



# UNIVERSITÀ DEGLI STUDI DI PALERMO

Dottorato in Scienze Agrarie e Forestali  
Dipartimento Scienze Agrarie e Forestali  
Settore Scientifico Disciplinare AGR/11 Entomologia generale e applicata

## WORLD REVISION OF *DYSCRITOBÆUS* PERKINS (HYMENOPTERA SCELIONIDAE)

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CICLO XXVII  
ANNO 2016



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## Introduction

In this PhD thesis I present the first part of the world revision of *Dyscritobaeus* Perkins:

- Revision of Afrotropical *Dyscritobaeus* Perkins, 1910 (Hymenoptera: Scelionidae);
- Definition of world species groups in *Dyscritobaeus* Perkins and revision of *comitans*-group with description of three new species;
- Revision of Neotropical and Nearctic *Dyscritobaeus* Perkins (Hymenoptera: Scelionidae).

The first part has been already submitted to *Zootaxa* in December 2015. The other two parts are to be refined, but the definition of species-group and individuation of new species and synonymies are already complete.

The next step will be the revision of *orientalis*-, *flavicornis*-, *abnormis*-, *armatus*- and *fuscipes*-group, mostly distributed in Australia and Oriental zoogeographic regions.

# Revision of Afrotropical *Dyscritobaeus* Perkins, 1910 (Hymenoptera: Scelionidae)

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## Abstract

The resurrection of Scelionidae proposed by McKellar & Engel is here accepted, specifying that all plesiomorphic living and fossil genera previously included in this family bearing the tibial spur formula 1,2,2 remains in Platygasteridae. A revision of Afrotropical species of *Dyscritobaeus* Perkins is presented with re-description of the four known species (*D. bicolor* O'Connor et Ashe, *D. comitans* Perkins, *D. parvipennis* (Dodd) and *D. sulawensis* Mineo, O'Connor et Ashe) and description of six new species (*D. antananarivensis* sp. nov., *D. flavus* sp. nov., *D. kilimanjarensis* sp. nov., *D. madagascarensis* sp. nov., *D. ndokii* sp. nov. and *D. tanzaniensis* sp. nov.). After a comparison of many specimens, *D. cerosus* is considered to be a junior synonym of *D. comitans*, *D. hannibal* is considered to be a junior synonym of *D. sulawensis* and *D. maputanus* is a junior synonym of *D. parvipennis*; so far these species are the only three *Dyscritobaeus* species that are widely distributed across four zoogeographical regions: Afrotropical, Australian, Oriental and Palearctic. *Dyscritobaeus comitans* and *D. ndokii* sp. nov. belong to the *comitans*-group, the other eight species belong to the *orientalis*-group. *Dyscritobaeus antananarivensis* sp. nov., *D. madagascarensis* sp. nov. and *D. sulawensis* are morphologically similar to *D. orientalis* bearing the specillum on T2; *D. bicolor*, *D. flavus* sp. nov., *D. kilimanjarensis* sp. nov., are morphologically similar to *D. parvipennis*; *D. tanzaniensis* sp. nov. shares the lack of a protruding metascutellum together with *D. aspinosus* Mineo, O'Connor et Ashe.

*Dyscritobaeus* species are sexually dimorphic, particularly in the following features: the anterior and posterior fringes of the forewing are longer in the female than in the male; the odontoid process, when present in females, is less developed or absent in the corresponding males; the specillum, when present in females, is less defined and smaller or absent in the corresponding males; the sculpture of the head is more evident in males than in females; and the first and second tergites are frequently lighter in males than in females.

*Mirotelenomus angulatus* Brues, 1940 is removed from *Dyscritobaeus*.

**Key words:** Afrotropical region, *Dyscritobaeus*, identification key, new species,; Platygasteridae, Scelionidae, Scelioninae, synonymy.

## Introduction

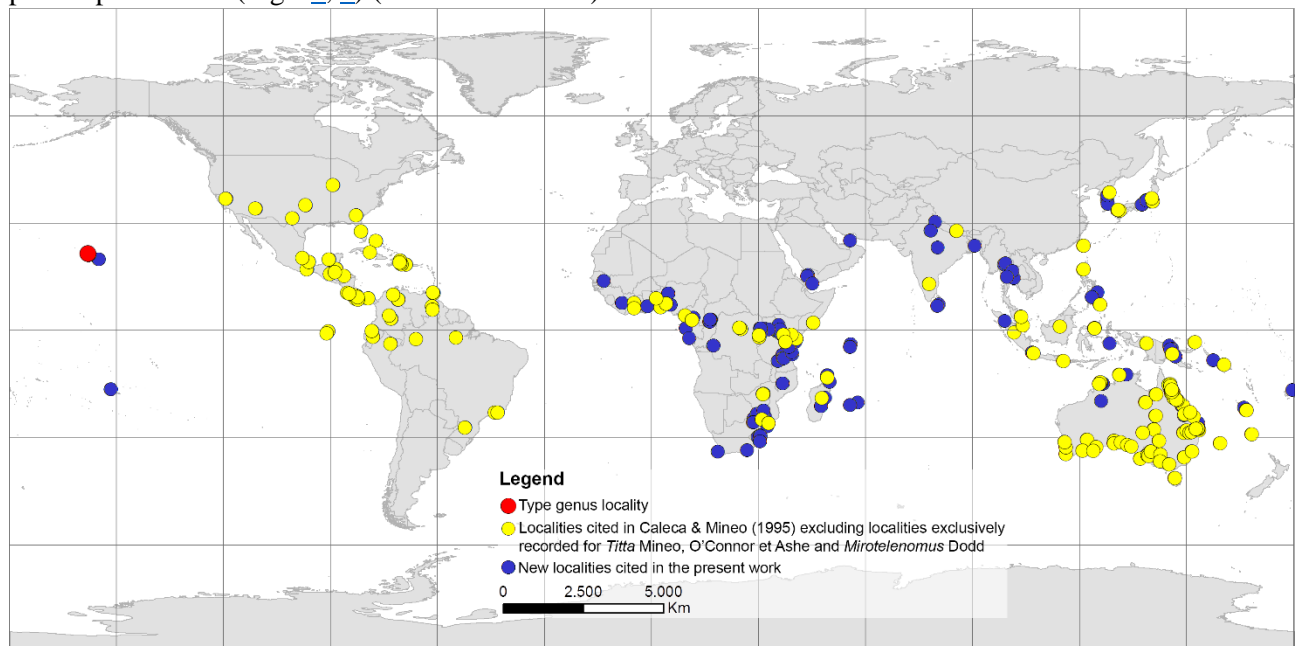
The genus *Dyscritobaeus* (Platygastroidea: Scelionidae: Scelioninae) was described by Perkins (1910) based on the type species, *D. comitans*. This genus was placed in the subfamily *Baeinae* by Kieffer (1926) and in the tribe *Idrini* by Kozlov (1981). Caleca & Mineo (1995), considered it to be a senior synonym of *Mirotelenomus* Dodd, 1913; this latter genus was previously placed in *Gryonini* by Masner (1976). Murphy *et al.* (2007), in their molecular study based on three markers, demonstrated that *Dyscritobaeus* is not affiliated to *Gryon* species analysed in that work, and because of this finding they hypothesised that *Gryonini* is not a monophyletic tribe. In 2011 Mineo, O'Connor & Ashe removed *Dyscritobaeus* from *Gryonini* placing it into the new tribe *Dyscritobaeini*, and simultaneously removed *Mirotelenomus* from synonymy with *Dyscritobaeus*, mainly based on the reduced wing venation of the two recognized *Mirotelenomus* species, *M. abnormis* Dodd and *M. incertus* Mineo, O'Connor et Ashe. *Dyscritobaeus* can be separated from the other genera of *Gryonini* based on a lower LOL/ OOL ratio, which ranges from 0.5 to 1.

The genus was described in detail by Perkins (1910) and Caleca & Mineo (1995). *Dyscritobaeus* species are probably arthropod egg parasitoids, but their hosts and biology are still unknown.

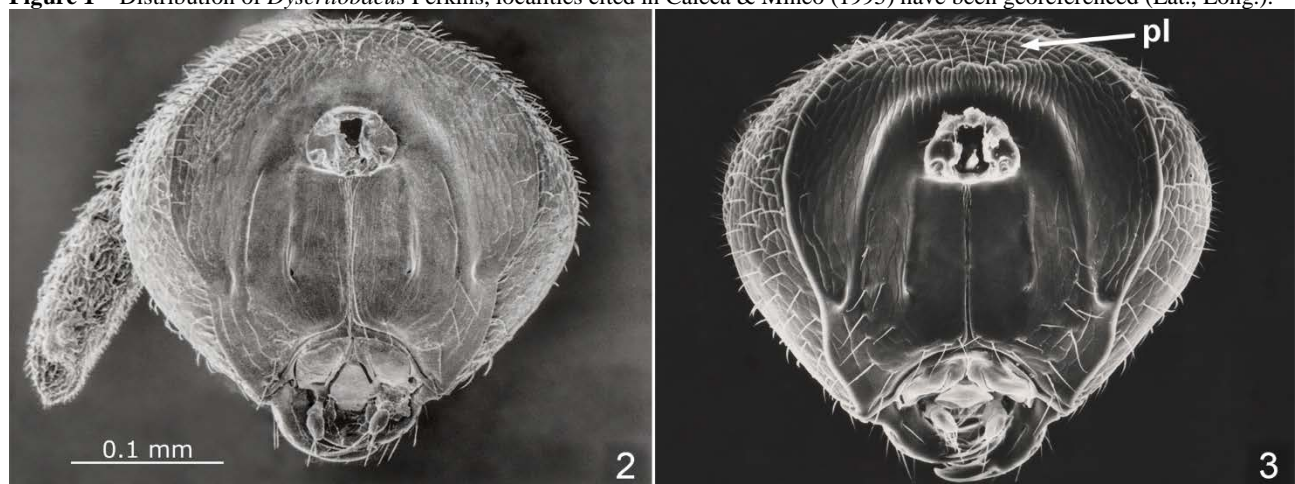
The genus *Dyscritobaeus* is distributed throughout the tropical areas of the world, but is also present in the temperate areas of the Afrotropical, Australian, Oriental, Palearctic and Nearctic regions (Fig. 1) (Caleca & Mineo 1995).

The type species of *Dyscritobaeus* (*D. comitans* Perkins) was described from Hawaii (Perkins 1910) and the other ten species were described from the Australian region (Caleca & Mineo 1995; Mineo *et al.* 2010); nine species from the Neotropical region (Megyaszi 1995; Mineo *et al.* 2010), four from the Oriental region (Lê 2000; Mukerjee 1994; O'Connor & Ashe 2012) and three from the Afrotropical region: *D. maputanus* O'Connor et Ashe, *D. bicolor* O'Connor et Ashe *D. hannibal* O'Connor et Ashe (O'Connor & Ashe 2011).

Three species-groups are currently defined: the *orientalis*-group (Mineo *et al.* 2009); the *comitans*-group (Mineo *et al.* 2010), and the *festivus*-group, originally circumscribed as the genus *Titta* Mineo, O'Connor et Ashe (Mineo *et al.* 2011). The *comitans*-group is distinguished from the *orientalis*-group by the lack of the preoccipital lunula (Figs. 2, 3) (Mineo *et al.* 2010).



**Figure 1** – Distribution of *Dyscritobaeus* Perkins, localities cited in Caleca & Mineo (1995) have been georeferenced (Lat., Long.).



**Figure 2** – *Dyscritobaeus comitans* Perkins ♀, specimen from Sulawesi: back of the head, preoccipital lunula absent, (after Caleca & Mineo 1995); **Figure 3** – *Dyscritobaeus sulawensis* Mineo, O'Connor et Ashe ♀, specimen from Zimbabwe: back of the head, preoccipital lunula present, (after Mineo & Villa 1982b and Caleca & Mineo 1995). pl= preoccipital lunula.

## Material and methods

Regarding the placement of *Dyscritobaeus* Perkins within Platygasteridae or Scelionidae and the synonymization of these families, we analysed papers regarding genera traditionally included in Scelionidae

before its synonymization under Platygastriidae proposed by Sharkey (2007), accepted by Johnson et al. (2008) and its resurrection by McKellar & Engel (2012).

## Morphological terms and abbreviations

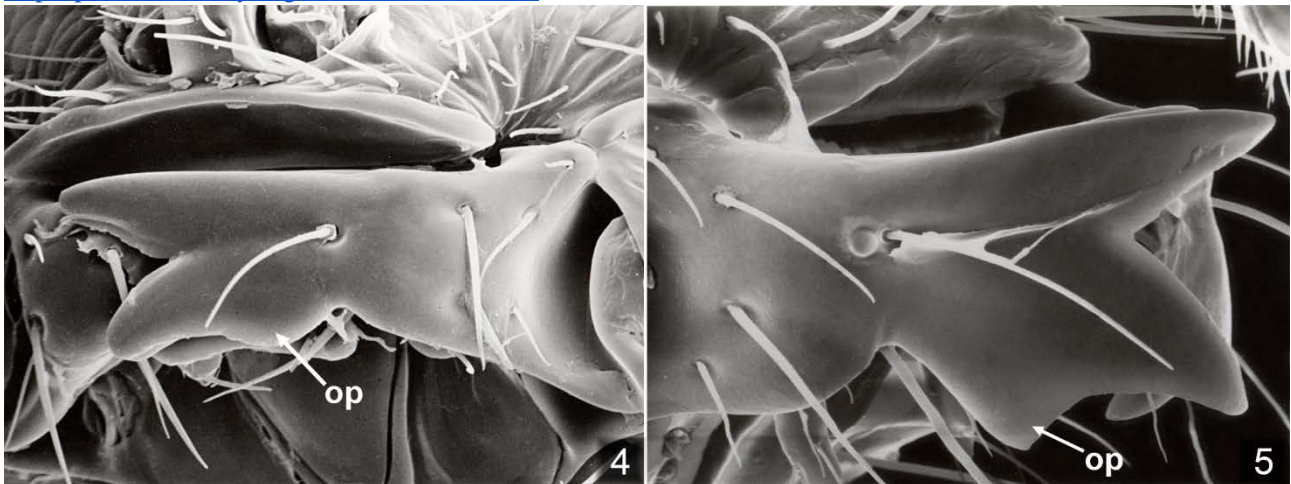
Institutional abbreviations:

ANIC	Australia, Australian Capital Territory, Canberra City, CSIRO, Australian National Insect Collection
BMNH	United Kingdom, London, The Natural History Museum, formerly British Museum (Natural History)
BPBM	USA, Hawaii, Honolulu, Bernice P. Bishop Museum
CNCI	Canada, Ontario, Ottawa, Canadian National Collection of Insects
DEZA	Italy, Portici (Naples), Dipartimento di Agraria, formerly Dipartimento di Entomologia e Zoologia agraria "Filippo Silvestri", Università degli Studi di Napoli "Federico II", Italy
HNHM	Hungary, Budapest, Hungarian Natural History Museum
IRSNB	Belgium, Brussels, Institut Royal des Sciences Naturelles de Belgique
MHNG	Switzerland, Geneva, Muséum d'Histoire Naturelle
MSNG	Italy, Genova, Museo Civico di Storia Naturale "Giacomo Doria"
NMID	Ireland, Dublin, National Museum of Ireland
QDPC	Australia, Queensland, Indooroopilly, Queensland Department of Primary Industries
SAMA	South Australia Museum, Adelaide, South Australia, Australia.
SAMC	South Africa, Cape Town, Iziko South African Museum
UNIPA	Italy, Palermo, Dipartimento di Scienze Agrarie e Forestali, Università degli Studi di Palermo
WINC	Australia, South Australia, Glen Osmond, Adelaide University, Waite Campus, Waite Insect & Nematode Collection

Terminology for surface sculpture follows the glossary by Harris (1979) or if better defined the terminology follows Eady (1968).

Morphological terminology follows Mikó et al. (2007) and Yoder et al. (2010) except for:

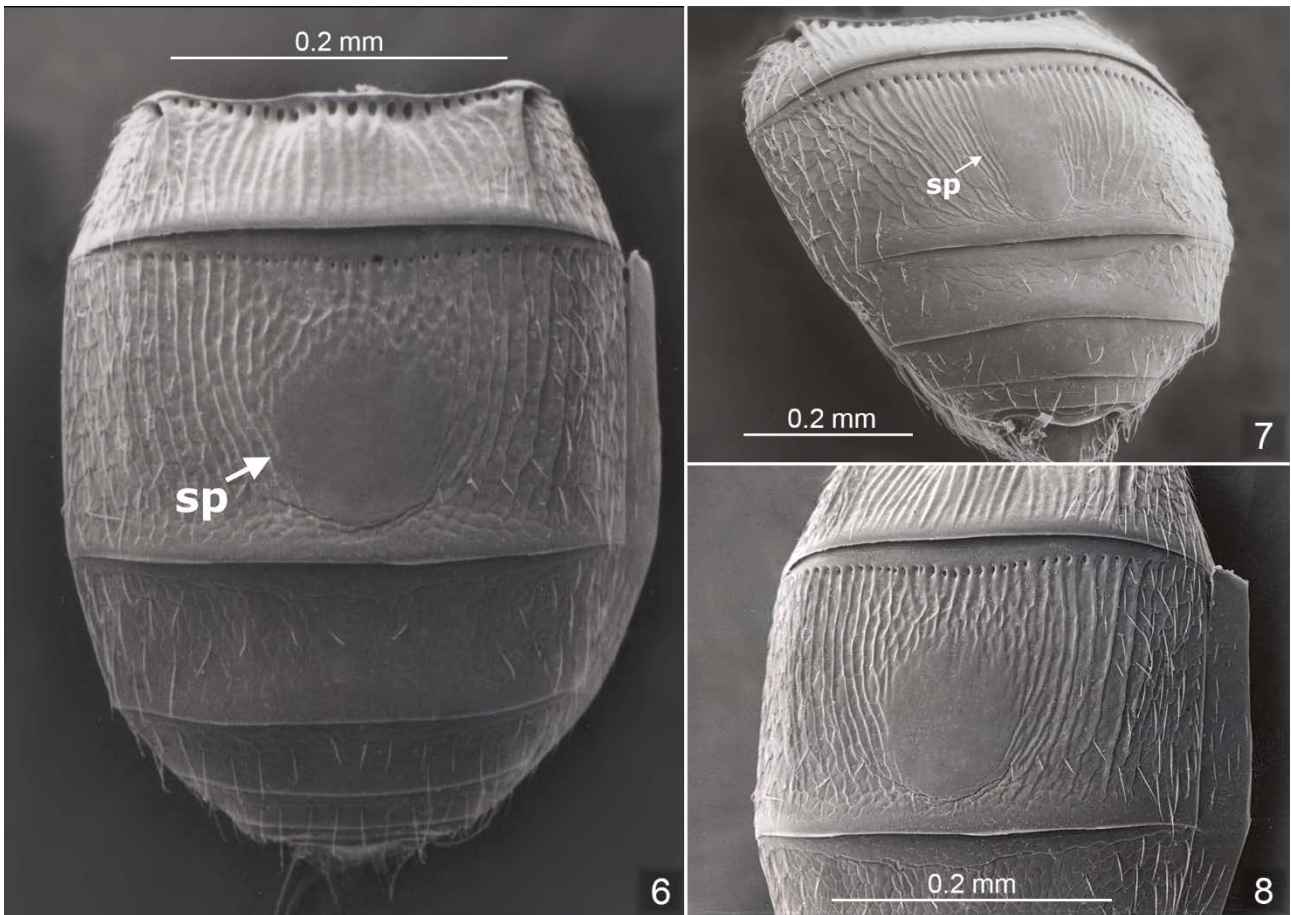
odontoid process: process situated on the posterior margin of ventral tooth as defined and shown by Caleca & Mineo (1995) (Fig. IV, 3, Fig. V, 1, 2) and as shown in Figs. [4](#), [5](#), [22](#), [25](#), [89](#), [102](#), [103](#) in this paper, [http://purl.obolibrary.org/obo/HAO\\_0002422](http://purl.obolibrary.org/obo/HAO_0002422);



**Figure 4** – *Mirotelenomus abnormis* Dodd ♀, specimen from Congo, New South Wales; **Figure 5** – *Dyscritobaeus* sp. ♀, specimen from Streaky Bay, South Australia. op= odontoid process (after Caleca & Mineo 1995).

specillum: smooth and shiny area on T2, frequently rounded, but also varying in shape as defined and shown by Mineo & Caleca (1992) (Figs. 3, 4), Caleca & Mineo (1995) (Fig. VII), and as shown in Figs. [6](#), [7](#), [8](#), [11](#), [12](#), [13](#), [33](#), [51](#), [62](#), [69](#) in this paper, [http://purl.obolibrary.org/obo/HAO\\_0002423](http://purl.obolibrary.org/obo/HAO_0002423);



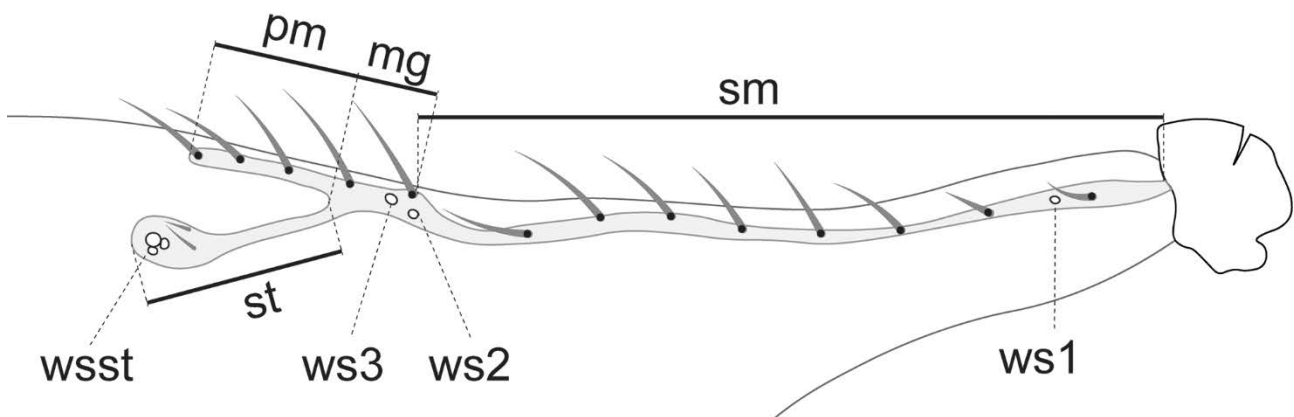


**Figure 6** – *D. sulawensis* ♀, same specimen from Zimbabwe of Figs. 3, 8, (after Mineo & Caleca 1992); **Figure 7** – *D. comitans* ♀, same specimen from Sulawesi of Fig. 2, (after Mineo & Caleca 1992); **Figure 8** – *D. sulawensis* ♀, same specimen from Zimbabwe of Figs. 3, 6, , after Caleca & Mineo (1995). sp= specillum.

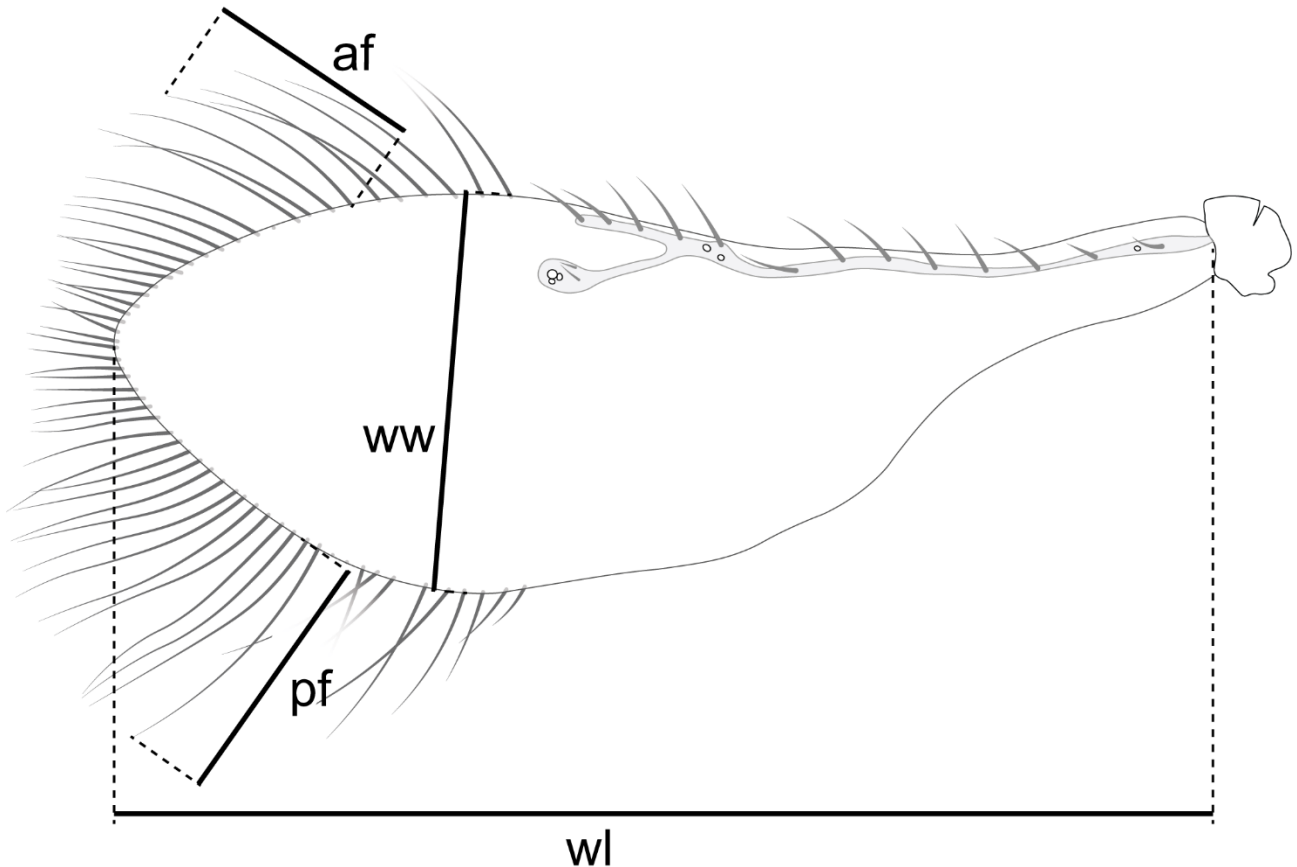
wing sensilla: circular sensilla in the venation (Figs. 9, 10); the relative position of these sensilla is sometimes taxonomically important in Chalcidoidea (Gibson *et al.* 1997);

LOL, OOL, POL, clava, follow Masner (1980). Forewing venation nomenclature and measurement definitions depicted in Figs. 9, 10.

Measurement of head, mesosoma and metasoma: length in lateral view, width in frontal view, height in lateral view; length of the body = head + mesosoma+ metasoma, all in dorsal view. The stigmal vein is the benchmark (=1) in the wing ratio expressed as st: pm: mg: sm: ww: lw: af: pf;



**Figure 9** – Forewing veins of *D. comitans* ♀ from Sulawesi. pm= postmarginal vein; mg= marginal vein; st= stigmal vein; sm= submarginal vein; ws1= wing sensillum at the base of the submarginal vein; ws2= wing sensillum at the end of the submarginal vein/base of the marginal vein; ws3= wing sensillum on the marginal vein; wsst= three wing sensilla of the stigmal vein.



**Figure 10** – Forewing veins of *D. comitans* ♀ from Sulawesi. wl= wing length; ww= wing width; af= maximum length of anterior fringe; pf= maximum length of posterior fringe.

claval sensilla formula - the sequence of sensilla, that Isidoro *et al.* (1996) defined as multiporous gustatory sensilla, from the apical to the last clavomere (Bin 1981).

All measurements are given in mm.

Zoogeographical distribution follows Rueda *et al.* (2013).

Illustration and data citation: stereomicroscope Leica MS5 and stereomicroscope Leica M165C were used for biometric diagnosis. Images were acquired using the Leica LAS 4.4 imaging system. The Leica LAS 4.4 system comprised a Leica® Z16 microscope (2.0X objective) with a Leica DFC450 Camera with a 0.63× video objective attached. Leica Application Suite V 4.4 software was installed on a desktop computer. Lighting was achieved using techniques summarized in Buffington *et al.* (2005), Kerr *et al.* (2008) and Buffington & Gates (2008). Leitz Laborlux S compound microscope with a camera lucida drawing tube was used for observation and illustration of the wings. Images were digitally post-processed using Adobe Photoshop®; digital illustration was accomplished with Adobe Illustrator®; distribution maps were produced with ERSI Archigis®. Data labels associated to these specimens have been deposited in Hymenoptera Online Database (<http://hol.osu.edu>).

## Results

We treat Scelionidae as a valid family following the resurrection of this taxon to family level by McKellar & Engel (2012). In contrast to Sharkey (2007) who considered "the inadvisability of subdividing a morphologically homogeneous taxon like the Platygastriidae s.l. into multiple families", we support the maintenance of all genera previously included in Scelionidae, bearing tibial spur formula 1,1,1 as a separate taxon from Platygastriidae. The molecular studies carried out by Murphy et al. (2007) raised doubts concerning the monophyly of the 'main clade Scelionidae' only in respect of the genera *Archaeoteleia* Masner, *Neuroscelio* Dodd, and *Sparasion* Latreille. These genera were positioned closer to Platygastriidae s.s. and together with *Sceliomorpha* Ashmead formed a separate clade in all three phylogenetic trees shown in Murphy et al. (2007, Figs. 1-3). However, Murphy et al (2007) stated "there is a well supported 'main scelionid clade' that contains the majority of genera assigned to the family". These four outlying genera previously included in Scelionidae share the plesiomorphic tibial spur formula 1,2,2 with most representatives of the Platygastriinae; with three other living genera previously included in Scelionidae (*Listron* Musetti et Johnson, *Mexon* Masner et Johnson, *Nixonia* Masner); with *Orwellium* Johnson, Masner et Musetti; with all the eight fossil genera described by Ortega-Blanco et al. (2014) and the fossil genus *Electroteleia* Brues. All of the other genera forming the main scelionid clade (among them *Dyscritobaeus*) have the tibial spur formula 1,1,1.

Six out of seven of the above listed living genera with tibial spur formula 1,2,2 lack a malar sulcus as do all representatives of the subfamily Platygastriinae. All seven of these genera, based on several different features, were and are to be considered to be outlying taxa relative to the core Scelionidae clade (Early et al. 2007; van Noort & Johnson 2009; Valerio et al. 2009). Austin and Field (1997) and Murphy et al (2007) demonstrated that, based on characters of the ovipositor and evidence from molecular phylogenetic analyses, that these genera are closer to Platygastriidae s. s. than to the 'main clade of Scelionidae in the old sense'.

For these reasons we accept the resurrection of the family Scelionidae proposed by McKellar & Engel (2012). The main clade of Scelionidae, including all genera previously placed in Scelionidae bearing tibial spur formula 1,1,1, is supported as monophyletic in all the above mentioned studies. The taxonomic position of the remaining living and fossil genera with tibial spur formula 1,2,2 require more detailed assessment. McKellar & Engel (2012) raised the tribes Sparasionini and Nixonini to family level, but Ortega-Blanco et al. (2014) subsequently treated placement of these taxa within the Platygastroidea as *incertae sedis*. These genera appear to be closer to Platygastriidae s.s. rather than to Scelionidae, but a comprehensive phylogenetic assessment is required to resolve their placement. Until this is done it is also necessary to recognise the existing subfamilies as they are currently defined: Platygastriinae and Sceliotrachelinae (Platygastriidae); and Scelioninae, Teleasinae and Teleoniminae (Scelionidae) as followed by Talamas & Buffington (2015).

### Afrotropical and world species of *Dyscritobaeus* Perkins

The richest zoogeographical region appears to be the Australian one, with 13 described species and at least 24 undescribed species. In comparison the recorded Afrotropical species richness is ten.

One fossil species, *Mirotelenomus angulatus* Brues, was described from Baltic amber (Brues 1940) and included in *Dyscritobaeus* (Hymenoptera Online (HOL) 2015). Based on the analysis of characters presented in the original description (p. 72, Fig. 2) this species does not belong to *Dyscritobaeus*, because T2 is as long as T3 and the LOL/OOL ratio is high (> 3); nevertheless we are not able to assess the correct genus for placement of this species, without examination of the holotype.

Specimens were examined from the following collections: CNCI (696 specimens), SAMC (262 specimens), ANIC (69 specimens), UNIPA (48 specimens), WINC (34 specimens), BMNH (31 specimens), MHNG (13 specimens), QDPC (13 specimens), IRSNB (11 specimens), MSNG (5 specimens), BPBM (3 specimens), HNHM (2 specimen), SAMA (2 specimens) NMID (2 specimens).

765 specimens from Africa and 17 specimens from Madagascar were examined. African countries of collection were: Central African Republic (161 specimens), Zimbabwe (111 specimens), South Africa (90 specimens), Ivory Coast (63 specimens), Uganda (62 specimens), Cameroun (58 specimens), Nigeria (49 specimens), Kenya (39 specimens), Tanzania (32 specimens), Democratic Republic of the Congo (20 specimens), Mozambique (14 specimens), Benin (11 specimens), Burkina Faso (10 specimens), Ghana (9 specimens), Guinea (8 specimens), Gabon (6 specimens), Somalya (4 specimens), Yemen (4 specimens), Reunion Is. (3

specimens), Senegal (3 specimens), Seychelles (3 specimens), Rwanda (2 specimens), Mauritius (1 specimens), Togo (1 specimens).

In this study we record ten *Dyscritobaeus* species from the Afrotropical region: four described and four new species from Africa and two new species from Madagascar; two of them belong to the *comitans*-group and eight to the *orientalis*-group.

The species from this region were compared with similar species from other regions of the world; 394 specimens belonging to three species were examined from the Australian (Australia, French Polynesia, New Caledonia, Papua New Guinea, Solomon Island, Hawaii), Oriental (Indonesia, Philippine Is., Malaysia, Singapore, Nepal, India, Japan, Bangladesh, Sri Lanka, Thailand, Fiji) and Palaeartic (Japan, South Korea) regions.

For the first time three *Dyscritobaeus* species, are recorded as having a wide distribution across the Old World: *D. comitans* and *D. sulawensis* are present in the Afrotropical region plus the Australian, Oriental and Palaeartic regions; *D. parvipennis* is present in the Afrotropical region plus the Australian and Oriental regions. Another close species, previously included in *Dyscritobaeus*, *Titta festiva* (Kieffer) has an extremely wide distribution encompassing four regions (Caleca & Mineo 2000). It is likely that this unusually wide distribution is linked to artificial anthropogenic mediated dispersal. These widely distributed species show variation in color across their distributional range, which may be linked to adaptation to various environmental conditions (Figs. [35](#), [36](#), [37](#)) and can potentially be classified as tramp species.

Sexual dimorphism is particularly marked in *Dyscritobaeus*, mostly in the following features:

- sculpture of the head: when comparing male and female specimens of the same size class, the fan-like striation and central keel on the face is more evident in males than in females;
- the anterior and posterior fringes of the forewing are longer in females than in males; this sexual dimorphism is particularly marked in *D. comitans* with respect to the anterior and posterior fringes (Figs. [38a](#), [38b](#)) and in *M. abnormis* (Dodd) with respect to the posterior fringe;
- when present, the odontoid process is more developed in females than in males, or present in the female and absent in the male (i.e. *D. flavus* Figs. [22](#), [91](#), *D. parvipennis* Figs. [102](#), [103](#), *Dyscritobaeus* sp. (c), *Dyscritobaeus* sp. (e) shown by Caleca & Mineo (1995, Fig. IV 3, Figs. V, 1, 2), *M. abnormis*);
- the specillum, when present in both sexes, is less defined and smaller in the male, i.e. *D. orientalis* (Dodd); in *D. comitans*, *D. sulawensis* and *D. madagascarensis* sp. nov. metasomal T2 has the same sculpture in both sexes, except for when the specillum is lacking in the male; in these species the striae do not enlarge in the middle of T2 to form a specillum (i.e. *D. comitans* ♀: Figs. [7](#), [13](#), ♂: Fig. [28](#); *D. sulawensis* ♀: Figs. [6](#), [8](#), [11](#), ♂: Fig. [34](#); *D. madagascarensis* sp. nov ♀: Figs. [12](#), [69](#), ♂: Fig. [70](#));
- the first and second tergites are frequently lighter in males than in females (i.e. *D. comitans* ♀ Fig. [13](#), ♂ Fig. [28](#); *D. sulawensis* ♀ Fig. [11](#), ♂ Fig. [34](#); *D. madagascarensis* sp. nov ♀: Figs. [12](#), [69](#), ♂: Fig. [70](#)).

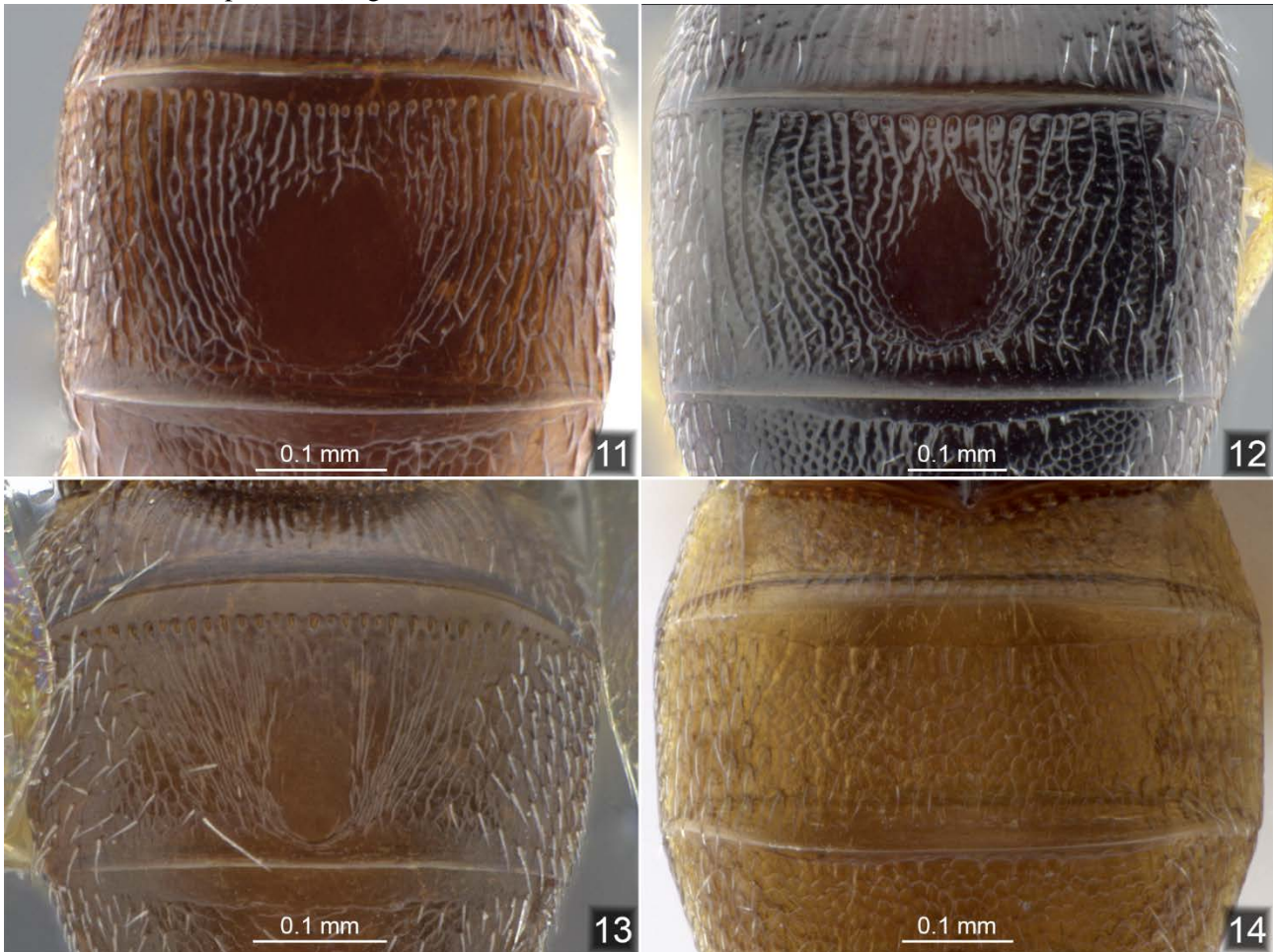
Differences between normally winged and brachypterous species:

in brachypterous species where the forewings do not surpass T1, there is a smooth area dorsally on T1 under the distal edge of the wings; T2, which is not covered by the wings, is setose (Figs. [96](#), [108](#)) (i.e. *D. kilimanjarensis*, *D. carens* Mineo O'Connor et Ashe, *D. minoculo* Mineo O'Connor et Ashe), while in fully winged species the central part of T2 is hairless or with a few short setae. In four out of five brachypterous species (*D. tanzaniensis*, *D. aspinosus* Mineo, O'Connor et Ashe, *D. minoculo*, *D. carens*) the pair of longitudinal submedial carinae on T1 is absent (Fig. [108](#)).



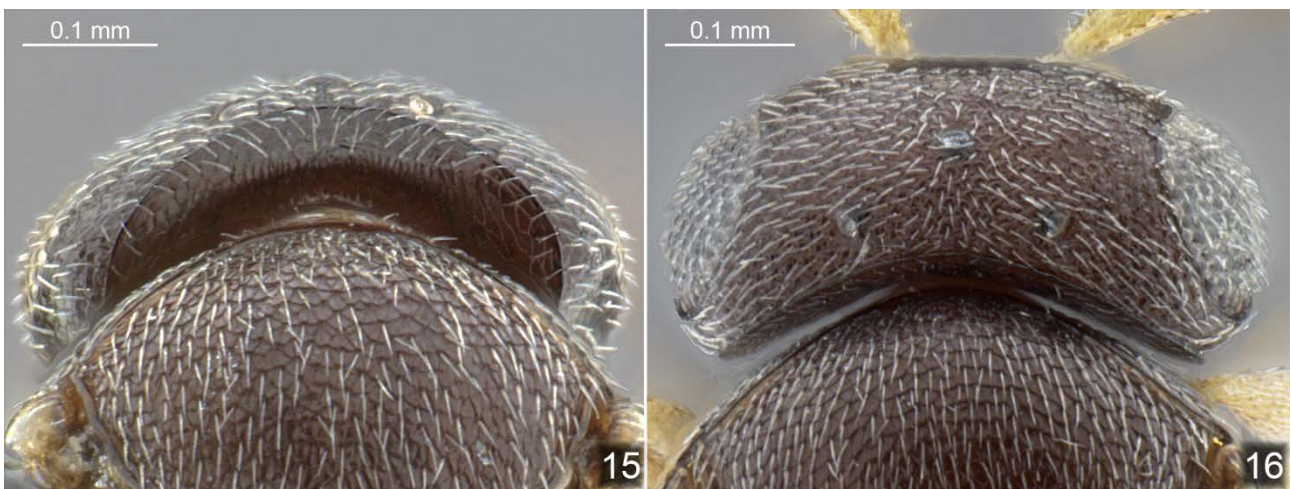
**Key to Female species**

- 1 T2 with specillum (i.e. smooth area in the middle of T2) (Figs. [6](#), [7](#), [8](#), [11](#), [12](#), [13](#), [51](#), [69](#)).....2  
 - T2 without specillum (Figs. [14](#), [81](#), [88](#), [99](#)) .....4



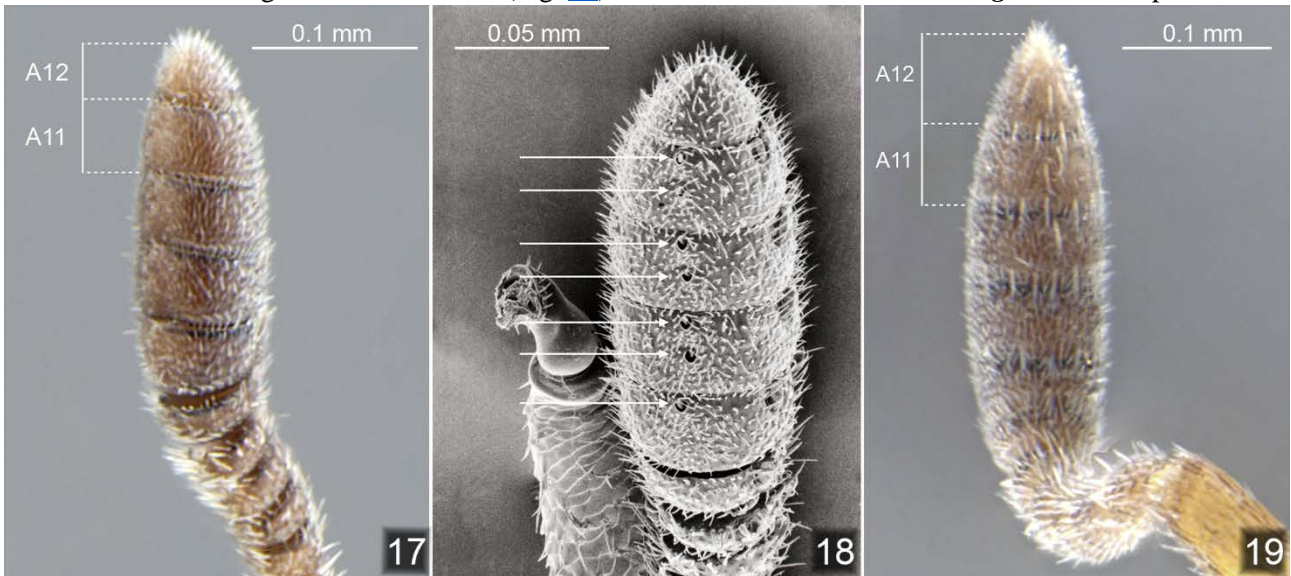
**Figure 11** – *D. sulawensis* ♀ (*D. hannibal* O'Connor et Ashe holotype): rounded specillum; **Figure 12** – *D. madagascarensis* sp. nov. ♀ holotype: drop-shaped specillum; **Figure 13** – *D. comitans* ♀ from Ivory Coast: elongate specillum; **Figure 14** – *D. parvipennis* ♀ from Mozambique: T2 without specillum.

