A taxonomic and faunistic study of the Cossidae of southwestern Africa (Lepidoptera: Cossoidea)

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The present study is based on material preserved in museum collections, as well as specimens obtained in the course of faunistic work conducted in recent years, and includes all cossid taxa recorded from southwestern Africa thus far. A total of 47 species representing 13 genera are treated. For each genus a differential diagnosis is provided. The following taxonomic changes are proposed: *Lichtensteiniana punctulata* (Walker, 1856) stat. nov., comb. nov.; *Coryphodema coelebs* (Clench, 1959), syn. nov. of *C. seineri* (Grünberg, 1910); *Brachylia eberti* Yakovlev, 2011 syn. nov. of *B. eutelia* Clench, 1959; *Aethalopteryx forsteri* (Clench, 1959), syn. nov. of *A. tristis* (Gaede, 1915), and *Aethalopteryx simplex* (Aurivillius, 1905) comb. nov. (from *Azygophleps*). The species of *Rethona* Walker, 1855 are revised and illustrations of the adults are provided. Ten new species are described: *Lichtensteiniana maritima* spec. nov., *L. orania* spec. nov., *Brachylia camparia* spec. nov., *B. contusa* spec. nov., *B. minor* spec. nov., *B. lineata* spec. nov., *B. fusca* spec. nov., *B. plumbata* spec. nov., *Meyoarabiella karooensis* spec. nov., and *Azygophleps asylasiformis* spec. nov. The original description of *Phalaena asylas* Cramer, 1779 was rechecked. The correct interpretation of this species is still pending. The genitalia of the new species and the adult moths are illustrated. A checklist of all species recorded from the subregion and a key to all genera occurring in southern Africa are provided.

Keywords: Lepidoptera, Cossidae, Taxonomy, Biogeography, Biology, Faunistics, New Species, New Synonymies, Afrotropical Region, Namibia, South Africa, Botswana.

INTRODUCTION

In recent years, the Cossidae of southern Africa were studied by Mey (2007, 2010, 2011, 2015), Yakovlev (2007, 2008, 2011) and Yakovlev and Lenz (2011). New genera and species were described by the latter senior author, increasing the number of known species from the region from 44 (Vári *et al*., 2002) to 50. The new additions to the fauna were *Afroarabiella meyi* Yakovlev, 2008, *Brachylia eberti* Yakovlev, 2011, *Aethalopteryx anikini* Yakovlev, 2011, *A. rudloffi* Yakovlev, 2011, *Tarsozeuzera ustjuzhanini* Yakovlev, 2011, *Azygophleps kovtunovitchi* Yakovlev, 2011 and *A. godswindow* Yakovlev & Saldaitis, 2011. Attempts to identify the cossid material collected by the author and others in Namibia and South Africa during recent years soon made it obvious that the taxonomy of the group for the subregion still requires a considerable amount of attention. What was thought to be a simple sorting and identification process soon turned into a deeper taxonomic study, which necessitated the examination of type material. As a first step the genus *Arctiocossus* Felder, 1874 was revised, which led to its constituent species being placed in four genera, two of which proved to be new to science (Mey, 2015). In a second step, the remaining groups were studied, and the results are presented in this article. The study is confined to the species from southwestern Africa, but the entire Afrotropical fauna was considered in cases where the introduction of new taxa was deemed necessary.

Cossidae are sometimes difficult to distinguish. The structure of the male genitalia tends to be simple, providing only few diagnostic features. Specific differences can be minute and are easily mistaken for individual variations. The concurrent examination of antennae, labial palpi, legs and wing venation usually allows for the correct interpretation of these morphological variations in most cases, however. Particular emphasis was placed on genera apparently endemic to southern Africa, or which are founded on South African type species. Based on the study of type specimens and additional material from several museum collections, improved diagnoses are provided for these genera with a focus on identifying autapomorphic characters. Lastly, the diagnoses were used to construct an identification key, which includes also those genera with a wide distribution but not yet recorded from southwestern Africa. The key is therefore applicable to the entire southern African subregion.

The phylogenetic relationships within Cossidae are largely unexplored. A recent molecular study of family groups in Lepidoptera has revealed that the present concept of Cossidae is polyphyletic (Regier *et al*., 2013). Both subfamilies Cossinae and

Zeuzerinae appear on different lineages in the cladogram where they are joined with other families. In the absence of a phylogenetic concept for the Cossidae no attempt was made to establish a systematic sequence of genera, nor of species within each genus, where species are arranged alphabetically. A rearrangement of all taxa currently included in the Cossoidea is the task of a future phylogenetic study using DNA sequencing and other molecular data.

The biology of most species remains poorly known. The larvae are notorious for being borers in stems and trunks of trees and shrubs, but the specific food-plants of most of the southern African species are largely unknown. This is the more to be regretted as the species cannot be linked with vegetation units below the biome classification. Also, the biogeography of the majority of species is not well understood. Faunistic data are scant, and with only a few available records the actual ranges of the species in Africa cannot be established. With this in mind, the present article aims not only at providing improved diagnoses of species and genera – as well as new species descriptions – but also at communicating new faunistic records. There are probably several additional species occurring in the region awaiting discovery; their recognition and subsequent descriptions should be facilitated by this article.

MATERIAL AND METHODS

This article is not a revision in the strict sense. It is a regional study, but equally an effort to revise those genera and species endemic or largely confined to southwestern Africa.

Southwest Africa is defined here as the area between the Cape Peninsula in the south and southern Angola in the north, including the Western and Northern Cape provinces of South Africa, and all provinces of Namibia save for the Caprivi Strip, areas extensively travelled and sampled by the author since 1992. Faunistic research intensified with the onset of the BIOTA Project in 2001 (see Mey, 2010). Since only few records are available from Botswana I have included these here as well.

If not registered by myself, geographical coordinates were adopted from the gazetteer in Krüger (2001).

Most of the collected material is housed in the Museum für Naturkunde, Berlin, Germany, and in the Ditsong National Museum of Natural History (formerly Transvaal Museum), Pretoria, South Africa. The holotypes of the new species collected in South Africa are deposited in the latter museum.

The determination of species is based on comparisons with type material, which was studied during visits to all major museums in Europe and South Africa.

Genitalia preparations were made according to the procedure described in Mey (2007: 10) and Robinson (1976).

Acronyms of depositories

BMNH	Natural History Museum, London (formerly British Museum (Natural History))
SAM	Iziko South African Museum, Cape Town, South Africa
MfN	Museum für Naturkunde, Berlin, Germany
MIZ	Museum and Institute of Zoology, PAS, Warsaw, Poland
MWM	Museum Witt, Munich, Germany
NMNW	National Museum of Namibia, Windhoek, Namibia
SMNH	Swedish Museum of Natural History, Stockholm, Sweden (formerly Naturhistoriska Riksmuseet Stockholm)
TMSA	Ditsong National Museum of Natural History, Pretoria, South Africa (formerly Transvaal Museum)
ZSM	Zoologische Staatssammlung, Munich, Germany

SYSTEMATICS

Checklist of species of southwestern Africa

(Within subfamilies genera are listed in alphabetical order. Within genera species are also arranged in alphabetical order. Type species are indicated by an asterisk. Synonyms of generic and species names are included only in cases with relevance to southwestern Africa. For a complete synonymy of generic names see Yakovlev, 2011).

Cossinae Leach, [1815]

Arctiocossus Felder, 1874

*A. antargyreus** Felder, 1874
South Africa: Western Cape

A. farinalis Mey, 2015
Namibia: Karas; South Africa: Northern and Eastern Cape

A. martinkruegeri Mey, 2015
South Africa: Northern Cape, Richtersveld

A. namaquensis Mey, 2015
South Africa: Northern Cape

Afroarabiella Yakovlev, 2008

A. polioptera (Clench, 1959)
Namibia: Erongo, Karas; South Africa: Northern Cape

Brachylia Felder, 1874

***terebroides* group**

*B. terebroides** Felder, 1874
South Africa: Western Cape

***windhoekensis* group**

B. camparia spec. nov.
Namibia

B. plumbata spec. nov.
South Africa: Western Cape

B. windhoekensis (Strand, 1913)
Namibia; South Africa; Malawi

***eutelia* group**

B. minor spec. nov.
Namibia

B. contusa spec. nov.
Namibia

B. eutelia Clench, 1959
Namibia
B. eberti Yakovlev, 2011 syn. nov.
Namibia

B. fusca spec. nov.
Namibia

B. lineata spec. nov.
South Africa: Western Cape

Coryphodema Felder, 1874

C. seineri (Grünberg, 1910)
Namibia; Botswana; South Africa
C. coelebs (Clench, 1959) syn. nov.

C. tristis (Drury, 1782)
South Africa
*C. capensis** Felder, 1874

Lichtensteiniana Mey, 2015

*L. aloides** Mey, 2015
Namibia: Karas

L. brandbergensis Mey, 2015
Namibia: Brandberg

L. fuscoalaria Mey, 2015
South Africa: Northern Cape

L. maritima spec. nov.
South Africa: Western Cape

L. strigulata (Gaede, 1929)
Namibia: Brandberg

L. orania spec. nov.
South Africa: Northern Cape

L. punctulata (Walker, 1856) comb. nov.
South Africa: Eastern Cape; Free State

L. tessellata (Clench, 1959)
Namibia: Stampriet

Macrocossus Aurivillius, 1900

M. toluminus (Druce, 1887)
Africa south of the Sahara
*M. rudis** (Aurivillius, 1900)

Meyoarabiella Yakovlev, 2008

*M. meyi** (Yakovlev, 2008)
South Africa: Northern Cape

M. karooensis spec. nov.
South Africa: Western Cape

Namibiocossus Mey, 2015

*N. gaerdesi** (Daniel, 1956)
Namibia: Namib Desert

N. punctifer (Gaede, 1929)
Namibia: Namib Desert
N. danieli (Clench, 1959)

N. uhligorum Mey, 2015
Namibia: Namib Desert

Rethona Walker, 1855

R. albifasciata (Hampson, 1910)
South Africa: KwaZulu-Natal; Eastern Cape

*R. strigosa** Walker, 1855
South Africa: KwaZulu-Natal

ZEUZERINAE Boisduval, [1828]

Aethalopteryx Schoorl, 1990

*A. atrireta** (Hampson, 1910)
Botswana

A. dictyotephra (Clench, 1959)
Namibia

A. obscurascens (Gaede, 1929)
Namibia; Zambia; Zimbabwe; South Africa

A. tristis (Gaede, 1915)
Namibia; Botswana; South Africa
A. forsteri (Clench, 1959), syn. nov.

Azygophleps Hampson, 1892

A. asylas (Cramer, 1779)
Africa
A. albovittata Bethune-Baker, 1908, ?syn. nov.

A. asylasiformis spec. nov.
South Africa: Northern and Western Cape

A. cooksoni Pinhey, 1968
South Africa

A. inclusa (Walker, 1856)
Africa
A. petax (Wallengren, 1860)

A. leopardina Distant, 1902
Namibia
A. borchmanni Grünberg, 1910

A. liturata (Aurivillius, 1879)
Namibia
A. aurivillii Kirby, 1892

A. scalaris (Fabricius, 1775)
Botswana; South Africa to East Africa

A. spec.
Namibia; Zambia; Malawi

Eulophonotus Felder, 1874

*E. myrmeleon** Felder, 1874
South Africa; Botswana

Strigocossus Houlbert, 1916

S. capensis (Walker, 1856)
Namibia; South Africa to East Africa

Phragmataecia Newman, 1850

P. andarana Clench, 1959
Namibia

P. irrorata Hampson, 1910
Namibia; South Africa; Zambia; Zimbabwe; Malawi; Botswana; Mozambique

P. okovangae Clench, 1959
Namibia; Zambia

Key to subfamilies and genera

1. ♂ antennae with bipectinate basal half and serrate apical portion; ♀ antennae short bipectinate or filiform; tibial spur formula 0.2.2.. . . . . subfamily Zeuzerinae, 10
— ♂ antennae pectinate to tip, ♀ antennae bi- or unipectinate; tibial spur formula 0.2.4 . . . . . subfamily Cossinae, 2
2. Epiphysis present; rami of ♂ antennae flattened and unscaled dorsally, on all sides with small hairs (Fig. 1: 6–7); ♀ antennae unipectinate or stout and filiform 3
— Epiphysis absent; rami of ♂ antennae rounded, usually scaled dorsally, laterally and dorsally without small hairs, ventral aspect with rows of long hairs (Fig. 1: 1–2); ♀ antennae bipectinate 5
3. Arolium present (Fig. 1: 14) . . . . . *Brachylia*
— Arolium absent on all legs 4
4. Forewing length 40–60 mm . . . *Macrocossus*
— Forewing length between 17–30 mm . . . . . *Coryphodema*
5. Arolium present, piliform and membranous . . . . . *Afroarabiella*
— Arolium absent. 6
6. Male with large cornutus in phallic apparatus (Fig. 55) . . . . . *Meyoarabiella*
— Phallic apparatus without cornuti 7
7. Forewings with a large white patch, at least in cell area; costal margin of ♂ valva simple; ♀ ovipositor short, with membranous tip . . . 8
— Forewings without white patches; costal margin of valva of ♂ sclerotized, with subapical teeth; ♀ ovipositor long, with terminally fused apophyses posteriores forming a piercing organ (Fig. 115) 9
8. Rami of ♂ antenna unscaled dorsally; M1 absent or present in hind wings, not stalked with R. . . . . *Rethona*
— Rami of ♂ antenna scaled; M1 always stalked with R in hind wing . . . . *Arctiocossus*
9. Large species, ♂ forewing length 15– 26 mm; gnathos of ♂ genitalia with medial element granulose . . . . . *Namibiocossus*
— Smaller species, ♂ forewing length 10–15 mm, females occasionally larger; gnathos of ♂ genitalia with denticles on medial element . . . . . *Lichtensteiniana*
10. Forewings with numerous small spots on darker background, or wings largely membranous (= unscaled) 11
— Forewing pattern different 12
11. Labial palpi of ♂ reduced; ♂ wings partly hyaline and unscaled . . . . . *Eulophonotus*
— Labial palpi present, wings completely scaled. . . . . *Alophonotus*
12. Forewing pattern striking, with contrasting black lines, striae or spots on white, yellow or light brown background; arolium present; forewing with R1 arising before areole (Fig. 32) . . . . . *Azygophleps*
— Forewing pattern indistinct, usually on a brown background; arolium present or absent; forewing with R1 arising from areole 13
13. ♂ forewing brown, semi-transparent and veins visible; R4 and R5 very short (= long-stalked); first tarsal segment of forelegs swollen; arolium absent . . . . . *Tarsozeuzera*
— Forewings densely scaled; R4 and R5 long (= short-stalked) (Fig. 31) 14
14. Tarsal spines long and clearly visible; ♀ antennae filiform. . . . . *Aethalopteryx*
— Tarsal spines minute, barely protruding beyond scale cover; ♀ antennae bipectinate 15
15. Arolium absent on all legs . . . . *Strigocossus*
— Arolium present on all legs (Fig. 1: 14) . . . 16
16. Forewings light brown, with slightly darker, indistinct small spots along costal field or within cell; hind wings uniform white-grey; second branch of Rs anastomosing with M1 in the middle of the forewing (Fig. 33) . . . . . *Phragmataecia*
— Forewings with two oblique, dark brown fasciae; hind wings with reticulate pattern; Rs and M1 not anastomosing in forewings, connected by a short cross-vein; areole and median cell separated . . . . . *Oreocossus*

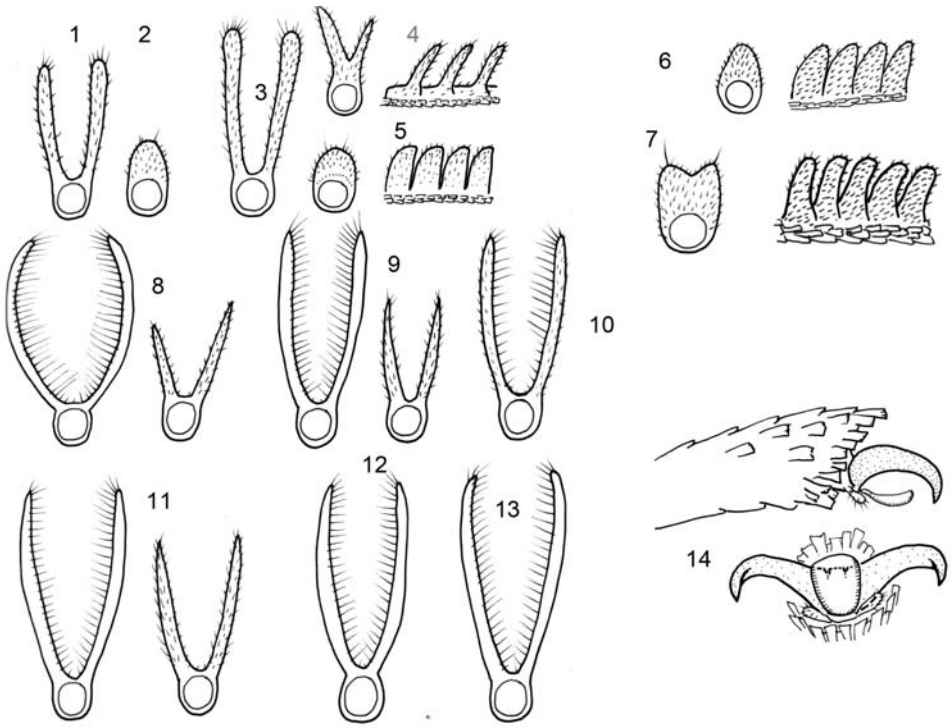

Fig. 1

Praetarsus and structure of antennal flagellomeres and associated rami in different genera of Cossinae. **1–2:** *Coryphodema tristis*, 1 – male, 2 – female; **3, 5:** *Brachylia windhoekensis*: 3 – male, 5 – female, in profile and lateral view; **4:** *Brachylia eutelia*, female, in profile and lateral view; **6:** *Brachylia plumbata* spec. nov., female, in profile and lateral view; **7:** *Brachylia terebroides*, female, in profile and lateral view; **8:** *Arctiocossus antargyreus*, male and female; **9:** *Lichtensteiniana aloides*, male and female; **10:** *Brachylia terebroides*, male; **11:** *Namibiocossus gaerdesi*, male and female; **12:** *Afroarabiella polioptera*, male; **13:** *Meyoarabiella meyi*, male; **14:** *Phragmataecia irrorata*, praetarsus with arolium, in lateral and caudal view.

Taxonomic accounts

Cossinae Leach, [1815] 1830

Lichtensteiniana Mey, 2015

Lichtensteiniana Mey, 2015: 34–36. Type species: *L. aloides* Mey, 2015, by original designation, holotype ♂ (MfN), type locality: Namibia, Karas, Kokerboom Forest.

DIAGNOSIS. See Mey, 2015.

Lichtensteiniana aloides Mey, 2015, Figs 35, 36, 113

MATERIAL EXAMINED. 3♂, **Namibia**, Etosha Pan, Okaukujo camp, at light, 19°11′S 15°55′E, 27.xii.1974, leg. S. Endrödy-Younga [one cleared abdomen in glycerine vial]; 2♀, Namibia, Rehoboth, March 1938 [cleared abdomen in glycerine vial], leg. H. W. B[ell]-Marley; 1♀, Namibia, Karasberge, S.W.A./ Farm Nochabib/ 8–10.iv.1972/ Jones & Strydom; 1♂, Namibia, 15 km east of Helmeringhausen, Farm Lovedale, 25°54′S 16°39′E, 1560 m, 11.ii.2010, leg. D. Bartsch [cleared abdomen in glycerine vial]; 10♂, Namibia, Tsondab Vlei, light collecting, 23°59′S 15°26′E, 13.i.1975, leg. S. Endrödy-Younga [one cleared abdomen in glycerine vial]; 1♂, **South Africa**, Northern Cape, Omdraai, near Kakamas, 19.ii.1961, leg. L. Vári [cleared abdomen in glycerine vial]; 1♂, South Africa, Northern Cape, Keimoes, 20.ii.1961, leg. L. Vári; 1♂, South Africa, Northern Cape, Moutons Puts, Gordonia District, 18.ii.1961, leg. L. Vári (all in TMSA).

REMARKS. The illustration of the female genitalia in Mey (2015: 50, Figs 48–49) is incomplete. The ductus seminalis became detached during preparation and was later omitted from the illustration. Also, the tip of the ovipositor does not show the piercing apparatus clearly. Therefore, a new illustration is provided to correct the earlier one and to allow comparison with other species of *Lichtensteiniana*.

Lichtensteiniana fuscoalaria Mey, 2015, Figs 114, 115

MATERIAL EXAMINED. 3♂, 3♀, **South Africa**, Western Cape, Melkboschstrand, 33°44′S 18°26′E, 6–9.xii.1979, genitalia slide Mey 47/15, leg. D. M. Kroon (coll. Kroon, later TMSA); 1♀, South Africa, Northern Cape, Mesklip, 18 km S of Springbok, 29°52′S 17°53′E, 3.xi.1993, leg. T. Karisch (MfN).

REMARKS. Species of *Lichtensteiniana* have markedly dimorphic sexes. This renders the correct association of sexes difficult, especially when species are sympatrically distributed. It was therefore a fortunate coincidence to find three pairs of this species in the collection of D. M. Kroon of Sasolburg, South Africa, which were collected all together at the same place without any other *Lichtensteiniana* species being present. I use the opportunity to illustrate the genitalia of the female (see Figs 114–115) in comparison with the females of *L. aloides* and *L. punctulata*, both of which occur in the Northern Cape as well. The genitalia are very similar to each other and exhibit only minor differences. The female of *L. fuscoalaria* can be separated from females of the two other species by the tip of the ovipositor, where the apophyses posteriores are thin and form only a weak piercing apparatus.

Lichtensteiniana maritima **spec. nov.**, Figs 3, 37–40

TYPE MATERIAL. Holotype ♂, **South Africa:** Western Cape, Bloubergstrand, 34°20′S 18°25′E, 15.ii.1977, leg. L. & G. Vári [cleared abdomen in glycerine vial] (TMSA).

ETYMOLOGY. The species is named with reference to its type locality by the seaside.

DESCRIPTION. *Adult male* (Fig. 3). Forewing length 13 mm, wingspan 29 mm (n = 1). Antennae bipectinate, with 57 black rami, white-scaled dorsally, tips slightly swollen and rounded in lateral view; basal rami short, becoming longer towards tip, longest beyond middle of antennae; labial palps ascending, with short scales and long hairs. Vertex with protruding scale tuft between antennae. Frons clearly wider than diameter of eyes in frontal view. Head and thorax white-grey, mixed with some black scales; patagia without black margin; tegulae grey-brown. Tibiae on all pairs of legs with long, piliform scales on dorsal side; tarsal segments brown with white tips, spines black. Forewings with slender apex, reticulate pattern indistinct, two short, black transverse lines present; costa with short striae on both sides, hamus present between costa and subcosta. Hind wings brown, without clear reticulate pattern. Forewings with R4 and R5 very long, only short-stalked, R and M1 in hind wings anastomosing for a short distance. Abdomen grey-white, tergites and sternites large.

Male genitalia (Figs 37–40). Uncus slender, with pointed tip in lateral view, much broader in dorsal view, without constrictions; gnathos arms broad, as long as uncus, distal part large, almost triangular and flat, bearing stout denticles dorsally and ventrally. Vinculum small, without saccus. Valvae band-like, costal margin without conspicuous sclerotization; basal processes broad, serrate on dorsal edge. Juxta large, bearing two broad-winged, lateral processes not equalling basal processes in length. Phallic apparatus long, almost straight, constricted at base; bulbus ejaculatorius large, funnel-shaped.

Female. Unknown.

DIAGNOSIS. Externally and in genitalia structure the new species is very similar to *L. aloides*, *L. orania* spec. nov. and *L. punctulata* (Walker). It clearly differs, however, by the apically rounded rami, which are pointed in all other species of *Lichtensteiniana*. In the male genitalia the costal margin is without sclerotizations and also lacks a subapical indentation. The large, triangular medial element of the gnathos with strong denticles on both sides is unique to this species.

Lichtensteiniana orania **spec. nov.**, Figs 4, 41–43

TYPE MATERIAL. Holotype ♂, **South Africa:** Northern Cape, Orania, Hopetown, SE 29 24 Ca, 29°48′S 24°55′E, 6.i.1971, leg. H. Snyman [cleared abdomen in glycerine vial] (TMSA).

ETYMOLOGY. The species is named after its type locality.

DESCRIPTION. *Adult male* (Fig. 4) Forewing length 13 mm, wingspan 29.5 mm (n = 1). Antennae bipectinate, with 55 black rami, white-scaled dorsally, ventral side with three rows of long hairs; labial palpi ascending [last segment missing], closely appressed to frons; vertex with protruding scale tuft between antennae. Frons broader than diameter of eyes in frontal view. Head and thorax white-grey, with some black-tipped scales; patagia with black margin; tegulae grey-brown. Tibiae on all legs with long, piliform scales on dorsal side; tarsal segments of all legs black with white tips, spines black. Forewings with slender apex, displaying reticulate pattern in distal half, two short, black transverse

lines present; costa with short striae on both sides, hamus present between costa and subcosta. Hind wings without clear reticulate pattern, pale brown. Forewings with R4 and R5 very long, only stalked for a short distance, R and M1 in hind wings anastomosing briefly. Abdomen with undivided tergites and sternites.

Male genitalia (Figs 41–43). Uncus slender, with pointed tip in lateral view, much broader in dorsal view; gnathos arms thin, shorter than uncus, distal portion enlarged, flat, with denticles on dorsal side. Vinculum small, without saccus; valvae band-like, sclerotized along costal margin and with apical portion membranous. Basal processes slender. Juxta short and thin, bearing two broad-winged, lateral processes not equalling basal processes in length. Phallic apparatus long and curved at about 40° in basal one-third, straight in ventral view, its base enlarged laterally; bulbus ejaculatorius large, funnel-shaped.

Female. Unknown.

DIAGNOSIS. Externally and in genitalia structure the new species is very similar to *L. aloides*, *L. maritima* spec. nov. and *L. punctulata*. It is smaller in size, and the rami of the antennae are shorter than in its congeners. Dissection of the male genitalia is necessary for correct identification.

Lichtensteiniana punctulata (Walker, 1856), **stat. nov., comb. nov.**, Figs 5, 6, 34, 44–46, 116–118

Brachionycha? punctulata Walker, 1856: Cat. VII, p. 1750. Holotype ♀ (BMNH), type locality: South Africa, coll. A. Smith [described in Notodontidae].

Brachionycha? punctulata Walker, 1856: Janse, 1917: 83.

Coryphodema punctulata (Walker, 1856) [as synonym of *C. tristis* (Drury) and *C. capensis* (Felder)]: Hampson, 1910: 133; Gaede, 1929: 543; Clench, 1959: 18; Pinhey, 1975: 33; Vári *et al*., 2002: 59.

