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Four new species of *Brueelia* Kéler, 1936 (Phthiraptera: Ischnocera) from African hosts, with a redescription of *Nirmus bicurvatus* Piaget, 1880

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Abstract. Four new species of *Brueelia* Kéler, 1936 are described and illustrated. All of them parasitize African endemic host species in the families Passeridae, Ploceidae, and Estrildidae (Passeriformes). They are: *Brueelia pofadderensis* sp. nov. ex *Passer melanurus damarensis* Reichenow, 1902 and *P. m. vicinus* Clancey, 1958; *B. semiscalaris* sp. nov. ex *Granatina granatina* (Linnaeus, 1758); *B. sima* sp. nov. ex *Malimbus nitens* (Gray, 1831); *B. terpsichore* sp. nov. ex *Euplectes jacksoni* (Sharpe, 1891) and *E. progne delamerei* (Shelley, 1903). In addition, *Brueelia bicurvata* (Piaget, 1880) is redescribed and reillustrated from non-type material. A summary of all published records of lice in the *Brueelia* complex from Africa since 1980 is provided. We also estimate the unknown diversity of African species of *Brueelia* based on an index of host specificity calculated for each host family independently. The unknown diversity is estimated to be over 1000 species of *Brueelia* from African hosts, compared to the <50 species in this genus currently recorded from Africa.

Keywords. Phthiraptera, new species, *Brueelia* complex, species diversity, host specificity.

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Introduction

The chewing lice of African songbirds have long been poorly known (Ledger 1980; Gustafsson & Bush 2015; Light *et al.* 2016; Takano *et al*. 2017, 2018). In particular, very few species of lice belonging to the *Brueelia* complex (sensu Gustafsson & Bush 2017) have ever been reported from Africa. In his summary of the chewing lice known from sub-Saharan Africa, Ledger (1980) listed only 3 species of *Meropoecus* Eichler, 1940, 36 species of *Brueelia* Kéler, 1936 and 16 species of *Sturnidoecus* Eichler, 1944 (note that Ledger overlooked the many African species of *Sturnidoecus* described in Ansari 1968). Of these, only 25 species have been recorded from birds that breed in sub-Saharan Africa; the remaining lice in the list in Ledger (1980) concern species known from hosts that migrate to Africa from Eurasia. In at least some cases, this list includes species of lice that have never been recorded in sub-Saharan Africa, but which occur on hosts that migrate to this region.

In recent decades, many new records of lice in the *Brueelia* complex have been published from African countries (e.g., Balakrishnan & Sorenson 2006; Sychra *et al.* 2010a, 2010b; Najer *et al*. 2012; Gustafsson & Bush 2015, 2017; Bush *et al*. 2016; Light *et al.* 2016; Takano *et al*. 2017, 2018; Gustafsson *et al*. 2018). However, in many of these reports, lice of the *Brueelia* complex have not been identified to species level, and few new species of lice in this complex have been described from Africa since 1980 (Fig. 1; Appendix). Data from several published phylogenies that include African lice of the *Brueelia* complex (Bush *et al*. 2016; Light *et al.* 2016; Takano *et al*. 2017, 2018) and from a morphological survey (D.R. Gustafsson and S.E. Bush, unpublished data) show that the diversity of lice in this complex is very high in Africa, and a vast number of species remain undescribed. The lack of descriptions, illustrations and identification keys for African lice of the *Brueelia* complex limits our understanding of the biogeography and evolution of these lice and their host associations.

Here, we provide descriptions of four new species of *Brueelia* from Africa, as well as a redescription of *Nirmus bicurvatus* Piaget, 1880. All five species treated here are from host species that are endemic to Africa, and all five hosts belong to families that are very speciose in this region.

Material and methods

All material examined is deposited as slide-mounted specimens at the Natural History Museum, London (NHML). Specimens were examined in an Olympus CX31 microscope. Illustrations were drawn by hand, using a drawing tube fitted to the microscope. Line drawings were scanned, collated and edited in GIMP (www.gimp.org). Grey lines in all illustrations denote the approximate extent of dark pigmentation; note that these patterns typically differ slightly between specimens of the same species, and sometimes between sides of the same specimen.

Measurements were made from photographs in Quick Photo Micro ver. 3.1 (Promicra, Prague, Czech Republic) and are given for the following dimensions (in mm):

AW = abdominal width (at segment V)
HL = head length (at midline)
HW = head width (at temples)
PRW = prothoracic width (at posterior end)
PTW = pterothoracic width (at posterior end)
TL = total length (at midline)

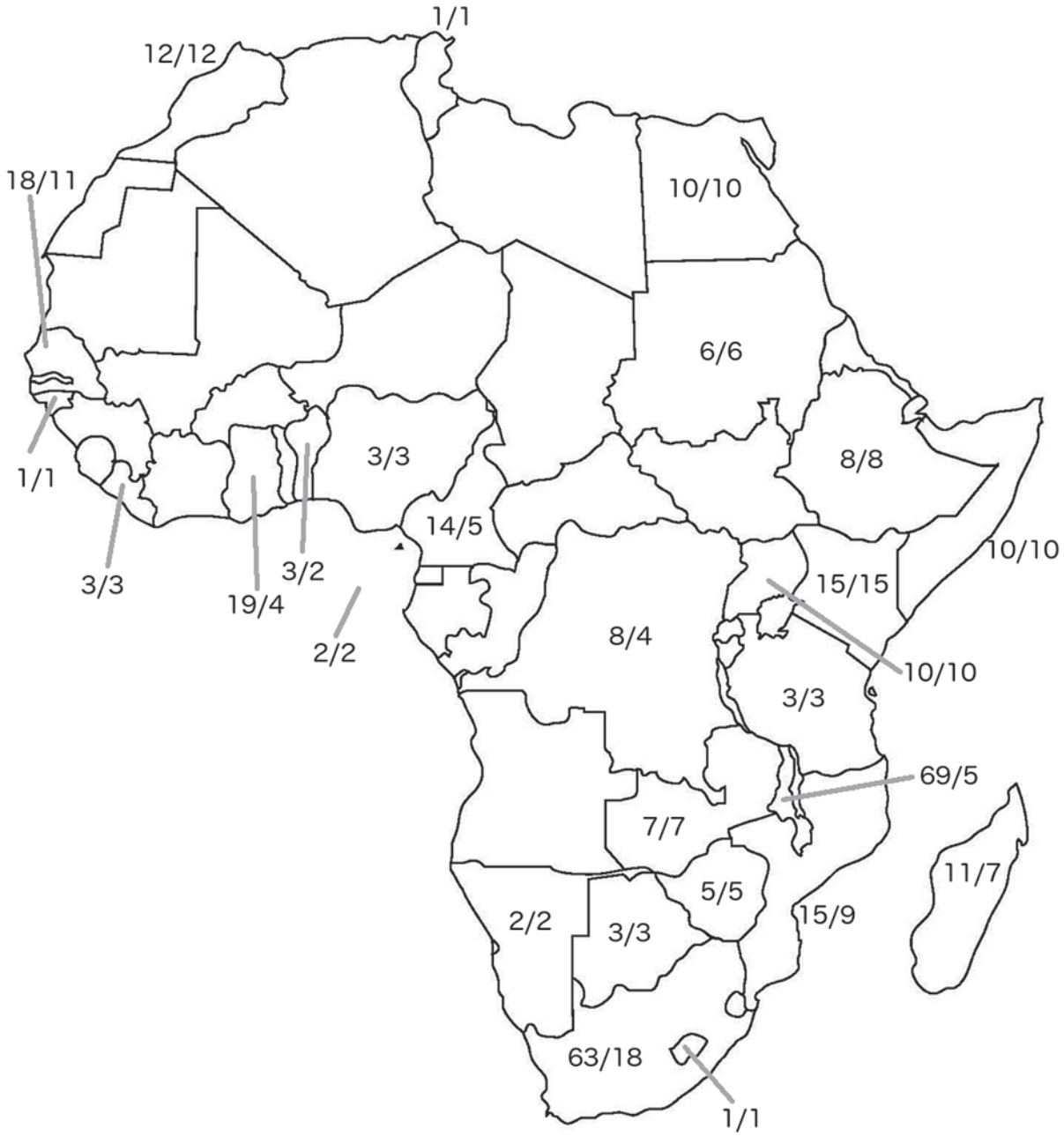


Fig. 1. Map of Africa, showing the number of species of chewing lice in the *Brueelia* complex reported from each country since Ledger (1980), including the records published herein. The first number represents the total number of records of host–louse associations reported for each country, disregarding that some records from different host species may refer to the same louse species. The second number represents the number of louse species identified to species level. Countries with no records of lice of the *Brueelia* complex since 1980 are unmarked. References to lice in the *Brueelia* complex known from each country can be found in the Appendix. Note that as no precise collection locality is given on older slides, records for Sudan and South Sudan are here presented together. The numbers '2/2' in the Gulf of Guinea refer to São Tomé and Príncipe, which is not visible on the map. The islands of Réunion (France) and St. Helena (United Kingdom) are also not visible on the map; both have 1 record of a louse of the *Brueelia* complex in the time period, in both cases identified to species level. In addition to the records shown here, one species was recorded from "Northern Africa" and one from "Congo", with no more detailed locality given on the slide labels.

The terminology of chaetotaxy and morphological structures follows Gustafsson & Bush (2017), and includes:

aps = accessory post-spiracular setae
ps = paratergal setae
psps = principal post-spiracular setae
pst1–2 = parameral setae 1–2
pts = post-temporal seta
sts = sternal setae
tps = tergal posterior setae
vms = vulval marginal setae
vos = vulval oblique setae
vss = vulval submarginal setae

Counts of *vos* include the distal *vos* typically situated median to the *vss*. Setal characters are given in italics.

Host taxonomy follows Clements *et al.* (2018).

An index of specificity (IS) was calculated for all host families from which *Brueelia* are known in Africa, following Valim & Weckstein (2013). Two estimates were calculated: one based only on the IS of identified species of *Brueelia*, and one on the IS of identified species of *Brueelia* plus unidentified species recorded from Africa (see Appendix). The latter IS was calculated under the assumption that all unidentified species listed as '*Brueelia* sp.' in the Appendix are accurately assigned to genus, which is likely not the case for many specimens.

Results

The index of specificity was calculated for the genus *Brueelia* in Africa, following Valim & Weckstein (2013); from this index, two estimates of the diversity of this genus in Africa were calculated (Table 1). In Table 1, an IS of 1 means that all species of *Brueelia* are host-specific within this host family. In host families for which IS > 1, each host species is on average parasitized by more than one species of *Brueelia*; for instance, different host subspecies being parasitized by different species of *Brueelia* would give an IS > 1. An IS < 1 indicates that at least some *Brueelia* species parasitizing hosts in this family are not host-specific, but occur on more than one host species.

In almost all host families, the IS of *Brueelia* is 1, suggesting that *Brueelia* are generally host-specific. For nine host families, IS < 1; however, in most of these cases, the species of *Brueelia* parasitizing hosts in this family have been poorly described, and some of these cases may represent misidentifications. Only one host family, Corvidae, has an IS > 1.

Our two calculations of IS are based of different sets of reported taxa, and thus the two estimates of diversity of *Brueelia* are slightly different. However, both estimates suggest that well over 1000 species of *Brueelia* may occur in Africa. Only 30 species of *Brueelia* have been recorded from Africa since 1980 (Appendix). Using the IS estimate that includes unidentified specimens of *Brueelia* suggests that only 2.24% of the African diversity of *Brueelia* is currently known; using the more conservative IS estimate, and ignoring unidentified *Brueelia*, this number is 2.64%.

Table 1 (continued on next page). Estimate of the known and unknown diversity of *Brueelia* Kéler, 1936 in Africa based on an index of host specificity, following Valim & Weckstein (2013). Host taxonomy and species numbers follow Clements *et al.* (2018); louse numbers follow Gustafsson & Bush (2017) and Gustafsson *et al.* (2018). Host numbers in the African fauna includes residents, wintering migrants, introduced species and vagrants, following Lepage (2018). IS is the 'index of specificity' of Valim & Weckstein (2013), and represents #*Brueelia* species/host species of *Brueelia*. Estimates have been rounded off to the closest whole number. The second estimate includes the specimens listed as '*Brueelia* sp.' in the Appendix, recorded from Africa after 1980 but not identified to species. Species are included in this estimate under the assumption that all species listed as '*Brueelia* sp.' in the Appendix belong to the genus *Brueelia*; most likely, this is incorrect in some cases, and the numbers given are thus probably overestimates. The following host families (# African species in parentheses) are presently not known to be parasitized by any species of *Brueelia*, and are therefore not included in the list below: Aegithalidae (1), Bernieridae (11), Buphagidae* (2), Calyptomenidae (8), Campephagidae* (14), Certhiidae (2), Chaetopidae (2), Cinclidae (1), Eurylaimidae* (1), Hirundinidae* (42), Hyliotidae (4), Hypocoliidae (1), Modulatricidae (3), Nicatoridae (3), Oriolidae* (9), Panuridae (1), Pellorneidae* (8), Philepittidae (4), Phylloscopidae (20), Picathartidae (2), Pittidae (2), Promeropidae (2), Stenostiridae (6), Tichodromidae (1), Vireonidae (1). Species in many of these families (marked with *) are known to be parasitized by other genera in the *Brueelia* complex (e.g., *Indoceoplanetes* Gustafsson & Bush, 2017, on hosts in the Campephagidae), which may replace *Brueelia* on these hosts.

Host family	Known world fauna				African fauna		Including unidentified after 1980			
	Bird species	*Brueelia* species	Host species for *Brueelia*	IS	Bird species	Estimate of African *Brueelia* species	*Brueelia* species	Host species for *Brueelia*	IS	Estimate of African *Brueelia* species
Passeriformes										
Acrocephalidae	61	1	1	1	33	**33**	1	1	1	**33**
Alaudidae	97	4	5	0.80	80	**64**	5	6	0.83	**67**
Cisticolidae	145	1	1	1	131	**131**	6	6	1	**131**
Corvidae	128	4	3	1.33	20	**27**	4	3	1.33	**27**
Dicruridae	25	1	1	1	9	**9**	2	2	1	**9**
Emberizidae	44	3	6	0.50	27	**14**	6	9	0.67	**18**
Estrildidae	140	5	5	1	83	**83**	13	13	1	**83**
Fringillidae	225	14	14	1	65	**65**	17	17	1	**65**
Laniidae	33	6	6	1	24	**24**	6	6	1	**24**
Leiothrichidae	146	5	5	1	23	**23**	5	5	1	**23**
Locustellidae	61	1	1	1	18	**18**	1	1	1	**18**
Macrosphenidae	21	0	0	0	18	**0**	1	1	1	**18**
Malaconotidae	50	0	0	0	50	**0**	2	2	1	**50**
Monarchidae	99	0	0	0	12	**0**	1	1	1	**12**

Table 1 (continued). Estimate of the known and unknown diversity of *Brueelia* Kéler, 1936 in Africa based on an index of host specificity, following Valim & Weckstein (2013).

Host family	Known world fauna				African fauna		Including unidentified after 1980			
	Bird species	*Brueelia* species	Host species for *Brueelia*	IS	Bird species	Estimate of African *Brueelia* species	*Brueelia* species	Host species for *Brueelia*	IS	Estimate of African *Brueelia* species
Passeriformes (continued)										
Motacillidae	67	5	7	0.71	43	**31**	7	9	0.78	**33**
Muscicapidae	317	2	2	1	158	**158**	4	4	1	**158**
Nectariniidae	139	1	1	1	93	**93**	2	2	1	**93**
Paridae	63	7	7	1	19	**19**	7	7	1	**19**
Passeridae	42	5	7	0.71	28	**20**	10	12	0.83	**23**
Ploceidae	116	5	6	0.83	113	**94**	13	14	0.93	**105**
Prunellidae	13	2	2	1	2	**2**	2	2	1	**2**
Pycnonotidae	143	3	3	1	74	**74**	10	10	1	**74**
Regulidae	6	1	1	1	3	**3**	1	1	1	**3**
Remizidae	11	2	2	1	7	**7**	2	2	1	**7**
Scotocercidae	36	1	1	1	6	**6**	1	1	1	**6**
Sittidae	27	5	5	1	2	**2**	5	5	1	**2**
Sturnidae	122	15	16	0.94	53	**50**	19	20	0.95	**50**
Sylviidae	33	4	5	0.80	30	**24**	5	6	0.83	**25**
Troglodytidae	85	1	1	1	1	**1**	1	1	1	**1**
Turdidae	170	7	9	0.78	33	**26**	8	10	0.80	**26**
Vangidae	39	0	0	0	31	**0**	1	1	1	**31**
Viduidae	20	1	1	1	20	**20**	4	4	1	**20**
Zosteropidae	130	0	0	0	25	**0**	1	1	1	**25**
Piciformes										
Lybiidae	41	0	0	0	41	**0**	1	1	1	**41**
Picidae	232	3	7	0.43	35	**15**	3	7	0.43	**15**
Total	3127	115	131		1410	**1136**	177	193		**1337**

Order Phthiraptera Haeckel, 1896
Suborder Ischnocera Kellogg, 1896
Family Philopteridae Burmeister, 1838
Brueelia complex sensu Gustafsson & Bush 2017

Genus ***Brueelia*** Kéler, 1936

Philopterus Nitzsch, 1818: 288 partim.
Nirmus Nitzsch, 1818: 291 partim.
Degeeriella Neumann, 1906: 60 partim.
Brueelia Kéler, 1936: 257.
Painjunirmus Ansari, 1947: 285.
Allobrueelia Eichler, 1951: 36 partim.
Nigronirmus Złotorzycka, 1964: 248.
Spironirmus Złotorzycka, 1964: 261.
Serinirmus Soler Cruz *et al.*, 1987: 244.

