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## Research article

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# Taxonomic revision of *Camerunia* Aurivillius, 1893 and allied genera (Lepidoptera: Eupterotidae: Janinae)

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**Abstract.** The distinctive monkey moth genus *Camerunia* Aurivillius, 1893 is revised, resulting in the implementation of several taxonomic and nomenclatural changes. Two genera historically considered to be allied to *Camerunia*, *Hemijana* Aurivillius, 1901 syn. nov. and *Catajana* Strand, 1910 syn. nov. are synonymised with it and as a result, the genus now contains six species: *C. orphne* (Schaus, 1893), *C. flava* Aurivillius, 1904, *C. albida* Aurivillius, 1901, *C. subrosea* (Aurivillius, 1893) comb. nov., *C. bimaculata* (Dewitz, 1879) comb. rev. and a new species, *C. smithi* sp. nov. described from Tanzania. To preserve the stability of nomenclature, lectotypes are designated for *Camerunia insignis* Aurivillius, 1893, *Camerunia flava* Aurivillius, 1904, *Jana subrosea* Aurivillius, 1893 and *Hemijana ruberrima* Rothschild, 1917. Examination of the unlabelled type of *Hemijana griseola* Rothschild, 1917 syn. nov. has confirmed that it is conspecific with *Poloma nigromaculata* (Aurivillius, 1893) and it is synonymised accordingly.

**Keywords.** Afrotropics, monkey moths, barcodes, systematics, *Hemijana*, *Catajana*.

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## Introduction

The Afrotropical Eupterotidae Swinhoe, 1892 have remained poorly studied despite their large size and colourful appearance. With the exception of checklists (e.g., Vári *et al.* 2002; Nässig & Oberprieler 2008; Kitching *et al.* 2018), descriptions of distinct taxa (e.g., Bouyer 2014) or notes on life histories (e.g., Raviglione *et al.* 2022), there have been very few taxonomic overviews of the Afrotropical genera or species, with many in need of holistic revision (Takano & László 2022). The subfamily Janinae Aurivillius, 1892 currently comprises 22 genera and 149 species, all of which are restricted to the Afrotropical realm (Kitching *et al.* 2018). Species of three of these genera, *Camerunia* Aurivillius, 1893, *Hemijana* Aurivillius, 1901 and *Catajana* Strand, 1910, have historically been treated in the literature as being closely allied to each other (e.g., Forbes 1955), and in this current paper, these affiliations are investigated further.

The genus *Camerunia* was initially erected by Aurivillius (1893) for the new species *C. insignis* Aurivillius, 1893 from Central Africa. In his review of the African Eupterotidae (or Striphnopterygidae

as it was referred to then), Aurivillius (1901b) transferred *Homochroa orphne* Schaus, 1893, described from Sierra Leone, to *Camerunia* and synonymised *C. insignis* with it, whilst also describing a second species in the genus, *C. albida* Aurivillius, 1901 from Tanzania. He also tentatively placed *Dreata bimaculata* Dewitz, 1879 from Angola in *Camerunia*, although this species was later deemed different enough by Strand (1910) – notably the orientation of the palps, the presence of protibial epiphyses and differing wing venation – to merit a new genus, *Catajana*. A third species of *Camerunia*, *C. flava* Aurivillius, 1904 was later described from East Africa with some uncertainty as to its generic placement due to slight differences in wing venation. Aurivillius (1901b) established the genus *Hemijana* for *Jana subrosea* Aurivillius, 1893 based once again on differences in the forewing venation, to which were later added three further taxa, *H. ruberrima* Rothschild, 1917, *H. griseola* Rothschild, 1917 and *H. variegata* Rothschild, 1917. Since Gaede (1927), *H. ruberrima* has been synonymised with the type species of the genus (Vári *et al.* 2002) and *H. variegata* transferred to the genus *Poloma* Walker, 1855 (Takano & László 2022), leaving two valid species in *Hemijana*. Forbes (1955) divided the Eupterotidae into several subfamilies and stated that *Camerunia* and *Hemijana* were closely related, although rather than comparing with the type species of the latter genus, he treated *Catajana bimaculata* as belonging to *Hemijana*. In the most recent catalogues including the Eupterotidae (Nässig & Oberprieler 2008; Kitching *et al.* 2018), *Camerunia* comprised three species, *Catajana* remained monobasic, whilst *Hemijana* contains two species after the removal of *H. variegata* as mentioned above. The taxon *semijana* Aurivillius, 1893, assigned to *Hemijana* by Kitching *et al.* (2018), could not be traced in the literature despite determination labels attached to specimens of *H. subrosea* in NHMUK, and it is treated here as a manuscript name.