- 2 Preoccipital lunula present (Figs. [3](#), [15](#), [69](#), [75](#), [80](#), [87](#), [100](#)); specillum rounded or drop-shaped (Figs. [6](#), [8](#), [11](#), [12](#), [69](#))..... 3  
 - Preoccipital lunula absent (Figs. [2](#), [16](#), [47](#)); specillum elongate (Figs. [7](#), [13](#), [51](#)).....  
 ..... *comitans* Perkins



**Figure 15** – *D. sulawensis* ♀ (*D. hannibal* paratype from Mozambique): preoccipital lunula present; **Figure 16** – *D. comitans* ♀ from Ivory Coast: preoccipital lunula absent.

- 3 Specillum rounded (Figs. 6, 8, 11); A12 shorter than A11 (Figs. 17, 18); dorsal tooth as long as lower tooth (Fig. 74)..... *sulawensis* Mineo, O'Connor et Ashe  
 - Specillum drop shaped (i.e. pointed in the anterior part) (Figs. 12, 69); A12 as long as A11 (Fig. 19); dorsal tooth much longer than lower tooth (Fig. 67)..... *madagascarensis* sp. nov.



**Figure 17** – *D. sulawensis* ♀ (*D. hannibal* paratype from Mozambique): A12 < A11; **Figure 18** – *D. sulawensis* ♀ from Zimbabwe: arrows indicate multiporous gustatory sensilla (after Caleca & Mineo, 1995); **Figure 19** – *D. madagascarensis* sp. nov. ♀ from 40km N. Ambilobe: A12 = A11.

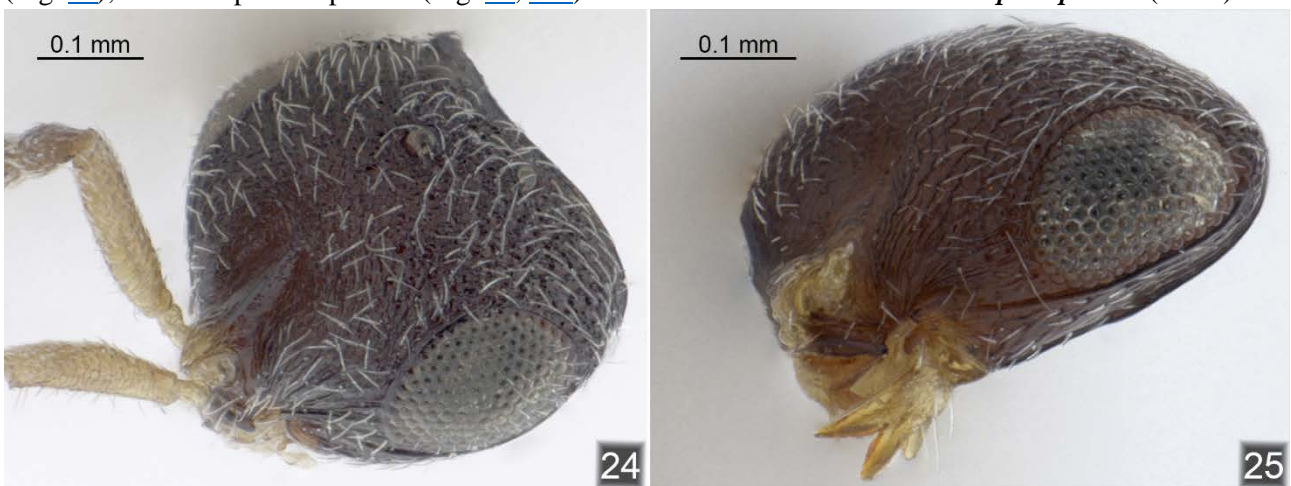
- 4 Ventral tooth longer and larger than dorsal tooth (Figs. 22, 89); head yellow, ocelli black rimmed (Fig. 20) ..... *flavus* sp. nov.  
 - Ventral tooth about the length of dorsal tooth, never longer than it (Figs. 23, 25, 102); head black or brown (Figs. 21, 24, 25), ..... 5





**Figure 20** – *D. flavus* sp. nov. ♀ holotype: head yellow, ocelli black rimmed; **Figure 21** – *D. bicolor* ♀ from Central African Republic: head black; **Figure 22** – *D. flavus* ♀, holotype: mandibles with ventral tooth larger than dorsal tooth, odontoid process developed forming a 90° angle with ventral margin of lower tooth; **Figure 23** – *D. bicolor* ♀ from Central African Republic: mandible with ventral tooth longer than dorsal tooth, without odontoid process.

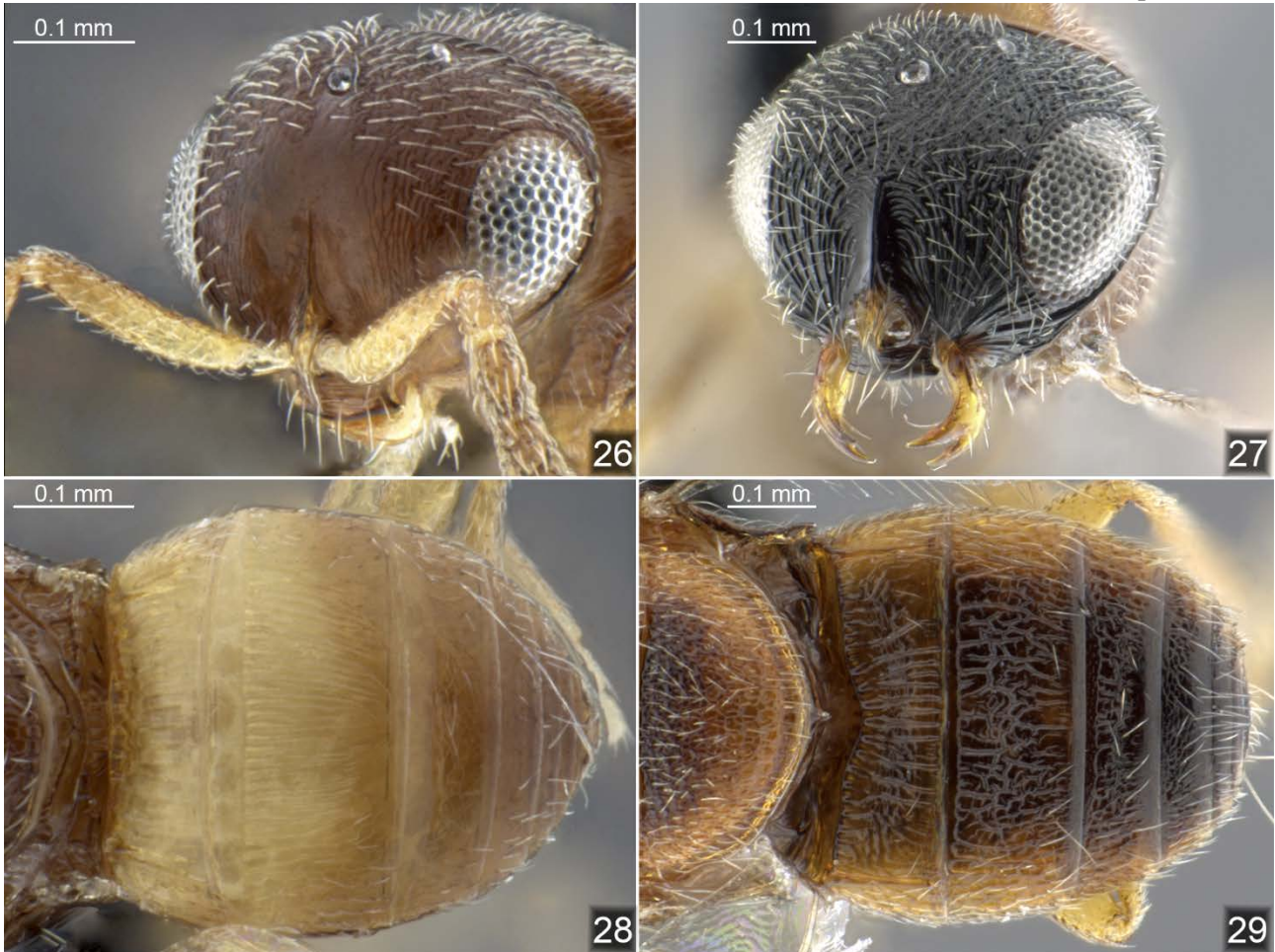
- 5 Central keel present, surpassing 1/3 of eye height (Figs. 24, 82); odontoid process absent (Fig. 23)  
 ..... *bicolor* O'Connor et Ashe  
 - Central keel absent; interantennal process sometimes elongate, but in frontal view not reaching eye level  
 (Fig. 25); odontoid process present (Fig. 25, 102) ..... *parvipennis* (Dodd)



**Figure 24** – *D. bicolor* ♂ holotype: head brown, central keel surpassing 1/3 of eye height; **Figure 25** – *D. parvipennis* ♀ from Mozambique: central keel absent, odontoid process present on mandible forming an angle of about 45° with ventral margin of ventral tooth.

**Key to Male species**

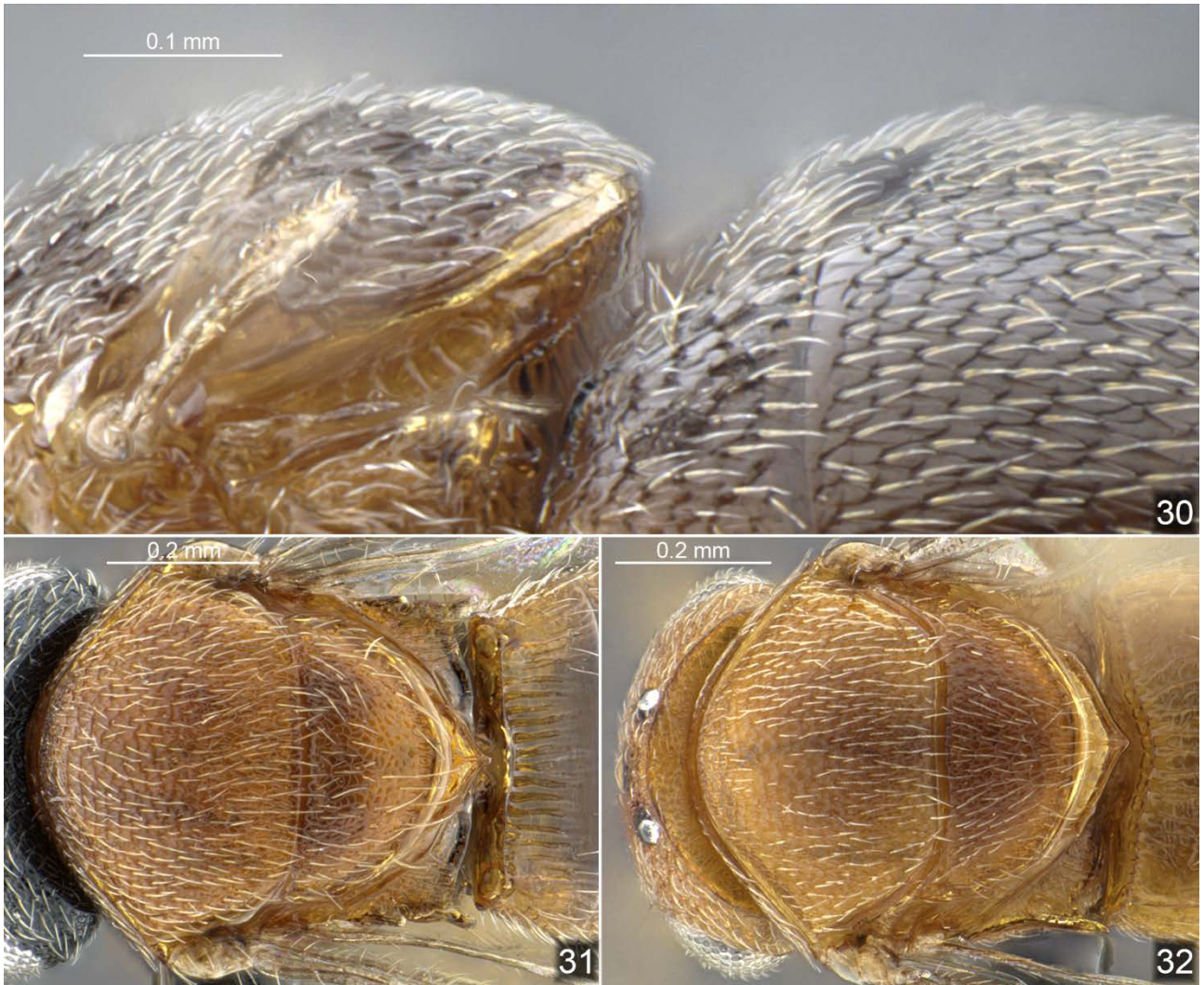
- 1 Preoccipital lunula absent (Figs. [2](#), [48](#), [56](#)) ..... 2
- Preoccipital lunula present (Figs. [3](#), [32](#), [35](#), [36](#), [37](#), [62](#), [70](#), [96](#), [108](#)) ..... 3
- 2 Frontal depression smooth (Fig. [26](#)); T2 with longitudinal striation (Figs. [28](#), [52](#)) ..... *comitans* Perkins
- Frontal depression with curved striae and surrounded by striae (Figs. [27](#), [54](#)); T2 rugose (Fig. [29](#)). ..... *ndokii* sp. nov.



**Figure 26** – *D. comitans* ♂ from Sulawesi: central keel, frontal depression smooth; **Figure 27** – *D. ndokii* sp. nov. ♂ holotype: central keel, frontal depression with curved striae, surrounding face striate; **Figure 28** – *D. comitans* ♂ from Sulawesi: metasoma in dorsal view, T2 striate; **Figure 29** – *D. ndokii* sp. nov. ♂ holotype: metasoma in dorsal view, T2 rugose.

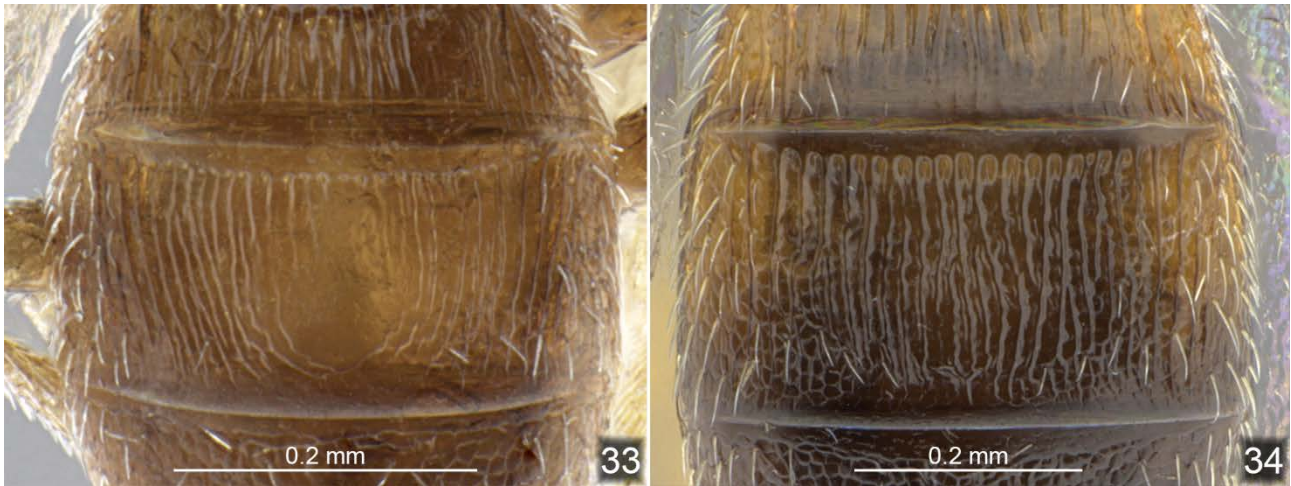
- 3 Metascutellum not protruding (Figs. [30](#), [107](#), [108](#)); brachypterous (Fig. [40f](#)) ..... *tanzaniensis* sp. nov.
- Metascutellum protruding (Figs. [31](#), [32](#), [35](#), [36](#), [37](#), [48](#), [55](#), [62](#), [70](#), [84](#), [92](#), [96](#)); macropterous or brachypterous ..... 4





**Figure 30** – *D. tanzaniensis* sp. nov. ♂ holotype: metascutellum not protruding, metanotal spine absent; **Figure 31** – *D. sulawensis* ♂: metascutellum protruding, triangular; large metanotal spine; **Figure 32** – *D. flavus* sp. nov. ♂ from Central African Republic: metascutellum protruding, wide with margin subparallel to scutellum margin; small metanotal spine.

- 4 Metascutellum triangular; large metanotal spine (Figs. [31](#), [62](#), [70](#)); pm:st = 1.25 – 1.6; T2 costulate, with or without specillum (Figs. [33](#), [34](#), [62](#), [70](#), [78](#))..... 5
- Metascutellum wide with margins parallel to scutellum ones; small metanotal spine (Figs. [32](#), [35](#), [36](#), [37](#), [84](#), [92](#), [96](#)); pm:st <1; T2 subcostulate-rugose ..... 7
- 5 T2 with drop shaped specillum (Figs. [33](#), [62](#)); keel of the sex segment at the top of antennomer (Fig. [42](#)) ..... *antanarivensis* sp. nov.
- T2 without specillum (Figs. [34](#), [70](#), [78](#)); keel of the sex segment in the middle of antennomer (Fig. [43](#)) ..... 6



**Figure 33** – *D. antananarivensis* sp. nov. ♂ holotype: T2 with drop-shaped specillum; **Figure 34** – *D. sulawensis* ♂ from Central African Republic: T2 without specillum, costae slightly curving in the middle and converging at posterior margin.

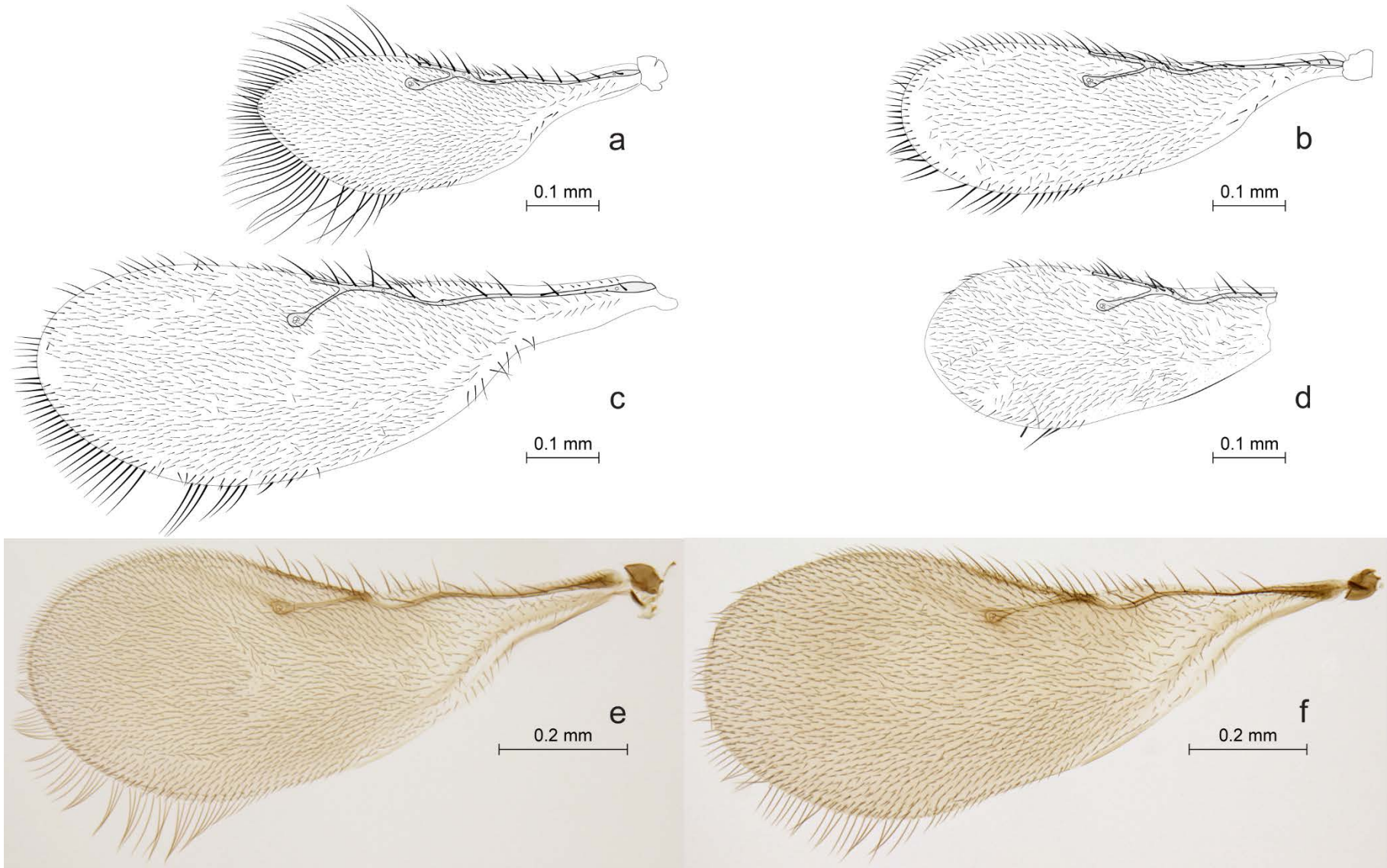
- 6 dorsal tooth longer more than 3 time ventral tooth (Fig. 68); distance lateral ocellus/ occipital carina as ocellus diameter ..... *madagascarensis* sp. nov.  
 - dorsal tooth longer as ventral tooth (Fig. 74); distance lateral ocellus/ occipital carina shorter than ocellus diameter ..... *sulawensis* O'Connor et Ashe
- 7 Head yellow (Figs. 32, 91); ocelli black rimmed (Figs. 20, 32) ..... *flavus* sp. nov.  
 - Head black or brown (Figs. 24, 35, 36, 37, 94, 104) ..... 8
- 8 Central keel present, surpassing 1/3 of eye height (Fig. 24) ..... *bicolor* O'Connor et Ashe  
 - Central keel absent; interantennal process sometimes elongate; but in frontal view not reaching eye level (Figs. 25, 104) ..... 9
- 9 Wing venation developed, forewing from brachypterous (reaching the posterior border of T2) (Figs. 35, 36, 40d) to macropterous (surpassing gaster) (Figs 37, 40b); short rugae in anterior margin of T2 .....  
 ..... *parvipennis* (Dodd)  
 - wing venation not developed, brachypterous (forewing not surpassing T1) (Figs. 40e, 96); T2 coriaceous without rugae in anterior margin ..... *kilimanjarensis* sp. nov.





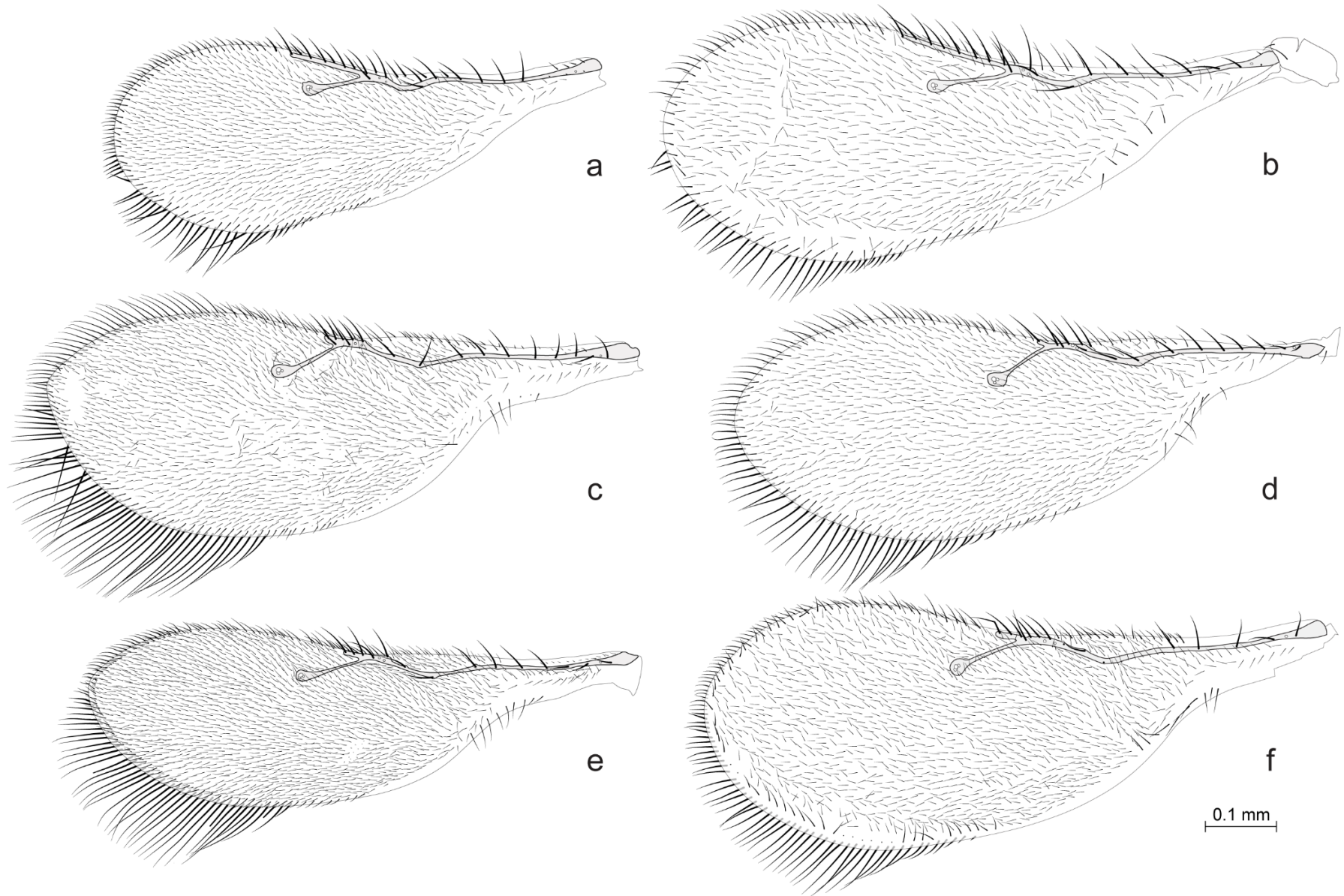
**Figure 35 - 37.** *D. parvipennis* ♂: **35** – brachypterous form, from Reunion Is. [CNC 471161]; **36** – brachypterous form, from Queensland; **37** – macropterous form, from South Africa [CNC 471168].

## Illustrations

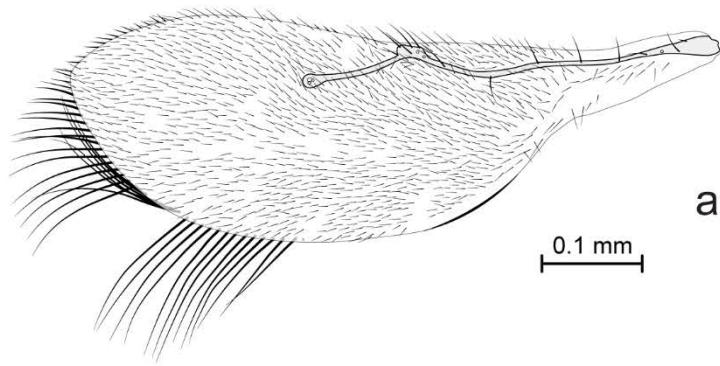


**Figures 38a - f.** Forewings: **a** – *D. comitans* ♀, from Sulawesi; **b** – *D. comitans* ♂, from Sulawesi; **c** – *D. ndokii* holotype ♂; **d** – *D. antananarivensis* holotype ♂; **e** – *D. madagascarensis* ♀; **f** – *D. madagascarensis* ♂.

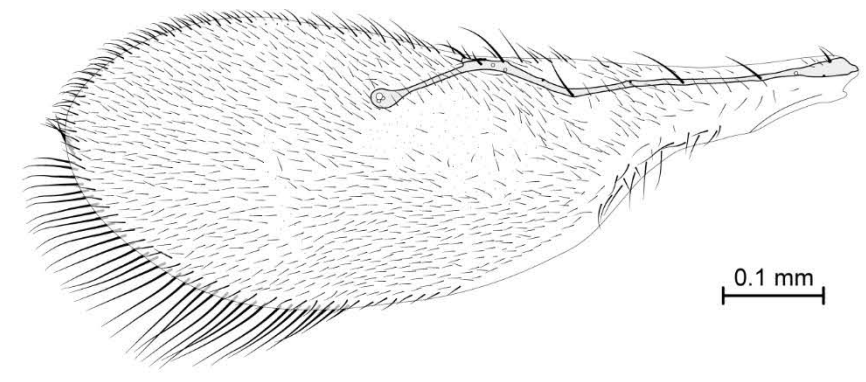




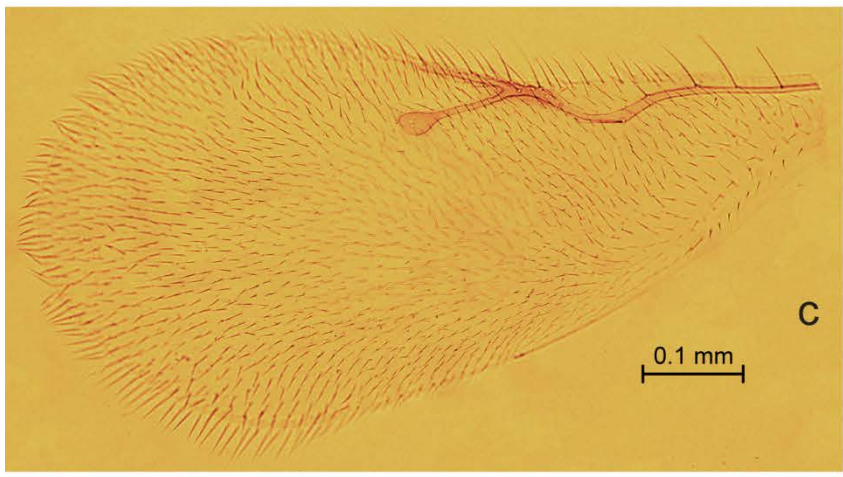
**Figures 39a - f.** Forewings: **a** – *D. sulawensis* ♀, from Zimbabwe; **b** – *D. sulawensis* ♂, from Kenya; **c** – *D. bicolor* ♀, from Central African Republic; **d** – *D. bicolor* ♂, from Uganda; **e** – *D. flavus* ♀, from Central African Republic; **f** – *D. flavus* ♂, from Central African Republic.



a



b



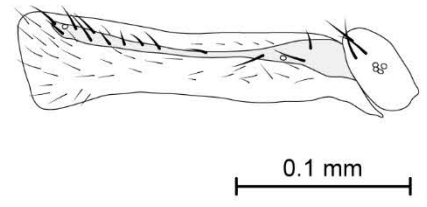
c



d

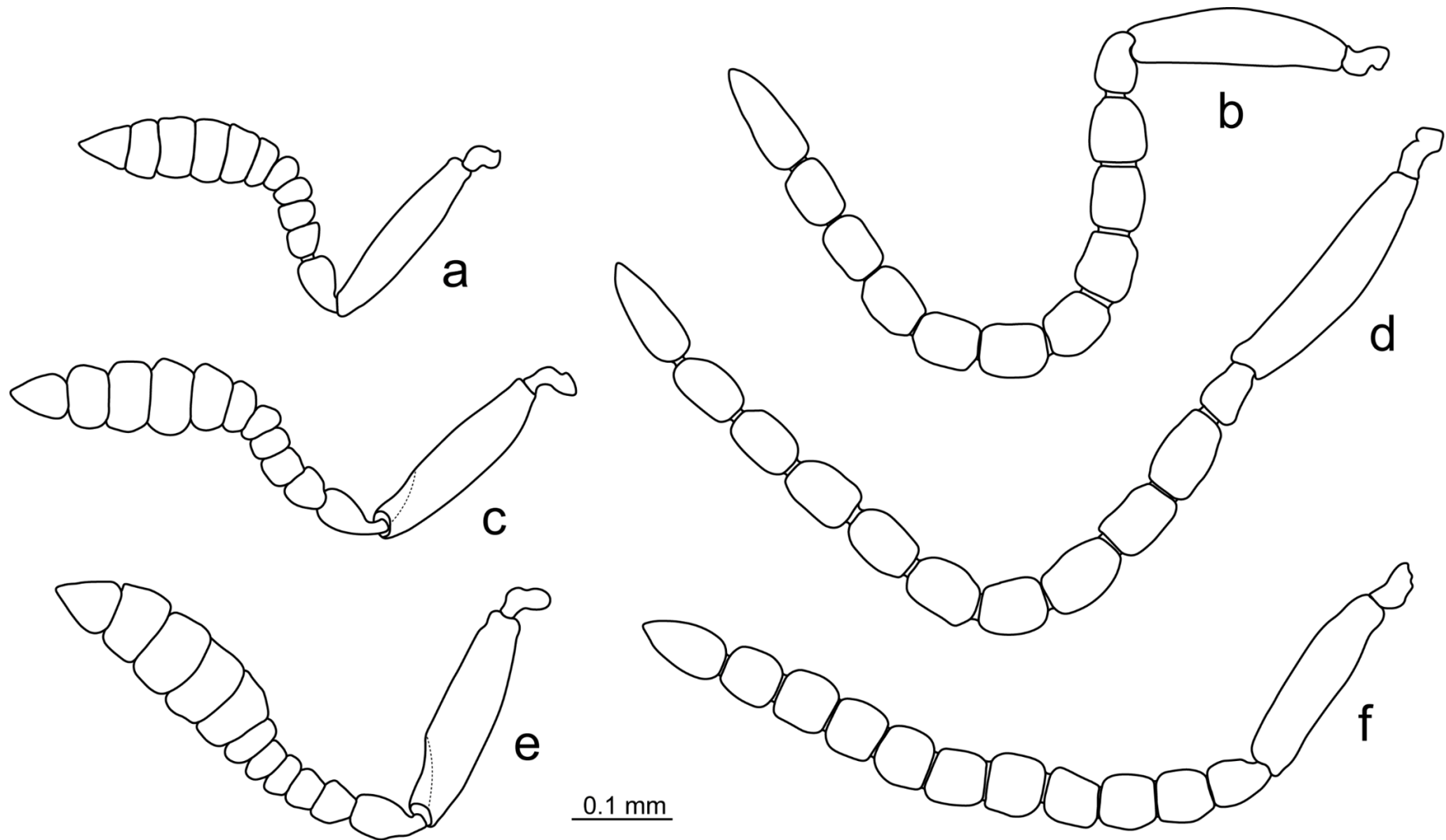


e



f

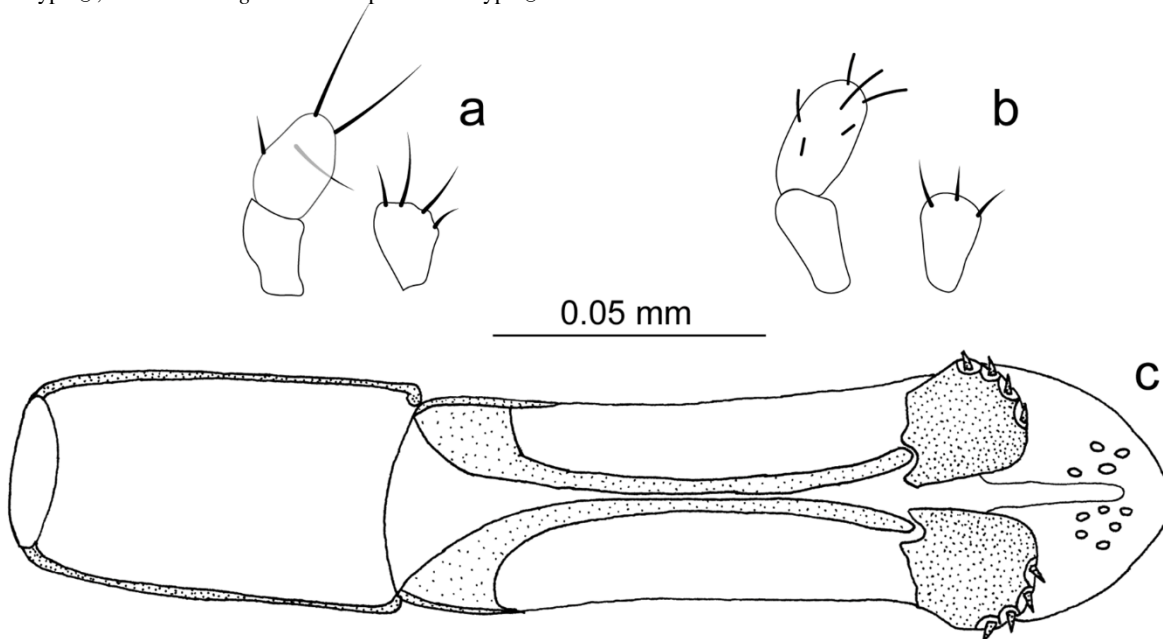
**Figures 40a - f.** Forewings: **a** – *D. parvipennis* ♀, from Western Australia; **b** – *D. parvipennis* ♂, from Zimbabwe; **c** – *D. orientalis* holotype ♀; **d** – *D. parvipennis* ♂, from Queensland; **e** – *D. kilimanjarensis* holotype ♂; **f** – *D. tanzaniensis* holotype ♂.



**Figures 41a - f.** Antennae: **a** – *D. bicolor* ♀ from Uganda; **b** – *D. bicolor* ♂ from Central African Republic; **c**, *D. flavus* ♀ from Central African Republic; **d** – *D. flavus* ♂ from Central African Republic; **e** – *D. parvipennis* ♀ from South Africa; **f** – *D. parvipennis* ♂ from South Africa.



**Figures 42 - 43.** Different shape of sex segment (male fifth antennomere) in Madagascan species: **42** – *D. antananarivensis* sp. nov. holotype ♂; **43** – *D. madagascarensis* sp. nov. allotype ♂.



**Figures 44a - c.** Maxillary and labial palpi: **a** – *D. sulawensis* from Zimbabwe (after Caleca & Mineo 1995); **b** – *D. bicolor*, holotype. Aedeagus: **c** – *D. flavus* sp. nov. from Nigeria (after Caleca & Mineo 1995).



## Species descriptions

### **comitans-group**

This group includes species without a preoccipital lunula. In the Afrotropical region we recorded two species: *D. comitans* and *D. ndokii* sp. nov.

Based on an analysis of the description and figures of *D. indicus* (Mukerjee, 1994), in contrast to Mineo et al (2010) and O'Connor & Ashe (2011), both of whom included this species in the *orientalis*-group, we consider it as belonging to the *comitans*-group, because of the clear absence of a preoccipital lunula. This species appears to be morphologically very similar to *D. comitans*, but unfortunately the holotype was not located in the collection of the Department of Zoology, Government Post-Graduate College, Rishikesh or in ZSI centre of Dehradun, India (K. Rajmohana, in litteris); the only difference with *D. comitans* is the absence of a specillum on T2. This feature was only recently observed and described (Mineo & Caleca 1992) and we suspect that, as previously happened for *D. orientalis* in Dodd's original description (1915), the specillum was overlooked by the author and T2 was described as striate.

### ***Dyscritobaeus comitans* Perkins**

[urn:lsid:zoobank.org:act:533F0DAB-45ED-428E-A38A-2C3D3FFB7475](https://doi.org/10.31233/osf.io/zt9qj)

*Dyscritobaeus comitans* ♂: Perkins (1910): p. 622, original description.

*Dyscritobaeus comitans* ♂: Kieffer (1926): p. 156, description.

*Dyscritobaeus comitans* ♂: (Swezey 1929): p. 284.

*Dyscritobaeus comitans* ♂: Johnson (1992), p. 370, catalogued

*Dyscritobaeus* sp. (b) ♀: Mineo & Caleca (1992): Fig. 4, p. 13.

*Dyscritobaeus comitans* ♂: Caleca & Mineo (1995): Fig. I, p. 10.

*Dyscritobaeus* sp. (b) ♀: Caleca & Mineo (1995): Fig. IV, p. 12., Fig. VI (6, 7), p. 16

*Dyscritobaeus comitans* ♂: O'Connor & Ashe (2012): p. 315, keyed.

*Dyscritobaeus cerosus* ♀: O'Connor & Ashe (2012): p. 314, original description, **syn. nov.**

We provide a redescription to present a comparative uniform treatment of all species included in this paper. Based on a comparison of the holotypes of *D. comitans* (male) and *D. cerosus* O'Connor et Ashe (female), we consider *D. cerosus* to be a junior synonym of *D. comitans*; differential characters separating the two specimens are linked to sexual dimorphism, similar to the degree of sexual dimorphism present in other *Dyscritobaeus* species. The specimen used for the description of the male was selected by one of the authors (V. Caleca) who compared it with the holotype.

### Diagnosis

The absence of a preoccipital lunula, in combination with a dorsally sharp occipital carina (Figs. 2, 16), two character states shared with *D. ndokii*, distinguish these two species from the other Afrotropical species. A smooth frontal depression in combination with the presence of longitudinal striae on T2 distinguish *D. comitans* from *D. ndokii*.

### Description

Male: Sulawesi Utara: Dumoga Bone Nat., 0°34'N, 123°54'E; 7-25 Jun '85, Edge of rainforest, 220m, leg. A. D. Austin; (WINC); ♂ Homotype *Dyscritobaeus comitans* Perkins, compared by V. Caleca, 1990.

Length of the body: 0.7 mm

**Head.** Sculpture coriaceous sensu Eady (1967), frontal depression with a smooth area starting from the interantennal process and surpassing mid eye height; central keel reaching 1/2 the height of the eye (Fig. 26). Fan-like striation in malar area from oral foramen to eye margin, striation evident only in genal area (Fig. 50). Head width: height: 0.3: 0.27: 0.14 mm. Malar sulcus length: 0.09 mm. Eye width: height = 0.09: 0.12 mm. OOL: LOL: POL = 0.07: 0.05: 0.09 mm. Mandibles bidentate with almost equal tooth.

Antenna. Radicle yellow, scape and A2 yellow, A3-A12 brown; A12 twice as long as A11.

**Mesosoma.** In dorsal view, mesonotum and scutellum brown with posterior scutellar margin yellowish; propodeum brown (Fig. 48). In lateral view, pleurae brown with metapleural carina yellowish (Fig. 50).

**Sculpture.** In dorsal view mesonotum and scutellum imbricate; in lateral view speculum and femoral depression with furrow, posterior mesepimeral area anteriorly delimited by a mesepimeral sulcus with a crenulate furrow; dorsal and ventral metapleural area smooth anteriorly with crenulated depression with rugae

posteriorly (Fig. 50). Propodeal carina with two spiny projections, one surrounding the propodeal spiracle and the second one at the posterior margin (Fig. 48, 50). Metascutellum visible in dorsal view and metanotal spine small, slightly surpassing propodeum (Figs. 48, 52). Mesonotum length 0.15 mm, width 0.3 mm; scutellum length 0.07 mm, width 0.21 mm.

Wings. Forewing hyaline surpassing gaster; st length 0.08 mm and ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.9: 0.3: 2.4: 2.3: 6.6: 0.3: 0.6; angle st-pm = 20° as in Fig. 38b.

**Metasoma.** Color yellow on T1 and T2, gradually transforming to brown in the other tergites. On T1 a pair of longitudinal submedial carinae are aligned with the propodeal carina and separate external coriaceous microsculpture from internal costae started with crenulated furrows in anterior margin (Figs. 48, 52); T2 with foveolate anterior margin; costulate to imbricate, specillum absent, costae curved in the middle of posterior margin of T2 (Fig. 52).