Type species

Brueelia rossittensis Kéler, 1936: 257 (= *Nirmus brachythorax* Giebel, 1874: 134) by original designation.

Remarks

Clay (1954) discussed the use of the *post-spiracular sensillum* in determining homology in the abdominal chaetotaxy of Ischnocera. She stated that in *Brueelia*, these sensilla are known from segments III–VII, whereas in all other groups of ischnoceran lice, they are never found posterior to segment V. Gustafsson & Bush (2017) included these sensilla in their illustrations, but neglected to discuss their importance in the text. Based on our investigation of several hundred species of lice in the *Brueelia* complex, it seems that these sensilla occur on segments II–III only in the following genera: *Brueelia*, *Teinomordeus* Gustafsson & Bush, 2017, *Acronirmus* Eichler, 1953 and *Sychraella* Gustafsson & Bush, 2017. In all other genera of the *Brueelia* complex, these sensilla only occur on segments IV–V. However, they are typically very hard to see, especially in species with reduced tergopleurites.

Gustafsson & Bush (2017) also neglected to explicitly state that it is the position of post-spiracular setae in relationship to this sensillum that determines whether they are *psps* or *aps*. Any setae positioned laterally to the sensillum are *aps*, whereas any setae situated immediately median to this sensillum are *psps*. Note that *aps* and *psps* on the first abdominal segment bearing post-spiracular setae (often segment V or VI in *Brueelia*) may be similar in length. Moreover, in some species of, e.g., *Olivinirmus* Złotorzycka, 1964 there may be more than one *psps* per side on some segments. To our knowledge, no species in the *Brueelia* complex has more than one *aps* per side on any segment.

Several of the species here belong to a group of pied *Brueelia* species found mainly on African hosts in the families Ploceidae, Estrildidae and Paridae. The only species of this group known from hosts outside Africa is *Brueelia plocea* (Lakshminarayana, 1968), from India. We have seen many additional species in this group, all from African hosts; however, suitable hosts in the same genera are found in South Asia. We here refer to this group as the "African pied *Brueelia*" group, to distinguish it from the New World *ornatissima* group, which have similar pigmentation patterns. This group comprises the following species: *Brueelia plocea* (Lakshminarayana, 1968); *B. queleae* Sychra & Barlev in Sychra *et al*., 2010a; *B. cantans* Sychra in Sychra *et al.*, 2010b; *B. aguilarae* Gustafsson & Bush, 2017; *B. mpumalangensis* Gustafsson *et al*., 2018; *B. semiscalaris* sp. nov.; *B. terspichore* sp. nov.; *B. sima* sp. nov.

The main characteristic of this group is the striking pigmentation pattern. This varies slightly between species, but typically includes having dark pigmentation on the anterior and posterior margins of sternites III–VI, the female tergopleurite IX+X, along the lateral margins of the abdomen, around the distal section of femora I–III and on the subgenital plates. The dark areas are generally at least dark brown, but may appear black in some species; both sternal and subgenital plates typically have distinct translucent fenestrae in both sexes.

In the phylogeny of Bush *et al*. (2016), members of this group (e.g., *Brueelia queleae* and *Brueelia* sp. (= *B. mpumalangensis*) ex *Melaniparus niger*) were placed in different parts of the tree, suggesting that they do not form a natural group; however, these placements received no statistical support. Apart from pigmentation patterns, the morphological characters of this group are also very diverse, suggesting that the division of this group in the phylogeny of Bush *et al.* (2016) may be correct.

Nevertheless, for the purposes of identification and keying, we consider the 'African pied *Brueelia*' group a useful grouping to help sort out the vast diversity of species of *Brueelia* on African hosts. As more species of *Brueelia* from African hosts become known, the relationships of the species in this informal group may have to be revised, and the group may be found to be artificial. We provide a key to the described species in this group below.

Key to the 'African pied *Brueelia*'

Note that the dorsal abdominal setae in the original illustration of *Brueelia plocea* have been translocated to the ventral side (Lakshminarayana 1968). No dorsal setae are given in the original description (ibid.: table II), but multiple setae are illustrated on some segments; we interpret all setae on these segments except the *sts* as dorsal setae. The female of *B. plocea* is undescribed.

1. Male 2
– Female 9

2. *Accessory post-spiracular setae* present on tergopleurite V (Fig. 9) 3
– *Accessory post-spiracular setae* absent on tergopleurite V (Fig. 23) 6

3. *Tergal posterior setae* present on tergopleurites V–VI 4
– *Tergal posterior setae* absent on tergopleurites V–VI (Fig. 9) 5

4. Frons rounded; *aps* present on tergopleurite IV ..... ***Brueelia queleae*** Sychra & Barlev in Sychra *et al*., 2010a
– Frons flattened; *aps* absent on tergopleurite IV ..... ***Brueelia cantans*** Sychra in Sychra *et al*., 2010b

5. *Tergal posterior setae* present on tergopleurite VII (Fig. 9); dark pigmentation of subgenital plate limited to anterior margin (Figs 9, 40) ..... ***Brueelia semiscalaris*** sp. nov.
– *Tergal posterior setae* absent on tergopleurite VII; dark pigmentation of subgenital plate extensive along lateral margins, reaching distal end of subgenital plate ..... ***Brueelia aguilarae*** Gustafsson & Bush, 2017

6. Preantennal head narrowly rounded ..... ***Brueelia plocea*** (Lakshminarayana, 1968)
– Preantennal head broad, frons either rounded or flattened (Fig. 25) 7

7. *Tergal posterior setae* present on tergopleurite VI (Fig. 23) (absent in single examined specimen from *E. p. delamerei*); 2 *ps* on each side of abdominal segment IV (Fig. 23) ..... ***Brueelia terpsichore*** sp. nov.
– *Tergal posterior setae* absent on tergopleurite VI (Fig. 30); 1 *ps* on each side of abdominal segment IV (Fig. 30) 8

8. Preantennal area roughly trapezoidal, with flattened frons (Fig. 32); *tps* present on tergopleurite VII (Fig. 30) .....***Brueelia sima*** sp. nov.
– Preantennal area roughly semioval, with rounded frons; *tps* absent on tergopleurite VII ....***Brueelia mpumalangensis*** Gustafsson *et al*., 2018

9. Frons rounded 10
– Frons flattened (Fig. 31) 11

10. Subgenital plate largely translucent, with lateral areas of dark pigmentation clearly separated from anterior band of dark pigmentation .....***Brueelia queleae*** Sychra & Barlev in Sychra *et al*., 2010a
– Subgenital plate largely dark, with lateral and anterior sections of dark pigmentation fused ....***Brueelia mpumalangensis*** Gustafsson *et al*., 2018

11. *Pleural setae* present on abdominal segment IV (Fig. 10) 12
– *Pleural setae* absent on abdominal segment IV (Fig. 31) .....***Brueelia sima*** sp. nov.

12. Subgenital plate with largely dark pigmentation apart from a central more or less T-shaped translucent fenestra (sections of this fenestra may be interrupted as in Fig. 29) 13
– Subgenital plate largely translucent, but with central arched section of dark pigmentation connected to anterior band of dark pigmentation as in Figs 15, 39 .....***Brueelia semiscalaris*** sp. nov.

13. Vulval margin with distinct median point .....***Brueelia aguilarae*** Gustafsson & Bush, 2017
– Vulval margin without distinct median point (Fig. 29) 14

14. Subgenital plate almost entirely dark, with translucent areas small and isolated from each other (Figs 29, 41) .....***Brueelia terpsichore*** sp. nov.
– Subgenital plate with clear central T-shaped translucent fenestrum ....***Brueelia cantans*** Sychra in Sychra *et al.*, 2010b

Brueelia pofadderensis sp. nov.

urn:lsid:zoobank.org:act:374AAEBC-FB7D-455F-86A9-D3BC2360AD78

Figs 2–8, 37–38

Type host

Passer melanurus damarensis Reichenow, 1902 – Cape sparrow (Passeridae).

Type locality

Pofadder, Cape Province, South Africa.

Other hosts

Passer melanurus vicinus Clancey, 1958.

Diagnosis

Brueelia pofadderensis sp. nov. is a fairly typical species of *Brueelia* from hosts in the genus *Passer* Brisson, 1760. This informal group of *Brueelia* parasitizing *Passer* spp. is characterized by long, slender heads with convex lateral margins of the preantennal area, elongated parameres and the presence of *aps* but not *psps* on the male tergopleurite V. We have seen several undescribed species of this group (D.R. Gustafsson and S.E. Bush, in prep.), but the only described species in this group is *Brueelia cyclothorax* (Burmeister, 1838) (including *N. subtilis* Nitzsch in Giebel, 1874 and *B. obligata* Eichler, 1954). No adequate illustrations or descriptions of *B. cyclothorax* have been published, but partial illustrations

were published by Eichler (1954) and Złotorzycka (1964, 1977). Note that the illustration in Eichler (1954) of the female abdomen mixes dorsal and ventral setae and characters on the same side. The frons in his illustrations are also incorrectly illustrated, as the hyaline margin has collapsed in his specimens.

Brueelia pofadderensis sp. nov. can be separated from *B. cyclothorax* by the following characters: abdominal segment III in both sexes without *ps* in *B. pofadderensis* sp. nov. (Figs 2–3), but with 1 *ps* on each side in *B. cyclothorax*; male tergopleurite IV without *aps* in *B. pofadderensis* sp. nov. (Fig. 2), but with *aps* in *B cyclothorax*; antero-lateral corners of mesosomal lobes blunt in *B. pofadderensis* sp. nov. (Figs 5–6), but acute in *B. cyclothorax*; distal section of mesosome almost square-shaped in *B. pofadderensis* sp. nov. (Figs 5–6), but with more convergent lateral margins in *B. cyclothorax*; parameres more elongated in *B. cyclothorax* than in *B. pofadderensis* sp. nov. (Fig. 7).

Etymology

The specific epithet is derived from the type locality.

Material examined

Holotype

SOUTH AFRICA • ♂, ex *Passer melanurus damarensis*; Cape Province, Pofadder; May 1949; R. Meinertzhagen leg.; NHML 19050.

Paratypes

SOUTH AFRICA • 3 ♂♂; same data as for holotype; NHML 19050.

UNKNOWN COUNTRY • 1 ♂, 1 ♀, ex *Passer melanurus demarensis*; locality unknown; Mar. 1913; J. Waterston Collection, formerly South Africa Museum; British Museum; NHML 1930-232.

Other material

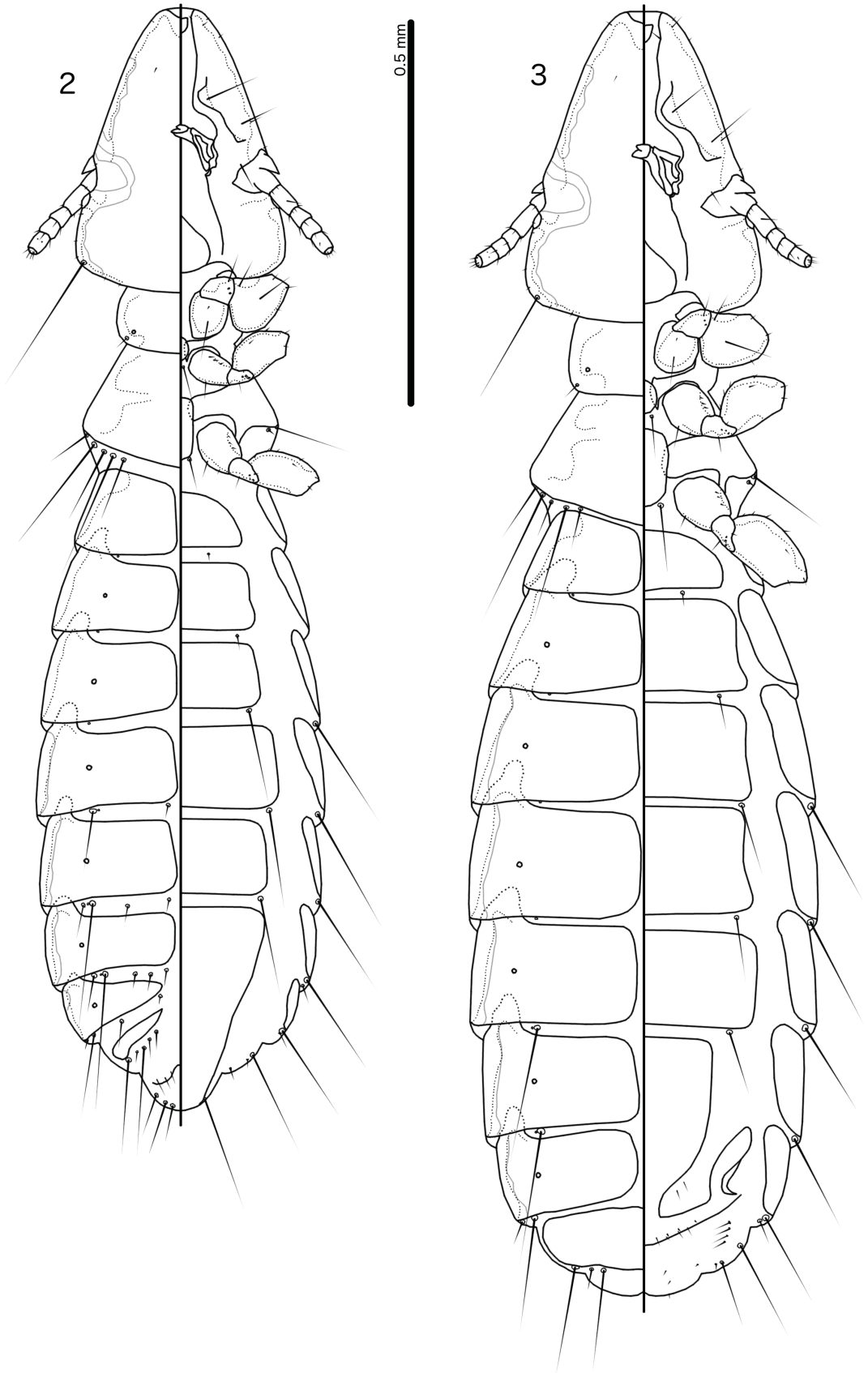
SOUTH AFRICA • 1 ♂, 1 ♀, ex *Passer melanurus vicinus*; West Transvaal, Potchefstroom; May 1953; British Museum; NHML 1955-660 • 2 ♂♂, 1 ♀, ex *Passer melanurus vicinus*; Transvaal, Ventersdorf; 12 Jul. 1954; H.E. Paterson leg.; British Museum; NHML 1955-660.

Description

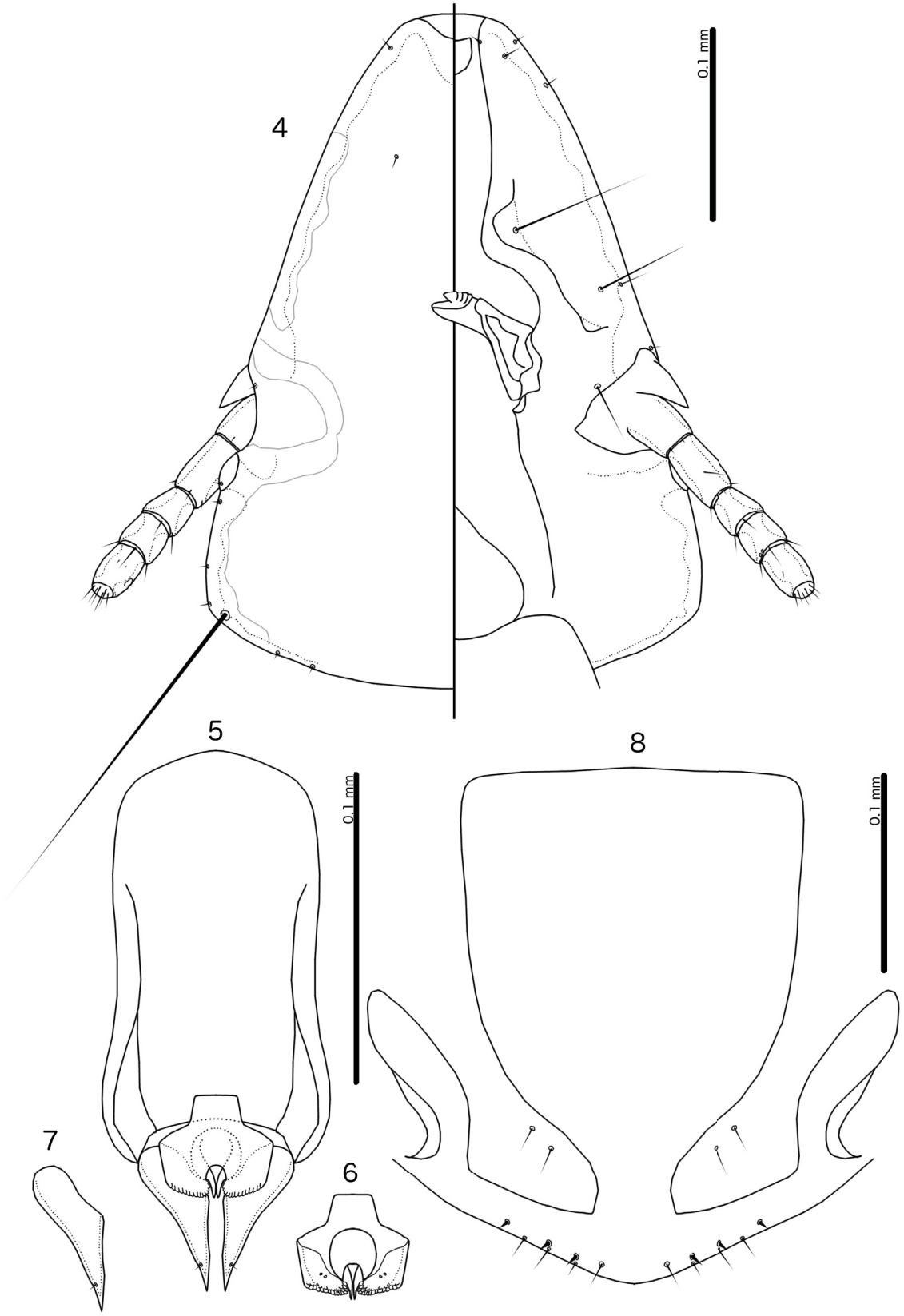
Head slenderly rounded, dome-shaped (Fig. 4), lateral margins of preantennal area convex, frons slightly convex. Marginal carina narrow, with shallowly undulating median margins, displaced and widened at osculum. Ventral anterior plate large, with flat to shallowly concave anterior margin. Head chaetotaxy and pigmentation patterns as in Fig. 4; head sensilla and *pts* not visible in examined specimens. Pre- and postocular nodi of similar size. Marginal temporal carina slender, with undulating median margin. Gular plate broad, lanceolate. Thoracic and abdominal segments and pigmentation patterns as in Figs 2–3, 37–38.