Based on the rich holdings of Eupterotidae held at the African Natural History Research Trust and in conjunction with specimens in institutional and private collections, the aforementioned genera are herein comprehensively reviewed, resulting in several taxonomic changes. Both *Hemijana* and *Catajana* are considered to be junior subjective synonyms of *Camerunia* based on similar genital morphology and DNA barcodes of their respective type species, and the following combinations are proposed: *Camerunia subrosea* (Aurivillius, 1893) comb. nov. and *Camerunia bimaculata* (Dewitz, 1879) comb. rev. Furthermore, the remaining species of *Hemijana*, *H. griseola* syn. nov., is deemed to be conspecific with *Poloma nigromaculata* (Aurivillius, 1893) and is synonymised accordingly. Aside from the two aforementioned *Camerunia* taxa, the genus sensu novo includes six species, *C. orphne*, *C. flava*, *C. albida* and a new species from the Eastern Arc Mountains of Tanzania, *C. smithi* sp. nov.

## Material and methods

The preparation of genitalia followed Lafontaine & Mikkola (1987). The phalluses were stained with Eosin red, and the dissected genitalia were mounted on microscope slides or stored in glycerol. Genitalia were photographed using a Canon EOS 700D camera mounted on a Leitz Diaplan compound microscope. Adults were photographed using a Canon EOS 80D with a Canon 100 mm Macro lens. All images were edited in Adobe Photoshop. Primary label data have been transcribed verbatim with “/” denoting a different label and “/” denoting a line break followed by a comment for each label in square brackets (if no indication is given, the label is printed on plain card). Genital terminology follows Forbes (1955) and Oberprieler *et al.* (2003). Aside from the data extracted from examined specimens, photographic records that could be unequivocally identified from iNaturalist (<https://www.inaturalist.org>) have been included in the distribution maps.

To test the monophyly of *Camerunia*, DNA barcodes were obtained by removing tarsal segments from 14 adult specimens, belonging to five putative taxa in the three genera, and then submitted to the Canadian Centre for DNA Barcoding (CCDB, Biodiversity Institute of Ontario, University of Guelph). The Janinae genus *Hibrildes* Druce, 1888 was selected as the outgroup taxon. Sequences were obtained using Single Molecule Real-Time sequencing through the Sequel II (PacBio) pipeline at CCDB (Hebert *et al.* 2018)

and, together with 12 publicly available sequences from the BOLD (<https://boldsystems.org>) database, were aligned using MUSCLE in MEGA ver. X (Kumar *et al.* 2018). Genetic distances were calculated using Kimura's two-parameter model (Kimura 1980). The final dataset comprised 17 individuals of *Camerunia* (three taxa), four of *Hemijana* (one taxon) and five of *Catajana* (one taxon). Phylogenetic tree searches were performed using Bayesian Inference (BI) and Maximum Likelihood (ML). BI analyses were performed using MrBayes ver. 3.2.7a (Ronquist *et al.* 2012). Metropolis-coupled Markov chain Monte Carlo (MCMC) analyses were run with four chains (one cold and three heated) for 10 000 000 generations sampling every 100 generations, discarding the first 25% as burn-in. The two runs converged with the standard deviation of split frequencies 0.002. ML analyses were performed using raxmlGUI ver. 2.0 (Edler *et al.* 2021) using a general time reversible model (GTR-GAMMA). Support for clades was evaluated for BI using posterior probabilities and ML using rapid bootstrapping with 1000 replicates. Trees were visualised and annotated in FigTree ver. 1.4.4 and Adobe Photoshop.

