krb."; (5) "Zool. Mus. / Berlin"; (6) "*Pseudophysocephala* / *caenoneura* Kröber / det. Camras 1999"; coll. ZMHB.

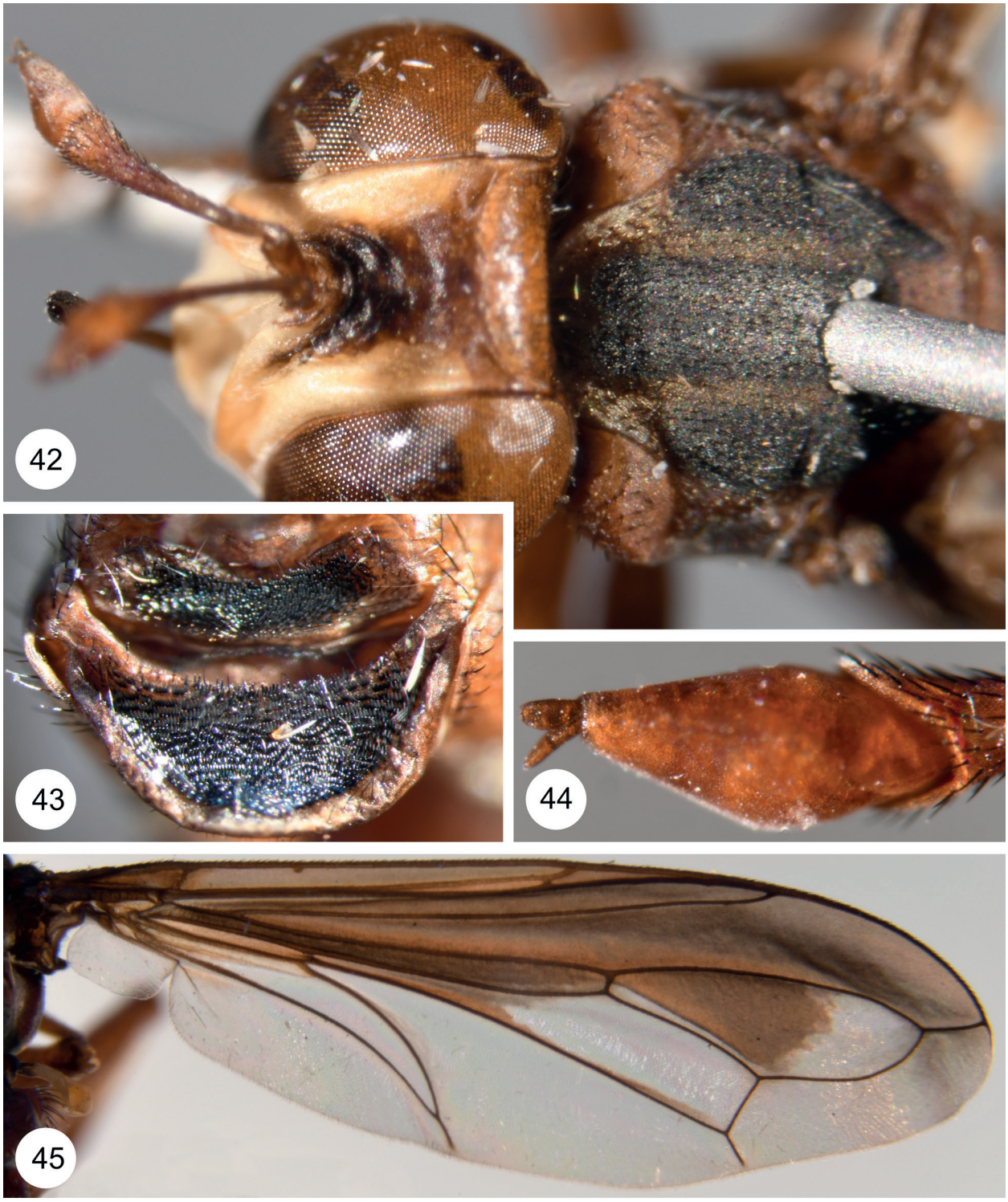
Additional material. KENYA: 1♀, 2.iii.1993, Ilrad, w Nairobi, 1900 m, leg. B. Merz, coll. TAUI; 1♀, 10.viii.2004, near Karura Forest, Nairobi [1°14.829'S 36°48.953'E], leg. R. Copeland, coll. NMKE; TANZANIA: 1♂ 1♀, 4.ii.1977, Amani, East Usambara, 1000 m, det. as *P. caenoneura* by Camras 1999, leg. H. Enghoff, O. Lomholdt, O. Martin, coll. FMNH; 1♂, 10.iii.1963, Kilimajaru, Weruweru, det. as *P. caenoneura* by Camras 1999, leg. D. J. Greathead, coll. NHML [NHMUK010922144]; 1♂, 20.iv.1966, plains e Arusha, det. as *P. caenoneura* by Camras 1999, leg. D. J. Greathead, coll. NHML [NHMUK010922145]6.

***P. capensis* Kröber, 1931**
(Figs 55–59)
Physocephala capensis Kröber 1931

Material. SOUTH AFRICA: 1♂, 25.ii.2016, Barberton, Mpumalanga [25°10′18″S 30°56′45″E], 1400 m, leg. A. Ssymank, coll. PASS; 1♀, 4.–7.xi.1931, Cape Province, George, det. as *P. capensis* by Kröber, leg. H. P. Thommaset, coll. NHML [NHMUK010922135]; 1♀, 23.ix.2007, Eastern Cape Province, Zuurberg [33°21′S 25°44′E], leg. C. Turnbull, coll. AMGS; 1♀, 15.xii.2012, KwaZulu-Natal Province, Kwela Lodge, Pietermaritzburg [29°29′34″S 30°21′40″E], 930 m, leg. G. Ståhls, coll. PASS; 1♂, 15.x.2003, Western Cape Province, Humansdorp [34°1′60S 24°46′0E], 114 m, leg. C. Hepburn, coll. AMGS.

***P. fenestralis* (Kröber, 1939)**
(Figs 60–62)
Pseudophysocephala fenestralis Kröber 1939

Primary type material examined. 1 ♂ syntype of *Pseudophysocephala fenestralis* Kröber 1939: (1) "Type"; (2) "Nyassa-See / Langenburg / 14.V.1999/ Fülleborn S."; (3) "Typus"; (4) "*Pseudophysocepha-*



Figs 42–45. *Physocephala afenestralis* (Camras, 2001) (♀, Royal Natal National park). **42**. Frons and scutum, anterodorsal view; **43**. Theca, ventral view; **44**. Arista, lateral view; **45**. Wing, dorsal view.

la / *fenestralis* Krb. /det. Kröber 1938"; coll. ZMHB.

1♀ syntype of *Pseudophysocephala fenestralis* Kröber 1939: (1) "Syn- / type"; (2) "George, Cape Province, / 27.VI.–1.VII.1920."; (3) "S. Africa / R. E. Turner. / 1920-

Figs 46–49. *Physocephala braunsi* Kröber, 2001 (♂, Marieps Mnt.). **46**. Habitus, lateral view; **47**. Head, lateral view; **48**. Aristomeres, lateral view; **49**. Wing, ventral view.

318."; (4) "*Pseudophysocephala* / *fenestralis*, Krb. / examined & det. / O. Krober, 1938."; (5) "*Pseudophysocephala* / *fenestralis* / Krb"; coll. NHML.

Additional material. TANZANIA: 1♀, 20.viii.1980, Mt. Rungwe, sw, 1900 m, det. as *P. fenestralis* by Camras 2000, leg. M. Stoltze, N. Scharff, coll. FMNH; 1♀, 16.ii.1952, Njombe, 6000–6500 ft, det. as *P. fenes-*

Figs 50–54. *Physocephala caenoneura* (Kröber, 1939) (♀, Nairobi). **50**. Antenna, lateral view; **51**. Leg with tarsi, dorsal view; **52**. Frons, dorsal view; **53**. Wing, dorsal view; **54**. Theca, posterior view.

tralis by Camras 1999, leg. W. Peters, coll. NHML [NHMUK010922142].

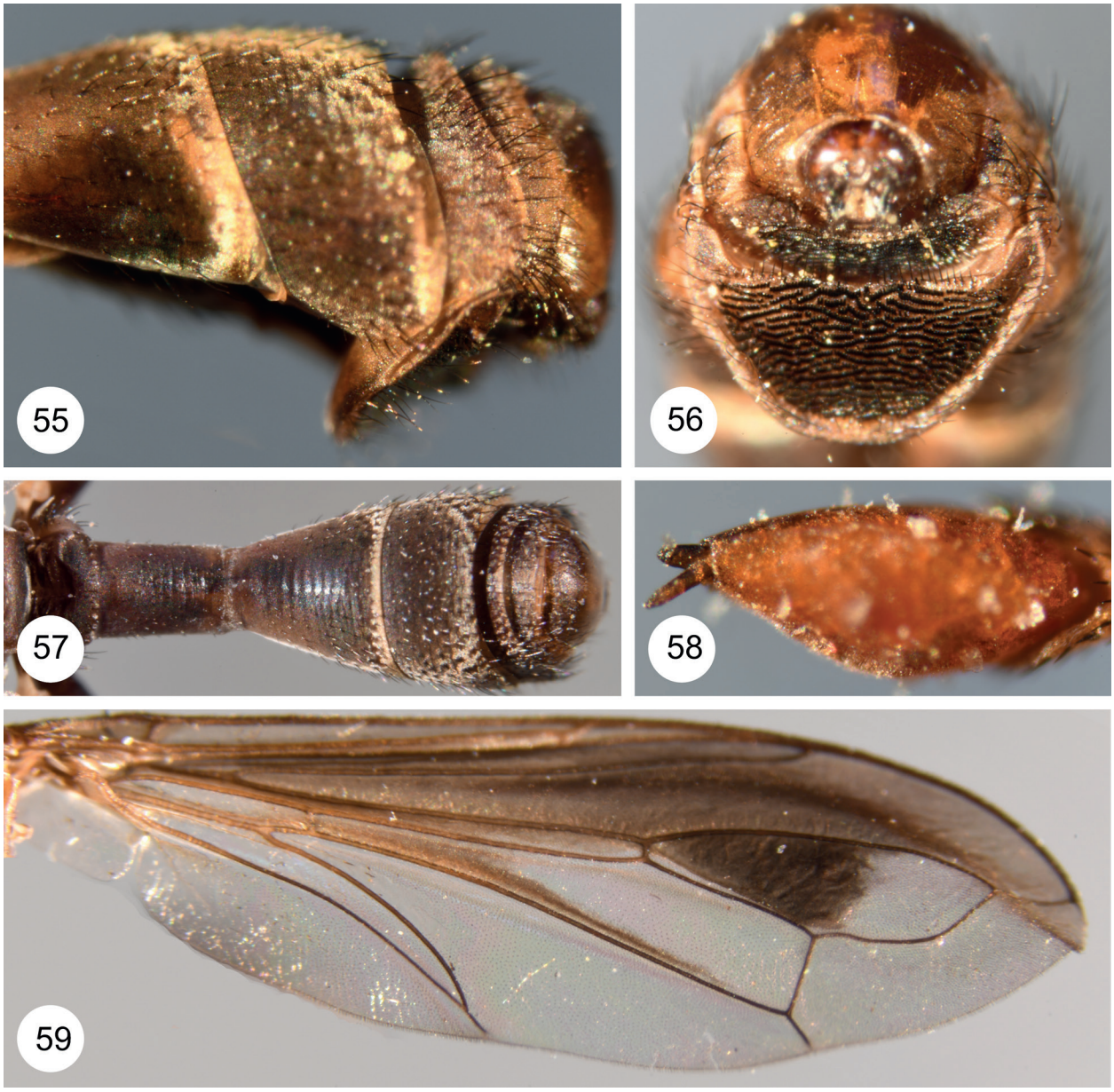
***P. rufitarsis* (Camras, 1962)**
(Figs 63–65)
Pseudophysocephala rufitarsis Camras 1962

Primary type material examined. ♀ holotype of *Pseudophysocephala rufitarsis* Camras 1962: (1) "Holo- / type"; (2) "S. Africa. / R. E. Turner / Brit. Mus. / 1933-108."; (3) "Holotype ♀ / *Pseudophysocephala* / *rufitarsis* / Camras"; (4) "*Pseudophysocephala* / *platycephala* Loew / examined & det. / O. Kröber. 1938"; (5) "E. Cape Prov. / Katberg. / 15–30.i.1933."; (6) "BMNH(E)# / 249149"; coll. NHML

Additional material. SOUTH AFRICA: 1♂, i.1953, Natal, Hilton Road, det. as *P. rufitarsis* by Camras 2000, leg. P. Graham, coll. NHML [NHMUK010922159]; 1♂, xi.1930, Cape Province, Somerset East, det. as *P. platycephala* by Kröber 1938, det. as *P. rufitarsis* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922162]; 2♂♂, 19.x.1994, Cape Province, Tsitsikama National Park, Storms River Pass [33°59′S 23°55′E], leg. R. Danielsson, coll. MZLU; 1♀, 1.–10.1932, Eastern Cape Province, Katberg, det. as *P. platycephala* by Kröber 1938; det. as P. *rufitarsis* by Camras, 2000, leg. R. E. Turner, coll. NHML [NHMUK010922189]; 1♀, 1.–10.1932, Eastern Cape Province, Katberg, det. as *P. platycephala* by Kröber 1938; det. as *P. rufitarsis* by Camras, 2000, leg. R. E. Turner, coll. NHML [NHMUK010922190]; 1♂, 11.–18.ii.1933, Eastern Cape Province, Katberg, det. as *P. platycephala* by Kröber, 1938, det. as *P. rufitarsis* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922158]; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *P. platycephala* by Kröber 1938, det. as *P. rufitarsis* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922160]; 1♂, 1.–12.iii.1933, Eastern Cape Province, Katberg, det. as *P. platycephala* by Kröber 1938, det. as *P. rufitarsis* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922161]; 1♀, 15.–30.i.1933, Eastern Cape Province, Ratberg, det. as *P. platycephala* by Kröber 1938, det. as *P. rufitarsis* by Camras 2000, leg. R. E. Turner, coll. FMNH.

***Physocephala halterata* species-group**

Camras (1962b) originally placed *P. congoensis* and *P. halterata* in his *Physocephala halterata* species-group and *P. acroschista* – very probably misidentified – in his *Pseudophysocephala vitripennis* group. This species-group is easily recognised by the velvety black



Figs 55–59. *Physocephala capensis* Kröber, 1931. **55**. Theca, lateral view (♀, Zuurberg); **56**. Theca, posterior view (♀, Zuurberg); **57**. ♀ abdomen, dorsal view (♀, Zuurberg); **58**. Arista, lateral view (♀, Zuurberg); **59**. Wing, dorsal view (♀, Kwela lodge).

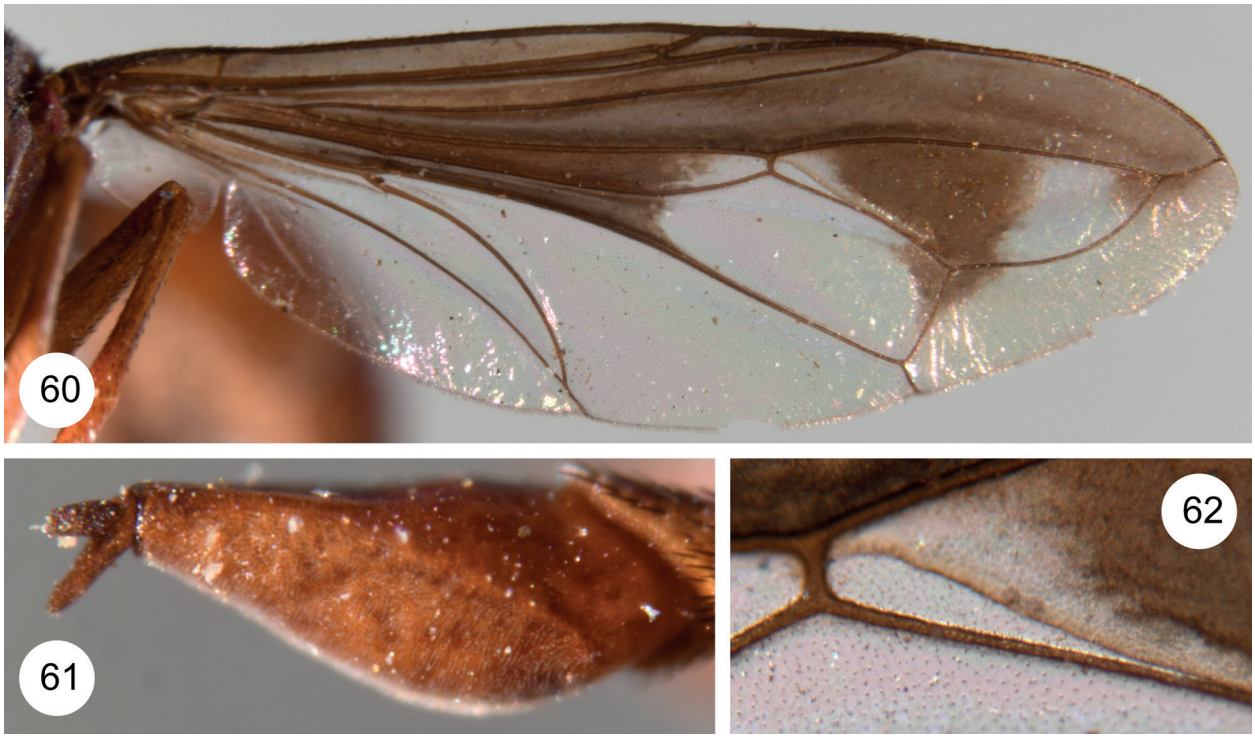
halteres. Members of the *Physocephala halterata* species-group can be identified using Key 5 below. All members of this species-group are restricted to the Afrotropical Region.

Key 5 – Identification of the *Physocephala halterata* species-group

1. Frons orange-brown, lacking any distinct blackish marking (Fig. 68); gena and facial groove orange to black (Fig. 67); at least postpronotum orange-brown; femora orange-brown .... ***P. halterata* Brunetti, 1925**

– Frons with obvious blackish marking, or completely black (e.g. Fig. 66); gena and facial groove more or less black (e.g. Fig. 66); thorax including postpronotum black to dark brown; femora black .. **2**

2. Frons almost completely black (Fig. 66); gena brown to black ..... ***P. congoensis* Kröber, 1936**



Figs 60–62. *Physocephala fenestralis* (Kröber, 1939) (holotype). **60**. Wing, dorsal view; **61**. Arista, lateral view; **62**. Wing, vena spuria in cell r_{4+5}, lateral view.

– Frons black in basal half, and with a black medial line reaching the lunule; gena yellow, with small brown markings..... ***P. acroschista*** **(Speiser, 1911)**

P. acroschista **(Speiser, 1911)**
Conops (Physocephala) acroschistus Speiser 1911

Primary type material examined. ♂ holotype of *Conops acroschista* Speiser, 1911: (1) "Holo- / TYPE"; (2) "Musée du Congo / Kasaï: Kondué / E. Luja"; (3) "R. DÉT / B / 1477"; (4) "Type! / *Conops* (*Physocephala)* / *acroschistus* m. / P. Speiser det."/; (5) "RMCA ENT / 000012172"; coll. MRAC.

The holotype reported here fits in all aspects to the original description and there is no reason to assume that it is not the type specimen, although according to the original description this should be in the Museum d'Histoire Naturalle du Grand-Duchy de Luxembourg (MGDL). Camras (2001) reported concerning a specimen in the MGDL as follows: "The unidentified holotype of *acroschista* was finally found by J. M. Guinet and he informed me that Luja was the collector." The specimen reported by Camras (2001) was a female, however, whereas in the original description it was explicitly stated that the type was a male, and a male is described. Evidently there are more than one specimen bearing the same labels, which led to the misinterpretation of the female specimen in the MGDL. Camras placed the species in his *Pseudophysocephala vitripennis* species-group, having presumably misinterpreted the species due to this wrongly labelled specimen. The synonymy of *P. intermedia* Kröber, 1936 and *P. acroschista* which was introduced by Camras (2001) is therefore invalid and *P. acroschista* should be treated as valid species (**status rev.: valid species**).

P. congoensis **Kröber, 1936**
(Fig. 66)
Physocephala halterata Brun. var. *congoënsis* Kröber 1936

Primary type material examined. ♂ syntype of *Physocephala halterata* Brun. var. *congoënsis* Kröber, 1936: (1) "Ph. Type ♂ / *halterata* var / *congoensis*"; (2) "Musée du Congo / Bambesa / 15-IX-1933 / H. J. Bredo"; (3) "*Physocephala* ♂ / *halterata* Brun. / var. *congoensis* / Krb / det. Kröber 1935"; (4) "R. DÉT" / P / 2992"; (5) "Typus"; (6) "RMCA ENT / 000012174"; coll. MRAC.

♀ syntype of *Physocephala halterata* Brun. var. *congoënsis* Kröber, 1936: (1) "*Ph*. Type ♀ / *halterata* var / *congoensis*"; (2) "Musée du Congo / Bambesa / 25-IX-1933 / H. J. Bredo"; (3) "*Physocephala* ♀ / *halterata* Brun. / v. *congoensis* Krb / det. Kröber 1935"; (4) "R. DÉT" / Q / 2992"; (5) "Typus"; coll. MRAC.

Figs 63–65. *Physocephala rufitarsis* (Camras, 1962) (♀, Katberg). **63**. Head and scutum, dorsal view; **64**. Theca, posterior view; **65**. Antenna, lateral view.

Additional material. BURUNDI: 1♂ 1♀, 15.i.1950, Bururi, 1900 m, leg. F. J. François, coll. ISNB; 1♀, 26.v.1949, Bururi Province, Bururi, 1950 m, leg. F. J. François, coll. ISNB; 1♂, 15.v.1949, Bururi Province, Bururi, 2050 m, leg. F. J. François, coll. ISNB; DEMOCRATIC REPUBLIC OF CONGO: 1♀, 21.–27.viii.1931, Tshibinda [-0.287 28.776], det. as *P. congoensis* by Camras 2000, leg. J. Ogilvie, coll. NHML [NHMUK010922105]; 1♂, 5.ii.1949, North Kivu Province, Gishari, Territory Masisi, 2300 m, leg. F. J. François, coll. ISNB; EQUATORIAL GUINEA: 1♀, 15.–31.i.1907, Uelleburg, Benitogebiet, det. as *P. congoensis* by Camras 2000, leg. G. Tessmann, coll. ZMHB.

Physocephala congoensis is very similar to *P. halterata* and *P. acroschista*, and all three species could be interpreted as colour morphs of a single species. As Camras (2001) pointed out before, however, the few specimens which are available can be consistently segregated using the characters given in Key 5.