MATERIAL EXAMINED. 1♂, **South Africa:** Free State, Bloemfontein, 25.xii.1918, leg. H. E. Irving (TMSA); 1♂, 1♀, P. K. Le Roux Dam, Van der Kloof, 17–21.xi.1968, leg. Snyman & Strydom, genitalia slide ♀ Mey 42/15 (TMSA); 4♂, Free State, Oranjekrag, H. F. Verwoerd Dam, 9–17.i.1968, leg. Snyman & Strydom (TMSA); 1♀, Free State, Sepani, 25.ii.1924, leg. G. Edelsten (TMSA); 1♂, South Africa, Eastern Cape, Aliwal North, 15–25.ii.1971, leg. Snyman & Jones (TMSA); 1♂, 'Africa m[eridionalis]/Kapland/Aliwal-North, 5.xii.1948/ O. Meyer leg.', '?*Pecticossus*/ *castaneus* Gaede/ det. Clench 1957' [misidentification], genitalia slide FO-4, ♂ Ger., foreleg slide Mey 16/15 (ZSM); 1♂, Eastern Cape, Steynsburg,[Farm] Hillmoor, 8–13.iii.1966, leg R. J. Southey (TMSA); 1♂, Northern Cape, 30 km N Somerset East, Farm Dombieterfontein, 31°05′S 23°23′E, 18–20.xi.2007, leg. D. Bartsch (TMSA); 1♂, Northern Cape, Buguberg, 31°53′S 19°14′E, 21.xi.1961, leg. L. Vári (TMSA); 1♂, 'Smithfield/Orange River Colony/ Kannemeyer 1916' (BMNH); 1♀, Northern Cape, Pofadder, 63 miles west, 16–17.x.1954, leg. A. J. T. Janse, genitalia slide Mey 43/15 (TMSA); 1♂, North-West Province, 'Bloemhof, Tvl./ 1.ii.1953/ N. J. van der Merwe' (TMSA).

DESCRIPTION. *Adult* (Figs 5, 6). Length of forewing 14–16 mm (♂) – 17–20 mm (♀), wingspan 31–45 mm (n = 8). Antennae bipectinate in both sexes, with 54–55 rami. Forewings brown, with dense reticulate pattern in apical half, spots of darker brown in the bases of the apical cells, short, black strigulae along costal margin, hind wings brown; in female forewings more uniformly brown, with indistinct pattern; 2–3 frenular bristles (♀); venation as in Fig. 34. Epiphysis absent; tarsal claws without arolium.

Male genitalia (Figs 44–46). Uncus long and triangular, without lateral constrictions; gnathos arms thin, fused to form a small median process, seemingly paired and with small denticules; apical portion of valvae less sclerotized; ventral side of basal hook of valvae separated from juxtal processes; juxta with small basal plate and broad lateral processes, briefly extending proximad on dorsal part of base; phallic apparatus curved in basal half.

Female genitalia (Figs 116–118). Ovipositor relatively short, papillae anales indistinct, with short hairs; tergum VIII sclerotized dorsally and ventrally; apophyses posteriores stout, fused apically and forming a piercing organ; apophyses anteriores slightly shorter, attached laterally to tergum VIII; antrum broad, ductus bursae slightly thinner but elongate, as long as bursa; lamella antevaginalis sickle-shaped.

DIAGNOSIS. In body size and the structure of the antennae, labial palpi and the male genitalia *L. punctulata* closely resembles other species in this genus, and only wing shape and forewing pattern correspond less well. With respect to the male genitalia, the species resembles *L. aloides* Mey, 2015 and the illustrations in the original description of *L. tessellata* (Clench, 1959). In the male sex *L. punctulata* is larger than other *Lichtensteiniana* species, and the forewings have a more rectangular shape. A distinct pattern is often absent on the forewings of females. Dissection of the male genitalia is necessary for correct identification.

The species appears to be distributed in the Nama Karoo biome of the Northern and Eastern Cape and in several places in the Free State.

REMARKS. *Brachionycha punctulata* Walker, 1856 was synonymized with *Coryphodema capensis* Felder, 1874 (itself a junior subjective synonym of *Cossus tristis* Drury, 1782) by Hampson (1910). The types of both species are deposited in BMNH, where they were placed in the same drawer. It is one of the taxonomic mysteries why these externally quite different individuals were thought to belong to one and the same species (see Figs 5 and 12). Body size, the shape of wings and the antennae are sufficiently distinct not only to resurrect *C. punctulata* here as a valid species but also to exclude it from *Coryphodema*. The female holotype is without abdomen. It has, however, intact antennae, which are bipectinate. This type of antenna does not occur in *Coryphodema*. Due to their external similarity, males from localities in the Free State and Eastern Cape were associated with *C. punctulata*. The wing pattern of this species resembles the condition seen in *Brachylia* Felder, but the absent arolium and the bipectinate antennae of the female argue against its being placed in that genus. It agrees more closely with species of *Lichtensteiniana* Mey, 2015 and is transferred here to this genus (comb. nov.).

Namibiocossus Mey, 2015

Namibiocossus Mey, 2015: 38–39. Type species: *Pecticossus gaerdesi* Daniel, 1956; by original designation, holotype ♂ (ZSM), type locality: Namibia, Wlotzkasbaken (Namib Desert).

DIAGNOSIS. See Mey, 2015.

Namibiocossus punctifer (Gaede, 1929)

MATERIAL EXAMINED. 2♂, **Namibia**, Walfishbay, Rooibank, 4.vii.1975 (TMSA); 1♀, same locality, 15.vi.1981, leg. Pretorius, 'near *Trianthema* clump' (TMSA); 1♂, 1♀, **South Africa**, Northern Cape, Port Nolloth, McDougall Bay, S29°16′ E16°53′, 6.i.1976, leg. D. M. Kroon (in coll. Kroon, later TMSA).

REMARKS. This is the first record of the species (and genus) from South Africa. The range of *N. punctifer* is apparently confined to the Namib Desert and neighbouring arid regions.

Rethona Walker, 1855

Rethona Walker, 1855: 1042–1043. Type species: *R. strigosa* Walker, 1855, by monotypy; type locality: South Africa.

Rethona Walker, 1855: Mey, 2015: 33–34.

DIAGNOSIS. See Mey, 2015.

Rethona strigosa Walker, 1855, Fig. 9

Rethona strigosa Walker, 1855: 1042–1043. Holotype ♂ (BMNH), type locality: South Africa.

MATERIAL EXAMINED. 1♂, **[South Africa]**, 'Ladismith/ Cape/ 22/10/[19]82/ N.J. Duke' (TMSA).

REMARKS. *Rethona strigosa* Walker, 1855 was redescribed in Mey (2015: 34) based on a study of the holotype, which is a rather worn specimen showing only remnants of the wing pattern. Further material was not known at this time. Only recently a perfectly preserved specimen was discovered in the Duke collection in TMSA. It was collected in KwaZulu-Natal, Ladismith. The specimen is depicted in Fig. 9. In addition to the redescription in Mey (2015) three external characters turned out to be of diagnostic value:

1. On the forewings, the white ground-colour extends to the anal field also.
2. The black scaling of the forewing veins extends to the termen, forming a chequered fringe.
3. The veins on the white hind wings are also lined with black scales.

Rethona albifasciata (Hampson, 1910), Figs 8, 47–52

Coryphodema albifasciata Hampson, 1910: 133. Holotype ♂ (BMNH), type locality: [South Africa], Cape Colony, Kokstad.

Coryphodema albifasciata (Hampson, 1910): Vári *et al*., 2002: 59.

Rethona albifasciata (Hampson, 1910): Yakovlev, 2011: 13.

MATERIAL EXAMINED. 1♂, **South Africa**, KwaZulu-Natal, Balgowan, 1.xi.1950, leg. K. M. Pennington (TMSA); 1♂, KwaZulu-Natal, Yellowwoods, Balgowan, October 1964, leg. K. M. Pennington (TMSA); 1♂, South Africa, KwaZulu-Natal, Natal Drakensberg, Cathedral Peak Forestry Research Station, 1380 m, leg. István Pajor, 4.ix.1991 (TMSA); 1♂, [South Africa] Eastern Cape, Katberg, 4000 ft., 14–26.xi.1932 (BMNH) [genitalia not examined]; 1♂, South Africa, Eastern Cape, Amatola Mountains, Dohne Peak, 1407 m, 32°31′S 27°24′E, 23.xi.2000, UV light, mountain grassland, leg. M. Krüger & B. Dombrowsky, genitalia slide Mey 46/15 (MfN). 1♂, **Swaziland**, Malolotja, 30.ix.1995, leg. N.J. Duke (TMSA).

DESCRIPTION. *Adult male* (Fig. 8). Length of forewings 14–15 mm (♂), wingspan 31–35 mm (n = 6). Antennae bipectinate, with 53–59 brown to light brown rami, dorsal side of rami unscaled and with

thin hairs. Frons and labial palpi brown, mixed with grey. Forewings brown with elongate patch of white across cell, a simple reticulate pattern in apical cells produced by the superimposition of small brown scales on white background, areas of darker brown along costa and in anal field, Cu2 and A 1+2 with dark scales on both sides, strigulae absent on costal margin, fringe chequered; hind wings pale brown; venation of hind wings with R and M1 fused. Epiphysis absent; tarsal claws without arolium.

Male genitalia (Figs 47–52). Uncus broad, triangular, with or without lateral constriction; gnathos arms robust, fused to form a median process, seemingly paired and without denticles; valvae evenly sclerotized, costa simple; inner side of valvae with a medially protruding process and bearing a small indentation on ventral side; basal hook of valvae absent; juxta with small basal plate and short lateral processes extending distad and basad, phallic apparatus curved in a sinus-like manner, vesica without cornuti.

Female. Unknown.

REMARKS. Morphological variation was observed in the specimen examined from the Amatola Mts (Figs 47–49). The extent of the lateral constriction of the uncus is greater than in other specimens seen, and the median process of the gnathos is broader and laterally curved. In the hind wings, R and M1 are present on the right side as free veins, and on the other side R and M1 share a long stalk. No external differences were noted. Additional material is required to decide if this variation falls within intraspecific limits or not. To date the species is only known from Swaziland, KwaZulu-Natal and the Eastern Cape. It is included here as possibly occurring in adjacent areas in the Northern and Western Cape as well. The species was transferred to *Rethona* Walker, 1855 by Yakovlev (2011) without explanation. The new combination is provisionally accepted here.

Macrocossus Aurivillius, 1900

Macrocossus Aurivillius, 1900: 1054. Type species: *M. rudis* Aurivillius (SMNH), by monotypy. Type locality: [Democratic Republic of Congo]: Belgian Congo, Mukimbungu.

DIAGNOSIS. *Adult*. Large species with wingspans of 72–105 mm (♂) and 100–125 mm (♀) ($n = 6$ and 4, respectively); antennae short, strongly bipectinate in both sexes, antennal rami of males laminate, tightly packed, with short cilia on dorsal side and two rows of longer cilia ventrally; 100–102 pairs of rami present, the two rows of rami in nearly parallel order with little space in between; female antennae longer, with 86–95 flagellomeres, rami shorter than in males, covered by short cilia dorsally and ventrally; eyes hemispherical, each broader than frons between eyes in frontal view; labial palpi closely appressed to frons, their vestiture consisting of short scales on ventral side; foretibiae with epiphysis; tarsal claws without arolium, tarsal segments with short, ventral spines; mesomeron slightly broader than eucoxa. Forewing termen stouter in females, more elongate in males; areole on forewings small, inner cell (= median cell) somewhat longer, R3 stalked with R4+5; on hind wings R+M1 shortly stalked or originating from one point; cross-vein between R+M1 and Sc very faint, sometimes only indicated by a fissure of the vein at this point; Sc with a short subapical spur; frenulum of female with 5–8 rather thin black bristles.

Male genitalia. Uncus broad, triangular; gnathos curved, with rounded and paired median lobe; valvae compact and large, with dorsal fissures and projections; juxta with basal plate between valvae and a pair of broad, lateral processes; basal processes or hooks on median side of valvae concave at base; phallic apparatus tubular, straight; bulbus ejaculatorius short; vesica without cornuti.

Female genitalia. Ovipositor long and thin, papillae anales small and setose, apophyses posteriores weak and widely separated, apically piercing organ absent.

Macrocossus toluminus (Druce, 1887)

Trypanus toluminus Druce, 1887: *Proc. Zool. Soc. London* 1887: 684–685, pl. 1, Fig. 26, holotype ♂ (BMNH) [not examined]. Type locality: Gambia.

Cossus toluminus (Druce, 1887): Dalla Torre, 1923: 15.

Macrocossus rudis Aurivillius, 1900: 1054 [synonymized by Clench, 1959: 3], holotype ♂ (SMNH) [not examined]. Type locality: [Democratic Republic of the Congo], Belgian Congo, Mukimbungu.

Macrocossus rudis Aurivillius, 1900: Gaede, 1929: 541; Schoorl, 1990: 35–36; Yakovlev, 2011: 16.

MATERIAL EXAMINED. 1♂, 2♀, **[Namibia]**: D. S. W. Afrika, Churutabis, 6.vi.1910, leg. Lorch (MfN); 1♂, D. S. W. Afrika, Windhuk, leg. Lindt (MfN); 1♀, Namibia, Okahandja, 9.xi.1923, ex pupa (TMSA); 1♂, Namibia, Waterberg National Park, Tourist Camp, 23.xi.1993, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Namib-Naukluft National Park, 24°15.77′S 16°14.33′E, 26–30.xi.1997, leg. M.& B. Uhlig, E. Marais & A. Kirk-Spriggs (MfN); 1♀, same locality, 23.iv.1983 (TMSA); 1♂, Namibia, Khomas Hochland, Vaalgras Farm, 22°54′S 16°45′E, 21.ix.2008, leg. F. Koch (MfN); 1♂, **South Africa**, Eastern Cape, Graaff-Reinet District, Asante Sana

Game Farm, Cottage, 5–14.xi.2012, leg. W. Mey (MfN); 2♂, same locality, 22–26.i.2012, leg. W. Mey (MfN); 1♂, RSA, Western Cape, Swartberg Nature Reserve, Gamskaskloof (The Hell), 33°22′S 21°40′E, 26–28.xi.2013, leg. F. Koch (MfN); 1♂, Western Cape, Swellendam, 16.xii.1996, leg. C. Griffiths (TMSA).

DESCRIPTION. See diagnosis of genus. Clench (1959) mentioned a cross-vein in the hind wings between Sc and R as a specific trait of *M. toluminus*. However, this cross-vein is weakly developed in most of the specimens examined and often impossible to discern. It is thus of little use as reliable taxonomic character.

REMARKS. *M. toluminus* is the largest species of the family Cossidae in Africa. It has been recorded from West, East, Central and southern Africa, but seems to be a rare insect. All examined specimens were collected at light.

Meyoarabiella Yakovlev, 2008

Afroarabiella (*Meyoarabiella*) Yakovlev, 2008: 391–395. Type species: *Afroarabiella* (*Meyoarabiella*) *meyi* Yakovlev, 2008, by monotypy, holotype ♂ (MfN). Type locality: South Africa, [Northern Cape]: Richtersveld.

Meyoarabiella Yakovlev, 2008: Mey, 2015: 42–43.

DIAGNOSIS. See Mey, 2015.

***Meyoarabiella karooensis* spec. nov.**, Figs 7, 53–55

TYPE MATERIAL. Holotype ♂, 'South Africa: Western Cape, 20 km SW of Oudtshoorn, Min Water Eco Trail, 33°42′32.28″S 22°01′58.7″E, 27.xii.2007, leg. K. Gainsford', genitalia slide Mey 137/14 (TMSA).

DESCRIPTION. *Adult* (Fig. 7). Forewing length 11 mm, wingspan 26 mm ($n = 1$). Antennae bipectinate, bearing 42 black rami, scaled dorsally, ventral side with three rows of cilia; labial palpi closely appressed to frons, ascending to beyond dorsal margin of eyes; vertex with protruding scale tuft between antennae. Patagia with white-scaled margin; tegulae grey; mesothorax with black scale bundles laterally. Forelegs without epiphysis; tarsal segments of all legs black with white tips. Forewings with rounded apex, reticulate pattern developed in distal half, two or three black transverse lines present. Hind wings with distinct reticulate pattern. Forewings with R4+5 on a short stalk, R and M1 on hind wings from the same point. Abdomen with paired tergites on segments V–VIII, sternites undivided.

Male genitalia (Figs 53–55). Uncus slender, with pointed tip; gnathos arms broad, shorter than uncus, distal portion enlarged and flat, with minute spines dorsally. Vinculum very slender, without saccus; valvae band-like, evenly sclerotized and rounded apically. Basal processes broad, narrowly excised apically. Juxta short and narrow, bearing two broad-winged, stout lateral processes not reaching length of basal processes. Phallic apparatus short and thick-set, appearing hardly curved in lateral view, its base enlarged ventrally and laterally; bulbus ejaculatorius large, funnel-shaped; vesica with a short, curved and acute cornutus.

Female. Unknown.

DIAGNOSIS. The new species differs externally from *M. meyi* Yakovlev, 2008 by the rounded forewing apex, the black transverse lines on the forewings and the reticulate pattern on the hind wings. In the male genitalia the gnathos bears minute denticles only, which are markedly larger in *M. meyi*; the basal processes are smaller and the apex is smooth and devoid of denticles.

REMARKS. *M. karooensis* spec. nov. is the second species known of a genus originally established to accommodate *M. meyi* (Yakovlev, 2008) from the Richtersveld, Northern Cape.

Coryphodema Felder, 1874

Coryphodema Felder, 1874: *Novara*, Heft 4, p. 2, Tafel 82. Type species: *Coryphodema capensis* Felder, 1874, *ibidem*, Tafel 82, Fig. 8, by monotypy, holotype ♀. Type locality: Cape of Good Hope (BMNH) [a junior subjective synonym of *Phalaena tristis*, synonymized by Fletcher and Nye, 1982: 44].

Phalaena tristis Drury, 1782, *Illust. nat. Hist. exot. Insects* **3:** 27, pl. 21, Fig. 1, holotype ♀, Cape of Good Hope (BMNH).

Coryphodema Felder, 1874: Dalla Torre, 1923: 26; Gaede, 1929: 543; Schoorl, 1990: 63–64; Yakovlev, 2011: 34.

DIAGNOSIS. *Adult*. Medium-sized to large species with 35–50 mm wingspan; antennae short, strongly bipectinate in males and serrate in females, antennal rami of males short ciliate on all sides, 47–53 pairs of rami present in two rows running nearly in parallel, with little space in between (Fig. 1); female antennae longer, with over 60 flagellomeres, covered by short cilia, scales absent; eyes hemispherical, each broader than frons between eyes in frontal view; vestiture of labial palpi with short scales ventrally, labial palpi closely appressed to frons; foretibiae with epiphysis; tarsal claws without arolium, mesomeron slightly broader than eucoxa. Forewing termen convex in females, less so in

males; areole on forewings elongate and narrow, inner cell (= median cell) short, formed by weak M veins, R3 stalked with R4+5; on hind wings R+M1 with a short stalk or originating from one point; female frenulum with 5–6 bristles; pregenital segments with unpaired, plate-like tergites, strongly sclerotized along anterior margins, with a shallow excision in the middle.

Male genitalia. Uncus broad; gnathos curved, with rounded median lobe; valvae compact, with dorsal, subapical extension and oblique crest medially; juxta with a basal plate between valvae and the paired lateral processes, directed distad, but completely connected laterally to the membranous inner side of valvae; basal processes or hooks on median side of valvae concave at base; phallic apparatus slender, slightly curved, bulbus ejaculatorius cap-shaped; vesica without cornuti.

Female genitalia. Ovipositor long and thin, papillae anales rounded and setose, apophyses posteriores becoming weak and thin towards apex, not connected apically; apophyses anteriores half the length of posterior apophyses and seemingly split apically, with the ventral branch supporting the sclerotized area around the ostium and antrum; segment VIII sclerotized dorsally and laterally; antrum on ventral side with a ring-like fortification; ostium small, ductus bursae short, bursa taking the form of an elongate sac without signum.

SYSTEMATIC POSITION. Schoorl (1990: 63–64) suggested a sister-group relationship with *Brachylia* Felder 1874 and placed both genera in a clade together with the Palaearctic genera *Paracossulus* Schoorl, 1990, *Cossulus* Staudinger, 1887 and *Parahypopta* Daniel, 1961. Yakovlev (2011) in his catalogue followed this view.

DISTRIBUTION. The genus is endemic to southern Africa, with two, near-allopatrically distributed species in Namibia, Botswana, and South Africa, with an overlap in the Mpumalanga province of South Africa (Fig. 2). A third, as yet undescribed species from Zimbabwe was found in the accessions of the Lepidoptera collections in TMSA.

Coryphodema tristis (Drury, 1782), Figs 1, 56, 57, 125

Phalaena tristis Drury, 1782, *Illust*. *nat*. *Hist*. *exot*. *Insects* **3:** 27, pl. 21, Fig. 1. Holotype ♀ (BMNH), type locality: South Africa, Cape of Good Hope.

Coryphodema capensis Felder, 1874, *Novara*, Heft 4, p. 2, Tafel 82, Fig. 8, type locality: Cape Town, holotype in BMNH [examined] [synonymized by Fletcher and Nye, 1982: 44].

Cossus punctulatus Walker (1856): Hampson (1910); Gaede (1929) [misidentification].

Cossus seineri Grünberg, 1910: tentatively

Fig. 2

Geographical distribution of the genus *Coryphodema* Felder, 1874 in southern Africa (based on specimens identified by the author).

synonymized by Yakovlev (2011: 34) [misidentification].

MATERIAL EXAMINED. 1♀, **[South Africa]**, Cape, det. Hampson (SAM); 1♂, 1♀, Stellenbosch (SAM); 1♂ [South Africa], RSA, West Natal, Dragon Peaks Park, 9–12.xi.1993, leg. [W.] Mey & [K.] Ebert (MfN); 1♀, Cape Town, Orange Kloof, 14.x.2009, leg. W. Mey (MfN); 1♂, Western Cape, Rocherpan Nature Reserve, 20–21.xi.2008, leg. W. Mey, K. Ebert & L. Kühne, genitalia slide Mey 19/15 (MfN); 1♀, KwaZulu-Natal, Umlalazi Nature Reserve, coastal forest, 28°57′34″S 31°46′14″E, 5.xi.2013, genitalia slide Mey 49/15, leg. H. S. Staude (MfN).

Further material in TMSA from the following localities in South Africa: *Western Cape* – Cape Town, 33°55′S 18°25′E; De Wet, 33°36′S 19°30′E; Swartbergpass, 33°19′S 22°03′E; Oudtshoorn, 33°35′S 22°12′E; Knysna, 34°02′S 23°02′E; Noordhoek, 34°06′S 18°22′E; Caledon, 34°13′S 19°26′E; Worcester, 33°39′S 19°26′E; Sevenweekspoort, 33°22′S 21°25′E; Robertson, 33°48′S 19°53′E; Clanwilliam, 32°10′S 19°00′E; *KwaZulu-Natal*: Durban, 29°52′S 31°00′E; Sordwana Bay, 27°32′S 32°41′E; Richard's Bay, 28°49′S 32°06′E; Sarnia, 29°50′S 30°52′E; Umhlanga Rocks, 29°43′S 31°05′E; Muden, 28°58′S 30°22′E; Yellowwoods/ Balgowan, 29°24′S 30°03′E; *Gauteng:* Heidelberg, 26°31′S 28°20′E; *Mpumalanga*: Mariepskop, 24°35′S 30°50′E; Middelburg, 25°45′S 29°27′E; Renosterpoort, 25°30′S 28°40′E; Blyde River Canyon, 24°15′S 30°50′E; *Limpopo*: Chunies Poort, 24°12′S 29°31′E; Wylie's Poort, 22°53′S 29°56′E; Haenertsburg, 23°56′S 29°57′E.

DESCRIPTION. *Adult*. Forewing length 18–24 mm (♂), wingspan 40–53 mm ($n = 5$). Forewings with reticulate pattern less pronounced in basal half, a black oblique line parallel to termen, long and extending in a conspicuous fashion from A to at least M2, sometimes to R5; anal vein lined with grey, costal area grey-brown, cell between R and Cu2 grey or brown. Forewings of female with rounded termen, basal area of forewings darker brown.

Male genitalia (Figs 56, 57). Base of vinculum small, sides narrow. Valvae broad at base, tapering to a triangular apex, inner side concave, with oblique crest; two to three fissures on subapical costal margin accompanied by short horizontal lamellae, apex of valvae less sclerotized. Phallic apparatus shorter than valvae, almost straight, ventral apex acute and slightly curved dorsad, the adjacent flaps of vesica lightly sclerotized.

Female genitalia (Fig. 125). Papillae anales curved ventrad, bearing both short and long setae; ostium surrounded by circular lamella antevaginalis and divided lamella postvaginalis, the latter appearing to be connected to ventral branch of apophyses anteriores. Bursa copulatrix simple and relatively small; ductus seminalis branching off posteriorly before ductus bursae.

BIOLOGY. The species is popularly known as the Apple trunk borer and can be a serious pest in plantations. Completion of larval development takes 1–3 years. Female fecundity is very high, with about 300 eggs laid by each female. After initially feeding under bark, the first-instar larvae start boring into the wood. Moths emerge from September to January. Pupal cases protruding from the exit holes are used to monitor infestation rates. The species has been reared from a number of host plant genera, including *Combretum* (Combretaceae), *Lagunaria* (Malvaceae), *Myoporum*, *Paulownia* (Scrophulariaceae), *Olea* (Oleaceae), *Cliffortia*, *Cydonia*, *Pyrus* (Rosaceae), *Quercus* (Fagaceae), *Salix* (Salicaceae), *Ulmus* (Ulmaceae), *Vitis* (Vitaceae) and *Ziziphus mucronatus* (Rhamnaceae) and also attacks *Eucalyptus nitens* (Myrtaceae) (Pinhey, 1975; Kroon, 1999; Prinsloo and Uys, 2015). Descriptions of the larva and pupa are apparantly not available.

Coryphodema seineri (Grünberg, 1910), **comb. nov., stat. rev.**, Figs 11–12a, 58–60

Cossus seineri Grünberg, 1910: 139–140, Tafel 3, Fig. 18. Holotype ♂, **[Botswana]**, British Bechuanaland, Palapye Road, 8.xi.[1906], leg. [F.] Seiner (MfN) [not examined]. See also under Remarks below.

Cossus seineri Grünberg, 1910: Dalla Torre 1923: 13 [as *steineri*; misspelling]; Gaede, 1929: 542; Vári *et al*., 2002: 59.

Macrocossus coelebs Clench, 1959: 5–6, Fig. 2. Holotype ♂, *Macrocossus coelebs* Clench, type locality: Namibia, Okahandja (ZSM) [examined], **syn. nov.**

Macrocossus coelebs Clench, 1959: Vári *et al*,. 2002: 59; Yakovlev, 2011: 16.

MATERIAL EXAMINED. 1♂, holotype of *Macrocossus coelebs* Clench, **[Namibia]**: South West Africa, Okahandja, 28.x.1937, leg. F. Gaerdes, genitalia slide Clench F-23, sp. 246 (ZSM); 1♂, same data as holotype of *C. coelebs*, 26.x.1937 (TMSA); 1♂, Namibia, Namib-Naukluft National Park, Tsams-Ost, 3.xii.2008, leg. W. Mey, K. Ebert & L. Kühne (MfN); 3♂, Namibia, Karas, Orange River valley, Gamkap, 30.xi.2008, leg. W. Mey, K. Ebert & L. Kühne, 1♂ genitalia in glycerine vial (MfN); 3♂, **South Africa**, Northern Cape, Vioolsdrif, 28°46′S 17°37′E, 6.x.1971, leg. H. Snyman & R. Jones (TMSA); 1♂, [South Africa]: RSA, Northern Cape,

north-east of Bitterfontein, Draaihoek, 25.ix.2008, leg. W. Mey, K. Ebert & L. Kühne (MfN); 1♂, South Africa, Namaqualand, 18 km S Springbok, Mesklip, 29°52′S 17°53′E, 3.xi.1993, leg. T. Karisch (MfN); 1♂, South Africa, Mpumalanga, Roodeplaat, Liqualvangi, Oct. 1969, H. D. Naudé, genitalia in glycerine vial (TMSA); 1♂, South Africa, Mpumalanga, Louws Creek, xii.1922, N. G. Williams (TMSA).