Female: Sulawesi Utara: Dumoga Bone Nat., 0°34'N, 123°54'E; 7-25 Jun '85, Edge of rainforest, 220 m, leg. A. D. Austin; (WINC); ♀ *Dyscritobaeus comitans* Perkins, det. V. Caleca.

Length of the body: 0.73 mm

**Head.** Color brown. Sculpture coriaceous sensu Eady (1967), frontal depression with a smooth area starting from the interantennal process and surpassing mid eye height; central keel reaching 1/2 the height of the eye (Fig. 45). Fan-like striation in malar area from oral foramen to eye margin, striation evident just in genal area (Figs. 46, 49). Preoccipital lunula absent (Fig. 16). Measure of the head width: height: length = 0.31: 0.27: 0.16 mm. Malar sulcus length: 0.09 mm. Measure of eye width: height = 0.1: 0.14 mm. OOL: LOL: POL = 0.06: 0.05: 0.1 mm. Mandibles bidentate with almost equal tooth (Fig. 46).

Antenna, radicle, A1 and A2 yellowish to brown; A3 to A12 brown (Fig. 45). A1 length: 0.18 mm; A2 as long as A3+ A4. Clava six-segmented; A11 is longer as A12 (Fig. 45). Claval sensilla formula 1:2:2:2:1:0.

**Mesosoma.** In dorsal view, mesonotum and scutellum brown with posterior scutellar margin yellowish; propodeum brown. In lateral view, pleurae brown with metapleural carina yellowish (Fig. 47).

Sculpture. In dorsal view mesonotum and scutellum imbricate; in lateral view speculum and femoral depression with furrow, posterior mesepimeral area anteriorly delimited by a mesepimeral sulcus with a crenulate furrow; dorsal and ventral metapleural area smooth anteriorly with crenulated depression with rugae posteriorly (Fig. 49). Propodeal carina with two spiny projections, one surrounding the propodeal spiracle and the second one at the posterior margin (Figs. 47, 49). Metascutellum visible in dorsal view and metanotal spine small, slightly surpassing propodeum (Figs. 47, 51). Mesonotum length 0.16 mm, width 0.29 mm; scutellum length 0.1 mm, width 0.22 mm.

Wings. Forewing hyaline surpassing gaster; st length 0.07 mm and ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.8: 0.5: 3.3: 3.2: 8.3: 1.8: 2.2; angle st-pm = 25° as in Fig. 38a.

Legs yellow and coxae brown.

**Metasoma.** In dorsal view, tergites brown, in ventral view sternites brown, laterotergites yellowish. On T1 a pair of longitudinal submedial carinae are aligned with the propodeal carina and separate external coriaceous microsculpture from internal costae started with crenulated furrows in anterior margin (Figs. 47, 51). T2 with foveolate anterior margin; costulate to imbricate, specillum elongate in the middle of T2, longitudinal costae converging to posterior margin of specillum as in Figs. 13, 51.

### Comment and variability

Eighty-five specimens were examined from Africa, Indonesia, Japan, Malaysia, Nepal, Hawaii.

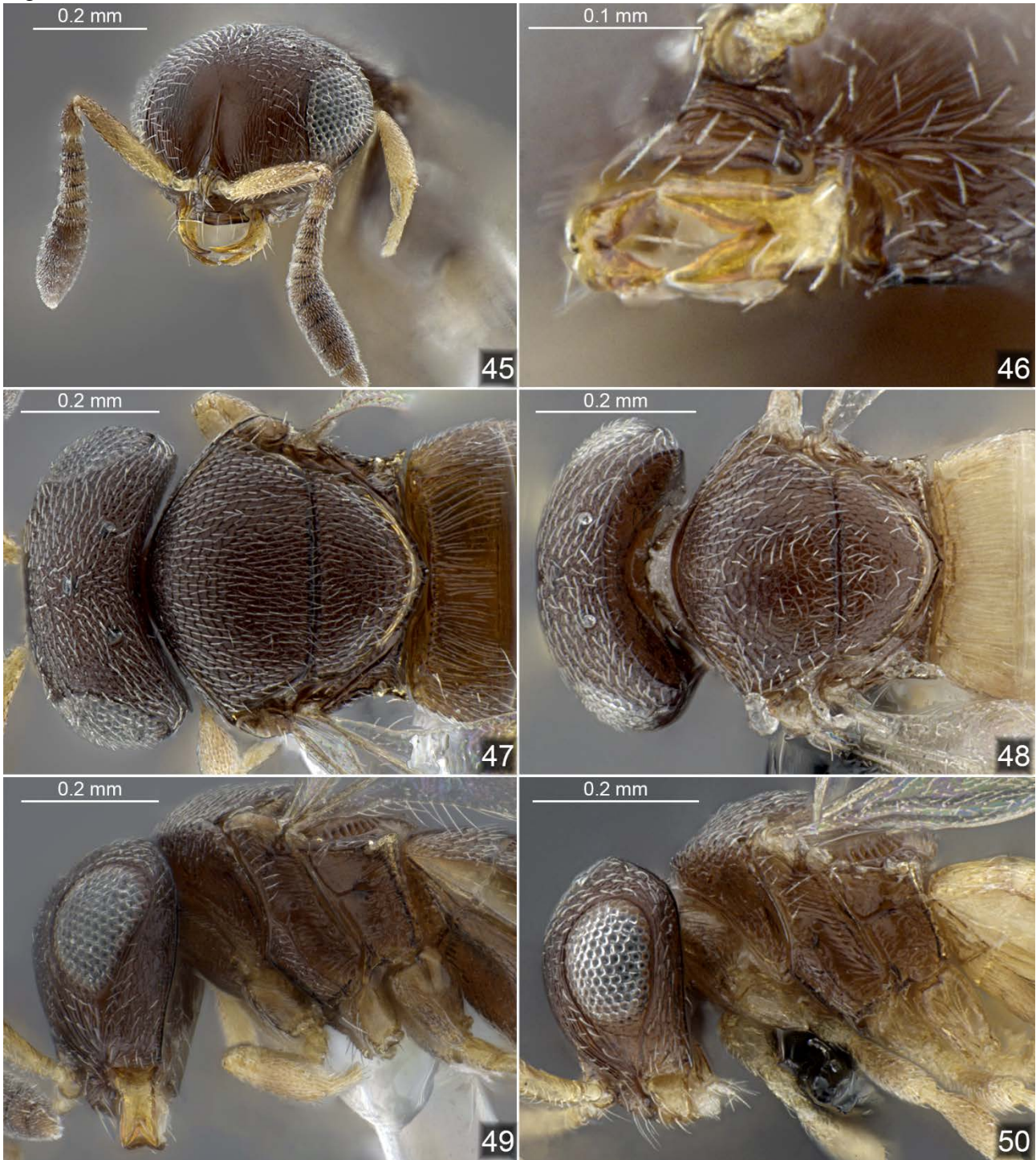
In females, the anterior fringe of the forewings is very long and the specillum is elongate, both of which are gender-linked characters that are only useful for distinguishing the sexes and hence are not diagnostic at species level in both sexes. In all observed females the specillum has a variable shape, particularly at the anterior and posterior ends, it can be short with narrower ends as in Figs. 13, 51 or longer with wider ends as in Fig. 7; the width of the specillum also varies from 9% to 16% of T2 width.

Female length from 0.72 mm to 0.74 mm.

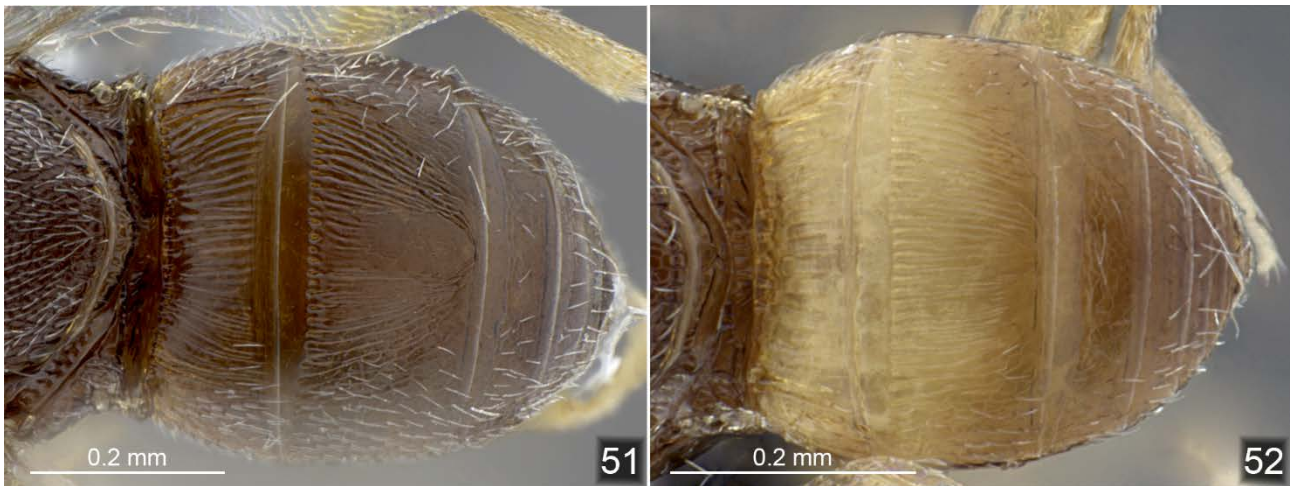
Male length from 0.69 mm to 0.71 mm.



Figures



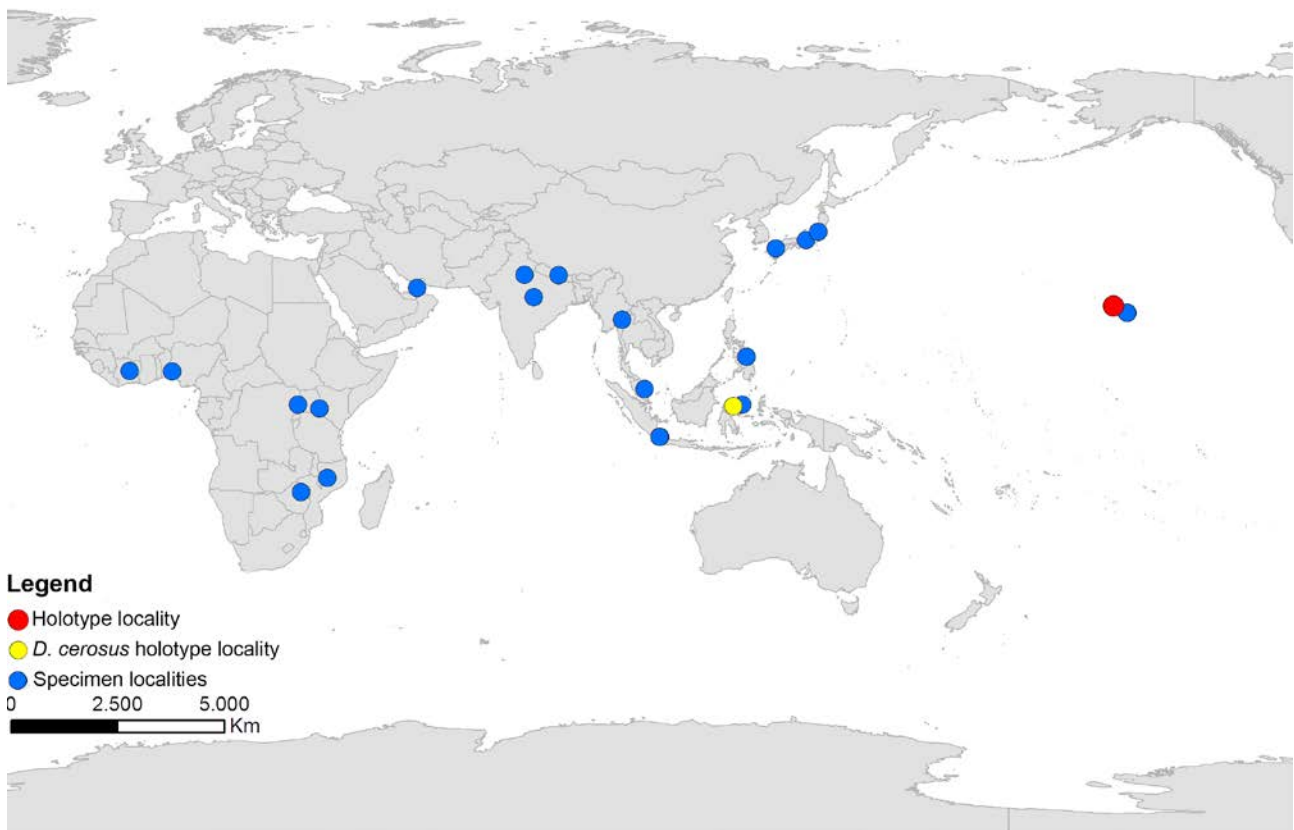
**Figures 45 - 50.** *Dyscritobaeus comitans*, ♀ from Ivory Coast, ♂ from Sulawesi: **45** – ♀, head, anterolateral view; **46** – ♀, mandibles; **47** – ♀, head and mesosoma, dorsal view; **48** – ♂, head and mesosoma, dorsal view; **49** – ♀, head and mesosoma, lateral view; **50** – ♂, head and mesosoma, lateral view.



**Figures 51 - 52.** *Dyscritobaeus comitans*, ♀ from Ivory Coast [CNC 471596]; ♂ from Sulawesi: **51** – ♀, metasoma, dorsal view; **52** – ♂, metasoma, dorsal view.

### Distribution

This species is recorded in the Australian, Palearctic, Oriental, Afrotropical Regions.



**Figure 53** – Distribution of *D. comitans*.

### Material examined

Holotype. ♂: **USA: Hawaii:** Honolulu, Bates st., 1904, Swept R. CLP., (BPBM), [1513].

Homotypes *Dyscritobaeus comitans* Perkins, compared by V. Caleca, 1990: **INDONESIA: Sulawesi, Utara:** Dumoga Bone Nat. Pk, Edge of rainforest, 220m, 23♂, 1985/06/07-1985/06/25, A.D. Austin, (WINC) (1♂, wings in slide, Figs. 38b); **MALAYSIA:** Pahang, Genting H'lands, 1♂, 1986/12, A.D. Austin, (WINC).

**AFRICA: Ivory Coast:** Bouake, rice field, 1♀, 1980/03, P. Cochereau, (CNCI), [CNC 471596]; **Kenya:** Nyanza kusa, 0°18'12"S 34°53'21"E, 1♀, 2003/09/11-2003/10/04, I. Prikryl, Malaise Trap, (CNCI), [CNC 471597]; **Mozambique:** Niassa Cuamba, Catholic University of Mozambique farm, 600m, 1♀, 2006/02/02-2006/04/17, M. Olmi, MT, (CNCI), [CNC 471598]; **Nigeria:** Oyo Ibadan, IITA compound, 1♀, 1987/11, J. S. Noyes, MT, (CNCI), [CNC 471599]; **Uganda:** Kibale National Park, Kanyawara, Makerere University Biogical Field Station, Primary mid-altitude Rainforest, near



stream, 0°33.408'N 30°22.603'E, 1587m, 1♀, 2008/08/02, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P030697]; **United Arab Emirates:** SSW of Ghaid, 25.09N 55.48E, 1♀, 2005/12/10-2005/12/29, A. van Harten, light trap, (CNCI), [CNC #3590/471600]; **Zimbabwe:** Salisbury, 1♀, 1979/06, A. Watsham, (CNCI), [CNC 471601]; **INDIA: Madhya Pradesh:** Jabalpur, Sof town, scrubby area, 1♀, 1967/03/24, Topal, (CNCI), [CNC No. 259/471602]; **Uttar Pradesh:** Aligarh, 1♀, 1978/08/11, M. Hayat, (CNCI), [CNC 471603]; **INDONESIA: Curug:** 1♀, 8♂, 1980/02/07-1980/02/14, H. R. Gillespie, pan trap, (CNCI), [CNC 394575, 471604, 471605, 471606, 471607, 471608, 471609, 471610, 471611]; 1♀, 2♂, 1980/04/01-1980/04/07, H. R. Gillespie, pan trap, (CNCI), [CNC 471612, 471613, 471614]; 7♀, 1980/04/08-1980/04/14, H. R. Gillespie, pan trap, (CNCI), [CNC 471615, 471616, 471617, 471618, 471619, 471620, 471621]; 4♂, 1980/04/14-1980/04/21, H. R. Gillespie, pan trap, (CNCI), [CNC 471622, 471623, 471624, 471625]; 1♂, 1981/01/04-1981/01/11, H. R. Gillespie, pan trap, (CNCI), [CNC 471626]; 1♀, 1981/01/24-1981/02/12, H. R. Gillespie, pan trap, (CNCI), [CNC 471663]; 3♀, 1981/02/24-1981/03/10, H. R. Gillespie, pan trap, (CNCI), [CNC 471660, 471661, 471662]; 1♀, 1981/03/23-1981/04/06, H. R. Gillespie, (CNCI), [CNC 471627]; 1♂, 1981/07/05-1981/05/17, H. R. Gillespie, pan trap, (CNCI), [CNC 471628]; 1♀, 1♂, 1981/07/19-1981/08/21, H. R. Gillespie, pan trap, (CNCI), [CNC 471629, 471630]; **Sulawesi, Utara:** Dumoga Bone Nat. Pk, Edge of rainforest, 220m, 7♀, 1985/06/07-1985/06/25, A.D. Austin, (WINC) (1♀, wings in slide, Figs. [38a](#)); **JAPAN: Honshu:** Douzuki, Obara, 1♂, 1990/08/08-1990/08/17, K. Yamagishi, PT, (CNCI), [CNC 471631]; **Kyushu:** Fukuoka, Mt Hiko, 700m, 1♀, 1989/09/11-1989/09/18, K. Takeno, M. Sharkey, MT, (CNCI), [CNC 471632]; **Tochigi Pref.:** Hikinuma, Shiobara, 1♀, 1985/07/12, K. Takahashi, Truck trap, (CNCI), [CNC 471633]; **NEPAL: Nepal:** centr. Kakani, 2070m, 1♀, 1983/08/1-1983/08/23, H.G. Allen, Malaise Trap, (CNCI), [CNC 471634]; **PHILIPPINES: Leyte:** Visca, Baybay, 1♀, 1♂, 1982/09/23-1982/10/20, C. Starr, PT, (CNCI), [CNC 471635, 471636]; **THAILAND: Chang:** Kiang Doi Suthop, riv. Gully, 1♀, 1985/02/16, D. Jackson, (CNCI), [CNC 471637]; **USA: Hawaii:** Hilo Coast, Kolekole Beach Park, 1♀, 4♂, 1983/10/19, D. M. LaSalle, (CNCI), [CNC 471640, 471639, 471638, 471641, 471642]; Honolulu, 1♂, 1906, RCLP Perkins collection, (BPBM to CNCI), [BPBMent 78694].

## ***Dyscritobaeus ndokii* Tortorici et Caleca sp. nov.**

### Diagnosis

Absence of the preoccipital lunula (Fig. 56), a character state shared with *D. comitans*, differentiates these two species from the other African species.

The rugose T2 separates this species from the other species of the *comitans*-group, which either have T2 with some longitudinal striation (*D. comitans*, *D. bolivar*, other undescribed species) or with minute granulate punctuation or coriaceous (*D. minoculo*, one undescribed species). Additionally the frontal depression with arched striae commencing from the top of central keel and reaching the oral foramen on the side of clypeus (Fig. 27) distinguishes this species from *D. comitans* that has the frontal depression shallow and smooth (Fig. 26). A black head differentiates this species from the brown head of *D. comitans*.

### Description

Length of the body: 0.91 mm

**Head.** Color black. Sculpture coriaceous sensu Eady (1967). Head covered by long hair, mandibles yellow. Frontal depression with a shallow area starting from the interantennal process, reaching 1/2 the height of eye with long striae starting from the top of central keel and reaching the oral foramen (Figs. 27, 54). Central keel reaching 1/2 the height of the eye (Fig. 54). Fan-like striation in malar area from oral foramen to eye margin, fan-like striation present in genal area surpassing half-length of malar sulcus. Malar sulcus length: 0.01 mm. Preoccipital lunula absent (Fig. 56). Measures of the head width: height: length = 0.41: 0.34: 0.19 mm. Measures of eye width: height = 0.14: 0.19 mm. OOL: LOL: POL = 0.09: 0.06: 0.1 mm. Mandibles bidentate without odontoid process (Figs. 55, 57).

Antennae not present in the specimen.

**Mesosoma.** In dorsal view, mesoscutum anteriorly yellow, dark brown in central and posterior part; scutellum with dark brown anterior and central part and yellow posterior and lateral margins; propodeum brown; metascutellum and metanotal spine brown with dark edge (Figs. 29, 55). In lateral view brown (Fig. 57). Sculpture. In dorsal view mesonotum and scutellum imbricate (Fig. 55); in lateral view speculum with furrow; femoral depression smooth and fan-like striation absent on it; posterior mesepimeral area well delimitate anteriorly; dorsal and ventral metapleural area with a crenulated depression with rugae (Fig. 57); propodeal carina with one posterior spiny projection (Fig. 58). Metascutellum visible in dorsal view, small metanotal spine (Fig. 55).

Mesosoma length 0.25 mm, width 0.4 mm; scutellum length 0.15 mm, width 0.3 mm.

Wings. Forewing hyaline surpassing gaster; ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.4: 0.8: 3.4: 3.4: 9.0: 0.4: 1.0; angle st-pm = 43° as in Fig. 38c. st length is 0.09 mm; width: length of forewing is 0.31: 0.81 mm.

Legs yellow except fore and middle coxae light brown, hind coxae brown.

**Metasoma.** In dorsal view metasoma anteriorly yellowish as in propodeum, color gradually changes in dark brown in last tergite; T1, T2, T3 color light brown on side (Fig. 29); laterotergites yellowish. On T1 pair of longitudinal submedial carinae are aligned with the propodeal carina and separate external coriaceous microsculpture from internal smooth area. In the middle of T1 a microsculpture striate to coriaceous starts from the anterior margin and gradually dissolves towards the posterior margin. T2 rugose, not foveolate in anterior margin (Fig. 29).

Female: unknown

### Comment and variability

The species is represented by only one specimen, but the characters easily diagnose the species. Size, and sculpture of the head place this species close to the genus *Titta* Mineo, O'Connor et Ashe, but the bidentate mandible is a typical feature of *Dyscritobaeus* species.

Figures



**Figures 54 - 58.** *Dyscritobaeus ndokii* sp. nov. ♂, holotype [SAM-HYM-P025617]: **54** – head, frontal view; **55** – head and mesosoma, dorsal view; **56** – head, dorsal view; **57** – head and mesosoma, lateral view; **58** – posterior spiny projection in propodeum.

## Distribution



**Figure 59** – Distribution of *D. ndokii* sp. nov.

### Etymology

The species is named after the collection site located in the Ndoki sector of the Dzanga-Ndoki National Park.

### Material examined

Holotype. ♂: **AFRICA: Central African Republic:** Parc National de Dzanga-Ndoki, 38.6km 173° S Lidjombo, Lowland Rainforest, 2°21.60'N, 16°09.20'E, 350m, 2001/05/22, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025617] (wings in slide, in Fig. [38c](#)).

### ***orientalis*-group s.s.**

The following species belong to the *orientalis*-group s.s because they have a preoccipital lunula, characteristic of species of the *orientalis*-group s.l., and in females they share with *D. orientalis* the specillum on T2; the metascutellum is visible in dorsal view, triangular; and a large metanotal spine is present. Regarding the forewing of *D. orientalis*, in Fig. 37a we show the slide micrograph (taken by V. Caleca in 1989) of one of the two forewings mounted in the original slide of the holotype of *Mirotelenomus orientalis* Dodd preserved at SAMA. Comparing this image to that shown by Mineo et al (2009; pg. 174, fig. 5), the wing shape and the fringe are very different and it is clear that the latter specimen does not belong to *D. orientalis*.

### ***Dyscritobaeus antananarivensis* Tortorici et Caleca sp. nov.**

#### Diagnosis

This species is easily distinguished from *D. comitans* and *D. ndokii* by the presence of the occipital lunula and specillum in males. The species can be differentiated from *D bicolor*, *D. flavus*, *D. ndokii* and *D. parvipennis* by the dorsal tooth, which is 4 times longer than the ventral tooth,  $pm > st$  (Fig. 38d), a triangular metascutellum and long metanotal spine, propodeal carina with two spiny projections and specillum present in males; furthermore it differs from *D. ndokii*, also by an anteriorly well delimited posterior mesepimeral area (Figs. 63). *Dyscritobaeus antananarivensis* differs from *D. sulawensis* and *D. madagascarensis* by the sex segment keel in the distal part of antennomere (Fig. 42), OOL/POL= 0.78, T2 with specillum and T3 without striae (Fig. 62); it also differs from *D. sulawensis* by the large dorsal tooth of the mandible, which is 4 times longer than the ventral tooth (Fig. 61).

#### Description

##### Male.

Length of the body: 0.75 mm

**Head.** Color, light brown. Sculpture coriaceous sensu Eady (1967), frontal depression with a smooth area starting from the interantennal process and reaching the mid eye height, central keel surpassing the eye level (Fig. 60). Fan-like striation in malar area from oral foramen to eye margin, striation just evident in genal area. Preoccipital lunula present and sculptured (Fig. 62). Measures of the head width: height: length = 0.31: 0.27: 0.16 mm. Malar sulcus length: 0.08 mm. Measures of eye width: height = 0.1: 0.13 mm. OOL: LOL: POL = 0.07: 0.05: 0.9 mm. Distance lateral ocellus to occipital carina less than ocellar diameter. Mandibles bidentate with dorsal tooth 4 time longer than ventral one (Fig. 61).

Antenna. A1-A12 brown; A12 length twice A11 length. Sex segment with keel in the distal part of antennomer (Fig. 42).

**Mesosoma.** In dorsal view, mesoscutum, scutellum and propodeum light brown. (Fig. 62). In lateral view, pleurae light brown (Fig. 63). Sculpture. In dorsal view mesoscutum and scutellum coriaceous. In lateral view speculum with furrow, femoral depression smooth, posterior mesepimeral area delimitate anteriorly by a mesepimeral sulcus with a crenulate furrow, dorsal and ventral metapleural area with crenulated depression with rugae (Fig. 63). Propodeal carina with two spiny projections, one surrounding the propodeal spiracle and the second one at the posterior margin. Metascutellum visible in dorsal view, triangular; large metanotal spine, slightly surpassing propodeum (Fig. 62). Mesonotum length 0.18 mm, width 0.28 mm; scutellum length 0.09 mm, width 0.19 mm.

Wings. Forewing hyaline surpassing gaster; wing ratio  $st: pm: mg: ww: af: pf = 1: 1.0: 0.4: 2.9: 0.3: 0.8$ ; angle  $st-pm = 28^\circ$  as in Fig. 38d.  $st$  length is 0.08 mm.

Legs yellow, except coxae dark yellow.

**Metasoma.** (Fig. 62). In dorsal view, tergites brown, in ventral view sternites brown, laterotergites light brown. On T1 pair of longitudinal submedial carinae are aligned with the propodeal carina. They separate an external coriaceous area from an internal area where striate sculpture starts with crenulated furrows in anterior margin and finishes to coriaceous sculpture. T2 with foveolate anterior margin; costulate to colliculate, drop shaped specillum in the middle of T2 not well delimited at sides and on top; costae converging to posterior margin of specillum (Figs. 33, 62). T3 without striae.

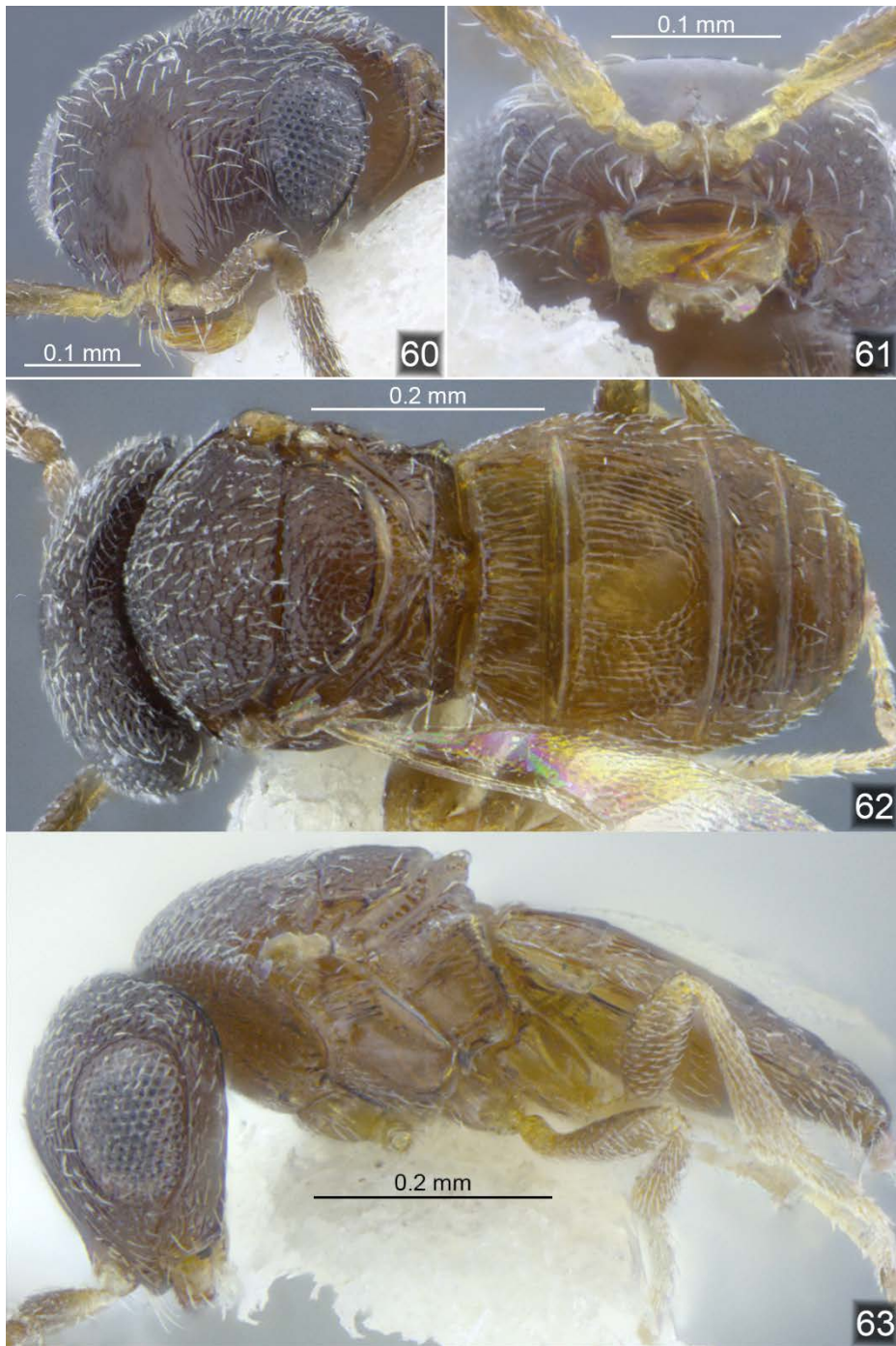
#### Comment and variability

The species is represented by only a single male specimen. The combination of character states represented by the presence of a specillum in males and a long dorsal mandible tooth, which is 3-4 times longer than the ventral



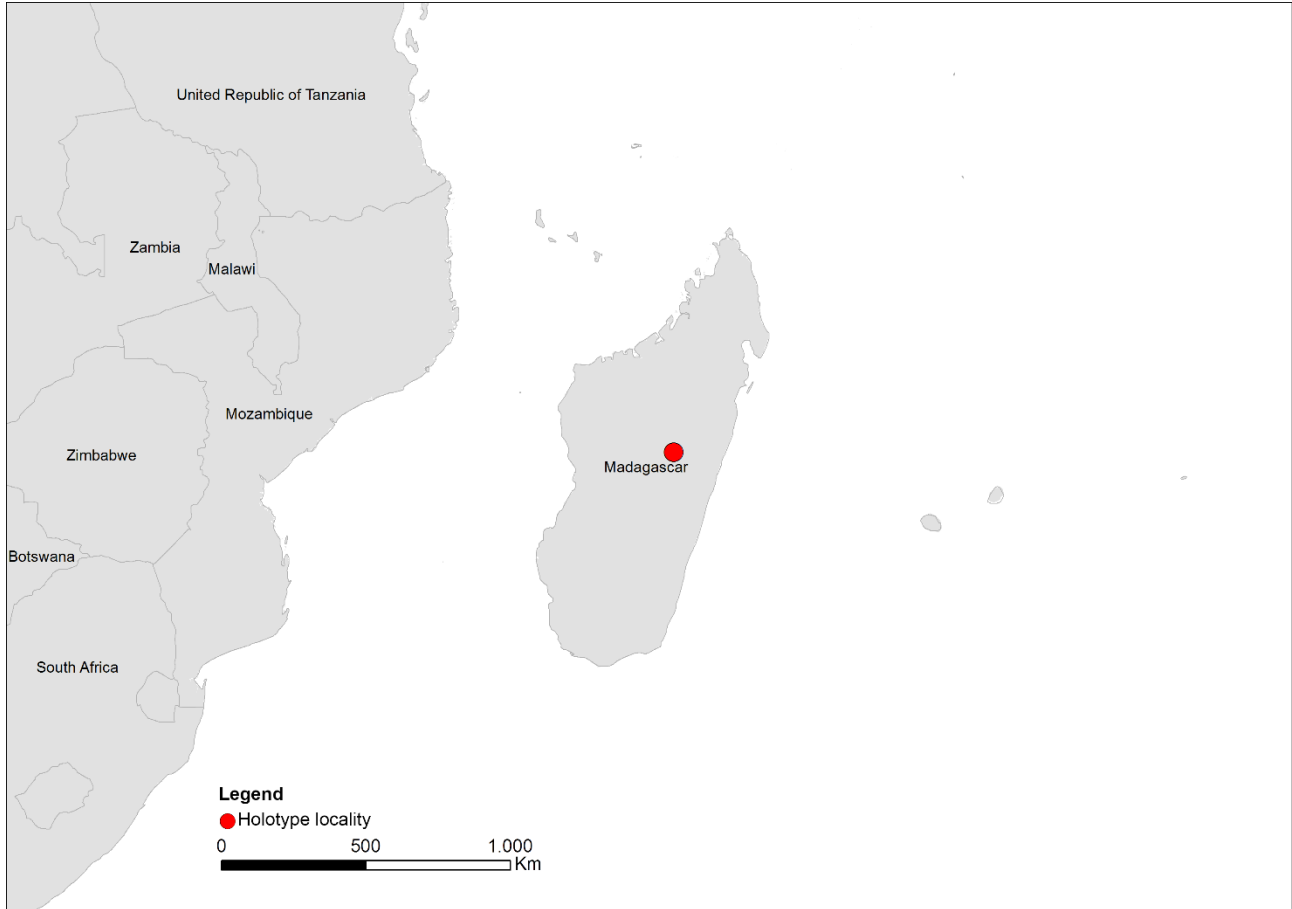
tooth is unusual in Afrotropical species, but this character combination is commonly represented in *Dyscritobaeus* species from the Oriental region.

Figures



**Figures 60 – 63.** *Dyscritobaeus antananarivensis* sp. nov. ♂, holotype [BMNH (E)#971551]: **60** – head, frontal view; **61** – mandibles, ventral view; **62** – head, mesosoma and metasoma, lateral view; **63** – head, mesosoma and metasoma, lateral view.

## Distribution



**Figure 64** – Distribution of *D. antananarivensis* sp. nov.

### Etymology

The name of this species is linked to the locality Antananarivo where the type was collected.

### Material examined

Holotype. ♂: **AFRICA: Madagascar:** 25km W. Tananarive, 1983/05/24-1983/05/29, J. Noyes & M. C. Day, (BMNH), [BMNH (E)#971551] (wings in slide, in Fig. [38d](#)).

## *Dyscritobaeus madagascarensis* Tortorici et Caleca sp. nov.

### Diagnosis

The dorsal mandible tooth is 4 times longer than the ventral tooth in both sexes, which distinguishes *D. madagascarensis* and *D. antananarivensis* from the other Afrotropical species. Presence of the preoccipital lunula (Fig. 15) distinguishes this species from *D. comitans* and *D. ndokii*. The drop-shaped T2 specillum in females (Fig. 12, 69) and equal length of female antennal segments A11 and A12 distinguish the species from *D. sulawensis*. The specillum is absent in males (Fig. 70) as in *D. sulawensis*. The male of this species differs from *D. antananarivensis* by the position of the sex segment keel (in the middle of antennomere, Fig. 43), OOL/POL= 1, T2 without specillum, T3 with short striae (in *D. antananarivensis*: the sex segment keel is in the distal part of antennomere as in Fig. 42, OOL/POL= 0.78, T2 with specillum and T3 without striae as in Fig. 62); the male differs from *D. sulawensis* by the distance between the lateral ocellus and occipital carina as being equal to the diameter of the ocellus, the occipital carina is less depressed at vertex and shape and by the size of the mandible teeth (Fig. 68) (in *D. sulawensis*: the distance between the lateral ocellus and occipital carina is less than the ocellus diameter; the occipital carina is depressed at the vertex and the mandible dorsal tooth is as long as the ventral tooth, as in Fig 74).

### Description

#### Female.

Length of the body: 1.23 mm

**Head.** Color, dark brown. Sculpture coriaceous sensu Eady (1967), frontal depression with a smooth area starting from the interantennal process and reaching the mid eye height (Fig. 65). Central keel reaching the eye level (Fig. 65). Fan-like striation in malar area from oral foramen to eye margin, short striation is also present in genal area (Fig. 67). Preoccipital lunula present and sculptured (Fig. 69). Measures of the head width: height: length = 0.5: 0.44: 0.26 mm. Malar sulcus length: 0.12 mm. Ratio of eye width: height = 0.17: 0.24 mm. OOL: LOL: POL = 0.1: 0.06: 0.11 mm. Distance lateral ocellus to occipital carina = 1 ocellar diameter. Mandibles bidentate with dorsal tooth 4 time longer than ventral one (Fig. 67).

Antenna. A1 to A7 yellowish, A8 to A12 brown. A1 length: 0.23 mm; A2 longer as A3+ A4. Clava six-segmented; A11 is as long as A12 (Fig. 19). Claval sensilla formula 1:2:2:2:1:0.

**Mesosoma.** In dorsal view, mesoscutum and scutellum dark brown with posterior scutellar margin yellowish; propodeum dark red. (Fig. 69). In lateral view, pleurae dark red (Fig. 71).

Sculpture. In dorsal view mesoscutum and scutellum imbricate. In lateral view speculum with furrow, femoral depression smooth, posterior mesepimeral area delimitate anteriorly by a mesepimeral sulcus with a crenulate furrow, dorsal metapleural area with crenulated depression with rugae, ventral metapleural area smooth (Fig. 71). Propodeal carina with two spiny projections, one surrounding the propodeal spiracle and the second one at the posterior margin. Metascutellum visible in dorsal view, triangular, and large metanotal spine, slightly surpassing propodeum (Fig. 69). Mesonotum length 0.29 mm, width 0.47 mm; scutellum length 0.16 mm, width 0.35 mm.

Wings. Forewing hyaline surpassing gaster; st length 0.12 mm and ratio st: pm: mg: sm: ww: lw: af: pf = 1: 1.2: 0.3: 3.3: 3.2: 7.8: 0.2: 0.9; angle st-pm= 20° as in Fig 38e.

Legs yellow, except coxae dark yellow.

**Metasoma.** In dorsal view, tergites brown, in ventral view sternites brown, laterotergites light brown. On T1 pair of longitudinal submedial carinae are aligned with the propodeal carina. They separate an external coriaceous area from an internal area where striate sculpture starts with crenulated furrows in anterior margin and finishes to coriaceous sculpture (Fig. 69). T2 with foveolate anterior margin; costulate to colliculate, drop shaped specillum in the middle of T2, costae converging to posterior margin of specillum (Fig. 12). T3 with costae long ½ of T3 (Fig. 69).

#### Male.

Length of the body: 1,1 mm

**Head.** Sculpture as in female. Frontal depression shallower than in female, central keel as in female (Fig. 66). Fan-like striation in malar area from oral foramen to eye margin, striation just evident in genal area (Fig. 68).



Measures of the head width: height: length = 0.45: 0.38: 0.20 mm. Malar sulcus length: 0.11 mm. Measures of eye width: height = 0.16: 0.2 mm. OOL: LOL: POL = 0.09: 0.06: 0.09 mm. Mandibles as in female (Fig. 68). Antenna: A1 and A2 yellow, A3 to A12 brown. Sex segment with spine in the middle of antennomere (Fig. 43). A12 length twice A11 length.

**Mesosoma.** Color and sculpture as in female. Mesonotum length 0.29 mm, width 0.43 mm; scutellum length 0.15 mm, width 0.31 mm (Fig. 70).

Wings. Forewing hyaline surpassing gaster; st length 0.12 mm and ratio st: pm: mg: sm: ww: lw: af: pf = 1: 1.3: 0.4: 3.0: 3.2: 7.8: 0.1: 0.6; angle st-pm= 24° as in Fig. 38f.

**Metasoma.** tergites brown. Sculpture as in female except T2: longitudinal parallel costae, specillum not present. T3 striate as in female (Fig. 70).

#### Comment and variability

Sixteen specimens were examined from Madagascar.

The size of the body is very homogenous in all the specimens, female occasionally completely brown.

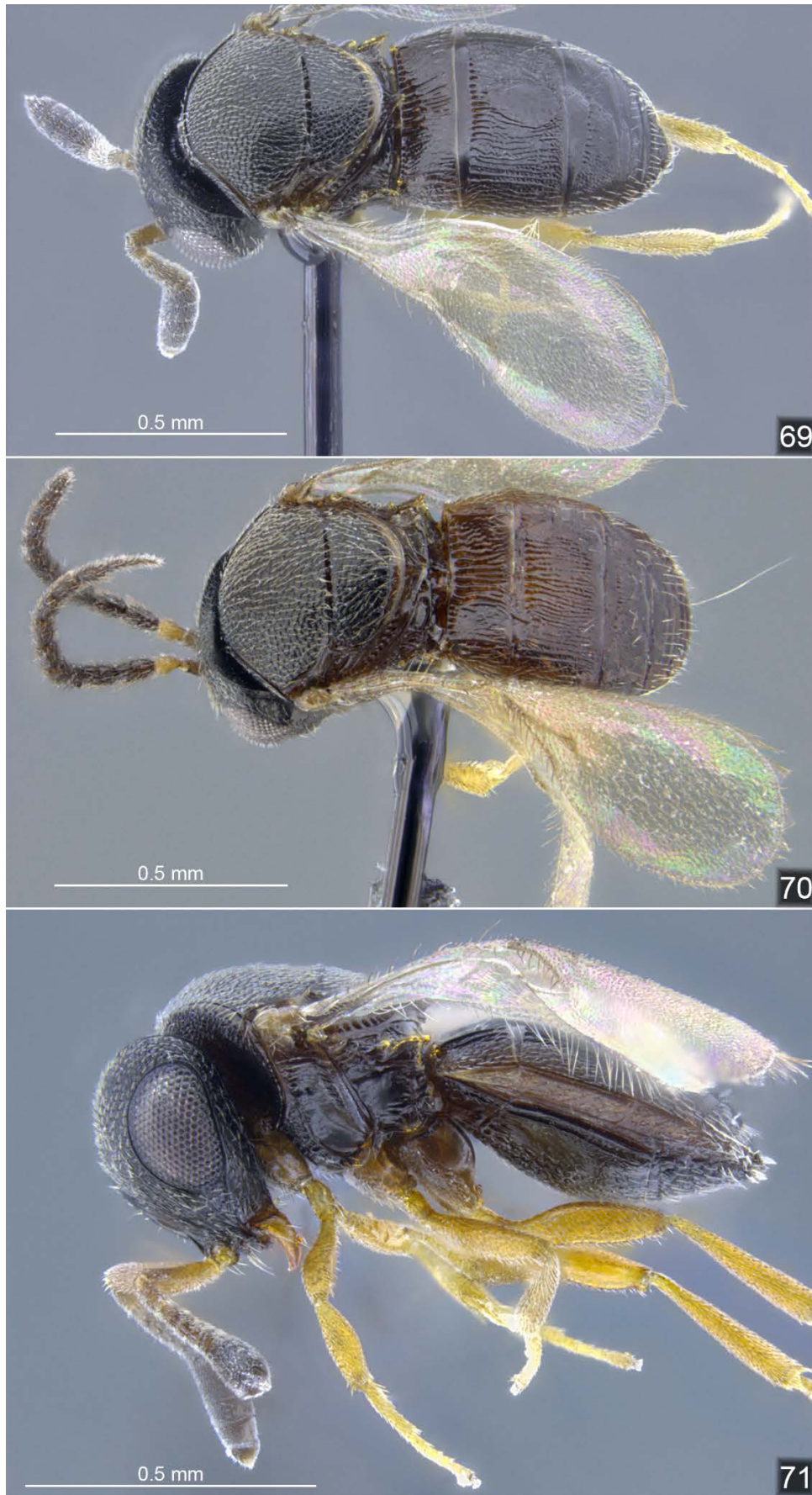
A bidentate mandible with the dorsal tooth stronger and longer than the ventral tooth is a character state typical of specimens from the Oriental, Australian, Neotropical and Nearctic regions This character state is present in only two Madagascan species and is absent in all species from the African continent.