P. halterata Brunetti, 1925

(Figs 67–70)

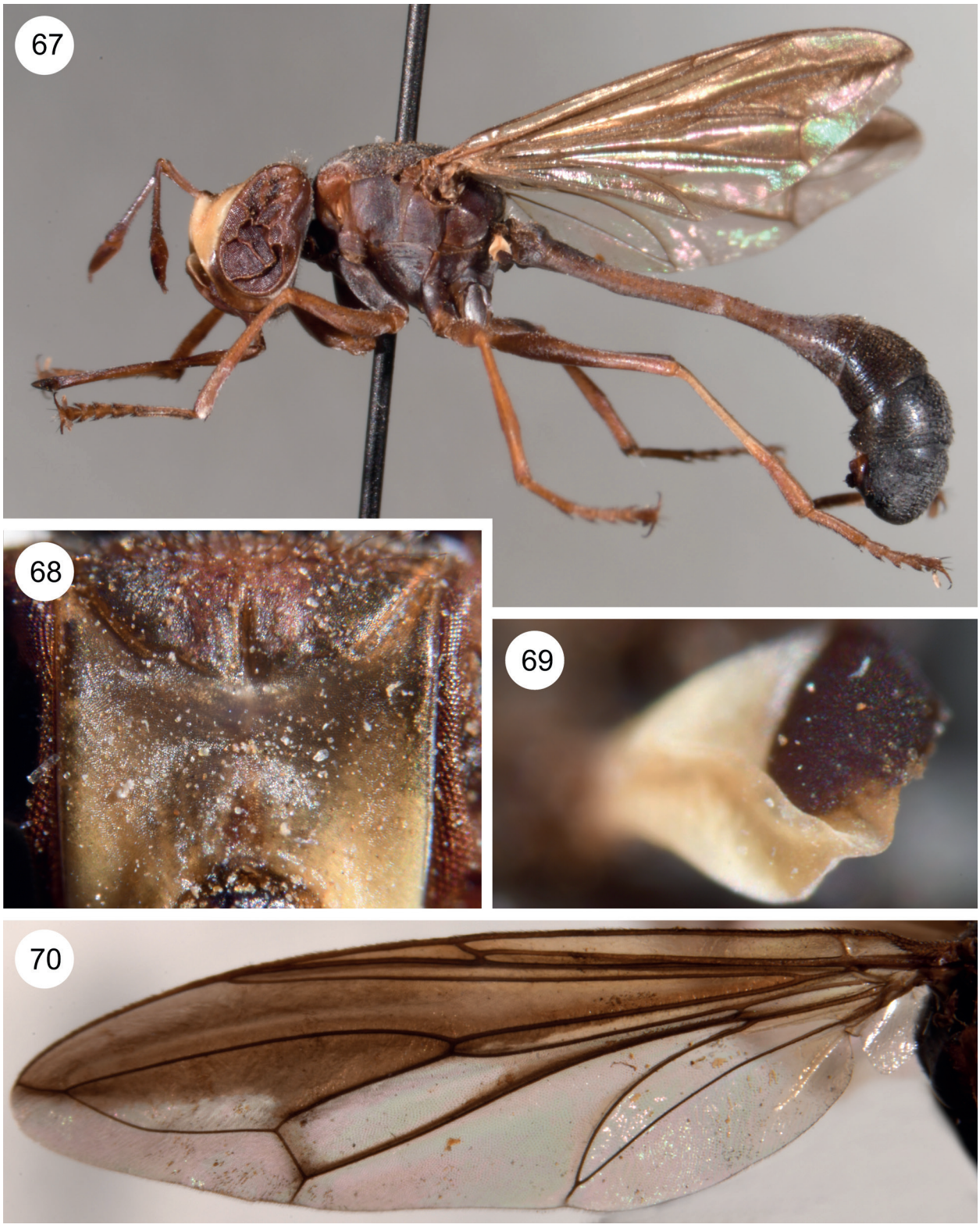
Physocephala halterata Brunetti 1925

Primary type material examined. ♀ holotype of *Physocephala halterata* Brunetti 1925: (1) “Holo- / type”; (2) “S. Africa.”; (3) “Umbilo / 17.X.15”; (4) “Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924-306.”; (5) “Durb / Mus”; (6)

Fig. 66. Head of *Physocephala congoensis* Kröber, 1936, anterolateral view (♂, Bururi).

"*Physocephala* / *halterata* / Brun Type ♀"; (7) BMNH(E)#/ 249078; coll. NHML

Additional Material. BURUNDI: 1♀, 23.iv.1955, Gitega [=Kitega], 1700 m, leg. F. J. François, coll. ISNB; DEMOCRATIC REPUBLIC OF CONGO: 1♀, 6.iii.1948, Katanga Province, Mukana, Lusinga, 1810 m, leg. G. F. de Witte, coll. ISNB; 1♀, 15.iii.1948, ditto; ETHIOPIA: 1♀, 4.xii.2014, Bonga Waldsaum, 1628 m [07°11.87′N 036°15.13′E], *Bothriocline schimperi*, leg. H.-J. Flügel, coll. PHJF; KENYA: 1♀, 25.ix.2005, Kericho junction [0°23′S 35°16′E], 1530 m, leg. L. Friedman, coll. TAUI; 1♂, 23.v.1910, Muguga, det. as *P. halterata* by Camras 2000, [collector unknown], coll. NHML [NHMUK010922109]; 1♀, vii.1937, Nairobi, det. as *P. halterata* by Camras 2000, leg. V. G. L. van Someren, coll. NHML [NHMUK010922121]; 1♂, vii.1937, Nairobi, leg. van Someren, coll. NHML [NHMUK010922111]; LESOTHO: 1♂, 30.xii.1950, Mamathes [-29.136617 27.845796], leg. C. Jacot-Guillarmod, coll. AMGS; 1♀, 4.xi.1951, ditto; 2♂♂, 9.xi.1951, ditto; 1♂, 11.xi.1951, ditto; 2♀♀, 3.ii.1952, ditto; 1♂, 15.ii.1952, ditto; 1♀, 11.xi.1952, ditto; 2♂♂, 23.xi.1952, ditto; 1♂, 14.xi.1954, ditto; SOUTH AFRICA: 1♂, 1906, Transvaal, leg. A. J. Cholmley, coll. NHML [NHMUK010922113]; 1♀, 6.–7.i.1993, Cape Province, Cape of Good Hope Nat. Res., leg. F. Koch, coll. ZMHB; 1♂, 12.xi.1952, Cape Province, Grahamstown, leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 23.i.1970, Cape Province, Grahamstown, Belmont Valley, on flowering *Foeniculum vulgare* Mill., leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, i.1922, Cape Province, Mossel Bay, det. as *P. halterata* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922114]; 1♀, iv.1933, Cape Province, Mossel Bay, det. as halterata by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922117]; 1♀, 1.–14.xi.1921, Cape Province, Mossel Bay, det. as *P. halterata* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922120]; 1♀, 22.iii.1939, Cape Province, Mossel Bay, det. as *P. halterata* by Camras 1962, leg. R. E. Turner, coll. NHML [NHMUK010922124]; 1♂, 29.i.–5.ii.1924, Eastern Cape Province, Port St. John, Bondoland, det. as *P. halterata* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922115]; 1♀, 6.–25.ii.1924, Eastern Cape Province, Port St. John, Bondoland, det. as *P. halterata* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922119]; 1♀, ii.1927, Free State Province, Harrismith, det. as *P. halterata* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922118]; 1♀, 10.x.2004, Gauteng Province, Benoni [26°08′S 28°23′E], leg. C. Midgley, coll. AMGS; 1♂, ii.1897, Natal Province, Karkloof, [collector unknown], coll. NHML [NHMUK010922110]; 1♀, 25.–31.iii.2001, Northern Province, Lekgalameetse Reserve [24°12′S 30°20′E],



Figs 67–70. *Physocephala halterata* Brunetti, 1925 (♂, Mamathes). **67**. Habitus, lateral view; **68**. Frons, dorsal view; **69**. Haltere, lateral view; **70**. Wing, dorsal view.

leg. F. Koch, coll. ZMHB; TANZANIA: 1♂, end of xii.1898 to end of i 1899, Nyasasee, Langenburg [?= Tukuyu], det. as *P. congoensis* by Camras 2000, leg. S. Fülleborn, coll. ZMHB; 1♀, 24.xi.1963, Iringa Region, Ulete, det. as halterata by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922122]; UGANDA: 1♂, 13.ii.1966, Lake Nabugabo, leg. D. J. Greathead, coll. NHML [NHMUK010922112]; ZIMBABWE: 1♂, 10.1926, Chirinda Forest, det. as *P. halterata* by Bryant, leg. G. Arnold, coll. NHML [NHMUK010922116]; 1♀, 16.–18.iii.2001, Vumba Mountain, Botanical Garden [19°07′S 32°47′E], leg. F. Koch, coll. ZMHB; UNKNOWN LOCATION: 1♀, 25.v.1901, [characters illegible], det. as *P. halterata* by Kröber 1938, [collector unknown], coll. NHML [NHMUK010922123].

***Physocephala microvena* species-group**

This species-group combines some of the species which were variously placed by Camras (2001) in his *Pseudophysocephala nigritarsis*, *Pseudophysocephala platycephala* and *Physocephala simplex* species-groups. Members of this group cannot be defined by single characters but by a combination of characters as set out in Key 1. A reduced or absent radial-medial crossvein, and therefore either a reduced vena spuria or a vena spuria that lies very close to the radius R_{4+5}, is typical, however. Almost always there is no hyaline wing membrane between the vena spuria and radius R_{4+5} and the aristomeres are elongated, with the apical aristomere usually towering over the basal aristomere. The group contains some very difficult species, several of which can readily be confused with members from other species-groups, and more material is necessary in order to understand the full variability of the species. All members of this group are restricted to the Afrotropical Region.

Key 6 – Identification of the *Physocephala microvena* species-group

1. Face with deep black stripe extending from antennal base to mouth edge, clearly separated from yellow lateral part of facial groove (e.g. Fig. 92); hind femur with a wide blackish ring in apical half, fore and middle femora with distinct black spots (e.g. Fig. 91); dusting stripe on pleura not evident; vertex almost entirely covered with long setulae and with a roughened surface, although lacking longitudinal grooves; margin of scutum and scutellum light orange to brown (e.g. Fig. 91); cell r_{2+3} completely brown (e.g. Fig. 93)..... **2**

– Face sometimes black but never with such a distinct and deep black stripe; femora without such black markings; other characters variable but never in the above combination **3**

2. Discal-medial-cubital crossvein not completely surrounded by brown colouration (Fig. 93); radial-medial crossvein usually absent, radius and media fused (Fig. 93); scape and pedicel light orange (Fig. 91); tarsi concolourous with tibiae, orange-brown (Fig. 91); proboscis completely orange to brown, lacking contrasting black labellum (Fig. 91); scutum anteriorly with submedial pair of dull lines caused by microtrichia; ♂ tergites 3–5 densely dusted (anterior view), tergite 2 densely dusted (posterior view) and with a complete dusting band at its hind margin; ♂ epandrium with isolated black tooth submedially on posterior margin ..... ***P. kroeberi* nom. nov.**

– Discal-medial-cubital crossvein completely surrounded by brown colouration; radial-medial crossvein developed, radius and media therefore separated; scape and pedicel mainly black to dark brown; tarsi distinctly darker than tibiae; proboscis black in apical half; scutum anteriorly lacking submedial pair of dull lines caused by microtrichia; ♂ tergite 3 only lightly dusted, tergite 2 lacking dusting band at hind margin; no obvious black tooth submedially on posterior margin of ♂ epandrium..... ***P. discalis* (Camras, 1962)**

3. ♂ narrow base of abdomen (from tergite 1 to end of parallel-sided anterior part of tergite 3, Fig. 75) only about half as long as the broad apical part of the abdomen; ♀ unknown ..... ***P. brevipetiola* (Camras, 1962)**

– Narrow base of abdomen (as measured above, e.g. Figs 78, 94) more than half as long as the broad apical part of the abdomen **4**

4. ♂ abdominal segments short, hind margin of tergite 3 almost as long as lateral margin (e.g. Fig. 78); ♂ tergites 4–5 densely dusted (anterior view); tergite 3 sometimes densely dusted (usually in posterior view) and has a complete dusting band at its hind margin (e.g. Fig. 78); ♀ abdomen obviously narrows apically in dorsal view (e.g. Fig. 76); ♀ theca small, not projecting far ventrally (e.g. Fig. 77); ♂ epandrium with isolated black tooth submedially on posterior margin (e.g. Fig. 82); epandrium in dorsal view as e.g. Fig. 82; radial-medial crossvein sometimes short but is always distinct; costa and subcosta usually orange-brown; cell r_{2+3} completely brown (e.g. Fig. 83); proboscis orange to brown, with contrasting black labellum; legs including tarsi orange-brown; face with more or less large brown to black mark; gena typically light brown, darker than yellow parafacia; frons with a more or less obvious brown mark reaching from vertex to base of antennae; scutum with three fused or separated blackish spots, margin of scutum and scutellum always light orange (e.g. Fig. 81); scutum anteriorly may have submedial

dull lines caused by microtrichia (e.g. Fig. 81); where such lines occur, the distance between them is almost as wide as the lines themselves **5**

– ♂ abdominal segments usually longer, hind margin of tergite 3 shorter than lateral margin (e. g. Figs 94, 106); ♂ tergites 3–4 hardly to distinctly dusted, tergite 2 at most indistinctly dusted and may lack a complete dusting band at its hind margin (e. g. Figs 94, 106); ♀ abdomen not obviously narrowing apically in dorsal view (e.g. Fig. 95); ♀ theca always larger, and usually projecting further ventrally (e.g. Fig. 96); ♂ epandrium lacking black tooth, or with tooth situated on an elongated blackish keel on posterior margin (e.g. Fig. 101); epandrium in dorsal view sometimes different; radial-medial crossvein sometimes completely absent (e.g. Fig. 101); costa and subcosta sometimes dark brown like other veins; cell r_{2+3} may be hyaline in apical third; proboscis sometimes completely brown to black, lacking a distinctly darker labellum; legs and tarsi sometimes completely black, or with obvious black markings; face sometimes completely yellow to orange-brown; gena sometimes yellow or orange-brown like parafacia; frons may have no dark marking, or is sometimes almost completely black to brown; margins of scutum and scutellum sometimes black or dark brown; scutum anteriorly with or without submedial dull lines caused by microtrichia. Where such lines occur these are only separated very narrowly (e.g. Fig. 99)..... **6**

5. Three separate blackish spots on scutum (Figs 103, 105); ♀ theca about as broad as width of tergite 7 (Fig. 102), posterior surface with strong black setulae less dense so that the underlying surface is visible, ventral margin and posterior surface with long setae irregularly arranged; ♀ postabdomen elongated in side view, apical tergites tapered in dorsal view (Figs 102–104) ..... ***P. platycephala*** **(Loew, 1853)**

– Black spots on scutum more or less fused (Fig. 81); ♀ theca narrower than width of tergite 7 (Fig. 77), posterior surface with strong black setulae densely packed so as to obscure underlying surface, ventrolateral margin with long setae regularly arranged in a line, about the same distance from each other; ♀ postabdomen not obviously elongated in side view, apical tergites sharply narrowed in dorsal view (Figs 76–77) ..... ***P. constricta*** **Kröber, 1915**

6. Vertex usually with distinct longitudinal grooves and always lacking distinct dense punctiform indentations (cf Fig. 87); cell r_{2+3} completely brown (e.g. Fig. 107); radial-medial crossvein sometimes completely absent, and radius and media fused (e.g. Fig. 107); frons with a delimited black to light brown marking from vertex to base of antennae, becoming narrower anteriorly; ♀ theca short and broad, field of black setae on sternite 4 about three times as broad as long (e.g. Figs 96, 97); ♀ tergite 6 obviously shorter than tergite 4 in side view (e.g. Fig. 96)..... **7**

– Vertex usually lacking longitudinal grooves but with distinct dense punctiform indentations (e.g. Fig. 87); cell r_{2+3} sometimes hyaline apically (e.g. Fig. 89); radial-medial crossvein usually present (although may be very short) and therefore media and radius not touching (e.g. Fig. 89); frons sometimes almost completely darkened; ♀ theca longer and narrower, field of black setae of sternite 4 at most about two times as broad as long; ♀ tergite 6 obviously longer than tergite 4 in side view (e.g. Figs 73, 88)..... **8**

7. Dusting stripe on pleura more or less distinct, reaching from middle coxa to notopleuron; margin of scutum and scutellum orange and distinctly delimited from blackish central scutum; scutum anteriorly with submedial dull lines caused by microtrichia (Fig. 99); abdomen partly orange-brown to light brown, grading into dark brown or blackish areas (Figs 94, 95); tergites 3 and 4 with distinct dusted hind margins or strongly dusted all over, tergite 5 and protandrium (♂) or tergite 6 (♀) completely dusted (all in dorsal view, Fig. 94, 95); ♂ epandrium with distinct black tooth standing on an elongated blackish keel on posterior margin (Fig. 101) ..... ***P. microvena*** **Brunetti, 1925**

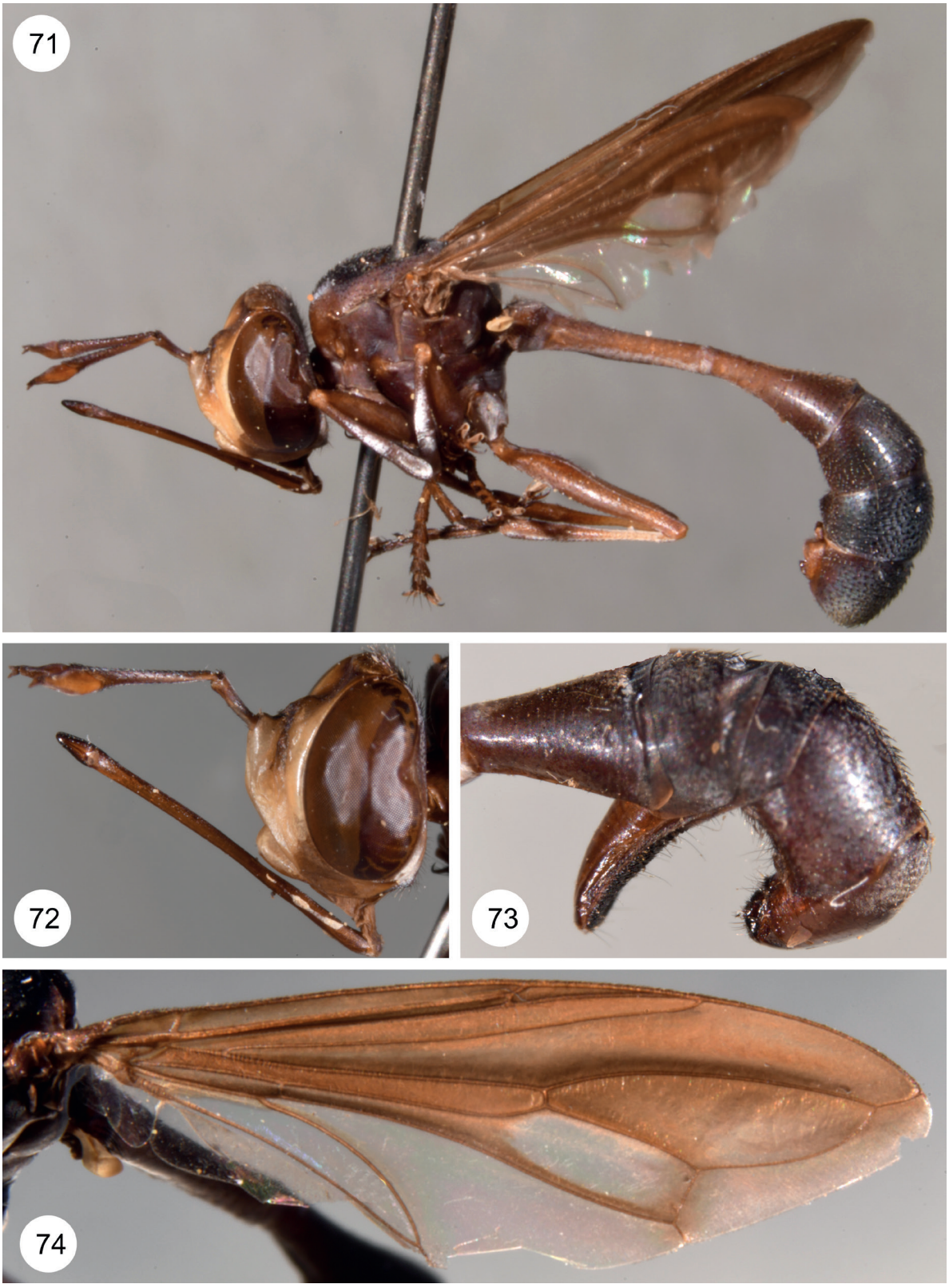
– Dusting stripe on pleura absent or only poorly developed; margin of scutum and scutellum completely black or dark brown, and not obviously delimited from black centre (Fig. 106); scutum anteriorly lacking submedial dull lines caused by microtrichia; abdomen uniformly blackish to dark brown (Fig. 106); tergite 3 may have an indistinctly dusted hind margin, abdomen otherwise shining to only very lightly dusted; ♂ epandrium not examined ..... ***P. pseudomicrovena*** **Kröber, 1939**

8. Smaller species, wing length less than 7 mm..... ***P. digitata*** **(Speiser, 1909)**

– Larger species, wing length about 8 mm **9**

9. Face yellow, without dark spot (Fig. 72); gena sometimes completely brown, in all specimens examined there is at least some brownish colouration; pleura lightly dusted all over but without obvious dense dusting; scutum anteriorly without submedial dull lines caused by microtrichia; tergite 3 lacking large silver dusting spots in posterior lateral corners; discal-medial-cubital crossvein more or less brown infuscated (Figs 71, 74); ♀ theca exceptionally long (Fig. 73)..... ***P. abyssinica*** **Kröber, 1915**

– Face with dark spot; gena sometimes completely yellow, at most with some brown colouration but



Figs 71–74. *Physocephala abyssinica* Kröber, 1915. **71**. ♀ habitus, lateral view (♂, n Vumba); **72**. ♀ head, lateral view (♂, n Vumba); **73**. ♀ theca, lateral view (♀, Albertville); **74**. Wing, dorsal view (♂, n Vumba).

never completely brown; katepisternum strongly silver dusted in posterolateral corner; scutum anteriorly with submedial dull lines caused by microtrichia; tergite 3 with large silver dusted spots in posterior lateral corners; discal-medial-cubital crossvein not brown infuscated in the specimens examined; ♀ theca not exceptionally long..... .....***P. maculifacies*** **Camras, 2001**

P. abyssinica **Kröber, 1915**
(Figs 71–74)
Physocephala abyssinica Kröber 1915
= *Physocephala fumivena* Camras 2001 (**syn. nov.**)
= *Physocephala longitheca* Camras 2001 (**syn. nov.**)
= *Physocephala atronata* Camras, 2001 (**syn. nov.**)

Primary type material examined. ♀ holotype of *Physocephala longitheca* Camras, 2001: (1) "Angola (A37) / 5 mls. NE. Negola / 25.iii.1972"; (2) "Southern / African Exp. / B. M. 1972 –1"; (3) "Holotype ♀ / *Physocephala* / *longitheca* / Camras"; coll. NHML.