DESCRIPTION. *Adult male* (Figs 11–12a). Forewing length 16–22 mm, wingspan 35–50 mm (n = 13). Forewings with reticulate pattern over apical one-third close to termen, a black transverse line parallel to termen, short and slightly incurved, anal vein finely lined with black, costal area brown, cell between R and Cu2 pale ochreous or grey-brown.

Male genitalia (Figs 58–60). Vinculum enlarged basally, distal margin nearly straight, proximal margin broadly rounded; valvae broad, nearly rectangular, inner side concave, with two to three vertical fissures subapically on costal margin, accompanied by medially protruding lamellae; apex sclerotized, rounded, not membranous; phallic apparatus relatively thin, longer than valvae, almost straight.

Female. Unknown.

REMARKS. (i) While describing the present species in the genus *Macrocossus* Aurivillius, 1900, Clench (1959) was aware of the striking external discrepancy to the then only included species *M. toluminus* (Druce, 1887) and he therefore considered the placement as being provisional. Here, the species is transferred to *Coryphodema* Felder, 1874, on the basis of corresponding wing venation, wing pattern, structure of the antennae and the similar male genitalia. (ii) Yakovlev (2011: 34) tentatively synonymized *Cossus seineri* Grünberg, 1910 with *Coryphodema tristis*. The illustration of the holotype in Grünberg (1910) shows a rather dark individual with reduced reticulate pattern on the wings. According to this illustration the species probably does belong to *Coryphodema*, but it was unclear whether as a distinct species, a junior subjective synonym of *C. tristis*, or as a senior subjective synonym of *C. coelebs*. The type has been on loan to A. D. Kondratiev (Moscow) since 1996 and could not be studied up to now. However, two specimens collected in Mpumalanga province and deposited in the TMSA collection display the same dark wing pattern as *C. seineri*. Since body size and genitalia largely correspond with *C. coelebs*, both taxa are regarded as being synonymous. *C. seineri* as the older name has priority and is the valid name of the species. However, the dark form from Mpumalanga deserves further attention. A subspecific differentiation cannot be excluded for these specimens, but more material is needed to answer this question. (iii) Both species of *Coryphodema* are distributed in southern Africa, probably with an undocumented overlapping zone in the interior provinces of South Africa. While *C. seineri* occurs in the western part of the study area, in Botswana and Mpumalanga, *C. tristis* is distributed from the Cape Floristic Region along the eastern part of the country towards Limpopo province (Fig. 2). Both species occur sympatrically in Mpumalanga.

Brachylia Felder, 1874

Brachylia Felder, 1874: *Novara*, Heft 4, p. 2, Tafel 82. Type species: *Brachylia terebroides* Felder, 1874, *ibidem*, Tafel 82, Fig. 7, by monotypy. Holotype ♀ (BMNH), type locality: South Africa, Cap b[onae] sp[ei].

Brachylia Felder, 1874 [as junior subjective synonym of *Cossus* Fabricius, 1794]: Hampson, 1892: 304; Dalla Torre, 1923: 5; Gaede, 1929: 541.

Brachylia Felder, 1874: Clench, 1959: 16 [genus resurrected]; Schoorl, 1990: 62–63; Yakovlev, 2011: 32.

DIAGNOSIS. *Adult*. Males with bipectinate and females with unilobate antennae, 65–68 (♂) pairs of rami and 57–59 (♀) flagellomeres; rows of rami barely diverging and arranged nearly parallel to each other, flattened, with tips slightly broadened; short cilia on dorsal and lateral sides and around apex, scales absent; female flagellomeres unilobate, with short to long bifid tips; epiphysis present in both sexes. Tarsal claws with arolium. Forewing venation with R4 and R5 on a short stalk, hind wings with R and M1 from the same point or fused over a very short distance.

Male genitalia. Uncus of male broad, without pronounced lateral constriction in dorsal view; median part of gnathos with or without denticles; valvae with or without apodemal ledge on median side close to transtilla; ventrally basal processes of valvae attached to the base of processes arising from juxta; transtilla largely membranous, connected to a varying extent to basal processes; valvae with one to three fissures on dorsal margin, apical portion less sclerotized than basal part. Phallic apparatus without cornuti.

Female genitalia. Ovipositor long; apophyses posteriores apically without piercing tip; ostium small, situated in membrane between segments VII and VIII, antrum short and triangular, lamella antevaginalis well sclerotized; ductus bursae short, gradually broadening towards the elongate, thin bursa; ductus seminalis short, modified to form a bulla seminalis, bursa lacking signum.

SYSTEMATIC POSITION. Due to the matching morphology of the bipectinate male and unilobed female antennae, the genus may be close to *Coryphodema*. The wing pattern, however, is quite different and rather recalls that of Palaearctic *Cossus* species, and some *Brachylia* species were indeed placed in this genus in the past. Members of *Cossus* do not have an arolium, which is considered to be an apomorphic character state (= secondary loss). On the basis of features of the male and female antennae the South African species can be placed into three species groups, which are introduced below. Wing shape and forewing pattern also differ between the groups. Future studies including the remaining Afrotropical species will have to show whether the species groups established here form an adequate concept for *Brachylia* or not.

DISTRIBUTION. The genus, with about 17 species, is restricted to the Afrotropical Region (Yakovlev, 2011). *Brachylia* species are widely distributed across the continent but have not been recorded from the Horn of Africa nor from the Arabian Peninsula to date.

***terebroides* species group**

DIAGNOSIS. Rami of male antennae on all sides with small hairs, bearing some longer hairs on inner side, space between rami greater than diameter of an individual ramus; in female flagellomeres with a single, apically bifid ventral lobe.

Brachylia terebroides Felder, 1874, Figs 1, 21, 73, 75–78, 119, 120, 146, 147

Brachylia terebroides Felder, 1874: *Novara*, Heft 4, p. 2, Tafel 82, Fig. 7. Holotype ♂, type locality: [South Africa] Cap b[onae] sp[ei] (BMNH).

Cossus terebroides (Felder, 1874): Hampson, 1892: 304; Dalla Torre, 1923: 14; Gaede, 1929: 541.

Brachylia terebroides Felder, 1874: Clench, 1959: 16; Yakovlev, 2011: 32; Fletcher and Nye, 1982: 25.

MATERIAL EXAMINED. Holotype ♂, [**South Africa**, Eastern Cape]: 'Bashee R[iver]/Kaffraria/J. H. Bowker' [printed on white card], 'coll./Trimen', 'Felder/Colln.' [round label], 'Type', '*Brachylia*/*terebroides*/Nov. in tab.' [handwritten on white card], 'Cossidae/genitalia slide/No. 229' [inscription on blue card]; 1♂, South Africa, Hexriver C[ape] C[olony], 12.x.1953, leg. C. G. C. Dickson (TMSA); 1♂, Western Cape, Hex River, 16.x.1953, leg. C. G. C. Dickson (TMSA); 1♀, Western Cape, Clanwilliam, Farm Zeekoeivlei, 15.xi.2002, farm staff leg. (TMSA); 2♂, same locality, 6.iii.2003, 23.i.2004, 6.xii.2007 (TMSA); 1♂, Western Cape, Montagu Pass, 25.ix.1922, leg. Dr. Brauns (TMSA) 1♂, Western Cape, Camps Bay, 25.iii.1955, leg. A. J. Duke (TMSA); 19♂, 1♀, Cape Town, Kirstenbosch, 15–29.xii.1954, leg. A. J. T. Janse (TMSA); 2♂, Western Cape, Betties Baai, 21.ii.1977, leg. L. & G. Vári (TMSA); 6♂, Western Cape, Keurboomstrand, 34°00′S 23°27′E, 15.xii.1976, UV-light collection, leg. S. Endrödy-Younga (TMSA); 1♂, Cape Province [Western Cape], Knysna, 10–14.i.1955, leg. A. J. T. Janse (TMSA); 1♂, Cape Province [Western Cape], Wilderness, 19.xi.1963, leg. J. S. Taylor (TMSA); 3♂, 2♀, Eastern Cape, Beacon Bay, 2.i.1982, leg. N. J. Duke (TMSA); 1♂, [KwaZulu-Natal], Umgazi River mouth, 31°41′S 29°27′E, 8–29.xi.1962, leg. Mrs. C. Granville (TMSA); 2♀, KwaZulu-Natal, St. Lucia Bay, Oct. 1927 [H. W. Bell-Marley] (TMSA); 13♂,[South Africa]' RSA, West.[ern] Cape/ CP Table Mt. N[ational] P[ark]/ 22–26.x.2007/ leg. [W.] Mey & [V.] Richter', 'Olifantsbos/Automat[ische] Falle' (MfN), 18♂, same locality but 17–19.xi.2008, leg. W. Mey, K. Ebert & L. Kühne (MfN);1♂, RSA, Western Cape, Rocherpan Nature Reserve, 20–21.xi.2008, leg. W. Mey, K. Ebert & L. Kühne (MfN); 1♀, South Africa, Cape Town, Kirstenbosch, 5–29.xii.1954, leg. A. J. T. Janse, genitalia slide Mey 45/15 (TMSA). 3♂, South Africa, KwaZulu-Natal, False Bay Nat., October 1924, leg. H. Bell-Marley (TMSA).

DESCRIPTION. *Adult* (Fig. 21). Length of forewings 13–18 mm, wingspan 28–40 mm ($n = 68$). Shaft of antennae with white scales, rami brown ventrally, dorsal side with rami dark brown, inner side with three rows of longer cilia; in female flagellomeres with short lobes (= unilobate) with excised tips. Hind margin of patagia pale brown. Forewings with reticulate pattern of broader black, transverse lines and fine grey reticulation; basal area darker than apical part, without reticulation, covered in dark to light brown scales; hind wings with or without reticulation.

Male genitalia (Figs 73, 75–78, 146, 147). Uncus strongly curved and deeply emarginate on ventral side, shorter than valvae; basal processes generally long and slender, of varying length, their bases not connected to membranous transtilla dorsally, ventrally fused with base of lateral processes of juxta; central plate of juxta absent, bases of juxtal processes fused to form a slender and acute sclerite between bases of valvae; the latter attached to vinculum for nearly as long as dorsal margin of valvae, three dorsal fissures present but not extending beyond dorsal margin, phallic apparatus with a cap-like bulbus ejaculatorius (Fig. 147).

Female genitalia (Figs 119, 120). Ovipositor long, papillae anales bearing both short and long hairs;

tergum VIII sclerotized dorsally and laterally, ventral side of segment VIII nearly membranous; apophyses posteriores becoming thin towards apex and terminating separately, thus not forming a piercing organ; apophyses anteriores shorter, connected to ostium by a curved strap-like sclerite; antrum small and elongate, situated below the triangular lamella antevaginalis.

DIAGNOSIS. This species can be readily separated from its congeners by the structure and arrangement of hairs on the male antennae, as well as by the unilobate flagellomeres and bifid tips of the female antennae. A further distinguishing feature is the forewing pattern consisting of narrow and bold lines in the reticulation area and the more or less extended brown coloration in the centre.

DISTRIBUTION. The species occurs mainly in the Cape Floristic Region, reaching KwaZulu-Natal along the east coast.

windhoekensis species group

DIAGNOSIS. Rami of male antennae on all sides with short hairs only, rami stout and rounded, spaces between rami in basal half short, not exceeding diameter of an individual ramus; female flagellomeres tightly packed, with a single, apically rounded ventral lobe.

Brachylia camparia spec. nov., Figs 14, 68, 134, 135

TYPE MATERIAL. Holotype ♂: **[South Africa]:** RSA, Northern Cape, south-west of Kamieskroon, Spoekrevier, Bethelklip, 29.xi.2008, LF, leg. W. Mey, K. Ebert & L. Kühne (TMSA).

Paratypes (9♂ and 2♀): **[South Africa]:** 4♂, 2♀, same date as holotype, genitalia slide Mey 8/12 (MfN); 3♂, RSA, Northern Cape, north-east of Bitterfontein, Draaihoek, 25.xi.2008, leg. W. Mey, K. Ebert & L. Kühne (MfN, TMSA). **Namibia:** 2♂, Karas, Orange River valley, Gamkap, 30.xi.2008, leg. W. Mey, K. Ebert & L. Kühne (MfN).

ETYMOLOGY. Derived from Latin *campus* (*-i*), field or farmland, reflecting the distribution of the species in the open Succulent Karoo vegetation.

DESCRIPTION. *Adult* (Fig. 14). Length of forewings 13–16 mm, wingspan 29–38 mm ($n = 12$). Rami of antennae short, equalling 3–4 flagellomeres in length, space between rami in lateral view smaller than diameter of the latter. Female with 60, males with 56–59 flagellomeres. Labial palpi closely appressed to frons and extending to well beyond dorsal margin of eyes. Wing pattern as in *B. windhoekensis*, but generally slightly darker.

Male genitalia (Figs 68, 134, 135). Juxta V-shaped, with lateral processes very short, originating from dorsal side of juxta, the point of attachment of the ventral edge of the basal hook. Phallic apparatus straight, considerably shorter than valvae.

Female genitalia. The ovipositor and the internal structures are very similar to females of the following two species.

Brachylia plumbata spec. nov., Figs 1, 19, 20, 61–66, 121–122

TYPE MATERIAL. Holotype ♂, **[South Africa]:** RSA, Western Cape, Swartberg Nature Reserve, Gamskaskloof (The Hell), 33°22′S 21°40′E, 26–28.xi.2013, leg. F. Koch, genitalia slide Mey 138/14 (TMSA).

Paratypes (2♂ 4♀): **[South Africa]:** 1♂, same data as holotype, genitalia slide Mey 17/15 (MfN), 1♀, RSA, Eastern Cape, Graaff-Reinet district, Asante Sana Game Farm, 22–26.x.2013, leg. W. Mey (MfN); 1♂, South Africa, Western Cape, Worcester, 23°41′S 19°25′E, 9.xi.1993, leg. T. Karisch (MfN); 1♀, South Africa, Eastern Cape Province, near Port St. Johns, 55 m, 10.i.2012, leg. S. Murzin, genitalia slide Mey14/15 (MfN); 1♀, South Africa, Western Cape, Prince Albert, 29.ix.1969, leg. C. G. C. Dickson (TMSA); 1♀, South Africa, Eastern Cape, Mt. Marlow Lodge, 30 km N Somerset East, 32°31′S 25°34′E, 28–30.ix.2007, leg. D. Bartsch (TMSA).

ETYMOLOGY. From Latin *plumbum* (*-i*), lead, with reference to the forewing colour of the males.

DESCRIPTION. *Adult* (Figs 19, 20). Length of forewings 12–16 mm, wingspan 25–35 mm ($n = 7$). Rami of antennae dark brown, flattened, equalling 5–6 flagellomeres in length, all sides of rami with short cilia; female with 62, male with 62–64 flagellomeres. Labial palpi ascending, barely reaching dorsal margin of eyes. Thorax covered in lamelliform scales, patagia not distinctly separated from thorax, hind margin marked with black. Arolium small, membranous, sclerotized laterally. Wings leaden grey-brown, with dark brown reticulation and three black vertical lines, veins not lined with black, cilia moderately chequered; hind wings grey-white, with distinct reticulation; cilia grey-brown. Female with broader wings and more strongly rounded termen, hind wings plain grey-brown, with weak reticulation only.

Male genitalia (Figs 61–66). Uncus straight, triangular, attached to broad teguminal base. Medial element of gnathos without denticles. Valvae with two fissures on dorsal margin; apodemal ledge on

median side of valvae present but weakly developed; transtilla membranous; juxta trapezoidal, lateral processes long and broad, without free apex, originating from dorsal side of juxta. Ventral edge of basal hook attached further dorsally from juxta. Phallic apparatus slightly curved, nearly as long as valvae, bulbus ejaculatorius elongate, proximally recurved ventrad.

Female genitalia (Figs 121, 122). Ovipositor longer than in *B. terebroides*, papillae anales rounded, with both short and long setae; apophyses posteriores terminating separately at apex and not forming piercing organ; antrum small, strongly sclerotized and funnel-shaped; lamella antevaginalis connected to apophyses anteriores by weakly sclerotized ribbons; lamella postvaginalis as a narrow, recurved clasp, reaching antrum on both sides.

DIAGNOSIS. Externally not distinguishable from other species of the *windhoekensis* group. In the male genitalia the smooth median lobe of the gnathos and the very long bulbus ejaculatorius are diagnostic.

REMARKS. The females are tentatively associated with the males on account of the forewing coloration.

Brachylia windhoekensis (Strand, 1913),
Figs 1, 22, 22a, 74, 109–112, 148, 149

Cossus windhoekensis Strand, 1913: 87. Holotype ♂ (MfN), type locality: [Namibia], Windhoek.

Cossus windhoekensis Strand, 1913: Dalla Torre, 1923: 15; Gaede, 1929: 541.

Brachylia terebroides Felder, 1874: Clench, 1959: 16 [misidentification].

Brachylia windhoekensis (Strand, 1913): Yakovlev, 2011: 32.

MATERIAL EXAMINED. Holotype ♂, *Cossus windhoekensis* Strand, **[Namibia]:** D. S. W. Afrika , Windhoek, leg. Techow, genitalia slide Mey 5/12 (MfN); 2♂, Namibia, Windhoek, 11.xii.1973 and 24.ix.1974, leg. R. Oberprieler (TMSA); 1♂, Namibia, Marienthal District, Hardap Dam, 10–14.iv.1972, leg. Strydom & Jones (TMSA); 1♂, Namibia, Okahandja, 12.ix.1947, leg. F. Gaerdes (TMSA); 2♂, same locality, 5.viii.1948, leg. F. Gaerdes, genitalia in glycerine vials (ZSM); 1♂, Namibia, Kalidone, x.1950, leg. F. Gaerdes, genitalia slide Mey 18/15 (ZSM); 6♂, Namibia, Khomas Hochland, Vaalgras Farm, 22°54′S 16°45′E, 21.ix.2008, leg. F. Koch (MfN); 2♂, Namibia, Solitaire, 23°51′S 16°03′E, 31.viii.2010, lux, leg. T. N. Chance & J. Cave, genitalia slide Mey 21/12 (MWM); 25♂, 2♀, Namibia, Tsauchab River, Oerwald camp, 1100 m, 24°30′S 16°06′E, 29.viii.2010, leg. T. N. Chance & J. Cave, genitalia slide Mey 20/12 (MWM, MfN). **South Africa:** 3♂, Northern Cape, Richtersveld, Brakf[ontein], 18.xi.1933, leg. G. van Son, cleared abdomen in glycerine vial (TMSA); 2♂, South Africa, Northern Cape, Orania, Hopetown, 29°48′S 24°55′E, 6.i.1971, leg. H. Snyman (TMSA). **Malawi:** 3♂, Stone Hills, Tukuyu, 10°36′71″S 34°06′77.4″E, 30.v.2010, 1370 m, lux, leg. T. N. Chance & J. Cave, genitalia slide Mey 8/13 (MWM).

DESCRIPTION. *Adult* (Fig. 22). Length of forewings 13–16 mm, wingspan 29–39 mm ($n = 51$); shaft of antennae with white to grey scales, antennae bipectinate (♂) or unilobate (♀), rami brown to dark brown; longest rami of antennae (middle section) equalling six flagellomeres in length. Labial palpi closely appressed to frons, ascending, barely reaching dorsal margin of eyes. Hind margin of patagia black. Forewings with dense reticulate pattern consisting mostly of thin lines, with only a few slightly broader black, vertical lines, sometimes an indistinct, oblique brown fascia present; basal area slightly reticulated; hind wings white-grey with distinct reticulation. Forewings of female rounded apically, hind wings brown, without reticulate pattern. Sternites of segments VI–VIII compact, with concave sides. Females on abdominal segment VIII with lateral and dorsal brushes of long and black, hair-like scales.

Male genitalia (Figs 74, 148, 149). Uncus slightly curved, deeply emarginate ventrally, reaching tip of valvae; dorsal edge of base of basal hook connected to the membranous transtilla, forming knob-like swellings; ventral edge fused with base of lateral processes of juxta, connected by a short appendage originating from the proximal side of the processes; central plate of juxta broad, triangular; length of base of valvae attached to vinculum markedly shorter than dorsal margin of valvae; two dorsal fissures present on median side and barely protruding beyond dorsal margin, phallic apparatus with an elongate bulbus ejaculatorius, proximally recurved ventrad.

Female genitalia. Ovipositor long, apophyses posteriores terminating separately at apex and not forming piercing organ; antrum small and elongate, embedded in the triangular lamella antevaginalis.

DIAGNOSIS. The species is difficult to distinguish from *B. camparia* spec. nov. and *B. plumbata* spec. nov. using external characters. Genitalia dissection is necessary for the reliable identification of specimens from outside Namibia. In the male genitalia the form of the juxta and its lateral processes, and the length of the phallic apparatus serve to separate the species from its congeners.

DISTRIBUTION. Formerly known only from Namibia,

but judging from records from South Africa and Malawi, the species evidently has a wider distribution in southern Africa and beyond.

REMARKS. The holotype is the specimen first identified by Grünberg (1910) as *Cossus henleyi* Warren & Rothschild, 1905 (now placed in *Camellocossus* Yakovlev, 2011). All records of the latter species from southern Africa are based on this misidentification. This specimen was later recognized as belonging to a different species and subsequently described by Strand (1913) as *C. windhoekensis*. The species was later synonymized with *Brachylia terebroides* Felder, 1874 by Clench (1959), but without checking the type material. After examination of the holotype preserved in MfN (Fig. 22–22a) the species proved to be a valid taxon clearly distinct from *Brachylia terebroides* and other *Brachylia* species in southern Africa.

eutelia species group

DIAGNOSIS. Rami of male antennae on dorsal (= outer) side with small hairs, ventral (= inner) side with 2–3 rows of long cilia; rami slender, space between rami wide in basal half, nearly twice diameter of an individual ramus; female antennae appearing to be bipectinate as in male but rami originating from a common lobe and pointed at apex.

***Brachylia minor* spec. nov.**, Figs 13, 67, 132, 133

TYPE MATERIAL. Holotype ♂, **Namibia**, Hardap, Maltahöhe, Tsauchab River, Oerwald campsite, 1080 m, 24°30′S 16°07′E, 15.xii.2007, leg. J. Deckert, genitalia slide Mey 68/12 (MfN).

ETYMOLOGY. From Latin *minor*, small, with reference to the small size of the moths.

DESCRIPTION. *Adult male* (Fig. 13). Length of forewings 12.5 mm, wingspan 27 mm ($n = 1$). Rami of antennae black, barely flattened, length equal to five flagellomeres, space between rami in lateral view wider than diameter of rami; inner side of rami with rows of long cilia. Labial palpi closely appressed to frons and ascending, not reaching dorsal margin of eyes. Patagia with black hind margin. Wings as in *B. contusa* spec. nov. but black line from apex to Cu1b concave to termen; cilia moderately chequered; hind wings white-grey, without reticulation. Arolium membranous.

Male genitalia (Figs 67, 132, 133). Apodemal ledge on median side of valvae absent; transtilla slightly sclerotized ventrally; juxta V-like, with short arms, lateral processes broad and long, originating from dorsal arms of juxta, where the ventral edge of the basal hook is also attached. Phallic apparatus slightly curved, as long as valvae.

Female. Unknown.

DIAGNOSIS. This is one of the smallest species in the genus. With respect to wing colour and forewing pattern, it resembles *B. contusa* spec. nov. In the male genitalia, the species differs in the shape of the juxta and uncus; especially the long processes of the juxta separate *B. minor* spec. nov. from *B. contusa* spec. nov. (see Fig. 67).

***Brachylia contusa* spec. nov.**, Figs 15, 16, 69, 70, 136, 137

TYPE MATERIAL. Holotype ♂: **Namibia**, Namib-Naukluft National Park, Tsams-Ost, 3.xii.2008, LF, leg. W. Mey, K. Ebert & L. Kühne, genitalia slide Mey 70/12 (MfN).

Paratypes (24♂): 1♂, Namibia, Brandberg, Mason Shelter, 5.iii.2002, 1740 m, leg. W. Mey, genitalia slide Mey 53/06 (MfN); 1♂, Namibia, *ca*. 50 km N of Okahandja, BIOTA Observatory Erichsfelde, 15.iv.2001, LF, leg. K. Ebert, genitalia slide Mey 52/06 (MfN); 1♂, Namibia, *ca*. 80 km N of Okahandja, BIOTA Observatory Omatako (Toggegry) [local Herero name for Omatako], 14.i.2007, light trap, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Erongo Mt., Kuduberg Farm, 12–14.i.2007, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Namib–Naukluft National Park, campsite, 27.ii.2008, LF, leg. J. Deckert, genitalia slide Mey 74/12 (MfN); 2♂, Namibia, Tsauchab River, Oerwald camp, 1100 m, 24°30′S 16°06′E, 29.viii.2010, leg. T. N. Chance & J. Cave, genitalia slide Mey 69/12 (MWM); 1♂, Namibia, Karas, Seeheim, 27°01.115′S 17°49,949′E, 690 m, 4.viii.2010, lux, leg. W. Struijlaart & K. Ljissbrand van der Meer (MWM); 4♂, 'Gobabeb, S.W.A./ Game Reserve No. 3/ 12–17.iv. 1967, J. H. Potgieter', 1♂, same data but 23–24.iv. 1967 (TMSA); 4♂, same data but 20–29.v.1965 (TMSA); 1♂, same locality, 2–8.vii.1975 (TMSA); 3♂, Namibia, Gobabeb, 23°34′S 15°03′E, 6–18.ix.1974, leg. Endrödy-Younga (TMSA); 2♂, same data but 3.xi.1974 (TMSA); 1♂, same locality, 9–13.vii.1990, leg. M. Nel (TMSA); 1♂, Namibia, Mariental, 10–14.v.1972, leg. Strydom & Jones (TMSA); 1♂, Namibia, Mariental, Tsondabvlei, 10.vii.1975, leg. University of Pretoria (TMSA); 2♂, Namibia, Kara, Farm Bergland, Gaapmouth into Fish River, 454 m, 27°28′S 17°40′E, 25.vii.2005, leg. T. Bird (TMSA).

ETYMOLOGY. Derived from Latin *contusus* (*-a*, *-um*), crushed, with reference to the pale patches of the forewings somewhat reminiscent of worn spots.

DESCRIPTION. *Adult* (Figs 15, 16). Length of forewings 13–16 mm, wingspan 29–36 mm ($n = 25$).

Rami of antennae black, very slightly flattened, equalling six flagellomeres in length, space between rami in lateral view greater than diameter of rami; inner side of rami bearing rows of long cilia. Labial palpi closely appressed to frons and ascending, not reaching dorsal margin of eyes. Forewings dark grey, apical half lighter with paler areas and fine reticulation; cilia moderately chequered; hind wings grey white, reticulation indistinct. Arolium brown, sclerotized ventrally.

Male genitalia (Figs 69, 70, 136, 137). Transtilla connected to valvae and basal hook via apodemal ledge on median side; juxta semicircular, with ventral side somewhat notched, lateral processes long, originating from dorsal margin of juxta, which also serves as the point of attachment for the ventral edge of the basal hook. Phallic apparatus slightly curved, as long as valvae.

Female. Unknown.