The absence of a specillum in males confirms the presence of sexual dimorphism in respect of the T2 sculpture as in *D. sulawensis* and *D. comitans*.

#### Figures

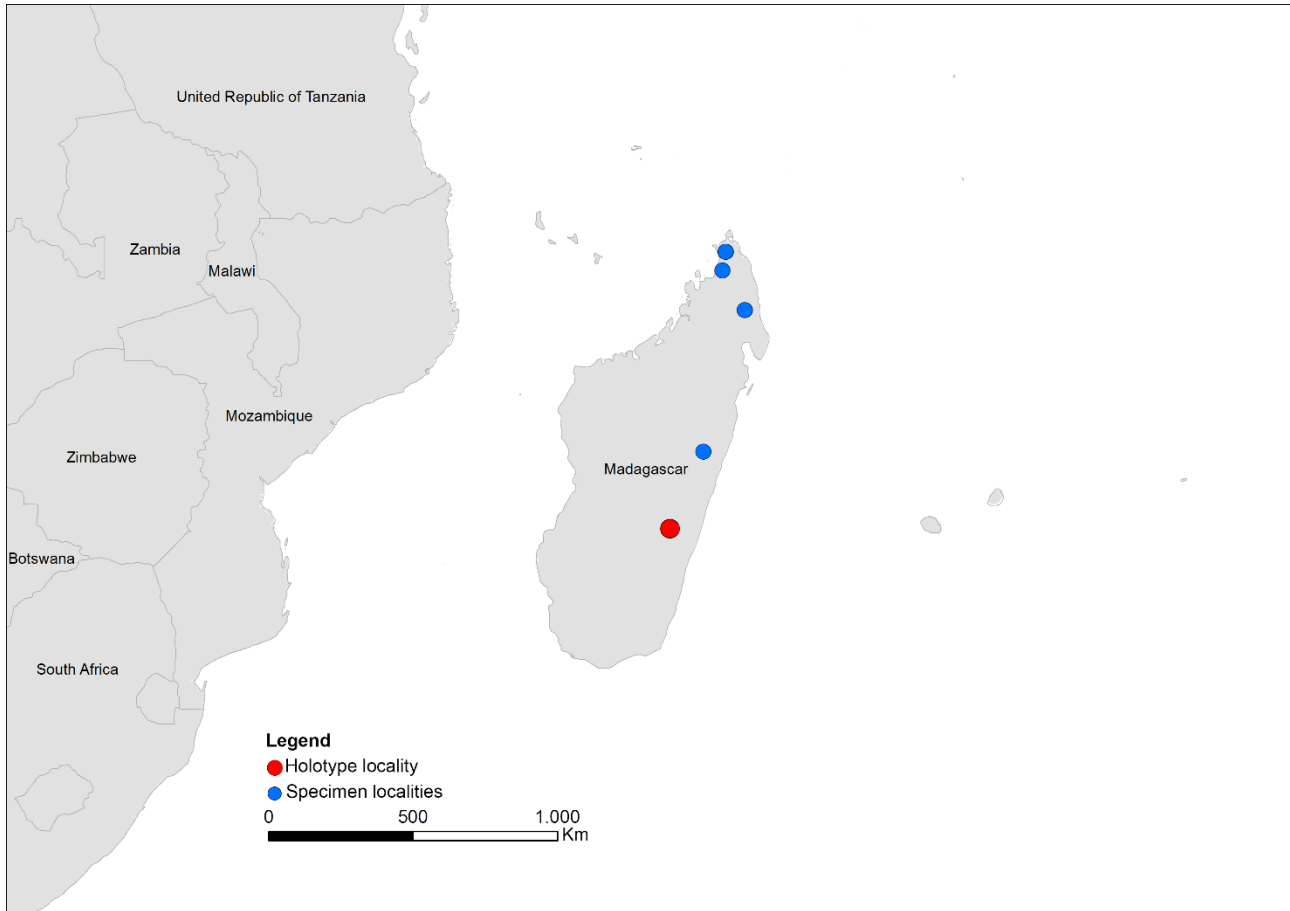


**Figures 65 – 68.** *Dyscritobaeus madagascarensis* sp. nov., ♀ [CNC 471139] and ♂ [CNC 471149] from Montagne d'Ambre Nat. Park; **65** – ♀, head, frontal view; **66** – ♂, head, frontal view; **67** – ♀, mandibles, ventral view; **68** – ♂, mandibles, ventral view.



**Figures 69 – 71.** *Dyscritobaeus madagascarensis* sp. nov., ♀ [CNC 471139] and ♂ [CNC 471149] from Montagne d'Ambre Nat. Park  
**69** – ♀, dorsal view; **70** – ♂, dorsal view; **67** – ♀, lateral view.

## Distribution



**Figure 72** – Distribution of *D. madagascarensis* sp. nov.

### Etymology

The name of the species is linked to the island where the specimens were collected.

### Material examined

Holotype. ♀: **AFRICA: Madagascar:** Ranomafana Nat. Park, 21°14'51"S, 47°24'13"E, 1079m, 2010/11/16-2010/11/18, P. Baňář, sifting, (CNCI), [CNC 471138].

Allotype. ♂: **AFRICA: Madagascar:** Ranomafana Nat. Park, 21°14'51"S, 1079m, 2010/11/16-2010/11/18, P. Baňář, sifting, (CNCI), [CNC 471150].

Paratypes. **AFRICA: Madagascar:** 40km N. Ambilobe, 1♀, 1981/09/19, J. Wilson, (BMNH), [BMNH (E)#971570]; Antsiranana, Marojejy Res., 8.4km NNW Manantenina, 14°26'S 49°45'E, 700m, 2♀, 1♂, 1993/11/10-1993/11/16, C. Griswold, J. Coddington, N. Scharff, S. Larcher, R. Andriamasimanana, (CNCI), [CNC 471143, 471144, 471145]; CE Andasibe Nat. Park, 1♀, 2010/11/03-2010/11/06, P. Baňář & L. S. Rahanitriniaina, Circuit Indri 2 sifting, (CNCI), [CNC 471152]; Montagne d'Ambre Nat. Park, 1100m, 2♀, 4♂, 2010/10/30, P. Baňář, sifting, (CNCI), [CNC 471139 (♀, wings in slide, Fig. 38e), 471140, 471146, 471147, 471148, 471149 (♂, wings in slide, Fig. 38f)]; Ranomafana Nat. Park, 21°14'51"S 47°24'13"E, 1079m, 2♀, 1♂, 2010/11/16-2010/11/18, P. Baňář, sifting, (CNCI), [CNC 471141, 471142, 471151].



## ***Dyscritobaeus sulawensis* Mineo, O'Connor et Ashe**

[urn:lsid:zoobank.org:act:2E29CC1E-9C7D-4E55-89A9-E75772A841E6](https://zoobank.org/act:2E29CC1E-9C7D-4E55-89A9-E75772A841E6)

*Mirotelenomus* sp.: Mineo & Villa (1982b), p. 138, Figs. XXXV, XXXVI, XXXVII

*Mirotelenomus* sp.: Mineo & Villa (1982a), p.178, Figs. XXV, XLIII, XLVI, LV

*Dyscritobaeus* sp. (a): Mineo & Caleca (1992): Fig. 1, p. 12; Fig. 3, p. 13.

*Dyscritobaeus* sp. (a): Caleca & Mineo (1995): Figs. III, 2, 3 p. 12; Figs. IV, 6, 7 p. 13; Figs. V, 3, 4 p. 15; Fig. VII, p. 18.

*Dyscritobaeus sulawensis*: Mineo, O'Connor et Ashe (2009), p. 175, original description.

*Dyscritobaeus sulawensis*: O'Connor & Ashe (2012), p. 314.

*Dyscritobaeus hannibal*: O'Connor et Ashe (2011), p. 347. **syn. nov.**

### Diagnosis

The presence of a preoccipital lunula (Fig. 15) distinguishes this species from *D. comitans* and other species that lack a preoccipital area. The marginalis and stigmalis are normally developed as in *D. comitans* and most of the other species in the genus; this character distinguishes this species from *D. armatus* (Dodd), having a reduced stigmalis. T2 with a rounded-shaped specillum in females (Fig. 11), but absent in males (Fig. 34); forewing shape and angle between stigmalis and postmarginalis similar to *D. comitans*; the combination of the presence of a specillum in females, absence of specillum in males and features of the forewing is shared with *D. madagascarensis*, but distinguishes this species from all species known to be close to *D. orientalis* (1 described, *D. antanananrivensis* sp. nov. and 9 undescribed species). In females the antennal segment A12 is shorter than A11 (Fig. 17), with a corresponding claval sensilla formula: 0:2:2:2:1:0 (Fig. 18); this character state is unique in the genus. A dorsal tooth that is longer than the ventral tooth (Fig. 74) distinguishes the species from *D. madagascarensis* in both sexes. In females the specillum is rounded in comparison with drop-shaped specillum of *D. madagascarensis*; in males the distance between the lateral ocellus and occipital carina is less than the ocellar diameter ; the occipital carina is depressed at the vertex in comparison with *D. madagascarensis* (in which the distance between the lateral ocellus and occipital carina is equal to the ocellar diameter ; the occipital carina is less depressed at the vertex).

After comparing the description of *D. sulawensis* (Mineo *et al.* 2009) and photographs of the holotype kindly taken by James O'Connor, with specimens of this species collected from around the world and with the holotype of *D. hannibal*, we could not find any significant morphological differences between these two species. As a result we consider *D. hannibal* to be a junior synonym of *D. sulawensis*.

### Description

We provide a redescription to present a comparative uniform treatment of all species included in this paper.

Female: Holotype of *Dyscritobaeus hannibal* O'Connor et Ashe, Maputo, V- 1989, leg. Angela (MSNG).

Length of the body: 0.9 mm

**Head.** Color dark brown, lighter in the lower half. Sculpture coriaceous sensu Eady (1967), frontal depression with a smooth area starting from the interantennal process and reaching the mid eye height. Central keel reaching 1/3 the height of the eye (Fig. 73). Fan-like striation in malar area from oral foramen to eye margin, striation absent in genal area (Fig. 74). Preoccipital lunula present and sculptured (Figs. 3, 15, 75). Head width: height: length = 0.36: 0.31: 0.19 mm. Malar sulcus length: 0.1 mm. Eye width: height = 0.11: 0.16 mm. OOL: LOL: POL = 0.14: 0.05: 0.09 mm. Mandibles bidentate with dorsal tooth a little larger than ventral one (Fig. 74). Palpi as in Fig IV 6, 7 after Caleca & Mineo (1995) (Fig. 44a in this paper).

Antenna. Radicle and proximal half of A1 yellowish to light brown; distal half of A1 and proximal half of A2 brown; distal half of A2 light brown to yellow; A3 to A12 brown (Fig. 73). A1 length: 0.19 mm; A2 longer as A3+ A4. Clava six-segmented; A11 is long, twice A12 length (Fig. 17). Claval sensilla formula 0:2:2:2:1:0 (Fig. 18).

**Mesosoma.** In dorsal view, mesonotum and scutellum dark brown with posterior scutellar margin yellowish; propodeum dark red. In lateral view, pleurae dark red with metapleural carina yellowish (Figs. 75, 76).

Sculpture. In dorsal view mesonotum and scutellum imbricate; in lateral view speculum with furrow, femoral depression smooth, posterior mesepimeral area delimited anteriorly by a mesepimeral sulcus with a crenulate furrow, dorsal and ventral metapleural area with crenulated depression with rugae (Fig. 76). Propodeal carina with two spiny projections, one surrounding the propodeal spiracle and the second one at the posterior margin

(Figs. [75](#), [76](#)). Metascutellum visible in dorsal view, triangular, large metanotal spines slightly surpassing propodeum (Figs. [75](#), [76](#)).

Mesosoma length 0.19 mm, width 0.35 mm; scutellum length 0.11 mm, width 0.24 mm.

Wings. Forewing hyaline surpassing gaster; ratio st: pm: mg: sm: ww: lw: af: pf = 1: 1.3: 0.5: 3.4: 3.4: 8.3: 0.3: 1.0; angle st-pm = 23° as in Fig. [39a](#). st length is 0.08 mm.

Coxae brown, femurs brown in the middle to yellowish in the tips; fore and middle tibiae brown in the middle to yellowish in the tips. Hind tibiae and tarsi yellow.

**Metasoma.** In dorsal view, tergites brown, in ventral view sternites brown, laterotergites yellowish. On T1 the pair of longitudinal submedial carinae are aligned with the propodeal carina and separate external coriaceous microsculpture from a microsculpture striate to coriaceous starting at crenulated furrows in anterior margin (Fig. [11](#)). T2 with foveolate anterior margin; costulate to coriaceous, rounded specillum in the middle of T2, costae converging to posterior margin of specillum (Fig. [11](#)).

Male (nov.): Singapore, Manday road, 1978/11/30, J. T. Huber, (CNCI), [CNC 471528].

Length of the body: 0.71 mm

**Head.** Darker than in female, black (Fig. [77](#)). Sculpture as in female. Frontal depression shallower than in female; central keel little surpassing 1/3 the height of the eye. Fan-like striation in malar area from oral foramen to eye margin, striation just evident in genal area. Measures of the head width: height: length = 0.29: 0.25: 0.11 mm. Malar sulcus length: 0.07 mm. Measures of eye width: height = 0.09: 0.12 mm. OOL: LOL: POL = 0.06: 0.05: 0.05 mm. Mandibles as in female.

Antenna. Radicles yellow, scape yellowish on tips, brown in the middle; A2-A12 brown; A12 two times A11. Sex segment with keel in the middle of antennomere (Fig. [43](#))

**Mesosoma.** Color lighter than in female, with some parts brown yellow (Fig. [31](#)). Sculpture as in female. Mesosoma length 0.19 mm, width 0.29 mm; scutellum length 0.07 mm, width 0.19 mm.

Wings. Forewing hyaline surpassing gaster; ratio st: pm: mg: sm: ww: lw: af: pf = 1: 1.4: 0.4: 2.8: 3.1: 7.5: 0.4: 0.6; angle st-pm = 23° as in Fig. [39b](#). st length 0.11 mm

**Metasoma.** T1 and first half of T2 yellowish; last part of T2 and all the other tergites brown. Sculpture as in female except T2: specillum absent and costae slightly curving in the middle and converging at posterior margin of T2 (Figs. [34](#), [78](#)).

Comment and variability

This species has the widest distribution of all *Dyscritobaeus* species.

Four hundred and fifty-four specimens were examined from Africa, Indonesia, Japan, Malaysia, Nepal, Australia, Bangladesh, French Polynesia, India, Korea, New Caledonia, Papua New Guinea, Philippine, Singapore, Solomon Island, Sri Lanka.

The degree of sexual dimorphism is also pronounced: specillum present in female and absent in male; female body dark brown, male with black head, mesosoma and metasoma with yellow parts in contrast with the rest brown or dark brown.

Female length from 0.61 mm in Oriental specimens to 1.19 mm in Japanese specimens.

Females from the Australian region are a little smaller than African ones, the central keel is shorter, and the frontal depression a little bit shallower than in African specimens.

Male length from 0.64 mm in African specimens to 1.2 mm in Japanese specimens.

Larger specimens of males are more sculptured than smaller ones. A2 totally yellow in smaller specimens, brown in the middle in larger specimens. Mesosoma in dorsal view may be brown. In some specimens the costae on T2 are curved in the middle of the posterior margin forming a small area resembling a faint specillum (Figs. [34](#), [67](#)).

Anthony Watsham illustrated a dark *Dyscritobaeus* (available in Norman Johnson's *Platyastroidea* website *Dyscritobaeus*, [image 306](#)). This specimen is probably *D. sulawensis*, considering that Watsham collected many *D. sulawensis* (see material examined) and no other similar dark *Dyscritobaeus* specimens, but also in this case, as happened for *D. orientalis* and probably for *D. indicus*, he overlooked the presence of the specillum, illustrating T2 as being entirely striate (high magnification and correct lighting is critical to discern the specillum).



The holotype of *D. hannibal*, here considered to be a junior synonym of *D. sulawensis*, is deposited in the collection of the Genoa Museum (MSNG) and not in the Insect Collection of Portici Università Federico II-Napoli, Italy (DEZA) as stated by O'Connor and Ashe (2011) in the original description.

#### Figures

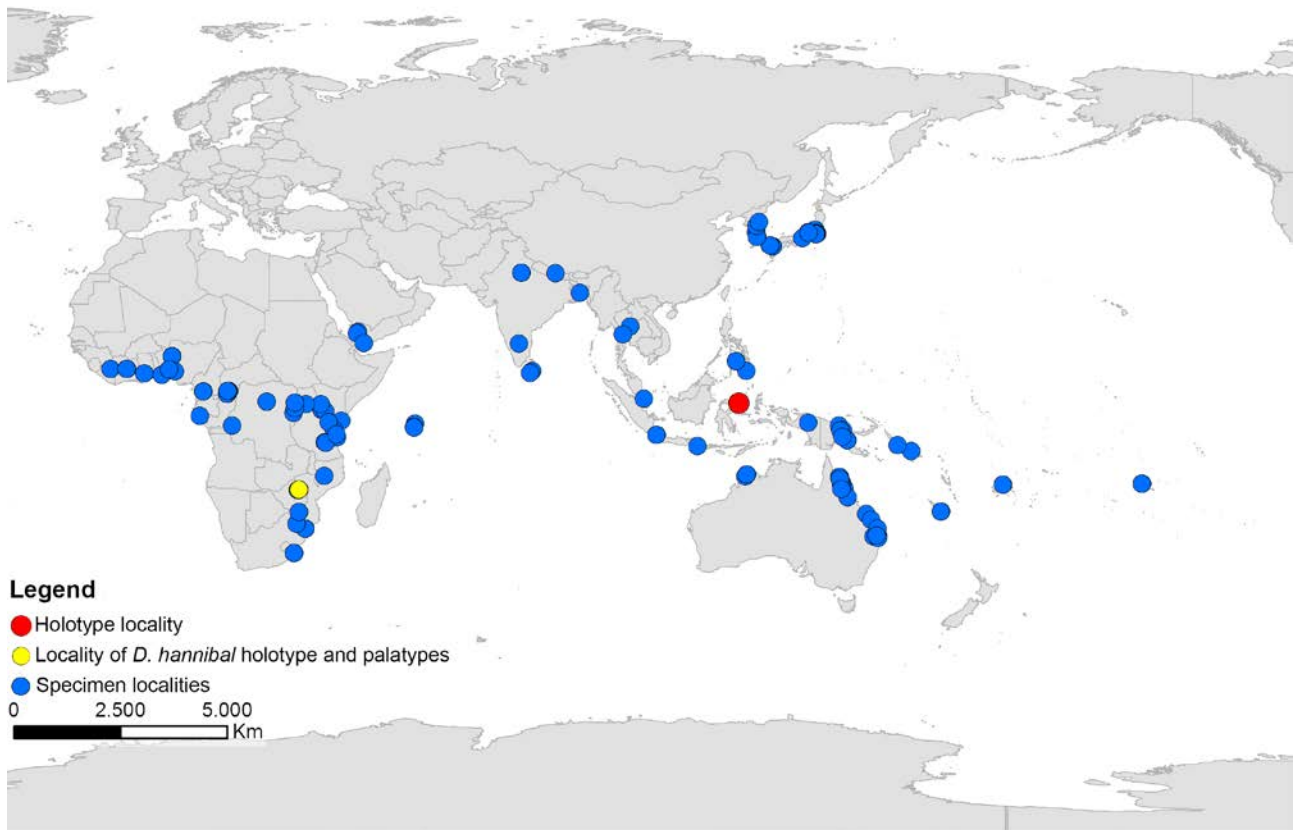


**Figures 73 – 78.** *Dyscritobaeus sulawensis*, ♀ from Mozambique, ♂ from Central African Republic: **73** – ♀, head, anterolateral view; **74** – ♀, mandibles; **75** – ♀, head and mesosoma, dorsal view; **76** – ♀, mesosoma, lateral view; **77** – ♂, head, anterolateral view [SAM\_HYM\_P030696]; **78** – ♂, metasoma, dorsal view [SAM-HYM-P025537].

#### Distribution

This species is recorded in the Oriental, Palearctic, Afrotropical, and Australian regions.





**Figure 79** – Distribution of *D. sulawensis*.

**Material examined**

Holotype. ♀: **INDONESIA: Sulawesi:** Bogani Nani Wartabone National Park, over the first span of the footbridge over the River Toraut, -, -, 1985/10/14-1985/11/02, P. Ashe, Malaise Trap, (NMID).

**AFRICA: Benin:** Abomey-Calavi ca. 25km N. Coconou, 2♀, 1988/12, J. S. Noyes, MT, (CNCI), [CNC 471382, 471383]; **Burkina Faso:** Comoé, Forêt de Boulon, 10°16'39"N 4°29'28"E, 270m, 10♀, 2006/07/07, F. & S. Génier, MT, (CNCI), [CNC 471384, 471385, 471386, 471387, 471388, 471389, 471390, 471391, 471392, 471393]; **Cameroun:** Nkoemvon, 1♀, 1979/07-1979/08, P. Jackson, MT, (CNCI), [CNC 471395]; 1♀, 1979/09, D. Jackson, (BMNH), [BMNH (E)#971580]; 2♀, 1980/04, P. Jackson, MT, (CNCI), [CNC 471396, 471397]; 1♀, 1980/05/14-1980/05/18, P. Jackson, MT, (CNCI), [CNC 471394]; Nkoemvon, Ebolowa, 2♂, 1978/03-1978/05, D. Jackson, (BMNH), [BMNH (E)#971581, (E)#971582]; 3♂, 1979/09, D. Jackson, (BMNH), [BMNH (E)#971583, (E)#971584, (E)#971585]; 1♂, 1980/07-1980/08, Ms D. Jackson, (BMNH), [BMNH (E)#971586]; **Central African Republic:** Parc National de Dzanga-Ndoki, 38.6km 173° S Lidjombo, Lowland Rainforest, 2°21.60'N 16°09.20'E, 350m, 3♀, 5♂, 2001/05/22, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P030679, P030680, P025605, P025613, P025615, P025619, P047825, P047982]; 1♂, 2001/05/23, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025525]; Parc National de Dzanga-Ndoki, Mabéa Bai, 21.4 km 53° NE Bayanga, Lowland Rainforest, marsh clearing, 3°02.01'N 16°24.57'E, 510m, 1♀, 2001/05/03, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025534]; 8♂, 2001/05/05, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025552, P025558, P025559, P025561, P025565, P048101, P047977]; 2♀, 3♂, 2001/05/06, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025536, P025546, P025566, P047830, P047979]; 1♀, 4♂, 2001/05/06-2001/05/06, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P047824, P047980]; 6♀, 5♂, 2001/05/07, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025575, P025576, P047826, P047827, P047828, P048100, P047978]; Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 kilometers 326° North West Bayanga, Lowland Rainforest, 3° 00.27' N 16° 11.55' E, 420m, 1♀, 2♂, 2001/05/12, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025589, P025594, P047829]; 1♂, 2001/05/14-2001/05/15, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P025553]; 1♂, 2001/05/17, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P047981]; **Democratic Republic of the Congo :** Bandundu, Wamba, Kikongo Mission, along

forest edge, 4°15'S 17°10'E, 1♀, 2006/04/19, S. L. Heydon, S. E. Stevenson, YPT, (CNCI), [CNC 471398]; Yangambi, 1♂, 1946/11/07, Catéier, (IRSNB), [I. G. 24.778]; Yangambi, *Desmodium Triflorum*, Belvedere, 4♂, 1946/11/07, (IRSNB), [I. G. 24.778]; **Gabon**: Réserve des Monts Doudou, 25.2 km 304° NW Doussala, Forest - Coastal lowland rainforest undergrowth - low canopy, 2° 13.63' S 10° 23.67' E, 660m, 1♀, 2000/03/15, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P048099]; **Ghana**: Ashanti Prov., Bobiri Forest Reserve, 6°42'N 1°20'W, 1♀, 2001/07/23-2001/07/31, C. Carlton, FIT, (CNCI), [CNC 471399]; 1♀, 2001/08/01-2001/08/22, C. Carlton, FIT, (CNCI), [CNC 471400]; **Guinea**: Mt-Nimba, rainforest, 7°41'N 8°23'W, 514m-740m, 1♀, 1990/12-1991/03, L. Leblanc, FIT, (CNCI), [CNC 471401]; Mt-Nimba, Gouan River, 514m, 1♀, 1991/01/15-1991/01/22, L. Leblanc, FIT, (CNCI), [CNC 471402]; **Ivory Coast**: Bouake, 1♀, 1978/02/07, P. Cochereau, Malaise trap, (CNCI), [CNC 471403]; 2♀, 1978/06-1978/07, P. Cochereau, Malaise trap, (CNCI), [CNC 471409, 471410]; rice field, 4♀, 1980/02, P. Cochereau, (CNCI), [CNC 471411, 471412, 471413, 471414]; 1♀, 1980/02, P. Cochereau, mal. tr., (CNCI), [CNC 471415]; 3♀, 2♂, 1980/02, P. Cochereau, pan trap, (CNCI), [CNC 471416, 471417, 471418, 471419, 471420]; 7♀, 1980/03, P. Cochereau, (CNCI), [CNC 471421, 471422, 471423, 471424, 471425, 471426, 471427]; rice field, 1♀, 1980/03, P. Cochereau, mal. tr., (CNCI), [CNC 471428]; 2♀, 1♂, 1980/10/11, P. Cochereau, PT, (CNCI), [CNC 471404, 471405, 471406]; 2♀, 1981/10/01, P. Cochereau, PT, (CNCI), [CNC 471407, 471408]; 1♀, 1981/12, P. Cochereau, PT, (CNCI), [CNC 471429]; **Kenya**: Malindi, forest near coast, 1♂, 1973/05, H. Falke, (CNCI), [CNC 471430]; Nairobi, 1♀, 1♂, 1982/02, M. C. Lubega, pan trap, (CNCI), [CNC 471431, 471432 (♂, wing in slide, Fig. 39b)]; 2♂, 1982/03, M. C. Lubega, pan trap, (CNCI), [CNC 471433, 471434]; Nairobi, Ngong Rd., forest, 1♀, 1991/12/11, B. D. Gill, FIT, (CNCI), [CNC 471435]; Western Prov. Kakamega, 0°14.13'N 35°51.87'E, 1♀, 2000/06/19-2000/06/26, R. Copland, MT, (CNCI), [CNC 471436]; **Mozambique**: (Holotype ♀ + 2 Paratypes ♀ of *Dyscritobaeus hannibal* O'Connor et Ashe) Maputo, 3♀, 1989/05, Angela, (MSNG); 2♀, 1993/05, R. Paci, (UNIPA); Niassa Cuamba, Mituque, Centro Pastoral, 1♀, 2012/03/28-2012/04/3, M. Olmi, MT, (CNCI), [CNC 471437]; **Nigeria**: Ibadan, 1♂, 1962/10/27, D. C. Eidt, (CNCI), [CNC 471438]; 1♀, 1962/12/15, D. C. Eidt, (CNCI), [CNC 471439]; 1♀, 1962/12/20, D. C. Eidt, (CNCI), [CNC 471440]; 1♂, 1962/12/22, D. C. Eidt, (CNCI), [CNC 471441]; 1♂, 1962/12/26, D. C. Eidt, (CNCI), [CNC 471442]; 1♀, 1962/12/28, D. C. Eidt, (CNCI), [CNC 471443]; 1♂, 1963/01/09, D. C. Eidt, (CNCI), [CNC 471444]; Ondo State, Idanre Hills, 7°06'16"N 05°06'13"E, 437m, 1♀, 2008/07/17, J. Hearty, sweeping, (CNCI), [CNC 471445]; Oyo Ibadan, IITA compound, 1♀, 1987/11, J. S. Noyes, PT, (CNCI), [CNC 471446]; **Rwanda**: Kibali, 1♀, 1977 (UNIPA); **Seychelles**: Denis I., 1♂, 2000/04/13, M. J. Hill, MT, plot F1, (CNCI), [CNC 471447]; Mahé, 4°37'S 50°26'E, 50m, 1♀, 2000/08/19, J. S. Noyes, (CNCI), [CNC 471448]; Mahé, Tea Factory, 4°40'S 400m, 1♀, 2000/08/30, J. S. Noyes, (CNCI), [CNC 471449]; **South Africa**: E. Transvaal, 11km SE Pilgrims Rest, relict native forest, 1400m, 2♀, 1985/12/11-1985/12/31, S. & J. Peck, FIT-Mal., (CNCI), [CNC 471450, 471451]; Kruger Nat. Park, Pafuri, 12km W jct. Levuvhu&Limpopo Rivers, 2♀, 1984/04/01-1984/04/21, M. Brigham, PT, (CNCI), [CNC 471452, 471453]; Umtamvuna Nature Reserve, Forest - Coastal, 31° 03.509' S 30° 10.484' E, 160m, 1♀, 1♂, 2000/11/11-2000/11/18, S. van Noort, Pitfall Trap, (SAMC), [SAM-HYM-P031743, P047984]; 2♀, 2000/11/11-2000/11/18, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P047832]; **Tanzania**: Dar es Salaam, Univ. Of Dar es Salaam, 1♀, 1984/10-1984/11, J. Middleton, (CNCI), [CNC 471454]; E Usambara Mts., Amani NR, 05°10'34"S 38°36'01"E, 1004m, 1♂, 2011/12/15, V. Grebennikov, sift. 05, (CNCI), [CNC 471455]; Iringa Kilolo dist., Udzungwa Mts., Ndundulu Forest, Luwala camp area, seasonal flooded meadow grassland surrounded by semi-evergreen montane virgin forest, 1880m, 1♂, 2007/03/01-2007/03/30, L. A. Hansen, MT, (CNCI), [CNC 471456]; Mkomazi Game Reserve, Ibaya Camp, *Acacia-Commiphora-Combretum* bushveld, 3.58'S 37.48'E, 1♂, 1996/01/29-1996/03/11, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P018340]; Mkomazi Game Reserve, Kinondo Mtn, Forest edge - Montane, 1♀, 1996/05/09, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P018847]; Udzungwa Mts., -7,8447 36,8677, 1113m, 1♂, 2014/10/07, V. Grebennikov, sift. 02, (CNCI), [CNC 471457]; Zanzibar, Prison Island, Changu, 1♀, 1995/05, Ann Helen Renning, (CNCI), [CNC 471458]; **Uganda**: 13km SE Kampala, Gaba wetland, 1♀, 2004/06/10-2004/07/17, I. Přikryl, Malaise Trap, (CNCI), [CNC 471459]; Kibale National Park, Kanyawara, Makerere, University Biological Field Station, Primary mid-altitude Rainforest, near stream, 1587m, 1♀, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P031257]; Secondary mid-altitude Rainforest, 0° 33.871' N 30° 21.355' E, 1495m, 2♀, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap,

(SAMC), [SAM-HYM-P047831]; Secondary mid-altitude Rainforest, marshy area, 0° 34.806' S 30° 21.874' E, 1491m, 1♀, 1♂, 2008/08/02-2008/08/12, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P030696]; Primary mid-altitude Rainforest, near stream, 0°34.405'N 30°21.646'E, 1484m, 2♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P047983]; **Yemen:** Ar Rujum, 1♀, 2000/10/16-2001/01/15, A. van Harten, MT, (CNCI), [CNC 471460]; Khamis Bani Sa'd, litter, 1♂, 1999/06/09, A. van Harten, (CNCI), [CNC 3754/471461]; Lahj, 1♂, 2000/09, A. van Harten, (CNCI), [CNC 5076/471462]; **Zimbabwe:** Harare (Salisbury), 2♀, 1980/04, A. Watsham, pantr., (CNCI), [CNC 471495, 471496]; 4♀, 1♂, 1980/04, A. Watsham, PT, (CNCI), [CNC 471463, 471464, 471465, 471466, 471467]; **Zimbabwe (Rhodesia):** 1♂, 1975/05-1975/07, A. Watsham, (CNCI), [CNC 471468]; 1♀, 1979/04, A. Watsham, (BMNH), [BMNH (E)#971587]; 3♀, 4♂, 1979/05, A. Watsham, (CNCI), [CNC 471469, 471470, 471471, 471472, 471473, 471478, 471479]; 3♀, 2♂, 1979/06, A. Watsham, (CNCI), [CNC 471476, 471477, (E)#971588, 471474, 471475]; 1♀, 1979/07, A. Watsham, (CNCI), [CNC 471480]; 1♀, 1980/02, A. Watsham, Pan Trap, (CNCI), [CNC 471497]; 2♀, 1980/03, A. Watsham, Pan Trap, (CNCI), [CNC 471498 (wing in slide, Fig. 39a), 471499]; 14♀, 1980/05, A. Watsham, (CNCI), [CNC 471484, 471485, 471486, 471487, 471488, 471489, 471490, 471491, 471492, 471493, 471494, 471481, 471482, 471483]; 3♀, 1980/06, A. Watsham, (CNCI), [CNC 471500, 471501, 471502]; 2♀, 1980/07, A. Watsham, (CNCI), [CNC 471503, 471504]; Harare (Salisbury), Chishawasha, 1♀, 1979/10, A. Watsham, (CNCI), [CNC 471505]; 8♀, 1♂, 1980/02, A. Watsham, pan trap, (CNCI), [CNC 471506, 471507, 471508, 471509, 471510, 471511, 471512, 471513, 471514]; 10♀, 3♂, 1980/03, A. Watsham, (CNCI), [CNC 471515, 471516, 471517, 471518, 471519, 471520, 471521, 471522, 471523, 471524, 471525, 471526, 471527]; **AUSTRALIA: Queensland:** 3km NE Mt. Webb, 2♀, 1980/10/01-1980/10/03, J.C. Cardale, Yellow Pan Trap, (ANIC), [ANIC 32-070476, 32-070477]; s. s. Rain forest undergrowth, 1♀, 1981/04/30-1981/05/04, J. C. Calder & J. Feehan, Berlesate Trap, (ANIC), [ANIC 32-070478]; Base Tinaroo Falls, 1♂, 1976/03/30, I. D. Galloway, (QDPC); Bellenden Ker Range, Cableway Base Stn, 100m, 2♀, 1981/10/17-1981/11/09, Baited window Trap, (QDPC); Bowen State Forest, Byfield Cent. Q., 1♀, 1♂, 1975/10/31, I. D. Galloway, D-vac., (QDPC); Brookfield Nr Brisbane, 1♀, 1982/01, Boucek, (BMNH), [BMNH (E)#971589]; Cairns, 1♂, (ANIC), [ANIC 32-070479]; Capalaba, 2♂, 1980/06/08, J. S. Noyes, (CNCI), [CNC 471390, 471391]; Daintree Nat. Park, Cape Tribulation, Bloomfield Track at Emmagen creek, rainforest, 16°020.357'S 145°27.443'E, 30m, 1♀, 2005/12/17-2005/12/18, A. R. Deans & M. Buffington, yellow, blue, red pan traps (4:1:1), (CNCI), [CNC 471392]; Eurimbula Ck., via Round Hill Head, 1♀, 1975/05/03-1975/05/05, I. Naumann, (QDPC); Gap. Ck. 5km ESE Mt. Finnigan Q., 3♀, 1981/05/13-1981/05/16, I. D. Naumann, Yellow Pan Trap, (ANIC), [ANIC 32-070480, 32-070481, 32-070482]; Gatton, 1♀, 1♂, 1981/03/30-1981/04/06, Yellow Pan Trap, (QDPC); 1♀, 1981/04/06, D-vac, (QDPC); Grap Ck. 5km ESE, Mt. Finnigan, 6♂, 1981/05/13-1981/05/16, I. D. Naumann, Yellow Pan Trap, (ANIC), [ANIC 32-070483, 32-070484, 32-070485, 32-070486, 32-070487, 32-070488]; Great Sandy Nat. Park, 25°00.62'S 153°02.80'E, 1♂, 2002/12/16-2002/12/17, J. Munro, A. Owen, YPT, (CNCI), [CNC 471393]; Lacey's Creek Q Mission Beach, s. s. Rain forest undergrowth, 1♀, 1♂, 1980/05/13-1980/05/14, I. D. Naumann & J. C. Cardale, (ANIC), [ANIC 32-070489, 32-070490]; Mossman Gorge, 30m, 2♀, 1984/02/23, L. Masner, (CNCI), [CNC 471394, 471395]; Mt Webb Nat. Pk., 2♂, 1980/09/28-1980/09/30, T. Weir, Berlesate Trap, (ANIC), [ANIC 32-070491, 32-070492]; 1♂, 1981/04/27-1981/04/30, I. D. Naumann, Yellow Pan Trap, (ANIC), [ANIC 32-070493]; Mt. Tamborine, 1♀, 1978/11-1979/01, Pitfall Trap, (QDPC); Mt. Webb, 4♀, 1981/04/27-1981/04/30, I. D. Naumann, Yellow Pan Trap, (ANIC), [ANIC 32-070494, 32-070495, 32-070496, 32-070497]; Pebbly Beach, N of Cairns, 1♂, 1974/04/27, J. F. Donaldson, (QDPC); Rotary Park, Mossman, 1♀, 1975/11/06, I. D. Galloway, D-vac., (QDPC); Samford, 1♂, 1962/01, E. Warwiell, Yellow Pan Trap, (ANIC), [ANIC 32-070498]; Shiptons Flat, 1♀, 1980/10/17-1980/10/19, J.C. Cardale, (ANIC), [ANIC 32-070499]; Townsville James Cook Uni Campus, 1♂, 1988/05/21-1988/05/24, A. D. Austin, Pitfall Trap, (WINC); Tully Falls Road, 1♀, 1976/03/31, I. D. Galloway, (QDPC); **Western Australia:** "Marun" CALM Site 8/4 Prince Frederick Harbour, 1♂, 1988/06/06-1988/06/11, I. D. Naumann, Yellow Pan Trap, (ANIC), [ANIC 32-070500]; Mining Camp, Mitchell Plateau, 3♀, 1♂, 1983/05/09-1983/05/19, I. D. Naumann & J. C. Cardale, Yellow Pan Trap, (ANIC), [ANIC 32-070501, 32-070502, 32-070503, 32-070504]; **BANGLADESH: Bangladesh:** potato crop, 1♀, 1982/11/03, J. V. Harten, PT, (CNCI), [CNC 471531]; **FIJI: Suva:** Nabua, SPC Compound, 1♀, 2002/06/22-2002/06/30, L. Leblanc, (CNCI), [CNC 471532]; **FRENCH**



**POLYNESIA: Bora Bora:** nr. Pt. Paoaoa, 1♀, 2♂, 1984/09/04, D. M. Lasalle, (CNCI), [CNC 471533, 471534, 471535]; **Tahitii:** Bora Bora, in grass, 3♀, 1982/07/21, H. Andersen Col., sweeping grasses, (CNCI), [CNC 471536, 471537, 471530]; **INDIA: Karnataka:** Bangalore, CIBC grounds, 1♀, 1974/12/16, PT, (CNCI), [CNC 471529]; **Uttar Pradesh:** Aligarh, 1♀, 1980, M. Hayat, (CNCI), [CNC 471538]; 1♀, 1980/11, M. Hayat, (CNCI), [CNC 471539]; 1♀, 1980/12, M. Hayat, (CNCI), [CNC 471540]; **INDONESIA: Bali:** Penulisan, potato crop, 1♀, 1978/11/21, J. T. Huber, (CNCI), [CNC 471541]; **Curug:** 1♀, 1980/03/14-1980/03/21, H. R. Gillespie, pan trap, (CNCI), [CNC 471542]; 2♀, 1980/12/20-1980/12/30, H. R. Gillespie, pan trap, (CNCI), [CNC 471543, 471544]; **Papua:** Neth. Guega, W. of Swart Val., 1200m, 1♂, 1958/11/14, J. L. Gressitt, (BPBM); **Sulawesi, Utara:** Dumoga Bone Nat. Pk., Sieved rain-forest litter, 220m, 2♀, 1985/06/07-1985/06/25, A. D. Austin, (WINC); **JAPAN: Fukuoka:** Mt. Tachibanayama, 2♂, 1980/08/12, C. M. Yoshimoto, (CNCI), [CNC 471545, 471546]; **Gunma Pref.:** Takamine Table Land, 1950m, 1♀, 1980/07/19, A. & Z. Smetana, (CNCI), [CNC 471376]; **Honshu Aichi:** Yakusa, Toyota, 2♀, 1990/07/30-1990/08/07, K. Yamagishi, PT, (CNCI), [CNC 471272, 471273]; **Honshu Ibaraki Pref.:** Tsuchiura, 1♂, 1989/08/08-1989/08/13, M. J. Sharkey, (CNCI), [CNC 471274]; Tsuchiura forest, 1♀, 1989/09/11-1989/09/19, M. J. Sharkey, PT, (CNCI), [CNC 471275]; 3♀, 1989/09/19-1989/10/02, M. J. Sharkey, PT, (CNCI), [CNC 471276, 471277, 471278]; 1♀, 1989/10/02-1989/10/16, M. J. Sharkey, PT, (CNCI), [CNC 471279]; 1♀, 1989/10/16-1989/10/27, M. J. Sharkey, PT, (CNCI), [CNC 471280]; Tsuchiura marsh, 1♂, 1989/09/27-1989/10/03, M. J. Sharkey, PT, (CNCI), [CNC 471281]; Tsuchiura, Shizizuka forest, 2♀, 1996/09/04-1996/09/05, L. Masner, YPT, (CNCI), [CNC 471282, 471283]; Tsukuba, 6♀, 1989/05/26-1989/05/31, M. Sharkey, YPT&FIT, (CNCI), [CNC 471284, 471285, 471286, 471287, 471288, 471289]; Tsukuba, Matsushiro, 1♂, 1989/07/26-1989/08/04, M. J. Sharkey, PT, (CNCI), [CNC 471290]; **Honshu Tochigi Pref.:** Nishinasuno, N.G.R.I., 500m, 3♀, 1♂, 1989/08/10, M. J. Sharkey, sweep, (CNCI), [CNC 471291, 471292, 471293, 471294]; **Ibaraki:** Mt. Tsukuba, 1♀, 1989/08/29-1989/09/06, M. J. Sharkey, (CNCI), [CNC 471295]; Tsuchiura City, Shishizuka-Oika, 1♀, 1989/08/13-1989/08/25, M. J. Sharkey, MT, (CNCI), [CNC 471296]; Tsuchiura marsh, 1♀, 1989/06/24-1989/06/31, M. J. Sharkey, Pan Trap, (CNCI), [CNC 471297]; 1♀, 1989/08/21-1989/08/29, M. J. Sharkey, PT, (CNCI), [CNC 471298]; 1♀, 1♂, 1989/08/29-1989/09/06, M. J. Sharkey, PT, (CNCI), [CNC 471299, 471300]; 1♀, 1989/09/19-1989/10/02, M. Sharkey, PT-FIT, (CNCI), [CNC 471301]; Tsuchiura, Expo Site, 4♀, 8♂, 1989/08/01-1989/08/08, M. J. Sharkey, PT, (CNCI), [CNC 471302, 471303, 471304, 471305, 471306, 471307, 471308, 471309, 471310, 471311, 471312, 471313]; Tsukuba, Expo Site, 5♀, 1989/07/24-1989/07/31, M. Sharkey, PT, (CNCI), [CNC 471314, 471315, 471316, 471317, 471318]; 6♀, 2♂, 1989/08/08-1989/08/15, M. Sharkey, PT, (CNCI), [CNC 471319, 471320, 471321, 471322, 471323, 471324, 471325, 471326]; 8♀, 1989/08/15-1989/08/29, M. Sharkey, PT, (CNCI), [CNC 471327, 471328, 471329, 471330, 471331, 471332, 471333, 471334]; 9♀, 2♂, 1989/08/29-1989/09/05, M. Sharkey, PT, (CNCI), [CNC 471335, 471336, 471337, 471338, 471339, 471340, 471341, 471342, 471343, 471344, 471345]; 1♂, 1989/09/05-1989/09/11, M. Sharkey, MT, (CNCI), [CNC 471346]; 1♀, 1♂, 1989/09/05-1989/09/11, M. Sharkey, PT, (CNCI), [CNC 471347, 471348]; 1♂, 1989/09/18-1989/09/24, M. Sharkey, PT, (CNCI), [CNC 471349]; 1♀, 1989/09/24-1989/10/02, M. Sharkey, PT, (CNCI), [CNC 471350]; 1♀, 1989/10/27-1989/11/03, M. Sharkey, PT, (CNCI), [CNC 471351]; Tsukuba, NIAES, 2♂, 1989/06/26-1989/07/10, M. Sharkey, PT, (CNCI), [CNC 471352, 471353]; 1♀, 1989/07/10-1989/07/17, M. Sharkey, PT, (CNCI), [CNC 471354]; 6♀, 2♂, 1989/07/14-1989/07/25, M. Sharkey, PT, (CNCI), [CNC 471355, 471356, 471357, 471358, 471359, 471360, 471361, 471362]; 2♀, 2♂, 1989/08/04-1989/08/14, M. Sharkey, PT, (CNCI), [CNC 471363, 471364, 471365, 471366]; 1♀, 1989/08/14-1989/08/27, M. Sharkey, PT, (CNCI), [CNC 471367]; 5♀, 1♂, 1989/09/07-1989/09/11, M. Sharkey, PT, (CNCI), [CNC 471368, 471369, 471370, 471371, 471372, 471373]; 1♀, 1989/09/11-1989/09/18, M. Sharkey, PT, (CNCI), [CNC 471374]; **Kyushu:** Fukuoka, Mt Hiko, potato crop, 4♀, 1989/05/09-1989/05/10, M. J. Sharkey, sweep, (CNCI), [CNC 471547, 471548, 471549, 471550]; 700m, 1♀, 1989/08/25-1989/09/04, K. Takeno, M. Sharkey, MT, (CNCI), [CNC 471551]; 2♀, 1989/09/18-1989/09/25, K. Takeno, M. Sharkey, MT, (CNCI), [CNC 471552, 471553]; 1♀, 1989/09/25-1989/10/02, K. Takeno, M. Sharkey, MT, (CNCI), [CNC 471554]; Fukuoka, Mt. Tachibana, 1♀, 1979/07/15-1979/07/21, K. Yamagishi, cutover land, (CNCI), [CNC 471555]; 3♀, 1♂, 1979/08/12-1979/08/18, K. Yamagishi, YPT, (CNCI), [CNC 471556, 471557, 471558, 471559]; 2♀, 1♂, 1979/08/19-1979/08/25, K. Yamagishi, YPT, (CNCI), [CNC 471560, 471561, 471562]; 4♀, 1992/08/17, K. Yamagishi,

(CNCI), [CNC 471563, 471564, 471565, 471566]; **Nagano Pref.:** Nakakaruzawa, 1000m, 1♂, 1980/07/19, A. & Z. Smetana, (CNCI), [CNC 471375]; **NEPAL: Kakani:** 2700m, 1♀, 1983/08/01-1983/08/23, H. J. Allen, Malaise Trap, (CNCI), [CNC 471567]; **NEW CALEDONIA: Noumea:** Ouen Toro, 2♂, 1972/01, P. Cochereau, (CNCI), [CNC 471571, 471572]; 1♀, 1♂, 1972/01/07, P. Cochereau, (CNCI), [CNC 471568, 471569]; 1♂, 1972/05, P. Cochereau, (CNCI), [CNC 471573]; 1♀, 1972/06/01-1972/06/19, P. Cochereau, (CNCI), [CNC 471570]; **PAPUA NEW GUINEA: Madang:** Morox, 4°16'S 144°58'E, 100m, 1♀, 2006/08/01-2006/08/16, V. Iwam, YPT, (CNCI), [CNC 471574]; Nagada, 5°17'S 145°49'E, 5m, 1♂, 2006/06/06, J. Hrček, YPT, (CNCI), [CNC 471575]; Wanang, 5°15'S 145°16'E, 100m, 2♂, 2006/08/23, P. Damen, MT, (CNCI), [CNC 471576, 471577]; **Morobe Prov:** Wau Ecol. Instit, 2♀, 1983/07/26-1983/07/31, S. & P. Miller, PT, (CNCI), [CNC 471578, 471579]; 1♂, 1983/08, S. & P. Miller, PT, (CNCI), [CNC 471580]; **Okapa:** Eastern H' land, South, 1♂, 1964/10/27, R. Hornabrook, (ANIC), [ANIC 32-070505]; **PHILIPPINES: Davao:** Davao, 1♀, 1961/11, M. Gavarra, Yellow Pan Trap, (BMNH), [BMNH (E)#971590]; **Negros Oriental:** Cuernos de Negros, 7km W Valencia, primary forest edge, 9°17'N 123°15'E, 700m, 1♀, 1987/07/15-1987/07/21, D. C. Darling, E. Mayordo, MT with pans, (CNCI), [CNC 471581]; 3♀, 1987/07/25-1987/07/29, D. C. Darling, E. Mayordo, MT wit pans, (CNCI), [CNC 471582, 471583, 471584]; **SINGAPORE: Singapore:** Manday road, 1♂, 1978/11/30, J. T. Huber, (CNCI), [CNC 471528]; **SOLOMON ISLAND: Guadalcanal:** Honiara, 0-100m, 1♂, 1970/10, N. L. H. Krauss, (BPBM); **New Georgia:** Munda, 1♂, 1980/11, N. L. H. Krauss, (CNCI), [CNC 471585]; **SOUTH KOREA: Chung-nam:** Daejon-si, Wadong, for. Edge, wild rose patch, 36°24.02'N 127°25.98'E, 1♀, 2006/05/06-2006/05/28, P. Tripotin, MT, (CNCI), [CNC 471377]; **Jirisan:** Hamyang-gum, Macheon-myon, Samjeong-li, forest gully, 35°20'55"N 127°38'21"E, 700m, 2♀, 2002/08/25-2002/09/14, P. Tripotin, MT, (CNCI), [CNC 471378, 471379]; **Kangwon:** Chuncheon, Nam-myeon, Hudong-li, pastured area, trail close to forest edge, 1♀, 2003/06/14-2003/07/06, P. Tripotin, MT, (CNCI), [CNC 471380]; in semi-shade, forest edge, 1♀, 2003/07/31-2003/08/16, P. Tripotin, MT, (CNCI), [CNC 471381]; district On-dzong, Kus-gang san, along Ok-ru dong, 300-600m, 1♂, 1975/08/05, J. Papp & A. Vojnits, (HNHM), [No.317]; **SRI LANKA: Sabaragamuwa:** Kegalle, 1♀, 1970/01/14, Mussard Besuchet Lobl, (CNCI), [CNC 471388]; **West Province:** Nugegoda, 1♂, 1969/01/01, B. P. Karumaratne, (CNCI), [CNC 471389]; **THAILAND: PhetchabunKhao:** Kho Nat. Park, 16°32.546'N 0', 560m, 1♀, 2007/06/19-2007/06/26, Somchai Chachumnan, S. Singtong, (CNCI), [CNC #2458/471586]; **Suphanburi:** Pu Toei Nat. Park, Huai Mongpae, 14°56.574'N 99°25.23'E, 378m, 1♀, 2008/09/08-2008/09/09, W. Jaisue, PT, (CNCI), [CNC #3570/471587].