♂ holotype of *Physocephala atronata* Camras, 2001: (1) "W. Uganda / Kibale Forest / 12.xii.1971 – 9.i.1972 / R. L. Mason"; (2) "Holotype ♂ / *Pseudophysocephala* / *atronata* / Camras"; coll. NHML.

Additional material. DEMOCRATIC REPUBLIC OF CONGO: 2♀♀, 1.–20.i.1919, Albertville [= Kalemi], 780 m, det. as *P*. "? *abyssinica*" by Brunetti 1925, leg. R. Mayné, coll. MRAC; 1♂, x.1932, Lulua, Kapanga, det. as *P*. "? *abyssinica* Krb" by Kröber 1935, leg. F. G. Overlaet, coll. MRAC; MALAWI: 1♂, 4.x.1919, Nyasaland, Cholo. [= Thyolo District], det. as P. "? *abyssinica*" by Brunetti 1924, leg. R. C. Wood, coll. NHML [NHMUK010922100]; UGANDA: 1♀, 21.i.1913, West Mengo District, Entebbe, det. as *P*. "? *abyssinica*" by Brunetti 1924, leg. C. C. Gowdey, coll. NHML [NHMUK010922101]; ZIMBABWE: 1♂, 2.i.1966, n Vumba [= Bvumba] [-19.093432 32.740631], paratype of *P. fumivena*, leg. D. Cookson, coll. FMNH.

Physocephala abyssinica is easily recognised in the female by the very long theca (Fig. 73) but is difficult to identify in the male. Camras (2001) failed to recognize that females of his newly described *P. longitheca* were in fact conspecific with males previously identified as *P. abyssinica*. Instead he described the males again as *P. fumivena* – a species in which only males are known. The only character given by Camras (2001) to distinguish *P. fumivena* and *P. longitheca* is the wing colouration, with a dark infuscated discal-medial-cubital crossvein being present in *P. fumivena*. It is clear that this character is very variable, however, in which case there is no other published character left to distinguish these two species either from each other or from *P. abysinica*, and we cannot find any such characters in the material we have to hand, which includes the holotype of *P. longitheca* and a paratype of *P. fumivena*. Therefore, *Physocephala longitheca* Camras 2001 and *Physocephala fumivena* Camras, 2001 are both placed as junior synonyms of *Physocephala abyssinica* Kröber, 1915 (**syns. nov.**).

In addition, Camras (2001) also characterised *P. atronata* with the character "Haltere with black on club". In fact there is only slight darkening on the haltere of the holotype, which is quite different from the velvety black haltere of species in the *P. halterata* species-group. The holotype of *P. atronata* otherwise fits very well with specimens of *P. abyssinica* and therefore *Physocephala atronata* Camras, 2001 is also herewith placed as a junior synonym to *Physocephala abyssinica* Kröber, 1915 (**syn. nov.**).

P. brevipetiola **(Camras, 1962)**
(Fig. 75)
Pseudophysocephala brevipetiola Camras, 1962

Primary type material examined. ♂ holotype of *Pseudophysocephala brevipetiola* Camras, 1962: (1) "♂ / Holotypus"; (2) "Musé du Congo / Eala / III-1932 / H. J. Bredo"; (3) "Holotype ♂ / *Pseudophysocephala* / *brevipetiola* / Camras"; (4) "RMCA ENT / 000012177"; coll. MRAC.

Additional Material. GABON: 1♂, viii.1892, Libreville, determined as a *Physocephala* nov. spec. by Kröber 1921, [collector unknown], coll. MLUH.

Physocephala brevipetiola is a rarely recorded species. Only the two males mentioned above are known to date. These are obviously well characterised by the unique abdomen shape, having a very narrow base of the abdomen ("petiole" *sensu* Camras (1962), cf Fig. 75) which is obviously much shorter than remaining bulbous abdomen ("abdominal club" *sensu* Camras 1962).

P. constricta **Kröber, 1915**
Physocephala constricta Kröber 1915
= *Physocephala ruficoxa* Kröber, 1933
(Figs 76–83)

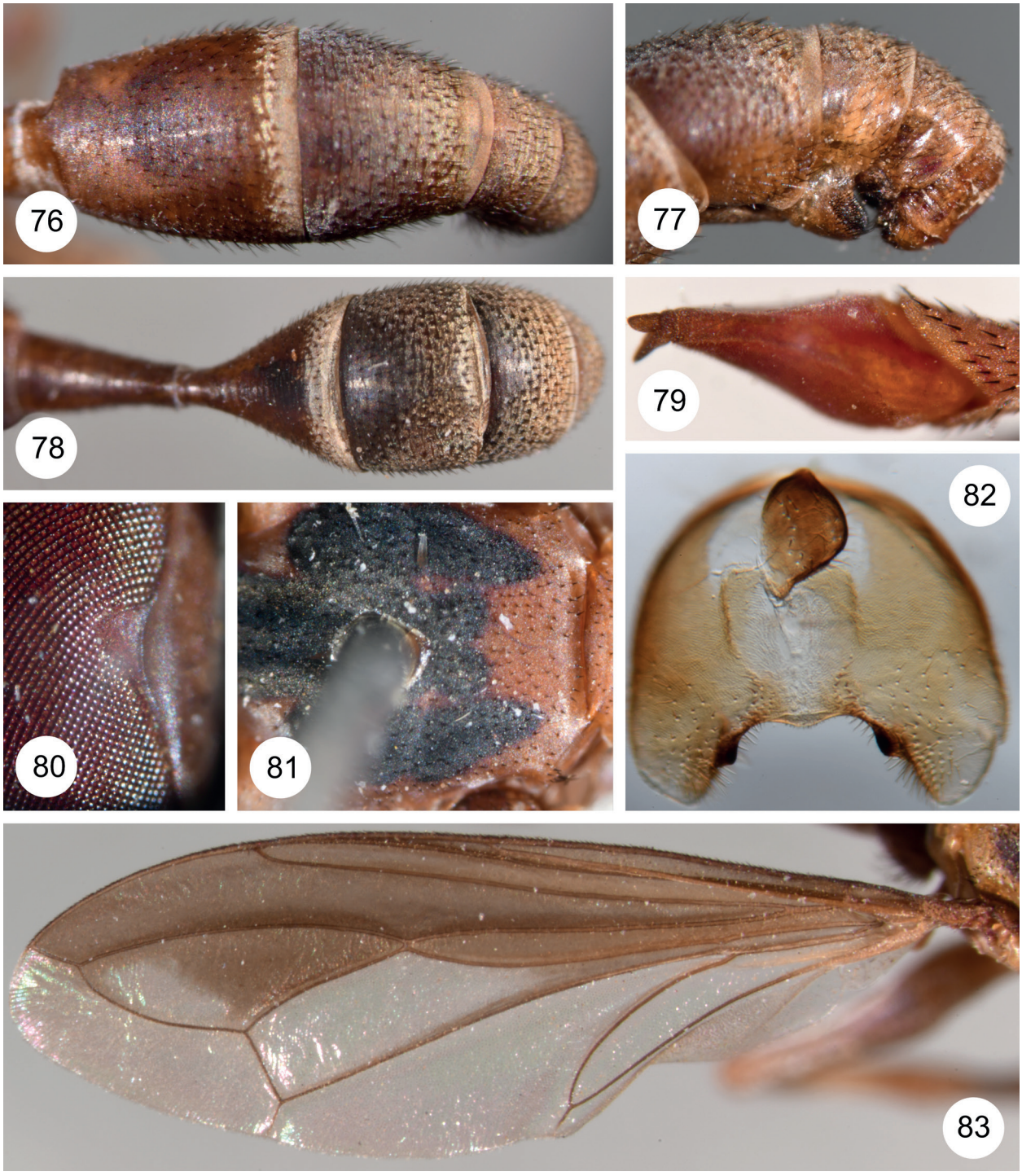
Primary type material examined. ♀ lectotype of *Physocephala constricta* Kröber 1915 designated by Camras (2001): (1) "3053"; (2) "Type"; (3) "*Physocephala* ♀ / *constricta* Krb. / O. Kröber det. 1914"; coll. ZMHB.

♂ holotype of *Physocephala ruficoxa* Kröber 1933: (1) "Holo - / type"; (2) "Lady Grey / 3 Feb. 1925. / R. I. Nel"; (3) "Pres. By / Imp. Inst. Ent. / Brit. Mus. / 1932-143"; (4) "*Physocephala* / *ruficoxa* Kröb / det. Kröber 1930"; (5) "Type"; (6) "*Pseudophysocephala* / *constricta* Kröber / compared to type / det. Camras, 2000"; coll. NHML.

Fig. 75. Abdomen of *Physocephala brevipetiola* (Camras, 1962), dorsal view (♂, Libreville).

Additional material. LESOTHO: 1♂, 13.xi.1949, Mamathes [-29.136617 27.845796], leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 7.xi.1951, Mamathes [-29.136617 27.845796], leg. A. Jacot-Guillarmod, coll. AMGS; 2♂♂, 3.ii.1952, Mamathes [-29.136617 27.845796], leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 11.ii.1952, ditto; 1♂, 23.xi.1952, ditto; 1♂, 15.iii.1951, Quthing, det. as *P*. spec., *interrupta* group by Smith 1966, leg. Brink, Rudebeck, coll. MZLU; 1♂, 12.iii.1951, Sebalabala, leg. C. Jacot-Guillarmod, coll. AMGS; 1♂, 8.–14.i.1963, Maseru district, Bushmans Pass, Maloti Mountains, 2125–2250 m, det. as *P. lineifrons* by Camras 1963, leg. B. R. Stuckenberg, P. J. Stuckenberg, coll. FMNH; SOUTH AFRICA: 1♂, "3053" [? Cape], paralectotype of P. *constricta*, leg., coll. ZMHB; 1♀, iii.1959, Cathedral Peak, Forestry reserve, Natal Drakensberg Little Berg summits, themeda Grassland, 5500–6000 ft, det. as *P. constricta* by Camras 1962, leg. B. R. Stuckenberg, P. J. Stuckenberg, coll. PJHS; 1♂, 10.–12.xi.2009, Cape Province, Harrismith Scotland farm [27°58′59.5″S 29°37′09.8″E], Malaise trap, dense *Leucosedea* dominated scrub, leg. A. H. Kirk-Spriggs, coll. BMSA; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *P. constricta* by Kröber 1938, det. as *P. constricta* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922174]; 1♂, 1.-10.ii.1933, Eastern Cape Province, Katberg, det. as *P. constricta* by Kröber 1938, det. as *P. constricta* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922175]; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as *P. constricta* by Kröber 1938, det. as *P. constricta* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922177]; 1♂, 1.–10.ii.1933, Eastern Cape Province, Katberg, det. as P. *constricta* by Kröber 1938, det. as *P. constricta* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922178]; 1♀, 19.–26.ii.1933, Eastern Cape Province, Katberg, det. as *P. ruficoxa* by Kröber 1938; det. as *P. constricta* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922173]; 1♂, 6.i.1925, Eastern Cape Province, Lady Grey, paratype of *P. ruficoxa*, leg. R. I. Nel, coll. NHML [NHMUK010922180]; 1♂, 26.i.1960, Eastern Cape Province, Molteno, leg. M. D. Anderson, coll. AMGS; 1♂, 4.–5.ii.1992, Eastern Cape Province, Rhode, village area [30°48′S 27°58′E], 1820 m, det. as *P. constricta* by Camras 2000, leg. Natal Museum Expedition, coll. FMNH; 1♂, 22.i.1965, Free State Province, Senekal, leg. D. J. Brother, coll. AMGS; 1♂ 1♀, 12.ii.2016, KwaZulu-Natal Province, Garden Castle N. R., Sleeping Bea [29°44′56′S 29°10′35″E], 2190 m, leg. RSA-team Ståhls, coll. PASS; 1♂, 4.xii.2012, KwaZulu-Natal Province, Royal Natal National Park, day visitor Ca [28°41′25.4″S 28°56′53.9″E], 1410 m, Paratype, leg. A. Ssymank, coll. PASS; 1♀, 20.–21.xi.2003, Mpumalanga Province, 20 km sw Lydenbrug, leg. J. Halada, coll. CULSP; 1♂, iii.1933, Natal Province, Natal, Nationalpark, det. as *P. constricta* by Camras 2000, leg. J. Ogilvie, coll. NHML [NHMUK010922179]; 1♂, 13.iv.1963, Northwest Reg., Retiefs Kloof, Rustenburg, leg. H. N. Empey, coll. PMHA; UNKNOWN LOCATION: 1♂,, "3054", det. as *P. platycephala* by Kröber 1914, wrongly labelled as allotype of *P. platycephala*, leg., coll. ZMHB; 2♀♀,, "AcP 5470", leg., coll. NHML; 1♀, no date, "AcP 5470", [collector unknown], coll. NHML; 1♂, 13.xi.1954, [characters illegible], det. as *P. constricta* by Camras 2000, leg. K. G. V. Smith, coll. NHML [NHMUK010922176].

Females of *P. constricta* are easily identified by the unique shape of the abdomen and theca as described in Key 6 (Figs 76, 77). Males are extremely difficult to diagnose, however, and can be confused with members of the *abdominalis*, *microvena*, *caenoneura* and *antiqua* species-groups. Males of *P. constricta* should be compared very carefully, bearing in mind that not all specimens can be reliably assigned to species.



Figs 76–83. *Physocephala constricta* Kröber, 1915. **76**. ♀ abdomen, dorsal view (♀, Cathedral peak); **77**. Tip of ♀ abdomen, lateral view (♀, Cathedral peak); **78**. ♂ abdomen, dorsal view (♂, Harrismith Scotland farm); **79**. Arista, lateral view (♂, Harrismith Scotland farm); **80**. Indentation on posterior margin of eye, lateral view (♀, Cathedral peak); **81**. Scutum, dorsal view (♂, Harrismith Scotland farm); **82**. Epandrium, dorsal view (♂, Mamathes); **83**. Wing, ventral view (♀, Cathedral peak).

***P. digitata* (Speiser, 1909)**
(Figs 84–90)
Conops (Physocephala) digitatus Speiser 1909
= *Physocephala simplex* Kröber, 1915 (**syn. nov.**)
= *Physocephala ugandae* Kröber, 1915 (**syn. nov.**)
= *Physocephala nigricoxa* Brunetti, 1925

= *Physocephala bequaertorum* Camras, 1962 (**syn. nov.**)
= *Physocephala lineifrons* Camras, 1962 (**syn. nov.**)
= *Physocephala ethiopica* Camras, 1962 (**syn. nov.**)

Primary type material examined. ♂ holotype of *Pseudophysocephala ugandae* Kröber 1939: (1) "?*Psilocephala* [sic] / *ugandae*, Krb. / examined & det. / O. Kröber, 1938."; (2) "*Psilocephala* [sic] / *ugandae* / Krb"; (3) "Uganda, / Kampala, / 6.IX.1918. / C C. Gowdey."; (4) "Kampala, / Uganda / 6.IX.1918 / No. 6545"; (5) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1921-153"; (6) "Type"; coll. NHML.

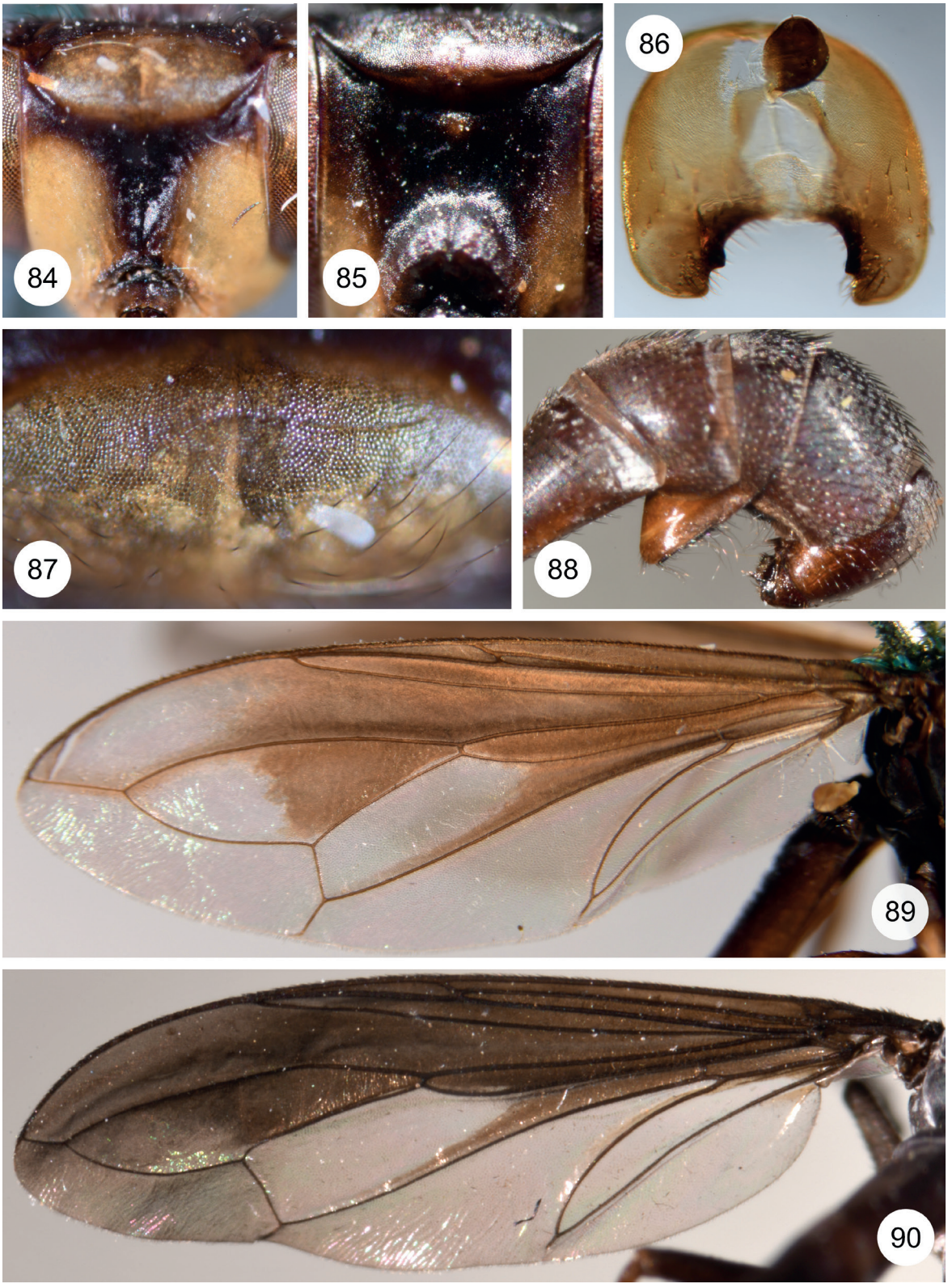
♂ holotype of *Physocephala nigricoxa* Brunetti, 1925: (1) "Syn- type"; (2) "Kampala, / Uganda / 4.IX.1918 / C. C. / No. 5392 Gowdey"; (3) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924-306."; (4) "*Physo*. / *nigrocoxae* [sic] / Brun Type ♂ / Det. E. Brunetti 1924"; coll. NHML. There is a second damaged specimen lacking both head and abdomen that is designated as "Syntype". This cannot be identified but in any event, in the original description the specimen listed above as the holotype is explicitly identified as the "Type".

♀ holotype of *Physocephala ethiopica* Camras, 1962, pinned together with ♂ paratype: (1) "Holo- / type"; (2) "Allo- / type"; (3) "Ethiopia: / Dilla, / (Sidamo). / iv.1948."; (5) "Holotype ♀ / *Physocephala* / *ethiopica* / Camras"; (6) "Allotype ♂"; (7) "K. M. Guichard / B. M. 1948-200."; (8) "[characters illegible]"; (9) "BMNH(E)# / 249079 / BMNH(E)# / 249080"; coll. NHML.

Additional material. BURUNDI: 1♀, V.1956, Mugera, leg. F. J. François, coll. ISNB; CAMEROON: 1♀, 30.vii.1920, Lolodorf, det. as *P. simplex* by Camras 1962, leg. A. I. Good, coll. FMNH; 1♂, 8.–10.viii.2013, Far-North Reg., Mayo-Tsanga, Mogode-Cha [10°34.111′N 13°36.422′E], 1001 m, Malaise trap, degrated savanna forest, leg. A. H. Kirk-Spriggs, coll. BMSA; DEMOCRATIC REPUBLIC OF CONGO: 2♂♂, 15.ix.1933, Bambesa, det. as *P. ugandae* by Kröber 1935, leg. J. V. Leroy, coll. MRAC; 1♀, 16.iii.1948, Basoko, Yamabuki, Div. 153, det. as *P. simplex* by Camras 1962, leg. P. L. G. Benoit, coll. MRAC; 1♂, 27.iv.1914, Beni [0°30′N 29°30′E], det. as *P. bequaertorum* by Camras 2000, leg. J. Bequaert, coll. FMNH; 1♀, 23.i.1927, Elisabethville [Lubumbashi] [-11.664232 27.482626], det. as *P. ugandae* by Kröber 1935, leg. M. Bequaert, coll. MRAC; 1♂, 4.iii.1936, Kamogobe, Sud Masisi, det. as *P. nigricoxa* by Camras 1962, leg. L. Lippens, coll. MRAC; 1♂, 18.vii.1935, Kivu, Nyongera, près Rutshuru, 1218 m, leg. G. F. de Witte, coll. ISNB; 1♂, 10.vii.1935, Kivu, Ritshuru, riv. Musugereza, 1100 m, leg. G. F. de Witte, coll. ISNB; 1♂, 10.vii.1935, Kivu, Ritshuru, riv. Musugereza, 1100 m, det. as *P. nigrocoxalis* by Vanschuytbroeck 1950, leg. G. F. de Witte, coll. MRAC; 1♀, 15.x.1957, Massif Ruwenzori, Bomboka près., Kyandolire, 1650 m, leg. P. Vanschuytbroeck & J. Kekenbosch, coll. MRAC; 1♀, 18.xii.1957, Massif Ruwenzori, riv. Lume, moyenne, 1800 m, leg. P. Vanschuytbroeck, coll. MRAC; 1♀, xi.1937, Rutshuru, det. as *P. digitata* by Camras 2000, leg. J. Ghesquière, coll. FMNH; 1♀, no date, Ville Malela, Chief Casende [5,40S 23,45E], det. as *P. simplex* by Camras, leg. J. Bequaert, coll. FMNH; RWANDA: 1♂, 6.ii.1935, Ruhengeri, riv. Mugara-Kigombe, 1800–1825 m, det. as *P. nigrocoxalis* by Vanschuytbroeck 1950, leg. G. F. de Witte, coll. MRAC; TOGO: 1♂, viii.2015, Kloto, forest area [6°57'31.66''N 0°34'29.75''E], leg. G. Goergen, coll. IITA; 1♀, ii.2002, ditto; 1♀, iii.2017, ditto; 1♂, viii.2008, ditto; 1♂, vi.2016, ditto; UGANDA: 1♂, 22.iv.1966, 20 miles e Mubende, det. as *P. nigricoxa* by Camras 2000; det. as *P. digitata* by Camras 2001, at Chickweed flowers, leg. D. J. Greathead, coll. NHML [NHMUK010922194]; 1♂, 14.v.1958, Bugisu Bugusege, det. as *P. nigricoxa* by Camras 2000; det. as *P. digitata* by Camras 2001, at Chickweed flowers, leg. J. Bowden, coll. NHML [NHMUK010922195]; 1♂, 1.–5.xii.1911, Bugoma Forest, Unyoro, 3700 ft, det. as *P. nigricoxa* by Camras 2000; det. as *P. digitata* by Camras 2001, at Chickweed flowers, leg. S. A. Neave, coll. NHML [NHMUK010922192]; 1♂, 21.iv.1927, Dwoli, det. as *P. nigricoxa* by Camras 2000; det. as *P. digitata* by Camras 2001, leg. H. Hargreaves, coll. NHML [NHMUK010922193]; 1♂, 15.–17.iii.1912, Uganda West, Kibale Region, surrounding Bigodi [N0029209 E3020022], 1400 m, leg. Oehlke, coll. PASS; 1♂, 15.–17.iii.2012, ditto; UGANDA / KENYA: 1♂, v., Elgon, 1700 m, leg. Lindblom, coll. NHRS; ZAMBIA: 7♂♂ 1♀, 12.–15.i.2003, 45 km se Kitwe, leg. J. Halada, coll. CULSP.