REMARKS. There is remarkable variation in the shape of the basal hook in the male genitalia, rendering this character unsuitable for distinguishing species. An example of this variable structure is given in Fig. 70. For the time being I consider this variation as intraspecific; if more material becomes available for study, a more detailed investigation should be done to determine whether additional, cryptic species are involved (compare Figs 15, 16).

Brachylia eutelia Clench, 1959, Figs 1, 16a, 138–141

Brachylia eutelia Clench, 1959: 17–19, plate III, figs 1–2, holotype ♂ (ZSM), type locality: S. W. Afrika [Namibia], Okahandja (ZSM) [examined].

Brachylia eutelia Clench, 1959: Mey, 2007: 190, figs 8–11; Schoorl, 1990: 63; Yakovlev, 2011: 32.

Brachylia eberti Yakovlev, 2011: 33, Fig. 28, plate 2, 34. Holotype ♂, type locality: Namibia, Karas, Noordoever, **syn. nov.**

MATERIAL EXAMINED. ♂ Holotype of *B. eberti*, '**Namibia**, Noordoever/Orange River/ 18.xi.1993, leg. [W.]Mey & [K.]Ebert, genitalia slide MHUB [Yakovlev] 2008/4 (MfN); 1♂ Paratype of *B. eberti*, 'Namibia/Ai-Ais/ Fishriver Canyon, 19.iii.2005, leg. W. Mey (MfN); 1♂, Namibia, Noordoever, Orange River, 18.xi.1993, leg. [W.]Mey & [K.]Ebert, genitalia slide MHUB [Yakovlev] 2008/5, *Brachylia eutelia* Clench, det. R. Yakovlev (MfN); 5♂, Namibia, Orange River, NW Noordoever, 4.iii.2005, leg. W. Mey, genitalia slide Mey 72/12 (MfN); 6♂, 3♀, Namibia, Orange, Gamkap, 30.xi.2008, leg. W. Mey, K. Ebert & L. Kühne, genitalia slide Mey 71/12 (MfN); 1♂, Namibia, Karas, Seeheim 27°01.115′S 17°49.949′E, 690 m, 4.viii.2010, lux, leg. W. Struijlaart & K. Ljissbrand van der Meer (MWM); 1♂, Namibia, Gobabeb, Desert Station, lux, 25–26.iv.2008, leg. J. Deckert (MfN). **South Africa**, 1♀, Northern Cape, Pella, 9–12.ix.1970, leg. Potgieter & Snyman (TMSA); 4♂, South Africa, Northern Cape, Richtersveld, Brandkaross, 2.xii.1949, leg. Koch (TMSA); 1♂, Konkiep, S.W.A., April 1933, leg. G. van Son (TMSA).

DESCRIPTION. *Adult* (Fig. 16a). Length of forewings 11–16 mm , wingspan 25–35 mm (♂), 30–40 mm (♀) ($n = 25$); shaft of antennae with white scales, rami brown, not flattened, with rows of long cilia on inner side; longest rami in middle section equalling 6–7 flagellomere shafts in length. Female antennae appearing bipectinate but rami fused basally, outer rami longer than those on inner side, bearing short cilia throughout. Labial palpi closely appressed to frons and ascending, not reaching dorsal margin of eyes. Hind margin of patagia black. Forewings grey white, with a scattering of small black scales, veins thinly lined with black; hind wings white; cilia chequered on both pairs of wings. Sternites of segments VI–VIII compact.

Male genitalia (Figs 138–141). Uncus slightly curved, dorsal edge of base of basal hook connected to the lightly sclerotized transtilla, forming knob-like swellings enclosed by apodemal ledges; ventral edge fused with base of lateral processes of juxta, connected by a short appendage arising from the proximal side of the process; central plate of juxta broad, semicircular; one to two dorsal fissures present on dorsal margin, phallic apparatus with elongate bulbus ejaculatorius, tip pointed and slightly recurved.

Female genitalia (not illustrated). Ovipositor long, apophyses posteriores terminating separately at apex; apophyses anteriores shorter; ostium small, antrum triangular, surrounded anteriorly by the large triangular lamella antevaginalis, protruding ventrad.

BIOLOGY. The species was collected on the banks of the Orange River and on other river beds in Namibia, always in close proximity to thickets of wild tamarix, *Tamarix usneoides* E. Mey. ex Bunge, 1852 (Tamaricaceae). This plant species is present at all localities where *B. eutelia* was collected by the author and thus might prove to be its larval host plant.

REMARKS. The species exhibits wide variation in both forewing pattern and in the male genitalia, which becomes evident when a large number of specimens are available for comparison. Yakovlev (2011) described *B. eberti* after two specimens only that are indistinguishable in genitalia structure from the type specimen of *B. eutelia* and is thus synonymized here with the latter.

***Brachylia fusca* spec. nov.**, Figs 17, 71, 142, 143

TYPE MATERIAL. Holotype ♂, [**South Africa**]: RSA, Northern Cape, 50 km NE of Bitterfontein, Draaihoek, 25.xi.2008, LF, leg. W. Mey, K. Ebert & L. Kühne (TMSA).

Paratypes: 2♂, same data as holotype (1 dissected, genitalia slide Mey 75/12) (MfN).

ETYMOLOGY. From Latin *fuscus* (*-a*, *-um*), brown to dark brown, referring to the colour of thorax and forewings.

DESCRIPTION. *Adult male* (Fig. 17). Length of forewings 11–13 mm, wingspan 25–31 mm (n = 3). Rami of antennae black, very slightly flattened, equalling five flagellomeres in length, space between rami in lateral view wider than diameter of an individual ramus; inner side of rami bearing rows of long cilia. Labial palpi ascending, not reaching dorsal margin of eyes. Thorax clad in piliform scales, patagia not clearly separated from thorax, hind margin with a short, black line. Arolium small, membranous. Wings brown, with dark brown reticulation, veins finely lined with black, vertical line from apex to Cu1b parallel to termen; cilia moderately chequered; hind wings of the same shade of brown as forewings, without reticulation.

Male genitalia (Figs 71, 142, 143). Uncus elongate and slender, arising from broad base of tegumen. Valvae with a single fissure on dorsal margin; apodemal ledge (see Fig. 73) present on median side of valvae; transtilla as a pair of membraneous knobs, slightly sclerotized on ventral side; juxta triangular, lateral processes long and broad, arising from the dorsal side of the juxta together with the ventral edge of the basal hook. Phallic apparatus evenly curved, as long as valvae, bulbus ejaculatorius cap-like.

Female. Unknown.

DIAGNOSIS. The small size and the dark brown hind wings (Fig. 17) are diagnostic features of this new species, although it generally resembles *Lichtensteiniana fuscoalaria* Mey, 2015 in coloration and size (see Fig. 15, p. 46 in Mey (2015)). The tarsal claws of the latter species, however, lack arolia, which allows for ready identification. Both species occur sympatrically in the Northern Cape.

REMARKS. The structure of the male genitalia and the small size of the moths in comparison to other congeneric species suggest that *B. fusca* spec. nov. and *B. lineata* spec. nov. below are sister species.

***Brachylia lineata* spec. nov.**, Figs 18, 72, 144, 145

TYPE MATERIAL. Holotype ♂, [**South Africa**]: RSA, Western Cape, Cederberg Region, Umgebung Cederberg, Kromrivier Ufer, 700 m, 22–23.xi.1998, leg. J. de Freina (MWM).

Paratypes: 1♂, same data as holotype, genitalia slide Mey 74/12 (MfN); 1♂, South Africa, Northern Cape, Richtersveld, 5 km N Claims P[ea]k, 28°24′S 17°10′E, 24.ix.1991, leg. M. Krüger (TMSA).

ETYMOLOGY. From Latin *lineatus* (*-a*, *-um*), lined, referring to the black-lined veins on the forewings.

DESCRIPTION. *Adult male* (Fig. 18). Length of forewings 12 mm, wingspan 27–28 mm (n = 3). Rami of antennae black, not flattened, in length equalling five flagellomeres, space between rami in lateral view wider than diameter of rami; inner side of rami bearing rows of long cilia. Labial palpi ascending, not reaching dorsal margin of eyes. Thorax covered in piliform scales, patagia not clearly separated from thorax. Arolium small, sclerotized laterally. Wings grey-brown, without reticulate pattern, veins thickly lined with black scales, vertical line from apex to Cu1b absent. Cilia moderately chequered; hind wings brown, without reticulation.

Male genitalia (Figs 72, 144, 145). Uncus elongate and slender, arising from broad shoulders. Valvae with two fissures on dorsal margin; apodemal ledge on median side of valvae present; transtilla taking the form of a pair of membranous knobs enclosed by proximal arms of apodemal ledge. Juxta broad, nearly rectangular, lateral processes broad and with their tips enlarged, arising from sides of juxta together with the ventral edge of the basal hook. Phallic apparatus from broad base, evenly curved, as long as valvae. Bulbus ejaculatorius cap-like.

Female. Unknown.

DIAGNOSIS. The small size and the black-lined veins of the forewings are diagnostic features of the new species. In the male genitalia it resembles *B. fusca* spec. nov., but the valvae are shorter, the juxtal plate is smaller (Fig. 72) and the phallic apparatus is more slender and curved as in *B. fusca* spec. nov. (Fig. 71).

ZEUZERINAE Boisduval, [1828]

Phragmataecia Newman, 1850

Phragmataecia Newman, 1850, *Zoologist* **8:** 2931 [replacement name for *Macrogaster*]. Type species: *Noctua arundinis* Hübner, [1808] [junior subjective synonym of *Phalaena castanea* Esper, 1807] (types lost). Type locality: Europe.

Macrogaster Duponchel, [1845], *Cat. méth. Lépid. Eur.* (2): 81 [junior homonym]. Type species: *Noctua arundinis* Hübner, [1808] by monotypy.

Phragmatoecia Walker, 1865: 590 [incorrect spelling].

DIAGNOSIS. Adult male with basal half of antennae bipectinate and basket-like, rami with rows of long cilia on inner side but scaled dorsally, flagellomeres in apical half unilobate, distinctly darker than basal flagellomeres; frons with protruding frontal tuft; labial palpi small to very small, eyes hemispherical, epiphysis and arolium present, tarsal segments without ventral spines. Forewings uniform pale grey, light brown to dark brown, with faint irroration and lines of small spots in the cell; basal M and median cell present on both pairs of wings, attached to areole on forewings, R 4+5 with long stalk; hind wings with A1 present but weakly developed (Fig. 33).

Male genitalia (Figs 90–92, 108). Vinculum narrow laterally, clearly separated from tegumen, saccus present, rounded; uncus separated from tegumen by desclerotized dorsal suture, triangular in dorsal view, with pointed tip; gnathos absent; valvae simple, rounded apically, ventrally without specialized structures; juxta broad, connected dorsally to apodemal ledges, ensheathing short, setose processes situated on both sides adjacent to the phallic apparatus, the latter tubular, basal opening oval, ventrally with an apically protruding vesica with two lateral, membranous lobes and a ventral, sclerotized fold.

Female genitalia (not illustrated). Ovipositor pointed but without piercing apex, formed by fused apophyses posteriores; segment VIII a compact, sclerotized tube, with stout and short apophyses anteriores; bursa copulatrix lacking signum.

REMARKS. Members of this genus exhibit only few characters suitable for identification. However, the relative length of the forewings and labial palpi, shape of the frontal tuft and coloration of the tarsal segments do provide reliable differences.

Phragmataecia andarana Clench, 1959

Phragmataecia andarana Clench, 1959: 9–10.

MATERIAL EXAMINED. 1♂, **Namibia**, Kavango, Okavango, Popa Falls, 8.xi.1999, leg. W. Mey (MfN).

DESCRIPTION. *Male*. Forewing length 14–15 mm; apical, unilobate section of antennae with 18–19 flagellomeres; labial palpi minute, located below ventral margin of eyes; frontal tuft extending vertically from vertex to ventral margin of eyes; tarsi dorsally flecked with brown and white.

Phragmataecia irrorata Hampson, 1910, Figs 1, 33, 90–92, 108

Phragmataecia irrorata Hampson, 1910: 128.

MATERIAL EXAMINED. 1♂, **Namibia**, Eastern Caprivi, Mudumu National Park, lux, 8–13.iii.1992, 18°10′S 23°26′E, leg. W. Mey (MfN); 3♂, same locality, 6.xi.2007, leg. V. Richter, genitalia slide Mey 23/15 (MfN); 1♂, Namibia, Kunene, Swartboisdrift, River Lodge, 26–27.xi.2000, leg. W. Mey (MfN); 1♂, Namibia, Ehombe, 13 km W, 17°43′S 13°31′E, 13.ii.1975, leg. S. Endrödy-Younga (TMSA); 1♂, Namibia, East Caprivi, Katima Mulilo, 4.xi.1981, leg. E. E. Malherbe (TMSA); 2♂, **Zimbabwe**, Victoria Falls, 11–13.xi.1993, leg. W. Mey & K. Ebert (MfN).

DESCRIPTION. *Adult male*. Forewing length 20–22 mm (n = 9). Apical, unilobate section of antennae with 28–30 flagellomeres; labial palpi small, appressed to lower part of frons; frontal tuft extending vertically from vertex to middle of eyes; tarsi yellow-brown.

Male genitalia (Figs 90–92, 108). Valvae band-like, apex evenly rounded; juxtal processes rounded, ball-like; phallic apparatus as a long, nearly straight tube with a sclerotized fold in the middle of the plicated vesica (Fig. 108).

Female genitalia. Unknown.

Phragmataecia okovangae Clench, 1959

Phragmataecia okovangae Clench, 1959: 10–11.

MATERIAL EXAMINED. 2♂, **Namibia**, Waterberg National Park, Tourist Camp, 23.xi.1993, leg. W. Mey & K. Ebert (MfN).

DESCRIPTION. *Adult male*. Forewing length 14–15 mm (n = 2); apical, unilobate section of antenna with 22–23 flagellomeres; labial palpi small, located below ventral margin of eyes; frontal tuft extending vertically from vertex to just below middle of eyes; tarsi pale brown dorsally.

Aethalopteryx Schoorl, 1990

Aethalopteryx Schoorl, 1990: 174–178. Type species: *Phragmataecia atrireta* Hampson, 1910 (as *Phragmatoecia*) [by subsequent designation]. Type locality: [Botswana].

DIAGNOSIS. *Adult*. Male with basal half of antennae bipectinate and basket-like, rami with two rows of long cilia on inner side, scaled dorsally, flagellomeres in apical half unilobate, as dark as basal flagellomeres; female antennae filiform, basal flagellomeres (2–17) broadened by lateral extensions, covered by cilia not reaching diameter of flagellomeres, apical flagellomeres serrate and

unilobate. Frons with short frontal tuft; labial palpi small, eyes hemispherical, epiphysis present; arolium present or absent; tarsal segments with black ventral spines. Forewings dark, with indistinct pattern consisting of grey areas and black spots or lines of black scales, anal field with reticulate pattern; basal M and median cell present on both pairs of wings, separated from areole on forewings, bifurcation of R1 and R2+3 in middle of forewing on costal margin of areole; R4+5 with very short stalk; hind wings with A1 present albeit weakly developed (Fig. 31). Abdominal segment VIII of females with ring-like tuft of long scales.

Male genitalia (Figs 152–155). Vinculum narrow laterally, clearly separated from tegumen, a rounded saccus present; uncus triangular in dorsal view, with pointed tip; lateral sides of gnathos present; valvae simple, apodemal ledge with projecting median keel; juxta broad, with two dorsolateral processes; phallic apparatus forming a sclerotized, short tube ensheathing the base of a large, multifolded vesica and one or two sclerotized folds resembling cornuti; bulbus ejaculatorius long.

Female genitalia (Figs 127–130). Ovipositor pointed but not forming piercing apex; segment VIII partly sclerotized, with robust and distally divided apophyses anteriores; bursa copulatrix with signum and appendix bursae.

Aethalopteryx atrireta (Hampson, 1910)

Phragmataecia atrireta Hampson, 1910: 129 (as *Phragmatoecia*). Holotype ♂ (BMNH), type locality: Lake Ngami [Botswana].

Aethalopteryx atrireta (Hampson, 1910): Schoorl, 1990: 174–178; Vári *et al*., 2002: 59.

MATERIAL EXAMINED. 5♂, Namibia, East Caprivi, Katima Mulilo, 20–28.x.1970, leg. A. Strydom (TMSA).

REMARKS. Dorsal side of thorax behind patagia with a broad black band; fore tibiae black, tarsi on all pairs of legs black; arolium present. Forewings with broad, black transverse lines. In the above specimens from Katima Mulilo these traits are of taxonomic significance. They are very similar to *A. dictyotephra*, and it remains to examine the holotype of *A. atrireta* to clarify whether both taxa are in fact distinct. Here, the specimens from Katima Mulilo are tentatively assigned to *A. atrireta*.

Aethalopteryx dictyotephra (Clench, 1959), Figs 23, 79–82, 152, 153

Kyleutes dictyotephra Clench, 1959: 13–14 [lapsus calami].

Xyleutes dictyotephra Clench, 1959: Schoorl, 1990: 175; Vári *et al*., 2002: 59.

Aethalopteryx dictyotephra (Clench, 1959): Yakovlev, 2011: 80.

MATERIAL EXAMINED. Holotype ♂, **[Namibia]:** Okahandja, 27.x.1937, leg. F. Gaerdes (ZSM); 1♂, same locality, 6.xii.1937, leg. F. Gaedes [TMSA]; 1♂, Namibia, Abachaus, Nov. 1944, leg. G. Hobohm (TMSA); 4♂, Namibia, BIOTA Observatory Ganab, 60 km north-east Gobabeb, 23°07.204′S 15°32.498′E, 995 m, 18.i.2007, lux, leg. W. Mey & K. Ebert; 1♂, same locality, 10.iv.2008, leg. W. Mey; 1♂, Namibia, Auas Moutains, Windhoek, Mountain Lodge, 4.xii.2008, lux, 1917 m, 22°41.345′S 17°06.948′E, leg. W. Mey & K. Ebert, genitalia slide Mey 35/15 (all MfN).

DESCRIPTION. *Adult male* (Fig. 23). Length of forewings 11–13 mm, wingspan 25–30 mm ($n = 9$). Frontal tuft pale grey, with some brown-tipped scales, labial palpi dark brown; antennae brown, bipectinate part with 17–18 segments, unilobate part with 27–34 segments; thorax grey-brown, mixed with black scales; legs dark brown, tarsi with grey scales on dorsal side, ventral side with black spines, arolium present.

Male genitalia (Figs 79–82, 152, 153). Tegumen invaginated in the middle of proximal margin in dorsal view; uncus elongate, laterally compressed and club-shaped apically; gnathos arms weakly sclerotized; vinculum short, saccus triangular; valvae with a short excavation on their ventral margin near basis; juxta processes short, as broad as juxta itself; phallic apparatus short and asymmetrical, ventral apex acute, dorsal side with an asymmetrical, keeled projection; vesica without sclerotized folds or cornuti.

Female. Unknown.

REMARKS. The genitalia of this species were not described and illustrated in the original description. The male genitalia are here depicted for the first time (Figs 79–82). The species is externally very similar to *Aethalopteryx atrireta* (Hampson, 1910) and *Aethalopteryx simplex* (Aurivillius, 1905) **comb. nov.**, with the latter transferred here to *Aethalopteryx*. The holotype of this species is deposited in MfN, Berlin and not in the Swedish Museum of Natural History, Stockholm as indicated in Yakovlev (2011).

Aethalopteryx tristis (Gaede, 1915), Figs 25, 25a, 26, 31, 86–89, 127–130, 154, 155

Xyleutes tristis Gaede, 1915: Gaede, 1929: 547; Vári *et al*., 2002: 59.

Hyleutes tristis Gaede, 1915: 147–148 [lapsus calami].

Aethalopteryx tristis (Gaede, 1915): Schoorl, 1990: 176; Yakovlev, 2011: 80.

Xyleutes forsteri Clench, 1959: 14–15, **syn. nov.**

Xyleutes forsteri Clench, 1959: Vári *et al*., 2002: 59.
Aethalopteryx forsteri (Clench, 1959): Schoorl, 1990: 176, Yakovlev, 2011: 80.
Duomitus mesosticta [sic] Hampson, 1916: Schoorl, 1990: 176 [incorrect synonymy].

MATERIAL EXAMINED. Holotype ♀, *Xyleutes tristis* Gaede, 'D.S.W. Afrika **[Namibia]**/ Kuibis, S[outh]. Namaland/ leg. Range'(MfN); 6♂, Namibia, Erongo Mt., Kuduberg Farm, 12–14.i.2007, leg. W. Mey & K. Ebert (MfN); 1♂, 1♀, Namibia, Etosha National Park, Namutoni, 14–16.xii.1993, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, *ca*. 50 km N of Okahandja, BIOTA Observatory Erichsfelde, 15.iv.2001, LF, leg. W. Mey & K. Ebert (MfN); 2♂, Namibia, Namib-Naukluft National Park, campsite, 29–31.i.2007, LF, leg. W. Mey & K. Ebert (MfN); 1♀, Namibia, Great Spitzkoppe, 1102 m, LF, 1–3.iii.2008, leg. W. Mey (MfN); 1♂, Namibia, Karasberge, Goibib Mountain Lodge, 30.i.2012, LF, leg. W. Mey (MfN). **Botswana**, 1♂, Kang, 32 km S, 22–24.i.1978, leg. M. Scoble (TMSA); 1♂, **[South Africa]**, Republica South Africa, NW Limpopo, Thabazimbi, 21.xii.2008, leg. Snizhek (MWM).

DESCRIPTION. *Adult* (Figs 25, 26). Forewing length 15–17 mm (♂) ($n = 13$), 20–21 mm (♀) ($n = 3$), wingspan 30–44 mm. Frontal tuft dark brown mixed with grey; patagia black. Tarsal claws without arolium, pulvilli present, small. Bipectinate portion of male antennae with 19 flagellomeres, unilobate portion with 31 flagellomeres. Forewings with a black horizontal streak between Cu1 and Cu2, from base to close to apical margin, with a tooth-like projection bordered by the grey, reticulated anal field. Hind wings pale grey, with darker wing margins and chequered cilia.

Male genitalia (Figs 86–89, 154, 155). Uncus triangular in dorsal view and club-shaped apically; vinculum as long as tegumen, saccus broadly rounded; valvae broad, with oblique and membranous apex; processes from juxta long, converging apically; phallic apparatus elongate, apex acute ventrally, dorsal aspect with an asymmetrical projection; vesica without sclerotized folds or cornuti.

Female genitalia (Figs 127–130). Apophyses posteriores twice as long as a. anteriores, with a slight fissure on base of segment IX; anterior apophyses distally divided and fused with dorsal plate of segment VIII and side of antrum; sclerotization of segment VIII limited to central areas of dorsal and ventral sides; antrum very wide, ventrally and laterally membranous, dorsal side sclerotized; ductus bursae short and broad; bursa copulatrix pyriform, with digitate appendix bursae; signum round, with short denticles on inner surface.

REMARKS. (i) Schoorl (1990) transferred the present species to his new genus *Aethalopteryx*. He further interpreted its inclusion by Gaede (1930: 547) together with *Duomitus mesosticta* Hampson, 1916 in the same paragraph as a valid synonymization of the latter. This is incorrect; it is the general style of the Seitz volumes to include similar species in one and the same paragraph. The description given by Gaede clearly denotes two different species. *Duomitus mesosticta* was correctly resurrected as a valid species in *Aethalopteryx* by Yakovlev (2011: 80). (ii) The examination of the female holotype confirmed the generic placement of Schoorl (1990). The type is in poor condition, having lost all its legs. However, despite the somewhat worn forewings, the discernible wing pattern, antennae and labial palps largely correspond to females of *A. forsteri*. The latter species must, therefore, be placed in synonymy with *A. tristis* (syn. nov.).

Aethalopteryx obscurascens (Gaede, 1929), Figs 24, 83–85

Xyleutes obscurascens Gaede, 1929: 547.
Xyleutes atriplaga Le Cerf, 1919: Clench, 1959: 13 [misidentification].
Aethalopteryx spec.: Schoorl, 1990: 176.
Aethalopteryx obscurascens (Gaede, 1929): Yakovlev, 2011: 80.

MATERIAL EXAMINED. 1♂, **Namibia**, Erongo Mt., Kuduberg Farm, 12–14.i.2007, leg. W. Mey & K. Ebert, genitalia slide Mey 77/12 (MfN); 1♂, Namibia, Outjo, Holstein Farm, 13.iii.2005, 1200 m, 19°45′S 15°30′E, leg. W. Mey (MfN); 1♂, Namibia, Otjiwarongo, Waterberg Plateau Park, 1600–1700 m, 23–25.i.1998, leg. J. de Freina (MWM); 1♂, Namibia, West Caprivi, Okavango Region, 1050 m, 27.i.1998, leg. J. de Freina (MWM); 1♂, Namibia, Tsumeb (BMNH); 1♂, **Botswana**, Nata, 13–15.i.1978, leg. M. J. Scoble (TMSA); 1♂, **[South Africa]**, Südafrika, Provinz Limpopo, 8 km S of Louis Trichardt (= Makhado), Ben Lavin Nature Reserve, 1000 m, 7–20.xii.2007, leg. J. de Freina, genitalia slide Mey 76/12 (MfN).

DESCRIPTION. *Adult male* (Fig. 24). Length of forewings 16–21 mm, wingspan 37–48 mm ($n = 7$). Male antennae with 22–23 pairs of rami; eyes hemispherical, width of frons one-quarter diameter of eyes; epiphysis and arolium present, legs grey, mixed with black, tarsi of all pairs of legs black; forewings with an elongate patch of black scales on base between costa and postcubitus, areole open, R3+4+5 on a short stalk; hind wings grey with brown reticulation, median cell present; abdominal segments with tergites and sternites compact.

Male genitalia (Figs 83–85). Vinculum broad,

forming saccus; uncus slender, shorter than valvae; the latter nearly rectangular, with rounded ventro-distal corner; juxta semicircular, bearing a pair of long, distally converging processes; phallic apparatus with long bulbus ejaculatorius, the tubular shaft short and stout, vesica long and folded, becoming bulbous and helicoid when fully everted, wall dorsally forming a long, sclerotized fold with rounded, spatulate apex.

Female genitalia. Not known

REMARKS. (i) The Namibian specimens have darker wings, and the basal black patch on the forewing base is reduced. The specimens reported by Clench (1959) as *Xyleutes atriplaga* Le Cerf, 1919 belong to this species. (ii) Male genitalia structure suggests that this species is closely related to *A. politzari* Yakovlev, 2011 (if indeed the two taxa are not conspecific). Both species share the same large phallic apparatus and short, triangular processes on the dorsal base of the valvae. *A. obscurascens* allegedly differs from *A. politzari* by the lateral shape of the uncus, the longer gnathos arms and the absence of cornuti in the phallic apparatus (not depicted in the original drawing but mentioned in the text). Externally the species is also similar to *A. squamosus* (Distant, 1902), but in that species the basal black patch is broader distally and the hind wings have no reticulate pattern. The latter species has not been recorded from southwestern Africa to date, but its occurrence at least in Namibia is very probable.

Azygophleps Hampson, 1892

Azygophleps Hampson, 1892: 309. Type species: *Hepialus scalaris* Fabricius, 1775: 590 [by original designation], type locality: China.