### ***orientalis*-group s.l., *parvipennis*-subgroup**

The following species have a preoccipital lunula as in other species of the *orientalis*-group s.l., but share a metascutellum that is visible in dorsal view, is wide with margins subparallel to the scutellar margin; a small metanotal spine (Figs. [32](#), [35](#), [36](#), [37](#), [80](#), [81](#), [84](#), [85](#), [87](#), [88](#), [92](#), [96](#), [99](#)); and an elongate forewing with a short or absent pm and a long posterior fringe as *D. parvipennis* (Dodd) (Figs. [39c](#), [d](#), [e](#), [f](#), Figs. [40a](#), [b](#), [d](#), [e](#)).

#### ***Dyscritobaeus bicolor* O'Connor et Ashe**

[urn:lsid:zoobank.org:act:790AD91D-1E5A-4F17-8446-5C5AAF901161](https://zoobank.org/urn:lsid:zoobank.org:act:790AD91D-1E5A-4F17-8446-5C5AAF901161)

*Dyscritobaeus bicolor*: O'Connor et Ashe (2011), p. 346, original description.

#### **Diagnosis**

The presence of a preoccipital lunula (Fig. [80](#)) distinguishes this species from the *comitans*-group. The marginalis and stigmalis are normally developed as in *D. comitans* and most of the species of the other genera; metascutellum visible in dorsal view, wide with margins subparallel to scutellar margin, a small metanotal spine; T2 without specillum (Figs. [81](#), [85](#)) and absence of odontoid process in both sexes, central keel present and the angle st-pm >40° in both sexes, distinguish this species from *D. flavus* and *D. parvipennis*.

The presence of a single posterior spiny projection on the propodeal carina (Figs. [80](#), [84](#), [85](#)) distinguishes this species from those having two spiny projections (*D. antananarivensis*, *D. comitans*, *D. madagascarensis*, *D. sulawensis*); this character state is shared with *D. ndokii*, *D. flavus*, *D. kilimanjarensis*, *D. parvipennis* and *D. tanzaniensis*. Postmarginalis reduced as *D. parvipennis* and similar species. In female the antennal segment A12 is as long as A11 (Fig. [17](#)), with a corresponding claval sensilla formula: 1:2:2:2:1:0. A smooth mesepimeral sulcus distinguishes the species from *D. sulawensis*, which has a crenulate mesepimeral furrow. In males the A2/A3 ratio is 0.83 (Fig. [41b](#)) similar to that in *D. parvipennis* (A2/A3 ratio 0.71) (Fig. [41f](#)); in *D. flavus* the A2/A3 ratio is 1.1 (Fig. [41d](#)).

#### **Description**

We provide a redescription to present a comparative uniform treatment of all species included in this paper.

Male: Holotype, ♂ *Dyscritobaeus bicolor* O'Connor et Ashe, Maputo, V- 1989, leg. Angela (MSNG).

Length of the body: 1 mm

**Head.** Color, sculpture coriaceous sensu Eady (1967). Fan-like striation not visible in genal area. Head surface is hairy (Fig. [24](#)). Head width: height: length = 0.37: 0.31: 0.19 mm. Malar sulcus length: 0.09 mm. Eye width: height = 0.12: 0.15 mm. OOL: LOL: POL = 0.1: 0.7: 0.1 mm. Mandibles bidentate without odontoid process. Maxillary and labial palpi in Fig. [44b](#).

Antenna (Fig. [41b](#)). Radicles and scape yellow; A3-A12 brown; A1 length: 14; A2 shorter than A3.

**Mesosoma.** Color brown (Fig. [84](#)). Sculpture, in dorsal view mesoscutum and scutellum imbricate; in lateral view speculum with furrow; femoral depression smooth with fan-like striation starting by post-ventral angle; posterior mesepimeral area not well delimitate anteriorly; dorsal and ventral metapleural area with crenulated depression with rugae (Fig. [84](#)); propodeal carina with one posterior spiny projection (Fig. [85](#)). Metascutellum visible in dorsal view, wide with margins parallel to scutellum ones, small metanotal spine (Fig. [85](#)).

Mesonotum length 0.22 mm, width 0.39 mm; scutellum length 0.12 mm, width 0.27 mm.

Wings. Forewing hyaline surpassing gaster; wing ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.1: 0.6: 3.3: 3.4: 8.9: 0.4: 1.1; angle st-pm = 42° as in Fig. [39d](#). st length is 0.09 mm.

Legs yellow except fore and middle coxae light brown, hind coxae brown.

**Metasoma.** Color brown, with T1, T2 light brown (Fig. [85](#)).

On T1 pair of longitudinal submedial carinae, aligned with the propodeal carina, separating external coriaceous sculpture from internal smooth area; In the middle of T1 a sculpture striate to coriaceous starting from anterior margin and gradually dissolving towards posterior margin (Figs. [84](#), [85](#)). T2 not foveolate in anterior margin, sculpture rugose-coriaceous, short longitudinal wrinkles not surpassing 1/5 of the gaster, sculpture rugose-coriaceous in the other tergites (Fig. [81](#)).

Female (nov.): Central African Republic, Prefecture Sangha- Mbaéré, Parc National de Dzanga- Ndoki, 38.6 km 173° S Lidjombo; 2°21.60'N 16°03.20'E 350m, 22- May- 2001, S. van Noort, Sweep, CAR01- S227, Lowland rainforest; SAM-HYM-P025611.

Length of the body: 1.05 mm



**Head.** Color black. Sculpture as in male; head covered by long hair, mandibles yellow. Frontal depression with a shallow, smooth area starting from the interantennal process and not reaching 1/5 the height of eye (Fig. 21). Central keel reaching 1/5 the height of the eye (Fig. 21). Fan-like striation in malar area from oral foramen to eye margin, fan-like striation present in genal area but not reaching half-length of malar sulcus (Fig. 82). Malar sulcus length: 0.125 mm. Preoccipital lunula present and sculptured. Measure of the head width: height: length = 0.42: 0.35: 0.19 mm. Measure of eye width: height = 0.14: 0.19 mm. OOL: LOL: POL = 0.09: 0.06: 0.09 mm. Mandibles bidentate without odontoid process (Fig. 23).

Antenna (Fig. 41a). Radicle and A1 yellowish. A2- A12 brown, light brown in ventral part. A1 length: 0.21 mm; A2 longer as A3+ A4. Clava antennomeres A7- A12. Claval sensilla formula 1:2:2:2:1:0.

**Mesosoma.** In dorsal view, mesonotum anteriorly dark yellow to brown; scutellum brown with posterior margin yellow; propodeum dark yellow; metascutellum and metanotal spine brown (Fig. 80). In lateral view, from dorsal margin yellowish to brown (Fig. 83).

Sculpture. In dorsal view mesonotum and scutellum imbricate (Fig. 80); in lateral view speculum with furrow; femoral depression smooth with fan-like striation starting by post-ventral angle; posterior mesepimeral area not well delimitate anteriorly; dorsal and ventral metapleural area with crenulated depression with rugae ( Fig. 83); propodeal carina with one posterior spiny projection (Fig. 80). Metascutellum visible in dorsal view, wide with margins parallel to scutellum ones, small metanotal spine (Fig. 80).

Mesonotum length 0.25 mm, width 0.41 mm; scutellum length 0.14 mm, width 0.34 mm.

Wings. Forewing hyaline surpassing gaster; ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.2: 0.4: 3.3: 3.2: 7.8: 0.6: 1.5; angle st-pm= 43° as in Fig. 39c. st length is 0.1 mm.

Legs as in male.

**Metasoma.** In dorsal view metasoma anteriorly yellowish as in propodeum, color changes gradually in dark brown in last tergite; T1, T2, T3 color light brown on side; laterotergites yellowish (Fig. 81). On T1 pair of longitudinal submedial carinae, aligned with the propodeal carina, separating external coriaceous sculpture from internal smooth area; in the middle of T1 a sculpture striate to coriaceous starting from anterior margin and gradually dissolving towards posterior margin (Fig. 80, 81). T2 not foveolate in anterior margin, sculpture rugose-coriaceous, short longitudinal wrinkles not surpassing 1/5 of the gaster, sculpture rugose-coriaceous in the other tergites (Fig. 81).

#### Comment and variability

The holotype is deposited in the collection of Genoa Museum (MSNG) and not in the Insect Collection of Portici Università Federico II-Napoli, Italy (DEZA) as stated by O'Connor and Ashe (2011) in the original description.

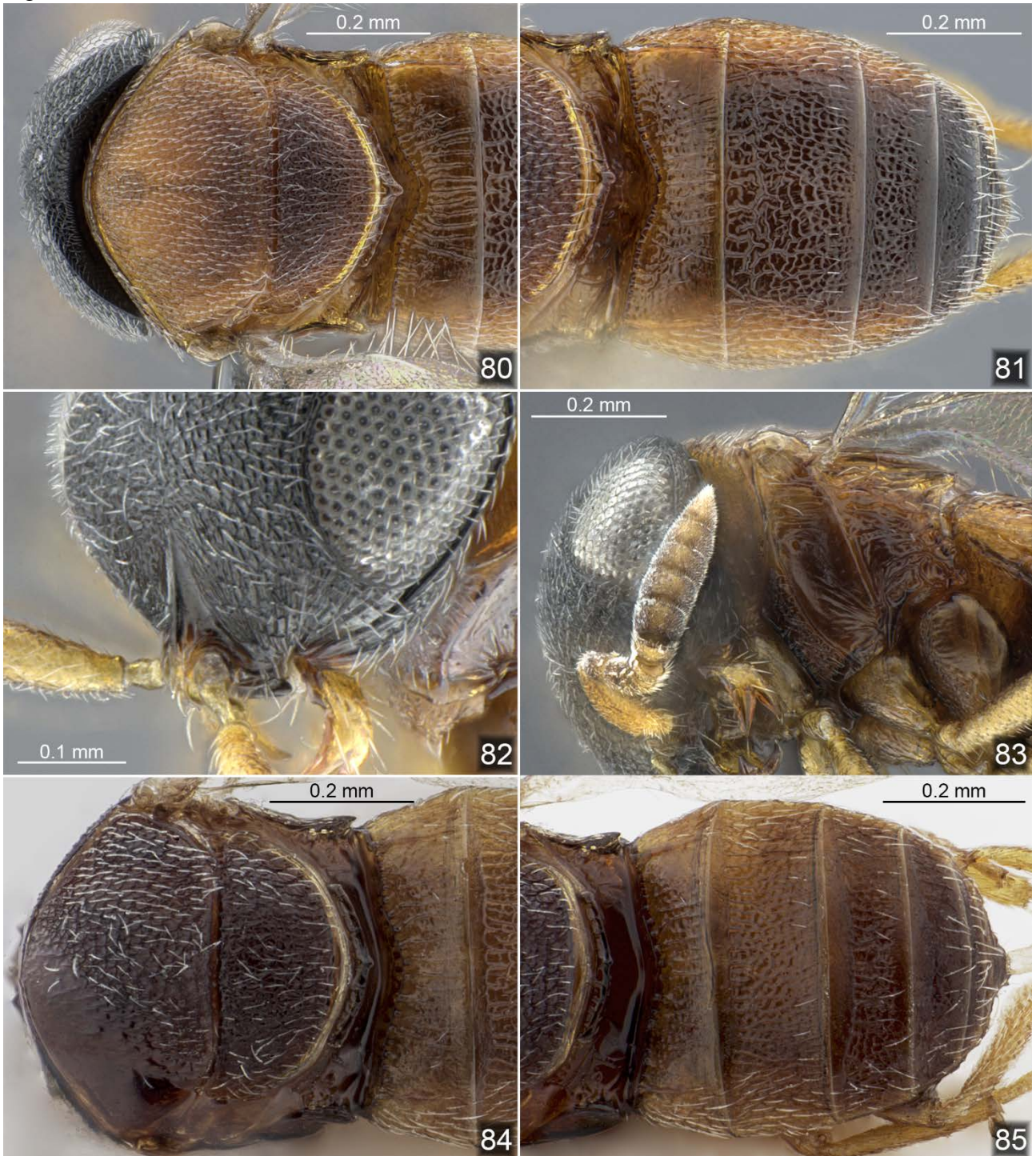
One hundred and twenty-nine specimens were examined from Africa.

Female length ranges from 0.65 mm in a Cameroun specimen to 1.1 mm in a Central African Republic specimen. Male length ranges from 0.54 mm in a Cameroun specimen to 1.06 mm in a Central African Republic specimen.

In both sexes, specimens collected in South Africa have the central keel a little longer and the frontal depression smoother than specimens collected from other countries.

Color is fairly uniform across all specimens; the observed variability in color is probably a result of different preparation and mounting processes.

## Figures

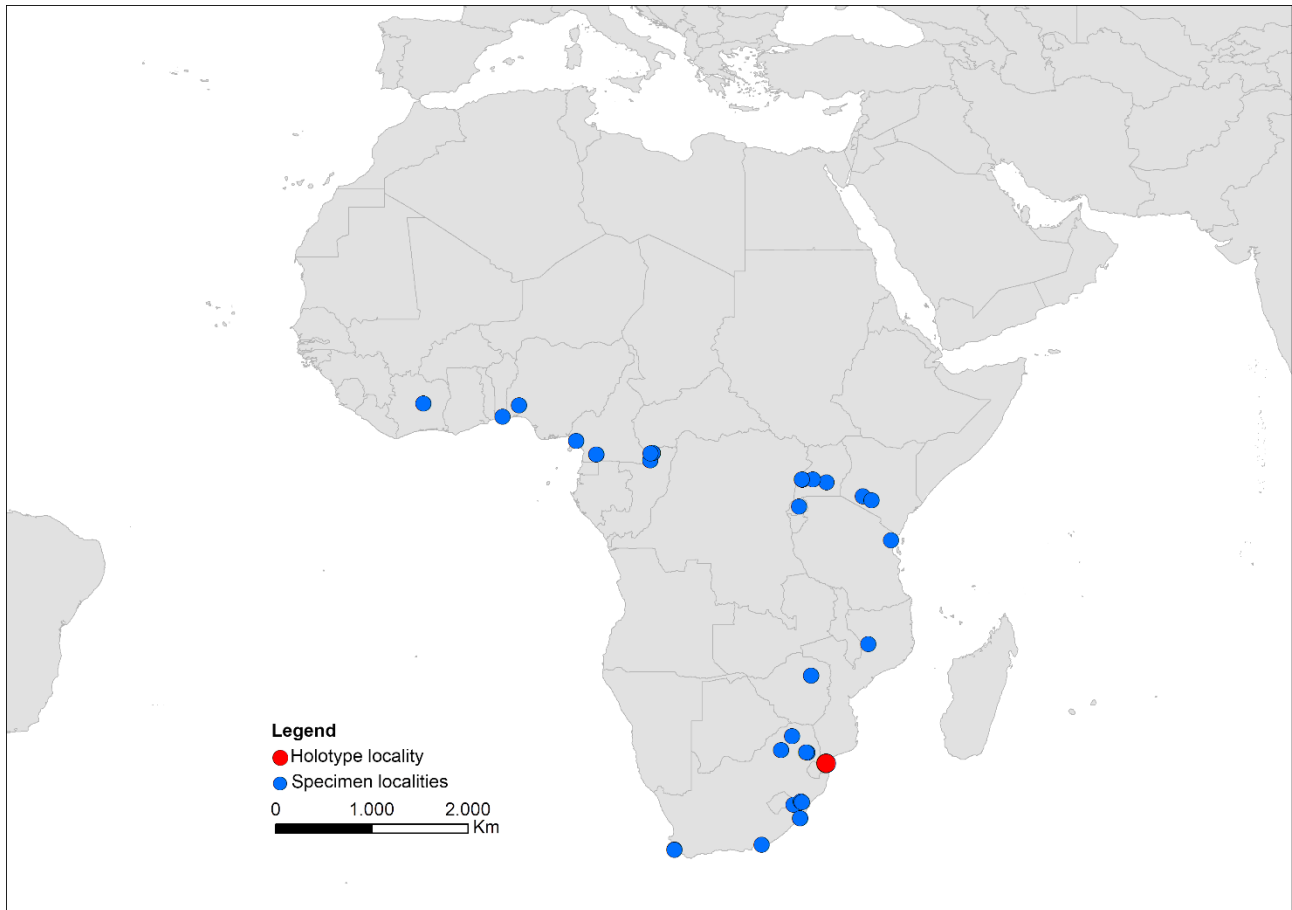


**Figures 80-85.** *Dyscritobaeus bicolor*, ♀ from Central African Republic [SAM-HYM-P025611], ♂ holotype: **80** – ♀, head and mesosoma, dorsal view; **81** – ♀, metasoma, dorsal view; **82** – ♀, head, anterolateral view; **83** – ♀, head and mesosoma, lateral view; **84** – ♂, mesosoma, dorsal view; **85** – ♂, metasoma, dorsal view.

### Distribution

The species is recorded exclusively in the Afrotropical region.





**Figure 86** – Distribution of *D. bicolor*.

**Material examined**

Holotype. ♂: **AFRICA: Mozambique:** Maputo, 1989/05, Angela, (MSNG), (palpi in slide, Fig.44b).

**AFRICA: Benin:** Abomey-Calavi ca. 25km N. Coconou, 1♂, 1988/12, J. S. Noyes, MT, (CNCI), [CNC 471208]; **Cameroun:** Buea, 2♂, 1981/12/24, S. Compton, (BMNH), [BMNH (E)#971552, (E)#971553]; Nkoemvon, 2♀, 1♂, 1979/09, D. Jackson, (BMNH), [BMNH (E)#971554, (E)#971555, (E)#971556]; 1♂, 1980/07, D. Jackson, (CNCI), [CNC 471209]; 2♂, 1980/09, D. Jackson, (BMNH), [BMNH (E)#971557, (E)#971558]; **Central African Republic:** Parc National de Dzanga-Ndoki, 38.6km 173° S Lidjombo, 350m, Lowland Rainforest, 2°21.60'N 16°09.20'E, 350m, 2♀, 2♂, 2001/05/22, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025611, P025618, P047988 (1♂, antenna in slide, in Fig. 41b)]; 2♂, 2001/05/23, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025526, P025528]; Parc National de Dzanga-Ndoki, Mabéa Bai, 21.4 km 53° NE Bayanga, Lowland Rainforest, marsh clearing, 3°02.01'N 16°24.57'E, 510m, 1♀, 2001/05/03, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P047990]; 3♀, 2001/05/04, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025556, P025557 (1♀, wings in slide, in Fig. 39c), P047989]; 1♂, 2001/05/05, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P047995]; 3♀, 2♂, 2001/05/06, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025537, P025567, P047985, P047987]; 1♀, 2♂, 2001/05/06-2001/05/06, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P047986]; 2♀, 1♂, 2001/05/07, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025577, P025582, P025583]; Prefecture Sangha-Mbaéré, Reserve Speciale de Foret Dense d Dzanga-Shangai, 21.7km 326°NW Bayanga, Degraded mid-altitude rainforest., 3°00.27'N 16°11.55'E, 420m, 1♂, 2005/07/30-2005/08/05, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P032154]; Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 kilometers 326° North West Bayanga, Lowland Rainforest, 1♀, 2001/05/11-2001/05/17, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030685]; **Ivory Coast:** Bouake, 1♂, 1980/10, P. Cochereau, (CNCI), [CNC 471210]; 1♂, 1980/10/11, P. Cochereau, PT, (CNCI), [CNC 471211]; **Kenya:** Nairobi, 1♀, 1982/04, M. C. Lubega, (CNCI), [CNC 471212]; Nairobi, Nairobi Game Park, 1♂, 1980/03/28, D. Levin, pan trap, (CNCI), [CNC 471213]; **Mozambique:** Niassa Cuamba, Mituque, Centro Pastoral, 1♀, 2012/03/28-2012/04/3, M. Olmi, MT, (CNCI), [CNC 471214]; **Nigeria:** Oyo Ibadan,



IITA compound, 2♀, 1987/11, J.S. Noyes, Pitfall Trap, (CNCI), [CNC 471215, 471216]; **Rwanda:** Kigali, 1♀, 1977, (UNIPA); **South Africa:** E. Transvaal, 11km SE Pilgrims Rest, relict native forest, 1400m, 37♀, 5♂, 1985/12/11-1985/12/31, S. & J. Peck, FIT-Mal., (CNCI), [CNC 471217, 471218, 471219, 471220, 471221, 471222, 471223, 471224, 471225, 471226, 471227, 471228, 471229, 471230, 471231, 471232, 471233, 471234, 471235, 471236, 471237, 471238, 471239, 471240, 471241, 471242, 471243, 471244, 471245, 471246, 471247, 471248, 471249, 471250, 471251, 471252, 471253, 471254, 471255, 471256, 471257, 471258]; Good Hope Estate, 9.3km 28 NW Boston, 1350m, 1♀, 1998/08/25, B.L. Fisher, Winkler Bag, (SAMC), [SAM-HYM-P039153]; Hlogoma (4.4 km 127° SE Underberg), Moist upland grassland on sandstone, livestock-grazed, 29°48.308'S 29°32.293'E, 1♀, 2001/12/04-2001/12/10, Robertson & Larsen & Tourle, Pitfall Trap, (SAMC), [SAM-HYM-P034558]; Karkloof, Leopards Bush Nature Res, 19km 251 NNE Howick, 1350m, 2♀, 1998/08/29, B.L. Fisher, Winkler Bag, (SAMC), [SAM-HYM-P039156, P039155]; Kwazulu-Natal, Pietermaritzburg Karkloff Nat. Park E, 1♀, 2005/04/22-38466, V. Kolyada, YPT, (CNCI), [CNC 471259]; Limpopo province, Magde Baskloof, 1♂, 2003/12/03, Melika, Mikò, (CNCI), [CNC 471260]; Newlands Forest, Western Cape., Forest - Indigenous, -33.96667°N +18.43333°E, 1♂, 06/1998, H.J. Ratsirarson, Winkler Bag, (SAMC), [SAM-HYM-P020780]; Transvaal, 30km E Nylstroom, 2♀, 1984/11/15-1984/12/17, H. & A. Howden, FIT, (CNCI), [CNC 471261, 471262]; Transvaal, Graskop, 1500m, 1♀, 1985/12/11-1985/12/19, W. R. M. Mason, (CNCI), [CNC 471263]; Tvl. 5km S Graskop, 1♀, 1985/12/20-1985/12/28, H. & A. Howden, FIT, (CNCI), [CNC 471264]; Tvl. Nr. Gods Windows, 1♀, 1985/12/26, M. Sanborne, s. s., (CNCI), [CNC 471265]; Umtamvuna Nature Reserve, Forest - Coastal, 31°03.509'S 30°10.484'E, 160m, 1♀, 1♂, 2000/11/11-2000/11/18, S. van Noort, Pitfall Trap, (SAMC), [SAM-HYM-P031742, P031744]; 1♂, 2000/11/11-2000/11/18, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P031749]; 1♀, 4♂, 2000/11/14, S. van Noort, Winkler Bag, (SAMC), [SAM-HYM-P031751, P031753, P031754, P031755]; 1♂, 2000/11/17, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P031757]; W. Cape Prov., Hout Bay, Oranje kloof Forest Pres., 34°0'S 18°25'E, 150m, 1♀, 1999/12/16-1999/12/31, S. & J. Peck, FIT, (CNCI), [CNC 471266]; **Tanzania:** E Usambara Mts., Amani NR, 5°06'04"S 38°39'08"E, 501m, 1♂, 2011/12/17, V. Grebennikov, sift.08, (CNCI), [CNC 471267]; **Uganda:** Kampala, lakeshore, 1158m, 1♀, 1973/01, H. Falke, (CNCI), [CNC 471268]; Kibale National Park Kanyawara, Makerere University Biological Field Station, Primary mid-altitude Rainforest, 0°33.823'N 30°21.490'E, 1505m, 1♂, 2005/07/29-2005/07/31, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P032162]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, Secondary mid-altitude Rainforest, 0°33.960'N 30°21.267'E, 1495m, 2♂, 2005/07/29-2005/07/31, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P032157]; 1♀, 2005/07/30-2005/08/05, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P032156]; 2♀, 1♂, 2005/07/31-2005/08/03, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P032158, P032161]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, Primary mid-altitude Rainforest, 0°33.784'N 30°21.617'E, 1500m, 1♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P046910]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, 1587m, Primary mid-altitude Rainforest, near stream., 0°34.390'N 30°21.658'E, 1587m, 2♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P047994]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, Primary mid-altitude Rainforest, 0°33.836'N 30°21.700'E, 1523m, 2♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030683 (1♂, wings in slide, in Fig. 39d)]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, 1♀, 2♂, 2008/08/11, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P049538 (1♀, antenna in slide, in Fig. 41a)]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, Secondary mid-altitude Rainforest, 0°33.996'N 30°21.262'E, 1495m, 2♂, 2005/07/29-2005/07/31, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P047993]; Kibale National Park, Kanyawara, Makerere University Biological Station, Primary mid-altitude Rainforest, near stream, 0°33.823'N 30°21.490'E, 1505m, 1♀, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P047991]; **Zimbabwe:** Salisbury, 1♀, 1980/05, A. Watsham, Yellow Pan Trap, (CNCI), [CNC 471269]; **Zimbabwe (Rhodesia):** Harare (Salisbury), 1♂, 1979/05, A. Watsham, (CNCI), [CNC 471270]; Harare (Salisbury), Chishawasha, 1♀, 1980/03, A. Watsham, (CNCI), [CNC 471271];

### ***Dyscritobaeus flavus Tortorici et Caleca sp. nov.***

*Dyscritobaeus* sp. (d): Caleca & Mineo (1995): Fig. IV, 8 p. 13.

*Dyscritobaeus* sp.: Anthony Watsham Gallery in Platygastroidea website: [http://osuc.biosci.ohio-state.edu/hymDB/eol\\_scelionidae.taxon\\_image?img\\_id=307](http://osuc.biosci.ohio-state.edu/hymDB/eol_scelionidae.taxon_image?img_id=307)

#### Diagnosis

The presence of a preoccipital lunula (Fig. 32, 87) distinguishes this species from *D. comitans* and other species without a preoccipital lunula. A metascutellum that is visible in dorsal view, is wide with margins parallel to scutellum ones, a small metanotal spine, and T2 without a specillum in females (Fig. 88) distinguishes *D. flavus* sp. nov. from species of the *orientalis*-group s.s. (i.e. *D. orientalis*, *D. sulawensis*, *D. madagascarensis*). A propodeal carina with a single posterior spiny projection (Fig. 87) distinguishes this species from those having two spiny projections (*D. antananarivensis*, *D. comitans*, *D. madagascarensis*, *D. sulawensis*); a character shared with *D. ndokii*, *D. bicolor*, *D. kilimanjarensis*, *D. parvipennis* and *D. tanzaniensis*. Color of the head, central keel absent (Figs. 20, 89), odontoid process developed (Figs. 22, 89) and angle st-pm < 40° distinguish the species from *D. bicolor*. Odontoid process forms a 90° angle with the ventral margin of the ventral tooth; the ventral tooth is larger than the dorsal tooth in females (Fig. 22). The yellow color of the head distinguishes *D. flavus* sp. nov. from *D. parvipennis*.

A12 long as A11 (Fig. 17), with a corresponding claval sensilla formula: 1:2:2:2:1:0. A smooth mesepimeral sulcus distinguishes the species from a crenulate furrow in *D. sulawensis*.

#### Description

##### Female

Length of the body: 1.22 mm.

**Head.** Color yellow; black occipital carina starting from oral foramen and reaching occiput; black rim around ocelli (Fig. 20). Sculpture coriaceous sensu Eady (1967); head covered by hair (Fig. 20).

Frontal depression with a hollow area starting from the interantennal process and not reaching 1/5 the height of eye (Fig. 20). Central keel very short, not surpassing the deeper part of frontal depression (Fig. 20). Fan-like striation in malar area from oral foramen to eye margin, fan-like striation present in genal area. Preoccipital lunula present and sculptured (Fig. 87).

Measures of the head width: height: length = 0.46: 0.4: 0.21 mm. Malar sulcus length: 0.11 mm. Measures of eye width: height = 0.14: 0.2 mm. OOL: LOL: POL = 0.09: 0.06: 0.12 mm. Mandibles bidentate with odontoid process in ventral margin of lower tooth. The lower tooth longer than dorsal tooth; odontoid process make a 90° angle with margin of lower tooth (Fig. 22).

Antenna (Fig. 41c). Radicle and A1 yellowish; A2- A12 brown. A1 length: 0.22 mm. Clava six-segmented. Claval sensilla formula 1:2:2:2:1:0 (Fig. 90).

**Mesosoma.** In dorsal view, mesoscutum anteriorly yellow to brown in scutellum; scutellum posterior margin yellow; propodeum brown; metascutellum and metanotal spine brown with dark edge (Figs. 87, 88).

In lateral view brown (Fig. 89).

**Sculpture.** In dorsal view mesoscutum and scutellum imbricate (Fig. 87); in lateral view speculum with furrow; femoral depression smooth with fan-like striation starting by post-ventral angle; posterior mesepimeral area not delimitate anteriorly; dorsal metapleural area with crenulated depression with rugae and ventral metapleural area partially smooth (Fig. 89); propodeal carina with one posterior spiny projection (Fig. 87). Metascutellum visible in dorsal view, wide with margins parallel to scutellum ones, small metanotal spine (Fig. 87). Mesosoma length 0.31 m, width 0.47 mm; scutellum length 0.16 mm, width 0.34 mm.

**Wings.** Forewing hyaline surpassing gaster; wing ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.2: 0.4: 3.3: 2.8: 8.0: 0.3: 1.4; angle st-pm = 30°, st = 0.1 mm (Fig. 39e), st = 0.1 mm.

Legs brown with femur lighter than other part.

**Metasoma.** In dorsal view metasoma light brown in lateral margins; T1 light brown gradually converting in dark brown in the last tergite (Fig. 88); laterotergites yellowish. On T1 pair of longitudinal submedial carinae are aligned with the propodeal carina and separate external coriaceous microsculpture from internal smooth area; in the middle of T1 a sculpture striate to coriaceous starting by anterior margin and gradually dissolving in posterior margin (Fig. 88). T2 not foveolate in anterior margin, very short longitudinal striae, sculpture coriaceous as in the other tergites (Fig. 88).

Male

Length of the body: 1.07 mm.

**Head.** Color and sculpture as in female. Fan-like striation not visible in genal area (Fig. 91). Head surface is hairy (Fig. 91). Measures of the head width: height: length = 0.41: 0.34: 0.21 mm. Malar sulcus length: 0.11 mm. Measures of eye width: height = 0.12: 0.19 mm. OOL: LOL: POL = 0.08: 0.06: 0.11 mm. Mandibles as in female except odontoid process extremely short and difficult to recognize (Fig. 91).

Antenna (Fig. 41d). Radicles and scape yellow; A2-A5 light brown, A6-A12 brown; A1 length: 0.2 mm; A2 as long as 0.7 A3.

**Mesosoma.** Color as in female, sculpture as in female (Fig. 32). Mesonotum length 0.29 mm, width 0.44 mm; scutellum length 0.14 mm, width 0.31 mm.

Wings. Forewing hyaline surpassing gaster; ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0.3: 0.5: 3.3: 3.5: 8.3: 0.2: 1.0; angle st-pm = 29°; st = 0.1 mm (Fig. 39f).

Hind wing as in female. Legs as in female.

**Metasoma.** Color as in female, sculpture as in female (Fig. 92). Edeago as in Fig. 44c.

Comment and variability

Three hundred and fifty-three specimens were examined from Africa.

Female length ranges from 0.82 mm in Togo to 1.25 mm in Democratic Republic of Congo.

Male length ranges from 0.81 mm in Kenya to 1.07 mm in Central African Republic.

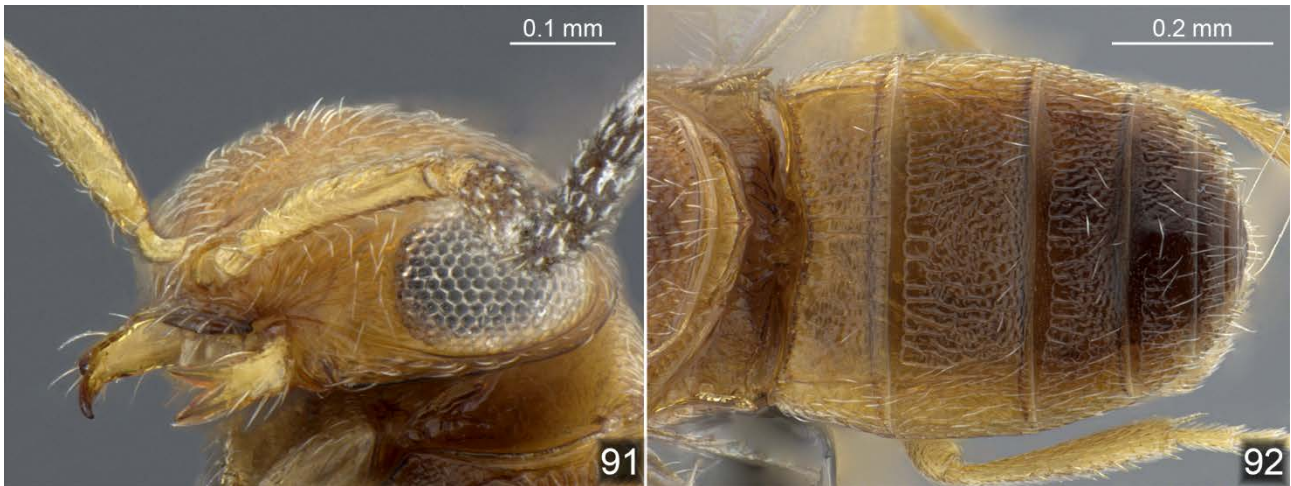
In both sexes the color is always yellow from dark to light. In male the length of antennal segment A2 is 0.7 times the length of A3, a ratio that also holds in smaller specimens.

Figures



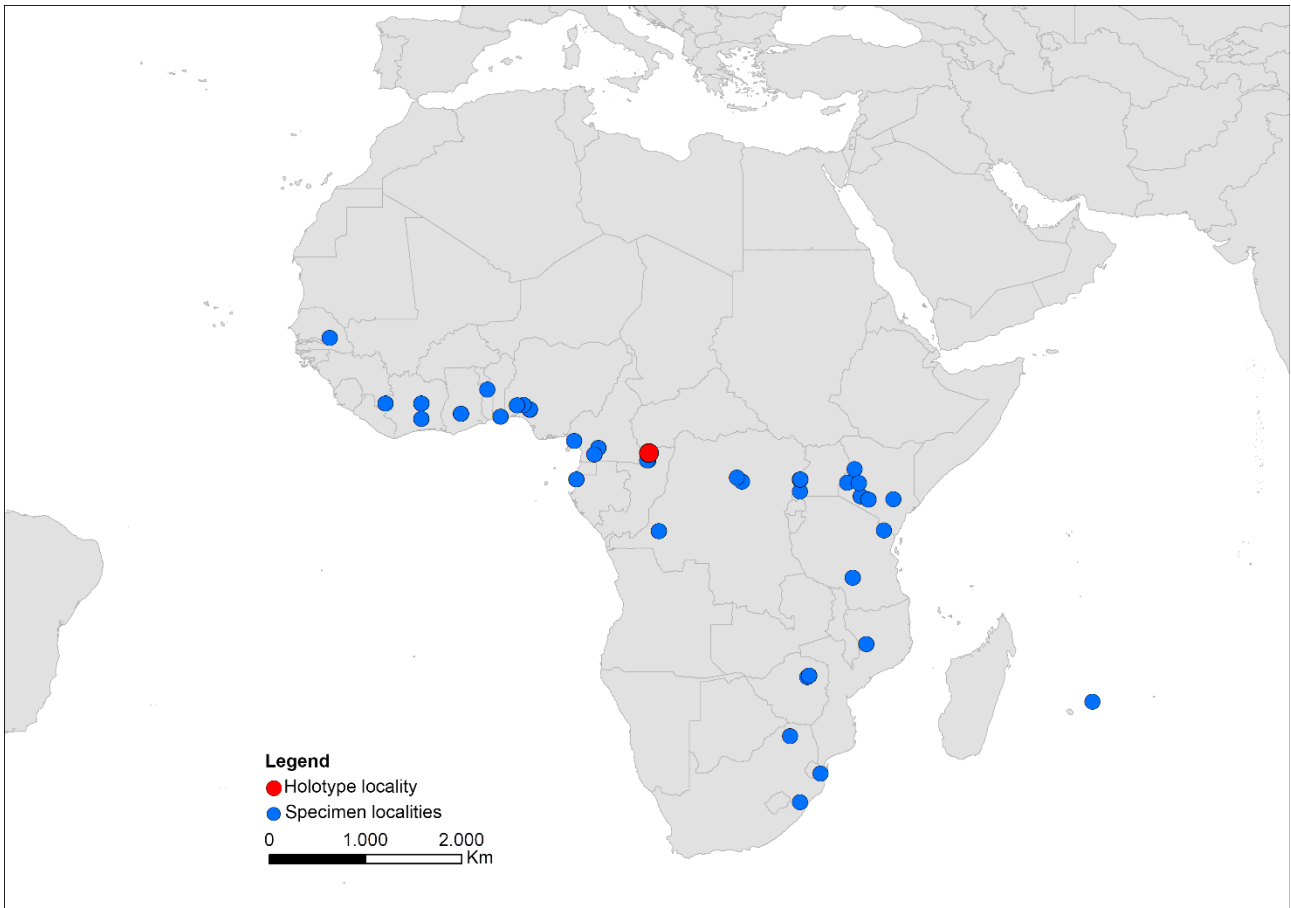
**Figures 87 - 90.** *Dyscritobaeus flavus* sp. nov., ♀ holotype [SAM-HYM-P025586]: **87** – head and mesosoma, dorsal view; **88** – metasoma, dorsal view; **89** – head and mesosoma, lateral view; **90** – antennae, dorsal view (left) and ventral view (right).





**Figure 91-92.** *Dyscritobaeus flavus* sp. nov., ♂ allotype [SAM-HYM-P025571]: **91** – head and mandibles, lateral view; **92** – metasoma, dorsal view.

### Distribution



**Figure 93** – Distribution of *D. flavus* sp. nov.

### Etymology

This species is named after the uniform yellow coloration of the head and body, which is very different from the other Afrotropical species that have a brown to black colored head in contrast to a yellow body.

### Material examined

Holotype. ♀: **AFRICA: Central African Republic:** Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 kilometers 326° North West Bayanga, Lowland Rainforest, 3°00.27'N, 16°11.55'E, 420m, 2001/05/12, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025586].