Male

Thoracic and abdominal chaetotaxy as in Fig. 2; 1–2 *tps* on tergopleurite VI. Basal apodeme broad, with shallowly concave lateral margins (Fig. 5). Proximal mesosome broadly trapezoidal, widening slightly distally (Fig. 6). Mesosomal lobes wide, angular, with extensive rugose area along distal margin. Gonopore oval, slightly longer than wide. Penile arms reach beyond distal margin of mesosome. Parameres slender, elongated distally (Fig. 7); *pst1–2* as in Fig. 7. Measurements ex *P. m. damarensis* (n = 5): TL = 1.30–1.40; HL = 0.34–0.35; HW = 0.26–0.27; PRW = 0.16–0.18; PTW = 0.27; AW = 0.35–0.38. Measurements ex *P. m. vicinus* (n = 3): TL = 1.39–1.51; HL = 0.34–0.36; HW = 0.26–0.30; PRW = 0.16–0.19; PTW = 0.27–0.31; AW = 0.36–0.41.



Figs 2–3. *Brueelia pofadderensis* sp. nov. ex *Passer melanurus damarensis* Reichenow, 1902. **2**. ♂, holotype (NHML 19050), habitus, dorsal and ventral views. **3**. ♀, habitus, dorsal and ventral views.



Figs 4–8. *Brueelia pofadderensis* sp. nov. ex *Passer melanurus damarensis* Reichenow, 1902. **4–7**. ♂, holotype (NHML 19050). **4**. Head, dorsal and ventral views. **5**. Genitalia, dorsal view. **6**. Mesosome, ventral view. **7**. Paramere, dorsal view. **8**. ♀, subgenital plate and vulval margin, ventral view.

Female

Thoracic and abdominal chaetotaxy as in Fig. 3. Subgenital plate rounded trapezoidal, with moderately wide connection to cross piece (Fig. 8). Vulval margin convergent to rounded median point, in specimen from type host subspecies with 2–3 short, slender *vms* and 3 short, thorn-like *vss* on each side; 3 short, slender *vos* on each side of subgenital plate; distal 1 *vos* median to *vss*. In material from *P. m. vicinus*, with 4 short, slender *vms* and 3–5 short, thorn-like *vss* on each side of vulval margin, and 2–3 short, slender *vos* on each side of subgenital plate, with distal 1 *vos* situated median to *vss*. Measurements ex *P. m. damarensis* (n = 1): TL = 1.66; HL = 0.40; HW = 0.30; PRW = 0.20; PTW = 0.31; AW = 0.46. Measurements ex *P. m. vicinus* (n = 2): TL = 1.69–1.81; HL = 0.37–0.40; HW = 0.29–0.34; PRW = 0.17–0.21; PTW = 0.29–0.33; AW = 0.40–0.47.

Remarks

Specimens from the Transvaal host subspecies, *Passer melanurus vicinus*, differ from the specimens from the type host subspecies by having proportionately shorter and more rounded preantennal heads, in size and in the female genital chaetotaxy; the latter character may be different only due to the small number of specimens examined. The male genitalia and abdominal chaetotaxy are essentially similar between the two populations. We presently do not consider these differences substantial enough to warrant the erection of a new taxon for the specimens from Transvaal, but note that in some other cases, different host subspecies are parasitized by different species of *Brueelia* (D.R. Gustafsson and S.E. Bush, in prep.).

Brueelia semiscalaris sp. nov.

urn:lsid:zoobank.org:act:FB13FA53-0431-4E3B-9050-04D1BDEA14C5

Figs 9–15, 39–40

Type host

Granatina granatina (Linnaeus, 1766) – violet-eared waxbill (Estrildidae).

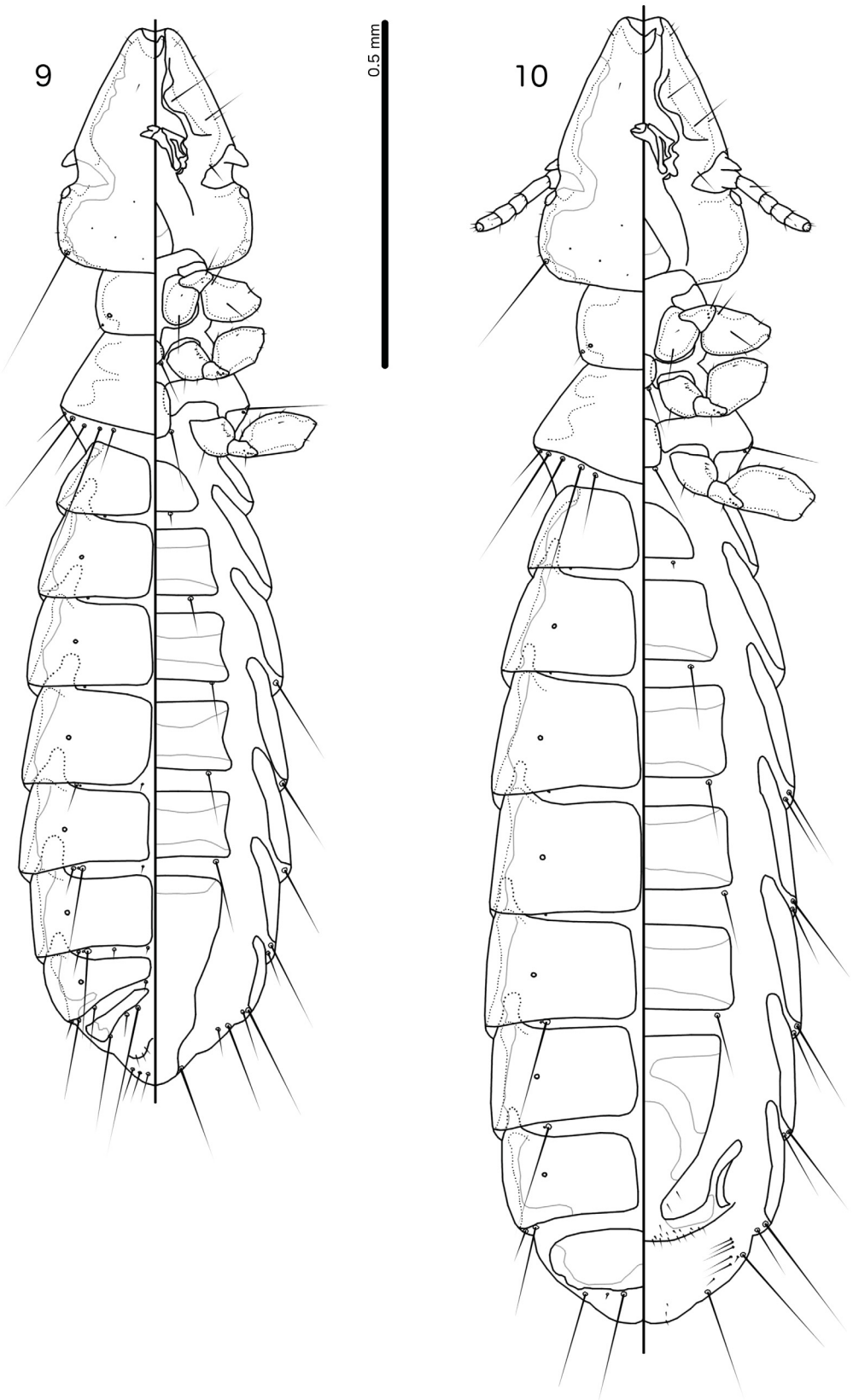
Type locality

Mahalapye, Botswana.

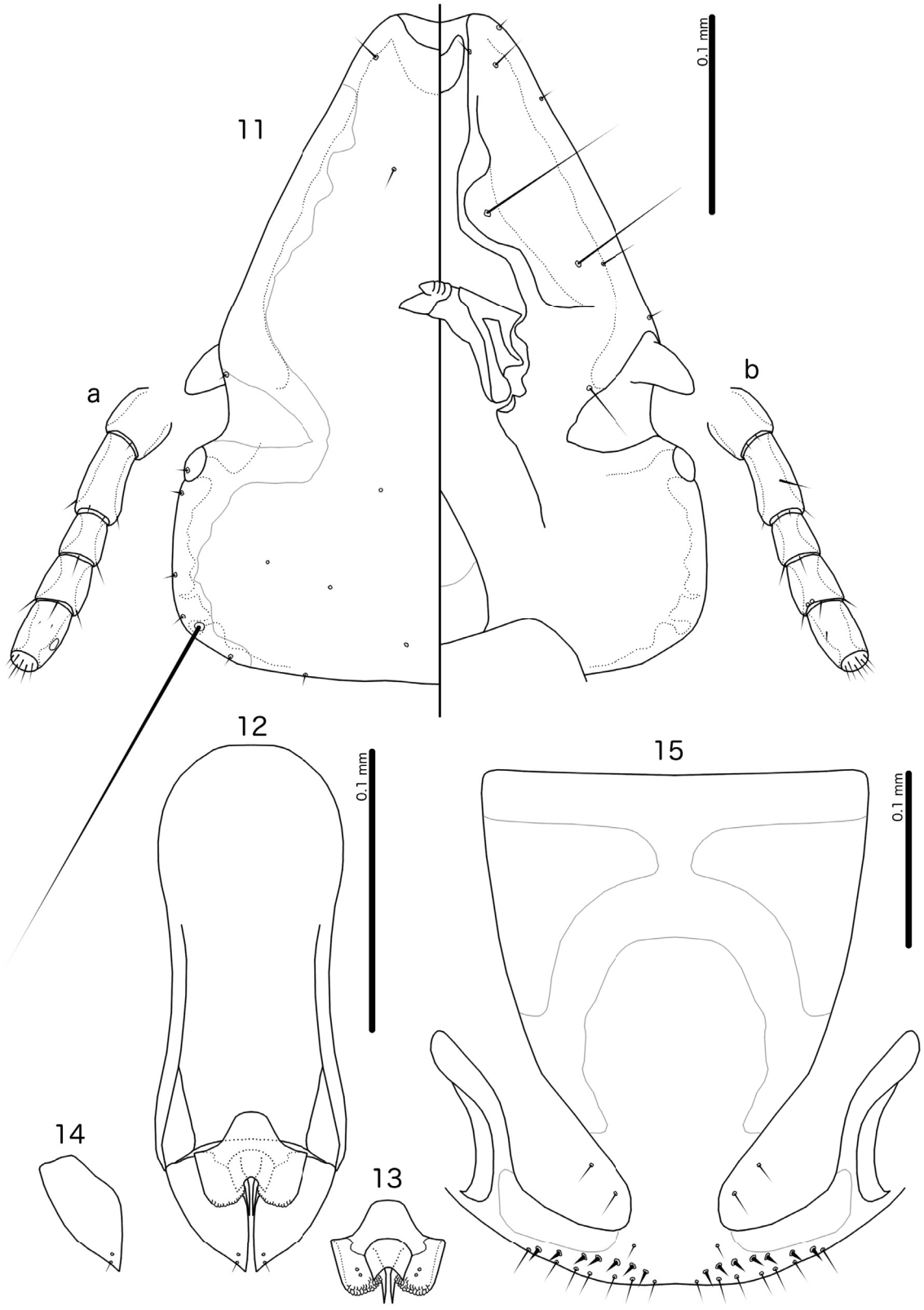
Diagnosis

Brueelia semiscalaris sp. nov. belongs to the "African pied *Brueelia*" group (see above), but is the palest described member of this group. Within this group, *B. semiscalaris* sp. nov. is most similar to *B. aguilarae* Gustafsson & Bush, 2017, with which it shares the following characters: head relatively slender (Fig. 11), with flattened frons and only slightly convex lateral margins of the preantennal area; mesosome with nearly parallel lateral margins and somewhat angular postero-lateral corners (Fig. 13); *aps* absent on male tergopleurite IV (Fig. 9); *tps* absent on male tergopleurites V–VI (Fig. 9); *ps* present on female abdominal segment IV (Fig. 10).

Brueelia semiscalaris sp. nov. can be separated from *B. aguilarae* by the following characters: *tps* present on male tergopleurite VII in *B. semiscalaris* sp. nov. (Fig. 9), but absent in *B. aguilarae*; parameres broad and roughly oval in *B. semiscalaris* sp. nov. (Fig. 14), but slender and elongated in *B. aguilarae*; proximal mesosome with convex lateral margins in *B. aguilarae*, but with concave lateral margins in *B. semiscalaris* sp. nov. (Fig. 13); gonopore about as long as wide and penile arms reaching beyond distal margin of mesosome in *B. semiscalaris* sp. nov. (Fig. 13), but gonopore very short and penile arms not reaching posterior margin of mesosome in *B. aguilarae*; female subgenital plate with central translucent, T-shaped fenestra in *B. aguilarae*, but with arched central dark pigmentation in *B. semiscalaris* sp. nov.



Figs 9–10. *Brueelia semiscalaris* sp. nov. ex *Granatina granatina* (Linnaeus, 1766). **9**. ♂, holotype (NHML 1956-561), habitus, dorsal and ventral views. Antennae distorted in original, and not illustrated. **10**. ♀, habitus, dorsal and ventral views.



Figs 11–15. *Brueelia semiscalaris* sp. nov. ex *Granatina granatina* (Linnaeus, 1766). **11–14**. ♂, holotype (NHML 1956-561). **11**. Head, dorsal and ventral views; **a–b**. Antennae from ♀, dorsal and ventral views. **12**. Genitalia, dorsal view. **13**. Mesosome, ventral view. **14**. Paramere, dorsal view. **15**. ♀, subgenital plate and vulval margin, ventral view.

(Figs 15, 39); vulval margin with flattened median section in *B. semiscalaris* sp. nov. (Fig. 15), but with median point in *B. aguilarae*.

Etymology

The specific epithet is derived from the Latin '*semi*' for 'partial, incomplete' and '*scalaris*' for 'ladder', referring to the pigmentation pattern of the abdomen.

Type material

Holotype

BOTSWANA • ♂; Bechuanaland (= Botswana), Mahalapye; 21 Dec. 1955; British Museum; NHML 1956-561.

Paratype

BOTSWANA • ♀; same data as for holotype.

Description

Head rounded trapezoidal (Fig. 11), lateral margins of preantennal area slightly convex proximally and slightly concave distally, frons concave. Marginal carina moderate, deeply displaced and much widened at osculum, with almost even median margin. Ventral anterior plate large, with deeply concave anterior margin. Head chaetotaxy and pigmentation patterns as in Fig. 11. Preantennal nodi elongated. Preocular nodi much larger than postocular nodi. Marginal temporal carina moderate in width, with undulating median margin. Gular plate slender, lanceolate. Thoracic and abdominal segments and pigmentation patterns as in Figs 9–10, 39–40.

Male

Antennae folded ventrally in single examined male and cannot be illustrated accurately. Seemingly similar to female antennae (Fig. 11a–b) in shape and proportions, but paler. Thoracic and abdominal chaetotaxy as in Fig. 9; *aps* present on tergopleurite V; *tps* present on tergopleurite VII. Proximal basal plate almost entirely translucent, exact extent hard to ascertain; here illustrated tentatively (Fig. 12); slender with concave lateral margins. Proximal mesosome rounded trapezoidal, rather broad (Fig. 13). Mesosomal lobes with nearly parallel lateral margins and somewhat angular postero-lateral corners; rugose area extensive at distal end. Gonopore arched, about as wide as long. Penile arms long, reaching beyond distal margin of mesosome. Parameres broadly oval, not much elongated distally, with *pst1–2* as in Fig. 14. Measurements (n = 1): TL = 1.51; HL = 0.35; HW = 0.28; PRW = 0.18; PTW = 0.28; AW = 0.38.