DIAGNOSIS. *Adult*. Male with basal half of antennae bipectinate (2–25) and basket-like, rami with two rows of long cilia on inner side, dorsal aspect scaled, flagellomeres (30–31) in apical half unilobate, as dark as basal flagellomeres; females with basal flagellomeres (2–15) with short lateral extensions or small rami, bearing short cilia not equalling diameter of flagellomeres, apical flagellomeres serrate, elongate; frons with short frontal tuft; labial palpi small, eyes hemispherical, epiphysis and arolium present; tarsal segments with short, ventral spines, hidden in scale cover and with only the tips visible. Forewings with white to pale grey ground-colour and species-specific black, yellow or brown forewing pattern consisting mainly of dark striae and spots; basal M and median cell present on both pairs of wings, separated from areole in the forewings, origin of R1 in basal part of forewings before areole; R4+5 with long stalk (Fig. 32). Abdominal segment VIII of females without conspicuous tuft of long scales; abdominal tergite and sternite compact, with excavated anterior margins and straight hind margins.

Male genitalia (Figs 156–161). Vinculum broad laterally, clearly separated from tegumen, a rounded saccus present; uncus slender and tapering towards apex, in dorsal view with pointed tip; lateral sides of gnathos (= gnathos arms) present but weakly developed; valvae simple, apodemal ledge with protruding keel on median side (see Fig. 94); juxta broad, with two dorsolateral processes; phallic apparatus with sclerotized, short tube containing a large, multifolded vesica and a single, cornutus-like sclerotized fold; bulbus ejaculatorius long.

Female genitalia (Fig. 131). Ovipositor long, membranous; apophyses posteriores slender, not forming piercing organ; papillae anales short, with both short and long setae. Segment VIII with dorsal and ventral sclerotization; apophyses anteriores divided distally; antrum large, membranous, dorsal wall forming a sclerotized, rectangular plate; ductus bursae very short, bursa copulatrix as a long sac, with oval signum covered in denticles; appendix bursae arising from proximal end of bursa.

***Azygophleps* spec.**, Fig. 30

Azygophleps aburae (Plötz, 1880) *sensu* Yakovlev, 2013: 390.

Zeuzera aburae Plötz, 1880: 77, holotype ♂ (depository unknown), type locality: [Ghana], Aburi.

Azygophleps aburae (Plötz, 1880): Gaede, 1930: 545, plate 79f.

MATERIAL EXAMINED. 1♂, South West Africa **[Namibia]**, Mashare, *c*. 17°54′S 20°09′E, 12.iii.1978, leg. J. Ball (TMSA).

REMARKS. The type material of *A. aburae* (Plötz, 1880) has not been traced so far and is probably lost. According to the original description of the species (unfortunately without illustrations), it should have an external appearance which comes close to a small individual of *A. atrifasciata* Hampson, 1910. The specimens identified and photographed by Yakovlev (2013) as *A. aburae* neither correspond to the description given by Plötz (1880) nor to the colour figure in Gaede (1930). His specimens together with the present individual belong to a different species with unknown affiliation. This is the first record of the species from Namibia, which is also known at least from Zimbabwe and Malawi.

***Azygophleps asylasiformis* spec. nov.**, Figs 27, 100–103, 158, 159

TYPE MATERIAL. Holotype ♂, **South Africa**, Northern Cape, Kalahari, 26°52′S 22°03′E, 16.ii.2001, leg. Brent Reed, ex coll. K. Gainsford, genitalia slide Mey 27/15 (TMSA).

Paratypes: 1♂, **South Africa**, Western Cape, Olifants River mouth, succulent Karoo, 20 m, 31°42′S 18°12′E, 14.xii.1999, leg. H. Staude, ex coll. K. Gainsford (MfN).

ETYMOLOGY. The name is taken from *Phalaena asylas* Cramer, 1779, a species described from the Cape of Good Hope, and externally similar to the new species.

DESCRIPTION. *Adult male* (Fig. 27). Length of forewings 20–21 mm, wingspan 45–48 mm ($n = 2$). Antennae black, with 24–25 pairs of rami and 31–33 serrate, apical flagellomeres; scaled dorsally. Labial palpi porrect, black laterally, inner aspect white. Frons black, covered dorsally by an overhanging white tuft of hairs from vertex. Head and thorax white. Legs black, tarsal segments flecked apically, tarsal spines minute. Arolium elongate, slightly sclerotized, pulvilli small and triangular. Ground colour of forewings white, with numerous short, transverse black striae and a white, horizontal band below costal field to subapical termen; striae on costa larger, also present on underside. Hind wings white, with black dots on termen, cilia white.

Male genitalia (Figs 100–103, 158, 159). Uncus slightly curved, triangular in dorsal view, attached to broad base of tegumen. Lateral sides of gnathos thin, lying attached to diaphragma. Dorsal margin of valvae concave, apex rounded, on inner, medial side with a large bulbous projection, membranous and bearing short hairs, connected to transtilla, an apodemal ledge present on inner side of valvae. Transtilla membranous. Basal plate of juxta nearly triangular, lateral processes elongate, central process bifid. Phallic apparatus slightly curved, nearly as long as valvae including the long bulbus ejaculatorius; dorsolaterally with a long sclerotized fortification, vesica lacking cornuti.

Female. Unknown.

DIAGNOSIS. Externally the new species is very similar to larger specimens of *A. asylas*. In the male genitalia the shorter processes from the juxta (Fig. 100) and presence of a membranous projection on the inner side of the valvae (Fig. 102) are the main distuingishing characteristics of *A. asylasiformis* spec. nov. In addition, on the forewings the striae are darker and thinner than in *A. asylas*.

Azygophleps asylas (Cramer, 1779), Figs 28, 32, 97–99

Phalaena asylas Cramer, 1779, *De Uitlandsche Kapellen* **2:** 62, pl. 137, Fig. C, type locality: Cape of Good Hope.

Zeuzera asylas (Cramer, 1779): Walker, 1856: 1538; Dalla Torre, 1923: 37.

Azygophleps asylas (Cramer, 1779): Grünberg, 1910: 141; Gaede, 1929: 545; Clench, 1959: 12.

Zeuzera strigulosa Walker, 1856: 1534 [synonymized by Kirby, 1892: 871–872]

Azygophleps albovittata Bethune-Baker, 1908 *sensu* Yakovlev, 2011; Yakovlev and Lenz, 2011; Yakovlev and Murphy, 2013.

Azygophleps albovittata Bethune-Baker, 1908, *Ann. Mag. Nat. Hist*. (8) **2:** 263, Holotype ♂ (BMNH), type locality: Sierra Leone.

Azygophleps albovittata Bethune-Baker, 1908: Carter and Deeming, 1980: 401 [lectotype designation].

MATERIAL EXAMINED. 1♂, **Namibia**, Abachaus, Jan. 1947, leg. G. Hobohm (TMSA); 1♂, Namibia, Tsumeb, 24.xi.1937, leg. F. Gaerdes (TMSA); 1♂, Namibia, West Caprivi, Bagani, 10.ii.1983, leg. G. B. Kroon (TMSA); 1♀, Namibia, Windhoek, 10.ii.1974, leg. R. Oberprieler (TMSA); 1♂, Namibia, Kavango, Popa Falls, 9.xii.2007, leg. V. Richter (MfN); 2♂, Namibia, east of Etosha National Park, Sachsenheim Farm, 29–30.viii.2012, leg. W. Mey (MfN); 1♂, Namibia, Waterberg, Touristencamp, 22.xi.1993, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Windhoek, Auas Mountains, 4.xii.2008, lux, leg. W. Mey & K. Ebert (MfN); 11♂, Namibia, 60 km N Gobabis, BIOTA Observatory Sandveld, 22–26.i.2007, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Gobabis, Farm Wyoming, 155 km SE Windhoek, D 1785, 23°06′S 18°27′E, 1300 m, 10–13.ii.2005, leg. R. Gerstmeier (MWM); 1♂, Namibia, Witvlei, 80 km S, Farm Breitenberg, Kaukurus Block, 19–25.iii. 2010, leg. T. Beyers (TMSA); 1♂, **Botswana**, Nata, 13–15.i.1978, leg. M. J. Scoble (TMSA); 4♂, Botswana, Kalahari Highway, *ca*. 30 km SE Sekoma, 24°34′S 24°13′E, 4.iii.2012, leg. V. Richter (MfN); 10♂, Botswana, Kalahari Highway, Okwa Valley near Tswaane, S 22°14' E 21°38', 10.ii.2012, leg. V. Richter (MfN); 1♂, 1♀, [Botswana], 'Betschuanaland Prot./ Kalahari/ Kang, ix [19]04/ L. Schultze S[ammler]'; 2♂, **South Africa**, Northern Cape, Namaqua coast, Gemsbok Vlakte Farm, S 30°30'E 17°29', 28.x.1977, at light, leg. S. Endrödy-Younga (TMSA); 1♂, South Africa, Northern Province, Dublin, Olifants River valley, 420 m, 16.i.2002, leg. S. Murzin (MWM); 1♂, South Africa, Northern Province, Camp David, 5 km S of Ofcolaco, 475 m, 17–24.i.2002, leg. S. Murzin (MWM); 1♂, South Africa, Limpopo, Vaalwater, Oliewenhoutsrus Farm, 24°09'S 20°05'E, 29.ii–3.iii.2012, leg. V. Richter, genitalia slide Mey

22/15 (MfN); 1♂, South Africa, Northern Cape, Prieska, 22.ii.1961, leg. L. Vári (TMSA); 1♂, South Africa, Northern Cape, Twee Rivieren, 11–20.ii.1958, Kalahari Gemsbok Park Expedition, 1♂, South Africa, Namaqualand, Hondeklipbaai, 5 km SO, 30°21'S 17°23'E, 5.xi.1993, leg. T. Karisch (MfN); 2♂, South Africa, Western Cape, Lamberts Bay, 27.x.1988. leg. D. M. Kroon (coll. Kroon, later TMSA).

BIOLOGY. *A. albovittata* Bethune-Baker is an occasional pest species on groundnuts (*Arachis hypogaea* L., Fabaceae) in Nigeria (Carter and Deeming, 1980). It occurs also in groundnut fields in Ghana and East Africa. In attacking groundnuts the larvae are freely living in the soil and pupate in subterranean cocoons of silk and earth connected to the surface by silk-lined tunnels. Larval development is without or with a diapause of about eight months during the dry saison. The larva and the pupa were described from material from groundnut-producing areas in Nigeria by Carter and Deeming (1980). Since groundnuts are introduced from South America, the species must have utilized some other leguminous species before groundnuts became an important host plant in Africa.

REMARKS. (i) In the literature two different years of the publication of the species description can be found: 1777 and 1779. On the title page of Cramers book, volume 2, the year of issue is printed in Roman letters: MDCCLXXIX, = 1779. In Horn and Schenkling (1928) the same year of publication is indicated for volume 2 of Cramer's work.

(ii) Walker (1856: 1538) was the first author correctly to place this species as belonging to the Cossidae. Subsequent authors were uncertain about its identity and in most cases identified specimens of *A. albovittata* or *A. sponda* (Wallengren, 1875) as *A. asylas*. In all major museum collections the drawers containing material of *A. asylas* turned out to contain an amalgam of several species. In an attempt to find the true identity of the species, the original description and illustration in Cramer (1779) were re-examined. Though the colour drawing of the moth is indeed reminiscent of a female specimen of *A. albovittata*, doubts were raised with regard to the simple antennae and large eyes of the specimen depicted. In set specimens of *Azygophleps* the female and male eyes are usually not visible from above. The antennae of the females are not filiform but have small, bipectinate antennae in the basal half. In the brief description, the antennae are described as being similar to species of Sphingidae and Hesperiidae, and the presence of a coiled proboscis ('La trompe est en forme de spirale.') is explicitly mentioned. These characters do not apply to Cossidae and would provide sufficient grounds for removing the species from the family. However, this course of action would result in a further problem. There are no other species with a similar wing pattern in the other macroheteroceran families in the Western Cape or South Africa as a whole. The wing pattern is obviously restricted to species of Cossidae. Therefore, I rather consider the description of Cramer's as erroneously mentioning a coiled proboscis and a hooked antennal apex. At the time of his description optical instruments were less sophisticated than they are now, and failures to recognize small, morphological characters could occur easily. In conclusion, *Phalaena asylas* Cramer, 1779 is the oldest available name for a South African cossid moth. The type material is missing and presumed lost, and the only documentation of the species is the colour illustration on plate 137. The figure shows one of several species of *Azygophleps* with numerous small striae on the white forewings and a horizontal, white stripe from the wing base to the subapical part of the termen. At least five species answering to this description occur in South Africa: *A. sponda* (Wallengren, 1875), *A. inclusa* (Walker, 1856), *A. albovittata* Bethune-Baker, 1908, plus two unnamed species and the taxon described herein as *A. asylasiformis* spec. nov. As to the identity of true *asylas*, *A. inclusa* can be excluded because it has short, white patches in the anal field of the forewings, which are not shown in Cramer's figure. Of the remaining species only *A. asylasiformis* spec. nov. and *A. albovittata* are known to occur in the Western Cape, the latter species fitting the figure of Cramer best. It is one of the more common and widespread Afrotropical cossids, whereas *A. asylasiformis* spec. nov. appears to be a rare species known only from two localities in the north of the Western Cape. *A. albovittata* appears to be a junior subjective synonym of *A. asylas*. However, before it is relegated to the synonymy of *A. asylas*, the types of *A. albovittata* must be re-examined and compared to specimens from southern Africa.

(iii) In order to stabilize the taxonomy of *A. asylas* and related species the designation of a neotype seems to be advisable. It will be the subject of a forthcoming article by the author.

Azygophleps cooksoni Pinhey, 1968

Azygophleps cooksoni Pinhey, 1968: 156, holotype ♂ (NMBZ), type locality: Natal.

MATERIAL EXAMINED. 5 ♂, **South Africa**, Eastern Cape, Graaff-Reinet District, Asante Sana Game Farm, Cottage, 5–6.xi.2012, leg. W. Mey (MfN).

REMARKS. The species was described from the

former province of Natal (now KwaZulu-Natal) and was until now known from the type series only. This new record from the Eastern Cape is suggestive of a wider distribution of the species, which may occur also in the Western Cape.

Azygophleps leopardina Distant, 1902

Azygophleps leopardina Distant, 1902: 213–214, holotype ♂ (BMNH), type locality: Transvaal.
Azygophleps borchmanni Grünberg, 1910: 140 [synonymized by Gaede, 1929: 545].
Azygophleps leopardina Distant, 1902: Clench, 1959: 12–13; Yakovlev and Murphy, 2013: 390.

MATERIAL EXAMINED. 1♂ [Holotype of *A. borchmanni*], **[Namibia]** 'Deutsch S. W. Afrika/Rietfontein/[27] i [18]97/ [K.] Borchmann, S[ammler].' '40760' [old MfN inventory number], 'Nachts bei Lampenlicht unter großen Dornbäumen' [handwritten] (MfN); 1♂, [Namibia], Karibib, 1896, leg. Dregel & Mangelsdorff (MfN); 1♂, 'DSW Afrika [Namibia]/ Windhuk/ O. Ullrich V[erkäufer]' (MfN); 2♂, Namibia, Windhoek, 16.i.1971 and 27.i.1974, leg. R. Oberprieler (TMSA); 1♂, Namibia, Kavango, BIOTA Observatory Mile 46, 18°18′S 19°15′E, 24–26.iii.2003, leg. W. Mey (MfN); 2♂, Namibia, Kaokoveld, Joubertpass, 1.ii.2009, leg. W. Mey (MfN); 1♂, Namibia, Waterberg National Park, Okatjikona, 14–18.ii.2008, leg. W. Mey (MfN); 1♂, same locality, 20.ii.2009, leg. F. Koch (MfN); 2♂, Namibia, 80 km N Okahandja, BIOTA Observatory Omatako, 22–23.iii.2003, leg. W. Mey (MfN), 1♀, same locality, 6.iii.2003, leg. K. Vohland (MfN); 1♂, Namibia, 50 km N of Okahandja, BIOTA Observatory Erichsfelde, 21°35′44″S 16°56′17″E, 1498 m, 27.ii.2003, leg. J. Frisch & K. Vohland (MfN). 2♂, **Botswana**, Kalahari Highway, *ca*. 30 km SE Sekoma, S 24°34′E 24°13′, 4.iii.2012, leg. V. Richter (MfN); 1♂, Botswana, Maun, 16–18.i.1978, leg. M. J. Scoble (TMSA); 1♂, **[South Africa]**, 'Pretoria-Transvaal/ Wichgraf S[ammler]/ Dr. L. Lück & Gehlen V[erkäufer]' (MfN); 1 ♂, **Swaziland**, Lebombo Mountains, Ndzevane area, Nsoko, 23–24.i.2007, LF, leg. T. Karisch (MfN).

Azygophleps liturata (Aurivillius, 1879), Fig. 131

Zeuzera liturata Aurivillius, 1879: 48–49, holotype ♂ (SMNH), type locality: Namibia, Damaraland.
Azygophleps aurivillii Kirby, 1892: 872 [unjustified replacement name, synonymized by Yakovlev, 2011: 84, not Dalla Torre 1923: 37]
Zeuzera aurivillii Kirby, 1892: Grünberg, 1910: 141; Clench, 1959: 13 [*Azygophleps*].

MATERIAL EXAMINED. 1♀ Paratype, **[Namibia]**, 'Damara', 'De Vylder.', '13/2', 'Type' [printed on red card], '40759' [old MfN inventory number], '*Zeuzera liturata* Auriv.' [handwritten in black ink] (MfN); 1♀, 'D. S. W. Afr.' [Namibia], Okahandja, leg. Dinter (MfN); 2♂, 2♀, 'DSW Afrika' [Namibia], Okahandya [sic], leg. L. Schultze (MfN); 2♀, 'D. S. W. Afr./ [Namibia]/ Windhuk/ leg. Lindt' (MfN); 1♂, Namibia, Tsumeb, 22.xii.1939, leg. G. Meyer (TMSA); 1♂, same locality, 30.xii.1937, leg. F. Gaerdes (TMSA); 1♀, Namibia, West Caprivi, Bagani, 9.xii.1982, leg. G. B. Kroon (TMSA); 1♂, Namibia, Etosha National Park, Namutoni, 7.xii.1976, leg. R. Oberprieler (TMSA); 1♀, Namibia, 50 km N of Okahandja, BIOTA Observatory Erichsfelde, 2.iii.2003, leg. K. Vohland, genitalia slide Mey 28/15 (MfN); 1♂, Namibia, 60 km N Gobabis, BIOTA Observatory Sandveld, 22–26.i.2007, leg. W. Mey (MfN); 1♂, Namibia, Khomas Hochland, Vaalgras Farm, 1.ii.2007, leg. W. Mey & K. Ebert (MfN); 1♂, **South Africa**, Northern Cape, Witsand Nature Reserve, 28°34′S 22°28′E, 1.x.2000, leg. J. C. Taylor (coll. D. M. Kroon, later TMSA).

Azygophleps inclusa (Walker, 1856), Figs 29, 93–96, 160, 161

Zeuzera inclusa Walker, 1856: 1534, holotype ♂ (BMNH), type locality: [Durban] Port Natal.
Xylocossus inclusus Houlbert, 1916: 115.
Xyleutes inclusa (Walker, 1856): Kirby, 1892: 875; Dalla Torre, 1923: 51.
Azygophleps inclusa (Walker, 1856): Gaede, 1929: 545.
Zeuzera petax Wallengren, 1860: 43 [synonymized by Gaede, 1929: 545].
Azygophleps petax (Wallengren, 1860): Grünberg, 1910: 140.

MATERIAL EXAMINED. 1♂, **Namibia**, Kamanjab, 19°37′S 14°48′E, 8–20.iii.1998, leg. Asano (MWM); 1♂, Namibia, Outjo, leg. Langheld (MfN); 1♂, Namibia, Windhoek, 5.ii.1977, leg. R. Oberprieler (TMSA); 1♂, Namibia, Erongo, Kuduberg Farm, 12–14.i.2007, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Windhoek, Ondekaremba, 12.iii.2014, leg. W. Mey (MfN); 2♂, Namibia, 40 km SW Windhoek, BIOTA Observatory Claratal, 21.i.2007, light trap, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Khomas Hochland, Vaalgras Farm, 1.ii.2007, leg. W. Mey & K. Ebert (MfN); 1♂, Namibia, Rehoboth (MfN); 2♂, **Botswana**, Maun, 16–19.i.1978, leg. M. J. Scoble (TMSA); 1♂, **South Africa**, Eastern Cape, near Port St. Johns, 55 m, 10.i.2002, leg. S. Murzin (MWM); 1♂, South Africa, Mpumalanga, Pullen Farm, 30 km SE Nelspruit, 24–26.xi.2004, leg. W. Mey (MfN); 2♂, South Africa, Mpumalanga, Sterkspruit Nature Reserve, 25°09′S 30°32′E, 19–22.ii.2012, leg. V. Richter (MfN); 1♂, South Africa,

'Verulam/ Natal/ Spiller', genitalia slide Mey 33/15 (MfN); 1♂, Western Cape, Knysna, 10–14.i.1955, leg. A.J.T. Janse (TMSA).

BIOLOGY. The larva was reported as a root-borer in a species of *Indigofera* (Fabaceae) in Uganda (Le Pelley, 1959).

Azygophleps scalaris (Fabricius, 1775)

Phalaena scalaris Fabricius, 1775, *Syst. Ent.*: 590, types lost, type locality: China.

MATERIAL EXAMINED. 1♂, **Namibia,** East Caprivi, Katima Mulilo, 17°29′S 24°17′E, lux, 3–8.iii.1992, leg. W. Mey; 3♂, Namibia, Kavango, Rundu, Okavango River, 27–28.iii.2003, leg. W. Mey; 4♂, Namibia, Kunene, Epupa Falls, lux, 21–23.ii.2008, leg. W. Mey (all MfN).

BIOLOGY. The species is known as a stem-borer in species of *Sesbania* (Fabaceae) in India and Ghana (Forsyth, 1966; Carter and Deeming, 1980).

REMARKS. *A. scalaris* has a wide distribution in the Afrotropical and Oriental regions. Specimens from Asia do not differ in external characters (head, legs, wing pattern) from specimens from Africa. In southwestern Africa, the species occurs only in northern Namibia and Angola (Hampson, 1892), which obviously marks the southern border of its range in Africa.

Eulophonotus Felder, 1874

Eulophonotus Felder, 1874, *Novara*, Heft 4, p. 2, Tafel 82. Type species: *Eulophonotus myrmeleon* Felder, 1874, *ibidem*, Tafel 82, Fig. 9, by monotypy, holotype ♀ (BMNH), type locality: Cap b[onae] sp[ei] [= Cape of Good Hope].

Engyophlebus Karsch, 1900: 2 [synonymized by Gaede, 1929: 549].

Callocossus Aurivillius, 1910: 51 [synonymized by Schoorl, 1990: 144].

Zeuzerops Strand, 1910: 143 [synonymized by Schoorl, 1990: 144].

DESCRIPTION. *Adults* with strong sexual dimorphism in colour, size and wing venation; males with fore- and hind wings largely hyaline, only the anal area and the brown veins with scales; wings of females completely scaled, forewings brown or blue, with numerous smaller and larger white or yellow-orange spots. Basis of male antennae bipectinate, forming a basket; ventral sides of rami with two rows of cilia. Female antennae filiform, scaled basally. Labial palpi not visible (absent?) in males, short and straight in females, arolium absent, epiphysis present, spurs 0.2.2., tarsal spines absent; fore- and hind wings in males without areole and median cell, both present in female. Cu2 and A1+2 in forewings of male anastomosing at one point or connected by a short cross-vein before wing margin, both veins separate in female. Anal area of forewings of male scaled, with species-specific pattern.

Male genitalia. Segment IX taking the form of a thin ring, uncus plate-like, apex acute and curved downwards; gnathos with long arms, interconnected apically by a bulbous membrane; valvae large, rounded; basal processes of valvae ball-like; juxta short and slender, processes from juxta as large, rounded flaps; phallic apparatus stout, genital opening asymmetrical, vesica without cornuti.

Female genitalia. Ovipositor long, membranous; apophyses posteriores thin, not forming piercing organ; papillae anales short, bearing both short and long setae. Segment IX with dorsal and ventral sclerotizations; antrum large, lamella postvaginalis present, ductus bursae short, joining bursa copulatrix close to origin of the elongate bulla seminalis, corpus bursae small, with signum.

Eulophonotus myrmeleon Felder, 1874, Figs 104, 105, 150, 151

Eulophonotus myrmeleon Felder, 1874: 2, Tafel 82, holotype ♀ (BMNH), type locality: Cape of Good Hope.

MATERIAL EXAMINED. 1♀, **Botswana**, Maun, 27.iii.1981, leg. N. J. Duke (TMSA); 2♂, **South Africa**, Northern Province, Lekgalameetse Nature Reserve, 24°12′S 30°20′E, 28.iii.2001, leg. F. Koch, genitalia slide Mey 29/15 (MfN); 1♂, South Africa, Mpumalanga, Songimvelo Nature Reserve, 7.ii.2012, 26°03′S 31°00′E, leg. V. Richter (MfN).

DESCRIPTION. *Adult*. Sexually dimorphic. Length of forewings 14–16 mm (♂), 20 mm (♀), wingspan 28–34 mm (♂), 40 mm (♀) ($n = 3$ and 1, respectively), female wingspan can be larger, reaching more than 60 mm (Prinsloo and Uys, 2015). Male antennae with 11–12 pairs of rami; apical flagellum with 24–24 serrate flagellomeres, covered in short cilia throughout. Eyes hemispherical, frons slightly narrower than diameter of eyes; epiphysis leaf-like, legs grey, mixed with white, tarsi on all pairs of legs with pointed scales ventrally, forewings of male largely hyaline, with scales only being present on costal-subcostal and anal fields, areole absent, R3+4+5 on a long stalk; median cell absent; Cu2 and A 1+2 anastomosing distally at one point and then diverging again; hind wings hyaline, only anal field with dark brown scales and hairs; median cell absent.

Male genitalia (Figs 104, 105, 150, 151). Vinculum broad, forming saccus; uncus slender, shorter than valvae; the latter nearly rectangular, with rounded ventrodistal corner; juxta semicircular, bearing a pair of long, distally converging processes; phallic apparatus with long bulbus ejaculatorius, tubular shaft short and stout, vesica long and folded, becoming bulbous and helicoid when fully everted, dorsally wall forming a long, sclerotized fold with a rounded, spatulate tip.

Female genitalia. Not examined. There are no females of the species available in the collection of MfN. The female genitalia were studied from specimens of *E. elegans* (Aurivillius, 1910).

BIOLOGY. The species is popularly known as the pecan stem borer. In addition to some infestations in pecan plantations (*Carya illinoensis*, Juglandaceae), the larvae are borers in the wood of twigs and stems of several unrelated tree and shrub species, including *Coffea* (Rubiaceae), *Populus* (Salicaceae), *Combretum* (Combretaceae), *Trichilia* (Meliaceae), *Acalypha* (Euphorbiaceae), *Theobroma cacao*, and *Cola nitida* (Sterculiaceae) (Pinhey, 1975; Kroon, 1999; Prinsloo and Uys, 2015).

REMARKS. The species was described from a single female collected in the vicinity of Cape Town. However, this has remained almost the only record from the Western Cape, where it is obviously rare.

Strigocossus Houlbert, 1916

Strigocossus Houlbert, 1916: 78. Type species: *S. leucopteris* Houlbert, 1916 [synonymized with *S. moderatus* (Walker, 1856) by Yakovlev, 2013: 381], type locality: Cameroon.

Xylocossus Houlbert, 1916: 85. [synonymized by Schoorl, 1990: 178].Type species: *Zeuzera capensis* Walker, 1856, type locality: [Durban] Port Natal.