Physocephala digitata is a species which shows great variation in colouration of the face (with or without dark marking); frons (more or less uniformly yellow to light brown, the latter especially in old specimens, and with distinct black midline or almost completely black); coxae (completely light brown to almost black); scutum (completely black to orange-brown with black centre only); and wing (e.g. cell r_{2+3} completely brown or hyaline apically, subcosta light orange to dark brown). In all of these variations we find different intermediates and no one of these characters, or combination of characters, can be used to consistently segregate species. Camras (2001) did not mention any character in his key for the *simplex* species-group which is not variable in *P. digitata*. Out of the eleven species he included in his *simplex* species-group key, only three species can be recognised consistently (see Key 6, couplets 8–9) and these three are still difficult to identify convincingly.

The original description of *P. simplex* falls within the variation of *P. digitata* as do the specimens reported by Camras (2001) as *P. simplex*. The holotype of *P. simplex* is stored in the Museo Civico di Storia Naturale "Giacomo Doria" (Stuke 2017) and was not available for exam-



Figs 84–90. *Physocephala digitata* (Speiser, 1909). **84**. Frons, light form, dorsal view (♀, Mugera); **85**. Frons, dark form, dorsal view (♀, Kloto); **86**. Epandrium, dorsal view (♂, sw Kitwe); **87**. Vertex, dorsal view (♀, Mugera); **88**. Theca, lateral view (♀, Mugera); **89**. Wing, light form, dorsal view (♀, Mugera); **90**. Wing, dark form, dorsal view (♀, Kloto).

ination. *Physocephala simplex* Kröber, 1915 is, however, placed as a junior synonym of *Physocephala* [*Conops*] *digitata* (Speiser, 1909) (**syn. nov.**).

Most specimens of *P. ugandae* are easily recognised by the wing pattern (Fig. 89) with cell r_{2+3} hyaline apically, and the frons yellow with a distinct black T-marking (Fig. 84). There are, however, less commonly encountered forms typified by a completely dark cell r_{2+3} and/or either a completely dark or completely pale frons, together with intermediates. Since this variation does not allow *P. ugandae* to be distinguished from *P. digitata* with any consistency, *Physocephala ugandae* Kröber, 1915 is herewith placed as a junior synonym of *Physocephala* [*Conops*] *digitata* (Speiser, 1909) (**syn. nov.**).

The original description and all of the key characters used by Camras (1962b) to identify *P. bequaertorum* fall within the variation of *P. digitata*. One available headless specimen in FMNH identified by Camras as *P. bequaertorum* also fits to *P. digitata*. *Physocephala bequaertorum* Camras, 1962 is therefore placed as a junior synonym of *Physocephala* [*Conops*] *digitata* (Speiser, 1909) (**syn. nov.**).

The type material of *P. ethiopica* falls within the variation of *P. digitata*. *Physocephala ethiopica* Camras, 1962 is therefore placed as a junior synonym of *Physocephala* [*Conops*] *digitata* (Speiser, 1909) (**syn. nov.**).

The original description of *P. lineifrons* compares it with *P. bequaertorum*, stating that the two differ only in the colouration of the gena and frons. The holotype is deposited in the Natal Museum (KwaZulu-Natal, Pietermaritzburg) and was not available for examination, but the original description of *P. lineifrons* falls within the variation of *P. digitata* and therefore *Physocephala lineifrons* Camras, 1962 is also placed as a junior synonym of *Physocephala* [*Conops*] *digitata* (Speiser, 1909) (**syn. nov.**).

***P. discalis* (Camras, 1962)**
Pseudophysocephala discalis Camras 1962

Material. UGANDA: 1♂, vii.1945, Bwamba Valley, det. as *P. discalis* by Camras 2000, leg. van Someren, coll. NHML [NHMUK010922150].

The interpretation of this species is based only upon the above specimen in the NHML which was identified by Camras as *P. discalis* following his comparison with the holotype of that species at the USNM.

***P. kroeberi* nom. nov.**
(Figs 91–93)
= *annulipes* (Kröber 1939), junior secondary homonym of *Conops annulipes* Wiedemann in Meigen 1824

Primary type material examined. ♂ holotype of *Pseudophysocephala annulipes* Kröber 1939: (1) "Holo- / type"; (2) "Kinangop / below bamboo / forest 8500 ft"; (3) "Kenya: / Aberdare Range / x.1934. / B. M. E. Afr. Exp. / B. M. 1935-203"; (4) "*Pseudophysocephala* / *annulipes*. Krb / examined & det. / O. Kröber 1938"; (5) "*Pseodophysoce* / *phala annuli-* / *pes* Krb"; (6) [blank red label]; coll. NHML.

Additional material. KENYA: 1♂, 22.ix.1990, Mount Kenya, ≈ 10.000 ft, sweep netting, leg. R. Copeland, coll. IITA; 1♀, i.–ii.1946, N. W. Mau Forest, 8000–10000ft, det. as *P. annulipes* by Camras 1962, leg. H. P. Thommaset, coll. NHML [NHMUK010922136].

Physocephala kroeberi **nom. nov.** is a new name for *Pseudophysocephala annulipes* Kröber 1939 – Kröber (1939): 389; type-locality: "Kenya, Aberdare Range"; HT ♂ [BMNH] – which is a junior secondary homonym of *Conops annulipes* Wiedemann in Meigen 1824: 135; type-locality: "Wahrscheinlich aus Oesterreich"; HT ♂ [depository unknown, Evenhuis 1997] – available, invalid: junior synonym of *Physocephala pusilla* (Meigen, 1804).

Physocephala kroeberi is easily recognised by the distinctive black facial marking (Fig. 92), obvious markings on the femora (Fig. 91), and wing pattern with the discal-medial-cubital crossvein not completely surrounded by brown colouration (Fig. 93). It would be informative to see more material to confirm that this is not merely an extreme variation of *P. platycephala* or *P. microvena*, however.

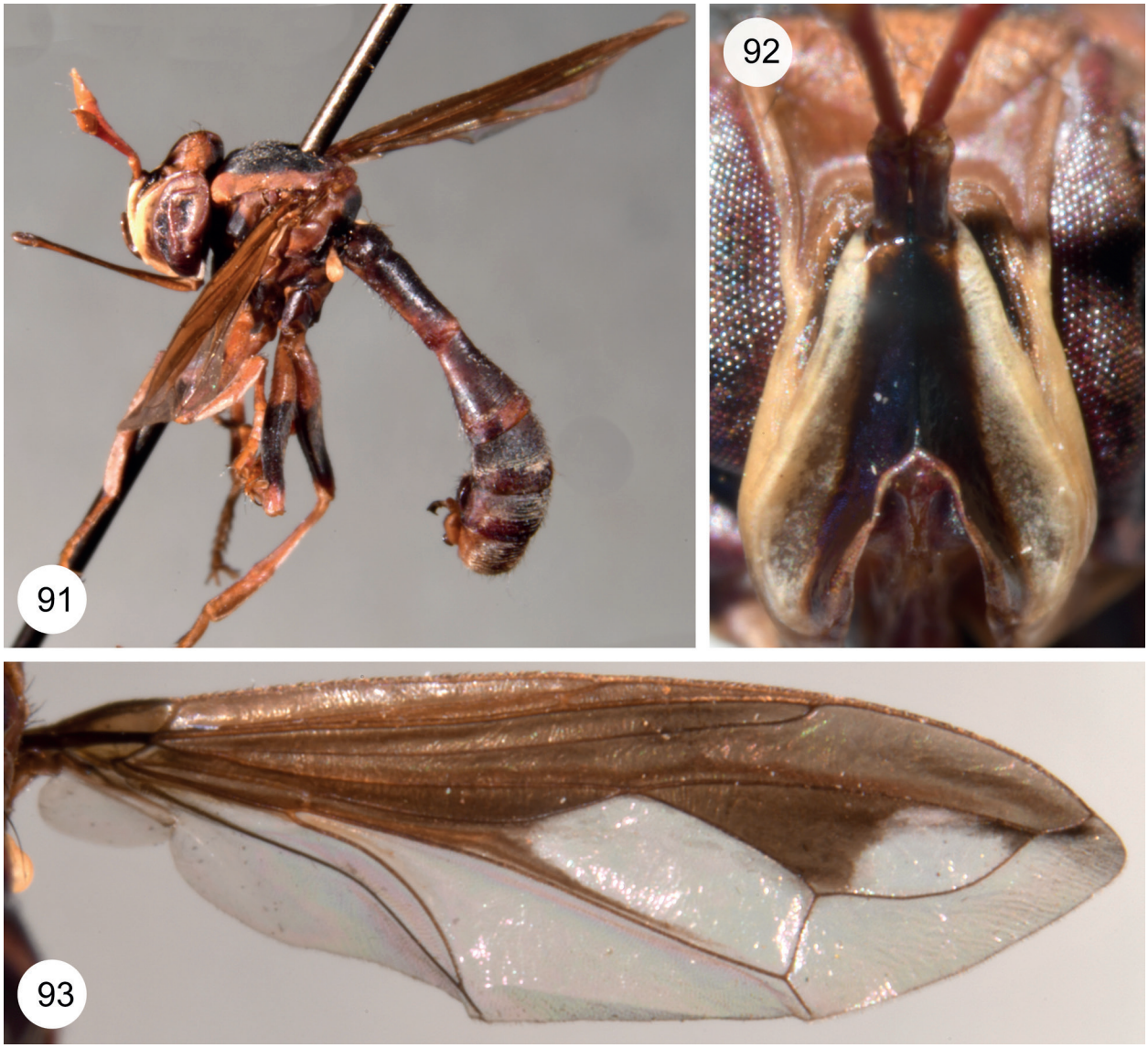
***P. maculifacies* Camras, 2001**
Physocephala maculifacies Camras 2001

Primary type material examined. ♂ holotype of *Physocephala maculifacies* Camras, 2001: (1) "Angola (A36) / Chianga / 21.–24.iii.1972"; (2) "Southern / African Exp. / B. M. 1972 -1"; (3) "Holotype ♂ / *Physocephala* / *maculifacies* / Camras"; coll. NHML.

Additional material. ANGOLA: 1♀, 21.–24.iii.1972, Chianga, paratype of *P. maculifacies*, leg. British Museum Expedition, coll. NHML [NHMUK010922096]; TANZANIA: 1♂, 10.iii.1963, Kilimajaru, Weruweru, det. as *P. abyssinica* by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922099].

A difficult species for which more material is necessary to test the stability of the identification characters given in Key 6.

***P. microvena* Brunetti, 1925**
(Figs 94–101)
Physocephala microvena Brunetti 1925
= *Pseudophysocephala nigritarsis* Kröber 1939 (**syn. nov.**)



Figs 91–93. *Physocephala kroeberi* nom. nov. (♂, Mt. Kenya). **91**. Habitus, lateral view; **92**. Face, anterior view; **93**. Wing, dorsal view.

Primary type material examined. 1♀ syntype of *Physocephala microvena* Brunetti 1925: (1) "Syn- / type"; (2) "H. S. Stannus / Zomba. / Nyasaland."; (3) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924-306"; (4) "*Physo*. / *microvena* / Brun Type ♀ / Det. E. Brunetti 1924"; (5) "BMNH(E)# / 249157"; coll. NHML.

1♂ syntype of *Physocephala microvena* Brunetti 1925: (1) "Syn- / type"; (2) "H. S. Stannus / Zomba. / Nyasaland."; (3) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924-306"; (4) "*Physo*. / *microvena* / Brun / Type ♂ / Det. E. Brunetti 1924"; (5) "BMNH(E)# / 249156"; coll. NHML.

1♂ syntype of *Physocephala microvena* Brunetti 1925: (1) "Syn- / type"; (2) "H. S. Stannus / Zomba. / Nyasaland."; (3) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924-306"; (4) "*Physo*. / *microvena* / Brun / Cotype ♂ / Det. E. Brunetti 1924"; (5) "BMNH(E)# / 249158"; coll. NHML.

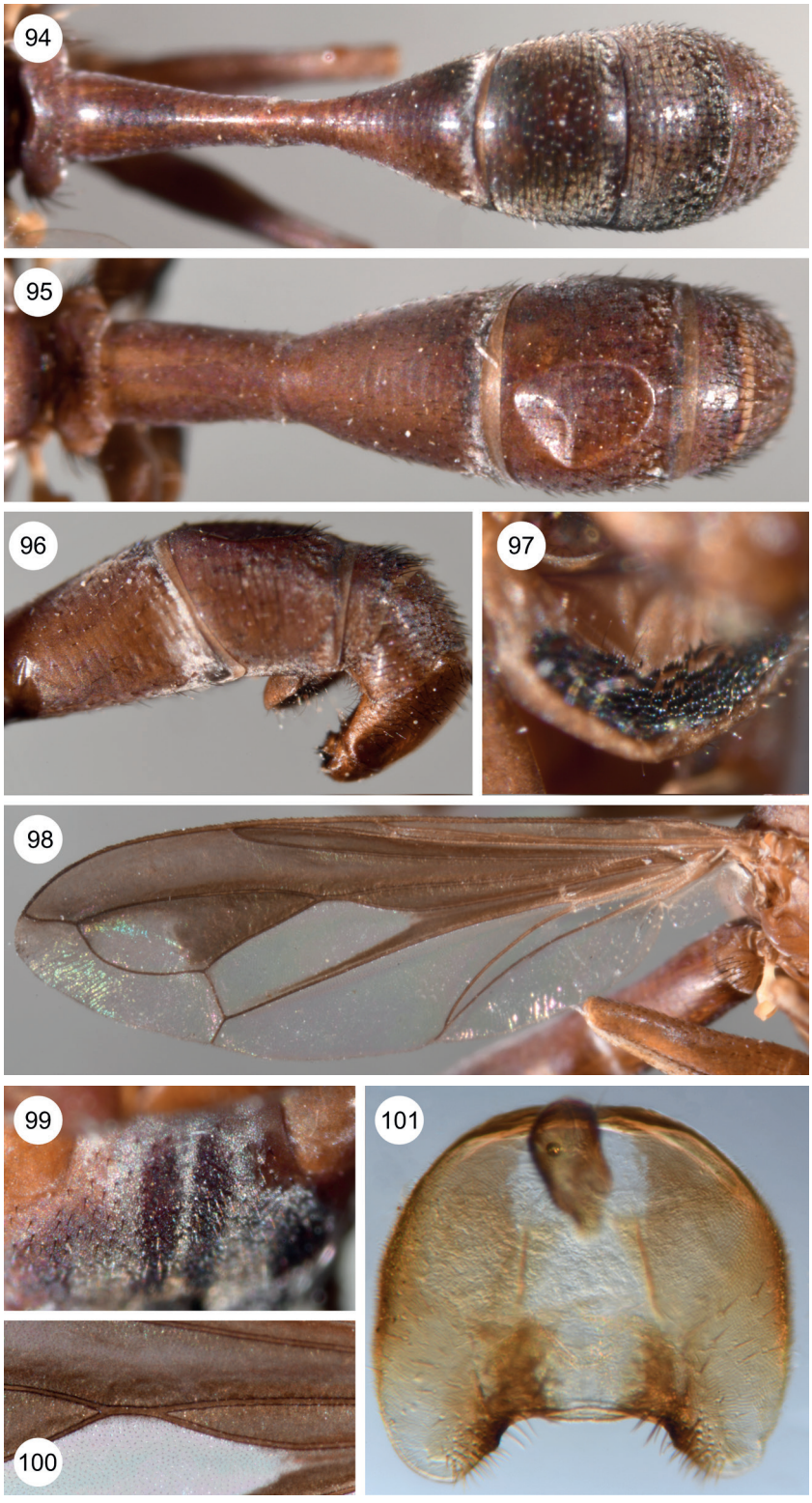
1♀ syntype of *Physocephala microvena* Brunetti 1925: (1) "Syn- / type"; (2) "H. S. Stannus / Zomba. / Nyasaland."; (3) "*Physo*. / *microvena* / Brun / Cotype ♂ / Det. E. Brunetti 1924"; (4) "BMNH(E)# / 249158"; coll. NHML.

1♀ syntype of *Physocephala microvena* Brunetti 1925: (1) "Syn- / type"; (2) "H. S. Stannus / Zomba. / Nyasaland."; (3) "Pres. by / Imp. Bur. Ent. / Brit. Mus. / 1924-306"; (4) "*Physocephala* / *microvena* Brun. / ♂. Cotype. / (Det. E. Brunetti 1924)"; (5) "BMNH(E)# / 249160"; coll. NHML.

♀ holotype of *Pseudophysocephala nigritarsis* Kröber 1939: (1) "Holo - / type"; (2) "Type"; (3) "Fort Portal / Nyakasura / 24.i.1935 / J. W. Edwards"; (4) "Uganda: / Ruwenzori Range / xii.1934–i.1935. / B. M. E. Afr. Exp. / B. M. 1935-203"; (5) "*Pseudophysocephala* / *nigritarsis*, Krb. / examined & det. / O. Krober, 1938."; (6) "*Pseodophysoce-* / *phala nigri-* / *tarsis* Krb"; (7) "BMNH(E)# / 249147"; coll. NHML.

Additional material. BENIN: 1♀, 1.xii.2011, Lokoli, swamp forest [07°03'40.00″N 02°15'50.00″E], leg. G. Goergen, coll. IITA; BURUNDI: 2♀♀, 5.–12.iii.1953, Bururi, 1800–2000 m [-3.949 29.623], det. as *P. nigritarsis* by Camras 1962, leg. P. Basilewsky, coll. FMNH, MRAC; 1♀, 4.vi.1952, Colline Muramba, Bugoni, Terr. de Muhinga [-2.930 30.357], 1400 m, det. as *P. nigritarsis* by Janssen 1955, leg. F. J. François, coll. ISNB; CAMEROON: 1♂, no date, Neu Kamerun, det. as *P. nigritarsis* by Camras 2000, leg. G. Tessmann, coll. ZMHB; DEMOCRATIC REPUBLIC OF CONGO: 1♀, no date, Elisabethville [Lubumbashi] [-11.664232 27.482626], det. as *P. microvena* by Camras 1962, leg. M. Bequaert, coll. FMNH; 1♀, 10.xi.1928, Ituri, Blukwar, syntype of *P. curta* but not conspecific with designated lectotype, leg. A. Collart, coll. MRAC; 1♀, 12.iv.1953, Kivu, Kitenga, près riv. Ruzizi [-6.896 25.975], leg. J. Verbeke, coll. ISNB; 1♀, 9.iv.1945, Rumangabo, riv. Bugombwa, det. as *P. gigantea* by Janssens 1950, leg. G. F. de Witte, coll. MRAC; 1♀, 29.iii.1954, Secteur Tshiaberimu, riv. Kalivina, affl. Talia Nord, 2350 m [-0.13 29.42], 2350 m, leg. P. Vanschuytbroeck & H. Synave, coll. MRAC; 1♂, 21.–27.viii.1931, Tshibinda [-0.287 28.776], det. as *P. nigritarsis* by Camras 1962, leg. J. Ogilvie, coll. FMNH; KENYA: 1♂, 12.iii.1993, 5 km e Kaimosi, se Kakamega [0.125 34.892], 1750 m, leg. B. Merz, coll. TAUI; 1♂, 10.x.1998, Bungoma [0.5645 34.558], leg. F. Kaplan, A. Freidberg, coll. TAUI; 2♂♂, 12.–13.i.1996, Bungoma [0.5645 34.558], leg. I. Yarom, A. Freidberg, coll. TAUI; 1♀, 8.x.1998, Gilgil [-0.500043 36.326122], leg. F. Kaplan, A. Freidberg, coll. TAUI; 3♂♂ 1♀, 10.x.1998, Kakamega [0.281 34.753], leg. F. Kaplan, A. Freidberg, coll. TAUI; 1♂, 7.–8.ii.2011, Kakamega Forest, 1586 m [0°13′37.2″N 34°52′49.8″E], 1586 m, leg. M. Mei, P. Ceretti, D. Whitmore, coll. PMME; 1♂, 1.–10.ii.2002, Kakamega Isecheno Nature Reserve [0.24′N 34.86′E], 1800 m, leg. Okeka, coll. PMHA; 1♂, 11.–20.i.2003, ditto; 1♂, iv.1969, Karen nr Nairobi, leg. van Someren, coll. NHML [NHMUK010922149]; 1♀, 9.x.1998, Kericho [-0.368726 35.281219], leg. F. Kaplan, A. Freidberg, coll. TAUI; 1♂, 11.–12.iv.1957, Molo, Mau Escarpment, 2150–2200 m, det. as *P. nigritarsis* by Camras 1962, leg. P. Basilewsky, N. Leleup, coll. MRAC; 1♂, ix.1939, Naivasha, det. as *P. nigritarsis* by Camras 1999, leg. H. J. A. Turner, coll. NHML [NHMUK010922138]; 1♀, ix.1939, Naivasha, det. as *P. nigritarsis* by Camras 2000, leg. H. J. A. Turner, coll. NHML [NHMUK010922141]; 1♂, 12.iii.1993, near Kaimosi, se Kakamega [0.125606 34.844837], 1750 m, leg. Muhangani, coll. TAUI; 1♀, 16.xi.–22.xii.1998, Rift Valley Province, Mpala research Station [00°19′N 36°53′E], Malaise trap, leg. S. Miller, coll. NMKE; 1♂, 2.–9.i.2000, Western Province, Kakamega Forest, Malaise trap [0°14.13′N 34°51.87′E], leg. R. Copeland, coll. NMKE; UGANDA: 1♂, 22.iv.1966, 20 miles e Mubende, leg. D. J. Greathead, coll. NHML [NHMUK010922147]; 1♂, 19.x.1958, Kawanda, det. as *P. nigritarsis* by Camras 2000, [collector unknown], coll. NHML [NHMUK010922137]; 1 specimen, xii.1934–i.1935, Ruwenzori Range, det. as *P. nigritarsis* by Camras 2000, leg. B. M. E. Africa Expedition, coll. NHML [NHMUK010922140]; 1♂, 20.iii.2012, Rwenzori Gebirge, Nyakalengila [N002100 E300149], 1705 m, leg. Oehlke, coll. PASS; 1♂, 16.xi.1949, Shangugu [= Cyangugu] [-2.483333 28.896667], 1460 m, det. as *P. platycephala* by Janssen 1954, leg. F. J. François, coll. ISNB; ZIMBABWE: 1♀, 2.–6.xii.2015, Chirinda Forest, Mt. Selinda [20°25′S 32°43′E], 1000 m, leg. J. Halada, coll. CULSP; 1♂, 18.vi.1964, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* Camras 2000, leg. D. Cookson, coll. FMNH; 2♂♂, 4.vii.1964, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* Camras 2000, leg. D. Cookson, coll. FMNH; 1♀, 18.vii.1964, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* by Camras 2000, leg. D. Cookson, coll. FMNH; 1♀, 8.x.1964, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* by Camras 2000, leg. D. Cookson, coll. FMNH; 1♂, 20.ii.1965, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* Camras 2000, leg. D. Cookson, coll. FMNH; 1♀, 8.v.1965, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* by Camras 1999, leg. D. Cookson, coll. FMNH; 1♀, 8.v.1965, n Vumba [= Bvumba] [-19.093432 32.740631], det. as *P. microvena* by Camras 2000, leg. D. Cookson, coll. FMNH; 1♀, v.1932, Xmas Pas, Umtali [= Christmas Pass near Mutare], leg. J. Ogilvie, coll. NHML [NHMUK010922146]; 1♂, v.1932, ditto [NHMUK010922148].