Female

Thoracic and abdominal chaetotaxy as in Fig. 10; *ps* present on abdominal segment IV. Subgenital plate rounded triangular, with broad connection to cross piece and unique pigmentation pattern (Fig. 15). Vulval margin flattened, median section somewhat concave, with 6–7 short, slender *vms* and 7–8 short, thorn-like *vss* on each side; 3 short, slender *vos* on each side of subgenital plate; distal 1 *vos* just anterior to *vss*. Measurements (n = 1): TL = 1.91; HL = 0.40; HW = 0.31; PRW = 0.20; PTW = 0.32; AW = 0.46.

Brueelia bicurvata (Piaget, 1880)
Figs 16–22

Nirmus bicurvatus Piaget, 1880: 159, pl. 13, fig. 8.

Degeeriella bicurvata – Harrison 1916: 109.
Brueelia bicurvata – Hopkins & Clay 1952: 53. — Gustafsson & Bush 2017: 38.

Type host

Vidua paradisaea (Linnaeus, 1758) – long-tailed paradise whydah (Ploceidae).

Type locality

Original material from the Leiden Museum, but no type locality given by Piaget (1880).

Material examined

ZAMBIA • 2 ♂♂, 2 ♀♀, ex *Vidua paradisaea obtusa*; North Rhodesia [= Zambia], Luanshya; 26 May 1955; British Museum; NHML 1955-486, ML/121.

Description

Head rounded trapezoidal (Fig. 18), lateral margins of preantennal area slightly convex proximally, but slightly concave distally, frons broadly flattened to slightly concave. Marginal carina slender, deeply displaced and much widened at osculum, and with median margin slightly undulating. Ventral anterior plate oblong, with rounded posterior margin. Head chaetotaxy and pigmentation pattern as in Fig. 18. Preantennal nodi elongated. Preocular nodi larger than postocular nodi. Marginal temporal carina slender, with slightly undulating median margin. Gular plate slenderly lanceolate. Thoracic and abdominal segments and pigmentation patterns as in Figs 16–17.

Male

Male subgenital plate does not reach terminal end of abdomen (Fig. 16). Thoracic and abdominal chaetotaxy as in Fig. 16. Basal apodeme broad, with concave lateral margins (Fig. 19). Proximal mesosome broad, convergent to median point, and with lateral extensions, making entire structure somewhat arrow-shaped (Fig. 20). Mesosomal lobes long and broad, with almost parallel lateral margins, rounded postero-lateral corners, and extensive rugose area along distal margin. Gonopore roughly semi-oval, about as long as wide. Penile arms long, reaching beyond distal margin of mesosome. Parameres long and broad, distal section elongated, with *pst1–2* as in Fig. 21. Measurements (n = 2): TL = 1.48–1.51; HL = 0.36; HW = 0.30; PRW = 0.20; PTW = 0.29–0.31; AW = 0.40–0.41.

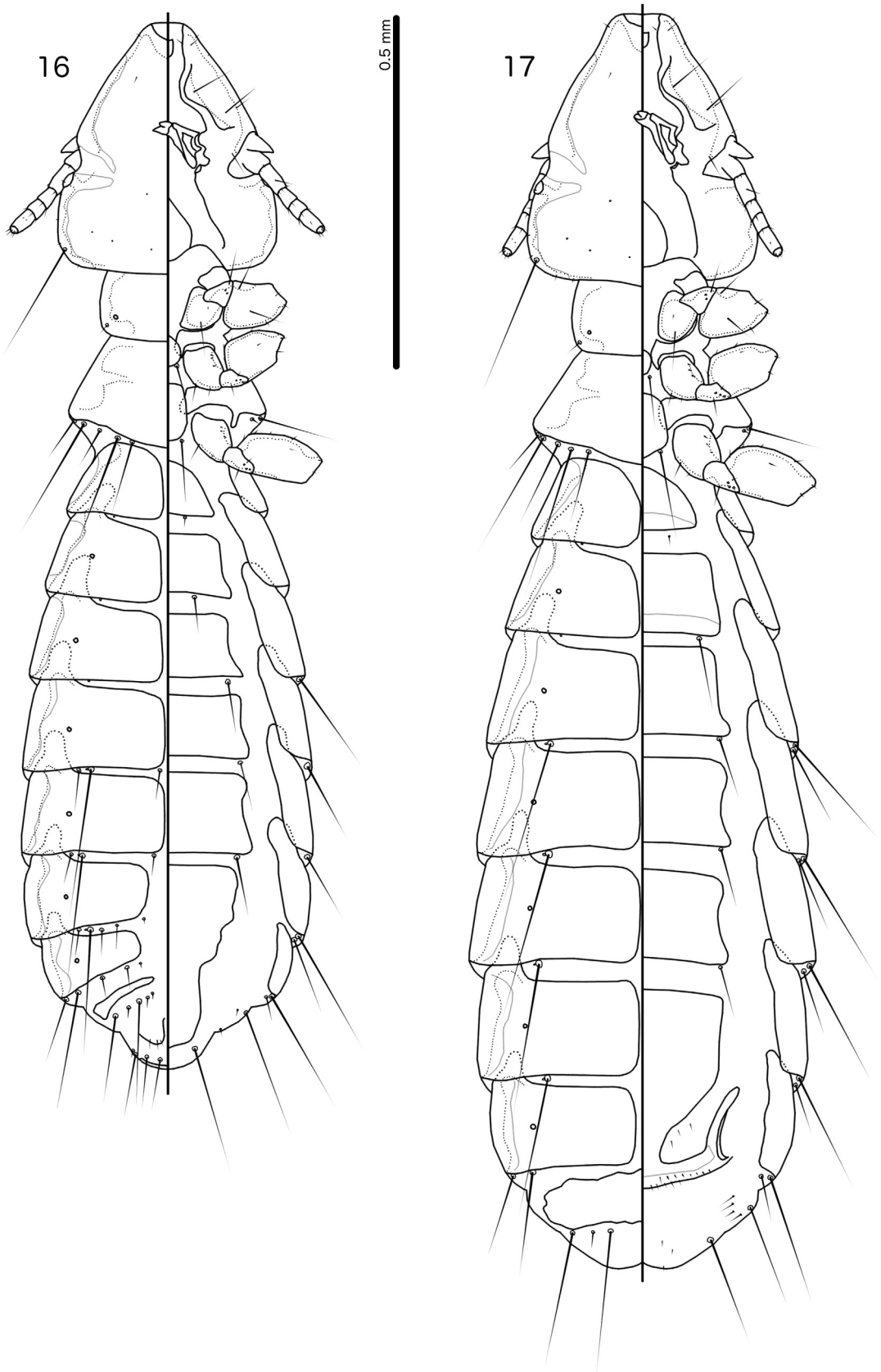
Female

Thoracic and abdominal chaetotaxy as in Fig. 17; *psps* present on tergopleurites IV–VII. Subgenital plate shaped as in Fig. 22, with broad connection to cross piece. Vulval margin somewhat convergent to median point, with 3–5 short, slender *vms* and 5–8 short, thorn-like *vss* on each side; 2–4 short, slender *vos* on each side of subgenital plate; distal 1 *vos* median to *vss*. Measurements (n = 2): TL = 1.76–1.81; HL = 0.37–0.39; HW = 0.31–0.34; PRW = 0.20–0.21; PTW = 0.30–0.33; AW = 0.44–0.47.

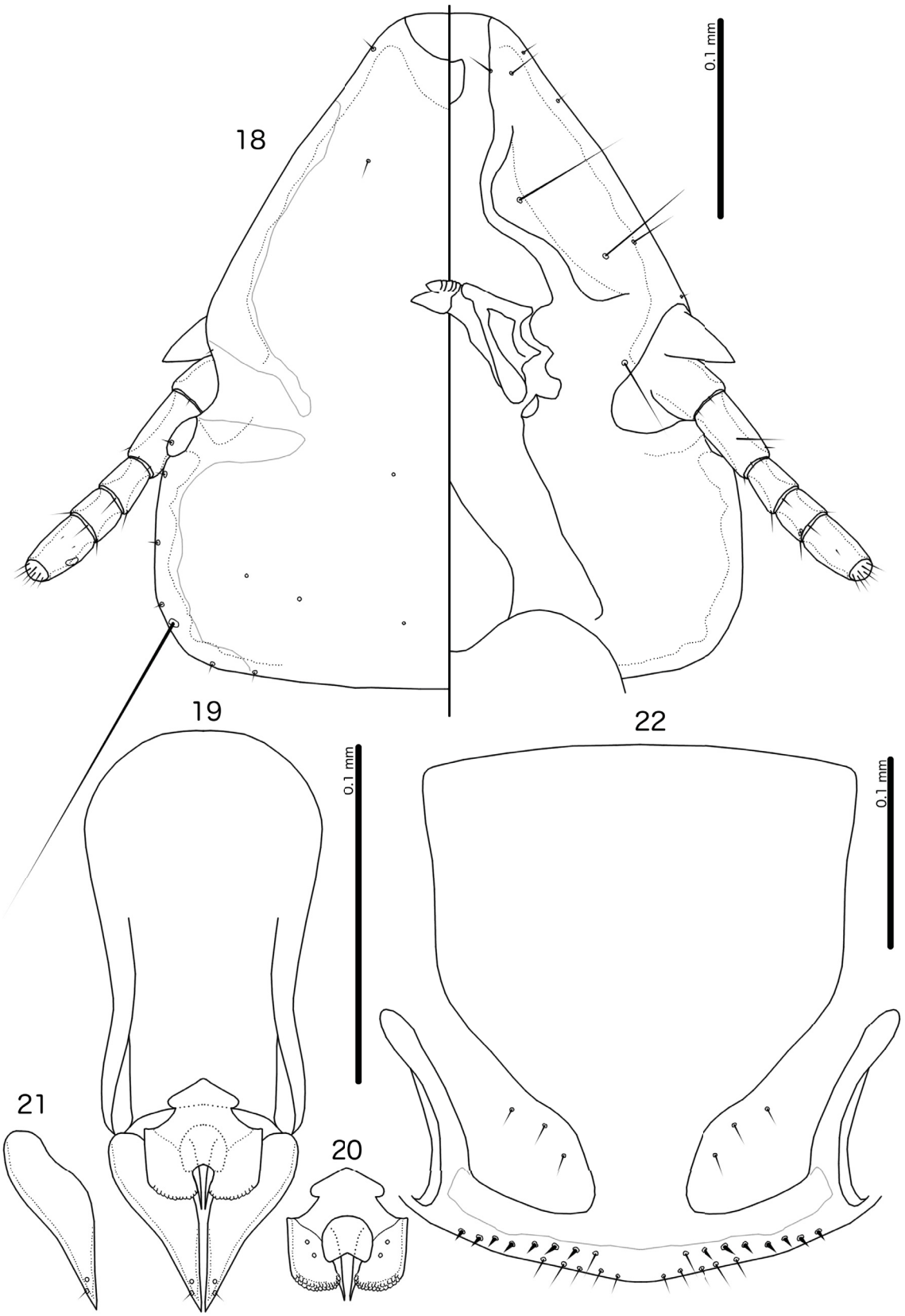
Remarks

The presence of *psps* on the female tergopleurites IV–V is unusual in *Brueelia*. No examples of females with *psps* on these segments were included in the list of variation in abdominal chaetotaxy of *Brueelia* published by Gustafsson & Bush (2017: table 3). We know of no other species of *Brueelia* in which *psps* are present on the female tergopleurite IV, but *psps* are present on the female tergopleurite V in several species of *Brueelia* found on icterid hosts (Cicchino & Castro 1996). Carriker (1963) illustrated setae on female tergopleurites III–VII in the position of *psps* in *B. mirabile* Carriker, 1963, but did not illustrate any *sts*. It is therefore doubtful whether these setae represent *psps* or *sts* translocated to the dorsal side; we have not examined Carriker's material. In females of most genera in the *Brueelia* complex, *psps* are absent on tergopleurites IV–V, and the general absence of these setae in *Brueelia* (except in *B. bicurvata*) is unusual for the complex (Gustafsson & Bush 2017: table 2).

A specimen of *Brueelia* from *Vidua macroura* was included in the phylogeny of Bush *et al*. (2016), but its placement as sister to the remaining *Brueelia* s. str. received no statistical support. As *psps* are



Figs 16–17. *Brueelia bicurvata* (Piaget, 1880) ex *Vidua paradisaea* (Linnaeus, 1758) (NHML 1955-486, ML/121). **16**. ♂, habitus, dorsal and ventral views. **17**. ♀, habitus, dorsal and ventral views.



Figs 18–22. *Brueelia bicurvata* (Piaget, 1880) ex *Vidua paradisaea* (Linnaeus, 1758) (NHML 1955-486, ML/121). **18**. ♂, head, dorsal and ventral views. **19**. ♂, genitalia, dorsal view. **20**. ♂, mesosome, ventral view. **21**. ♂, paramere, dorsal view. **22**. ♀, subgenital plate and vulval margin, ventral view.

commonly found on female tergopleurites IV–V in many other genera of the *Brueelia* complex (see Gustafsson & Bush 2017), it is possible that this represents the ancestral condition in the *Brueelia* complex, and that this placement as sister to the remaining *Brueelia* is correct.

Notably, these setae are present in both *Formicaphagus* Carriker, 1957 (see Price & Clayton 1996) and *Formicaricola* Carriker, 1957 (see Price & Clayton 1995), two of the genera most closely related to the *Brueelia* complex in the phylogeny of Bush *et al*. (2016). In the closest relative, *Neopsittaconirmus* Conci, 1942, the distribution of *psps* varies, e.g., present on III–VII in *N. albus* (Le Souëf & Bullen, 1902) (Price & Emerson 1978), but present only on IV–V in many species (Guimarães 1974) and only on IV in *N. gracilis* Guimarães, 1974 (see also Sychra 2005).

Brueelia terpsichore sp. nov.
urn:lsid:zoobank.org:act:A5296B28-CC4A-430B-928B-9A92B2AC5E2B
Figs 23–29, 41–42

Type host

Euplectes jacksoni (Sharpe, 1891) – Jackson's widowbird (Ploceidae).

Type locality

Kenya.

Other host

Euplectes progne delamerei (Shelley, 1903) – long-tailed widowbird.

Diagnosis

Brueelia terpsichore sp. nov. belongs to the informal 'African pied *Brueelia*' group (see above). Within this group, *B. terpsichore* sp. nov. is not particularly similar to any species. The extensive dark pigmentation of the sternites and subgenital plates of both sexes, the abdominal chaetotaxy, and the head shape suggests that *B. aguilarae* may be the closest relative of *B. terpsichore* sp. nov. These two species can be separated by the following characters: *tps* present on male tergopleurites VI–VIII in *B. terpsichore* sp. nov. (Fig. 23), but absent in *B. aguilarae*; male abdominal segment IV with 2 *ps* on each side in *B. terpsichore* sp. nov. (Fig. 23), but with 1 *ps* on each side in *B. aguilarae*; *aps* absent on male tergopleurite V in *B. terpsichore* sp. nov. (Fig. 23), but present in *B. aguilarae*; proximal mesosome broadly rounded in *B. aguilarae*, but trapezoidal in *B. terpsichore* sp. nov. (Fig. 27); translucent fenestra of female subgenital plate T-shaped in *B. aguilarae*, but divided into smaller, isolated fenestrae in *B. terpsichore* sp. nov. (Figs 29, 41; note that there is some variation between specimens in this species); vulval margin gently rounded in *B. terpsichore* sp. nov. (Fig. 29), but convergent to median point in *B. aguilarae*.

Etymology

The specific epithet is in honor of the Greek muse Terpsichore, goddess of dance; ultimately from the Greek '*terpo*' for 'I delight' and '*khoros*' for 'dance'. This refers to the peculiar lekking behaviour of the type host, which includes the construction of a small stage on which the male dances by jumping high into the air and singing to attract females (Andersson 1989, 1991).

Material examined

Holotype

KENYA • ♂, ex *Euplectes jacksoni* (as *Drepanoplectes jacksoni*); Kenya; Jan. 1936; R. Meinertzhagen leg.; NHML 6084 (lower male on slide).

Paratypes

KENYA • 2 ♂♂, 10 ♀♀; same data as for holotype; NHML 6081, 6082, 6084 (not lower male on slide), 6210.

Other material

KENYA • 1 ♂, 1 ♀, ex *Euplectes progne delamerei* (as *Drepanoplectes progne delamerei*); Kenya; Jan. 1936; R. Meinertzhagen leg.; NHML 6714.

Description

Head rounded trapezoidal (Fig. 25), lateral margins of preantennal area slightly convex or almost straight, frons broadly flattened. Marginal carina broad, deeply displaced and much widened at osculum, with undulating median margin. Ventral anterior plate not visible. Head chaetotaxy and pigmentation pattern as in Fig. 25. Preantennal nodi large, bulging. Pre- and postocular nodi large. Marginal temporal carina broad, with distinctly undulating median margin. Gular plate slender, lanceolate. Thoracic and abdominal segments and pigmentation patterns as in Figs 23–24, 41–42.