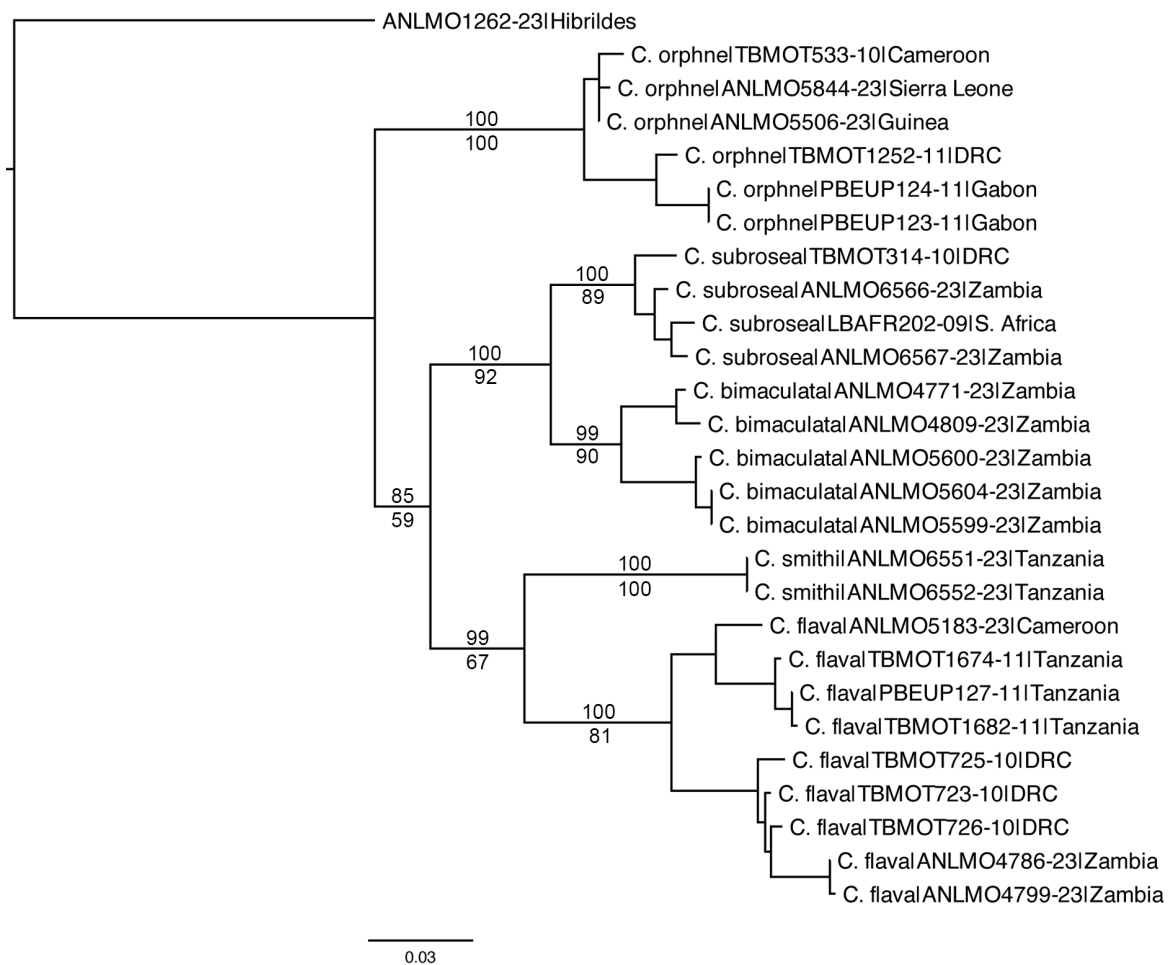
### Institutional abbreviations

AMNH = American Museum of Natural History, New York, USA  
ANHRT = African Natural History Research Trust, Leominster, U.K.  
MCSN = Museo Civico di Storia Naturale Giacomo Doria, Genoa, Italy  
MfN = Museum für Naturkunde, Berlin, Germany  
MZUF = Museo di Storia Naturale “La Specola”, Florence, Italy  
NHRS = Naturhistoriska riksmuseet, Stockholm, Sweden  
NHMUK = Natural History Museum, London, U.K.  
NHMW = Naturhistorisches Museum, Vienna, Austria  
OUMNH = Oxford University Museum of Natural History, Oxford, U.K.  
RCPB = Research collection of Patrick Basquin, Yvetot-Bocage, France  
RMCA = Royal Museum for Central Africa, Tervuren, Belgium  
USNM = National Museum of Natural History, Washington, D.C., USA

## Results

### Synthesis of molecular and morphological data

Phylogenetic inferences based on BI and ML recovered identical topologies (ML tree figured in Fig. 1) wherein *Camerunia* was recovered as paraphyletic with regard *Hemijana* and *Catajana*. *Camerunia orphne* was recovered as sister to a moderately well-supported (*Hemijana* + *Catajana*) + (*Camerunia smithi* sp. nov. + *Camerunia flava*) clade (PP: 85; BS: 59). The recovery of the *Hemijana* + *Catajana* (PP: 100; BS: 92) clade was unsurprising considering their respective type species share similar wing patterns as well as genital morphology. *Hemijana* was originally separated from all other Janinae based on a different length ratio of the lower and middle discocellular veins (Aurivillius 1901b), but the general appearance and genital configuration of its type species is very much that of the *Camerunia*-form. Aurivillius relied heavily upon venation to arrange and classify the Bombycoidea Latreille, 1802 and Lasiocampoidea Harris, 1841, but its suitability in Eupterotidae was considered doubtful by Mell (1930) and more recently has been shown to be uninformative in Lasiocampidae Harris, 1841 (Takano & László 2024). Similarly, for *Catajana* wing venation and the presence of an epiphysis on the foretibia were the traits outlined to differentiate it from *Camerunia*. Forbes (1955) considered *Hemijana* and *Catajana* to be congeneric and, referring to the type species of *Catajana*, Forbes (1955: 95) noted that if it were not for the venation, “the genus would hardly be considered distinct from *Camerunia*”. Moreover, Forbes (1955) correctly indicated that *C. bimaculata* lacked an epiphysis on the foretibia and suggested that Strand (1910) had confused it with the epiphyses of the mesotibia. Perhaps the most unexpected result from the phylogenetic analyses was the recovery of *C. flava* with *C. smithi* in a well-supported clade (PP: 99; BS: 67), and not *C. orphne*, which shares with *C. flava* tufts of ciliate scales on the abdomen and the flattened lateral processes of the tegumen in the male genitalia. Seemingly, *C. smithi* is a peculiar species



**Fig. 1.** Maximum likelihood tree of the *Camerunia* Aurivillius, 1893 species, with *Hibrildes* Druce, 1888 as outgroup, based on DNA barcodes. Numbers above branches indicate posterior probabilities (PP) and bootstrap (BS) below. Scale bar indicates substitution rates per site.

with wing patterns closest to *C. orphne* whereas the genitalia are most similar to the *Hemijana*/*Catajana* species. In summary, both *Hemijana* syn. nov. and *Catajana* syn. nov. are here treated as junior subjective synonyms of *Camerunia* based on external and genital morphology as well as the phylogenetic results.

### Taxonomy

Class Insecta Linnaeus, 1758  
 Order Lepidoptera Linnaeus, 1758  
 Superfamily Bombycoidea Latreille, 1802  
 Family Eupterotidae Swinhoe, 1892  
 Subfamily Janinae Aurivillius, 1892

Genus *Camerunia* Aurivillius, 1893

*Camerunia* Aurivillius, 1893: 211. Type species: *Camerunia insignis* Aurivillius, 1893, by monotypy.

*Hemijana* Aurivillius 1901b: 21. **Syn. nov.** Type species: *Jana subrosea* Aurivillius, 1893, by monotypy.