Most *P. microvena* specimens characteristically have veins M and R_{4+5} fused, thus lacking any radial-medial crossvein (Figs 98, 100). A minority of specimens do have a very short radial-medial crossvein present, however, and a reduced crossvein rm may also occur occasionally in specimens of other species, causing complications in identification. Females of *P. microvena* are easily identified by the short, broad theca (Fig. 97) and short abdominal segments (Fig. 96), with confusion only really likely with *P. pseudomicrovena*, which may be conspecific. Conversely, males of *P. microvena* are extremely difficult to identify reliably and could be easily confused with males of other species-groups and also with males of *P. constricta* where these also have a reduced radial-medial crossvein. Where present, the distance between



Figs 94–101. *Physocephala microvena* Brunetti, 1925. **94**. ♂ abdomen, dorsal view (♂, n Vumba); **95**. ♀ abdomen, dorsal view (♀, n Vumba); **96**. ♀ abdomen, lateral view (♀, n Vumba); **97**. ♀ theca, ventral view (♀, n Vumba); **98**. Wing, dorsal view (♀, n Vumba); **99**. Scutum with dusting stripes, anterodorsal view (♂, n Vumba); **100**. Completely reduced radial-medial crossvein, dorsal view (♀, n Vumba); **101**. ♂ epandrium, dorsal view (♂, Bumgoma).

Figs 102–105. *Physocephala platycephala* (Loew, 1853). **102**: tip of ♀ abdomen, lateral view (♀, Worcester); **103**. ♀ scutum, dorsal view (♀, Worcester); **104**. Tip of ♀ abdomen, dorsal view (♀, Worcester); **105**. ♂ scutum, dorsal view (♂, Clanwilliam dam).

the two short dark submedial stripes in the microtrichial dusting on the anterior scutum may be the best character for separating *P. constricta* and *P. microvena*, these being separated by a wider medial dusted stripe in the former (Fig. 81) than in the latter (Fig. 99).

As mentioned by Camras (2001) there are several intermediates between typical *P. microvena* and *P. nigritarsis*. Therefore, *Pseudophysocephala nigritarsis* Kröber, 1939 is herewith placed as a junior synonym of *Physocephala microvena* Brunetti, 1925 **(syn. nov.)**.

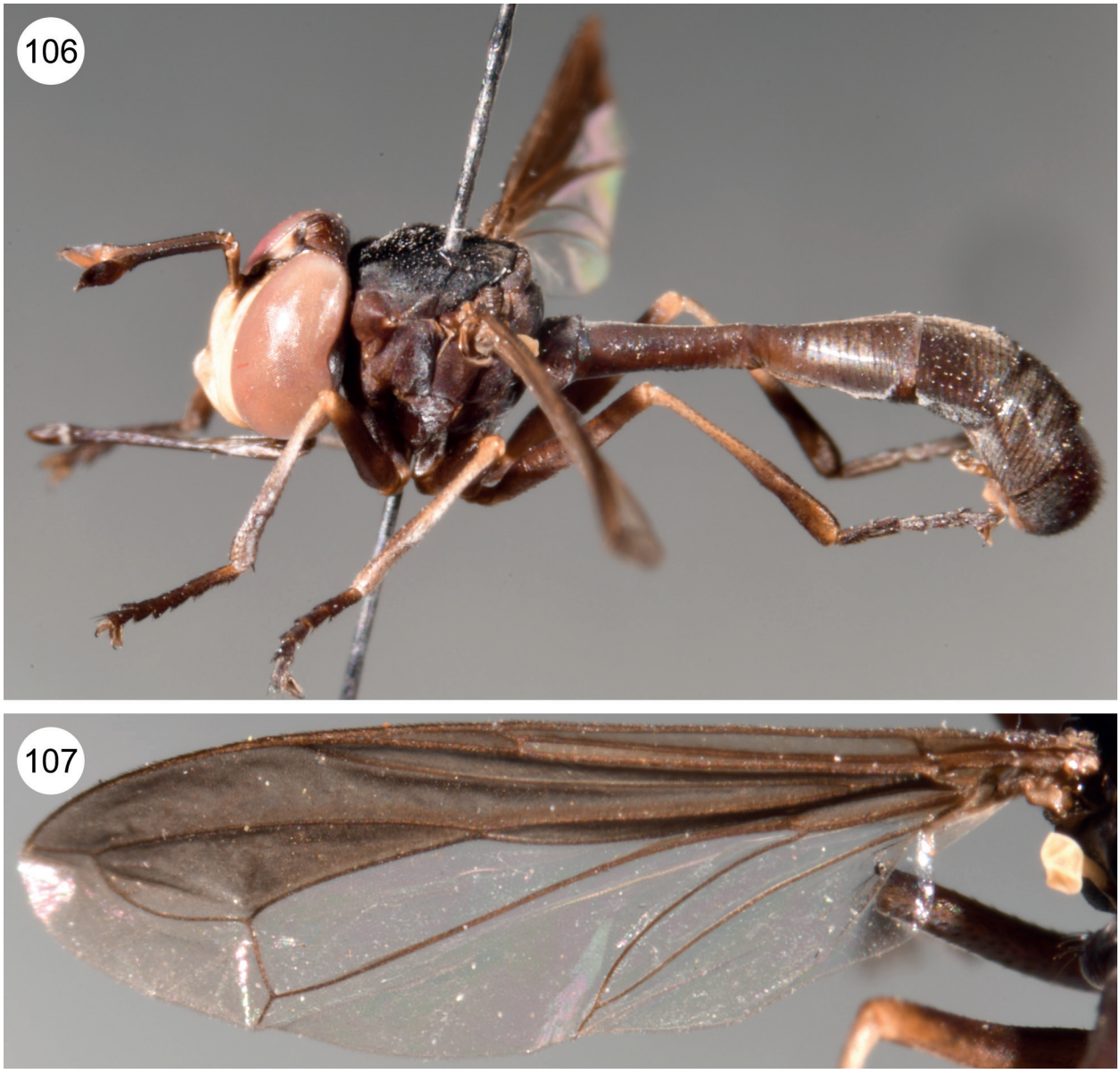
***P. platycephala* (Loew, 1853)**
Conops platycephalus Loew 1853
(Figs 102–105)

Material. SOUTH AFRICA: 1♂, 3.–7.x.1988, Cape Province, Clanwilliam Dam [32°11′30″S 18°53′42″E], on flowers of *Aspalathus desertorum* Bol., leg. F. W. Gees, S. K. Gees, coll. AMGS; 1♀, ix.1928, Cape Province, Worcester, det. as *Physocephala* spec. by Kröber 1938, det. as *P. platycephala* by Camras 2000, leg. R. E. Turner, coll. NHML [NHMUK010922130].

While the female of *P. platycephala* is easily recognised by the obvious shape of the postabdomen and theca (Figs 102, 104), males are more problematic. We doubt that males can be reliably identified using the colour pattern of the scutum as proposed by Camras (2001) and as described in Key 6. Figs 103 & 105 show that the black spots on the scutum are less distinctly separated in males (Fig. 105) compared to females (Fig. 103), and may perhaps sometimes become fused. Perhaps males of this rare species – only two female specimens are known – have therefore previously been misidentified as other species.

***P. pseudomicrovena* Kröber, 1939**
(Figs 106–107)
Physocephala pseudomicrovena Kröber 1939

Primary type material examined. ♂ lectotype of *Physocephala pseudomicrovena* Kröber, 1939 designated by Camras (1962): (1) "♂ / Holotypus"; (2) "Musée du Congo / Tanganyka-Moero : / Nyunzu - I - II - 1934/ De Saeger"; (3) "R. DÉT / O / 2992"; (4) "*Physocephala* ♂ / *microvena* Brun. / var. / det. Kröber 1935"; (5) "RMCA



Figs 106–107. *Physocephala pseudomicrovena* Kröber, 1939. **106**. Habitus, dorsolateral view (♂, Athiémé); **107**. Wing, dorsal view (♂, Athiémé).

ENT / 000012181"; (7) "Type ♂ / *Physocephala* / *pseudomicrovena* / Kröber"; (7) "designated by / Camras, 1962"; coll. MRAC.

Additional material. BENIN: 1♂, viii.2006, Athiémé [06°14'20.00″N 01°40'00.00″E], leg. G. Goergen, coll. IITA; 2♀♀, viii.2006, Athiémé [06°14'20.00″N 01°40'00.00″E], sweep netting, leg. G. Goergen, coll. IITA; 1♀, v.2006, Lokossa, sweep netting, leg. G. Goergen, coll. IITA.

The lectotype is in poor condition, with the antennae missing and a broken abdomen almost completely covered with glue. All of the characters which can be seen fit well to the concept of the species as given in Key 6, however. Neverthess, this species is only poorly differentiated from *P. microvena*, and it may easily be no more than a dark morph of that species. On the other hand, all of the specimens available to us can be distinguished with the characters given in Key 6 and therefore the species is here accepted as valid.

***Physocephala pilitarsis* species-group**

This group is identical to the *Pseudophysocephala pilitarsis* species-group of Camras (2001). Contrary to Camras (2001), however, it is not straightforwardly identified because the main character he used – a large hyaline area between the vena spuria and media in cell r_{4+5} – also occurs in some other *Physocephala* species-groups. Females belonging to this group are relatively easy to recognise by the theca, and the chaetotaxy and shape of the tarsi (Key 1). Males are more difficult to identify, however, and only careful examination of several characters in combination will rule out placement in other groups. In addition, species identification of males is so far based mainly on colouration characters, which may be variable. There has not been enough material available to begin looking at the male genitalia. All members of this species-group are restricted to the Afrotropical Region.

Key 7 – Identification of the *Physocephala pilitarsis* species-group

1. Reddish-brown species, scutum with three black stripes, scutellum reddish-brown, abdomen mainly reddish-brown; ♀ fore tarsi wide and bare, lacking any long setulae which are curled apically [based on the original description only] ..... ***P. rufa* (Camras, 2001)**

– Black to brown species, scutum mainly black, lacking distinct stripes, scutellum black, abdomen with at most tergites 1–3 orange-brown; ♀ fore tarsi often with unusual characters such as curled setulae **2**

2. Basal cell and basal medial cell dark and completely covered with microtrichia (Fig. 118); radial-medial crossvein sometimes quite short and the hyaline area posterior to vena spuria in cell r_{4+5} sometimes indistinct (Fig. 118); ♀ fore tarsus and middle tarsus with long setulae which are curled apically (Figs 114, 116); ♀ theca triangular and adpressed to abdomen (Fig. 115); ♀ sternite 6 with broad field of black setae which is concave posteriorly (Fig. 115) ..... ***P. pilitarsis* Kröber, 1936**

– Basal cell and basal medial cell hyaline, and at least partly lacking microtrichia; radial-medial crossvein sometimes quite short but the hyaline area posterior to vena spuria in cell r_{4+5} is always distinct; ♀ fore tarsus may have long setulae but these are not curled apically; ♀ theca and ♀ sternite 6 different **3**

3. Pulvilli spine-like (Fig. 120) ..... ***P. spinipes* (Camras, 2001)**

– Pulvilli not spine-like, but normally developed **4**

4. Cells r_1 and r_{2+3} completely dark brown, costal cell never hyaline but sometimes paler than cell r_1 (Fig. 113); ♀ fore tarsus and middle tarsus not obvious widened and lacking outstandingly long setulae (Fig. 109); ♀ hind tibia with extremely short tarsomeres (Figs 111, 112); ♀ theca shown in Fig. 110 ..... ***P. nitida* (Kröber, 1915)**

– Cells r_1 and r_{2+3} more or less hyaline, never both completely tinged dark brown, costal cell sometimes hyaline; ♀ fore tarsus with or without long setulae; ♀ hind tibia, hind tasomeres and theca different..... **5**

5. Costal cell pigmented but slightly paler than cell r_1; cells r_{2+3} and r_{4+5} apically hyaline, with base contrasting darker; ♀ fore and middle tarsi obvious shorter than tibiae; fore tarsus with characteristic long setulae: at apex with one pair of forward-directed and strongly incurved setulae, and basally with two pairs of strongly back-curved setulae; ♀ sternite 6 with a broad field of black, dispersed setae..... ***P. tetratarsata* (Camras, 2001)**

– Wing with different markings; ♀ fore and middle tarsi different; ♀ sternite 6 different..... **6**

6. Cell r_1 completely dark brown, cell r_{2+3} mostly dark brown and only slightly paler apically; abdomen completely black; ♀ theca with two patches of 6–7 strong black setae; sternite 6 with two distinct lateral fields of dense black setae and on each sits a pair of very close-set, long and strong black setae; ♀ fore tarsus not obviously widened, and lacking long setulae which equal the tarsus width..... ***P. basilewskyi* (Camras, 1962)**

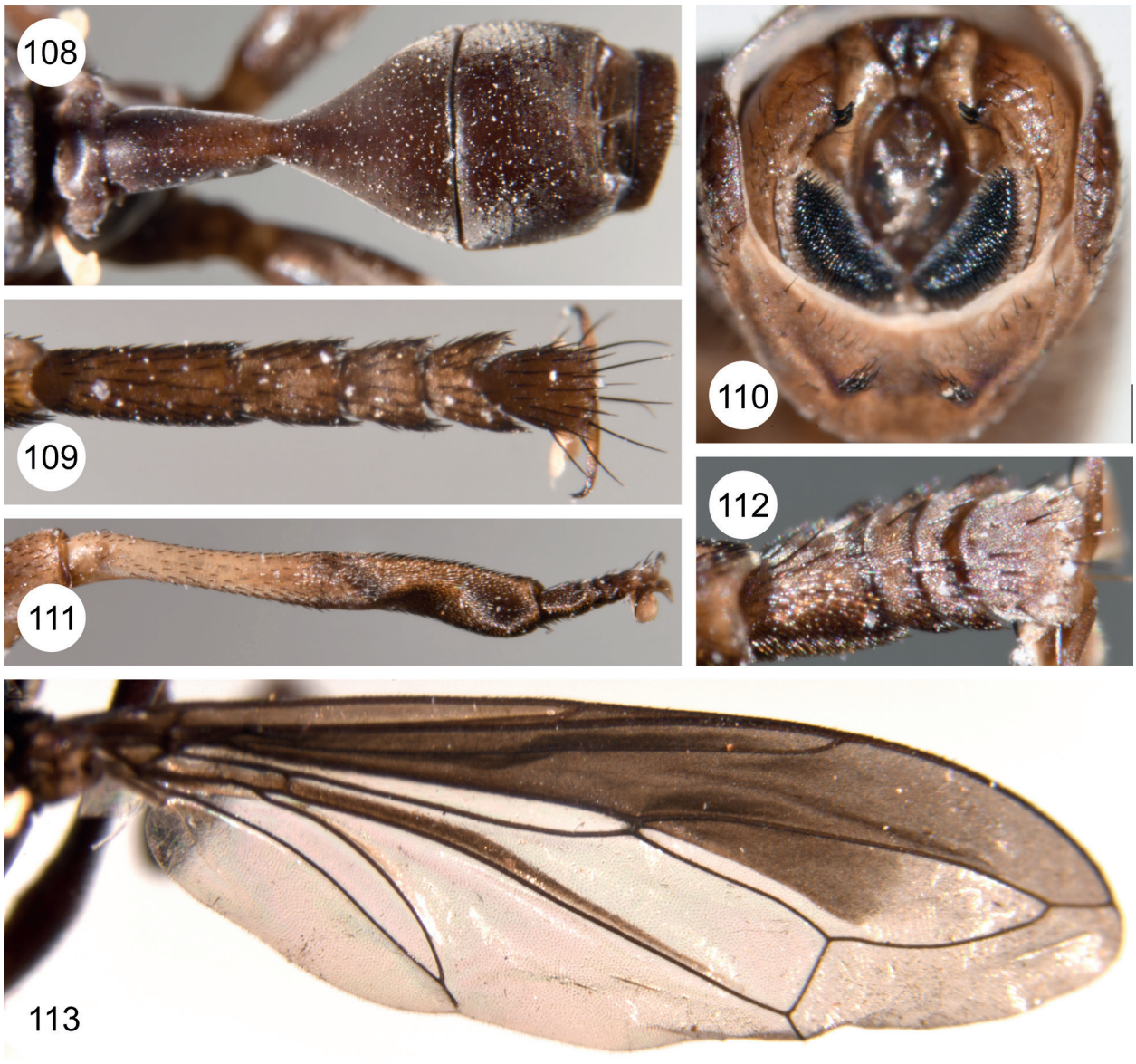
– Cell r_1 mainly hyaline, cell r_{2+3} at most slightly infuscated dark brown (Fig. 125); tergites 2–3 at least partly orange-brown (Fig. 122); ♀ theca and sternite 6 lacking any fields of setae or long strong setae, but with a large plate which has sparse fine setulae (Fig. 124); ♀ fore tarsus obviously widened and with long black setulae which equal the tarsus width (Fig. 123)..... ***P. vitripennis* Curran, 1928**

***P. basilewskyi* (Camras, 1962)**
Pseudophysocephala basilewskyi Camras 1962

Primary type material examined. ♀ holotype of *Pseudophysocephala basilewskyi* Camras, 1962: (1) "♀ / Holotypus"; (2) "Coll. Mus Congo / Kib.-Ituri : Irumu / 18/ XII-1952 / P. Basilewsky"; (3) "Holotype ♀ / *Pseudophysocephala* / *basilewskyi* / Camras"; (4) "RMCA ENT / 000012176"; coll. MRAC.

***P. nitida* (Kröber, 1915)**
(Figs 108–113)
Conops nitidus Kröber 1915

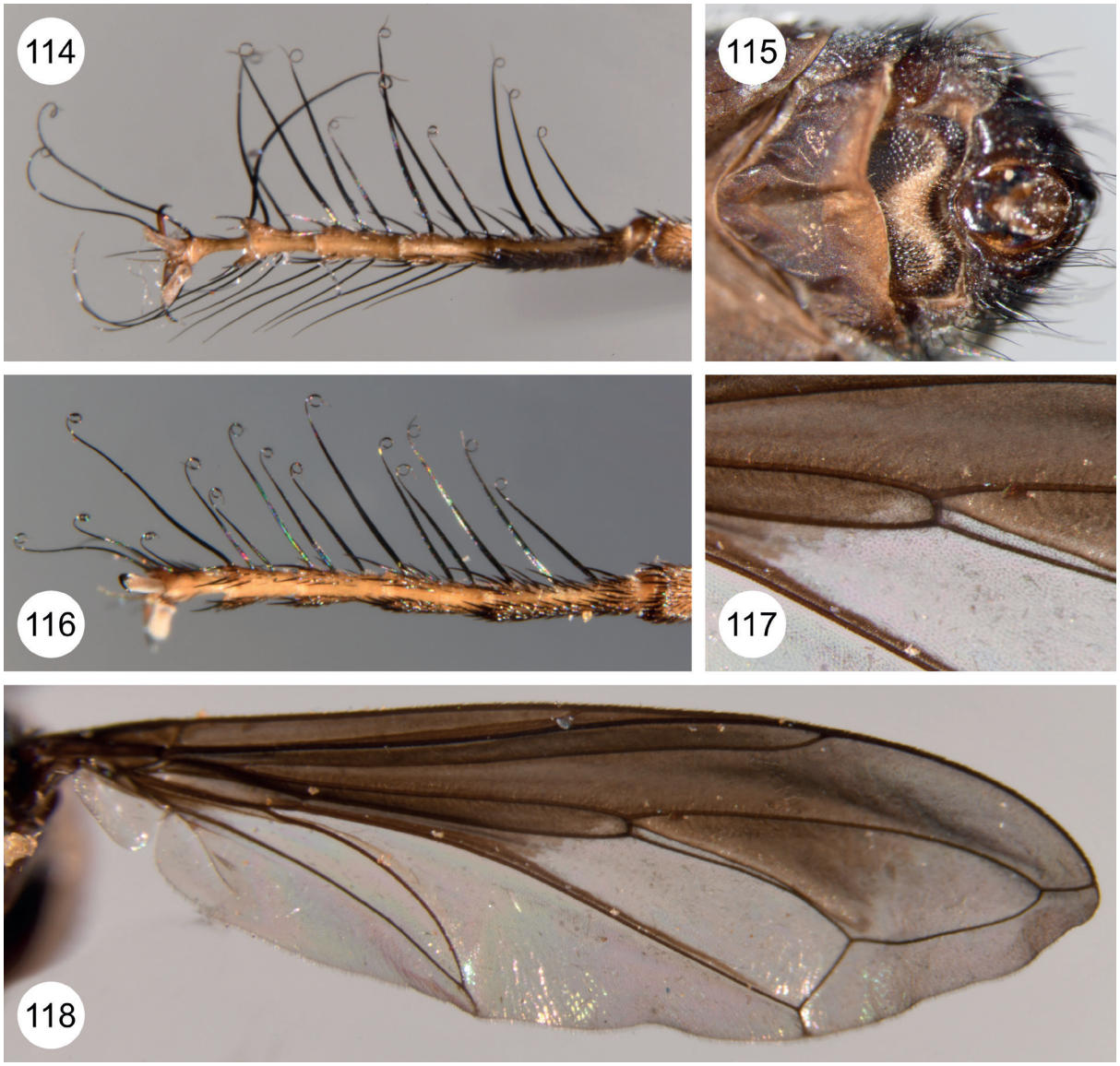
Primary type material examined. ♂ holotype of *Conops nitidus* Kröber 1915f: (1) "Togo / Bismarckburg / 2.–



Figs 108–113. *Physocephala nitida* (Kröber, 1915) (♀, Kloto forest). **108**. ♀ abdomen, dorsal view; **109**. ♀ fore tarsi, dorsal view; **110**. ♀ theca, ventral view; **111**. ♀ hind tibia and hind tarsi, lateral view; **112**. ♀ hind tarsi, dorsal view; **113**. Wing, dorsal view.