Male

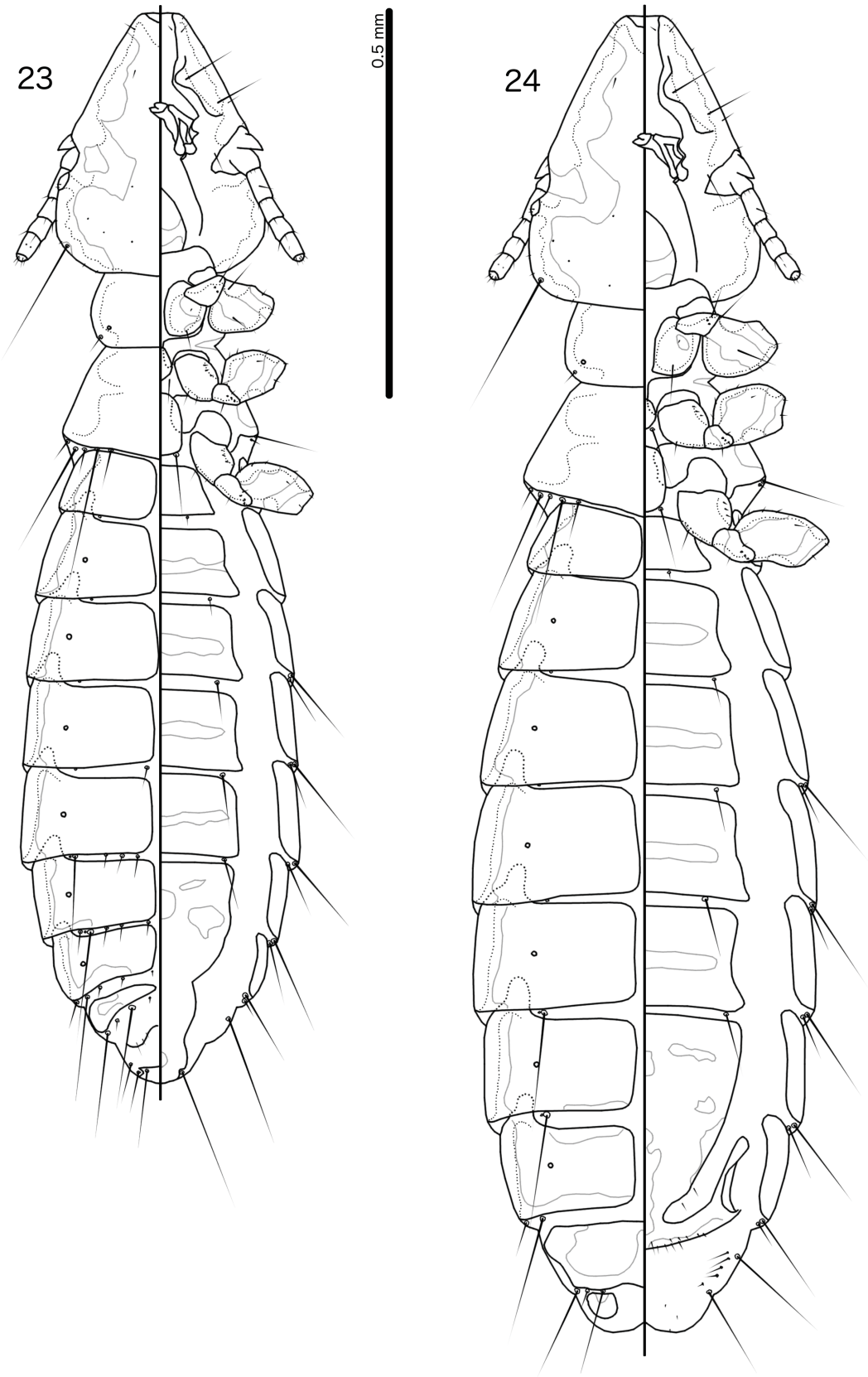
Thoracic and abdominal chaetotaxy as in Fig. 23. Anterior section of basal apodeme not pigmented and cannot be seen clearly in examined specimens; illustration here is approximate (Fig. 26). Proximal mesosome rounded trapezoidal, widening distally, with concave lateral margins (Fig. 27). Mesosomal lobes relatively slender, rounded distally, with rugose area limited to distal margin. Gonopore crescent-shaped, slightly wider than long. Penile arms short, not reaching beyond distal margin of mesosome. Parameres elongated, tapering gently (Fig. 28); *pst1–2* as in Fig. 28. Measurements ex *Euplectes jacksoni* (n = 3): TL = 1.42–1.48; HL = 0.33–0.34; HW = 0.26–0.28; PRW = 0.19; PTW = 0.26–0.27; AW = 0.36–0.37. Measurements ex *E. progne delamerei* (n = 1): TL = 1.44; HL = 0.34; HW = 0.26; PRW = 0.19; PTW = 0.27; AW = 0.35.

Female

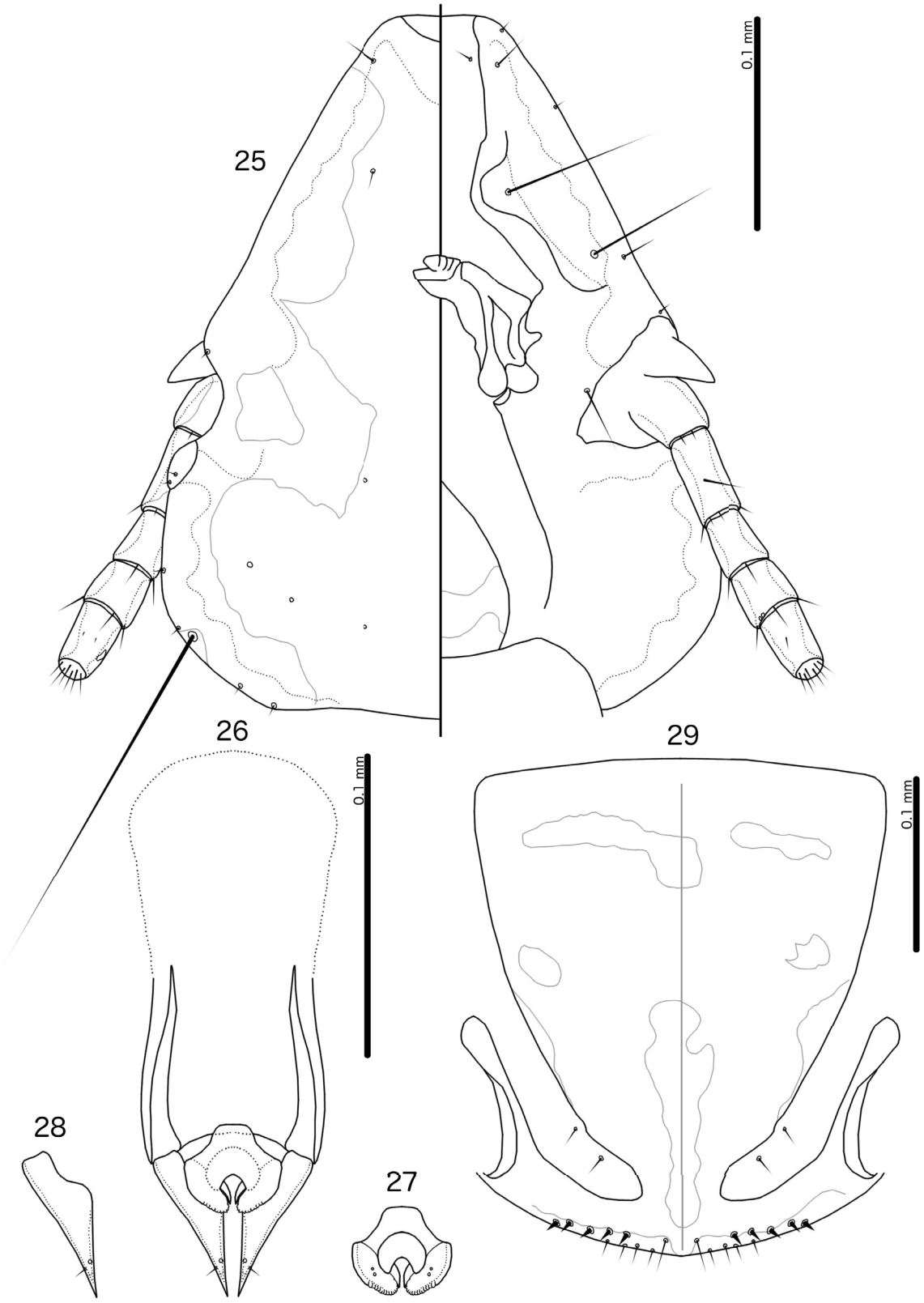
Thoracic and abdominal chaetotaxy as in Fig. 24. Pigmentation pattern of subgenital plate differing slightly between specimens; two variants shown in Fig. 29 (separated by grey line), one with antero-lateral fenestra connected to antero-median fenestra and one with these fenestrae unconnected. Antero-median fenestra generally pale brown in pigmentation, may extend posteriorly to approach postero-median fenestra (not shown). Exact shape of postero-lateral fenestrae and translucent lateral borders of distal subgenital plate also differ between specimens. Subgenital plate rounded triangular, with moderate connection to cross piece. Vulval margin gently rounded, with 3–5 short, slender *vms* and 4–6 short, thorn-like *vss* on each side; 2–3 short, slender *vos* on each side of subgenital plate; distal 1 *vos* median to *vss*. Material from both host species with same vulval chaetotaxy. Measurements ex *Euplectes jacksoni* (n = 10): TL = 1.58–1.73 (1.66); HL = 0.36–0.38 (0.37); HW = 0.28–0.31 (0.30); PRW = 0.19–0.22 (0.21); PTW = 0.28–0.31 (0.30); AW = 0.40–0.44 (0.42). Measurements ex *E. progne delamerei* (n = 1): TL = 1.73; HL = 0.37; HW = 0.30; PRW = 0.21; PTW = 0.31; AW = 0.40.

Remarks

No significant differences have been found between specimens from the two host species, except that the single examined male from *Euplectes progne delamerei* lacks *tps* on tergopleurite VI. These are present in all specimens from the type host; however, the number varies between 1 and 2. As only one male from *E. p. delamerei* was examined, we presently do not attach any significance to this difference, as the *psps* on this segment is also missing on one side. The absence of these setae may thus be due to individual variation.



Figs 23–24. *Brueelia terpsichore* sp. nov. ex *Euplectes jacksoni* (Sharpe, 1891). **23**. ♂, holotype (NHML 6084), habitus, dorsal and ventral views. **24**. ♀, habitus, dorsal and ventral views.



Figs 25–29. *Brueelia terpsichore* sp. nov. ex *Euplectes jacksoni* (Sharpe, 1891). **25–28**. ♂, holotype (NHML 6084). **25**. Head, dorsal and ventral views. **26**. Genitalia, dorsal view. **27**. Mesosome, ventral view. **28**. Paramere, dorsal view. **29**. ♀, subgenital plate and vulval margin, ventral view.

Brueelia sima sp. nov.
urn:lsid:zoobank.org:act:3657A29B-5BDB-4E90-A0EC-AD665F787BC7
Figs 30–36, 43–44

Type host

Malimbus nitens (Gray, 1831) – blue-billed malimbe (Ploceidae).

Type locality

Batouri, Cameroon.

Diagnosis

Brueelia sima sp. nov. is part of the informal 'African pied *Brueelia*' group (see above). Within this group, *B. sima* sp. nov. does not appear to be particularly similar to any other species, but the head shape and proportions are most reminiscent of those in *B. cantans* Sychra in Sychra *et al*., 2010. These two species can be separated by the following characters: in *B. cantans, aps* and *tps* are present on male tergopleurites V–VI, but they are absent in *B. sima* sp. nov. (Fig. 30); multiple *tps* are present on male tergopleurite VII in *B. cantans*, but only a single *tps* is present on this segment in males of *B. sima* sp. nov. (Fig. 30); the mesosome has angular postero-lateral corners in *B. cantans*, but has rounded postero-lateral corners in *B. sima* sp. nov. (Fig. 34); parameres less elongated in *B. sima* sp. nov. (Fig. 35) than in *B. cantans*; the female subgenital plate with an anterior transversal fenestra, interrupted medianly, and with a large central fenestra separated from the anterior transversal fenestra in *B. sima* sp. nov. (Figs 36, 43), but with all these fenestrae continuous in *B. cantans*.

Etymology

The specific epithet is derived from the Latin '*simus*' for 'snub-nosed', referring to the relatively short and broad preantennal area of this species.

Type material

Holotype

CAMEROON • ♂; French Cameroons [= Cameroon], Batouri; 15 May 1959; J. Mouchet leg.; British Museum; NHML 1960-295.

Paratype

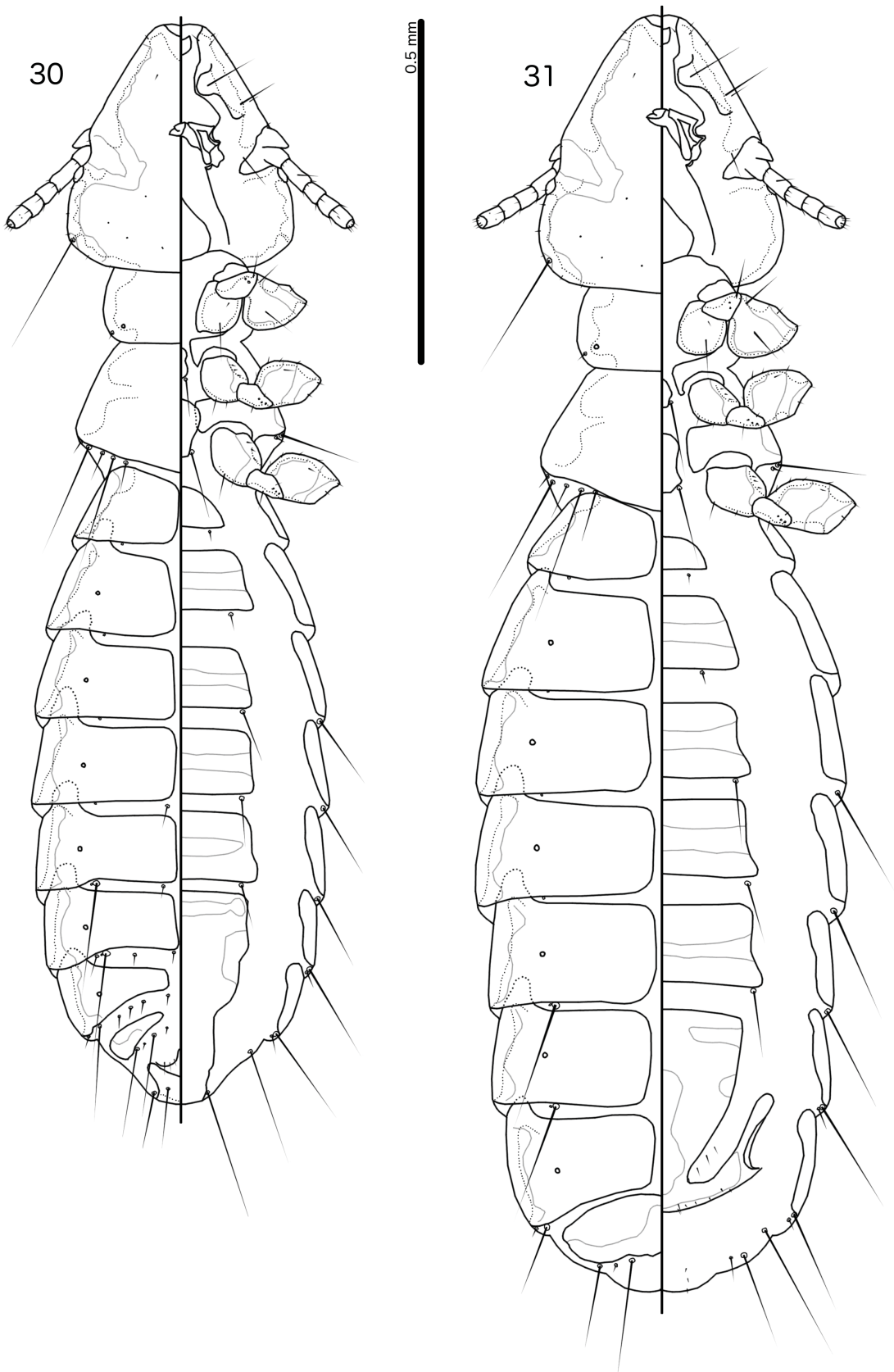
CAMEROON • ♀; same data as for holotype; NHML 1960-295.