DIAGNOSIS. *Adult*. Male with basal half of antennae bipectinate (25–27 flagellomeres) and basket-like, rami with two rows of long cilia on inner side, scaled on dorsal side, flagellomeres (37–40) in apical half unilobate, as dark as basal flagellomeres; females with basal flagellomeres (14–15) with short ventrolateral extensions, bearing short cilia not equalling diameter of flagellomeres, apical flagellomeres serrate, elongate; frons with a short frontal tuft; labial palpi small and recurved, reaching middle of eye in lateral view, frons at this point about 0.3 times diameter of the hemispherical eyes, epiphysis present, arolium absent; tarsal segments without ventral spines. Forewings with grey-white ground colour and reticulated forewing and hind wing pattern; basal M and median cell present in both pairs of wings, separated from areole in the forewings, R1 from middle of forewing within areole; R4+5 with short stalk. Hind wings with R and M1 connected by cross-vein, A1 atrophied in basal half. Abdominal segment VIII of females without conspicuous tuft of scales; abdominal tergites and sternites compact, with excavated anterior margin and straight hind margin.

Male genitalia. Vinculum broad laterally, clearly separated from tegumen, forming a rounded saccus; uncus slender and tapering towards apex in dorsal view, with pointed tip; lateral parts of gnathos present, but weakly sclerotized; valvae simple, apodemal ledge with protruding median keel; juxta broad, bearing two dorsolateral processes; phallic apparatus with sclerotized, short tube encompassing a large, multifolded vesica and a single cornutus-like sclerotized fold; bulbus ejaculatorius long.

Female genitalia. Ovipositor long, membranous; apophyses posteriores thin, not forming piercing organ; papillae anales short, with short setae. Segment IX with dorsal and lateral sclerotizations; apophyses anteriores divided distally; ostium bursae large, membranous, invaginated into segment VIII; antrum sclerotized, ductus bursae short, bursa copulatrix taking the form of an elongate sac, signum absent.

Strigocossus capensis (Walker, 1856), Figs 10, 106, 107, 126

Zeuzera capensis Walker, 1856: 1533, holotype ♂ (BMNH), type locality: [Durban] Port Natal.

Xylocossus capensis (Walker, 1856): Houlbert, 1916: 85, 114–115.

Xyleutes sjoestedti Aurivillius, 1910: 50–51 [synonymized by Schoorl, 1990].

Azygophleps flavitincta Hampson, 1910: 130 [synonymized by Schoorl, 1990].

Strigocossus capensis (Walker, 1856): Schoorl, 1991: 179; Yakovlev, 2011: 82–83; Yakovlev and Murphy, 2013: 385.

MATERIAL EXAMINED. 5♂, 1♀, **Namibia**, Kavango, Bagani, 9–20.xi.1982, leg. G. B. Kroon (TMSA). 1♂, **[Tanzania]**, Bagamoyo, Nov. [18]91 [leg. Steudel], genitalia slide Mey 31/15 (MfN); 1♀, **[Tanzania]**, Sansibar [without further data], genitalia slide Mey 32/15 (MfN).

BIOLOGY. In East Africa the species was found to be a stem-borer of several species of *Cassia* and *Ricinus communis* L. (Euphorbiaceae) (Le Pelley, 1959).

REMARKS. There is only one record of this species from southwestern Africa, based on a single male

collected in northern Namibia. Therefore, both the species and genus have been included in this account. Male and female genitalia are illustrated in Figs 106, 107 and 126, respectively; Fig. 10 is of an adult from Malawi. *Strigocossus capensis* is in all probability not a resident proper of the arid biomes of southwestern Africa or the Cape Floristic Region of South Africa.

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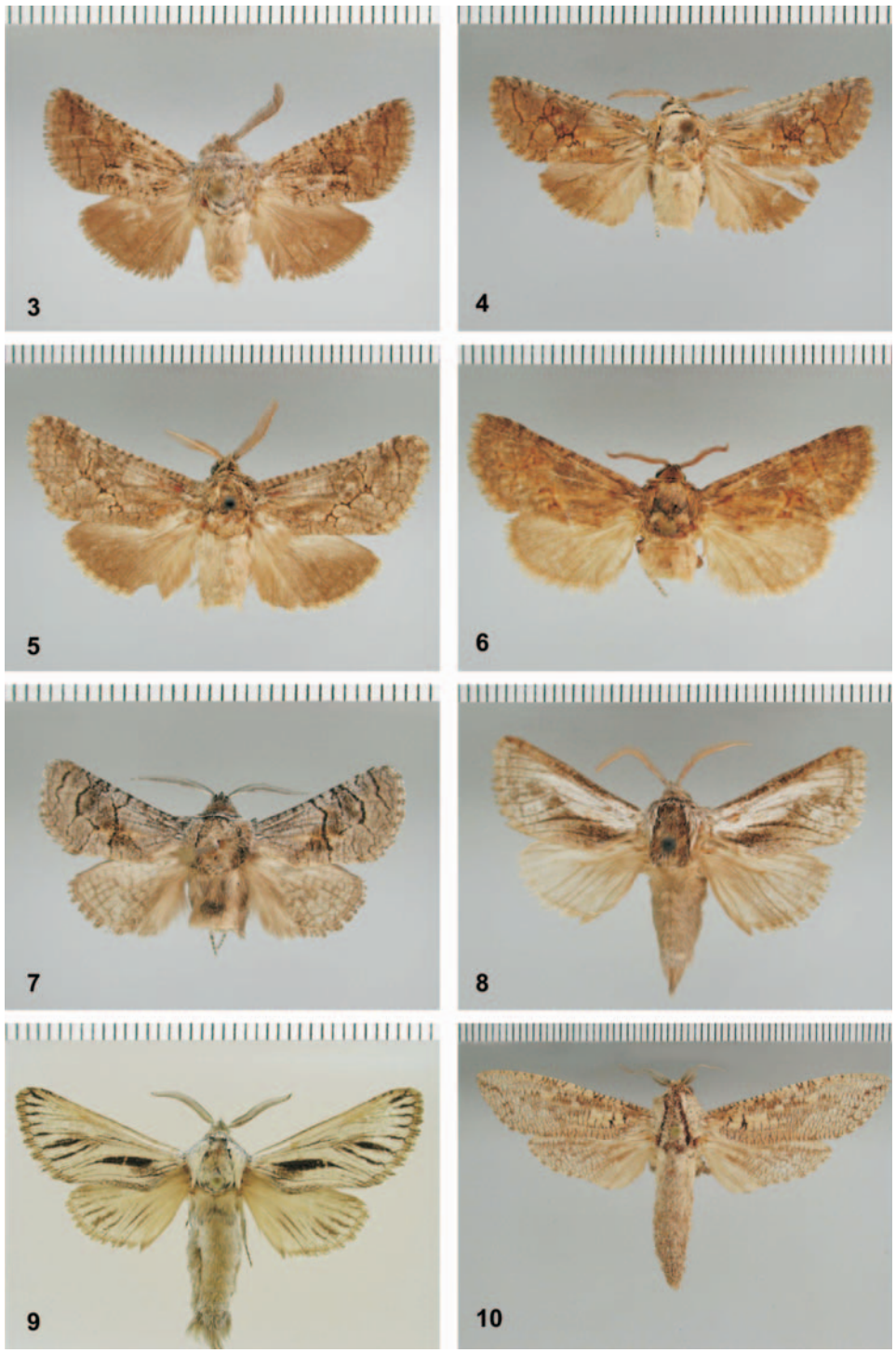


Figs 3–10

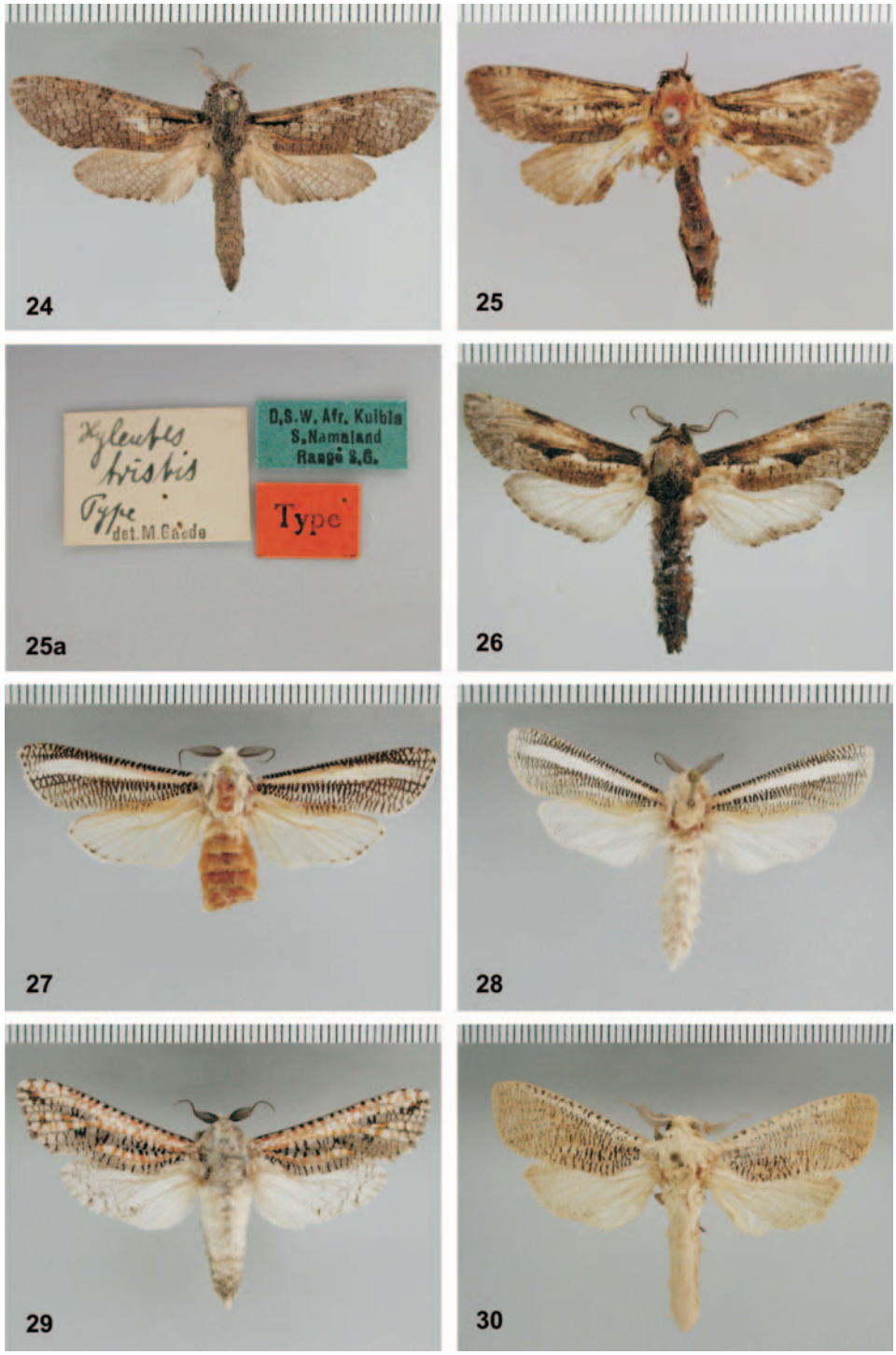
3: *Lichtensteiniana maritima* spec. nov., holotype ♂; **4:** *L. orania*, holotype ♂; **5:** *L. punctulata*, ♂; **6:** *L. punctulata*, ♀; **7:** *Meyoarabiella karooensis* spec. nov., holotype ♂; **8:** *Rethona albifasciata*, ♂; **9:** *R. strigosa*, ♂; **10:** *Strigocossus capensis*, ♂. Scale bars in mm.

Figs 11–16a

11: *Coryphodema seineri*, ♂; **12:** *C. seineri*, ♂ (holotype of *Macrocossus coelebs*); **12a:** *Macrocossus coelebs*, labels; **13:** *Brachylia minor* spec. nov., holotype ♂; **14:** *B. camparia* spec. nov., paratype ♂; **15:** *B. contusa* spec. nov., paratype ♂; **16:** *B. contusa* spec. nov., var., paratype ♂; **16a:** *B. eutelia*, ♀. Scale bars in mm.

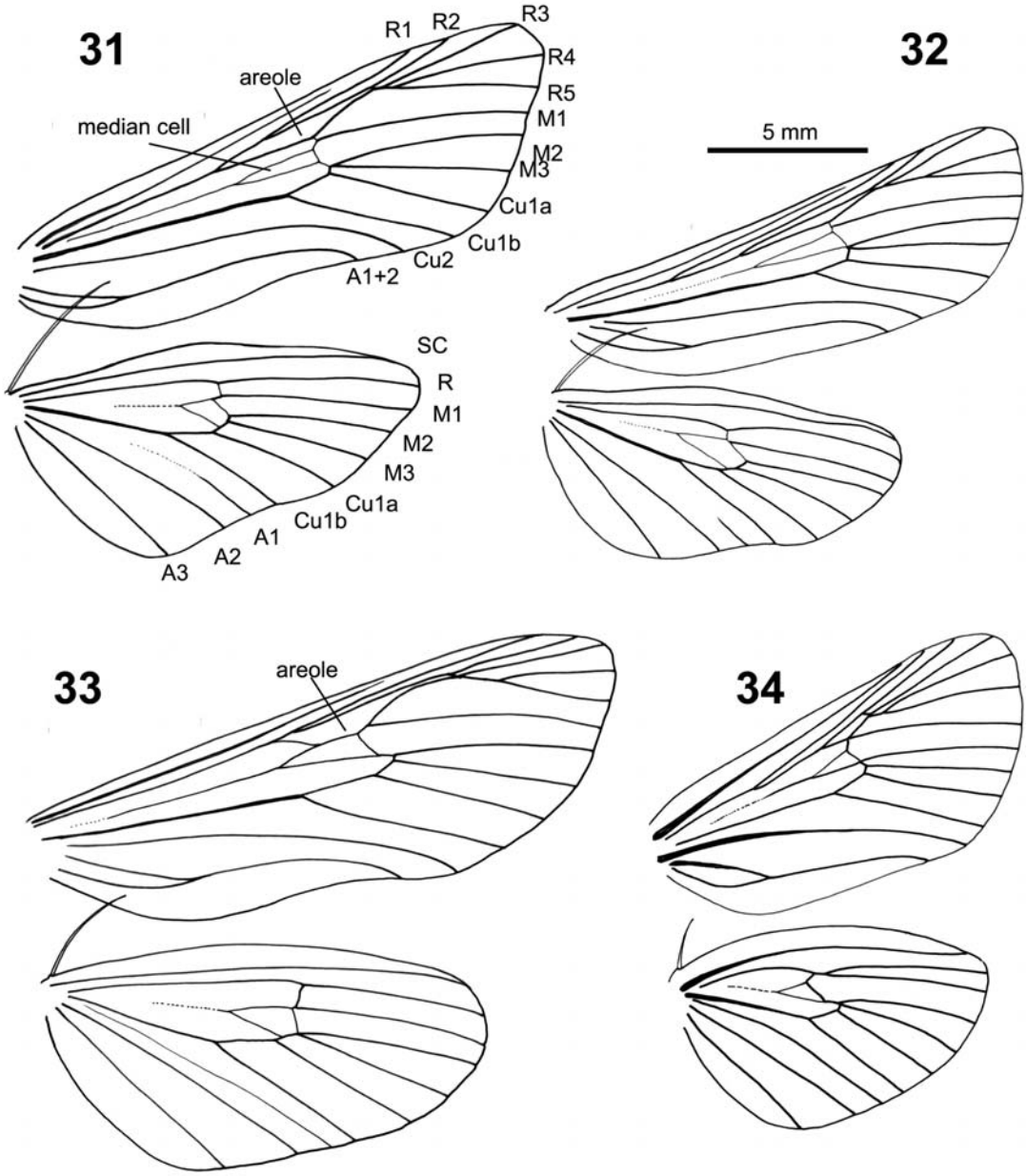
Figs 17–23

17: *Brachylia fusca* spec. nov., paratype ♂; **18:** *B. lineata* spec. nov., paratype ♂; **19:** *B. plumbata* spec. nov., paratype ♂; **20:** *B. plumbata* spec. nov., paratype ♀; **21:** *B. terebroides*, ♂; **22**: *B. windhoekensis*, holotype ♂; **22a:** *B. windhoekensis*, labels; **23:** *Aethalopteryx dictyotephra*, ♂. Scale bars in mm.



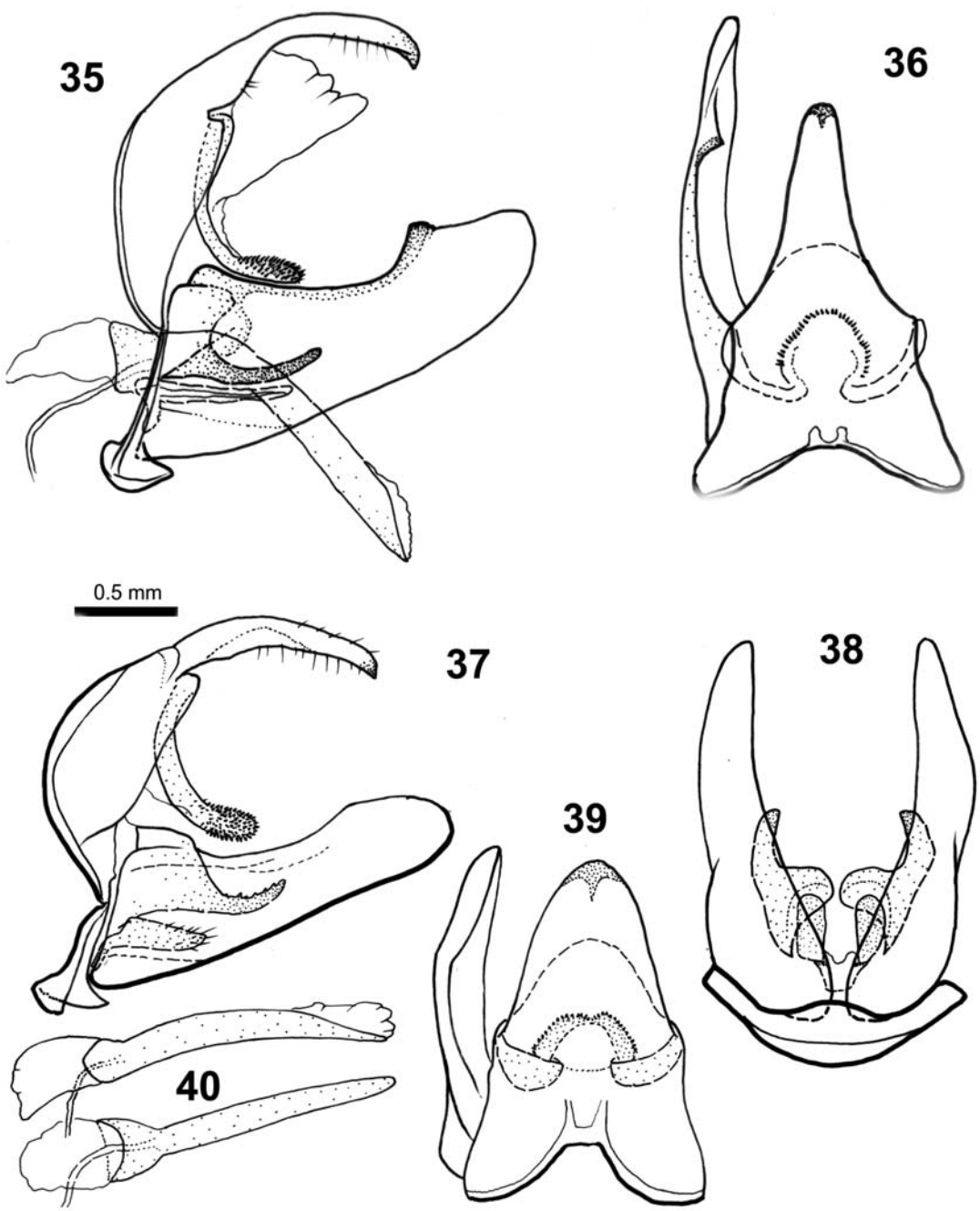
Figs 24–30

24: *Aethalopteryx obscurascens*, ♂; **25:** *A. tristis*, holotype ♂; **25a:** *A. tristis*, holotype labels; **26:** *A. tristis*, ♂ (Etosha); **27:** *Azygophleps asylasiformis* spec. nov., paratype ♂; **28:** *A. asylas*, ♂ (Etosha); **29:** *A. inclusa*, ♂ (Windhoek); **30:** *Azygophleps* spec., ♂ (Namibia). Scale bars in mm.



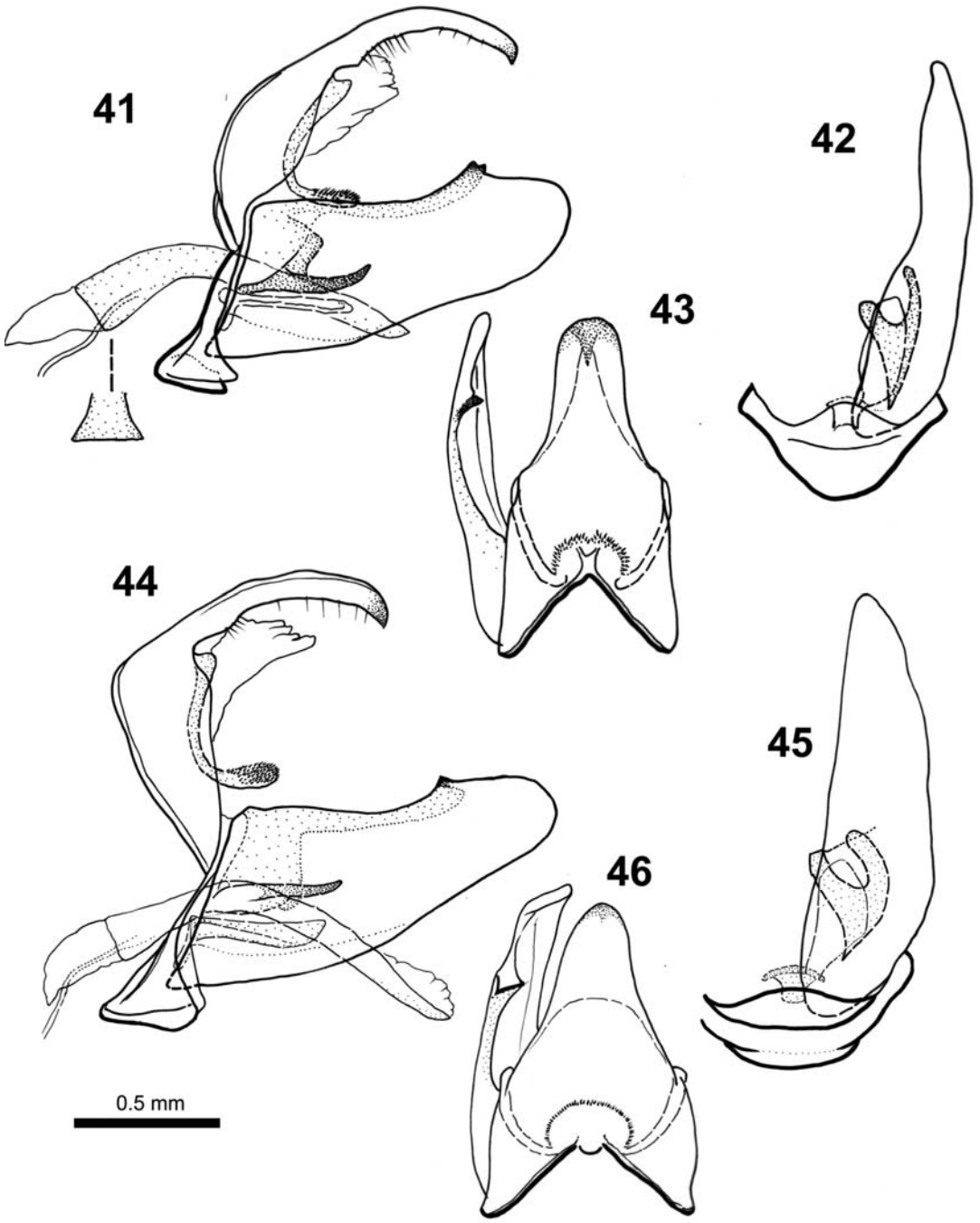
Figs 31–34

Wing venation. **31:** *Aethalopteryx tristis*; **32:** *Azygophleps asylas*; **33:** *Phragmataecia irrorata*; **34:** *Lichtensteiniana punctulata*.



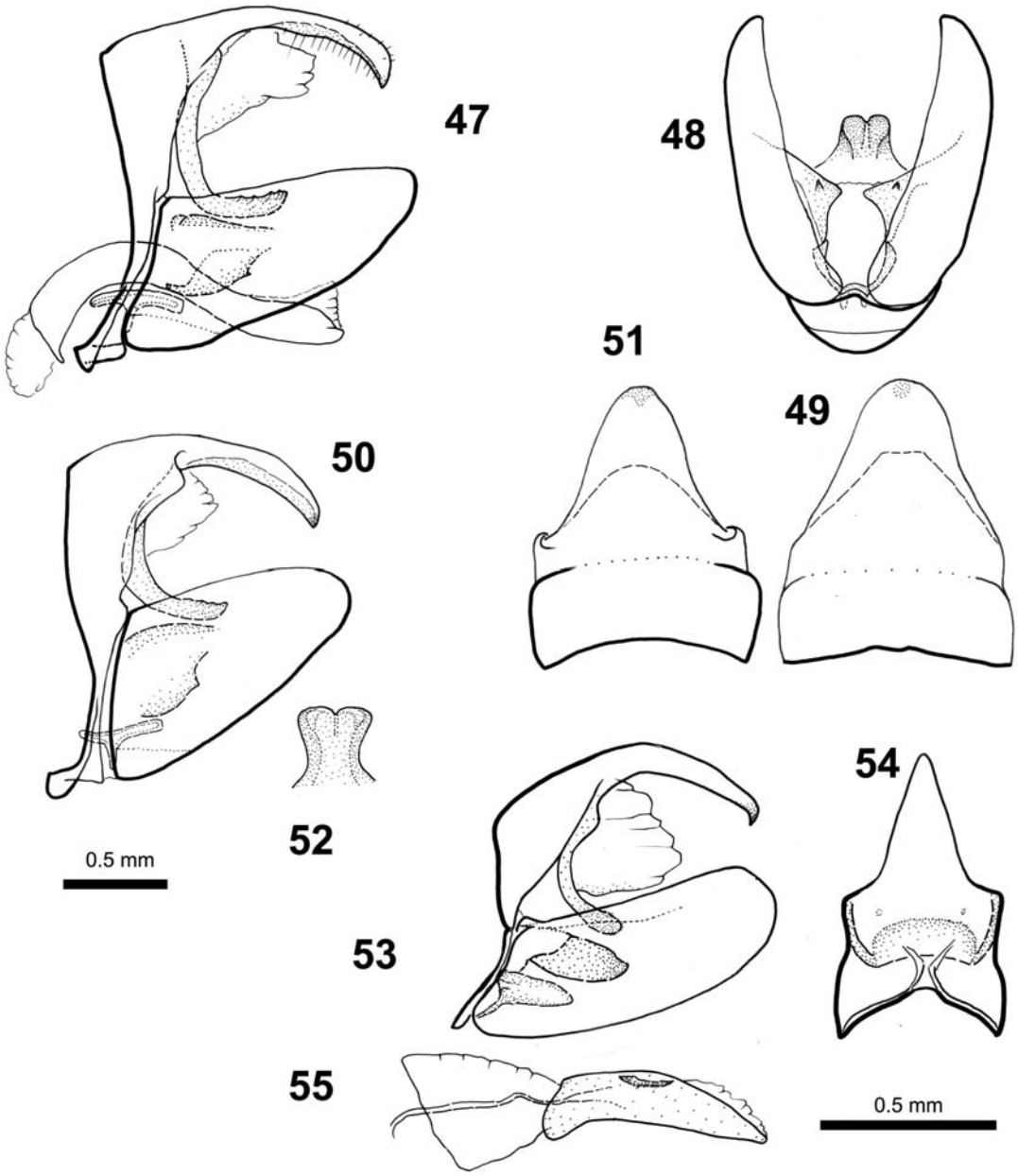
Figs 35–40

Lichtensteiniana, male genitalia. **35:** *Lichtensteiniana aloides*, lateral; **36:** dorsal; **37:** *L. maritima* spec. nov., lateral; **38:** ventral; **39:** dorsal; **40:** phallic apparatus, lateral and ventral.