18.vi.93 / L. Conradt S."; (2) "*Conops* ♂ / *nitidus* Kröb/ O. Kröber det. 1914"; (3) "Cotype"; (4) "Zool. Mus. Berlin"; (5) "*Pseudophysocephala* / *nitidus* / Kröber / det. Camras, 2000"; coll. ZMHB.

Additional material. BENIN: 1♂, x.2008, Ahozon, forest area [06°22'57.59″N 02°9'15.92″E], leg. G. Goergen, coll. IITA; 1♀, 26.iii.2013, Dangbo, sacred forest, leg. G. Goergen, coll. IITA; KENYA: 1♂, 12.–26.ii.2005, Nyanza Province, Ungoye Field Station [0°36.91′S 34°05.52′E], 1147 m, leg. R. Copeland, coll. NMKE; 1♂, 27.ii.–6.iii.2005, ditto; TANZANIA: 1♀, 1.vi.–4.vii.1893, Bismarckburg [= Kasanga], det. as *P. nitida* by Kröber 1914 and Camras 2000, wrongly interpreted as female syntype, leg. L. Conradt S., coll. ZMHB; TOGO: 1♂, 26.i.2016, Dzobégan, monastery [7°14'22.07″N 0°41›58.64″E], leg. G. Goergen, coll. IITA; 1♂, ix.2006, Kloto, forest area [6°57'31.66″N 0°34›29.75″E], leg. G. Goergen, coll. IITA; 1♂, viii.2008, ditto; 1♂, i.2005, ditto; 1♀, vi.2008, ditto; 1♀, x.2016, ditto.



Figs 114–118. *Physocephala pilitarsis* Kröber, 1936 (♀, Kakamega forest). **114**. ♀ fore tarsus, ventral view; **115**. ♀ postabdomen, ventral view; **116**. ♀ middle tarsus, lateroventral view; **117**. Radial-medial crossvein, dorsal view; **118**. Wing, dorsal view.

***P. pilitarsis* Kröber, 1936**
(Figs 114–118)
Physocephala pilitarsis Kröber 1936
= *Pseudophysocephala ugandae* Kröber 1939, junior homonym of *Physocephala ugandae* Kröber, 1915
Primary type material examined. ♀ holotype of *Physocephala pilitarsis* Kröber, 1936: (1) "Ph. Type / *pilitarsis*"; (2) "Musée du Congo / Ubangi: Nzali / 3/4-II-1932/ H. J. Brédo"; (3) "R. DÉT / N / 2992"; (4) "*Physocephala* / *pilitarsis* Krb. / det. Kröber 1935"; (5) "Typus"; (6) "RMCA ENT / 000012180"; coll. MRAC.

♂ holotype of *Pseudophysocephala ugandae* Kröber, 1939: (1) "Holo- / type"; (2) "Mpanga Forest / c 4,000 ft / F. W. Edwards"; (3) "Uganda: / Ruwenzori Range. / xii.1934–i.1935. / B. M. E. Afr. Exp. / B: M. 1935-203."; (4) "*Pseudophysocephala* / *ugandae* Kröb. / examined & det. / O. Kröber 1938."; (5) "*Pseudophyso-* / *cephala ugandae* / Krb"; (6) "Type"; (7) "*Pseudophysocephala* / *pilitarsis* / Kröber / det. Camras, 2000"; coll. NHML.
Additional material. CENTRAL AFRICAN REPUBLIC: 1♂, 14.vi.2009, 150 km nww Mbaiki [04°05′N 17°02′E], 620 m, leg. J. Halada, coll. CULSP; 1♀, 2.v.2010, 20 km nne Mbaiki [03°04′N 18°00′E], 450 m, leg. J. Halada, coll. CULSP; 1♂, 9.xi.2012, 40 km e of Bambio [3°60′N 17°12′E], 500 m, leg. J. Halada, coll. CULSP; 1♂, 9.xii.2008, 50km ne Bambio [03°59′N 17°11′E], 450 m, leg. J. Halada, coll. CULSP; 3♂♂, 4.xii.2010, 60 km w Banibo [3°50′N 16°44′E], 630 m,

leg. J. Halada, coll. CULSP; 1♂, 24.–28.xi.2010, 70 km nne Bangui [04°57′N 18°46′E], 445 m, leg. J. Halada, coll. CULSP; DEMOCRATIC REPUBLIC OF CONGO: 1♂, xii.1923, Katompe, Katanga, det. as "? *abyssinica*" by Brunetti 1925, det. as *P. pilitarsis* by Camras 1962, leg. Bequaert, coll. MRAC; 1♂, viii.1932, Lulua, Kapanga, det. as P. "*abyssinica* Krb var." by Kröber 1935, leg. F. G. Overlaet, coll. MRAC; 1♂, xi.1932, Lulua, Kapanga, det. as *P*. "*abyssinica* Krb var." by Kröber 1935, leg. F. G. Overlaet, coll. MRAC; 1♂, 1.iv.1937, Terr. Lisala, det. as *P. pilitarsis* by Camras 1962, leg. Leontovich, coll. MRAC; EQUATORIAL GUINEA: 1♀, 16.–31.viii.1906, Alén, Benitogebiet, det. as *P. pilitarsis* by Camras 2000, leg. G. Tessmann, coll. ZMHB; 1♀, 1.–15.xi.1906, Alén, Benitogebiet, det. as *P. pilitarsis* by Camras 2000, leg. G. Tessmann, coll. ZMHB; 2♂♂, vi.–viii.1908, Uelleburg, det. as *P. pilitarsis* by Camras 2000, leg. G. Tessmann, coll. ZMHB; KENYA: 1♂, 13.–27.viii.2006, Western Province, Kakamega Forest near Rondo Guest House [0.22767°N 34.88533°E], 1630 m, Malaise trap set across small permanent stream, leg. R. Copeland, coll. NMKE; 1♀, 3.–17.xii.2006, ditto; 1♀, 13.–27.viii.2006, ditto; 1♂, 12.–19.iii.2000, Western Province, Kakamega Forest, Malaise trap [0°14.13′N 34°51.87′E], leg. R. Copeland, coll. NMKE; 1♂, 28.viii.–4.ix.1999, ditto; 1♂, 2.–9.i.2000, ditto; 1♀, 20.–27.xi.1999, ditto; 2♀♀, 17.–24.vii.1999, ditto; 1♀, 13.–20.ii.2000, ditto; 2♀♀, 11.–18.ix.1999, ditto; 2♀♀, 3.–10.vii.1999, ditto; 1♀, 21.–28.v.2000, ditto; UGANDA: 1♂, vi.1912, Kawanda, det. as *P. pilitarsis* by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922154]; 1♂, 2.viii.1962, Mabira Forest, det. as *P. pilitarsis* by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922155].

***P. rufa* (Camras, 2001)**
Pseudophysocephala rufa Camras 2001

No material of this species has been seen by us. Only the female holotype is known, recorded from Malawi (Mulanje Mountain, Nr. Likabula) at 1500m.

***P. spinipes* (Camras, 2001)**
(Figs 119–121)
Pseudophysocephala spinipes Camras 2001

Primary type material examined. ♀ holotype of *Pseudophysocephala spinipes* Camras 2001: (1) "Tanganyika / Amani / 1957 / J. G. Halcrow / in thick bush"; (2) "C. I. E. Coll. / NO 15485"; (3) "*Pseudophysocephala* / sp. ? / Det. R. L. Coe. 1958"; (4) "Pres. by / Com Inst Ent / B M 1969-3"; (5) "Holotype ♀ / *Pseudophysocephala* / *spinipes* / Camras"; coll. NHML.

Additional material. KENYA: 1♀, 23.ix.2005, Kakamega Forest, Yala River [0°13′N 34°53′E], 1450 m, leg. A. Freidberg, coll. TAUI.

***P. tetratarsata* (Camras, 2001)**
Pseudophysocephala tetratarsata Camras 2001

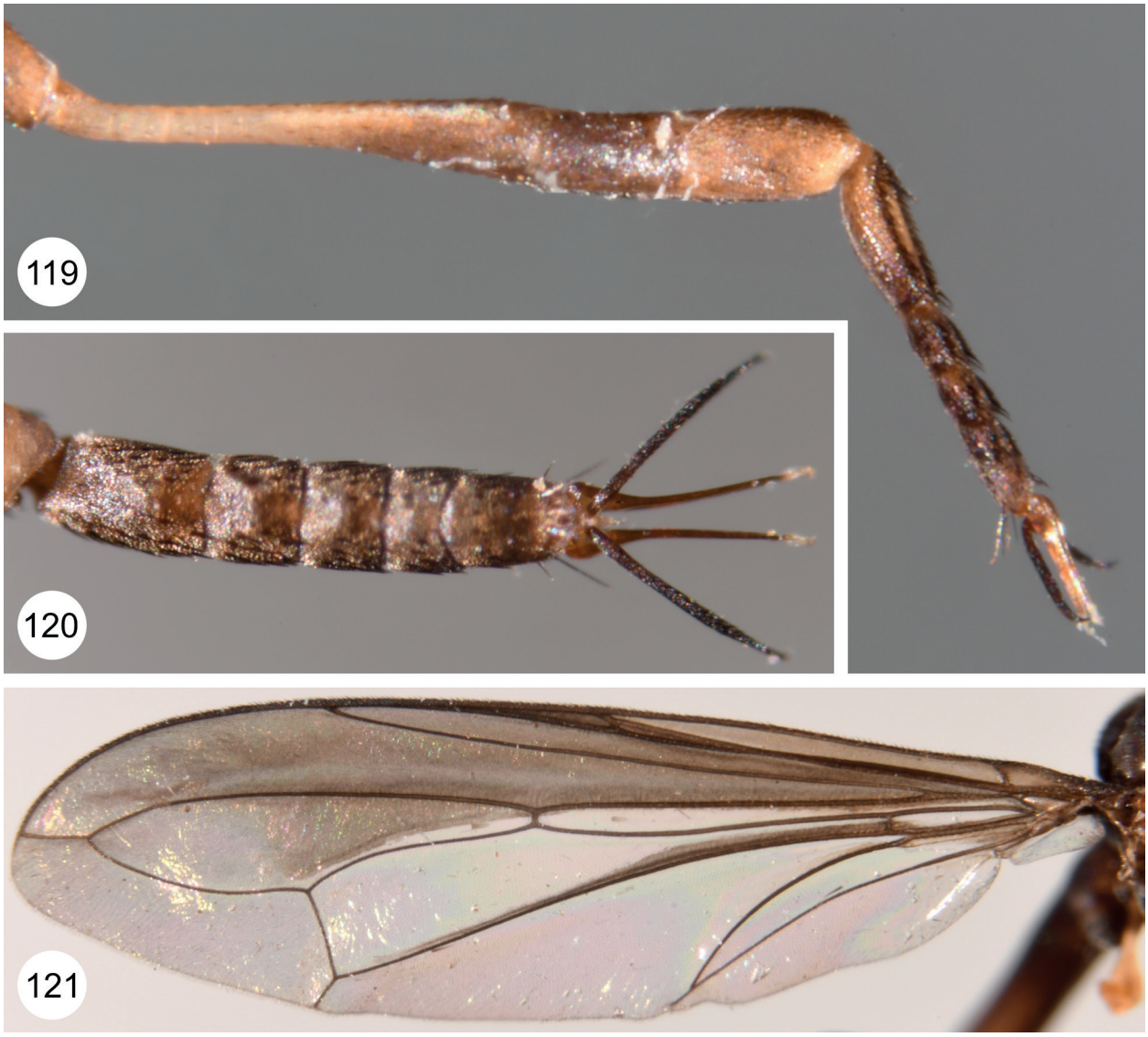
Primary type material examined. ♀ holotype of *Pseudophysocephala tetratarsata* Camras 2001: (1) "Yaoundé Cam. / Nkolbisson / Nonvll. X 1974"; (2) "parasitizing 6"; (3) "61a"; (4) "C. I. E. Coll. / A. 7811"; (5) "Pres by / Comm Inst Ent / B M 1975-1"; (6) "Holotype ♀ / *Pseudophysocephala* / *tetratarsata* / Camras"; (7) "*Pseudophysocephala* / *tetratarsata*" and on underside of this label "*Pseudophyso*. / BM. Mus. From. / Yaounde Cam"; coll. NHML.

Below the holotype is a large label with additional information: "Following and ovipositing on bees which were collecting sap flowing from Scolyid entrance holes in felled trees. Each was following a bee flying immediately behind it. When a *Physocephala* managed to approach closely a bee the fly deposited an egg on its body with an extreme rapidity and I could establish later that the egg remained attached to the tegument of the bee. Dr. Guido Nonveiller in letter 6.4.76 to K. M. Harris. C. I. E.*"* [Commonwealth Institute of Entomology].

***P. vitripennis* Curran, 1928**
(Figs 122–125)
Physocephala vitripennis Curran 1928
= *Physocephala intermedia* Kröber 1936 (**syn. nov.**)
= *Conops bouvieri* Séguy 1936 (**syn. nov.**)
= *Pseudophysocephala meii* Camras 2001 (**syn. nov.**)
= *Pseudophysocephala acroschista* sensu Camras (2001), nec Speiser, 1911

Primary type material examined. ♂ holotype of *Physocephala intermedia* Kröber, 1936: (1) "Ph. Type ♂ / *intermedia*"; (2) "Musée du Congo / Ubangi: Nzali / 3/4-II-1932/ H. J. Brédo"; (3) "R. DÉT / Z / 2992"; (4) "*Physocephala* ♂ / *intermedia* Krb. / det. Kröber 1935"; (5) "Type"; (6) "RMCA ENT / 000012179"; coll. MRAC.
♀ holotype, ♂ paratype (pinned on one needle) of *Pseudophysocephala meii* Camras 2001: (1) "Republique de Guinea PNHN5 / 10°16'43''N 10°26'02''W / Faranen, Sidakoro, mangor, / 29.XII.1995, leg. M. Mei"; (2) "Holotype ♀ and ♂ / *Pseudophysocephala* / *meii* / Camras"; (3) [glued male abdomen]; (4) "*Pseudophysocephala* / cf *vitripennis* Curran / M. Mei det. 1997"; (5) "*Pseudophysoc* / *meii*"; coll. FMNH.

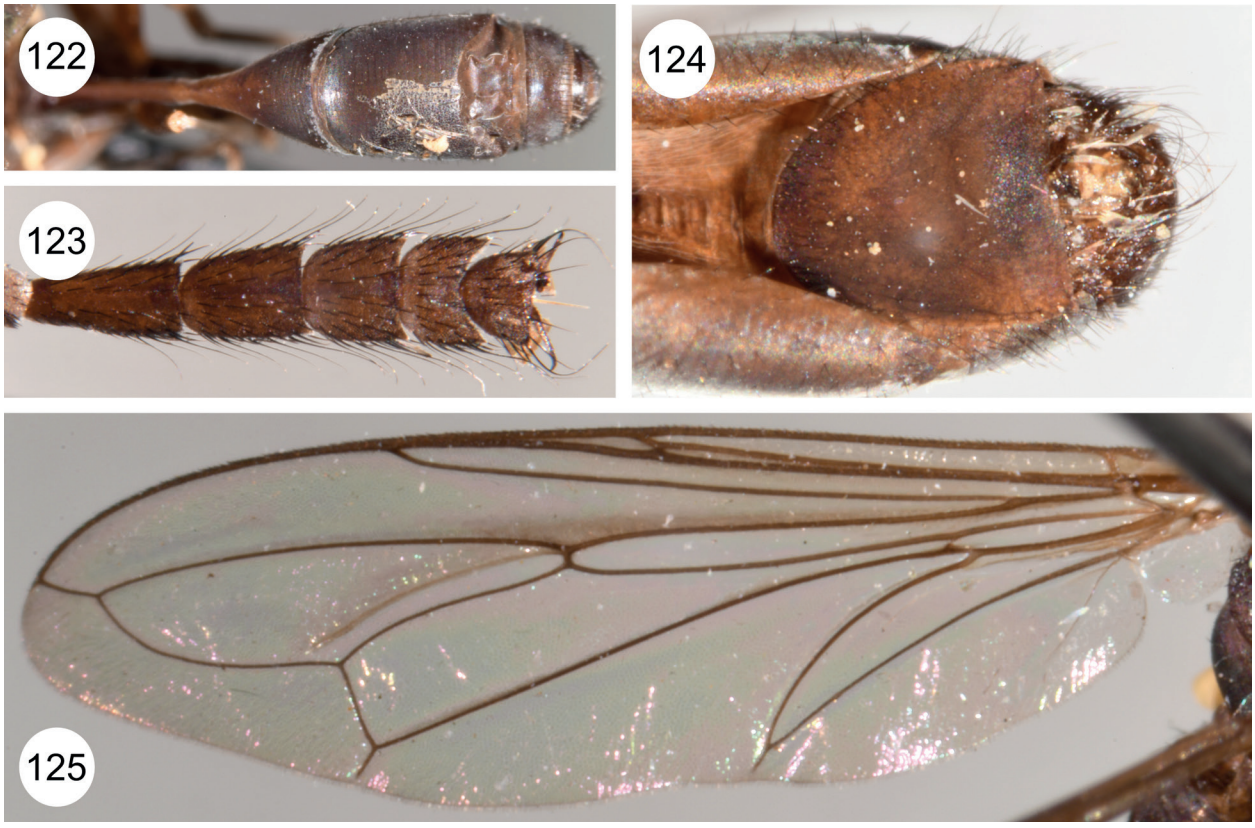
Additional material. BENIN: 1♂, 20.iii.2011, Niaouli, forest area [06°44'3.08″N 02°8'2.59″E], leg. G. Goergen, coll. IITA; 1♂, 2.ii.2014, Niaouli, forest area [06°44'3.08″N 02°8'2.59″E], sweepnetting, leg. G. Goergen, coll. IITA; 2♂♂, xi.2016, Sérou, forest area [09°40'03.00″N 01°41'50.00″E], leg. G. Goergen, coll. IITA; DEMOCRATIC REPUBLIC OF CONGO: 1 specimen, 18.x.1945, Tshuapa, Flandria, det. as *P. intermedia*



Figs 119–121. *Physocephala spinipes* (Camras, 2001) (♀, Kakamega forest). **119**. ♀ hind tibia and tarsi, lateral view; **120**. Middle tarsi, dorsal view; **121**. Wing, dorsal view.

by Camras 1962, leg. P. Hulstaert, coll. MRAC; 2♂♂, no date, Ville Malela, Chief Casende [5,40S 23,45E], det. as *P. acroschista* by Camras 2000, det. as *P. intermedia* by Camras 1962, leg. J. Bequaert, coll. FMNH; GHANA: 1♂, 9.ix.1947, Kumasi, paratype of *P. meii*, leg. J. Bowden, coll. NHML [NHMUK010922153]; NIGERIA: 2♂♂, xii.1998, Ibadan, IITA, sweeping net in forest, leg. G. Goergen, coll. IITA; 1♀, 30.i.1988, Ibadan, IITA, leg. G. G. M. Schulten, coll. RMNH; 1♀, 3.ii.2000, Ibadan, IITA, on mud at forest margin, leg. G. Goergen, coll. IITA; SIERRA LEONE: 1♂ 1♀, 28.xi.1993, 5 km w Kabala, swept along road [09°35′N 11°35′W], leg. L. Cederholm, R. Danielsson & R. Hall, coll. MZLU; UGANDA: 1♀, 16.i.1966, nr. Entebbe, paratype of *P. meii*, attacking *Apis*, leg. D. J. Greathead, coll. NHML [NHMUK010922152].

Camras (1962b, 2001) was the only author to distinguish four very similar species of the *pilitarsis* group*: P. vitripennis* (Curran, 1928), *P. intermedia* (Kröber, 1936) (as *P. acroschista sensu* Camras (2001) *nec* Speiser, 1911), *P. bouvieri* (Séguy, 1936) and *P. meii* Camras, 2001. He used characters of wing colouration, relative length of tarsomeres and extent of dusting on the postpronotum to segregate these, but all of these characters are variable and the four taxa intergrade. There is little consistent difference in the female theca or tarsi between these taxa. The holotypes of *P. intermedia* and *P. meii* were avail-



Figs 122–125. *Physocephala vitripennis* (Curran, 1928). **122**. ♀ abdomen, dorsal view (♀, w Kabala); **123**. ♀ fore tarsi, dorsal view (♀, w Kabala); **124**. ♀ theca, ventral view (♀, w Kabala); **125**. Wing, dorsal view (♀, Ibadan).

able to us but the holotype of P. *bouvieri*, which should be in Muséum National d'Histoire Naturelle, Paris, but which was not included in the list of material available there (GBIF 2019), could not be investigated. These four species are herewith treated as synonyms: *Physocephala vitripennis* Curran, 1928 = *Physocephala intermedia* Kröber, 1936 (**syn. nov.**) = *Physocephala* [*Conops*] *bouvieri* Séguy, 1936 (**syn. nov.**) = *Physocephala* [*Pseudophysocephala*] *meii* Camras, 2001 (**syn. nov.**).

Physocephala pubescens species-group

Our *pubescens*-group equates to the *Pseudophysocephala pubescens* species-group of Camras (2001). This group is easily recognised by the distinct setae on the mediotergite and several other subtle characters as summarised in Key 1. Key 8 below, and the interpretation of the species presented here, is based mainly on the key and descriptions of Camras (2001). All members of this group are restricted to the Afrotropical Region.