Description

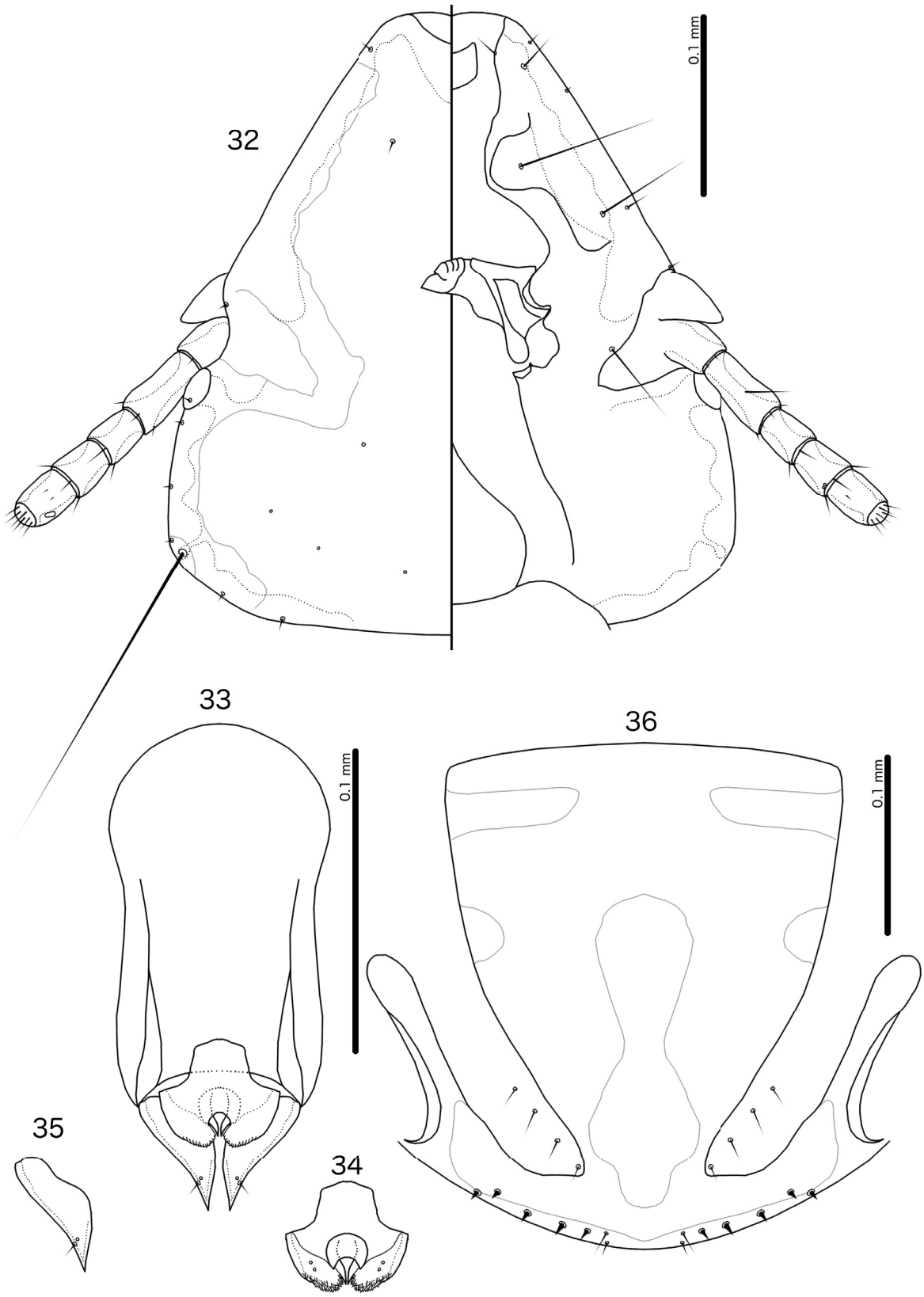
Head rounded trapezoidal (Fig. 32), lateral margins of preantennal area slightly convex, frons broadly flattened. Marginal carina broad, deeply displaced and much widened at osculum, and with undulating median margin. Ventral anterior plate broad, shield-shaped. Head chaetotaxy and pigmentation pattern as in Fig. 32. Preantennal nodi bulging, elongated. Preocular nodi much larger than postocular nodi. Marginal temporal carina broad, with distinctly undulating median margin. Gular plate broad, with concave antero-lateral margins. Thoracic and abdominal segments and pigmentation patterns as in Figs 30–31, 43–44.

Male

Thoracic and abdominal chaetotaxy as in Fig. 30. Basal apodeme broad, lateral margins concave (Fig. 33). Proximal mesosome roughly trapezoidal, widening slightly distally, and with anterior margin convergent to median point (Fig. 34). Mesosomal lobes broad, rounded distally, with extensive rugose area at distal end. Gonopore crescent-shaped, slightly wider than long. Penile arms short, not reaching



Figs 30–31. *Brueelia sima* sp. nov. ex *Malimbus nitens* (Gray, 1831). **30**. ♂, holotype (NHML 1960-295), habitus, dorsal and ventral views. **31**. ♀, habitus, dorsal and ventral views.



Figs 32–36. *Brueelia sima* sp. nov. ex *Malimbus nitens* (Gray, 1831). **32–35**. ♂, holotype (NHML 1960-295). **32**. Head, dorsal and ventral views. **33**. Genitalia, dorsal view. **34**. Mesosome, ventral view. **35**. Paramere, dorsal view. **36**. ♀, subgenital plate and vulval margin, ventral view.

beyond distal margin of mesosome. Parameres broad, not much elongated distally; *pst1–2* as in Fig. 35. Measurements (n = 1): TL = 1.56; HL = 0.36; HW = 0.32; PRW = 0.23; PTW = 0.31; AW = 0.43.

Female

Thoracic and abdominal chaetotaxy as in Fig. 31. Pigmentation pattern of subgenital plate as in Fig. 36; note that transition between brown and translucent areas of subgenital plate is gradual, and exact borders of translucent fenestra here approximate. Subgenital plate rounded triangular (Fig. 36), with broad connection to cross piece. Vulval margin gently rounded, with 1 short, slender *vms* and 4–5 short, thorn-like *vss* on each side; 3–6 short, slender *vos* on each side of subgenital plate; distal 1 *vos* median to *vss*. Measurements (n = 1): TL = 1.80; HL = 0.39; HW = 0.35; PRW = 0.24; PTW = 0.35; AW = 0.53.

Remarks

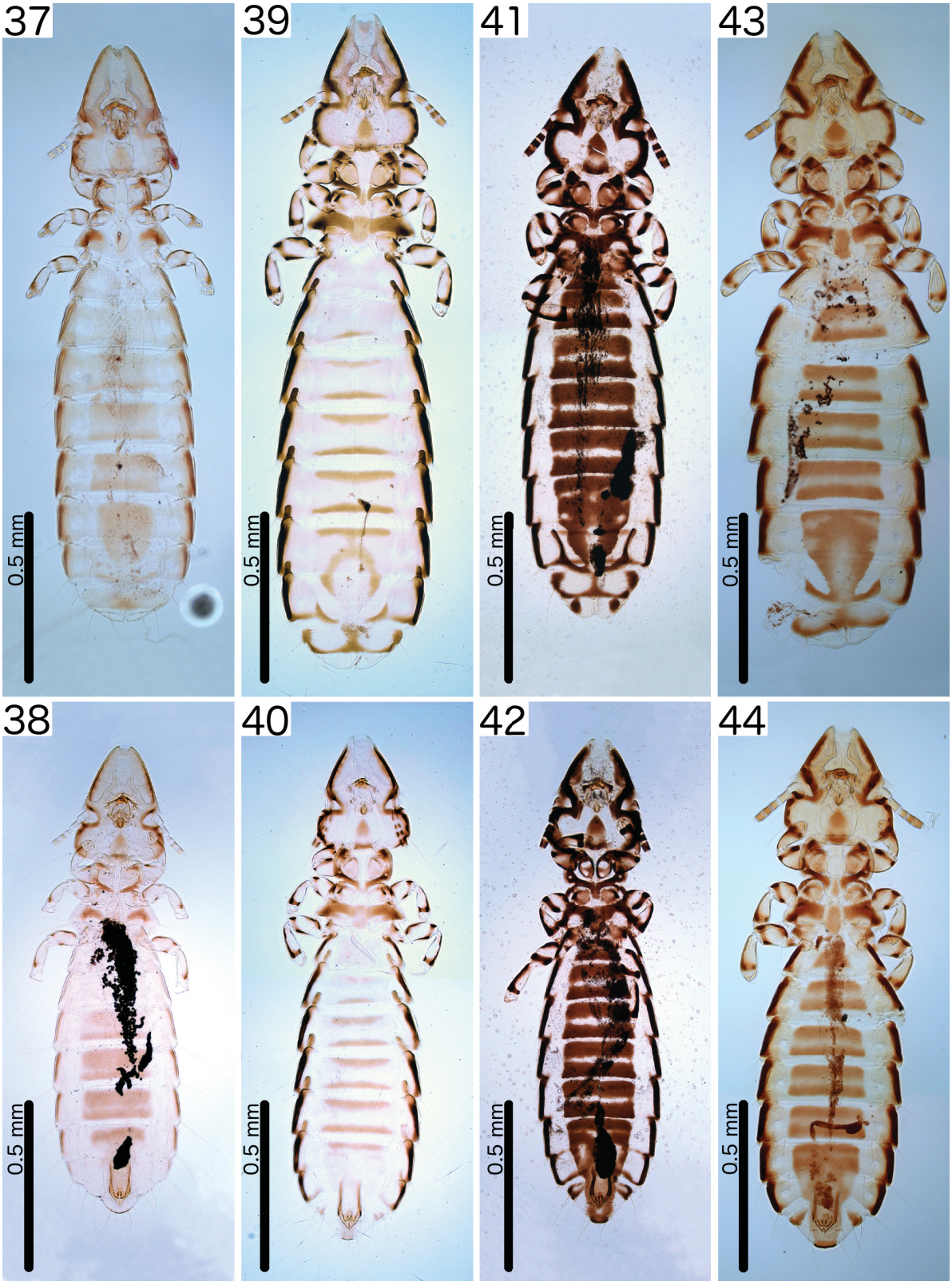
The abdomen of the single examined female is partially disrupted due to mounting; however, one side of every segment is undistorted. We have here illustrated the abdomen tentatively, based on the undistorted sides. However, the gonapophysal setae on segments VIII–X are absent on both sides of the specimen and are not illustrated here. These setae are present in all other species of the *Brueelia* complex, and when more specimens of *B. sima* sp. nov. are examined, it is likely that these setae will be found.

Discussion

The genetic data published by Bush *et al.* (2016), Light *et al*. (2016) and Takano *et al*. (2017, 2018) suggest that many of the *Brueelia* complex louse records from Africa represent distinct species, most of which appear to be host-specific. However, the vast majority of the species of chewing lice on African birds remain undescribed. We estimate that the potential *Brueelia* fauna of African passeriforms and piciforms comprises well over 1000 species (Table 1). The actual number of *Brueelia* recorded from Africa (including this report) is below 50 species. It is thus fair to say that the *Brueelia* fauna of Africa is almost entirely unknown, with less than 5% of the potential species described so far. These numbers are even worse when other genera in the *Brueelia* complex are included (data not shown).

For instance, 305 bird species that could potentially be parasitized by lice of the *Brueelia* complex (i.e., Passeriformes, Trogoniformes, Meropidae, Picidae) are listed as resident in South Africa by Sinclair *et al*. (2014). Chewing lice of the *Brueelia* complex have been reported from 51 of these potential host species since 1980, but only 18 of these reports are identified to species level (Appendix). Assuming that most of the lice of the *Brueelia* complex in South Africa are host-specific, and that most of the resident host species are infested with at least one louse species of the *Brueelia* complex, this suggests that the number of such species in South Africa may be underestimated by a factor of ten. The number of species of the *Brueelia* complex in all of Africa is most likely even more badly underestimated. The entirety of sub-Saharan West Africa has only 31 identified records of lice in the *Brueelia* complex (Appendix), but the region is home to over 560 species of potential host species (Borrow & Demey 2014). Note that these numbers do not include migrants to these regions, and the number of potential host species is therefore much higher if non-resident bird species are included.

In addition, many passeriform birds are parasitized by more than one species of chewing lice of the *Brueelia* complex (Gustafsson & Bush 2017). Moreover, there are indications that some host species are infested with different species of lice in the same genus in different parts of its range (e.g., *Brueelia* spp. on different subspecies of *Plocepasser mahali* (Smith, 1836); Gustafsson & Bush, in prep.). In some cases, multiple *Brueelia* species occur on the same host even in the absence of different host subspecies (e.g., *B. zohrae* Ansari, 1956 and *B. moreli* Ansari, 1957, both on *Ptilostomus afer* (Linnaeus, 1766)). By contrast, some species of lice in the *Brueelia* complex occur on multiple host species (e.g., Balakrishnan & Sorenson 2006; Bush *et al*. 2016), sometimes including host species from different families. Notably, four of the new genera described by Gustafsson & Bush (2017) are presently known only from African



Figs 37–44. Habitus photos of the species of *Brueelia* described as new herein, showing overall pigmentation patterns. **37**. *B. pofadderensis* sp. nov., ♀. **38**. *B. pofadderensis* sp. nov., ♂. **39**. *B. semiscalaris* sp. nov., ♀. **40**. *B. semiscalaris* sp. nov., ♂. **41**. *B. terpsichore* sp. nov., ♀. **42**. *B. terpsichore* sp. nov., ♂. **43**. *B. sima* sp. nov., ♀. **44**. *B. sima* sp. nov., ♂. All photographs are to scale.

endemic host groups. The undescribed diversity and host associations of African lice in the *Brueelia* complex may thus outweigh the known diversity significantly.

To a large extent, the lack of identifications to species level in these reports is due to the fact that very few chewing lice in the *Brueelia* complex have even been described from Africa. There is thus no framework of descriptions and illustrations with which to compare collected specimens. Here, we describe four new species of *Brueelia* from African hosts and redescribe one species. Three of these species belong to an apparently widely distributed informal group, characterised by their striking pigmentation patterns; a key to this informal group is provided. We hope that, together with those recently published by Gustafsson & Bush (2015, 2017) and Gustafsson *et al*. (2018), the descriptions, illustrations and key characters presented here will make future identifications and descriptions of African species of *Brueelia* easier, and help us better understand the biodiversity and evolutionary history of the *Brueelia* complex.

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Appendix (continued on next 15 pages). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger (1980). Louse taxonomy follows Gustafsson & Bush (2017); however, many of the specimens identified only to genus level have not been examined, and may in fact belong to a different genus than listed below. For brevity, louse subgenera have been excluded, and host subspecies are included only if reported in the original publication. Host taxonomy follows Clements *et al.* (2018).

Host species	Louse species	Country	Reference
Cuculiformes			
Cuculidae			
Coua caerulea	*Couala angulata* (Piaget, 1880)	Madagascar	Gustafsson & Bush 2017
	Koanirmus koaphilus Mey, 2017	Madagascar	Mey 2017
Coua cristata pyropyga Grandidier, 1867	*Couala dodekopter* Gustafsson & Bush, 2017	Madagascar	Gustafsson & Bush 2017
Coua serriana Pucheran, 1845	*Couala goniodes* (Piaget, 1880)	Madagascar	Gustafsson & Bush 2017
	Tesonirmus teso Mey, 2017	Madagascar	Mey 2017
Coua sp.	*Couala angulata* (Piaget, 1880)	Madagascar	Mey 2017
Piciformes			
Lybiidae			
Buccanodon duchaillui (Cassin, 1856)	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
Tricholaema leucomelas (Boddaert, 1783)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Picidae			
Dendropicos goertae (Müller, 1776)	*Brueelia goertae* Dalgleish, 1971	Cameroon	Gustafsson & Bush 2017
Coraciiformes			
Brachypteraciidae			
Brachypteracias leptosomus (Lesson, 1833)	*Buerelius longiceps* (Piaget, 1880)	Madagascar	Bush *et al.* 2016; Gustafsson & Bush 2017
	Buerelius subsimus Clay & Tandan, 1967	Madagascar	Gustafsson & Bush 2017
Meropidae			
Merops albicollis Vieillot, 1817	*Meropsiella erythropteri* (Piaget, 1885)	Cameroon	Williams 1981; Gustafsson & Bush 2017
		Ghana	Bush *et al.* 2016; Gustafsson & Bush 2017
		Sierra Leone	Williams 1981; Gustafsson & Bush 2017

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Merops apiaster Linnaeus, 1758	*Meropoecus meropis* (Denny, 1842)	Egypt	Gustafsson & Bush 2017
		Morocco	Gustafsson & Bush 2017
		South Africa	Gustafsson & Bush 2017
		Uganda	Gustafsson & Bush 2017
	Meropsiella apiastri (Denny, 1842)	Egypt	Williams 1981
		Malawi	Bush *et al.* 2016; Gustafsson & Bush 2017
		Morocco	Gustafsson & Bush 2017
		South Africa	Gustafsson & Bush 2017
		Sudan[1]	Gustafsson & Bush 2017
		Uganda	Williams 1981; Gustafsson & Bush 2017
		Zambia	Gustafsson & Bush 2017
Merops bulocki Vieillot, 1817	*Meropoecus emersoni* Tendeiro, 1961	Ghana	Gustafsson & Bush 2017
		Senegal	Najer *et al*. 2012
	Meropsiella erythropteri (Piaget, 1885)	Ghana	Williams 1981; Gustafsson & Bush 2017
		Senegal	Najer *et al*. 2012
Merops bullockoides (Smith, 1834)	*Meropoecus mossambicensis* Tendeiro, 1989	Mozambique	Tendeiro 1989
	Meropsiella bullockoda (Williams, 1981)	Kenya	Williams 1981; Gustafsson & Bush 2017
		Mozambique	Williams 1981; Gustafsson & Bush 2017
		South Africa	Williams 1981
		Zambia	Williams 1981
Merops gularis gularis Shaw, 1798	*Meropsiella erythropteri* (Piaget, 1885)	Ghana	Bush *et al.* 2016; Gustafsson & Bush 2017
Merops hirundineus Lichtenstein, 1793	*Meropsiella erythropteri* (Piaget, 1885)	Mozambique	Williams 1981
		Tanzania	Williams 1981; Gustafsson & Bush 2017
		Zimbabwe	Williams 1981; Gustafsson & Bush 2017
Merops nubicoides De Murs & Pucherans, 1846	*Meropoecus eichleri* Tendeiro, 1989	Mozambique	Tendeiro 1989
	Meropsiella erythropteri (Piaget, 1885)	Zimbabwe	Williams 1981; Gustafsson & Bush 2017

[1] Almost all specimens from Sudan were collected by Richard Meinertzhagen, who was stationed in Kenya. It thus seems likely that at least some of these specimens were collected in what is today South Sudan; however, the only locality information given on the slides is "Sudan".