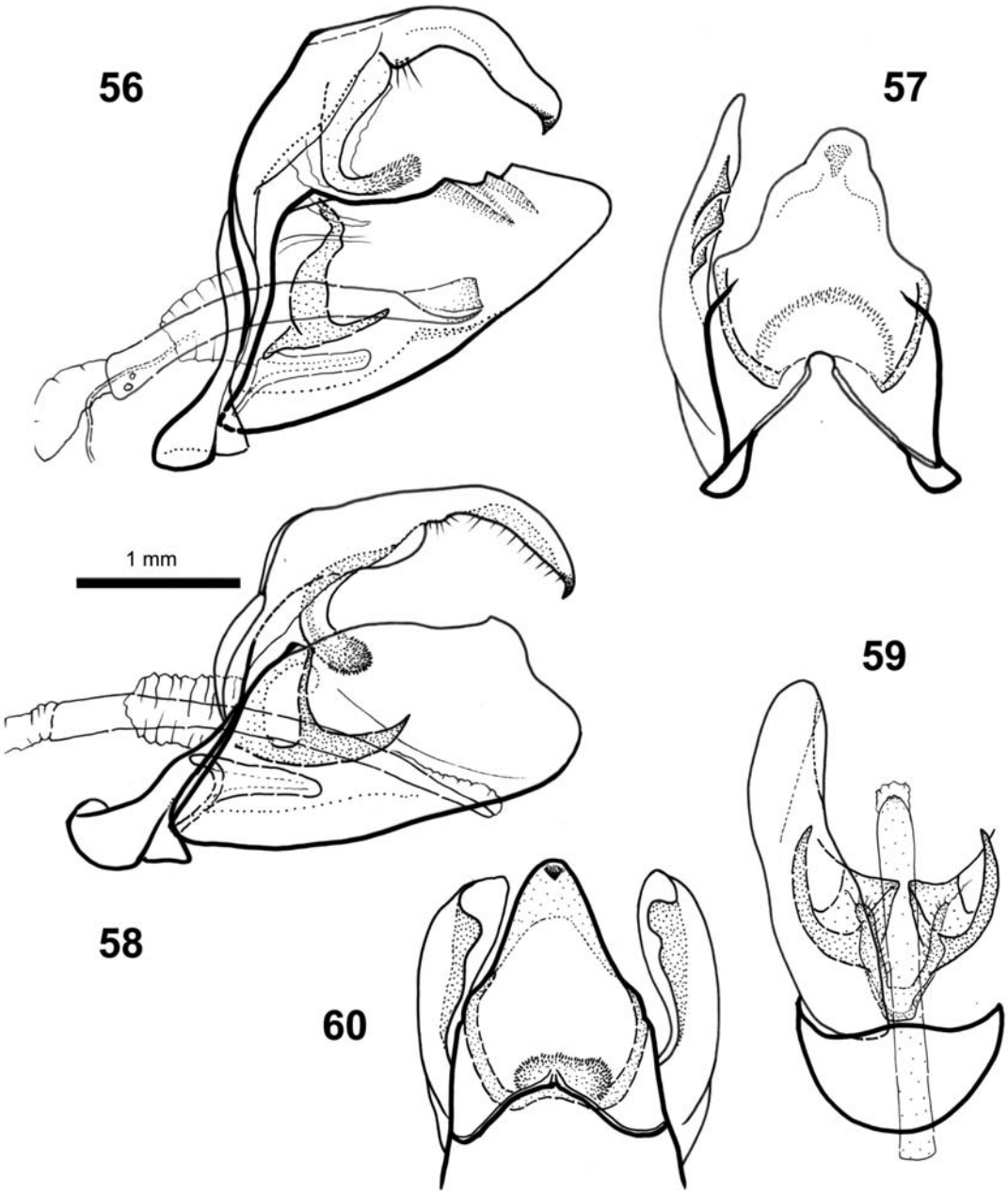
Figs 41–46

Lichtensteiniana, male genitalia. **41:** *L. orania* spec. nov., lateral; **42:** ventral; **43:** dorsal; **44:** *L. punctulata*, lateral; **45:** ventral; **46:** dorsal.

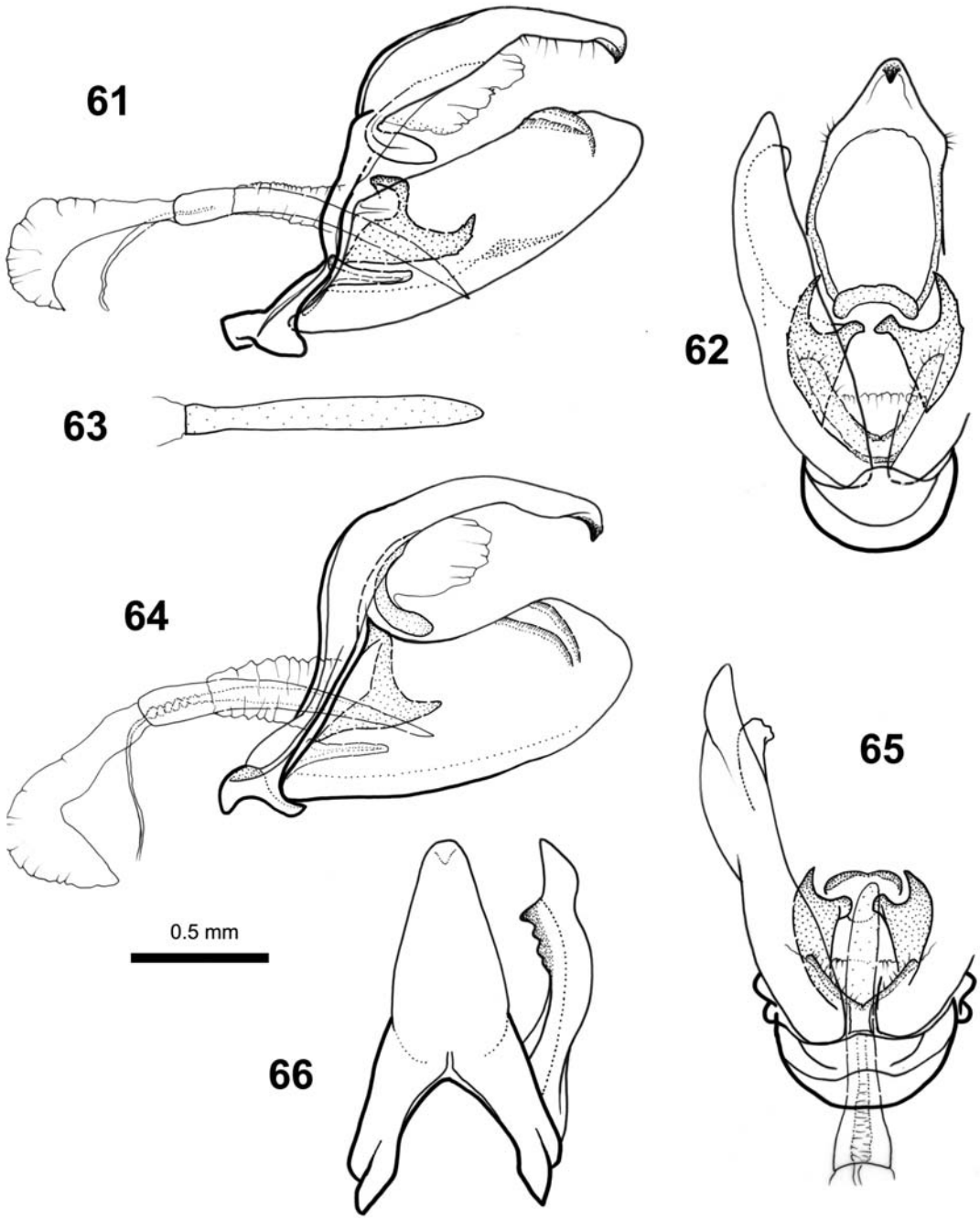


Figs 47–55

Rethona, *Meyoarabiella*, male genitalia. **47:** *R. albifasciata*, lateral; **48:** ventral; **49:** dorsal; **50:** *R. albifasciata* (Swaziland), lateral; **51:** dorsal; **52:** gnathos, ventral; **53:** *Meyoarabiella karooensis* spec. nov., holotype, lateral; **54:** dorsal; **55:** phallic apparatus, lateral.

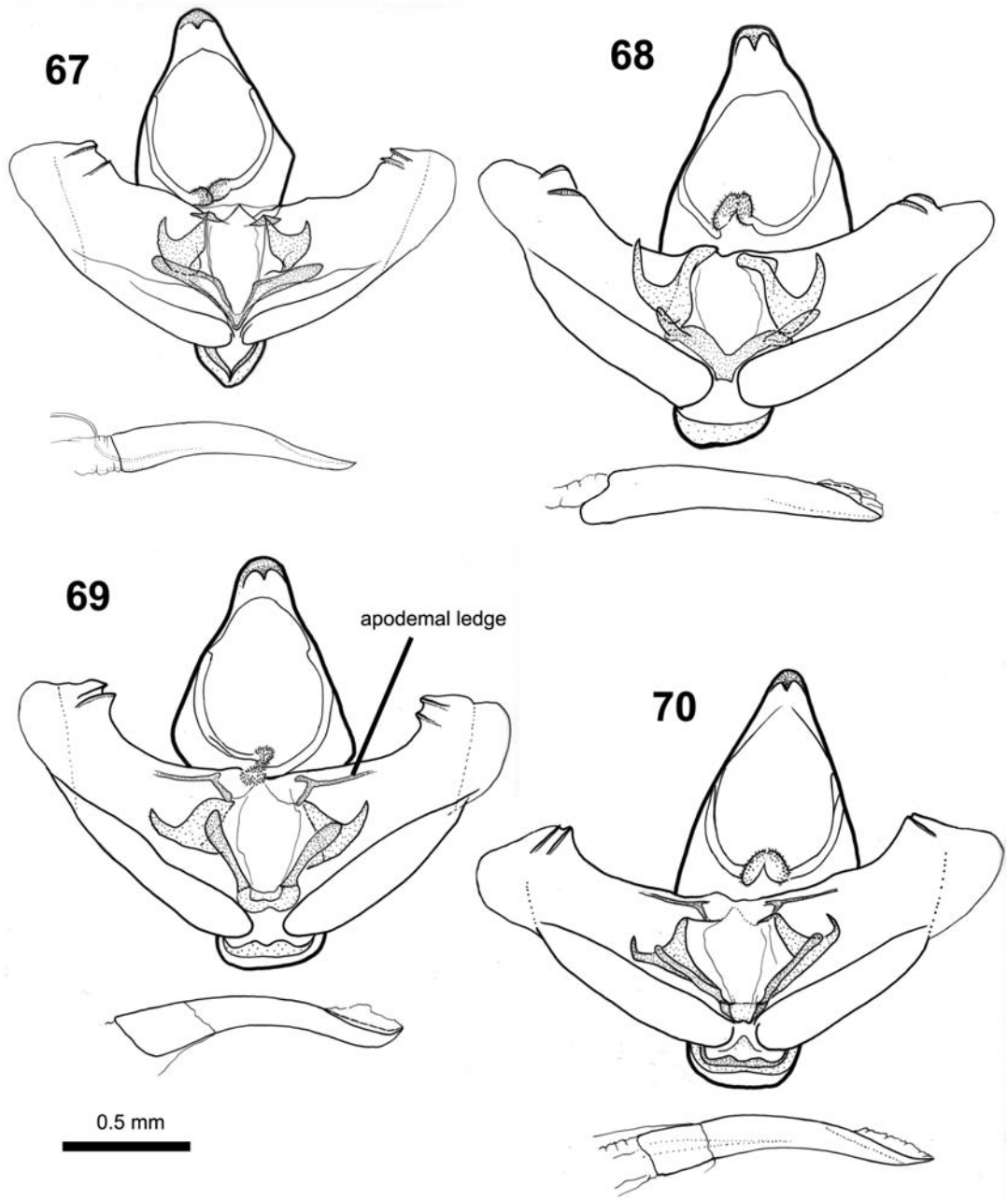


Figs 56–60
Coryphodema, male genitalia. **56:** *C. tristis*, lateral; **57:** dorsal; **58:** *C. seineri*, lateral; **59:** ventral; **60:** dorsal.



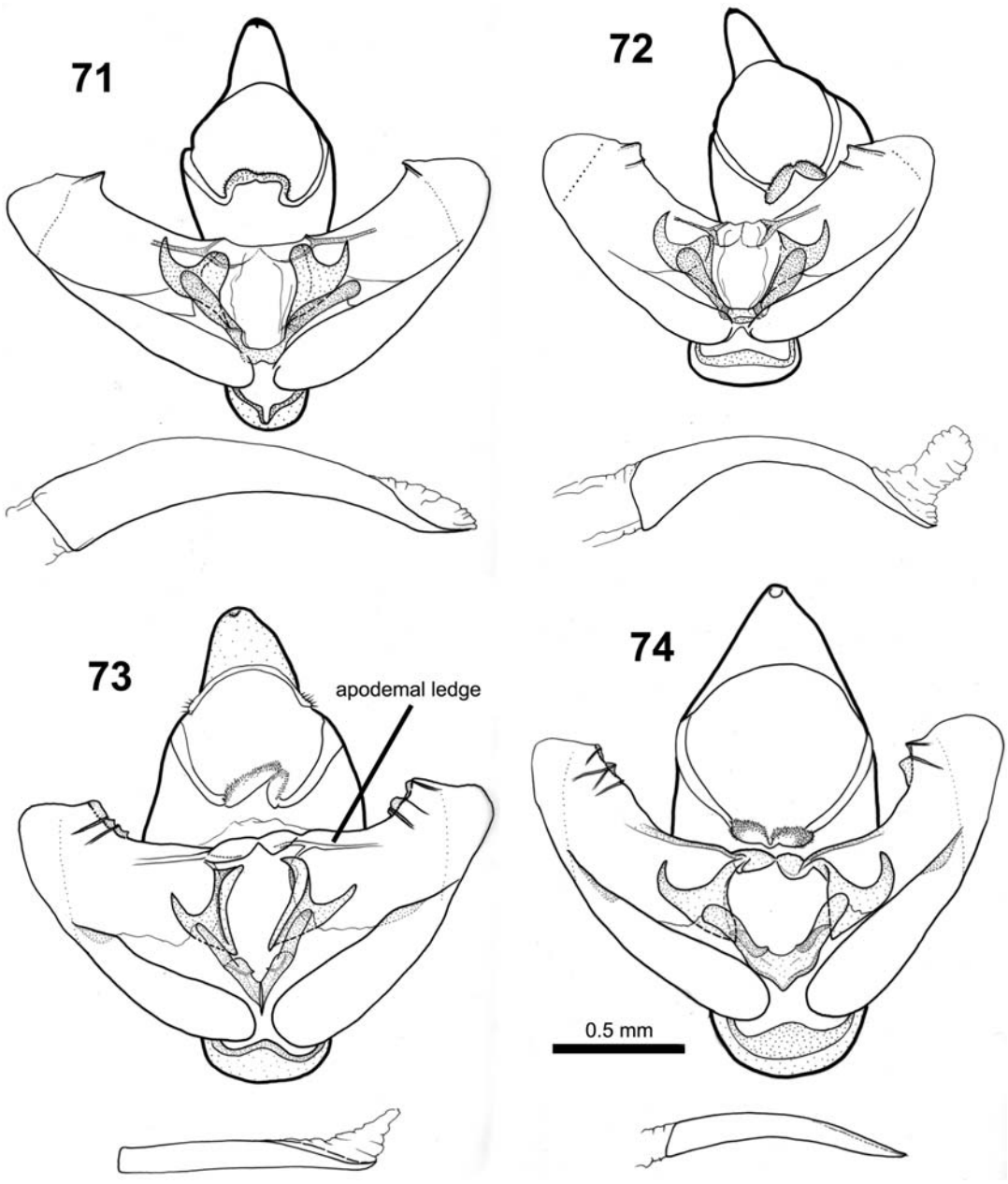
Figs 61–66

Brachylia, male genitalia. **61:** *B. plumbata* spec. nov. (Swartberg), lateral; **62:** ventral; **63:** phallic apparatus, ventral; **64:** *B. plumbata*, var., lateral; **65:** ventral; **66:** dorsal.



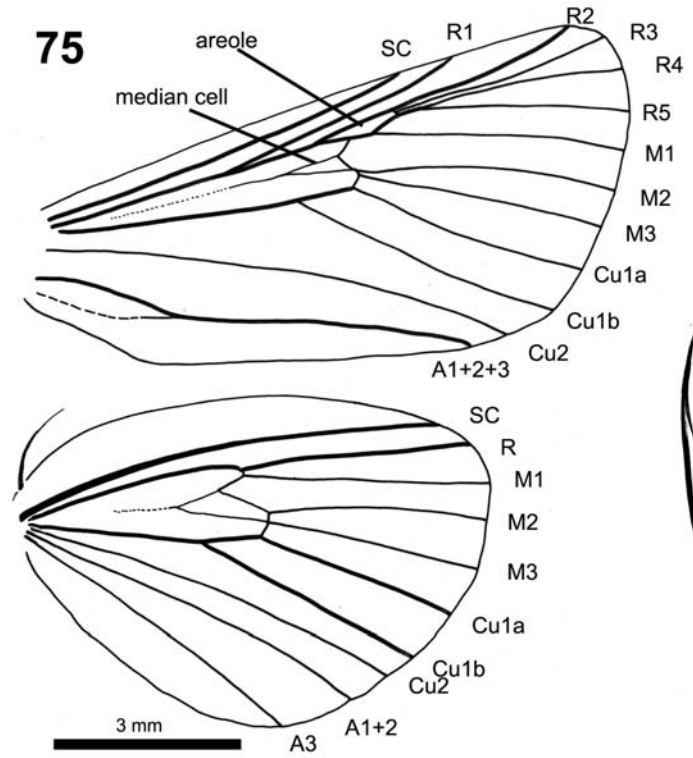
Figs 67–70

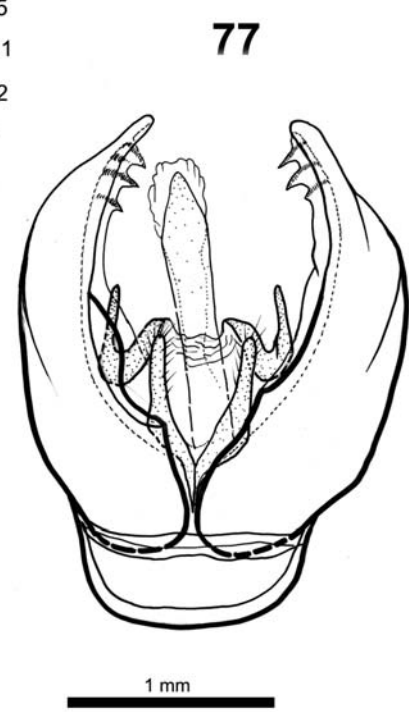
Brachylia, male genitalia, spread and in caudal view. **67:** *B. minor* spec. nov.; **68:** *B. camparia* spec. nov.; **69:** *B. contusa* spec. nov.; **70:** *B. contusa*, var.

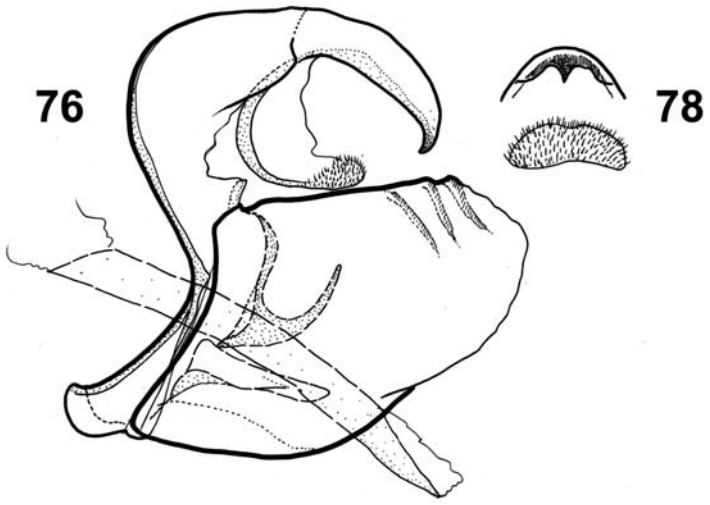


Figs 71–74

Brachylia, male genitalia, spread and in caudal view. **71:** *B. fusca* spec. nov.; **72:** *B. lineata* spec. nov.; **73:** *B. terebroides*; **74:** *B. windhoekensis*.

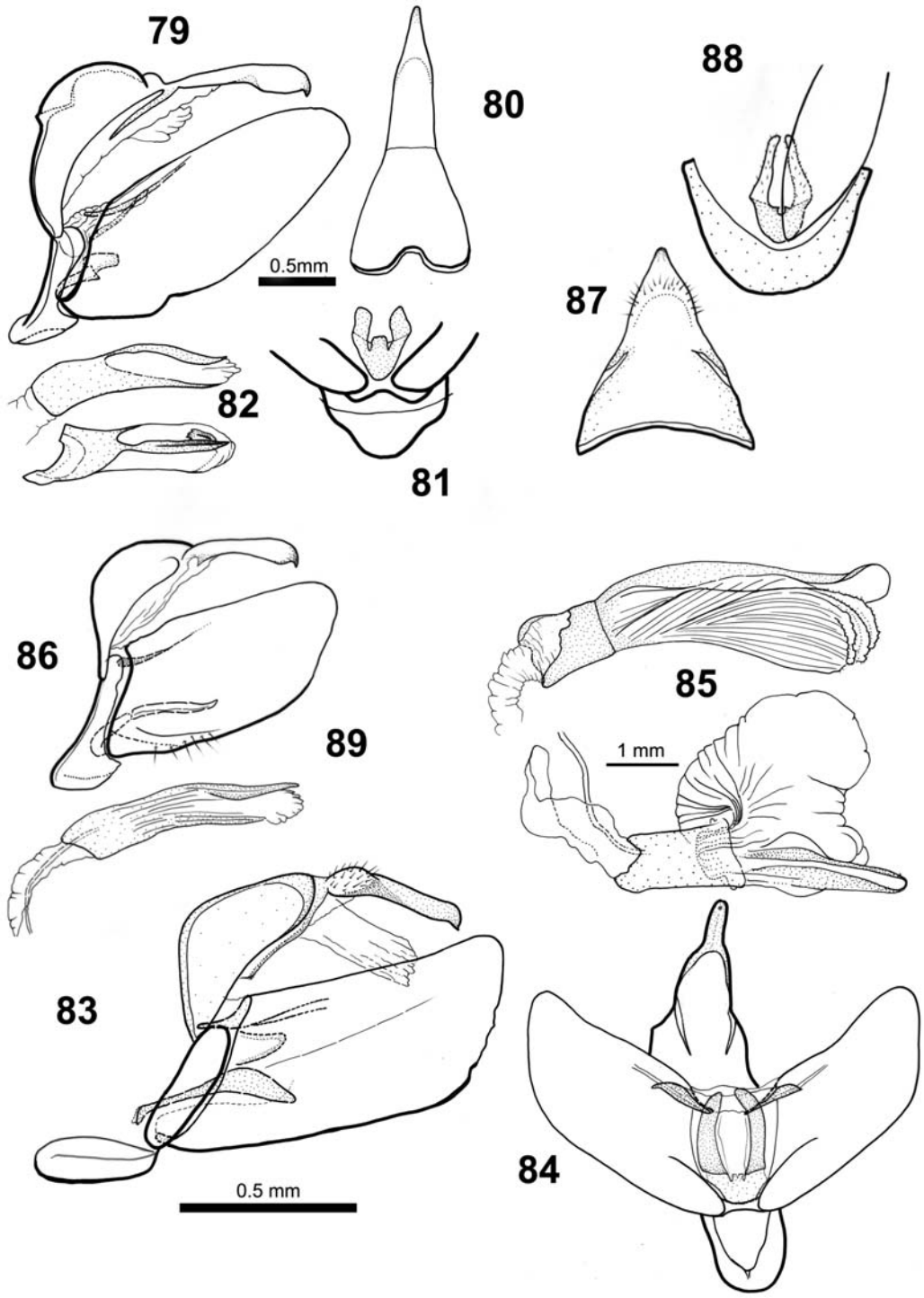






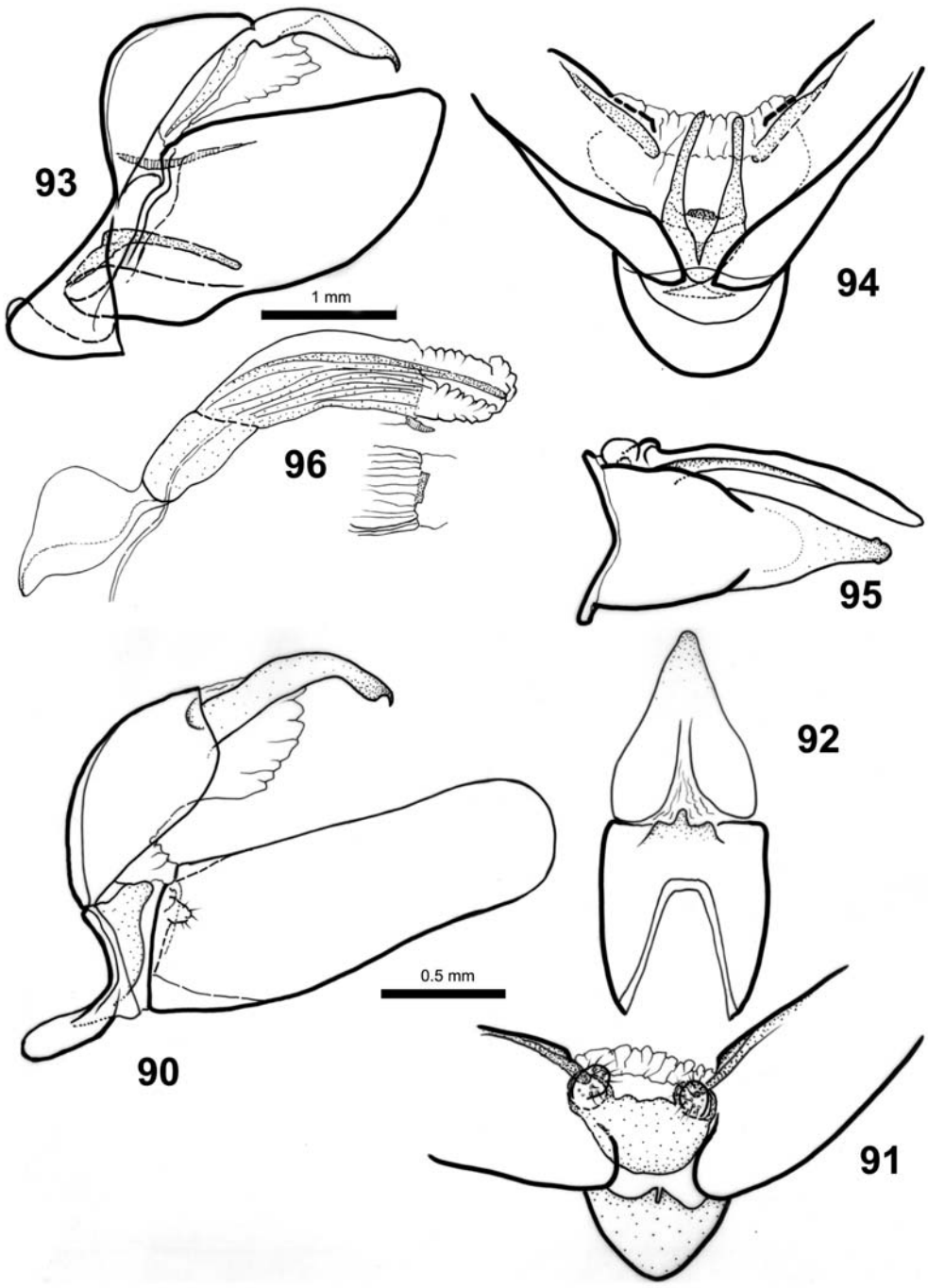
Figs 75–78

Brachylia terebroides. **75:** wing venation; **76:** male genitalia, lateral; **77:** gnathos and uncus, caudal; **78:** male genitalia, ventral.