Allotype. ♂: **AFRICA: Central African Republic:** Parc National de Dzanga-Ndoki, Mabéa Bai, 21.4 km 53° NE Bayanga, Lowland Rainforest, marsh clearing, 3°02.01'N, 16°24.57'E, 510m, 2001/05/07, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025571].

Paratypes: **AFRICA: Benin:** Abomey-Calavi ca. 25km N. Coconou, 7♀, 1♂, 1988/12, J. S. Noyes, MT, (CNCI), [CNC 262984, 470135, 470136, 470137, 470138, 470139, 470140, 471194]; **Cameroun:** Buea, 2♂, 1981/12/24, S. Compton, (BMNH), [BMNH (E)#971559, (E)#971560]; Mbalmayc, 5♀, 1♂, 1993/07, P. Eggleton, MT, (CNCI), [CNC 262985, 470141, 470142, 470143, 470144, 470145]; Nkoemvon, 1♀, 1979/09, D. Jackson, (BMNH), [BMNH (E)#971562]; 5♀, 1979/09, P. Jackson, MT, (CNCI), [CNC 262988, 470146, 470147, 470148, 470149]; 2♀, 1980/01, P. Jackson, MT, (CNCI), [CNC 262989, 470150]; 1♂, 1980/01/21, D. Jackson, (BMNH), [BMNH (E)#971561]; 1♂, 1980/05/14-1980/05/18, P. Jackson, MT, (CNCI), [CNC 262986]; 1♀, 1980/07, D. Jackson, (BMNH), [BMNH (E)#971563]; 1♂, 1980/08, D. Jackson, (BMNH), [BMNH (E)#971564]; 14♀, 1♂, 1980/08, P. Jackson, MT, (CNCI), [CNC 262990, 470151, 470152, 470153, 470154, 470155, 470156, 470157, 470158, 470159, 470160, 470161, 470162, 470163, 471195]; 1♀, 1980/10/26-1980/11/13, P. Jackson, MT, (CNCI), [CNC 262987]; Nkoemvon Forest, 1♀, 1♂, 1980/09/25, D. Jackson, (BMNH), [BMNH (E)#971565, (E)#971566]; Nkoemvon, Ebolowa, 1♂, 1978/03, D. Jackson, (BMNH), [BMNH (E)#971567]; **Central African Republic:** Dzanga-Ndoki Nat. Park, Mabea Bai, 3°02'N 16°25'E, 510m, 3♀, 2001/05/07, D. L. Fisher, (CNCI), [CNC 262991, 470164, 470165]; Parc National de Dzanga-Ndoki, 38.6km 173° S Lidjombo, 350m, Lowland Rainforest, 2°21.60'N 16°09.20'E, 350m, 3♀, 1♂, 2001/05/21-2001/05/27, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030689, P030690, P030691]; 3♀, 11♂, 2001/05/22, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025600, P025602, P025603, P025604, P025607, P025608, P025609, P025610, P025612, P025614, P025616, P025620, P049537]; 2♀, 8♂, 2001/05/23, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025522, P025523, P025524, P025527, P025529, P025530, P025531, P025532, P025533]; 1♂, 2001/05/23-2001/05/24, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P025535]; Parc National de Dzanga-Ndoki, Mabéa Bai, 21.4 km 53° NE Bayanga, Lowland Rainforest, marsh clearing, 3°02.01'N 16°24.57'E, 510m, 1♀, 2001/05/01-2001/05/07, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030684]; 1♂, 2001/05/02-2001/05/03, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P025551 (wings in slide, Fig. 39f)]; 1♀, 2♂, 2001/05/03, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025568, P025569]; 1♀, 3♂, 2001/05/04, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025554, P025555, P025560]; 2♂, 2001/05/05, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025562, P025563]; 8♀, 7♂, 2001/05/06, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025538, P025539, P025540, P025541, P025542, P025543, P025545, P025547, P025548, P025550]; 3♀, 5♂, 2001/05/07, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025572, P025574, P025578, P025579, P025581, P025584]; Prefecture Sangha-Mbaere, Parc National de Dzanga-Ndoki, 38.6km 173°S Lidjombo, Lowland Rainforest, 2°21.60'N 16°03.20'E, 350m, 1♀, 2001/05/22, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025521]; Réserve Spéciale de Forêt Dense de Dzanga-Sangha, 12.7 kilometers 326° North West Bayanga, 3°00.27'N 16°11.55'E, 420m, 1♂, 2001/05/11-2001/05/12, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P025570]; 1♀, 5♂, 2001/05/11-2001/05/17, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030686, P030687, P030692, P030693, P030694, P030695]; 2♀, 5♂, 2001/05/12, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025585, P025587 (1♂, antenna in slide, Fig. 41d), P025588 (1♀, wings and antenna in slide, Figs. 39e, 41c), P025590, P025591, P025592, P025593]; 1♀, 1♂, 2001/05/13, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025595, P025596]; 1♂, 2001/05/15, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025597]; 1♀, 5♂, 2001/05/17, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P025598, P025599, P025601]; **Democratic Republic of the Congo:** Bandundu, Wamba, Kikongo Mission, 4°15'S 17°10'E, 1♀, 2006/04/15-2006/04/17, S. L. Heydon, YPT, (CNCI), [CNC 262992]; along forest edge, 7♀, 2006/04/19, S. L. Heydon, S. E. Stevenson, YPT, (CNCI), [CNC 262993, 470166, 470167, 470168, 470169, 470170, 470171]; Yalocombe B41, 1♀, 2♂, 1951/11/03, Debauche, (IRSNB), [I. G. 24.778]; Yangambi, Cateler, 2♀, 1♂, 1949/11/07, Catéier, (IRSNB), [I. G. 24.778]; **Gabon:** Forêt de Mondah, 15-25km N Libreville, 5♀, 1987/11/25-1987/12/03, J. S. Noyes, (CNCI), [CNC 262994, 470172, 470173, 470174, 470175]; **Ghana:** Ashanti Prov., Bobiri Forest Reserve, 6°42'N 1°20'W, 3♀, 2001/07/23-2001/07/31, C. Carlton, O. Frimpong, FIT, (CNCI), [CNC 262995, 470176, 470177]; 3♀, 2001/09/05-2001/09/10, C. Carlton, O. Frimpong, FIT, (CNCI), [CNC 262996, 470178, 470179]; 1♀, 2002/05, C. Carlton, O. Frimpong, FIT,

(CNCI), [CNC 262997]; **Guinea**: Mt-Nimba, rainforest, 7°41'N 8°23'W, 514-740m, 6♀, 1990/12-1991/03, L. Lebianc, FIT, (CNCI), [CNC 262998, 470180, 470181, 470182, 470183, 470184]; Ivory Coast: Bouaché - rice field, 1♂, 1978/02, P. Cochereau, Yellow Pan Trap, (CNCI), [CNC 471196]; Bouake, 1♀, 3♂, 1978/02/07, P. Cochereau, MT, (CNCI), [CNC 262999, 470185, 470186, 470187]; 1♀, 1♂, 1978/03, P. Cochereau, MT, (CNCI), [CNC 471197, 471198]; rice field, 3♀, 4♂, 1980/02, P. Cochereau, (CNCI), [CNC 263002, 470191, 470192, 470193, 470194, 470195, 470196]; 4♀, 3♂, 1980/03, P. Cochereau, (CNCI), [CNC 263003, 470197, 470198, 470199, 470200, 470201, 470202]; 2♀, 1980/04, P. Cochereau, PT, (CNCI), [CNC 263004, 470203]; 1♀, 1980/10/11, P. Cochereau, PT, (CNCI), [CNC 263000]; 1♀, 1980/12, P. Cochereau, PT, (CNCI), [CNC 263005]; 3♀, 1♂, 1981/10/01, P. Cochereau, PT, (CNCI), [CNC 263001, 470188, 470189, 470190]; Lamto 160km NW. Abijan, 5°02'W 6°13'N, 4♀, 1988/11, J. S. Noyes, MT, PT, (CNCI), [CNC 263006, 470204, 470205, 471199]; **Kenya**: Kakamega, forest, 1♀, 1♂, 1990/12/19-1991/01/02, B. D. Gill, FIT, (CNCI), [CNC 263007, 470206]; Nairobi, 1♀, 1982/02, M. C. Lubega, pan trap, (CNCI), [CNC 471207]; 2♀, 1982/03, M. C. Lubega, pan trap, (CNCI), [CNC 263008, 471200]; Nairobi, environs, 1°0.2301'S 36°0.8513'E, 1656m, 4♀, 2002/04, S. Kimani, YPT, (CNCI), [CNC 263009, 470207, 470208, 470209]; Nairobi, Ngong Rd., forest, 1♂, 1990/12/11-1991/01/03, B. D. Gill, FIT, (CNCI), [CNC 263010]; 3♀, 1991/12/11, B. D. Gill, FIT, (CNCI), [CNC 263011, 470210, 470211]; Rift Valley, Marich Pass, gallery forest along river, 1°32.18'N 35°27.48'E, 917m, 1♀, 2005/04/01-2005/04/24, (CNCI), [CNC 263012]; Tana River, 10km N. Ctarsen, 10♂, 1977/11/23, M. Perret, (MHNG); Western Prov. Kakamega, forest, 0°14.13'N 35°51.87'E, 1♀, 1999/04/09-1999/04/16, R. Copland, MT, (CNCI), [CNC 263013]; **Mauritius**: Brise Fer, 1♀, 2000/06, L. Woolayer, MT, (CNCI), [CNC 263014]; **Mozambique**: Niassa Cuamba, Mituque, Centro Pastoral, 1♂, 2008/04/12-2008/05/06, M. Olmi, MT, (CNCI), [CNC 263015]; 2♀, 2012/03/28-2012/04/3, M. Olmi, MT, (CNCI), [CNC 263016, 470212]; 1♀, 2012/04/03-2012/04/17, M. Olmi, MT, (CNCI), [CNC 263017]; **Nigeria**: Ibadan, 1♀, 1962/11/10, D. C. Eidt, (CNCI), [CNC 263018]; 1♂, 1962/11/16, D. C. Eidt, (CNCI), [CNC 263019]; 1♀, 1962/12/20, D. C. Eidt, (CNCI), [CNC 263020]; 1♂, 1962/12/22, D. C. Eidt, (CNCI), [CNC 263021]; 1♀, 1963/01/11, D. C. Eidt, (CNCI), [CNC 263022]; 2♀, 1978/03, B. R. Critchley, (BMNH), [BMNH (E)#971568, (E)#971569]; Ibadan, DFR Nursery, 2♂, 1963/11/20, M. J. White, Yellow Pan Trap, (UNIPA) (edeago in Fig 8 in Caleca & Mineo, 1995, Fig. 44c); Ibadan, IITA, 3♀, 1987/10, J. S. Noyes, s.s., (CNCI), [CNC 263023, 470213, 470214]; Ondo State, Ibanre Hills, mature forest, 7°05'48"N 5°06'01"E, 437m, 4♀, 1♂, 2008/07/17-2008/07/19, J. Hearty, J. Mottern, YPT, (CNCI), [CNC 263025, 470216, 470217, 470218, 470219]; 7°06'16"N 5°06'13"E, 465m, 3♂, 2008/07/16-2008/07/17, J. Hearty, YPT, (CNCI), [CNC 263026, 470220, 470221]; Osun State, Obafemi Awololo Univ., forest, 7°31'16"N 4°31'20"E, 215m, 3♀, 4♂, 2008/07/20, J. Mottern, (CNCI), [CNC 263027, 470222, 470223, 470224, 470225, 470226, 470227]; Oyo Ibadan, IITA compound, 1♂, 1987/11, J. S. Noyes, MT, (CNCI), [CNC 470215]; 4♀, 3♂, 1987/11, J. S. Noyes, PT, (CNCI), [CNC 263028, 470228, 470229, 470230, 470231, 470232, 470233]; 1♀, 1987/11, J. S. Noyes, YPT, (CNCI), [CNC 263024]; Oyo state, Ibadan, IITA, 1♂, 1987/10, J. S. Noyes, PT, (CNCI), [CNC 263029]; **Senegal**: Tambacounda Niocolo Koba Nat. Pk., gallery forest, 13°48'16"N 13°34'47"W, 144m, 3♂, 2007/07/23, F. Génier, YPT, (CNCI), [CNC 263030, 470234, 470235]; **South Africa**: Kwazulu-Natal, Pietermaritzburg Ferncliff Nat. Res., 29°33.25'S 30°20.6'E, 850m, 1♀, 2005/04/06-2005/04/08, V. Kolyada, YPT, (CNCI), [CNC 263031]; Limpopo province, Magde Baskloof, 1♂, 2003/12/03, Melika, Mikò, (CNCI), [CNC 263032]; Natal Ndumu, 1♀, 1984/12/05-1984/12/07, H. A. Howden, (CNCI), [CNC 263033]; **Tanzania**: Iringa Region, Mufindi Highland Lodge, 8°36'S 35°17'E, 3♀, 2009/11/20-2009/11/22, S. Marshall, YPT, (CNCI), [CNC 263034, 470236, 470237]; Mkomazi Game Reserve, Kinondo Mtn, Montane forest on south-east slope, 1♂, 1996/05/09, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P018807]; **Togo**: Sokodé, dry collector jar, 1♀, 1978/03, A. Pauly, Malaise Trap, (UNIPA); **Uganda**: 20km SE Fort Portal, MUBFS, 0°33.08'N 30°21.54'E, 1570m, 1♀, 2♂, 2001/10/09-2001/10/11, B. & J. Gill, YPT, (CNCI), [CNC 263035, 470238, 470239]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, 1484m, Primary mid-altitude Rainforest, near stream, 0°34.405'N 30°21.646'E, 1484m, 2♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030699]; Kibale National Park Kanyawara, Makerere University Biological Field Station, Primary mid-altitude Rainforest, 0°33.823'S 30°21.490'E, 1505m, 1♀, 1♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030701]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, Secondary mid-altitude Rainforest, 0°33.960'N 30°21.267'E, 1495m, 1♀,



2005/07/29-2005/07/31, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P032155]; 2♀, 2005/07/31-2005/08/03, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P032159, P032160]; 5♀, 5♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030700]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, 1587m, Primary mid-altitude Rainforest, near stream., 0°34.390'N 30°21.658'E, 1587m, 2♀, 3♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030698]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, Primary mid-altitude Rainforest, 0°33.836'N 30°21.700'E, 1523m, 1♀, 1♂, 2008/08/11, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P030702]; 0°33.784'N 30°21.617'E, 1500m, 2♀, 1♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030681]; Kibale National Park, Kanyawara, Makerere University Biological Field Station, 0°33.836'N 30°21.700'E, 1523m, 1♀, 1♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P047992]; Kibale NP Kanyawara Makerere Univ.Bio.Fld.Sta. 1506m, 2♂, 2008/08/04-2008/08/26, S. van Noort, Yellow Pan Trap, (SAMC), [SAM-HYM-P030682]; **Zimbabwe**: Harare (Salisbury), 1♀, 1978/03, A. Watsham, Yellow Pan Trap, (CNCI), [CNC 471201]; Harare, Chishawasha, 3♀, 1♂, 1980/04, A. Watsham, PT, (CNCI), [CNC 263036, 470240, 470241, 470242]; 1♀, 1983/02, A. Watsham, PT, (CNCI), [CNC 263037]; **Zimbabwe (Rhodesia)**: Harare (Salisbury), 1♂, 1979/05, A. Watsham, (CNCI), [CNC 263038]; 1♂, 1981/04, A. Watsham, (CNCI), [CNC 263039]; Harare (Salisbury), Chishawasha, 1♀, 1979/08, A. Watsham, (CNCI), [CNC 471203]; 1♀, 1979/10, A. Watsham, (CNCI), [CNC 263040]; 2♀, 8♂, 1980/02, A. Watsham, pan trap, (CNCI), [CNC 263041, 470243, 470244, 470245, 470246, 470247, 470248, 470249, 470250, 470251]; 3♀, 7♂, 1980/03, A. Watsham, (CNCI), [CNC 263042, 470252, 470253, 470254, 470255, 470256, 470257, 470258, 470259, 470260]; 4♀, 2♂, 1980/05, A. Watsham, (CNCI), [CNC 471658, 471659, 471204, 471205, 471206, 471698]; 1♀, 1980/06, A. Watsham, (CNCI), [CNC 471202].

## ***Dyscritobaeus kilimanjarensis* Tortorici et Caleca sp. nov.**

### Diagnosis

The brachypterous wings (Figs. 40e, 96), the shape of the metascutellum, which is wide and visible in dorsal view with a small metanotal spine and the sculpture of T1 and T2 (Fig. 96) distinguishes this species from *D. antananarivensis*, *D. madagascarensis*, *D. sulawensis* and *D. tanzaniensis*; the presence of a preoccipital lunula separates this species from *D. comitans* and *D. ndokii*. *Dyscritobaeus kilimanjarensis* sp. nov. differs from *D. tanzaniensis* by the presence of the metascutellum and sculpture of T1. The species differs from *D. bicolor*, *D. flavus* and *D. parvipennis* by the sculpture of T1 and its brachypterous wings.

### Description

#### Male

Length of the body: 1.01 mm.

**Head.** Color dark brown. Sculpture coriaceous sensu Eady (1967); head covered by hairs, mandibles yellow. Frontal depression not completely smooth; central keel absent (Fig. 94). Fan-like striation in malar area from oral foramen to eye margin, fan-like striation present in genal area but not reaching half-length of malar sulcus. Malar sulcus length: 0.14 mm. Preoccipital lunula present and sculptured (Fig. 96). Head measures width: height: length= 0.45: 0.37: 0.21 mm. Eye measures width: length = 0.13: 0.17 mm. OOL: LOL: POL= 0.12: 0.08: 0.12 mm. Mandibles bidentate with a small odontoid process (Fig. 95).

Antenna. Radicles and scape light brown; A3-A12 brown; A1 length: 0.22 mm; A2 longer as A3; A11: A12 ratio= 1: 2.

**Mesosoma.** In dorsal view, mesoscutum brown; scutellum brown with posterior margin yellow; propodeum brown to yellow in lateral margin; metascutellum and metanotal spine brown (Fig. 96); in lateral view brown (Fig. 97).

Sculpture. In dorsal view mesoscutum and scutellum imbricate (Fig. 96); in lateral view speculum with furrow; femoral depression smooth with fan-like striation starting by post-ventral angle; posterior mesepimeral area not well delimitate anteriorly; dorsal and ventral metapleural area with crenulated depression with rugae (Fig. 97); Propodeal carina with one posterior spiny. Metascutellum visible in dorsal view, wide with margins parallel to scutellum ones, small metanotal spine (Fig. 96).

Mesonotum length 0.24 mm, width 0.42 mm; scutellum length 0.15 mm, width 0.31 mm.

Wings. Forewing hyaline, brachypterous, length not surpassing T1; sm: 0.27 mm; wing width 0.11 mm, length 0.36 mm. as in Fig. 40e.

Legs yellow except hind coxae light brown.

**Metasoma.** In dorsal view metasoma brown. On T1 pair of longitudinal submedial carinae are oblique and separate external coriaceous microsculpture and internal smooth and shiny area (Fig. 96). T2 not foveolate in anterior margin, coriaceous in the rest of tergite.

Female: unknown

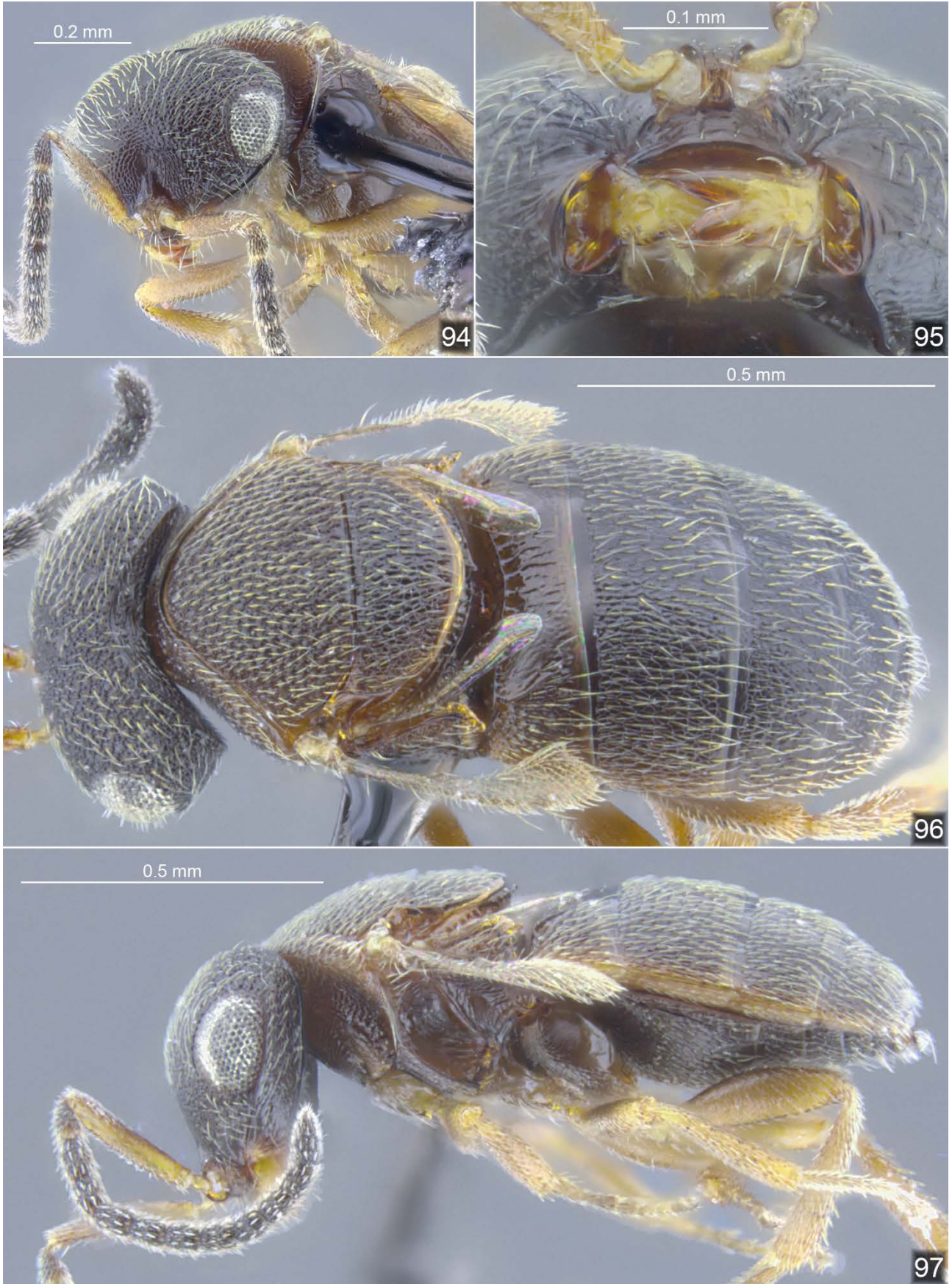
### Comment and variability

Seven specimens were examined from Africa.

Size of the body very homogenous in all the specimens, female sometimes completely brown.

Five of the analysed specimens were collected far from Mt. Kilimanjaro, but always at high altitude (more than 1800 m a.s.l.).

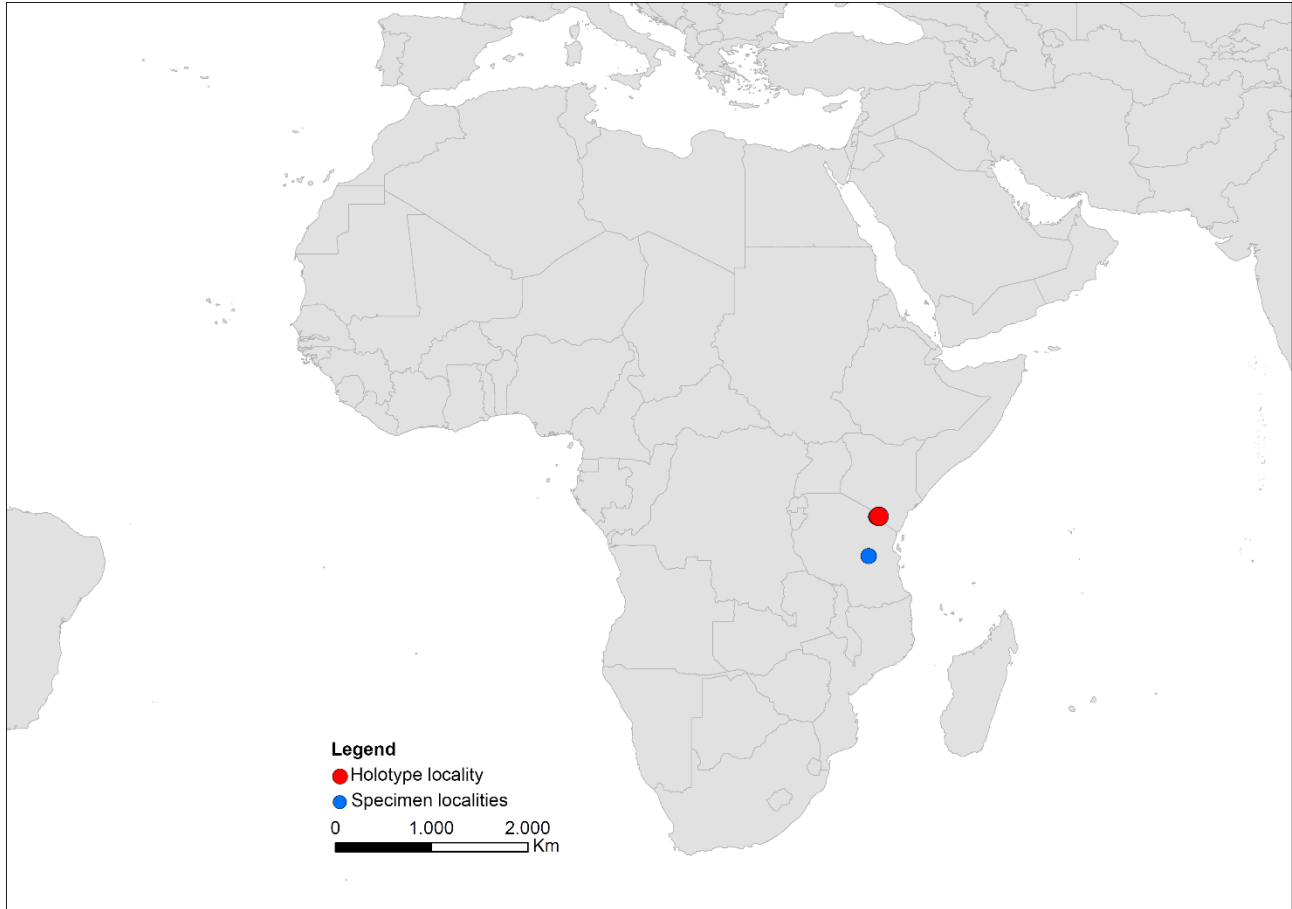
Figures



**Figures 94-97.** *Dyscritobaeus kilimanjarensis* sp. nov. ♂, holotype [CNC 471153]: **94** – head, anterolateral view; **95** – mandibles, ventral view; **96** – head, mesosoma and metasoma, dorsal view; **97** – head, mesosoma and metasoma, lateral view;



## Distribution



**Figure 98.** Distribution of *D. kilimanjarensis* sp. nov.

### Etymology

The name of this species is linked to the name of the holotype collection area: Mount Kilimanjaro.

### Material examined

Holotype. ♂: **AFRICA: Tanzania:** Mt. Kilimanjaro, Marangu route, S3.19304°, E37.51515°, 2590m, 2012/11/27, V. Grebennikov, sift 04, (CNCI), [CNC 471153].

Paratypes. **AFRICA: Tanzania:** Kilimanjaro, 1♂, 1909, Katona, (HNHM); Rubeho Mts. At Ipondelo vl., 6°50'20"S 36°34'32"E, 1875m, 5♂, 2011/12/21, V. Grebennikov, sift 10, (CNCI), [CNC 471154 (wing in slide, in Fig. [40e](#)), 471155, 471156, 471157, 471158].

### ***Dyscritobaeus parvipennis* (Dodd)**

[urn:lsid:zoobank.org:act:6933DDC1-C513-4FCA-899E-5A53F2C59CF1](https://www.zoobank.org/urn:lsid:zoobank.org:act:6933DDC1-C513-4FCA-899E-5A53F2C59CF1)

*Hadronotus parvipennis*: Dodd (1913), p. 172, original description.

*Hadronotus aquaticus*: Dodd (1913), p. 173, original description.

*Hadronotus parvipennis*: Dodd (1915), p. 19, keyed.

*Hadronotus aquaticus*: Dodd (1915), p. 19, keyed.

*Mirotelenomus parvipennis*: Dodd (1926), p. 313, generic transfer.

*Mirotelenomus aquaticus*: Dodd (1926), p. 313, generic transfer.

*Hadronotus parvipennis*: Kieffer (1926), p. 455, 469, description keyed.

*Hadronotus aquaticus*: Kieffer (1926), p. 455, 469, description keyed.

*Mirotelenomus parvipennis*: Galloway (1976), p. 97, type information.

*Mirotelenomus aquaticus*: Galloway (1976), p. 97, type information.

*Mirotelenomus parvipennis*: Johnson (1992), p. 440, catalogued, type information.

*Mirotelenomus aquaticus*: Johnson (1992), p. 440, catalogued, type information.

*Dyscritobaeus parvipennis*: Caleca & Mineo (1995), p. 17, generic transfer.

*Mirotelenomus aquaticus*: Caleca & Mineo (1995), p. 17, synonymization with *Dyscritobaeus parvipennis*

*Dyscritobaeus maputanus*: O'Connor et Ashe (2011), p. 344, original description. **syn. nov**

### Diagnosis

Presence of a preoccipital lunula (Fig. [100](#)) distinguishes this species from *D. comitans* and species without a preoccipital lunula. A metascutellum that is visible in dorsal view, that is wide with margins parallel to scutellar margins, a small metanotal spine (Fig. [99](#)); T2 without specillum in female (Fig. [14](#)) distinguishes this species from all species of *comitans*-group and *orientalis*-group. Propodeal carina with one posterior spiny projection (Fig. [87](#)) distinguishes this species from *D. sulawensis*, *D. comitans* and *D. madagascarensis* sp. nov.; this character is shared with *D. bicolor*, *D. flavus* sp. nov., *D. kilimanjarensis* sp. nov., *D. tanzaniensis* sp. nov. and *D. ndokii* sp. nov. Absence of a central keel (Figs. [25](#), [104](#)) and a developed odontoid process (Figs. [102](#), [103](#)) distinguishes this species from *D. bicolor*. The odontoid process forms an angle of about 45° with ventral margin of lower tooth, dorsal and lower teeth of same length in female (Fig. [102](#)) and brown color of the head distinguishes *D. parvipennis* from *D. flavus*. postmarginalis not developed. Forewing shape, angle between st and hypothetical pm (= anterior border of forewing) 28°-30°.

In males, the antennal segment A2 is as long as A3 distinguishes this species from *D. flavus* sp. nov. A smooth mesepimeral sulcus with fan-like striation (Fig. [101](#)) distinguishes the species from *D. sulawensis* which has a crenulate mesepimeral furrow.

### Description

We provide the re-description based on an Australian female and an Australian brachypterous male that were in 1989 compared (by one of the authors: V. Caleca) with the female holotype of *Hadronotus parvipennis* Dodd and with the holotype of *Hadronotus aquaticus* Dodd (both in the same slide); both of these specimens used for the description were collected close to the type locality.

Female. AUSTRALIA: Queensland, Bellenden Ker State Forest nr. Cable car station, Central Pk., Bellenden alpine rain forest, 17°12'S 145°51'E, 1979/11/20, E.C. Dahms, J.B. Woolley & J. La Salle (QDPC) (wing in slide, Fig. [40a](#));

Length of the body: 0.94 mm.

**Head.** Color brown, mandibles yellow. Sculpture coriaceous sensu Eady (1967); head covered by short hairs. Frontal depression with a deep area starting from the interantennal process and not reaching 1/5 the height of eye (Fig. [25](#)). Central keel absent (Fig. [25](#)). Fan-like striation in malar area from oral foramen to eye margin, fan-like striation absent in genal area (Fig. [25](#)). Preoccipital lunula present and sculptured. Head measures width: height: length = 0.35: 0.33: 0.18 mm. Malar sulcus length: 0.09 mm. Eye measures width: height = 0.1: 0.15 mm. OOL: LOL: POL = 0.08: 0.08: 0.11 mm. Mandibles bidentate with odontoid process in ventral margin of lower tooth. The lower tooth have the same length of dorsal tooth; odontoid process make an angle with margin of lower tooth of about 45° (Figs. [25](#), [102](#)).

Antenna (Fig. 41e). Radicle and A1 yellowish; A2- A12 brown, light brown in ventral part. A1 length: 0.18 mm; A2 longer than A3+ A4. Clava six-segmented. Claval sensilla formula 1:2:2:2:1:0.

**Mesosoma.** In dorsal view, mesoscutum anteriorly brown; scutellum brown with posterior margin yellow; propodeum brown; metascutellum and metanotal spine brown with dark edge (Figs. 99).

In lateral view light brown (Fig. 101).

**Sculpture.** In dorsal view mesoscutum and scutellum imbricate (Fig. 99); in lateral view speculum with furrow; femoral depression smooth with fan-like striation starting by post-ventral angle; mesepimeral sulcus smooth and not well delimited anteriorly; dorsal and ventral metapleural area with crenulated depression with rugae (Fig. 101); Propodeal carina with one posterior spiny projection (Fig. 99). Metascutellum visible in dorsal view, wide with margins parallel to scutellum ones, small metanotal spine (Fig. 99). Mesosoma length 0.36 mm, width 0.31 mm; scutellum length 0.11 mm, width 0.25 mm.

**Wings.** Forewing hyaline surpassing gaster; ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0: 0.4 3.2: 2.6: 7.3: 0.4: 1.3; angle st-anterior margin 30° (Fig. 40a), st= 0.1 mm.

Legs yellow.

**Metasoma.** In dorsal view metasoma light brown (Figs. 14, 99); laterotergites yellowish. On T1 pair of longitudinal submedial carinae, aligned with the propodeal carina, separating external coriaceous sculpture and internal smooth area; in the middle of T1 sculpture striate to coriaceous starting from anterior margin and gradually dissolving in posterior margin (Fig. 99). T2 not foveolate in anterior margin, very short longitudinal striae, sculpture coriaceous as in the other tergites (Fig. 99).

Male. Australia: Queensland: Gatton, 27°34'S 152°17'E, 1981/04/28-1981/05/05, yellow pan trap in potato crop # 198, (QDPC).

Length of the body: 0.67 mm

**Head.** Color darker than in female, sculpture more evident than in female. Head surface hairy. Frontal depression shallower than in female (Fig. 104); central keel absent as in female; Fan-like striation visible in malar area and not visible in genal area (Fig. 104). Head measures width: height: length = 0.36: 0.3: 0.16 mm. Malar sulcus length: 0.08 mm. Eye measures width: length = 0.1: 0.15 mm. OOL: LOL: POL = 0.09: 0.06: 0.11 mm. Mandibles as in female but odontoid process shorter (Fig. 103).

Antenna (Fig. 41f). Radicles and scape yellow; A2-A12 brown; A1 length: 0.19 mm; A2: A3 ratio= 1.1.

**Mesosoma.** Color, sculpture as in female. Mesonotum length 0.22 mm, width 0.35 mm; scutellum length 0.12 mm, width 0.26 mm (Fig. 36).

**Wings.** Forewing hyaline reaching T2; wing ratio st: pm: mg: sm: ww: lw: af: pf = 1: 0: 0.4: 3.4: 1.9: 6.1: 0.3: 0.3; angle st- anterior margin 29° (Fig. 40d), st= 0.08 mm and it is curved.

Legs as in female.

**Metasoma.** Color, sculpture as in female (Fig. 36).

**Comment and variability**

132 specimens were examined from Africa, Australia, India, Indonesia, Nepal, New Caledonia, Philippine, Thailand.

The holotype is in slide as well as the type of *Hadronotus aquaticus*. The type of *D. maputanus* and slide preparation of the wings are deposited in the collection of MSNG and not in the Insect Collection of Portici Università Federico II-Napoli, Italy (DEZA) as stated by O'Connor & Ashe (2011).

Female length ranges from 0.79 mm of Tanzania specimens to 1.02 mm of South African specimens. Male length ranges from 0.67 mm of Australian specimens to 1.02 mm of South African specimens.

In males there is a large variability in wings from brachypterous (reaching T2 or slightly surpassing the posterior margin of T2) to macropterous (slightly surpassing the gaster) (Figs. 35, 36, 37); when the forewing surpass the gaster, the wing ratio is: st: mg: sm: ww: lw: af: pf = 1: 0.4: 2.9: 2.9: 7.4: 0.2: 1.1; angle st- anterior margin 28° (Fig. 40b), st= 0.09 mm.

The head can vary from dark brown to light brown, but it is never black as in *D. bicolor* (Figs. 35, 36, 37, 104).



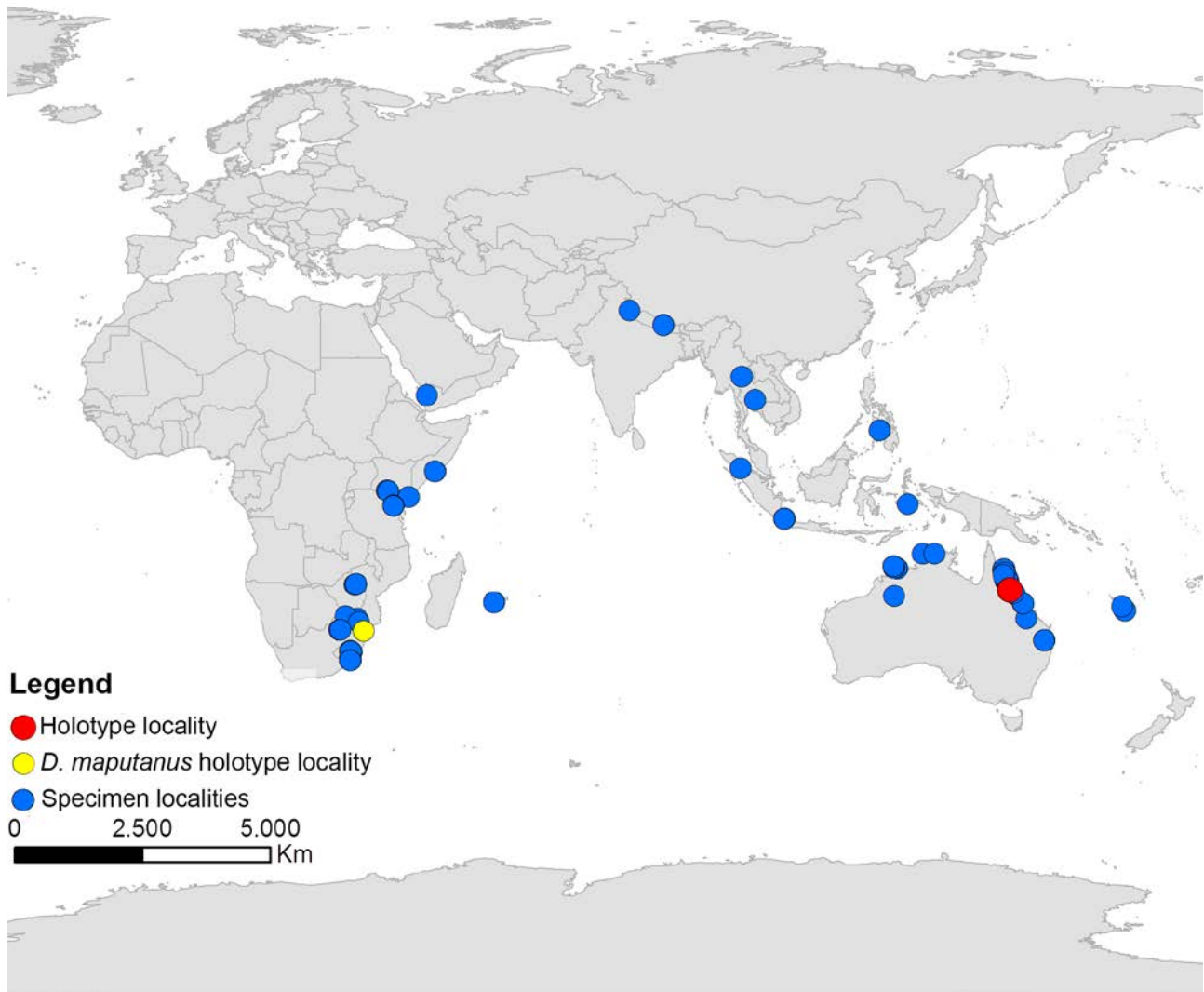
## Figures



**Figures 99 - 104.** *Dyscritobaeus parvipennis* ♀, (holotype of *D. maputanus* O'Connor et Ashe) from Mozambique, ♂ from Queensland [CNC 471161]: **99** – ♀, mesosoma and metasoma, dorsal view; **100** – ♀, head, dorsal view; **101** – ♀, mesonoto, lateral view; **102** – ♀, odontoid process; **103** – ♂, odontoid process; **104** – ♂, head, anterolateral view.

### Distribution

This species is recorded in the Oriental, Afrotropical and Australian Regions.



**Figure 105** – Distribution of *D. parvipennis*.

**Material examined**

Holotype. ♀: **AUSTRALIA: Queensland:** Ingham, Herbert River, swamp, 21m, 1913/01/13, A.P. Dodd, sweeping grass in a swamp, (SAMA) [SAMA-I 11133], in slide together with the holotype of *Hadronotus aquaticus* (Dodd) [SAMA-I 11134].

Homotypes *Hadronotus parvipennis* Dodd, compared by V. Caleca, 1989: **AUSTRALIA: Queensland:** Bellenden Ker State Forest nr. Cable car station, Central Pk., Bellenden alpine rain forest, alpine rain forest, 17°12'S 145°51'E, 1♀, 1979/11/20, E.C. Dahms, J.B. Woolley & J. La Salle, (QDPC); **Western Australia:** Mining Camp, Mitchell Plateau, 19°49'S 125°50'E, 1♀, 1983/05/09-1983/05/19, I.D. Naumann & J.C. Cardale, Malaise/ethanol, (ANIC), [ANIC 32-070475 (wing in slide, in Fig. 40a)].