Key 8 – Identification of the *Physocephala pubescens* species-group

1. Frons with numerous short setulae (e.g. Fig. 129), or least laterally with some setulae additional to those on vertex; scutum and mediotergite with short setae only, shorter than diameter of a tibia (e.g. Fig. 148). **2**

– Frons lacking setulae, setulae only present on vertex; scutum and mediotergite with long setae, longer than diameter of a tibia (e.g. Fig. 141)..... **5**

2. Tibiae lacking or with only very indistinct rows of black setulae (e.g. Fig. 127); setulae on frons and face obvious and widely distributed, some of them inside the facial grooves and on the facial ridges (e.g. Figs 128, 129)..... **3**

– Tibiae dorsally with distinct rows of black setulae (e.g. Fig. 140); no setulae in facial grooves or on facial ridges **4**

3. Very long, fine and dense setulae all over; long setulae on hind femur are especially obvious. Long setulae all over frons (longer than the diameter of hind tibia), and on abdomen. ***P. hirta* (Kröber, 1939)**

– Vestiture of fine setulae much less long and dense. Very few setulae anywhere longer than diameter of hind tibia..... ***P. barbata* (Camras, 2001)**

4. Maximum length of apical aristomere about twice maximum length of projection of basal aristomere (Kröber 1936: 272, Fig 132); setulae on frons indistinct and confined to outermost lateral margins of frons (Fig. 131); ♀ theca semi-circular, with an elongated field of dense black setae, the anterior and posterior margins of which are almost parallel ....***P. caenostylata* Kröber, 1936**

– Maximum length of apical aristomere less than twice maximum length of projection of basal aristomere (Fig 149); setulae on frons more widely distributed, usually not only confined to outermost lateral margins of frons (Fig. 147); ♀ theca narrow, triangular, with rounded central field of dense black setae (Fig. 150) .....***P. pubescens* Brunetti, 1925**

5. Tibiae lacking dorsal lines of black setulae; scutum orange-brown, with three black stripes; ♀ unknown [based on the original description only]..... .....***P. alinea* (Camras, 2001)**

– Tibiae with distinct lines of black setulae (e.g. Fig. 140); scutum completely black centrally **6**

6. Basal aristomere projection shorter than apical aristomere (Fig. 137); setulae on vertex denser and therefore surface of vertex appears very roughened. Anterior part of vertex with a distinct area bare of setulae; setulae on vertex shorter, forming a level-topped pile in lateral view, the longest setulae on vertex being shorter than scape (Fig. 136); ♀ theca with crescentric apical field of long, blunt black setae, the longitudinal height of the field being distinctly greater than width (Fig. 139)..... .....***P. goergeni* spec. nov.**

– Basal aristomere projection about same length as apical aristomere (Fig. 145); anterior part of vertex which lacks setulae indistinct and much smaller, and with a distinct depression (Fig. 143); setulae on vertex less dense and therefore surface of vertex appears less roughened (Fig. 143); setulae on vertex longer, becoming taller at rear in lateral view, the longest setulae on vertex about as long as scape; ♀ theca with a much broader field of black setae (Fig. 146) .....***P. nigrita* (Camras, 1962)**

***P. alinea* (Camras, 2001)**
Pseudophysocephala alinea Camras 2001

No material of this species has been seen by us. Only the male holotype is known, from Tanzania (Usambara Mountains, Amani) at 1000m.

***P. barbata* (Camras, 2001)**
(Figs 126–130)
Pseudophysocephala barbata Camras 2001

Material. SOUTH AFRICA: 1♂, 10.–22.xii.1930, Cape Province, Somerset East, paratype of *P. barbata*, det. as *P. constricta* by Kröber 1938, leg. R. E. Turner, coll. NHML [NHMUK010922128]; ZIMBABWE: 2♂♂, 28.x.1965, n Vumba [= Bvumba] [-19.093432 32.740631], paratype of *P. barbata*, leg. D. Cookson, coll. FMNH.

Physocephala barbata looks like *P. hirta* but with shorter setulae. Only the female holotype of *P. hirta* is known whilst only males are known of *P. barbata*, leading to the suspicion that they may be conspecific. It would be useful to find the opposite sex of one or other of these species to exclude the possibility of sexual dimorphism such as that observed in other species of the *pubescens* group.

***P. caenostylata* Kröber, 1936**
(Figs 131–133)
Physocephala caenostylatus Kröber 1936

Primary type material examined. ♀ holotype of *Physocephala caenostylatus* Kröber, 1936: (1) "*Ph*. Type ♂ / *caenostylus* [sic]"; (2) "Musée du Congo / Kibali-Ituri : Kilo / V-1930 / G. du Soleil"; (3) "R. DÉT / U / 2992"; (4) "*Physocephala* ♂ / *caenostylus* [sic]/ Krb / det. Kröber 1935"; (5) "Typus"; (6) "RMCA ENT / 000012178"; coll. MRAC.

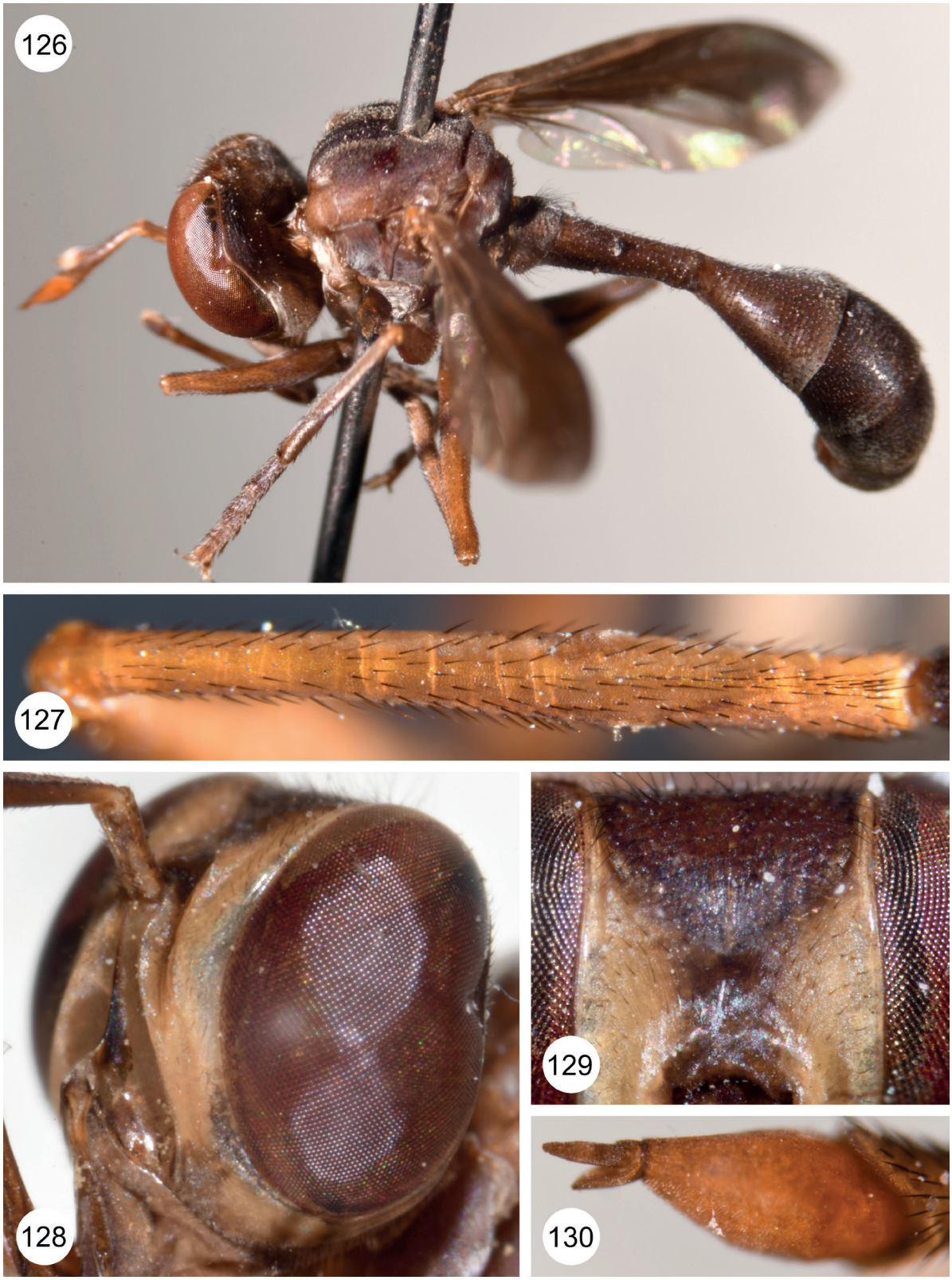
Additional material. KENYA: 1♀, 7.x.2013, S. Masai Reserve, des. as syntype of *P. pubescens*, leg. T. J. Anderson, coll. NHML [NHMUK010922163]; TOGO: 1♂, vi.2008, Kloto, forest area [6°57'31.66″N 0°34›29.75″E], leg. G. Goergen, coll. IITA.

Whilst identification of female *P. caenostylata* is straightforward males are very difficult. We are not convinced that all specimens can be safely distinguished from those of *P. pubescens*.

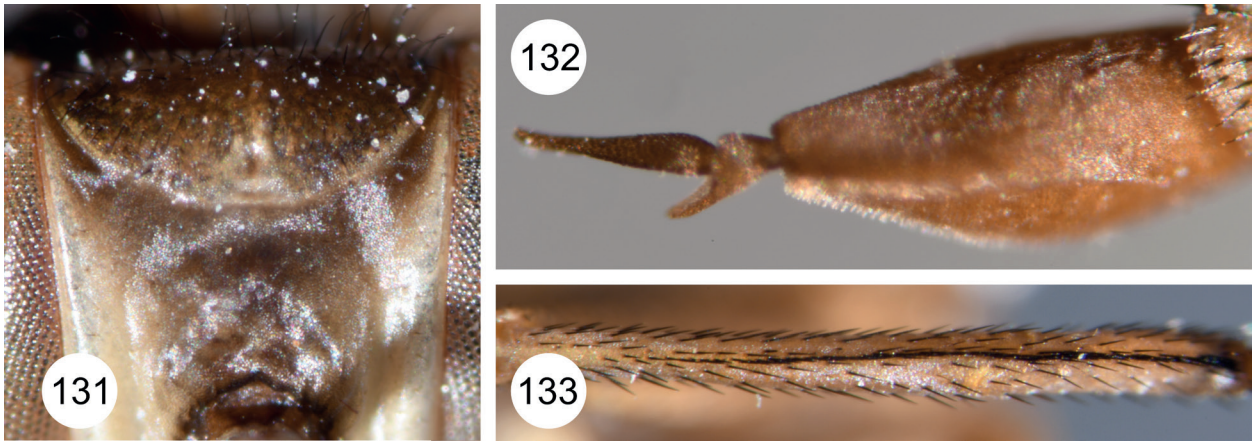
***P. goergeni* spec. nov.**
(Figs 134–142)
urn:lsid:zoobank.org:act:A4F67D5A-00A2-451D-8B10-59F1CA272EC0

Holotype ♀. (1) "Togo / Kloto /forest area / Feb. 2018 / Col.: G. Goergen"; (2) "Holotypus / *Physocephala goergeni* / spec. nov. ♀ / det. Stuke 2019". Holotype is deposited in ZMHB. The specimen is pinned and in very good condition.

Description of holotype (female)
Length 10.8 mm; Wing-length 7.0 mm; Head-height 2.8 mm.



Figs 126–130. *Physocephala barbata* (Camras, 2001) (♂, paratype n Vumba). **126**. Habitus, lateral view; **127**. Middle tibia, dorsal view; **128**. Face, anterolateral view; **129**. Frons, dorsal view; **130**. Arista, lateral view.



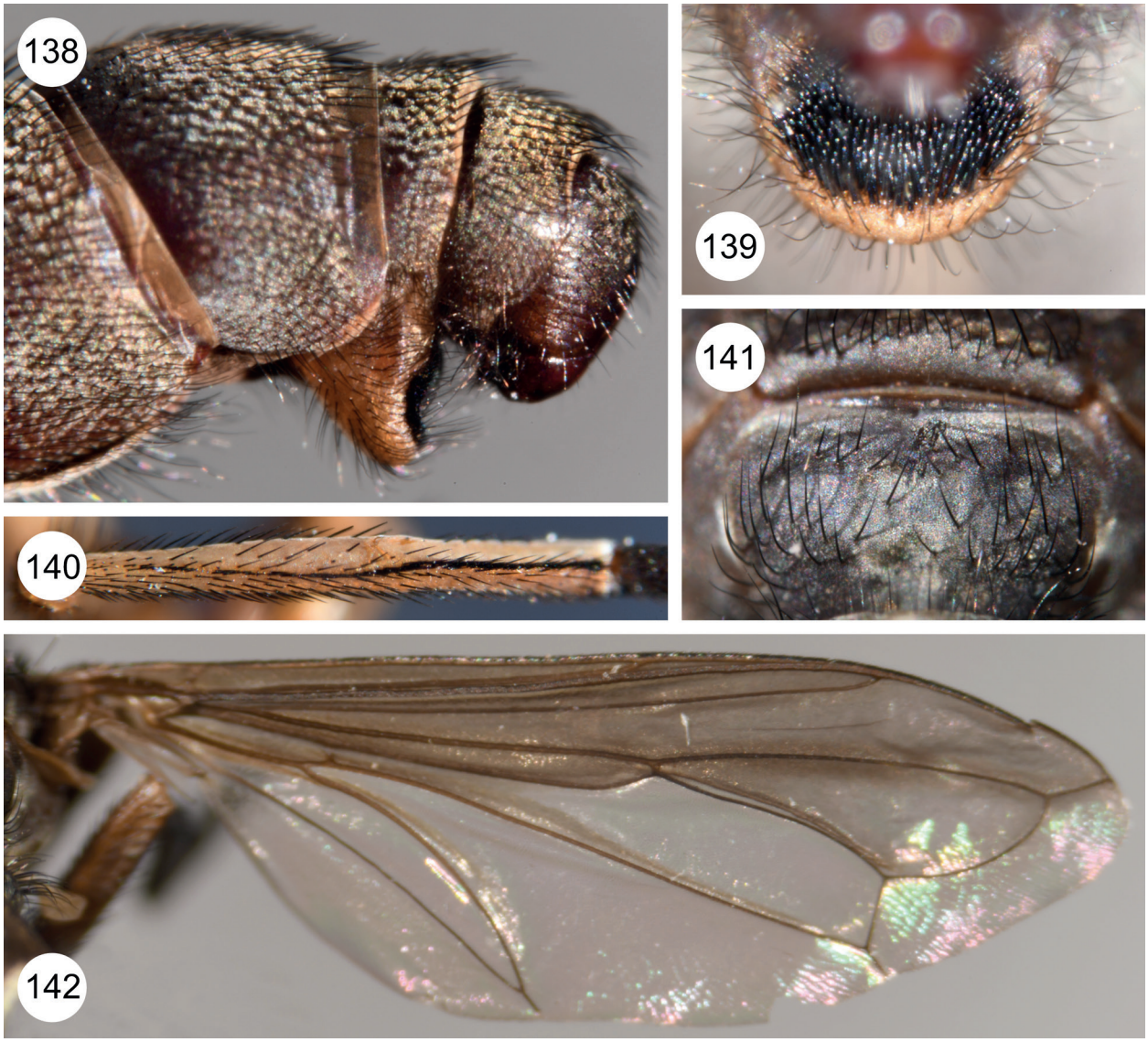
Figs 131–133. *Physocephala caenostylata* Kröber, 1936 (♂, Kloto). **131**. Frons, dorsal view; **132**. Arista, lateral view; **133**. Middle tibia, dorsal view.

Head. Antenna orange-brown, pedicel and tip of first flagellomere blackish-brown. Arista stylus-like, with 2 aristomeres situated at tip of first flagellomere (Fig. 137). Basal aristomere with projection about as long as apical aristomere. Scape about four times longer than maximum width, apically and ventrally with setae. Pedicel about six times longer than maximum width, apically and most of dorsal surface covered with black setulae. Pedicel lacking any ridge at base, expanded towards apex. First flagellomere long and conical, about three times as long as high, pointed, ventrally with indistinct membranous area. Lunule between base of antennae and ptilinal suture distinct, slightly longer than width of scape. Eye brown, lacking ommatrichia, facets all of about the same size. Posterior margin of eye with distinct shining indentation. Gena-height / eye-height (measurements taken from head in lateral view) = 0.1. No ocellar tubercle, no ocelli and no ocellar triangle evident. Frons (Fig. 135) longer than broad, slightly concave, not projecting above eyes posteriorly, lacking any setulae. Anterior margin of frons slightly concave. Frons yellow with broad brown midstripe. No frontofacial spot. Frons indistinctly dusted all over. Vertex as broad as frons, separated from latter by laterally distinct and medially indistinct ridge. Dense cover of black setulae on vertex forming a more or less level-topped pile in lateral view (Fig. 136). Vertex apically with triangular field which lacks setulae or any distinct depression. Face yellow with central brown to blackish spot. Facial grooves with indistinct dusting, narrowly dusted along eye margin. Gena yellow, generally lacking setae, although with several setae below postcranium. Distinct facial grooves reaching mouth edge, facial carina reaching from base of antennae to a distinctly broadened and outstanding frontoclypeal tubercle. Ptilinal suture stretching on either side well beneath antennal bases. Oral cavity tapers dorsally. Postcranium not obviously invaginated, black dorsally and yellow ventrally. Whole postcranium slightly dusted, with no obviously denser dusting adjacent to posterior margin of eye. Occiput and postgena covered with black setulae. Postgena not widened and not delimited from occiput. Bottom portion of postcranium distinctly separated-off and not setulose. Proboscis reddish-brown basally and black apically, labellum blackish-brown. Frontoclypeal membrane long, light orange-brown and hardly delimited from orange-brown clypeus. Palps absent. Labium longer than head-length in lateral view, thickened basally, anterior section completely fused into a tube. Labrum as long as labium but very narrow. Labellum short, completely divided, hardly broader than adjacent haustellum, and covered with very short setulae.

Thorax mainly black, with pleura black to brown. Postpronotum orange-brown. Thorax evenly grey-dusted all over, lacking any distinctly denser dusting or shining areas. Presternum distinct, broad. Basisternum broad, not narrowed ventrallyh to a point, lacking setae or setulae. Proepisternum also lacking setae or setulae. Scutum covered with black setae. Notopleuron and postalarcallus with several stronger setae. Postalarcallus lacking any curved setulae beneath the black setae. Katepisternum with 10–15 setae posterodorsally, 1–2 setae medially, and no setae ventrally. Metakatepisternum, anepisternum and anepimeron lacking setae or setulae. Mediotergite convex, covered with strong black setae which can be as long as maximum diameter of hind femur. Subscutellum inconspicuous. Scutellum densely covered with black setae and with 3 outstanding larger setae on posterior margin. Wing as Fig. 142: Fore-margin of wing tinged brown, with brownish membrane between costa and media, brown basal-medial cell and slightly brownish hind-margin of discal-medial cell. Hyaline membrane between media and vena spuria in cell r_{4+5}. Veins brown to black. Wing completely covered with microtrichia. Radial-medial crossvein short but complete. Basal-me-

Figs 134–137. *Physocephala goergeni* **spec.** nov. (♀, holotype). **134**. Habitus, lateral view; **135**. Frons, dorsal view; **136**. Level-topped pile of setulae on vertex, lateral view; **137**. Arista, lateral view.

dial-cubital crossvein incomplete. Radius R_1 and R_{2+3} terminate close together in costa, well beyond end of subcosta. Radius R_{4+5} with shallow, even curve in distal section directed towards fore-edge of wing. Cell r_{4+5} pedunculate, vein R_{4+5}+M_1 well distinctly longer than radial-medial crossvein. Cubital cell cup elongated, longer than vein A_1+CuA_2, and pointed distally (i.e. cubitus CuA_2 and anal vein A_1 meet at an acute angle). Cubital veins CuA_1 and Basal-medial-cubital crossvein separated. Upper and lower calypters yellowish-white to brown, upper calypter with black setulae on margin. Alula broad (distinctly broader than long), lacking setulae on posteri-



Figs 138–142. *Physocephala goergeni* spec. nov. (♀, holotype). **138**. ♀ theca, lateral view; **139**. ♀ theca, posterior view; **140**. Middle tibia, dorsal view; **141**. Mediotergite, posterior view; **142**. Wing, dorsal view.

or margin. Venae spuriae pronounced in cell r_{4+5}, cubital cells cup and cua1, and discal-medial cell. Haltere white, with light brown base. Knob of haltere with black setulae. Legs orange with black to dark brown tarsi. Legs with inconspicuous silver dusting, coxae densely silver-dusted. Posterior surfaces of fore and middle tibiae with obvious silver-dusted fields distally. Legs generally with short, adpressed black setulae. Base of fore and middle femora lacking denser black setulae basally. Areas with dense black to brown setulae anteroventrally on tip of fore tibia, and ventrally and posteriorly on tip of hind tibia. Middle femur lacking a distinct row of regularly arranged setulae. Hind femur ventrally with several long thin setulae. No preapical setae dorsally on tibiae. No setae ventrally on tibiae but all tibiae dorsally with distinct line of densely-arranged small black setulae (Fig. 140). Femora ventrally lacking rows of short black setae, but with indistinct lines of setulae. Coxae with several setae but none outstandingly long. Hind femur slightly thickened in basal half. Each metatarsus with 1–2 stronger seta ventrally on base. Pulvilli yellowish-white. Claws brown, with broad black tips. Empodium light brown, about as long as pulvilli.

Abdomen dark brown to black, with theca and lateral margins of tergites 2–3 orange-brown. Abdomen with dense black setulae all over, those on tergite 2 less dense and obviously longer. Abdomen entirely somewhat silver, brown or golden-dusted, more strongly so at hind

margins of tergites 1–3. Tergite 8 shining. Tergites 1–3 fused and hardly distinguishable from each other. Maximum width of abdomen at segment 3. Sternites cannot be seen due the ventrally overlapping tergites. Tergite 5 and sternite 5 not completely fused laterally. Shape of theca as Figs 138 & 139. Anterior surface of the theca with long black setulae. Posterior surface apically with crescentric field of long, blunt, close-set black spicules which stand very close together, not arranged in rows.

Diagnosis
Physocephala goergeni is easily identified as member of the *Physocephala pubescens* species-group by the long setae on the mediotergite (Fig. 141). Within this group it belongs among those species which lack any setulae on the frons. The shape of the field of thick black setae on the theca distinguishes ♀ *P. goergeni* immediately from *P. nigrita* (Fig. 139 vs. Fig. 146). Additional important characters include the level-topped pile of setulae on the vertex (Fig. 136) and the shorter basal aristomere (cf Fig. 137 vs. Fig. 145).

Etymology
This species is dedicated to Georg Goergen (Ibadan, Nigeria) who collected the holotype, and who appears to be the first entomologist to collect Conopidae in Benin and Togo.

Distribution
To date only the locus typicus in Togo is known. The sampling site is situated at 6°57'31.66″N 0°34›29.75″E.