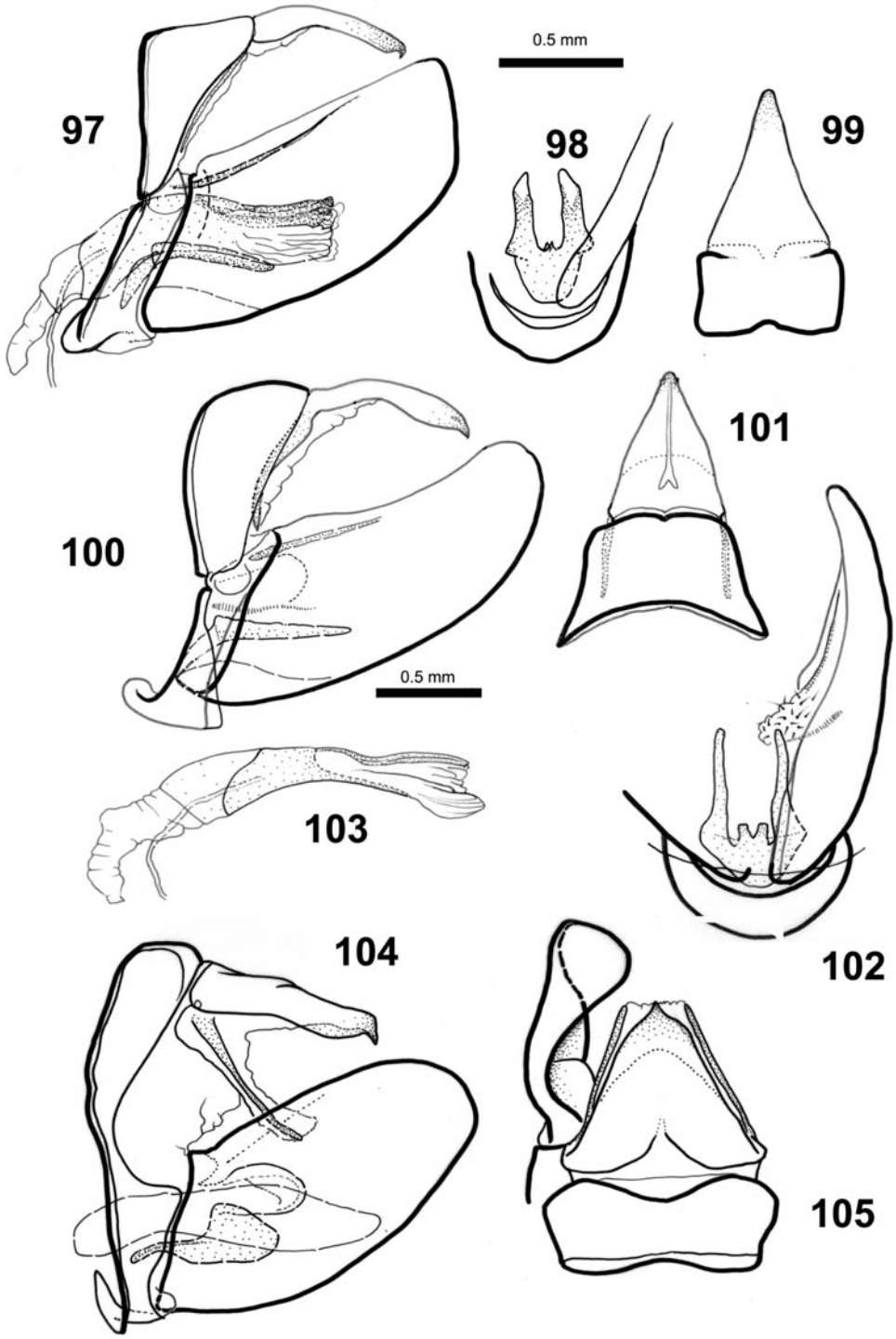
Figs 79–89

Aethalopteryx, male genitalia. **79:** *A. dictyotephra*, lateral; **80:** dorsal; **81:** ventral; **82:** phallic apparatus, lateral and dorsal; **83:** *A. obscurascens*, lateral; **84:** caudal; **85:** phallic apparatus, lateral view and dorsal view with vesica everted; **86:** *A. tristis*, lateral; **87:** dorsal; **88:** ventral; **89:** phallic apparatus, lateral.



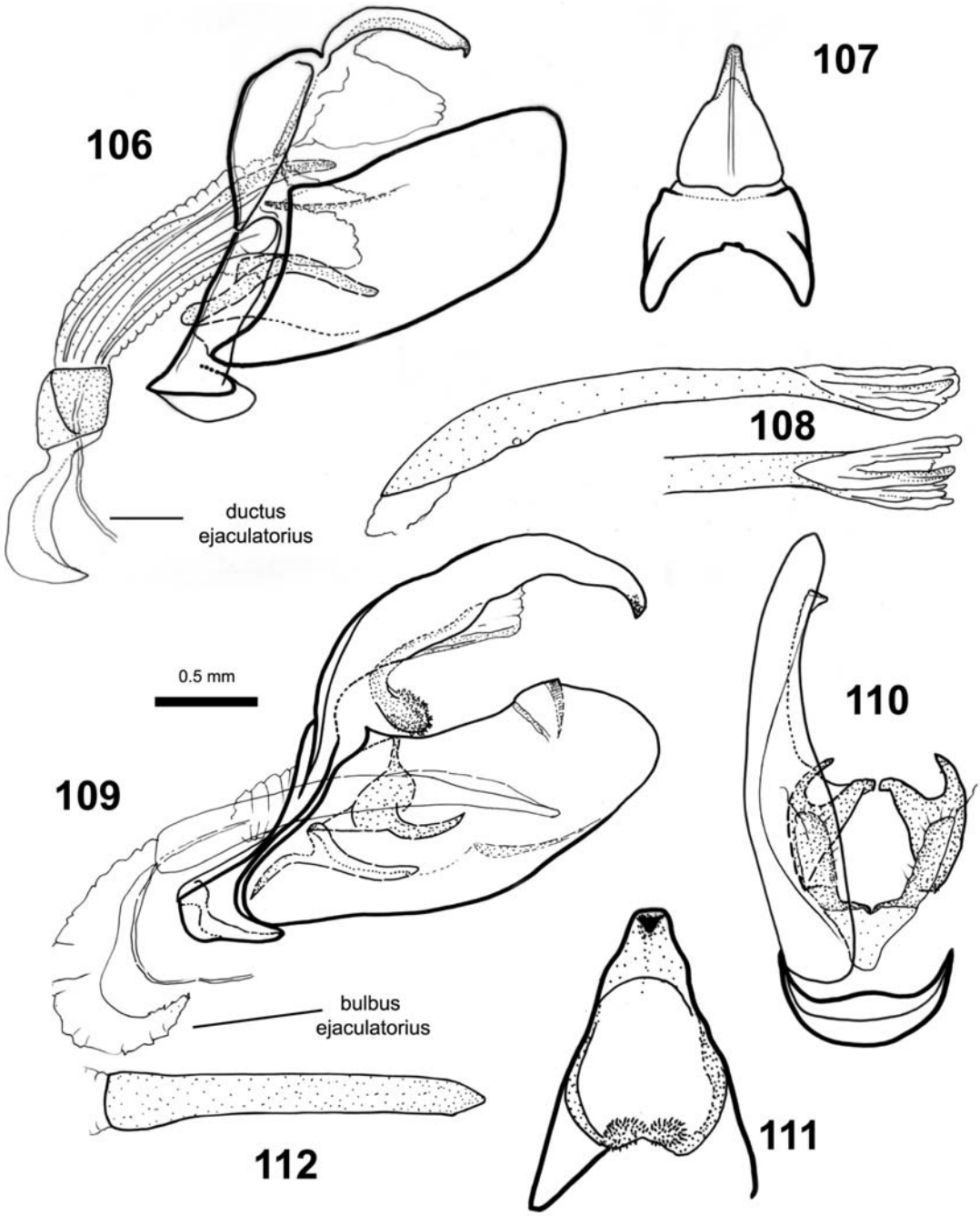
Figs 90–96

Phragmataecia, *Azygophleps*, male genitalia. **90:** *P. irrorata*, lateral; **91:** ventral; **92:** dorsal; **93:** *A. inclusa*, lateral; **94:** ventral; **95:** dorsal; **96:** phallic apparatus, lateral and process on ventral side.



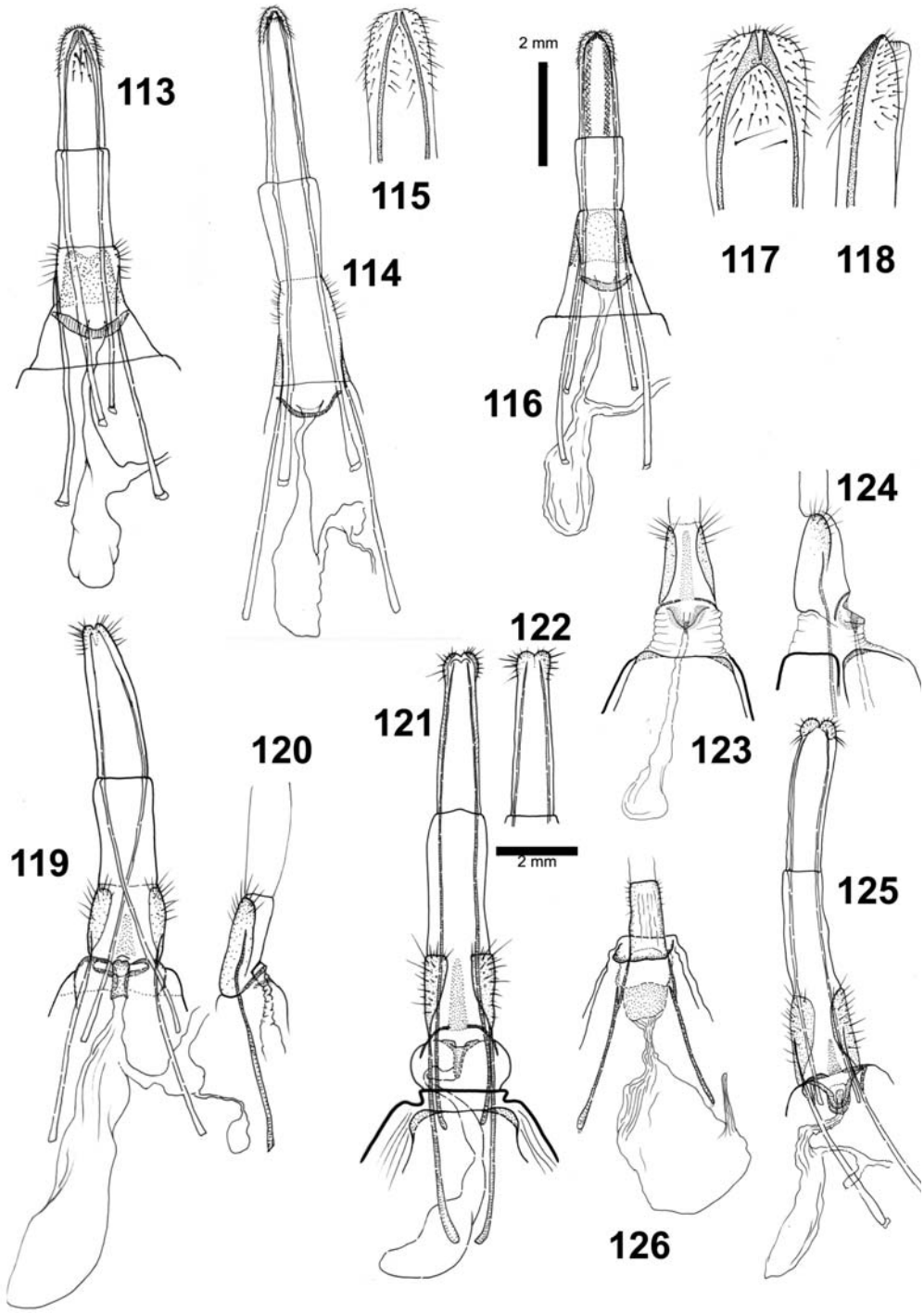
Figs 97–105

Azygophleps, *Eulophonotus*, male genitalia. **97:** *A. asylas*, lateral; **98:** ventral; **99:** dorsal; **100:** *A. asylasiformis* spec. nov., lateral; **101:** dorsal; **102:** ventral; **103:** phallic apparatus, lateral; **104:** *E. myrmeleon*, lateral; **105:** dorsal.



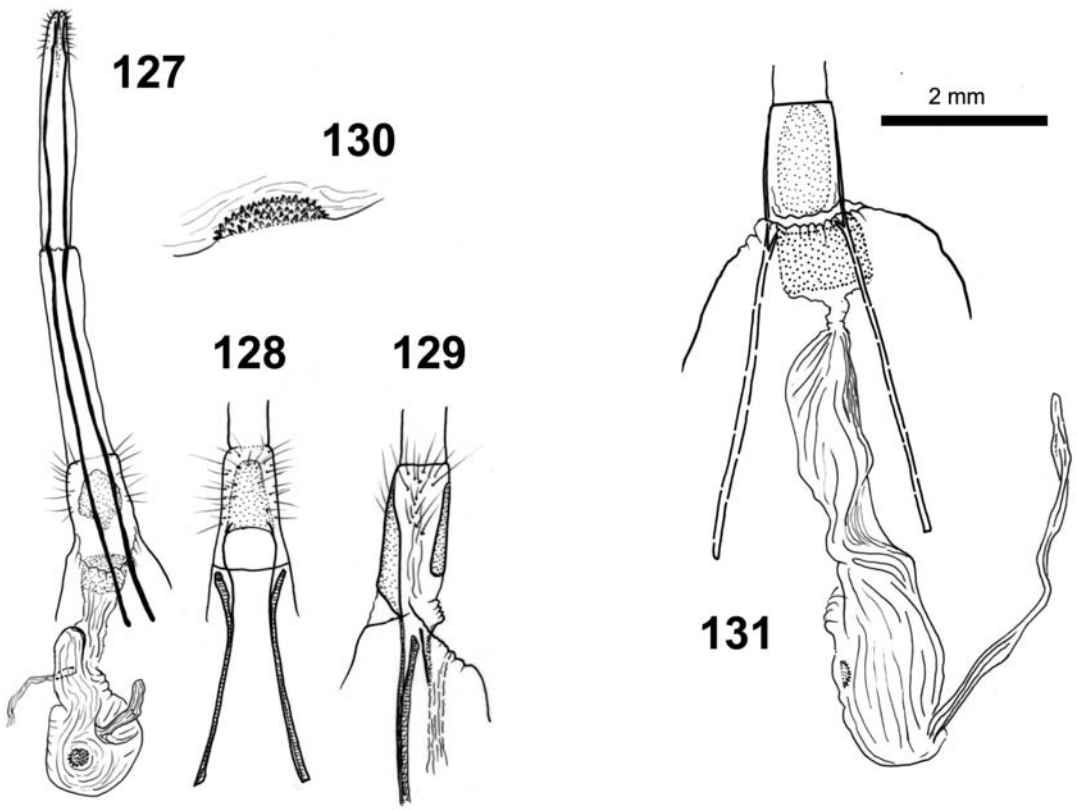
Figs 106–112

Male genitalia. **106:** *Strigocossus capensis*, lateral; **107:** dorsal; **108:** *Phragmataecia irrorata*, phallic apparatus, lateral and tip in dorsal view; **109:** *Brachylia windhoekensis*, lateral; **110:** ventral; **111:** dorsal; **112:** phallic apparatus, ventral.



Figs 113–126

Female genitalia. **113:** *Lichtensteiniana aloides*, ventral; **114:** *L. fuscoalaria*, ventral; **115:** dorsal tip of ovipositor, enlarged; **116:** *L. punctulata*, ventral; **117:** tip of ovipositor, enlarged, in dorsal and **118:** lateral view; **119:** *Brachylia terebroides*, ventral; **120:** lateral; **121:** *B. plumbata* spec. nov., ventral; **122:** tip of ovipositor, dorsal; **123:** *B. eutelia*, ventral; **124:** lateral; **125:** *Coryphodema tristis*, ventral; **126:** *Strigocossus capensis*, ventral.

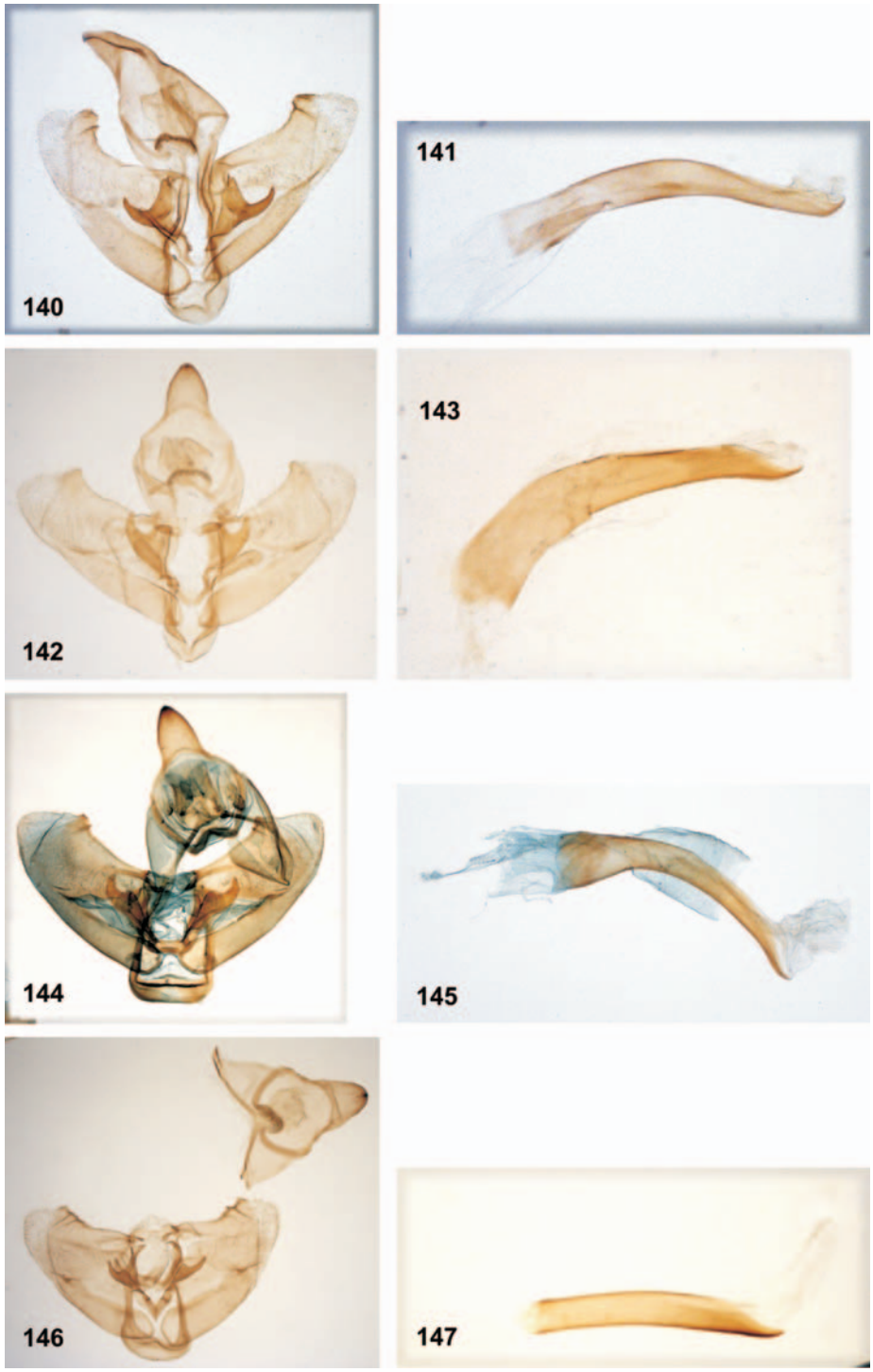


Figs 127–131

Female genitalia. **127:** *Aethalopteryx tristis*, ventral; **128:** dorsal; **129:** lateral; **130:** signum, lateral view; **131:** *Azygophleps liturata*, ventral.

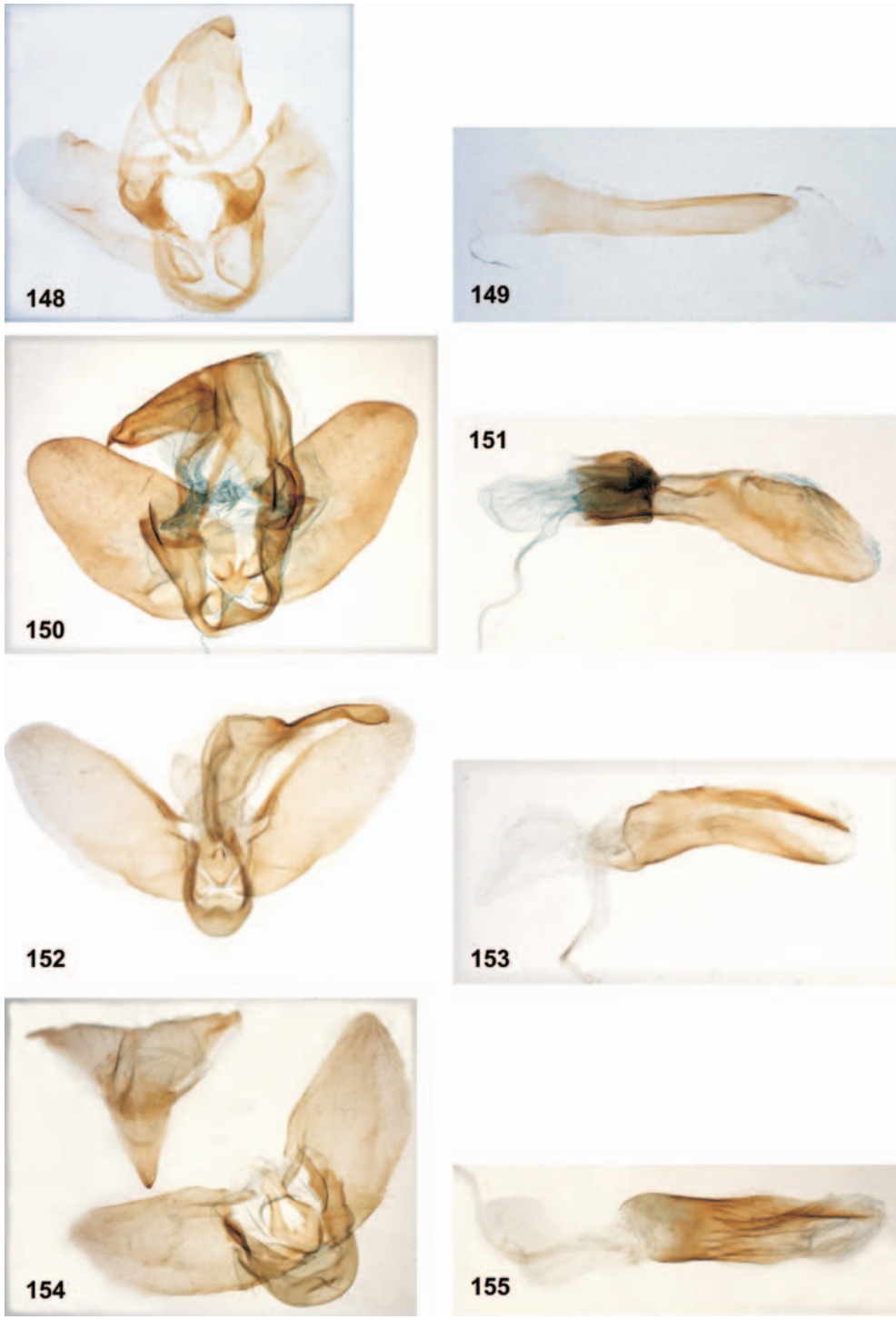
Figs 132–139

Male genitalia of *Brachylia* spp. with phallic apparatus. **132–133:** *B. minor* spec. nov.; **134–135:** *B. camparia* spec. nov.; **136–137***:* *B. contusa* spec. nov.; **138–139:** *B. eutelia* (Gamkap).



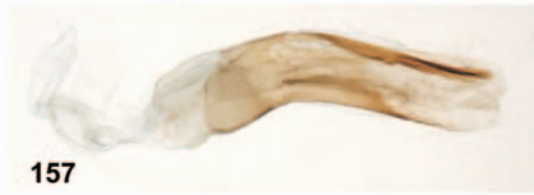
Figs 140–147

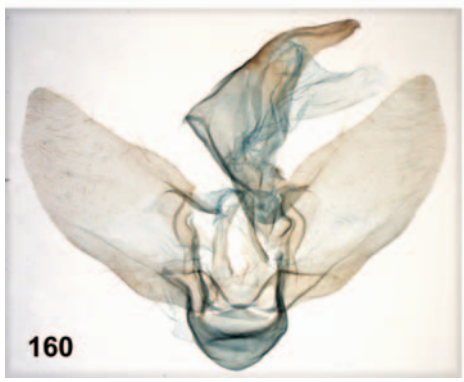
Male genitalia of *Brachylia* spp. with phallic apparatus. **140–141:** *B. eutelia*; **142–143:** *B. fusca* spec. nov.; **144–145:** *B. lineata* spec. nov.; **146–147:** *B. terebroides*.



Figs 148–155

Male genitalia of *Brachylia*, *Eulophotonus* and *Aethalopteryx* with phallic apparatus. **148–149:** *B. windhoekensis*; **150–151:** *E. myrmeleon*; **152–153:** *A. dictyotephra*; **154–155:** *A. tristis*.





Figs 156–161

Male genitalia of *Azygophleps* spp. with phallic apparatus. **156–157:** *A. asylas*; **158–159:** *A. asylasiformis* spec. nov.; **160–161:** *A. inclusa*.