Homotypes *Hadronotus aquaticus* Dodd, compared by V. Caleca, 1989: **AUSTRALIA: Queensland:** Gatton, potato crop, 27°34'S 152°17'E, 1♂, 1981/04/06-1981/04/13, pitfall trap # 202, (QDPC); Homotype *Hadronotus aquaticus* Dodd, compared by V. Caleca, 1989, 1♂, 1981/04/13-1981/04/21, yellow pan trap in potato crop # 52, (QDPC); Homotype *Hadronotus aquaticus* Dodd, compared by V. Caleca, 1989, 1♂, 1981/04/25-1981/05/05, yellow pan trap in potato crop # 198, (QDPC); Homotype *Hadronotus aquaticus* Dodd, compared by V. Caleca, 1989, 1♂, 1981/04/28-1981/05/05, yellow pan trap in potato crop # 198, (QDPC); Homotype *Hadronotus aquaticus* Dodd, compared by V. Caleca, 1989, 1♂, 1981/05/18-1981/05/25, yellow pan # 18, (QDPC); Mt. Cook Nat. Pk., Cooktown, 15°29'S 145°16'E, 1♂, 1980/10/11-1980/10/12, J.C. Cardale, caught in yellow tray, (ANIC), [ANIC 32-070445]; Mt. Webb Nat. Pk.,

**AUSTRALIA: Northern Territory:** Darwin, Coconut Grove, 1♀, 1972/11/14, T. Angeles, Berlesate ANIC 445, (ANIC), [ANIC 32-070437]; Kakadu, N p Ubirr, rainforest, 1♀, 1993/12/13-1993/12/25, S. & J. Peck,



(CNCI), [CNC 471178]; **Queensland:** 14km WbyN Hope Vale Mission, 15°16'S 144°59'E, 1♀, 1♂, 1980/10/08-1980/10/10, J.C. Cardale, yellow pantrap (ethanediol), (ANIC), [ANIC 32-070438, 32-070439]; 26km up Tinaroo Ck. Rd. Via Mareeba, 17°04'S 145°30'E, 1♀, 1983/09/29-1983/11/11, Storey & Brown, (QDPC); 2kmS Horseshoe Lookout, Blackdown Tableland, 23°46'S 149°06'E, 1♀, 1981/04/23-1981/04/24, I.D. Naumann, (ANIC), [ANIC 32-070440]; 3km NE of Mt. Webb, rainforest litter, 15°03'S 145°09'E, 1♀, 1980/10/01-1980/10/03, T. Weir, Berlesate ANIC 691 Sieved rainforest litter, (ANIC), [ANIC 32-070441]; 1♀, 1981/04/30-1981/05/03, A. Calder & J. Feehan, Berlesate ANIC 722 rain forest litter, (ANIC), [ANIC 32-070442]; Daintree Nat. Park, Cape Tribulation, 16°14.311'S 145°25.945'E, 1♂, 2005/12/18-2005/12/19, A. R. Deans & M. Buffington, YPT, (CNCI), [CNC 471179 (wings in slide, in Fig. 40d)]; Davis Creek N. P. 10km E Mareeba, disturbed dry sclerophyl forest, 3♀, 1984/02/18, L. Masner, s.s., (CNCI), [CNC 471180, 471181, 471182]; Emmett Ck., 10 km NW Giru, 1♂, 1980/05/11, I.D. Naumann & J.C. Cardale, (ANIC), [ANIC 32-070443]; Eungella (near school), 1♀, 1980/05/09, I.D. Naumann & J.C. Cardale, (ANIC), [ANIC 32-070444]; Gatton, potato crop, 27°34'S 152°17'E, 1♀, 1981/04/06, D-vac in potato field # 129, (QDPC); Homotype *Hadronotus aquaticus* Dodd, compared by V. Caleca, 1989.; Gatton, D.P.I. Research Stn., 2♀, 1981/03/09-1981/03/16, Malaise trap, (QDPC); Ingham, Herbert River, swamp, 21m, 1♂, 1913/01/13, A.P. Dodd, sweeping grass in a swamp, (SAMA) (holotype of *Hadronotus aquaticus*, in slide); Julatten, Chacherty Rd., intercept trap site 12, 1♀, 1983/02/04-1983/02/25, A. Walford-Huggins, intercept trap, (QDPC); Kuranda, 1000m, 1♀, 1984/02/21, L. Masner, s.s., (CNCI), [CNC 471183]; Mt. Webb Nat. Pk., 1♀, 1981/04/20-1981/04/27, I.D. Naumann, caught in yellow tray, (ANIC), [ANIC 32-070446]; Palm Cove, Malaleuca Resort, 1♀, 1989/05/12-1989/05/14, V. Caleca & G. Buglisi, Yellow pan trap, (UNIPA); Paluma Dam, 1♀, 1980/05/12-1980/05/13, I.D. Naumann & J.C. Cardale, (ANIC), [ANIC 32-070447]; Peases Lookout, Eungella Nat. Pk., 1♀, 1980/05/09, I.D. Naumann & J.C. Cardale, (ANIC), [ANIC 32-070448]; Shiptons Flat, 15°47'S 145°14'E, 1♂, 1980/10/17-1980/10/19, J.C. Cardale, caught in Malaise trap, (ANIC), [ANIC 32-070449]; Townsville, suburb garden, garden, 1♂, 1988/05/21-1988/05/26, A.D. Austin, pan trap, (WINC); Windsor Tableland via Mt. Carbine, 1♀, 1983/12/26-1984/01/24, Storey & Halfpapp, MDPI FIT, (QDPC); **Western Australia:** "Marun" CALM Site 6/4, Prince Frederick Harbour, Closed forest and margins, 15°00'S 126°21'E, 4♀, 2♂, 1988/06/06-1988/06/11, I.D. Naumann, Malaise, trough and pan traps, (ANIC), [ANIC 32-070450, 32-070451, 32-070452, 32-070453, 32-070454, 32-070455]; "The Crusher" CALM Site 9/1, 4 km S by W Mining Camp Mitchell Plateau, Closed forest litter, 14°52'S 125°50'E, 1♀, 16♂, 1988/06/02-1988/06/06, I.D. Naumann, Berlesate ANIC 1080, (ANIC), [ANIC 32-070456, 32-070457, 32-070458, 32-070459, 32-070460, 32-070461, 32-070462, 32-070463, 32-070464, 32-070465, 32-070466, 32-070467, 32-070468, 32-070469, 32-070470, 32-070471, 32-070472]; Lone Dingo, Mitchell Plateau, 14°35'S 125°45'E, 1♀, 1983/05/09-1983/05/19, I.D. Naumann & J.C. Cardale, ex pantraps, (ANIC), [ANIC 32-070473]; 1♀, 1983/05/09-1983/05/19, I.D. Naumann & J.C. Cardale, Malaise/ethanol, (ANIC), [ANIC 32-070474]; **AFRICA: Kenya:** Kiambu, Kikuyu Escarp., 2000m, 2♂, 1977/11/03, Mahnert Perret, (MHNG); Lamu pres the Witu, 1♀, 1977/10/26, Mahnert Perret, (MHNG); Nairobi, Nairobi Game Park, 2♀, 1980/03/28, D. Levin, pan trap, (CNCI), [CNC 471162, 471163]; **Mozambique:** Maputo, 1♀, 1989/05, Angela, (MSNG), (holotype of *D. maputanus*); **Reunion Is.:** St. Denis, 3♂, 1998/10/22-1998/10/30, B. Mullens, YPT, (CNCI), [CNC 471159, 471160, 471161]; **Somaliya:** Uebi-Shebeli: Afgòye, 2♀, 1977/04, F. Bin, Malaise Trap, (UNIPA); 1♀, 1978/05, F. Bin, Malaise Trap, (UNIPA); 1♀, 1978/06, F. Bin, Malaise Trap, (UNIPA); **South Africa:** Karkloof, Leopards Bush Nature Res, 19km 251 NNE Howick, 1350m, 1♀, 1998/08/29, B. L. Fisher, Winkler Bag, (SAMC), [SAM-HYM-P039156 (antenna in slide, in Figs. 41e)]; Kruger Nat. Park, Skukuza, 1♂, 1985/12/15-1985/12/18, M. Sanborne, MT, (CNCI), [CNC 471164]; Kwazulu Natal, 35km N Port Edward, 30°45'S 30°39'E, 450m, 1♀, 2009/12/28, J. Halada, YPT, (CNCI), [CNC 471165]; Kwazulu Natal, Pietermaritzburg, 1♀, 2003/12/24-2004/01/14, M. Mostovski, MT, (CNCI), [CNC 471166]; Kwazulu Natal, Pietermaritzburg, Hilton, 1♀, 2003/11/13-2003/11/23, M. Mostovski, MT, (CNCI), [CNC 471167]; Limpopo province, Magde Baskloof, 1♀, 1♂, 2003/12/03, Melika, Mikò, (CNCI), [CNC 471168, 471169]; Pretoria, ARC campus, 1♂, 2003/12/09, Melika, Mikò, YPT, (CNCI), [CNC 471170]; S.A.K.N.P. (Kruger Nat. Park), Satara, 1♂, 1985/12/16-1985/12/18, M. Sanborne, mal., (CNCI), [CNC 471171]; Transvaal, 25km W Pretoria, 1♀, 1984/11/25-1984/11/29, H. & A. Howden, MT, (CNCI), [CNC 471172]; Umtamvuna Nature Reserve, Forest - Coastal, 31°03.509'S 30°10.484'E, 160m, 3♀, 2000/11/11-2000/11/18, S. van Noort, Pitfall Trap,



(SAMC), [SAM-HYM-P031745, P031746, P049539]; 1♀, 2000/11/14, S. van Noort, Winkler Bag, (SAMC), [SAM-HYM-P031752]; 1♀, 2000/11/15-2000/11/16, S. van Noort, Malaise Trap, (SAMC), [SAM-HYM-P031756]; 1♂, 2000/11/17, S. van Noort, Sweeping, (SAMC), [SAM-HYM-P031758 (antenna in slide, in Fig. 41f)]; **Tanzania**: Mkomazi Game Reserve, foot of Maji Kununua, Combretum bushveld at base of valley, 1♀, 2♂, 1996/05/12, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P018791]; Mkomazi Game Reserve, forest above Ibaya, Forest edge - Montane, 1♂, 1996/05/07, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P018770]; Mkomazi Game Reserve, Kinondo Mtn, 1♂, 1996/05/09, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P018846]; Mkomazi Game Reserve, valley north west of Ibaya Camp, Woodland in river valley, 2♀, 3♂, 1995/12/02, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P015017]; leaf litter extraction from beneath *Ficus sycomorus*, 1♀, 1♂, 1995/12/06, H.G. Robertson, Winkler Bag, (SAMC), [SAM-HYM-P015000, P015001]; **Yemen**: Ar Rujum, 1♂, 2000/10/16-2000/01/15, A. van Harten, MT, (CNCI), [CNC 471173]; **Zimbabwe**: Harare, Chishawasha, 1♂, 1980/04, A. Watsham, PT, (CNCI), [CNC 471174]; Salisbury, 1♀, 1♂, 1980/12, A. Watsham, Yellow Pan Trap, (CNCI), [CNC 471192, 471193 (wings in slide, in Fig. 40b)]; **Zimbabwe (Rhodesia)**: Harare (Salisbury), Chishawasha, 1♀, 1979/12, A. Watsham, (CNCI), [CNC 471175]; 1♀, 1980/03, A. Watsham, (CNCI), [CNC 471176]; **INDIA: Uttarkhand**: Garhwal (UP), près de Chamoli à 16 km de Karnaprayag, 900 mm, 2♀, 1979/10/26, I. Löbl, (MHNG); **INDONESIA: Ambon Is.**: 1♀, 1994/06/12-1994/06/22, R. G. Holmberg, (CNCI), [CNC 471184]; **Curug**: 1♀, 1980/02/07-1980/02/17, H. R. Gillespie, pan trap, (BMNH), [BMNH (E)#971571]; 2♀, 1980/12/20-1980/12/30, H. R. Gillespie, pan trap, (BMNH), [BMNH (E)#971572, 394579]; 3♂, 1981/01/04-1981/01/11, H. R. Gillespie, pan trap, (BMNH), [BMNH (E)#971573, (E)#971574, 471185]; 2♀, 1981/01/11-1981/01/24, H. R. Gillespie, pan trap, (BMNH), [BMNH (E)#971575, (E)#971576]; 1♀, 1981/01/24-1981/02/12, H. R. Gillespie, pan trap, (BMNH), [BMNH (E)#971577]; 1♂, 1981/07/14-1981/08/21, H. R. Gillespie, pan trap, (CNCI), [CNC 471186]; **Java**: Curug, 1♀, 1980/12/30-1981/01/04, H. R. Gillespie, PT, (CNCI), [CNC 471187]; **Sumatra**: Lac Toba, Ile de Samasir, Ambarita, 1♂, 1977/04/20, T. Jaccoud, (MHNG); **NEPAL: Kakani**: 2070m, 2♀, 1983/08/01-1983/08/23, H. G. Allen, MT, Malaise Trap, (BMNH), [BMNH (E)#971578, (E)#971579]; **NEW CALEDONIA: Noumea**: Anse Vata, disturbed low scrub, 1♀, 1♂, 1985/05/01-1985/05/04, A.D. Austin, pan trap, (WINC); **Plateau de Dogny**: 1000m, 1♀, 1973/07, P. Cochereau, (CNCI), [CNC 471177]; **PHILIPPINES: Negros Oriental**: Cuernos de Negros, 7km W Valencia, primary forest edge, 9°17'N 123°15'E, 700m, 2♀, 1987/07/25-1987/07/29, D. C. Darling, E. Mayordo, MT wit pans, (CNCI), [CNC 471188, 471189]; **THAILAND: Chiang Mai**: garden, 1♀, 1985/01/25-1985/03/10, D. Jackson, (CNCI), [CNC 471190]; **Pak Chong**: 1♂, 1989/05/14-1989/05/15, G. T. Baker, YPT, (CNCI), [CNC 471191].

### ***orientalis*-group s.l., *aspinosus*-subgroup**

*Dyscritobaeus tanzaniensis* possesses a preoccipital lunula as in other species of *orientalis*-group s.l., but the metascutellum does not protrude; this species shares this feature only with the first described species of the subgroup, *D. aspinosus* Mineo, O'Connor et Ashe, known from Queensland, Australia.

### ***Dyscritobaeus tanzaniensis* Tortorici et Caleca sp. nov.**

#### Diagnosis

The species is brachypterous; in the Afrotropical region this feature is shared only with *D. kilimanjarensis* and *D. parvipennis*. On T1 the pair of longitudinal submedial carinae are absent and T1 has a sculpture that is homogeneously coriaceous; only three brachypterous species, *D. aspinosus*, *D. carens* (female and male) and *D. minoculo* (only male) from Australia have the same character state. The absence of the metanotal spine and the lack of a protruding metascutellum is shared only with *D. aspinosus*, from which *D. tanzaniensis* sp. nov. is easily distinguished by the smaller A2-A3 ratio and darker colors of the body.

#### Description

##### Male

Length of the body: 0.91 mm.

**Head.** Color brown. Sculpture coriaceous sensu Eady (1967); head covered by short hairs, mandibles yellow. Frontal depression shallow and lightly coriaceous; central keel present (Fig. 106). Fan-like striation in malar area from oral foramen to eye margin, fan-like striation not visible in genal area. Malar sulcus length: 0.15 mm. Preoccipital lunula present and sculptured (Fig. 106). Head measures width: height: length = 0.37: 0.36: 0.21 mm. Eye measures width: length = 0.12: 0.16 mm. OOL: LOL: POL = 0.1: 0.1: 0.11 mm. Mandibles bidentate without odontoid process.

Antenna. Radicles and scape dark yellow; A3-A12 brown; A1 length: 17; A2 as long as A3; A11: A12 ratio= 1:2.

**Mesosoma.** In dorsal view, mesoscutum brown; scutellum brown with posterior margin yellow; propodeum brown to yellow in lateral margin (Fig. 108); mesosoma in lateral view light brown (Fig. 107). Sculpture. In dorsal view mesoscutum and scutellum imbricate (Fig. 108); in lateral view speculum with furrow; femoral depression smooth with fan-like striation starting by post-ventral angle; posterior mesepimeral area not well delimitate anteriorly; dorsal and ventral metapleural area with crenulated depression with rugae (Fig. 107); Propodeal carina with one posterior spiny projection. Metascutellum not protruding, not visible in dorsal view, metanotal spine absent (Fig. 108). Mesonotum length 0.24 mm, width 0.41 mm; scutellum length 0.14 mm, width 0.32 mm.

Wings. Forewing hyaline, brachypterous, do not reach T1; sm: 0.17 mm; wing width 0.06 mm, length 0.19 mm. as in Fig. 40f. Legs light brown.

**Metasoma.** Metasoma brown; laterotergites yellow; sculpture coriaceous. On T1 pair of longitudinal submedial carinae absent (Figs. 107, 108).

Female: unknown

#### Comment and variability

The description of this species is based on only a single specimen, which, however, possesses uniquely diagnostic character states: brachypterous with the rare character state where the metascutellum is not visible in dorsal view.

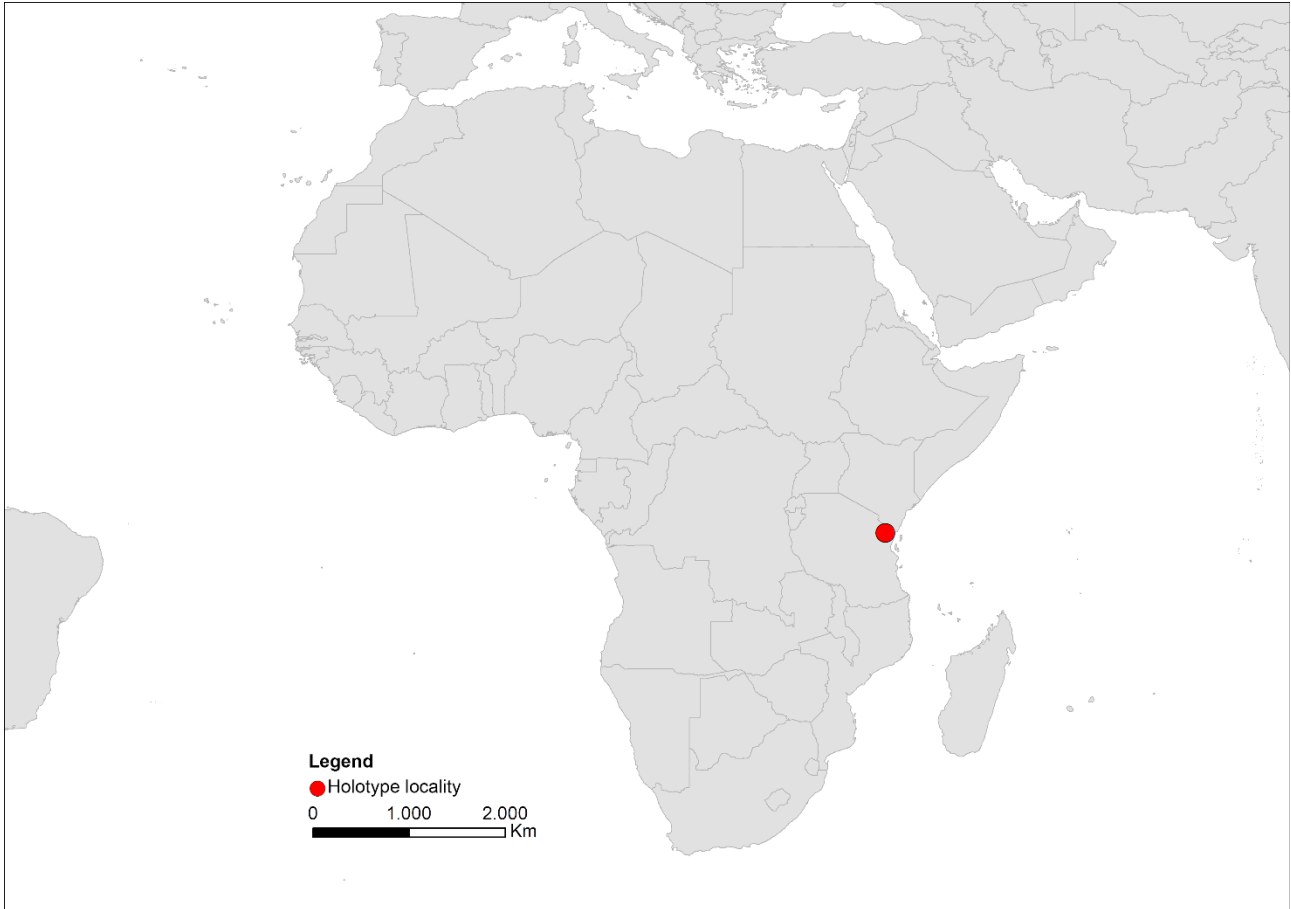
Figures



**Figures 106 - 108.** *Dyscritobaeus tanzaniensis* sp. nov. ♂, holotype [SAM-HYM-P018754]: **106** – head, frontal view; **107** – head, mesosoma and metasoma, lateral view; **108** – head, mesosoma and metasoma, dorsal view.



## Distribution



**Figure 109** – Distribution of *D. tanzaniensis* sp. nov.

### Etymology

The species is named after the country where the specimen was collected, Tanzania.

### Material examined

Holotype. ♂: AFRICA: Tanzania: West Usambara Forests - Site 4, Forest - montane - disturbed, 420m, 1996/05/13, Robertson, Winkler Bag, (SAMC), [SAM-HYM-P018754] (wings in slide, in Fig. [40f](#)).

## Acknowledgements

Lubomir Masner for providing the CNC material and facilities to study the specimens in CNCI.  
Norman F. Johnson and Luciana Musetti for maintaining the sites “The genera of Platygastroidea (Hymenoptera) of the World” and “Hymenoptera On-line Database”.  
We thank James O’Connor for photos and information regarding holotypes of *Dyscritobaeus sulawensis* and *D. cerosus* deposited in NMID; Roberto Poggi for wings photos and information regarding holotypes of *D. bicolor*, *D. hannibal* and *D. maputanus*.

Collecting and research permits were granted by: Cape Nature, Ezemvelo KZN Wildlife, and SANparks (South Africa); Directeur de la Faune et de la Chasse, Libreville (Gabon); Ugandan Wildlife Authority and UNCST (Uganda); the Ministers of Water, Forests and the Environment and the High Commissioners for tertiary Education and Research (Central African Republic). Field work by SvN in Central African Republic and Gabon was supported by WWF-US and WWF-CARPO. SvN was funded by South African National Research Foundation grants: GUN 2068865; GUN 61497; GUN 79004; GUN 79211; GUN 81139; GUN 98115.

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# Definition of world species groups in *Dyscritobaeus* Perkins and revision of *comitans*-group with description of three new species

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## Introduction

The genus *Dyscritobaeus* (Platygastroidea: Scelionidae: Scelioninae) was described by Perkins in 1910 based on the type species *D. comitans*. For historical review on higher classification and interrelationship see Tortorici et al (2015, submitted); in this paper authors accepted the resurrection of the family Scelionidae made by McKellar & Engel (2012), but Tortorici et al (2015, submitted) limited Scelionidae to all genera bearing tibial spur formula 1,1,1 previously included in Scelionidae, specifying that all plesiomorphic living and fossil genera previously included in this family bearing the tibial spur formula 1,2,2 remains in Platygastriidae.

In 2011 Mineo, O'Connor & Ashe removed *Mirotelenomus* Dodd from synonymy with *Dyscritobaeus* for the type species *M. abnormis*, and the motivation it's only inferable from the key to genera given in the paper; in the same paper both genera were removed from Gryonini including them into the new tribe Dyscritobaeini. In the same paper these authors described two new genera of this tribe, *Titta* Mineo, O'Connor et Ashe (previous considered and revised by Caleca & Mineo, 2000 as *festivus*-group of *Dyscritobaeus*; type species *Hadronotus festivus* Kieffer), and *Cardalnaumannus* Mineo, O'Connor et Ashe (type species *Gryon amleticus* Mineo et Caleca), including into Dyscritobaeini also *Okapa* Mineo et Caleca (type species *O. hornabrooki* Mineo et Caleca).

Two species-groups are currently defined: the *orientalis*-group (Mineo et al. 2009) and the *comitans*-group (Mineo et al. 2010). The *comitans*-group is distinguished from the *orientalis*-group by the lack of the preoccipital lunula (Figs. 2, 3) (Mineo et al. 2010).

The aim of this paper is to better define all groups of species of *Dyscritobaeus*, revising the *comitans*-group.

## Material and methods

Terminology of sculptures follows Harris (1979) or Eady (1968). Morphological terms follow Mikó et al. (2007) and Yoder et al. (2010). LOL, OOL, POL, clava, follow Masner (1980); claval sensilla formula - the sequence of sensilla, that Isidoro et al. (1996) defined as multiporous gustatory sensilla, from the apical to the last clavomere (Bin 1981). Forewing venation nomenclature and measurement definitions follow Tortorici et al. (2015, submitted).

Micropterous: wings not reaching metasoma, no *Dyscritobaeus* species.

Brachypterous: forewing not surpassing T2.

Macropterous: forewing surpassing T3.

## Abbreviations

Institutional abbreviations:

ANIC	Australia, Australian Capital Territory, Canberra City, CSIRO, Australian National Insect Collection
BMNH	United Kingdom, London, The Natural History Museum, formerly British Museum (Natural History)
BPBM	USA, Hawaii, Honolulu, Bernice P. Bishop Museum
CNCI	Canada, Ontario, Ottawa, Canadian National Collection of Insects
MSNG	Italy, Genova, Museo Civico di Storia Naturale "Giacomo Doria"
QDPC	Australia, Queensland, Indooroopilly, Queensland Department of Primary Industries
SAMA	South Australia Museum, Adelaide, South Australia, Australia.
UNIPA	Italy, Palermo, Dipartimento di Scienze Agrarie e Forestali, Università degli Studi di Palermo

## Results

We consider the designation of the tribe Dyscritobaeini unnecessary. Mineo et al. (2011) motivated their decision considering the distance between *Dyscritobaeus* and other Gryonini evidenced by Murphy et al. (2007) in their molecular studies. In the last paper specimens analysed as Gryonini belong to three species of *Gryon* Haliday and *Neuroscelio doddi* Galloway, Austin et Masner, which in the subsequent revision of *Neuroscelio* Dodd (Valerio et al. 2009) was removed from Gryonini; all three analysed species of *Gryon* belong to species groups characterized by clypeus short with anterolateral corners either converging or not differentiated, back of the head with sharp angular points in occipital carina and epomia present, in contrast with all *Dyscritobaeus*, a consistent part of *Gryon* (*misellum*-, *myrmecophilum*-, *subfasciatum*- *lymantriae*-group), Exon Masner, *Plesiobaeus* Kieffer, *Eremioscelio* Priesner, *Breviscelio* Sundholm, *Encyrtoscelio* Dodd, having clypeus with anterolateral corners prominent and divergent, occipital carina without angular points and no epomia. So, in our opinion the same distance recorded by Murphy et al. (2007) between *Dyscritobaeus* and *Gryon*, could be recorded among different groups inside *Gryon*. Mineo et al. (2011) distinguish Dyscritobaeini from Gryonini because of: a) the lateral ocelli are closer to the median ocellus than to the eyes; the ratio between LOL (lateral ocellar line) and OOL (ocello- ocular line) being from 0.5 to 1; b) the presence of a specillum, although not in all the species, is an unknown feature in other scelionids wasps. In the same paper Mineo et al. (2011), incredibly inserted the genus *Cardalnaumannus* Mineo, O'Connor et Ashe into Dyscritobaeini, without widening the above mentioned LOL/OOL ratio limits (0.5-1) of Dyscritobaeini, maintaining those of *Dyscritobaeus* (Caleca & Mineo 1995), and not considering that both female and male of the only described *Cardalnaumannus* species, *C. amleticus* (Mineo et Caleca) (Figure 27, Figure 35), have OOL shorter than LOL; indeed because of this character state the species was originally described as *Gryon amleticus*.

In our opinion *Cardalnaumannus* Mineo, O'Connor et Ashe must be considered **new junior synonym** of *Dyscritobaeus*, and *C. amleticus*, due to its strong similarity with *Dyscritobaeus fuscipes* (Dodd) (Figures 30, 31, 32, 33, 34, 35) and other species of this genus, is to be considered *Dyscritobaeus amleticus* **comb. nov.** including it into the here newly described *fuscipes*-group, widening LOL/OOL ratio limits of *Dyscritobaeus* to 0.5-1.7, with OOL at least 2.5 OD.

Mineo, O'Connor and Ashe (2011) removed *Mirotelenomus* Dodd from the synonymy under *Dyscritobaeus*, only for *M. abnormis* Dodd not clearly expressing the reason, which could be inferred by three characters inserted in key point 1 distinguishing *Mirotelenomus* from all other genera of Dyscritobaeini: "a. Forewing with subcostal, marginal and stigmal veins not developed, fused and reduced to a stump not extending for more than 1/7 of the length of the wing's plane, apically strongly knobbed; b. marginal cilia long; c. mandible with odontoid process present". No described *Mirotelenomus* or *Dyscritobaeus* species matches with all of these three characters. Even *M. abnormis* holotype shows only two out of these three characters: the length of broken veins in the forewing of holotype (Figure 10, shown as drawing by Caleca & Mineo 1995, Mineo, O'Connor & Ashe 2011) is 1/6 of wing length, while in a complete female forewing (Figure 11) veins reach 0.28 of wing length; therefore, its length is between 1/4 and 1/3 of wing length. In observed specimens (28 females, 18 males) having veins in forewing fused and reduced to a stump, marginal cilia long are limited to only 14 *M. abnormis* females; no male with this kind of veins has long marginal cilia in forewing.

We recovered forewing and hindwings the holotype of *Mirotelenomus incertus* Mineo, O'Connor et Ashe mounted in a slide; in contrast with Mineo et al. (2011) the right collecting site is Streaky Bay (South Australia) instead of Cape Arid (Western Australia). The forewing of *M. incertus* holotype, shown in Figure 15, has short marginal cilia and its veins reach 0.25 of wing length; therefore, the female holotype of *M. incertus* shares with the genus *Mirotelenomus* as defined by Mineo et al. (2011) in the key to genera of Dyscritobaeini, only the mandible with odontoid process. The odontoid process, as discussed by Tortorici et al. (2015, submitted), also in specimens with veins reduced to a stump is less pronounced or absent in males.

After this deep analysis involving all specimens of two described *Mirotelenomus* species, other specimens bearing with the same reduced veins in forewing, and all other world *Dyscritobaeus* specimens of different species groups, the reduced veins in forewing remains the only character state distinguishing *Mirotelenomus* from *Dyscritobaeus*, but due to the gradual modification of reduced veins into veins with a more defined stigmalis that we see in the here newly designated *armatus*-group and little by little, through other groups, up to a forewing with complete veins, we consider *Mirotelenomus* once again a **junior synonym** of *Dyscritobaeus* as already stated by Caleca & Mineo (1995), and two species considered by Mineo et al. (2011) inside this

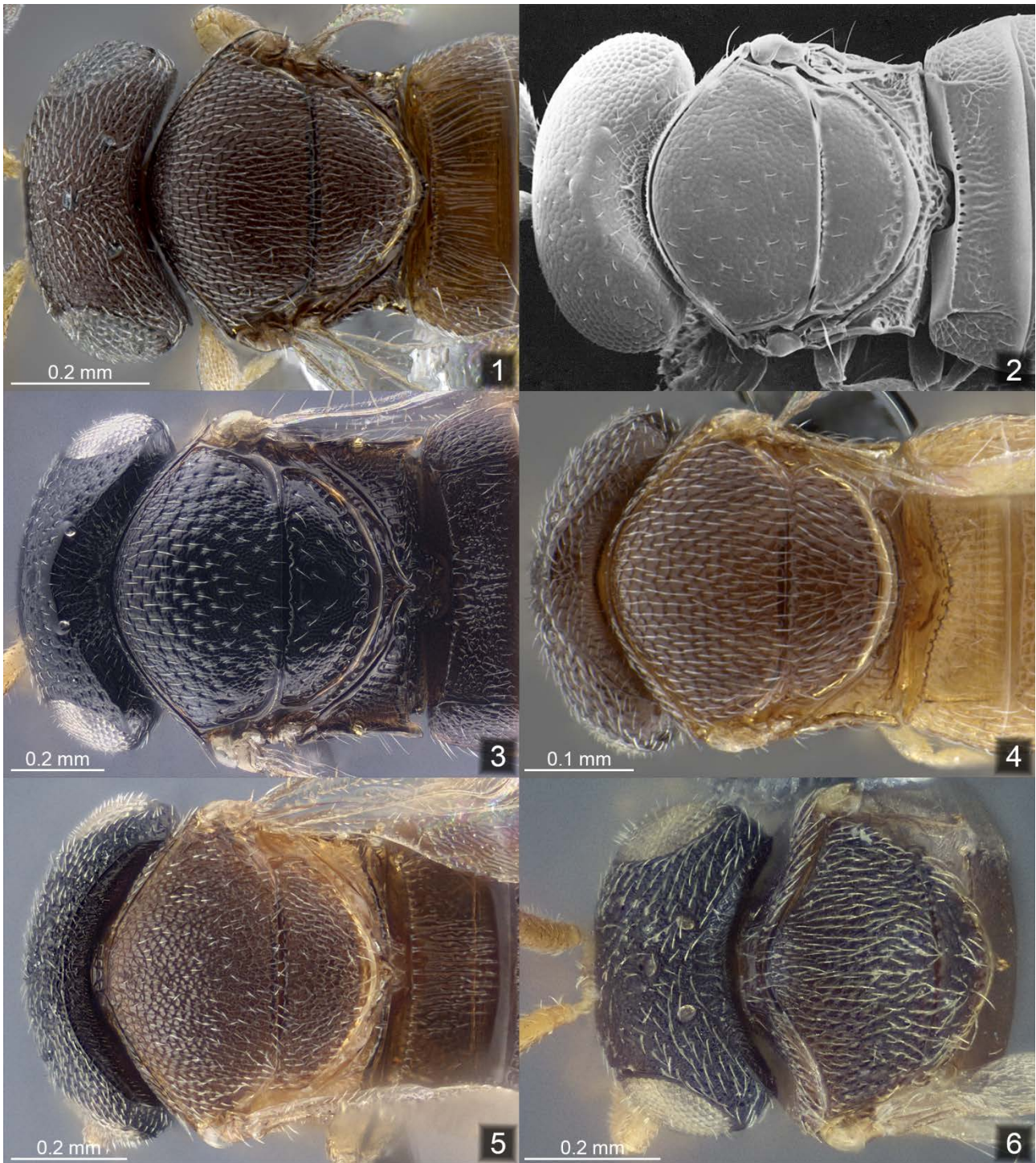


genus, *D. abnormis* (Dodd) and *D. incertus* (Mineo, O'Connor et Ashe) **comb. nov.**, have to be included in the here newly designated *abnormis*-group.

*Okapa* Mineo et Caleca, also included by Mineo, O'Connor and Ashe (2011) into *Dyscritobaeini*, is closer to some species- groups of *Gryon* Haliday rather than *Dyscritobaeus* Perkins. Indeed, *Okapa* although the low LOL/OOL ratio, because of the presence of epomia, clypeus small, not prominent, without pointed and tranverse anterolateral corners, back of the head with occipital carina with angular point, coarse sculpture, is very close to those species groups of *Gryon* Haliday characterized by the last four features, all absent or completely different in *Dyscritobaeus*.

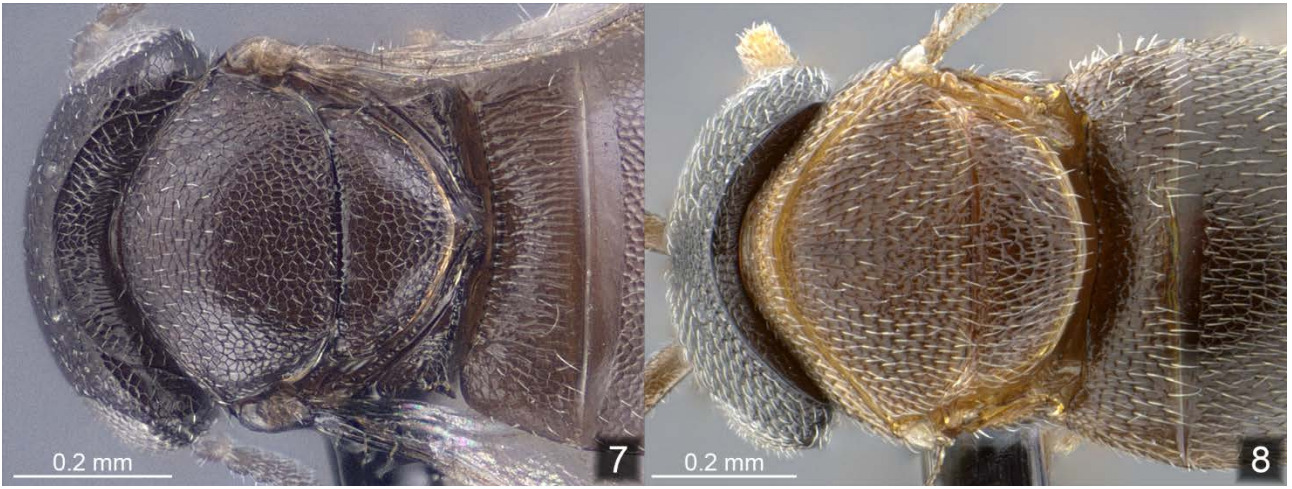
### Key to species-groups of *Dyscritobaeus* Perkins

- 1 Vertex passing sharply into occiput, preoccipital lunula absent (Figure 1) .....*comitans*-group
- vertex passing into occiput through preoccipital lunula (Figures 2, 3, 4, 5, 6; 7; 8).....2
- 2 metascutellum not protruding in dorsal and lateral view, metanotal spine absent (Figure 8).....
- ..... *aspinosus*-group
- metascutellum protruding, metanotal spine present .....3
- 3 interocellar ridge present (Figures 2, 3); macropterous species with forewing without st or with reduced st (Figures 9, 10) .....4
- interocellar ridge absent or weakly pronounced (Figures 5, 7, 27); brachypterous and macropterous species, in the last case forewing with a normally developed st (Figures 12, 13) .....5
- 4 forewings with veins reduced, reaching 0.3-0.5 of wing length, stigmalis short, but defined (Figure 9) ..
- ..... *armatus*-group
- forewings with veins reduced to a stump, not surpassing 0.3 of wing length, stigmalis not protruding fused to the end of submarginalis (Figures 10, 11) .....*abnormis*-group
- 5 metascutellum wide with margins parallel to scutellum ones, pm absent or very short (0.3 st) (Figure 4, 14) *parvipennis*-group
- metascutellum triangular (Figures 5, 6, 7), pm present at least 0.4 st (Figures 12, 13) .....6
- 6 female T2 with specillum, males T2 striate with or without specillum (in the latter case T2 entirely striate >1.5 T1 and elongate (Figures 19, 20, 21).....*orientalis*-group
- female and males T2 always without specillum (if male T2 entirely striate, T2 ≤1.2 T1 and transverse (width/length ratio = 3.9), (Figure 22).....7
- 7 Macropterous. Interocellar ridge between posterior ocelli weak, but present; in frontal view head more triangular and wide (Figure 23), snout-like protruded in buccal region, genae long (Figure 25); sculpture of mesoscutum alutaceous, less hairy as in Figure 7, Figure 34, Figure 35; T2 always coriaceous...*fuscipes*-group
- Macropterous or brachypterous. In macropterous specimens, interocellar ridge between posterior ocelli absent; in frontal view head more rounded (Figure 24), not snout-like (Figure 26); sculpture of mesoscutum coriaceous with punctures as in Figure 22; T2 striate or coriaceous .....*flavicornis*-group



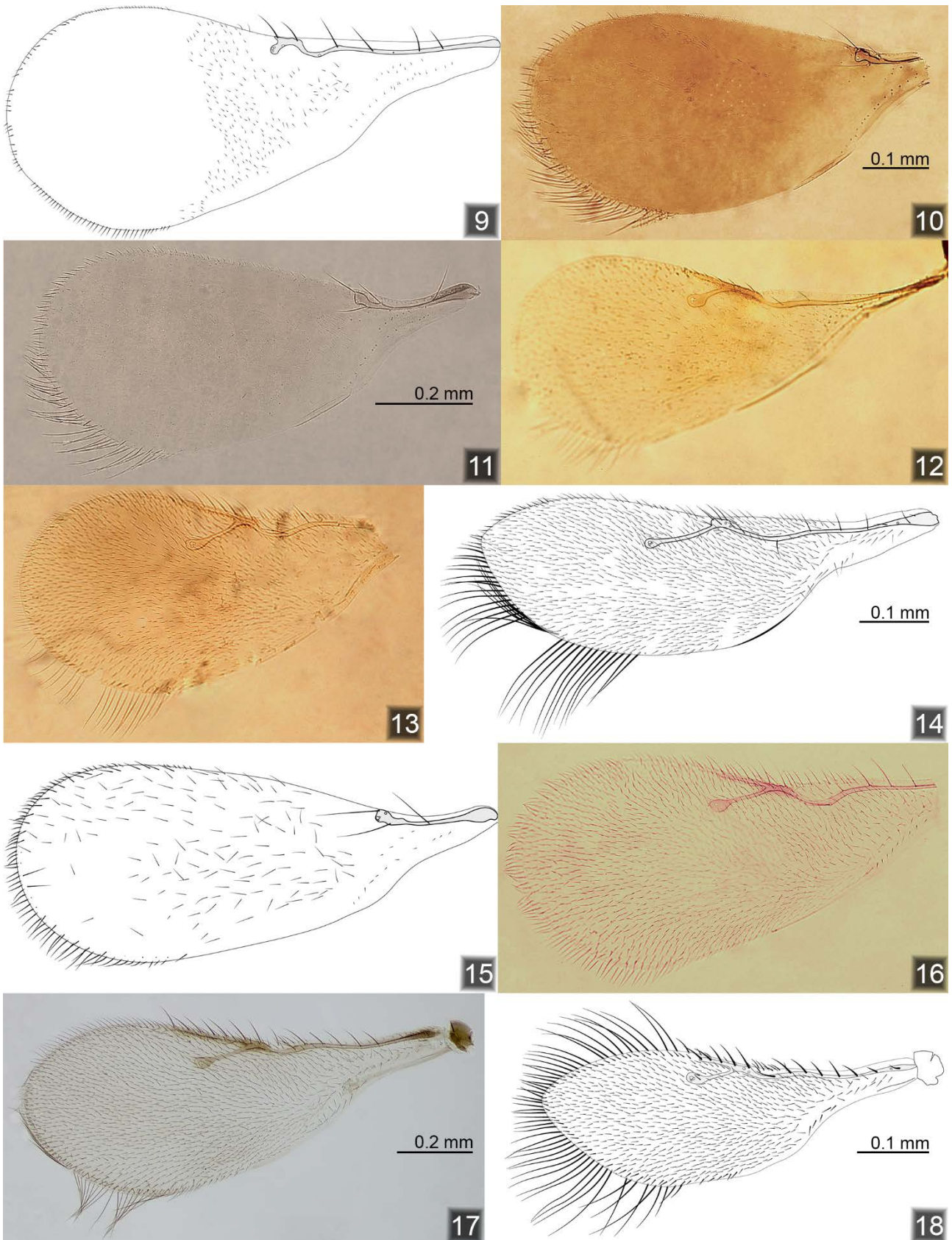
**Figures 1-8** – Head and mesosoma in dorsal view in all species groups of *Dyscritobaeus*: **Figure 1** – *D. comitans* ♀ from Ivory Coast; **Figure 2** – *D. abnormis* ♀ from Congo, NSW, Australia; **Figure 3** – *D. armatus* ♀ from Western Australia; **Figure 4** – *D. parvipennis* ♀ from Western Australia, [ANIC 32-070475]; **Figure 5** – *D. flavicornis* ♀ from Queensland; **Figure 6** – *D. orientalis* ♀ from Queensland





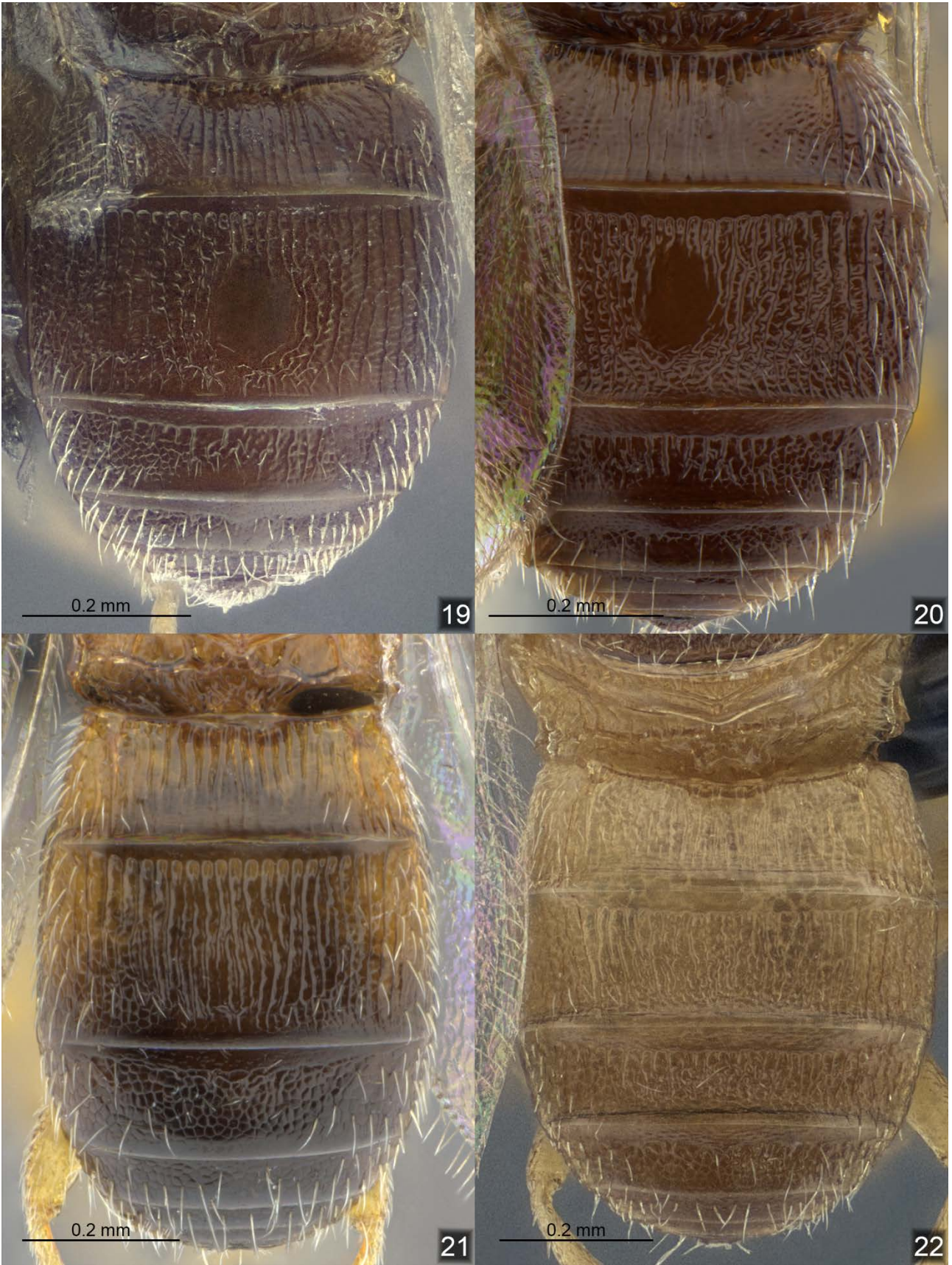
**Figure 7** – *D. fuscipes* ♀ from South Australia; **Figure 8** – *D. tanzaniensis* ♂, holotype.