***P. hirta* (Kröber, 1939)**
Pseudophysocephala hirta Kröber 1939

Primary type material examined. ♀ holotype of *Pseudophysocephala hirta* Kröber 1939: (1) "Holo- / type"; (2) "Type"; (3) "E. Cape Prov. / Katberg. / 1.–10.ii.1933."; (4) "S. Africa. / R. E. Turner. / Brit. Mus. / 1933-139."; (5) "*Pseudophysocephala* / *hirta* Kröber / examined & det. / O. Kröber, 1938."; coll. NHML

See comment under *Physocephala barbata* (Camras, 2001), above.

***P. nigrita* (Camras, 1962)**
(Figs 143–146)
Pseudophysocephala nigrita Camras 1962
= *Pseudophysocephala brevivertex* Camras 2001 (**syn. nov.**)

Material. CAMEROON: 1♀, 17.–19.viii.2003, Northwest Reg., Mezam, Bafut village [06°05.026′N 10°07.442′E], 1060 m, leg. A. H. Kirk-Spriggs, coll. BMSA; KENYA: 2♀, 4.–11.xii.1999, Western Province, Kakamega Forest, Malaise trap [0°14.13′N 34°51.87′E], leg. R. Copeland, coll. NMKE; 1♀, 16.–23.viii.2000, ditto; TOGO: 1♂, ii.2017, Kloto, forest area [6°57'31.66″N 0°34›29.75″E], leg. G. Goergen, coll. IITA; 1♀, viii.2015, ditto; UGANDA: 1♂, vii.–viii.1946, Bwamba, leg. van Someren, coll. NHML [NHMUK010922185]; 1♀, vii.–viii.1946, ditto [NHMUK010922187]; 1♂, 16.xii.1934, Kampala, flying against bees, leg. T. W. Chorley, coll. NHML [NHMUK010922191]; 1♂, 18.ii.1966, Lake Nabugabo, det. as *P. nigrita* by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922156].

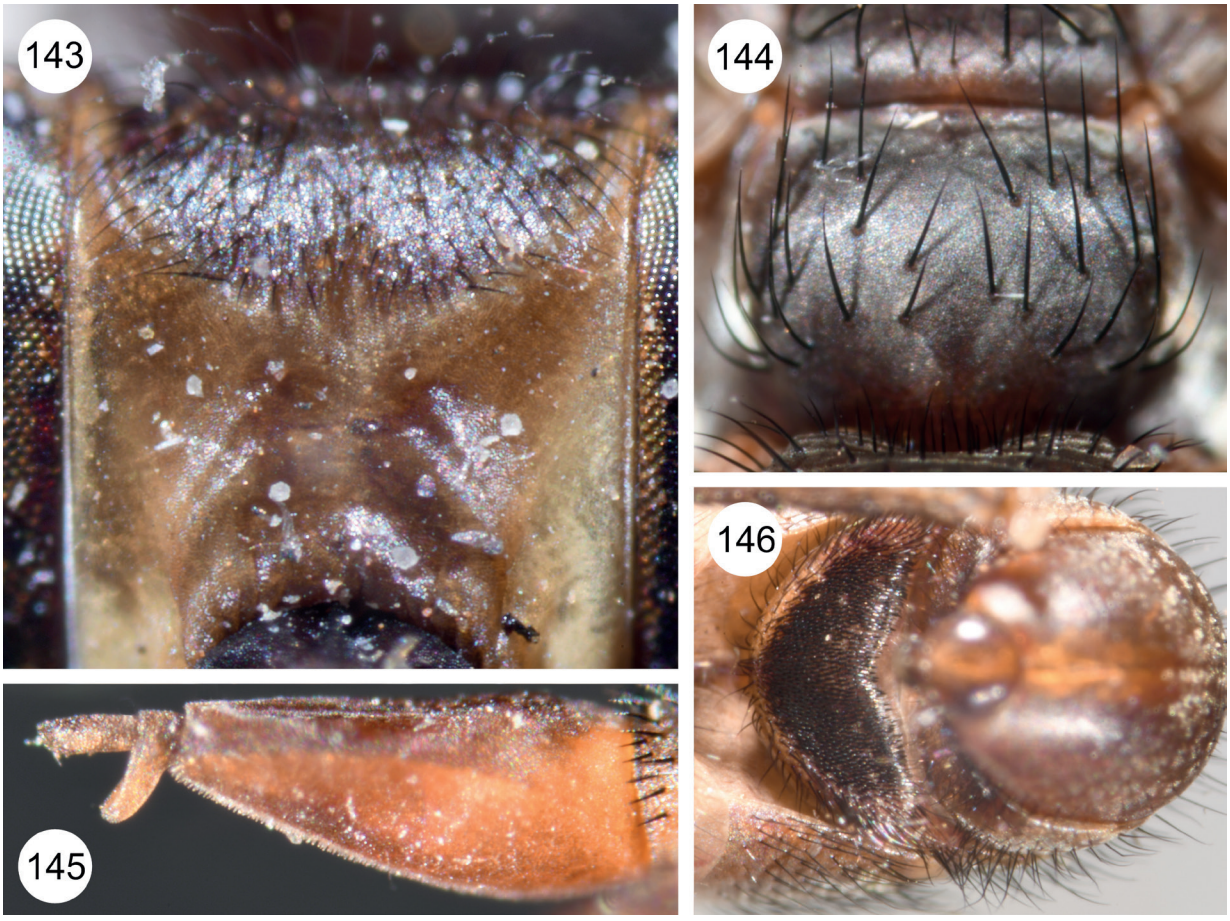
The main character given to distinguish *P. brevivertex* in the original description of Camras (2001) was a "short vertex". This character is difficult to assess, however, because the vertex may be tightly curved and of variable shape in the material to hand. Apically the vertex has an area which is not covered with setulae and which may have a depression, but the shape, size and extent of any depression can vary considerably, giving a different impression of the vertex shape. There is no other character available to distinguish *P. brevivertex* from *P. nigrita*, and therefore *Physocephala* [*Pseudophysocephala*] *brevivertex* Camras, 2001 is herewith placed as a junior synonym of *Physocephala* [*Pseudophysocephala*] *nigrita* Camras, 1962 (**syn. nov.**).

***P. pubescens* Brunetti, 1925**
Physocephala pubescens Brunetti 1925
= *Physocephala curta* Kröber 1936
(Figs 147–151)

Primary type material examined. ♂ lectotype of *Physocephala pubescens* Brunetti 1925 herewith designated: (1) "Syn - / type"; (2) "23.9.16 / Limbe / Nyasaland. / 4000′ (R. C. W.) / R. b. Wood / 684."; (3) "*Physo*. / *pubescens* / Brun Type ♂ / Det. E. Brunetti 1924"; (4) "Lectotypus / *Physocephala* / *pubescens* ♂ / Brunetti, 1925 / des. Stuke 2019"; NHML.

♀ lectotype of *Physocephala curta* Kröber, 1936 herewith designated: (1) "Type / *Ph. curta* ♀"; (2) "Musée du Congo / Elisabethville / 1927 / Dr. M. Bequaert"; (3) "*Physocephala* / *curta* Krb. / det. Kröber 1935"; (4) "R. DÉT / L / 2992"; (5) "Type"; (6) "RMCA ENT / 000012182"; coll. MRAC.

Additional material. DEMOCRATIC REPUBLIC OF CONGO: 1♂, no date, Elisabethville [Lubumbashi] [-11.664232 27.482626], det. as *P. pubescens* by Camras 1962, leg. M. Bequaert, coll. FMNH; KENYA: 1♀, ii.1932, Kijabe, det. as *P. pubescens* by Camras 1962, leg. van Someren, coll. NHML [NHMUK010922169]; 1♀, 20.iii.1949, Nairobi, det. as *P. pubescens* by Camras 1962, leg. G. Salt, coll. NHML [NHMUK010922168]; 1♂, 9.iv.1949, Nairobi, det. as *P. pubescens* by Camras, 2000, leg. G. Salt, coll. NHML [NHMUK010922188]; 1♀, 3.vii.1994, Nairobi, leg. R. Copeland, coll. NMKE;

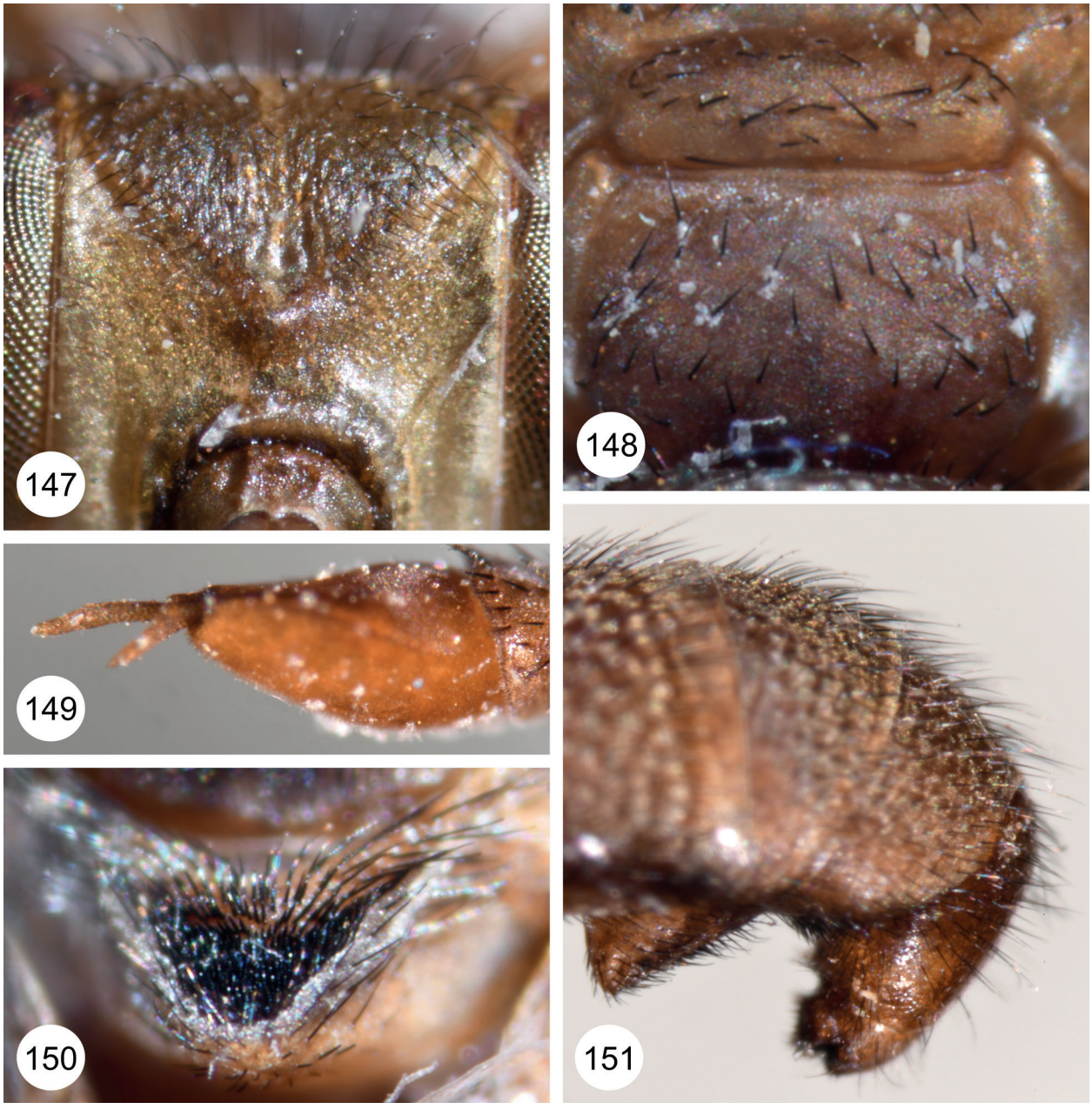


Figs 143–146. *Physocephala nigrita* Camras (1962). **143**. Frons, dorsal view (♂, Bwamba); **144**. Mediotergite, posterior view (♀, Bafut village); **145**. Arista, lateral view (♀, Bafut village); **146**. ♀ theca, ventral view; (♀, Bafut village).

1♂, 12.viii.1966, Nairobi, 5400 ft, det. as *P. pubescens* by Smith, 1967, leg. G. R. C. van Someren, coll. NHML [NHMUK010922186]; 1♂, 2.i.1997, Nairobi, Kebete, 1800 m, leg. T. Romig, coll. PMHA; MALAWI: 1♂, 17.iii.1913, Nyasaland, Mlanje [= Mulanje], des. as syntype of *P. pubescens*, leg. S. A. Neave, coll. NHML [NHMUK010922166]; 1♂, 6.xi.1912, Nyasaland, Mt. Mlanje [= Mulanje Massif], des. as syntype of *P. pubescens*, leg. S. A. Neave, coll. NHML [NHMUK010922165]; 1 specimen, 1.x.1913, Nyasaland, Mt. Mlanje [= Mulanje Massif], des. as syntype of *P. pubescens*, leg. S. A. Neave, coll. NHML [NHMUK010922164]; UNKNOWN LOCATION: 1♀, iv.1941, "Mtowambo", det. as *P. pubescens* by Camras 1962, leg., coll. FMNH; 1♀, viii.1943, [characters illegible], det. as *P. pubescens* by Camras 1962, leg. H. J. A. Turner, coll. NHML [NHMUK010922167].

The material held under '*Physocephala pubescens*' at the NHML includes four syntypes of *P. pubescens* and two syntypes of *P. curta*. The former comprises a mixture of *P. pubescens* and *P. caenostylata* Kröber, 1936. It is therefore necessary to designate a lectotype for *P. pubescens* and we herewith select a male syntype from Limbe which agrees with the species concept as here defined in order to prevent any change in the past usage of this name.

Stuke (2017a) incorrectly stated that Smith (1980) had synonymized *P. curta* with *P. pubescens* when in fact this was done by Camras (1962). Re-examination of the two *P. curta* syntypes held at NHML concluded that these also comprise multiple species. The female syntype from Elisabethville is identical with *P. pubescens*, and in order to prevent further confusion we herewith designate this specimen as the lectotype of *P. curta*. The second syntype belongs to *P. microvena* Brunetti, 1925 and bears the labels: (1) "Paratype / *Ph. curta* ♀"; (2) "Musée du Congo / Ituri: Blukwa / 10 - XI - 1928 / A. Collart"; (3) "Cotype"; (4) "*Physocephala* ♀ / *curta* Krb. / det. Kröber 1935"; (5) "R. DÉT / M / 2992"; coll. MRAC. This specimen has, unusually, a distinctly developed radial-medial crossvein and could therefore easily be confused with other species.



Figs 147–151. *Physocephala pubescens* **Brunetti 1925. 147**. Frons, dorsal view (♂, Nairobi); **148**. Mediotergite, posterior view (♂, Nairobi); **149**. Arista, lateral view (♂, Nairobi); **150**. ♀ theca, posteroventral view (♀, Nairobi); **151**. ♀ theca, lateral view (♀, Nairobi).

***Physocephala vittata* species-group**

This group contains only *P. vittata*, which Camras (2001) included (as *P. maculigera* Kröber, 1915) in his *Physocephala maculipes* species-group. The *vittata* group is very similiar to the *Physocephala antiqua* species-group due to its typical *Physocephala* habitus (as described in Key 1) and short arista. Both species-groups can be distinguished by the characters given in Key 1, however. A second member of this species-group – *P. schmideggeri* Stuke, 2017 – has been recorded from the Arabian Peninsula and could also potentially occur in the Afrotropical Region. These species can be distinguished using Stuke (2017b). *Physocephala vittata* is primarily a widespread Palaearctic species which reaches as far as Mongolia and China, as well as extending into the Afrotropical Region.

***P. vittata* (Fabricius, 1794)**
Conops vittata Fabricius 1794

Material. ERITREA: 1♀, 28.ix.1957, Taramna, det. as *P. maculigera* by Camras 2000, leg. D. J. Greathead, coll. NHML [NHMUK010922106]; ETHIOPIA: 1♀, 3.iv.2016, SNNPS State, Arba-Minch, Dorze [06°10′N 37°35′E], 2340 m, leg. J. Halada, coll. CULSP.

***Physocephala*, species not recognised**

***P. nigerrima* Kröber, 1915**
Physocephala nigerrima Kröber 1915

Physocephala nigerrima was only known from the female holotype, which is probably lost (Stuke 2017a). Camras (2001) placed this species in his *Physocephala maculipes* species-group although this interpretation does not fit with the original description. Kröber described the arista as being pointed and slender, and the lateral projection also, with both being of almost equal length ("Griffel spitz und zart, Seitenfortsatz ebenfalls, beide fast gleich lang") and the antenna as long, very slender and black, with the first flagellomere rusty brown and the scape about three times as long as its width at the base and slightly widened towards the tip ("Fühler lang und sehr schlank, schwarz, drittes Glied rostbraun. Erstes Glied etwa dreimal so lang als unten breit, oben wenig verbreitert."). This species cannot readily be placed and in the absence of any available material we therefore propose to classify *Physocephala nigerrima* Kröber, 1915 as an unrecognised species (**status rev.: nomen dubium**) until such time as new material appears.

Acknowledgements. We would like to thank all of the colleagues who have supported this work with their generous help: Miroslav Barták (Czech Republic, Prague), Eliana Buenaventura (Germany, Berlin), Pasquale Ciliberti (Netherlands, Leiden), Robert Copeland (Kenya, Nairobi), Wouter Dekoninck (Belgium, Brussels), Hans-Joachim Flügel (Germany, Knüllwald), Amnon Freidberg (Israel, Tel Aviv), Georg Goergen (Benin, Calavi), Martin Hauser (USA, Sacramento), Christian F. Kassebeer (Germany, Damlos), Ashley H. Kirk-Spriggs (formerly South Africa, Bloemfontein, now UK, London), Tom Kirschey (Berlin), Maurizio Mei (Italy, Rome), Ximo Mengual (Germany, Bonn), Frank Menzel (Germany, Müncheberg), Crystal Maier (USA, Chicago), Marc de Meyer (Belgium, Tervuren), Wolfgang Schacht (Germany, †), Karla Schneider (Germany, Halle), Peter Sehnal (Austria, Vienna), Axel Ssymank (Germany, Bonn), Nigel Wyatt (UK, London) and Joachim Ziegler (Germany, Berlin), all of whom provided material either from their private collections or from collections under their care. Martin Hauser in particular sorted through a huge amount of Conopidae from Malaise trap samples and made it available for our research. While visiting collections to look at Afrotropical Conopidae we received generous help from Nigel Wyatt (UK, London), Erica McAlister (UK, London), Sven Marotzke (Germany, Berlin), Jenny Pohl (Germany, Berlin), Joachim Ziegler (Germany, Berlin), Eliana Buenaventura (Germany, Berlin), Marc de Meyer (Belgium, Tervuren), Stéphane Hanot (Belgium, Tervuren), Wouter Dekoninck (Belgium, Brussels) and Frank Menzel (Germany, Müncheberg). With great skill, Nygel Wyatt decoded illegible writing and characters on the labels of many historical specimens.

REFERENCES

Borkent A (2018) The state of Phylogenetic Analysis: Narrow Visions and Simple Answers – Examples from the Diptera (Flies). Zootaxa 4374: 107–143

Camras S (1957) On some Conopidae (Dipt.) from Flores and Sumba. Wissenschaftliche Ergebnisse der Sumba-Expedition des Museums für Völkerkunde und des Naturhistorischen Museums in Basel, 1949. Verhandlungen der naturforschenden Gesellschaft in Basel 68: 160–164

Camras S (1962a) The Conopidae of Madagascar (Diptera). Mémoires de l' Institut Scientifique de Madagascar, serie E 13: 179–187

Camras S (1962b) Records and descriptions of African Conopidae (Diptera). Revue de Zoologie et de Botanique Africaines 66: 203–242

Camras S (1965) Family Conopidae. Pp. 625–632 in: Stone A, Sabrosky CW, Wirth WW, Foote RH & Coulson JR (eds) A catalog of the Diptera in America North of Mexico. Smithonian Institution Press, Washington

Camras S (2001) Additional information on Afrotropical Conopidae. Entomologist′s Monthly Magazine 137: 179–210

Cumming JM, Wood DM (2009) Adult Morphology and Terminology. Pp. 9–50 in: Brown BV, Borkent A, Cumming JM, Wood DM, Woodley NE & Zumbado MA (eds): Manual of Central American Diptera. Volume 1: 1–714. NRC Research Press, Ottawa.

GBIF (2019) Free and open access to biodiversity data. https://www.gbif.org [last access 18.11.2019]

Gibson JF, Skevington JH (2013) Phylogeny and taxonomic revision of all genera of Conopidae (Diptera) based on morphological data. Zoological Journal of the Linnean Society 167: 43–81

Kotrba M (2000) 1.3 Morphology and terminology of the female postabdomen. Pp. 75–84 in: Papp L & Darvas B (eds): Contributions to a Manual of Palearctic Diptera. Volume 1. General and Applied Dipterology. Science Herald, Budapest.

Kröber O (1915) Die afrikanischen Arten der Gattung *Physocephala* Schin. Archiv für Naturgeschichte, Abteilung A 80(11): 81–99

Kröber O (1939) Beiträge zur Kenntnis der Conopiden. I. Annals and Magazine of Natural History 11(4): 362–395

Smith KGV (1980) 39. Family Conopidae. Pp. 511–517 in: Crosskey RW (ed.): Catalogue of the Diptera of the Afrotropical Region. British Museum of Natural History, London.

Smith KGV, Cunningham-van Someren GR (1970) The identity of *Physocephala* bimarginipennis Karsch (Diptera, Conopidae) with notes on the immature stages and biology. Journal of Natural History 4: 439–446

Smith KGV, Peterson BV (1987) 54. Conopidae. Pp. 749–756 in: McAlpine JF, Peterson BV, Shewell GE, Teskey HJ, Vockeroth JR & Wood DM (eds): Manual of Nearctic Diptera. Volume 2. Monograph of the Research Branch Agriculture Canada 11: vi + 658 pp; Ottawa.

Stuke J-H (2015a) New Conopid records from the Afrotropical Region (Diptera). Part 1: *Paramyopa* Kröber, *Pseudoconops* Camras, *Stylogaster* Macquart, *Thecophora* Rondani and *Zodion* Latreille. Zootaxa 3963: 101–159

Stuke J-H (2015b) A contribution to the knowledge of *Physocephala antiqua* (Wiedemann) (Diptera: Conopidae). Studia Dipterologica (Müncheberg) 21: 209–220
Stuke J-H (2016): Taxonomic notes on West Palaearctic Conopidae (Diptera). Zootaxa 4178: 521–534
Stuke J-H (2017a): World Catalogue of Insects. Volume 15. Conopidae (Diptera). E. J. Brill, Leiden, Boston
Stuke J-H (2017b): Order Diptera, family Conopidae. Description of a new species of *Physocephala* Schiner. Arthropod Fauna of the UAE 6: 613–620
Stuke J-H (in press): New conopid records from the Afrotropical Region (Diptera). Part 2: Conopinae excluding Physocephalini. Israel Journal of Entomology