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Merops nubicus Gmelin, 1788	*Meropsiella erythropteri* (Piaget, 1885)	Sudan	Williams 1981; Gustafsson & Bush 2017
Merops oreobates (Sharpe, 1892)	*Meropsiella erythropteri* (Piaget, 1885)	Kenya	Williams 1981; Gustafsson & Bush 2017
Merops orientalis cleopatra Nicoll, 1910	*Meropsiella erythropteri* (Piaget, 1885)	Egypt	Gustafsson & Bush 2017
Merops orientalis viridissimus Swainson, 1837	*Meropoecus debeauxi* Conci, 1941	Nigeria	Gustafsson & Bush 2017
	Meropsiella erythropteri (Piaget, 1885)	Sudan	Williams 1981; Gustafsson & Bush 2017
Merops persicus persicus Pallas, 1773	*Meropoecus meropis* (Denny, 1842)	Egypt	Gustafsson & Bush 2017
	Meropsiella erythropteri (Piaget, 1885)	Kenya	Williams 1981; Gustafsson & Bush 2017
Merops pusillus cyanostictus Cabanis, 1869	*Meropsiella erythropteri* (Piaget, 1885)	Somalia	Gustafsson & Bush 2017
Merops pusillus meridionalis (Sharpe, 1892)	*Meropsiella erythropteri* (Piaget, 1885)	Malawi	Bush *et al.* 2016; Gustafsson & Bush 2017
		South Africa	Gustafsson & Bush 2017
Merops pusillus pusillus Müller, 1776	*Meropoecus debeauxi* Conci, 1941	Nigeria	Gustafsson & Bush 2017
		Sierra Leone	Gustafsson & Bush 2017
	Meropsiella erythropteri (Piaget, 1885)	Mozambique	Williams 1981
Merops revoilii Oustalet, 1882	*Meropoecus debeauxi* Conci, 1941	Somalia	Gustafsson & Bush 2017
	Meropsiella erythropteri (Piaget, 1885)	Somalia	Williams 1981; Gustafsson & Bush 2017
Merops variegatus loringi (Mearns, 1915)	*Meropsiella erythropteri* (Piaget, 1885)	Uganda	Gustafsson & Bush 2017
Merops variegatus variegatus Vieillot, 1817	*Meropsiella erythropteri* (Piaget, 1885)	Uganda	Williams 1981
Passeriformes			
Acrocephalidae			
Iduna similis Richmond, 1897	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Alaudidae			
Alauda arvensis cantarella Bonaparte, 1850	*Brueelia parviguttata* (Blagoveshtchensky, 1940)	Morocco	Gustafsson & Bush 2017
Mirafra africana Smith, 1836	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Bernieridae			
Bernieria madagascariensis (Gmelin, 1789)	*Guimaraesiella* sp.	Madagascar	Bush *et al.* 2016
Randia pseudozosterops Delacour & Berlioz, 1931	*Aratricerca* sp.	Madagascar	Bush *et al.* 2016
Xanthomixis cinereiceps Sharpe, 1881	*Guimaraesiella* sp.	Madagascar	Bush *et al.* 2016

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Buphagidae			
Buphagus africanus africanus Linnaeus, 1766	*Buphagoecus husaini* (Ansari, 1968)	Kenya	Gustafsson & Bush 2017
Buphagus erythrorhynchus (Stanley, 1814)	*Buphagoecus prominens* (Ansari, 1968)	Ethiopia	Gustafsson & Bush 2017
Campephagidae			
Coracina pectoralis Jardine & Selby, 1828	*Indoceoplanetes* sp.	Malawi	Bush *et al*. 2016
Cyanograucalus azureus (Cassin, 1852)	*Indoceoplanetes* sp.	Ghana	Bush *et al*. 2016
Lobotos oriolinus Bates, 1909	*Indoceoplanetes loboccupatrix* Gustafsson & Bush, 2017	"Congo"	Gustafsson & Bush 2017
Cisticolidae			
Apalis flavida (Strickland, 1852)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Calamonastes fasciolatus (Smith, 1847)	*Sturnidoecus* sp.	South Africa	Takano *et al*. 2018
Camaroptera brachyura (Vieillot, 1820)	*Guimaraesiella* sp.	South Africa	Takano *et al*. 2018
	Sturnidoecus sp.	Senegal	Najer *et al*. 2012
Cisticola fulvicapilla (Vieillot, 1817)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Cisticola lais (Hartlaub & Finsch, 1870)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Cisticola natalensis (Smith, 1843)	*Brueelia* sp.	Malawi	Bush *et al*. 2016
Prinia erythroptera (Jardine, 1849)	*Sturnidoecus* sp.	Senegal	Najer *et al*. 2012
Prinia maculosa (Boddaert, 1783)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Prinia subflava (Gmelin, 1789)	*Brueelia priniae* Najer & Sychra in Najer *et al*., 2012	Senegal	Najer *et al*. 2012
Corvidae			
Corvus albicollis Latham, 1790	*Corvonirmus leucocephalus* (Nitzsch in Giebel, 1866)	Kenya	Gustafsson & Bush 2017
		Lesotho	Gustafsson & Bush 2017
		Nigeria	Gustafsson & Bush 2017
		Tanzania	Gustafsson & Bush 2017
		Uganda	Gustafsson & Bush 2017

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Corvus albus Müller, 1776	*Corvonirmus* sp.?	Ghana	Bush *et al*. 2016
	Corvonirmus quadrangularis (Rudow, 1869)	Botswana	Gustafsson & Bush 2017
		Kenya	Gustafsson & Bush 2017
		Liberia	Gustafsson & Bush 2017
		Mozambique	Gustafsson & Bush 2017
		Namibia	Gustafsson & Bush 2017
		South Africa	Gustafsson & Bush 2017
		Sudan	Gustafsson & Bush 2017
		Tanzania	Gustafsson & Bush 2017
		Uganda	Gustafsson & Bush 2017
	Hecatrishula bipunctata (Rudow, 1870)	Sudan	Gustafsson & Bush 2017
Corvus capensis capensis Lichtenstein, 1823	*Corvonirmus variegatus* (Ansari, 1957)	South Africa	Gustafsson & Bush 2017
	Hecatrishula nawabi (Ansari, 1957)	Namibia	Gustafsson & Bush 2017
Corvus capensis kordofanensis Laubmann, 1919	*Corvonirmus variegatus* (Ansari, 1957)	Ethiopia	Gustafsson & Bush 2017
		Somalia	Gustafsson & Bush 2017
Corvus corax tingitanus Irby, 1874	*Corvonirmus argulus* (Burmeister, 1838)	Egypt	Gustafsson & Bush 2017
		Morocco	Gustafsson & Bush 2017
		"Northern Africa"	Gustafsson & Bush 2017
Corvus cornix pallescens (Madarasz, 1904)	*Corvonirmus uncinosus* (Burmeister, 1838)	Egypt	Gustafsson & Bush 2017
Corvus rhipidurus Hartert, 1918	*Corvonirmus theresae* (Ansari, 1957)	Ethiopia	Gustafsson & Bush 2017
		Kenya	Gustafsson & Bush 2017
		Uganda	Gustafsson & Bush 2017
Garrulus glandarius whitakeri Hartert, 1903	*Olivinirmus glandarii* (Denny, 1842)	Morocco	Gustafsson & Bush 2017
Ptilostomus afer (Linnaeus, 1766)	*Brueelia moreli* Ansari, 1957	Senegal	Gustafsson & Bush 2017
		Uganda	Gustafsson & Bush 2017
	Brueelia zohrae Ansari, 1956	Guinea-Bissau	Gustafsson & Bush 2017
		Sudan	Gustafsson & Bush 2017
	Brueelia sp.	Ghana	Bush *et al*. 2016
Pica pica mauritanica Malherbe, 1845	*Olivinirmus agadirensis* Mey, 2017	Morocco	Mey 2017

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Pyrrhocorax pyrrhocorax barbarus Vaurie, 1954	*Hecatrishula docilis* (Ansari, 1956)	Morocco	Gustafsson & Bush 2017
Zavattariornis stresemanni Moltoni, 1938	*Brueelia zavattariornis* Ansari, 1956	Ethiopia	Gustafsson & Bush 2017
Dicruridae			
Dicrurus adsimilis (Bechstein, 1794)	*Brueelia* sp.	Senegal	Najer *et al*. 2012
	Guimaraesiella sp.	Malawi	Bush *et al*. 2016
Dicrurus modestus Hartlaub, 1849	*Guimaraesiella* sp.	Ghana	Bush *et al*. 2016
Emberizidae			
Emberiza cabanisi (Reichenow, 1875)	*Brueelia* sp.	Malawi	Bush *et al*. 2016
Emberiza flaviventris Stephens, 1815	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Emberiza tahapisi Smith, 1836	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Estrildidae			
Amadina fasciata (Gmelin, 1789)	*Mirandofures fasciata* (Sychra in Sychra *et al*., 2010b)	Senegal	Sychra *et al*. 2010b
Amandava subflava (Vieillot, 1819)	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006
		Malawi	Bush *et al*. 2016
Coccopygia melanotis (Temminck, 1823)	*Mirandofures* sp.	Malawi	Bush *et al*. 2016
Cryptospiza reichenovii (Hartlaub, 1874)	*Mirandofures* sp.	Malawi	Bush *et al*. 2016
Estrilda astrild (Linnaeus, 1758)	*Mirandofures astrildae* (Tendeiro & Mendes, 1994)	São Tomé and Príncipe	Tendeiro & Mendes 1994
	Mirandofures sp.	Malawi	Bush *et al*. 2016
Estrilda erythronotus (Vieillot, 1817)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Euodice cantans (Gmelin, 1789)	*Brueelia cantans* Sychra in Sychra *et al*., 2010b	Senegal	Sychra *et al*. 2010b
Granatina granatina (Linnaeus, 1758)	*Brueelia semiscalaris* sp. nov.	Botswana	This report
	Brueelia sp.	South Africa	Takano *et al*. 2018
Hypargos niveoguttatus Peters, 1868	*Mirandofures* sp.	Malawi	Bush *et al*. 2016
Lagonosticta rara (Antinori, 1864)	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Lagonosticta rhodopareia (Heuglin, 1868)	*Mirandofures* sp.	Mozambique	Bush *et al*. 2016
	Brueelia sp.	South Africa	Takano *et al*. 2018
Lagonosticta rubricata (Lichtenstein, 1823)	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006
Lagonosticta rufopicta (Fraser, 1843)	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006
Lagonosticta senegala (Linnaeus, 1766)	*Brueelia senegala* Sychra in Sychra *et al*., 2010b	Senegal	Sychra *et al*. 2010b
Lonchura cucullata (Swainson, 1837)	*Mirandofures lonchurae* (Tendeiro & Mendes, 1994)	Benin	Takano *et al*. 2017
		São Tomé and Príncipe	Tendeiro & Mendes 1994
Pytilia afra (Gmelin, 1789)	*Brueelia* sp.	Malawi	Bush *et al*. 2016
Pytilia hypogrammica Sharpe, 1870	*Sturnidoecus* sp.	Cameroon	Balakrishnan & Sorenson 2006
Pytilia melba (Linnaeus, 1758)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Uraeginthus angolensis (Linnaeus, 1758)	*Mirandofures* sp.	Malawi	Bush *et al*. 2016
Fringillidae			
Crithagra gularis (Smith, 1836)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Crithagra mozambica (Müller, 1776)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Fringilla coelebs africana Levaillant, 1850	*Brueelia kluzi* Balát, 1955	Morocco	Gustafsson & Bush 2017
Serinus canicollis (Swainson, 1838)	*Brueelia* sp.	Malawi	Bush *et al*. 2016
		South Africa	Takano *et al*. 2018
Hirundinidae			
Cecropsis abyssinica puella (Temminck & Schlegel, 1845)	*Acronirmus gracilis* (Burmeister, 1838)	Ghana	Gustafsson & Bush 2017
Cecropsis abyssinica unitatis (Sclater & Mackworth-Preed, 1942)	*Acronirmus gracilis* (Burmeister, 1838)	Kenya	Gustafsson & Bush 2017
Cecropsis senegalensis saturatior (Bannermann, 1923)	*Acronirmus gracilis* (Burmeister, 1838)	Kenya	Gustafsson & Bush 2017
Delichon urbicum urbicum (Linnaeus, 1758)	*Acronirmus gracilis* (Burmeister, 1838)	Malawi	Bush *et al*. 2016; Gustafsson & Bush 2017
		Morocco	Gustafsson & Bush 2017
Hirundo aethiopicus amadoni White, 1956	*Acronirmus gracilis* (Burmeister, 1838)	Somalia	Gustafsson & Bush 2017

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Hirundo angolensis Bocage, 1868	*Acronirmus gracilis* (Burmeister, 1838)	Zambia	Gustafsson & Bush 2017
Hirundo rustica rustica Linnaeus, 1758	*Acronirmus gracilis* (Burmeister, 1838)	Morocco	Gustafsson & Bush 2017
Hirundo rustica savignii Stephens, 1817	*Acronirmus gracilis* (Burmeister, 1838)	Egypt	Gustafsson & Bush 2017
Laniidae [2]			
Corvinella melanoleuca (Jardine, 1831)	*Brueelia rigbyi* Gustafsson & Bush, 2015	South Africa	Gustafsson & Bush 2015, 2017
Corvinella melanoleuca expressa Clancey, 1961	*Sturnidoecus australafricanus* Gustafsson & Bush, 2017	South Africa	Gustafsson & Bush 2017
Eurocephalus rueppelli Bonaparte, 1853	*Teinomordeus entelosetus* Gustafsson & Bush, 2017	Somalia	Gustafsson & Bush 2017
		Ethiopia	Gustafsson & Bush 2017
Leiothrichidae			
Turdoides aylmeri aylmeri (Shelley, 1885)	*Priceiella brueliodes* (Ansari, 1956)	Somalia	Gustafsson & Bush 2017
Turdoides fulva acaciae (Lichtenstein, 1823)	*Brueelia magnini* Ansari, 1956	Sudan	Gustafsson & Bush 2017
Turdoides hartlaubii (Bocage, 1868)	*Priceiella nivea* (Ansari, 1956)	Zimbabwe	Gustafsson & Bush 2017
Turdoides tenebrosa (Hartlaub, 1883)	*Priceiella koka* Gustafsson & Bush, 2017	Ethiopia	Gustafsson & Bush 2017
Locustellidae			
Bradypterus cinnamomeus (Rüppell, 1840)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Macrosphenidae			
Sylvietta rufescens (Vieillot, 1817)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Malaconotidae			
Dryoscopus cubla (Shaw, 1809)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
		Mozambique	Bush *et al.* 2016
Laniarius aethiopicus (Gmelin, 1789)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Laniarius barbarus (Linnaeus, 1758)	*Brueelia* sp.	Senegal	Najer *et al.* 2012

[2] Gustafsson & Bush (2017) reported *Brueelia cruciata* (Burmeister, 1838) from a South African *Lanius collurio* Linnaeus, 1758. This report is in error, and represents an undescribed species of *Brueelia* from *Lanius collaris* Linnaeus, 1766.