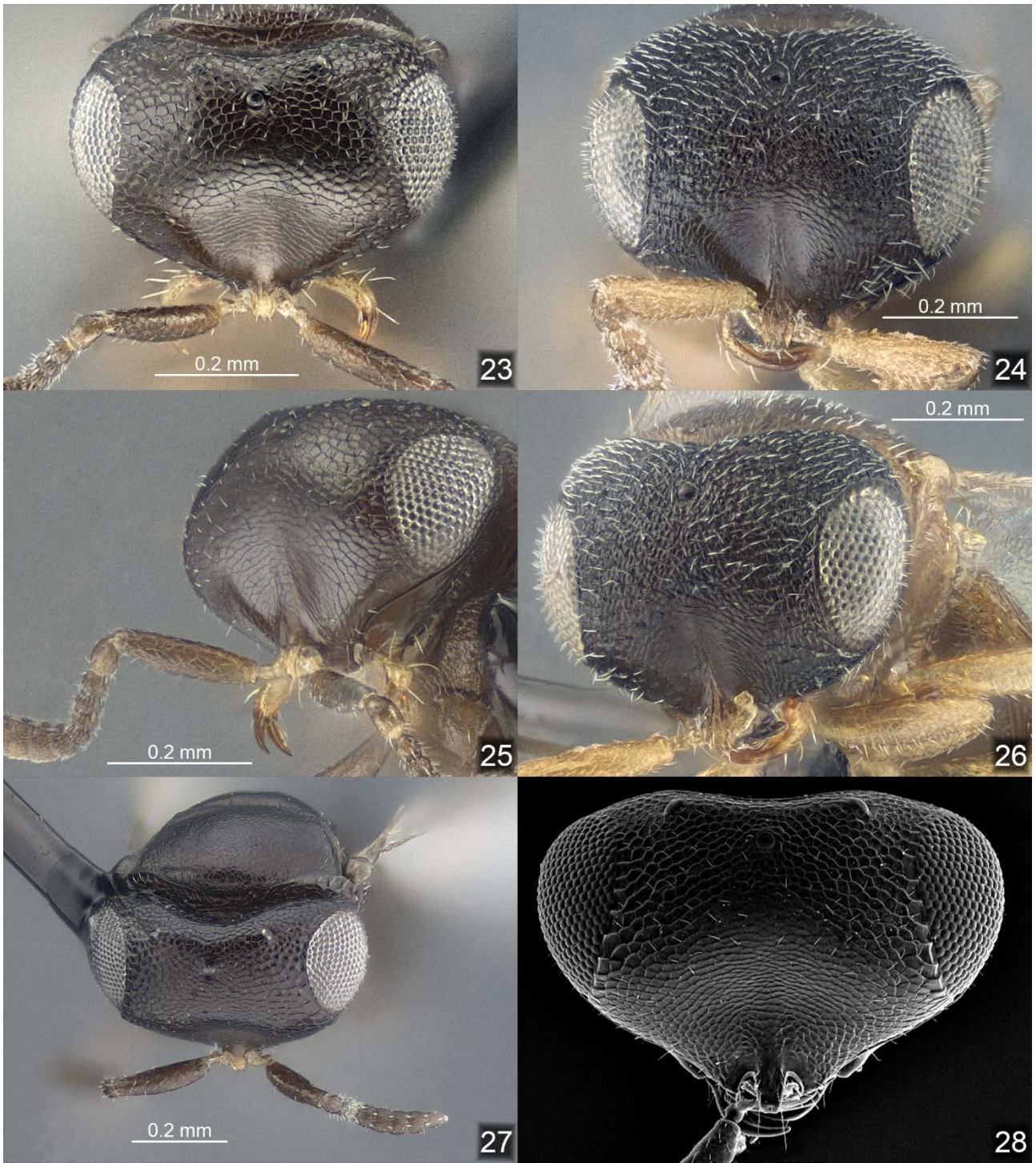
**Figures 9-18** – Forewings of different species groups of *Dyscritobaeus*: **Figure 9** – *D. armatus*; **Figure 10** – *D. abnormis*, holotype; **Figure 11** – *D. abnormis* ♀ from Queensland; **Figure 12** – *D. fuscipes*; **Figure 13** – *D. flavicornis*, holotype; **Figure 14** – *D. parvipennis*; **Figure 15** – *D. incertus* comb. nov. holotype, Streaky Bay, S. Australia; **Figure 16** – *D. orientalis*; **Figure 17** – *D. comitans*-group sp. 3; **Figure 18** – *D. comitans* ♀.





**Figures 19-22** – Mesosoma of *orientalis*- and *flavicornis*-group: **Figure 19** – *D. orientalis* ♀; **Figure 20** – *D. orientalis* ♂; **Figure 21** – *D. sulawensis* ♂ from Uganda; **Figure 22** – *D. flavicornis* ♂.





**Figures 23-28** – Head in *fuscipes*- and *flavicornis*-group: Figure 23 – *D. fuscipes* ♀ frontal view; Figure 24 – *D. flavicornis* ♀ frontal view; Figure 25 – *D. fuscipes* ♀ antero-lateral view; Figure 26 – *D. flavicornis* ♀ antero-lateral view; Figure 27 – *D. amleticus* comb. nov. ♀ antero-dorsal view; Figure 28 – *D. amleticus* comb. nov. ♀ frontal view.



Table 1 – Diagnostic features of world species groups of *Dyscritobaeus*.

Species groups ->		<i>comitans</i>	<i>orientalis</i>	<i>flavicornis</i>	<i>parvipennis</i>	<i>fuscipes</i>	<i>armatus</i>	<i>abnormis</i>	<i>aspinosus</i>
Head	Preoccipital lunula	Absent	Present	Present	Present	Present	Present	Present	Present
	Shape of in frontal view	Ellipsoidal	Ellipsoidal	Ellipsoidal	Ellipsoidal	Triangular	Triangular	Triangular	Ellipsoidal
	Snout-like protruded in buccal region	No	No	No	No	Yes	Yes	Yes	No
	Interocellar ridge	Absent	Absent	Absent	Absent	Present	Present	Present	Absent
Mesosoma	Mesoscutum sculpture	Coriaceous with punctures, densely hairy	Coriaceous with punctures, densely hairy	Coriaceous with punctures, densely hairy	Coriaceous with punctures, densely hairy	Alutaceous, sparsely hairy	Coriaceous with punctures	Coriaceous with punctures, sparsely hairy	Imbricate
	Metascutellum	Protruding	Protruding	Protruding	Protruding	Protruding	Protruding	Protruding	Not protruding
	Shape of metascutellum	Triangular	Triangular	Triangular	Wide with margins parallel to scutellum ones	Triangular	Triangular	Triangular	/
	Metanotal spine	Present	Present	Present	Present	Present	Present	Present	Absent
	Spiny projections of propodeal carina	2	2	2	1	2	2	2	1
	Posterior mesepimeral area delimitate by a crenulate furrow anteriorly	Yes	Yes	Yes	No	Yes	Yes	Yes	No
	Forewing length	Macropterous	Macropterous	Macropterous or brachypterous	Macropterous or brachypterous	Macropterous	Macropterous	Macropterous	Brachypterous
	Stigmatalis vein in forewing	Developed	Developed	Developed	Developed	Developed	Reduced	Absent	/
	Vein length (up to stigmatalis)/ forewing length	0.6	0.6	0.6	0,6-0,65	0.6	0,3-0,5	0,25-0,28	/
T2	Specillum in female	Present or absent	Present	Absent	Absent	Absent	Absent	Absent	Absent
	Specillum in male	Absent	Present or absent	Absent	Absent	Absent	Absent	Absent	Absent
	Sculpture	Striate, rugose, coriaceous, reticulate	Striate	Striate, coriaceous	Coriaceous	Coriaceous	Coriaceous	Coriaceous	Coriaceous
	Width/ length when male T2 striate		2.1	3.9					
	T2/ T1 ratio when T2 striate		>1,5	≤1,2					

### *orientalis*-group

(Figs. 6, 16, 19-21)

*orientalis*-group: Mineo et al. (2009), p. 173, designation and key to species.

*orientalis*-group: Mineo et al. (2010), p. 800, inclusion of new species into the group.

*orientalis*-group: O'Connor & Ashe (2012), p. 315, key to species groups.

*orientalis*-group: Tortorici et al. (2015, submitted), distinction between *orientalis*-group s.s. and *orientalis*-group s.l., inclusion of new species into the group.

**Diagnosis.** see Tab. 1.

**Comment.** In this paper the *orientalis*-group is restricted to species with preoccipital lunula and females bearing specillum in T2, the rest of the group as previously defined by Mineo et al. (2009) converges into *flavicornis*-, *parvipennis*-, *fuscipes*-, *armatus*- and *aspinosus*-group.

**Distribution.** Australian, Afrotropical, Oriental and Palearctic (Japan, Korea).

**Included species.** Fourteen species (4 + 10 undescribed): *D. orientalis* (Dodd), *D. sulawensis* Mineo, O'Connor et Ashe, *D. madagascarensis* Tortorici et Caleca, *D. antananarivensis* Tortorici et Caleca, undescribed *orientalis*-group sp.1-10 (Australian, Oriental).

### *flavicornis*-group new designation

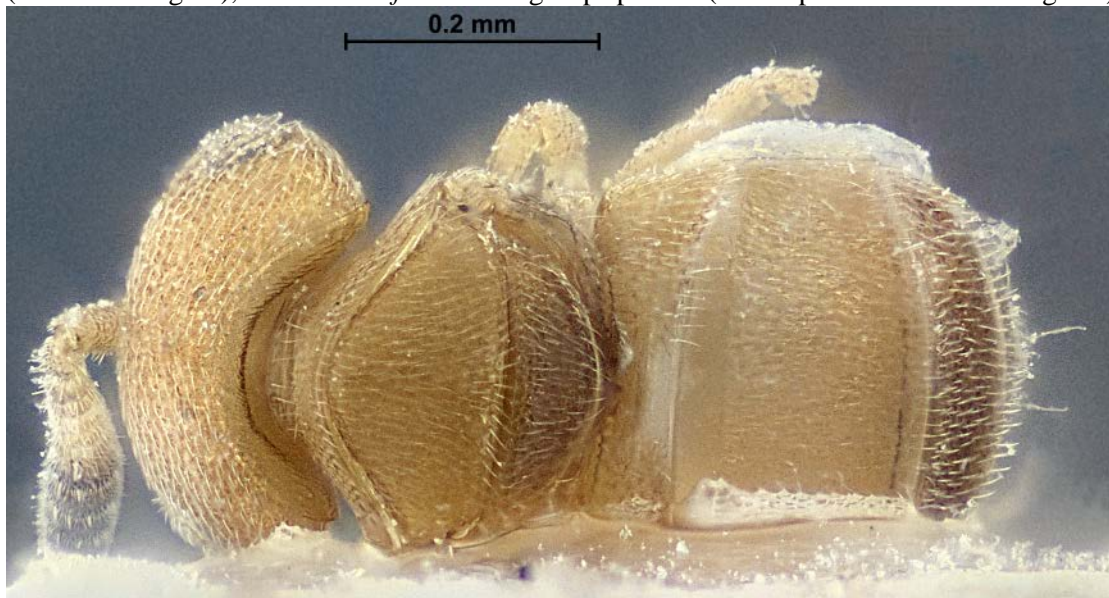
(Figs. 5, 13, 22, 24, 26, 30)

**Diagnosis.** See Tab. 1.

**Comment.** This group is named by the first described species with preoccipital lunula, without specillum in T2 in both sexes, triangular metascutellum, *D. flavicornis* (Dodd).

**Distribution:** Australian, Neotropical and Nearctic.

**Included species:** Thirty-one species (13 + 18 undescribed) *D. flavicornis*, *D. spinosus* (Dodd), *D. ocularis* (Dodd), *D. carens* Mineo, O'Connor et Ashe, *D. minoculo* Mineo, O'Connor et Ashe, *D. ildiae* (Megyaszi), *D. aequatorianus* Mineo, O'Connor et Ashe, *D. colombianus* Mineo, O'Connor et Ashe, *D. costaricanus* Mineo, O'Connor et Ashe, *D. dominicanus* Mineo, O'Connor et Ashe, *D. erraticus* Mineo, O'Connor et Ashe, *D. magnoculo* Mineo, O'Connor et Ashe, *D. triton* Mineo, O'Connor et Ashe, undescribed *flavicornis*-group sp1-11 (Australian region), undescribed *flavicornis*-group sp12-18 (Neotropical and Nearctic regions).



**Figure 29** – *Dyscritobaeus minoculo* Paratype

*parvipennis*-group **new designation**

(Figs. 4, 14)

*orientalis*-group s.l., *parvipennis*-subgroup: Tortorici et al. (2015, submitted),

**Diagnosis.** See Tab. 1.

**Distribution.** Australian, Oriental, Afrotropical

**Included species.** Four species: *D. parvipennis* (Dodd), *D. bicolor* O'Connor et Ashe), *D. flavus* Tortorici et Caleca, *D. kilimanjarensis* Tortorici et Caleca.

*fuscipes*-group **new designation**

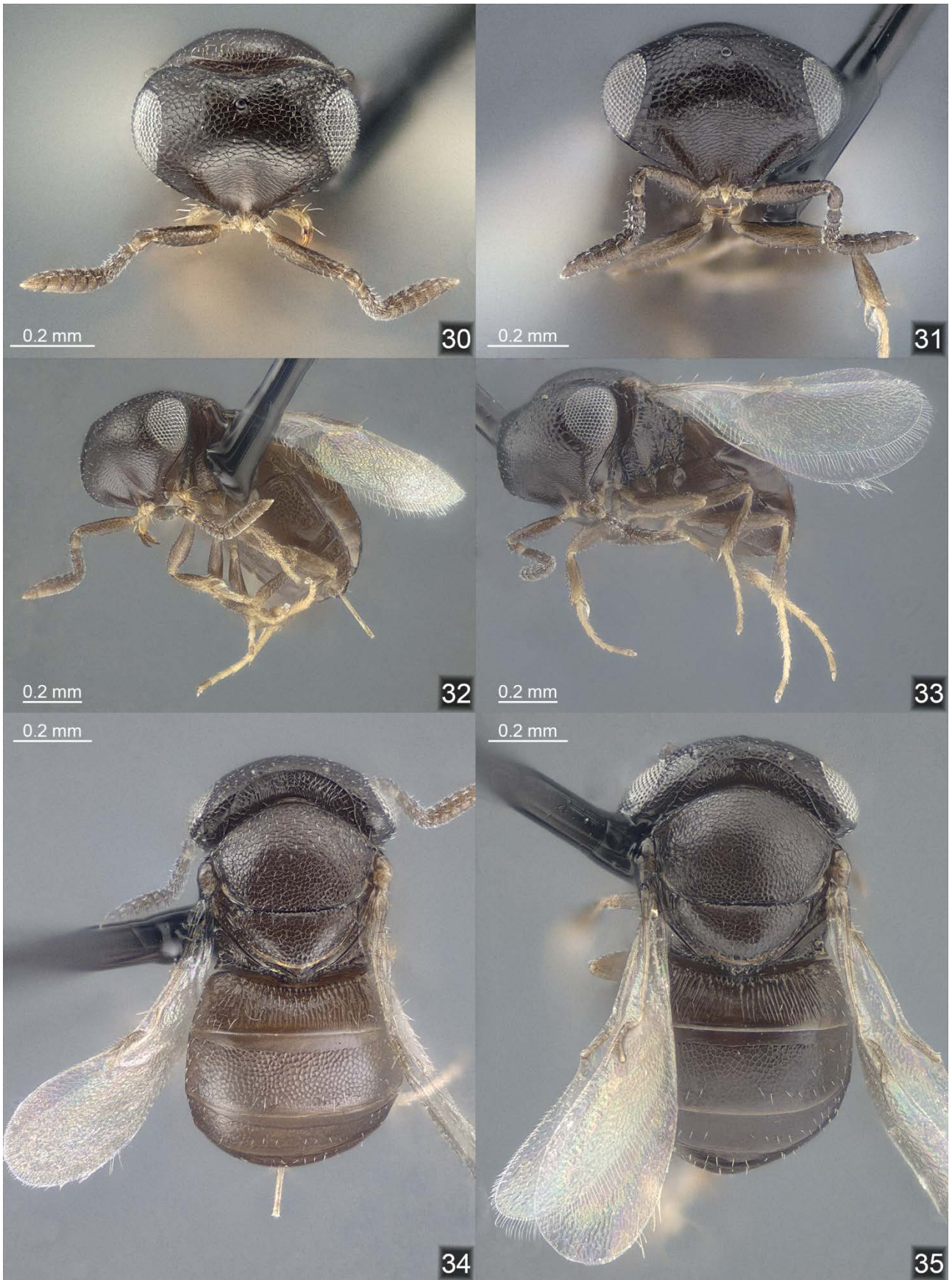
(Figs. 7, 12, 23, 25, 27-28, 31-36)

**Diagnosis.** See Tab. 1.

**Distribution.** Australian.

**Included species.** Three species (2 + 1 undescribed): *D. fuscipes* (Figures 30, 32, 34), *D. amleticus* **comb. nov.** (Figures 31, 33, 35), undescribed *fuscipes*-group sp. 1.





**Figures 30-35** – Comparison between *D. fuscipes* and *D. amleticus* comb. nov. Figure 30 – *D. fuscipes* ♀; Figure 31 – *D. amleticus* comb. nov. ♀; Figure 32 – *D. fuscipes* ♀; Figure 33 – *D. amleticus* comb. nov. ♀; Figure 34 – *D. fuscipes* ♀; Figure 35 – *D. amleticus* comb. nov. ♀.

***abnormis*-group new designation**

(Figs. 2, 10, 11, 15)

**Diagnosis.** See Tab. 1.

**Distribution.** Australian.

**Included species.** Three species (2 + 1 undescribed): *D. abnormis*, *D. incertus* **comb. nov.**, undescribed *abnormis*-group sp. 1.

***armatus*-group new designation**

(Figs. 3, 9, 37)

**Diagnosis.** See Tab. 1.

**Distribution.** Australian.

**Included species.** Three species (1 + 2 undescribed): *D. armatus* (Dodd) (Figure 37), undescribed *armatus*-group sp. 1, undescribed *armatus*-group sp. 2.



**Figure 36** – Antero-lateral view of *D. armatus* ♀.

***aspinosus*-group new designation**

(Fig. 8)

*orientalis*-group s.l., *aspinosus*-subgroup: Tortorici et al. (2015, submitted)

**Diagnosis.** See Tab. 1.

**Distribution:** Australian, Afrotropical.

**Included species:** *D. aspinosus* Mineo, O'Connor et Ashe, *D. tanzaniensis* Tortorici et Caleca

***comitans*-group**

(Figs. 1, 17-18, 38-51)

*comitans*-group: Mineo *et al.* 2010, p. 801, designation

*comitans*-group: O'Connor & Ashe 2012, p. 315, key to species

*comitans*-group: Tortorici et al. (2015, submitted), insertion of *D. indicus* (Mukerjee) and *D. ndokii* Tortorici et Caleca into the group.

**Diagnosis.** See Tab. 1.



**Comment.** In contrast with Mineo et al. (2011) and with O'Connor & Ashe (2012) *Dyscritobaeus minoculo* Mineo, O'Connor et Ashe has a small preoccipital lunula (Figure 29) and for this reason it does not belong to *comitans*-group, but to *flavicornis*-group.

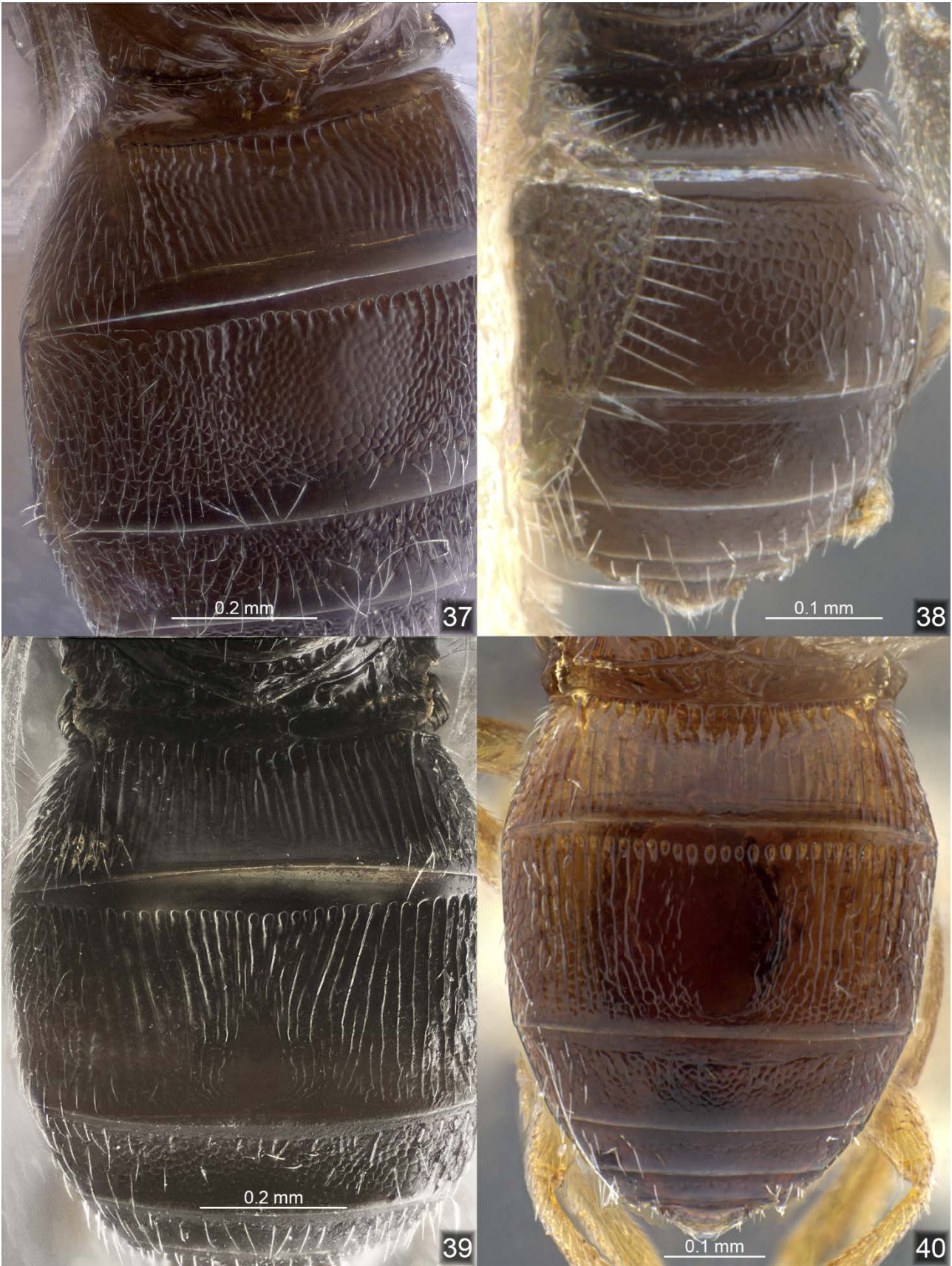
**Distribution.** Australian, Oriental, Palearctic (Japan), Afrotropical and Neotropical.

**Included species.** Seven species (4 + 3 undescribed): *D. comitans* Perkins, *D. indicus* (Mukerjee), *D. bolivar* Mineo, O'Connor et Ashe, *D. ndokii* Tortorici et Caleca, undescribed *comitans*-group sp.1 (Australian), undescribed *comitans*-group sp. 2-3 (Oriental, Australian).

### Key to species of *comitans*-group

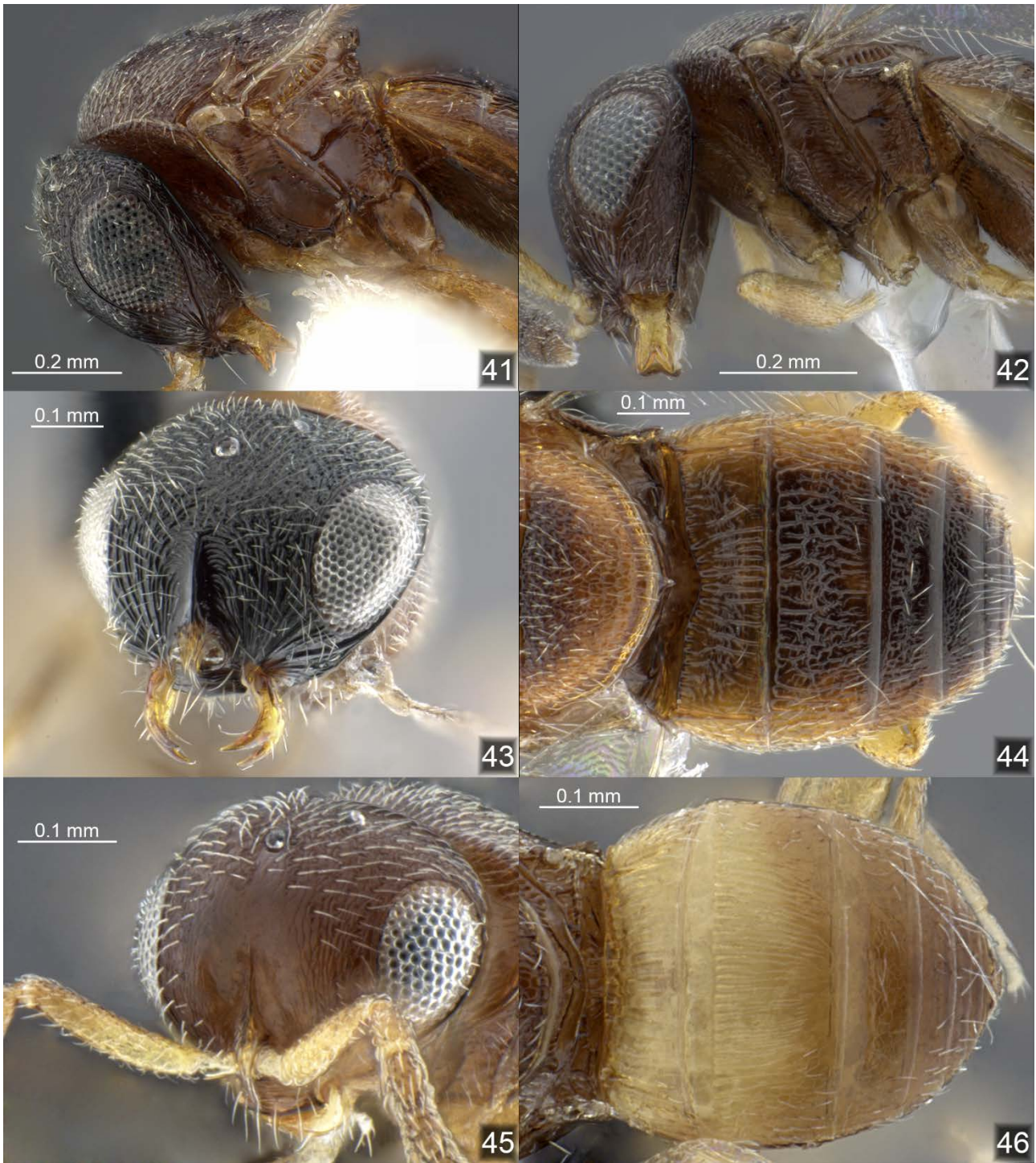
1	Females .....	2
-	Males .....	7
2	T2 without specillum (Figures 37, 38) .....	3
-	T2 with specillum (Figure 1).....	5
3	T2 entirely striate .....	<i>indicus</i> Mukerjee
-	T2 not entirely striate or rugulose .....	4
4	Brachypterous, T2 coriaceous in the middle bearing striae at sides and crenulate furrows at anterior margin (Figure 37).....	<i>bolivar</i> Mineo, o'Connor et Ashe
-	Macropterous, T2 rugulose, without crenulate furrows at anterior margin (Figure 38).....	undescribed <i>comitans</i> -group sp. 1
5	Specillum triangular (Figure 39).....	undescribed <i>comitans</i> -group sp. 2
-	Specillum ellipsoidal (Figure 40).....	6
6	Short anterior fringe on forewing, pm longer than st (Figure 17); metapleurae almost totally smooth; femoral depression smooth (Figure 41).....	undescribed <i>comitans</i> -group sp.3
-	Long anterior fringe on forewing, pm shorter than st (Figure 18); metapleurae more sculptured; femoral depression almost totally sculptured (Figure 42) .....	<i>comitans</i> Perkins
7	T2 rugose (Figure 44); frontal depression with arched striae (Figure 43).....	<i>ndokii</i> Tortorici et Caleca
-	T2 with longitudinal striae (Figures 46, 48); frontal depression smooth (g.....	8
8	T2 with the median sector coriaceous; lateral to this area, fine, short striae (Figure 50).....	<i>bolivar</i> Mineo, O'Connor et Ashe
-	T2 entirely striate (Figure 46) .....	9
9	Forewing surpassing tip of gaster for 1/3 of its length; T2 with parallel striae; femoral depression almost totally smooth (Figure 47) .....	10
-	Forewing surpassing tip of gaster for 1/4 (1.1cm) of its length; T2 with striae converging towards the middle of its posterior margin; femoral depression almost totally sculptured (Figure 49) .....	<i>comitans</i> Perkins
10	Head, mesosoma and T2-end of metasoma black, T1 yellow .....	undescribed <i>comitans</i> -group sp.2
-	Head, mesosoma and T3-end of metasoma brown, T1 yellow, T2 yellow to light brown .....	undescribed <i>comitans</i> -group sp.3





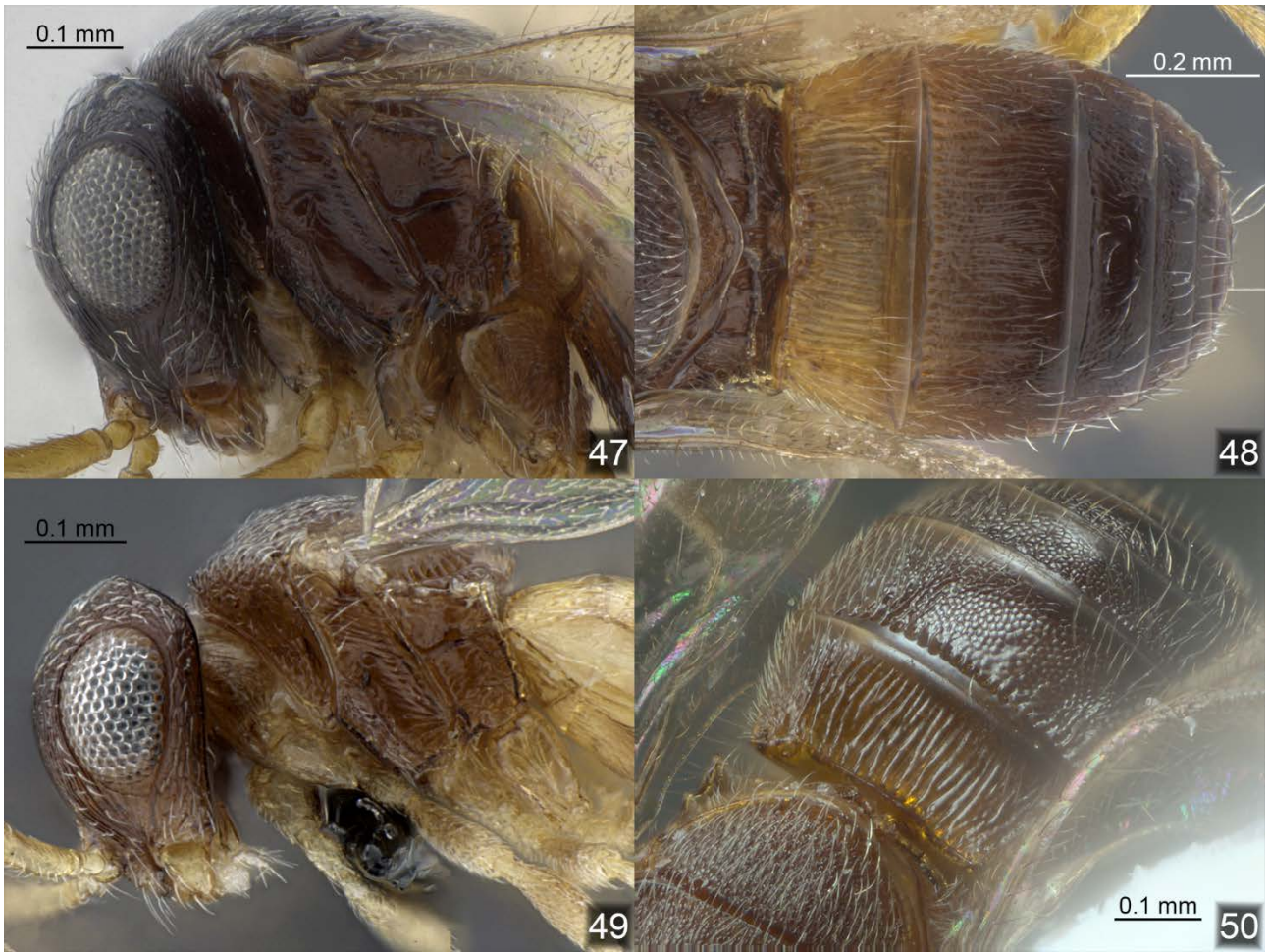
**Figure 37** – T1 and T2 of *D. bolivar*, paratype ♀; **Figure 38** – Metasoma in undescribed *comitans*-group sp.1 ♀; **Figure 39** – T1-T3 in undescribed *comitans*-group sp.2 ♀; **Figure 40** – Metasoma in undescribed *comitans*-group sp.3 ♀.





**Figure 41** – Lateral view of head and mesosoma in undescribed *comitans*-group sp.3 ♀; **Figure 42** - Lateral view of head and mesosoma in *D. comitans* ♀; **Figure 43** – Antero-lateral view of *D. ndokii* holotype ♂; **Figure 44** – Metasoma of *D. ndokii* holotype ♂; **Figure 45** - Antero-lateral view of *D. comitans* ♂; **Figure 46** - Metasoma of *D. comitans* ♂.





**Figure 47** - Lateral view of head and mesosoma in undescribed *comitans*-group sp.3 ♂; **Figure 48** - Metasoma in undescribed *comitans*-group sp.3 ♂; **Figure 49** - Lateral view of head and mesosoma in *D. comitans* ♂; **Figure 50** - T1 and T2 of *D. bolivar* ♂.



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# Revision of Neotropical and Nearctic *Dyscritobaeus* Perkins, 1910 (Hymenoptera: Scelionidae)

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## Introduction

The genus *Dyscritobaeus* (*Platygastroidea: Scelionidae: Scelioninae*) was described by Perkins in 1910 based on the type species *D. comitans*. For historical review on higher classification and interrelationship see Tortorici et al (2015, submitted).

Twenty four species are known in the world

NAME OF THE SPECIES	AUTHORS AND YEAR	TYPE LOCALITY	REGION
<i>D. aequatorianus</i>	Mineo, O'Connor et Ashe (2010)	Galapagos (Ecuador)	Nearctic
<i>D. antananarivensis</i>	Tortorici et Caleca	Madagascar	Afrotropical
<i>D. armatus</i>	(Dodd, 1926)	Queensland (Aus)	Australian
<i>D. aspinosus</i>	Mineo, O'Connor et Ashe (2010)	Queensland (Aus)	Australian
<i>D. aequalatus</i>	(Kozlov & Lê, 2000)	Vietnam	Oriental
<i>D. bicolor</i>	O'Connor et Ashe (2011)	Mozambique	Afrotropical
<i>D. bolivar</i>	Mineo, O'Connor et Ashe (2010)	Venezuela	Neotropical
<i>D. carens</i>	Mineo, O'Connor et Ashe (2010)	New South Wales (Aus)	Australian
<i>D. colombianus</i>	Mineo, O'Connor et Ashe (2010)	Colombia	Neotropical
<i>D. comitans</i>	Perkins (1910)	Hawaii	Palaearctic, Afrotropical, Oriental
<i>D. costaricanus</i>	Mineo, O'Connor et Ashe (2010)	Costa Rica	Neotropical
<i>D. dominicanus</i>	Mineo, O'Connor et Ashe (2010)	Dominican Rep.	Neotropical
<i>D. erraticus</i>	Mineo, O'Connor et Ashe (2010)	Brazil	Neotropical
<i>D. flavicornis</i>	(Dodd, 1914)	Queensland (Aus)	Australian
<i>D. flavus</i>	Tortorici et Caleca ()	Central African Rep.	Afrotropical
<i>D. fuscipes</i>	(Dodd, 1915)	Queensland (Aus)	Australian
<i>D. ildiae</i>	(Megyaszi, 1995)	Dominican Rep.	Neotropical
<i>D. indicus</i>	(Mukerjee, 1994)	India	Oriental
<i>D. kilimanjarensis</i>	Tortorici et Caleca ()	Tanzania	Afrotropical
<i>D. madagascarensis</i>	Tortorici et Caleca ()	Madagascar	Afrotropical
<i>D. magnoculo</i>	Mineo, O'Connor et Ashe (2010)	Venezuela	Neotropical
<i>D. minoculo</i>	Mineo, O'Connor et Ashe (2010)	New South Wales (Aus)	Australian
<i>D. ndokii</i>	Tortorici et Caleca ()	Central African Rep.	Afrotropical
<i>D. ocellaris</i>	(Dodd, 1915)	Queensland (Aus)	Australian
<i>D. orientalis</i>	(Dodd, 1915)	Queensland (Aus)	Australian
<i>D. parvipennis</i>	(Dodd, 1913)	Queensland (Aus)	Australian, Oriental, Afrotropical
<i>D. spinosus</i>	(Dodd, 1915)	Queensland (Aus)	Australian
<i>D. sulawensis</i>	Mineo, O'Connor et Ashe (2009)	Sulawesi (Indonesia)	Oriental, Palaearctic, Australian, Afrotropical
<i>D. tanzaniensis</i>	Tortorici et Caleca ()	Tanzania	Afrotropical
<i>D. triton</i>	Mineo, O'Connor et Ashe (2010)	Trinidad	Neotropical

The first species of *Dyscritobaeus* in the new world was described by Megyaszi (1995) from Dominica: *D. ildiae*. Mineo et al. (2010) described eight new species from Neotropical Region: *D. aequatorianus*, *D. bolivar*, *D. colombianus*, *D. costaricanus*, *D. dominicanus*, *D. erraticus*, *D. magnoculo* and *D. triton*. The same authors organize the species in three group: *comitans*-group, defined in the same paper and differs from the other groups for the lack of preoccipital lunula; *orientalis*-group *sensu stricto* distinguish from *comitans*-group for the presens of preoccipital lunula (Mineo et al. 2009); *orientalis*-group *sensu lato* was defined with the reduction of the preoccipital lunula (Mineo et al. 2010). In Caleca et al (in preparation), *D. bolivar* is confirmed

belonging to *comitans*-group; *D. aequatorianus*, *D. colombianus*, *D. costaricanus*, *D. dominicanus*, *D. erraticus*, *D. magnoculo* and *D. triton* belonging to *flavicornis*-group.

## Results

All the types are studied from the first author, except *D. erraticus* because it is lost and no one specimens of the material examined (576 specimens, 2 specimens from the type locality) present the characters described in the original description. In particular, in the original description, the type has bidentate mandibles and the teeth have equal length. Only one paratype is listed in the material examined, but it was used for SEM even if no pictures are illustrated in the same paper.

Four new species of *Dyscritobaeus* in addition to 7 known species are recognized in Neotropical region and two new species in Nearctic region.

For the first time a key to the identification of the species from new world is provided in this paper.

### Key to *Dyscritobaeus* from the Neotropical and Nearctic region, female

- |    |   |  |
|----|---|--|
| 1  | Preoccipital lunula absent; .....   | <i>bolivar</i> Mineo, O'Connor et Ashe       |
| -  | Preoccipital lunula present .....   | 2  |
| 2  | OC not complete at vertex.....  | 3  |
| -  | OC complete at vertex.....  | 6  |
| 3  | OOL > POL.....  | <i>aequatorianus</i> Mineo, O'Connor et Ashe |
| -  | OOL < POL.....  | 4  |
| 4  | T2 striate; ocular width = 1.5-1.7 temples.....                                   | undescribed <i>flavicornis</i> -group sp. 12 |
| -  | T2 coriaceous; ocular width > 2 temples.....                                      | 5  |
| 5  | T1 striate; ventral tooth of the mandible short but pointed .....                 | undescribed <i>flavicornis</i> -group sp. 13 |
| -  | T1 rugose; ventral tooth of the mandible reduced to blunt .....                   | undescribed <i>flavicornis</i> -group sp. 14 |
| 6  | lunula large (< OD); distance lateral ocelli- OC < lunula length .....            | 7  |
| -  | lunula narrow (= OD or less); distance lateral ocelli- OC > lunula length .....   | 10   |
| 7  | Long fringe in forewing (wing width = 1.7 - 1.3 posterior fringe) .....           | 8  |
| -  | short fringe in forewing (wing width = 3 posterior fringe) .....                  | 9  |
| 8  | large eye (eye width = 3 temples) .....   | undescribed <i>flavicornis</i> -group sp. 15 |
| -  | narrow eye (eye width = less 2.5 temples) .....                                   | undescribed <i>flavicornis</i> -group sp. 16 |
| 9  | eye width = 2 temples; OC indicated only by a flat line in vertex sculpture ..... | <i>ildiae</i> (Megyaszi) (ex dominicanus)    |
| -  | eye width = 2.6 temples; OC protruding as a normal carina.....                    | undescribed <i>flavicornis</i> -group sp. 17 |
| 10 | T2 rugose.....  | 11   |
| -  | T2 coriaceous .....   | undescribed <i>flavicornis</i> -group sp. 18 |
| 11 | eye width = less 2.5 temples.....   | <i>triton</i> Mineo, O'Connor et Ashe        |
| -  | eye width more than 3 temples.....  | 12   |
| 12 | eye height = 3 temples.....   | <i>colombianus</i> Mineo, O'Connor et Ashe   |
| -  | eye height = 5.2-5.4 temples .....  | 13   |
| 13 | S3 and S4 with longitudinal ridges.....   | <i>magnoculo</i> Mineo, O'Connor et Ashe     |
| -  | S3 and S4 smooth with deep punctures.....   | <i>costaricanus</i> Mineo, O'Connor et Ashe  |

### Key to *Dyscritobaeus* from Neotropical and Nearctic regions, male

- |   |   |  |
|---|---|--|
| 1 | lunula absent or, if present the angle between front and lunula is less than 90° .....            | 2  |
| - | lunula present, its angle with front more than 90° .....  | 3  |
| 2 | lunula absent; A3, A4, A5 long 2 times A2 each.....   | <i>bolivar</i> Mineo, O'Connor et Ashe       |
| - | lunula present, angle between front and lunula is less than 90°; A3, A4, A5 as long as A2 each .. | undescribed <i>flavicornis</i> -group sp. 17 |
| 3 | lunula narrow (< OD); distance lateral ocelli- OC > lunula width.....                             | 5  |



-	lunula large (= OD or less); distance lateral ocelli- OC < lunula width.....	8
5	T2 rugulose or striae reaching 1/3 T2 .....	6
-	T2 coriaceous .....	7
6	eye height = 4 temples.....	<i>costaricanus</i> Mineo, O'Connor et Ashe
-	eye height = 2.6-2.8 temples .....	<i>triton</i> Mineo, O'Connor et Ashe
7	vmma punctate; antennomers A3-A11 longer or equal than A2.....	
	.....	<i>colombianus</i> Mineo, O'Connor et Ashe
-	vmma not punctate; antennomers A3-A11 all shorten than A2 .....	
	.....	undescribed <i>flavicornis</i> -group sp. 18
8	OC complete at vertex.....	9
-	OC not complete at vertex.....	13
9	central keel present.....	10
-	central keel absent, replaced by a coriaceous ribbon .....	
	.....	<i>aequatorianus</i> Mineo, O'Connor et Ashe
10	OC protruding as a normal carina; vmma smooth in the centre.....	11
-	OC indicated only by a flat line in vertex sculpture; all vmma punctate .....	
	.....	undescribed <i>flavicornis</i> -group sp. 13
11	in interantennal scrobes, only the side close the CK smooth (dorso-frontal view).....	
	.....	<i>ildiae</i> (Megyaszi)(ex dominicanus)
-	interantennal scrobes totally smooth (dorso-frontal view).....	12
12	eye height 3 malar distance .....	undescribed <i>flavicornis</i> -group sp. 15
-	eye height 2 malar distance .....	undescribed <i>flavicornis</i> -group sp. 16
13	T1, T2, anterior part of T3 striate.....	undescribed <i>flavicornis</i> -group sp. 12
-	T1 rugose to striate, T2 striate to coriaceous, T3 coriaceous .....	
	.....	undescribed <i>flavicornis</i> -group sp. 14

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