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Laniarius erythrogaster (Cretzschmar, 1829)	*Titanomessor sexloba* Gustafsson & Bush, 2017	Uganda	Gustafsson & Bush 2017
Laniarius ferrugineus (Gmelin, 1788)	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
		South Africa	Takano *et al*. 2018
Laniarius fuelleborni (Reichenow, 1900)	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
Malaconotus blanchoti Stephens, 1826	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
	Sturnidoecus sp.	Malawi	Bush *et al*. 2016
Nilaus afer (Latham, 1801)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Tchagra australis (Smith, 1836)	*Sturnidoecus wittei* Tendeiro, 1963	South Africa	Takano *et al*. 2018
		Zimbabwe	Gustafsson & Bush 2017
Tchagra senegalus (Linnaeus, 1766)	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
Tchagra senegalus armenus (Oberholser, 1906)	*Sturnidoecus wittei* Tendeiro, 1963	Democratic Republic of the Congo	Gustafsson & Bush 2017
		Mozambique	Gustafsson & Bush 2017
		Zambia	Gustafsson & Bush 2017
Tchagra senegalus habessinica (Hemprich & Ehrenberg, 1833)	*Sturnidoecus wittei* Tendeiro, 1963	Ethiopia	Gustafsson & Bush 2017
Tchagra senegalus kalahari (Roberts, 1932)	*Sturnidoecus wittei* Tendeiro, 1963	Zimbabwe	Gustafsson & Bush 2017
Tchagra senegalus orientalis (Cabanis, 1869)	*Sturnidoecus wittei* Tendeiro, 1963	Mozambique	Gustafsson & Bush 2017
Tchagra tchagra natalensis (Reichenow, 1903)	*Sturnidoecus wittei* Tendeiro, 1963	Mozambique	Gustafsson & Bush 2017
Telophorus sulfureopectus (Lesson, 1831)	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
Monarchidae			
Terpsiphone viridis (Statius Müller, 1776)	*Brueelia* sp.	Senegal	Najer *et al*. 2012
		South Africa	Takano *et al*. 2018
Motacillidae			
Anthus sp.	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Anthus trivialis trivialis (Linnaeus, 1758)	*Brueelia ferianci* Balát, 1955	Morocco	Gustafsson & Bush 2017
Macronyx capensis (Linnaeus, 1766)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Motacilla capensis Linnaeus, 1766	*Brueelia* sp.	South Africa	Takano *et al*. 2018

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Motacilla flava Linnaeus, 1758	*Brueelia kratochvili* Balát, 1958	Egypt	Gustafsson & Bush 2017
Muscicapidae			
Copsychus albospecularis (Eydoux & Gervais, 1836)	*Guimaraesiella* sp.	Madagascar	Bush *et al.* 2016
Cossypha anomala (Shelley, 1893)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Cossypha caffra (Linnaeus, 1771)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Cossypha heuglini Hartlaub, 1866	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Melaenornis silens (Shaw, 1809)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Muscicapa striata (Pallas, 1764)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Myrmecocichla arnotti (Tristram, 1869)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Pogonocichla stellata (Vieillot, 1818)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Pseudalethe fuelleborni (Reihenow, 1900)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Sheppardia sharpei (Shelley, 1903)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Nectariniidae			
Chalcomitra senegalensis (Linnaeus, 1766)	*Brueelia chalcomitrae* Najer & Sychra in Najer *et al.*, 2012	Senegal	Najer *et al.* 2012
Cinnyris chalybaeus (Linnaeus, 1766)	*Sturnidoecus* sp.	South Africa	Takano *et al.* 2018
Nectarinia famosa (Linnaeus, 1766)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Nicatoridae			
Nicator chloris (Valenciennes, 1826)	*Guimaraesiella* sp.	Ghana	Bush *et al.* 2016
Oriolidae			
Oriolus auratus Vieillot, 1817	*Maculinirmus* sp.	Malawi	Bush *et al.* 2016
Oriolus larvatus Lichtenstein, 1823	*Maculinirmus* sp.	Malawi	Bush *et al.* 2016
Oriolus oriolus (Linnaeus, 1758)	*Maculinirmus mundus* (Nitzsch [in Giebel], 1866)	Egypt	Gustafsson & Bush 2017

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Paridae			
Melaniparus niger (Vieillot, 1818)	*Brueelia mpumalangensis* Gustafsson *et al*., 2018	South Africa	Gustafsson *et al.* 2018
	Brueelia sp. [3]	Malawi	Bush *et al.* 2016
		South Africa	Johnson *et al.* 2002; Bush *et al.* 2016; Takano *et al.* 2018
Parus major excelsus Buvry, 1857	*Brueelia picea* Gustafsson *et al.*, 2018	Morocco	Gustafsson *et al.* 2018
Passeridae			
Gymnoris superciliaris Blyth, 1845	*Brueelia* sp.	Malawi	Bush *et al.* 2016
Passer diffusus (Smith, 1836)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
	Guimaraesiella sp.	South Africa	Takano *et al.* 2018
Passer domesticus (Linnaeus, 1758)	*Brueelia cyclothorax* (Burmeister, 1838)	Réunion	Gustafsson & Bush 2017
	Rostrinirmus ruficeps (Nitzsch [in Giebel], 1866)	Egypt	Gustafsson & Bush 2017
Passer griseus (Vieillot, 1817)	*Brueelia* sp.	Malawi	Bush *et al.* 2016
Passer melanurus (Statius Müller, 1776)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
	Rostrinirmus sp.	South Africa	Bush *et al.* 2016; Takano *et al*. 2018
Passer melanurus damarensis Reichenow, 1902	*Brueelia pofadderensis* sp. nov.	South Africa	This report
Petronia petronia barbata Erlanger, 1899	*Brueelia alexandrii* Eichler, 1953	Tunisia	Gustafsson & Bush 2017
Plocepasser mahali (Smith, 1836)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Platysteiridae			
Batis capensis (Linnaeus, 1766)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Batis soror Reichenow, 1903	*Guimaraesiella* sp.	Mozambique	Bush *et al.* 2016
Platysteira cyanea (Müller, 1776)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Ploceidae			
Amblyospiza albifrons (Vigors, 1831)	*Sturnidoecus* cf. *basilewskyi* Tendeiro, 1963	Benin	Takano *et al.* 2017
Anaplectes rubriceps (Sundevall, 1850)	*Brueelia* sp.	Malawi	Bush *et al.* 2016

[3] These specimens have been examined, and are conspecific with *B. mpumalangensis* Gustafsson *et al.* 2018, which had not been formally described at the time these phylogenies were published.

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Euplectes albonotatus (Cassin, 1848)	*Brueelia* sp.	Malawi	Bush *et al.* 2016
	Sturnidoecus sp.	Malawi	Bush *et al.* 2016
Euplectes ardens (Boddaert, 1783)	*Brueelia* sp.	Malawi	Bush *et al.* 2016
		Mozambique	Bush *et al.* 2016
	Sturnidoecus sp.	Benin	Takano *et al.* 2017
		Malawi	Bush *et al.* 2016
		Mozambique	Bush *et al.* 2016
Euplectes fransiscanus (Isert, 1879)	*Brueelia aguilarae* Gustafsson & Bush, 2017	Somalia	Gustafsson & Bush 2017
Euplectes hordeaceus (Linnaeus, 1758)	*Sturnidoecus mon* Gustafsson & Bush, 2017	Ghana	Gustafsson & Bush 2017
Euplectes jacksoni (Sharpe, 1891)	*Brueelia terpsichore* sp. nov.	Kenya	This report
Euplectes progne delamerei (Shelley, 1903)	*Brueelia terpsichore* sp. nov.	Kenya	This report
Malimbus nitens (Gray, 1831)	*Brueelia sima* sp. nov.	Cameroon	This report
	Guimaraesiella sp.	Malawi	Bush *et al.* 2016
Plocepasser rufoscapulatus Büttikofer, 1888	*Brueelia* sp.	Malawi	Bush *et al.* 2016
Ploceus capensis (Linnaeus, 1766)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Ploceus cucullatus (Müller, 1776)	*Brueelia* sp.	South Africa	Bush *et al.* 2016; Takano *et al.* 2018
Ploceus cucullatus bohndorfii Reichenow, 1887	*Sturnidoecus basilewskyi* Tendeiro, 1963	Democratic Republic of the Congo	Gustafsson & Bush 2017
Ploceus cucullatus cucullatus (Müller, 1776)	*Sturnidoecus basilewskyi* Tendeiro, 1963	Cameroon	Gustafsson & Bush 2017
		Senegal	Gustafsson & Bush 2017
Ploceus cucullatus nigriceps (Layard, 1867)	*Sturnidoecus basilewskyi* Tendeiro, 1963	Mozambique	Gustafsson & Bush 2017
Ploceus melanocephalus (Linnaeus, 1758)	*Sturnidoecus textoris* Tendeiro, 1964	Democratic Republic of the Congo	Gustafsson & Bush 2017
Ploceus ocularis Smith, 1839	*Sturnidoecus* sp.	Mozambique	Bush *et al.* 2016
Ploceus velatus Viellot, 1819	*Brueelia* sp.	South Africa	Johnson *et al.* 2002; Bush *et al.* 2016; Takano *et al.* 2018
	Sturnidoecus sp.	Malawi	Bush *et al.* 2016
		South Africa	Takano *et al.* 2018

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Ploceus xanthops (Hartlaub, 1862)	*Sturnidoecus xanthops* Tendeiro, 1963	Democratic Republic of the Congo	Gustafsson & Bush 2017
	Sturnidoecus sp.	Malawi	Bush *et al.* 2016
Quelea quelea (Linnaeus, 1758)	*Brueelia quelea* Sychra & Barlev in Sychra *et al.*, 2010a	Malawi	Bush *et al.* 2016; Gustafsson & Bush 2017
		Senegal	Sychra *et al.* 2010a
		South Africa	Takano *et al.* 2018
	Sturnidoecus sp.	Malawi	Bush *et al.* 2016
Quelea quelea quelea (Linnaeus, 1758)	*Sturnidoecus somnodraco* Gustafsson & Bush, 2017	Senegal	Gustafsson & Bush 2017
Quelea quelea lathami (Smith, 1836)	*Sturnidoecus somnodraco* Gustafsson & Bush, 2017	Malawi	Gustafsson & Bush 2017
Sporopipes squamifrons (Smith, 1836)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Pycnonotidae			
Arizelocichla milanjensis (Shelley, 1894)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Bleda canicapillus (Hartlaub, 1854)	*Guimaraesiella* sp.	Ghana	Bush *et al.* 2016
Bleda eximius (Hartlaub, 1855)	*Guimaraesiella* sp.	Ghana	Bush *et al.* 2016
Bleda notatus (Cassin, 1856)[4]	*Brueelia* sp.	Democratic Republic of the Congo	Light *et al.* 2016
Bleda syndactylus (Swainson, 1837)	*Brueelia* sp.	Democratic Republic of the Congo	Light *et al.* 2016
	Guimaraesiella sp.	Ghana	Bush *et al.* 2016
Chlorocichla flaviventris (Smith, 1834)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
Criniger barbatus (Temminck, 1821)	*Guimaraesiella* sp.	Ghana	Bush *et al.* 2016
Eurillas latirostris (Strickland, 1844)	*Brueelia* sp.	Democratic Republic of the Congo	Light *et al.* 2016
	Guimaraesiella sp.	Ghana	Bush *et al.* 2016
Eurillas virens (Cassin, 1857)	*Mirandofures* sp.	Malawi	Bush *et al.* 2016

[4] The host was recorded as *Bleda ugandae* van Someren, 1915, which was treated as a synonym of *B. notatus* (Cassin, 1856) by Clements *et al.* (2018).

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Phyllastrephus albigularis (Sharpe, 1881)	*Guimaraesiella* sp.	Ghana	Bush *et al*. 2016
Phyllastrephus flavostriatus (Sharpe, 1876)	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
Phyllastrephus icterinus (Bonaparte, 1850)	*Brueelia* sp.	Democratic Republic of the Congo	Light *et al*. 2016
		Ghana	Bush *et al*. 2016
Pycnonotus barbatus (Desfontaines, 1789)	*Brueelia* sp.	Malawi	Bush *et al*. 2016
Pycnonotus nigricans (Vieillot, 1818)	*Brueelia pseudognatha* Gustafsson & Bush, 2017	South Africa	Gustafsson & Bush 2017; Takano *et al*. 2018
	Brueelia sp. [5]	South Africa	Johnson *et al.* 2002; Bush *et al.* 2016
Pycnonotus tricolor (Hartlaub, 1862)	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Stelgidillas gracilirostris Strickland, 1844	*Guimaraesiella* sp.	Malawi	Bush *et al*. 2016
Sturnidae			
Acridotheres tristis tristis (Linnaeus, 1766)	*Brueelia chayanh* Ansari, 1955	St. Helena	Gustafsson & Bush 2017
Cinnyricinclus leucogaster (Boddaert,1783)	*Sturnidoecus* sp.	Malawi	Bush *et al*. 2016
Cinnyricinclus leucogaster verreauxi (Bocage, 1870)	*Sturnidoecus porphyrogenitus* Gustafsson & Bush, 2017	Mozambique	Gustafsson & Bush 2017
Creatophora cinerea (Meuschen, 1787)	*Brueelia coryliventer* Gustafsson & Bush, 2015	Kenya	Gustafsson & Bush 2015, 2017
	Sturnidoecus afzali Ansari, 1968	Kenya	Gustafsson & Bush 2017
Lamprotornis australis (Smith, 1836)	*Brueelia clara* Gustafsson & Bush, 2015	Namibia	Gustafsson & Bush 2015, 2017
Lamprotornis bicolor Gmelin, 1789	"Brueeliinae"	South Africa	Złotorzycka *et al*. 1999
Lamprotornis chalybaeus chalybaeus Hemprich & Ehrenberg, 1828	*Sturnidoecus eichleri* Ansari, 1968	Ethiopia	Gustafsson & Bush 2017
		Kenya	Gustafsson & Bush 2017
Lamprotornis chalybaeus nordmanni (Hartert & Neumann, 1914)	*Sturnidoecus eichleri* Ansari, 1968	South Africa	Gustafsson & Bush 2017
Lamprotornis chloropterus Swainson, 1838	*Sturnidoecus* sp.	Malawi	Bush *et al*. 2016
Lamprotornis iris (Oustalet, 1879)	*Sturnidoecus distinguendus* Ansari, 1968	Uganda	Gustafsson & Bush 2017

[5] This specimen has been examined and is conspecific with *B. pseudognatha* Gustafsson & Bush, 2017, which had not been formally described at the time this phylogeny was published.

Appendix (continued). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Lamprotornis meevesi (Wahlberg, 1856)	*Sturnidoecus parvifrons* Ansari, 1968	Botswana	Gustafsson & Bush 2017
		Mozambique	Gustafsson & Bush 2017
		Zambia	Gustafsson & Bush 2017
		Zimbabwe	Gustafsson & Bush 2017
Lamprotornis nitens (Linnaeus, 1766)	*Brueelia* sp.	South Africa	Takano *et al.* 2018
	Sturnidoecus senegalensis (Rudow, 1869)	South Africa	Gustafsson & Bush 2017; Takano *et al.* 2018
Lamprotornis purpureus (Statius Müller, 1776)	*Brueelia* sp.	Ghana	Bush *et al.* 2016
	Sturnidoecus sp.	Ghana	Bush *et al.* 2016
Lamprotornis splendidus bailundensis (Neumann, 1920)	*Sturnidoecus meinertzhageni* Ansari, 1968	Zambia	Gustafsson & Bush 2017
Lamprotornis splendidus splendidus (Vieillot, 1822)	*Sturnidoecus meinertzhageni* Ansari, 1968	Cameroon	Gustafsson & Bush 2017
		Uganda	Gustafsson & Bush 2017
Lamprotornis superbus (Rüppell, 1845)	*Sturnidoecus theresae* Ansari, 1968	Somalia	Gustafsson & Bush 2017
Neocichla gutturalis (Bocage, 1871)	*Brueelia* sp.	Malawi	Bush *et al.* 2016
	Sturnidoecus sp.	Malawi	Bush *et al.* 2016
Onychognathus blythii (Hartlaub, 1859)	*Sturnidoecus clayae* Ansari, 1968	Somalia	Gustafsson & Bush 2017
Onychognathus morio (Linnaeus, 1766)	*Sturnidoecus zahrae* Ansari, 1968	Kenya	Gustafsson & Bush 2017
Onychognathus tenuirostris (Rüppell, 1836)	*Brueelia* sp.	Malawi	Bush *et al.* 2016
Onychognathus tenuirostris theresae Meinertzhagen, 1937	*Sturnidoecus illustris* Ansari, 1968	Kenya	Gustafsson & Bush 2017
Speculipastor bicolor Reichenow, 1879	*Sturnidoecus opeca* Ansari, 1968	Kenya	Gustafsson & Bush 2017
		South Africa	Gustafsson & Bush 2017
Spreo albicapillus albicapillus Blyth, 1856	*Brueelia tkachi* Gustafsson & Bush, 2015	Somalia	Gustafsson & Bush 2015, 2017
Sylviidae			
Sylvia subcaeruleum (Vieillot, 1817)	*Brueelia* sp.	South Africa	Johnson *et al.* 2002; Bush *et al.* 2016; Takano *et al.* 2018

Appendix (concluded). Species of chewing lice in the *Brueelia* complex (sensu Gustafsson & Bush 2017) reported from Africa since Ledger 1980.

Host species	Louse species	Country	Reference
Turdidae			
Geokichla gurneyi (Hartlaub, 1864)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Neocossyphus poensis (Strickland, 1844)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Turdus libonyana (Smith, 1836)	*Sturnidoecus* sp.	Malawi	Bush *et al.* 2016
Turdus merula syriacus Hemprich & Ehrenberg, 1833	*Guimaraesiella amsel* (Eichler, 1951)	Morocco	Gustafsson & Bush 2017
Turdus olivaceus pondoensis Reichenow, 1917	*Guimaraesiella ilmasae* (Ansari, 1956)	South Africa	Gustafsson & Bush 2017
Turdus pelios Bonaparte, 1850	*Guimaraesiella turdinulae* (Ansari, 1956)	Senegal	Najer *et al.* 2012
	Sturnidoecus sp.	Ghana	Bush *et al.* 2016
Turdus philomelos Brehm, 1831	*Guimaraesiella turdinulae* (Ansari, 1956)	Egypt	Gustafsson & Bush 2017
Turdus smithi Bonaparte, 1850	*Brueelia* sp.	South Africa	Takano *et al*. 2018
Vangidae			
Prionops plumatus (Shaw, 1809)	*Brueelia* sp.	Senegal	Najer *et al.* 2012
	Guimaraesiella sp.	Malawi	Bush *et al*. 2016
		South Africa	Takano *et al*. 2018
Vanga curvirostris (Linnaeus, 1766)	*Guimaraesiella* sp.	Malawi	Bush *et al.* 2016
Viduidae			
Vidua camerunensis Grote, 1922	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006
	Sturnidoecus sp.	Cameroon	Balakrishnan & Sorenson 2006
Vidua macroura (Pallas, 1764)	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006
		Malawi	Bush *et al.* 2016
		South Africa	Takano *et al*. 2018
Vidua paradisaea (Linnaeus, 1758)	*Brueelia bicurvata* (Piaget, 1880)	Zambia	This report
Vidua wilsoni (Hartert, 1901)	*Brueelia* sp.	Cameroon	Balakrishnan & Sorenson 2006
Zosteropidae			
Zosterops senegalensis Bonaparte, 1850	*Brueelia* sp.	Malawi	Bush *et al.* 2016