*Catajana* Strand 1910: 98. **Syn. nov.** Type species: *Dreata bimaculata* Dewitz, 1879, by original designation.

*Camerunia* – Aurivillius 1901b: 27; 1904: 698. — Gaede 1927: 306. — Forbes 1955: 94, 129. — Fletcher & Nye 1982: 29. — Vári *et al.* 2002: 150. — Nässig & Oberprieler 2008: 56. — Kitching *et al.* 2018: suppl. material 1.

*Hemijana* – Gaede 1927: 302. — Forbes 1955: 94, 129. — Fletcher & Nye 1982: 75. — Vári *et al.* 2002: 150. — Nässig & Oberprieler 2008: 56. — Kitching *et al.* 2018: suppl. material 1.

*Catajana* – Gaede 1927: 306. — Forbes 1955: 129 (as synonym of *Hemijana*). — Fletcher & Nye 1982: 32. — Vári *et al.* 2002: 150. — Nässig & Oberprieler 2008: 56. — Kitching *et al.* 2018: suppl. material 1.

### Diagnosis

*Camerunia* species are medium- to large-sized, brightly-coloured, highly distinctive monkey moths with broad, papery wings and, compared to other Janinae, have a proportionally small body. There is a superficial resemblance to the peculiar genus *Hibrildes*, which, unlike *Camerunia*, displays a high degree of sexual dimorphism (Poulton 1929). Male *Hibrildes* have almost translucent wings with markings mostly limited to densely packed dark brown scales along well-defined veins. The females, in contrast, are well-marked and polymorphic, displaying aposematic colouration that varies from pale yellow through to orange, with a dark discal bar-like marking present on both pairs of wings. The male genital morphology of the two genera is, however, very different; those of *Hibrildes* are highly modified with lateral processes on the uncus and tripartite valves (Minet 1994; Oberprieler *et al.* 2003).

### Redescription of the adult

Antenna bipectinate in both sexes, rami shorter in females of some species. Ground colour of body and forewing varying from white, through yellow to brown; hindwing white, yellow or pink. Forewing triangular, rounded at apex and outer margin gently arcuate; hindwing ovoid, outer margin arcuate. Both wings often with transverse fasciae; forewing may display basal and discal markings. Vein CuP of the forewing present and highlighted with brown scaling in some species.

MALE GENITALIA. Uncus reduced, fused with tegumen. Tegumen broad with a pair of long apically rounded lateral projections. Gnathos with spinose or clavate process. Valve trapezoidal or triangular with well-defined costa and sacculus, cleft in some species. Juxta trapezoid, emarginate distally. Vinculum V-shaped. Saccus cylindrical, rounded at apex. Phallus as long as valve, slightly curved medially; carina scobinate in some species; coecum rounded. Vesica with scobination.

### Molecular characterisation

The barcode region of *Camerunia* species was variable with intraspecific pairwise distances (PWD) for the five sampled taxa ranging from 0.0–5.8%, while interspecific PWDs were 6.0–13.1%. They diverged from the outgroup taxon *Hibrildes* by 13.6–16.5%. Aside from *C. subrosea* (Aurivillius, 1893) comb. nov. and *C. smithi* sp. nov., each of the remaining species was assigned numerous Barcode Index Numbers (BIN) in BOLD as a result of the large intraspecific divergences. Although the BINs in general showed geographical concordance, no differences in habitus or genital morphology were observed in the individuals assigned to each BIN, and thus any further taxonomic splitting (which would ultimately be based solely on barcodes) could not be justified.

## Distribution

Members of this genus are widely distributed from north-eastern South Africa as far north as Uganda and westwards to Sierra Leone and Guinea. With the exception of *C. orphne* and *C. smithi* sp. nov., which inhabit forested environments, all other species are found in open woodland and forest-savanna mosaics.

## Descriptions of the species

Due to incomplete taxon sampling in the phylogeny, the species are presented below based on the configurations of the male genitalia. The genus naturally divides into two groups, one with flattened lateral processes of the tegumen (*C. orphne*, *C. flava* and *C. albida*) and another with cylindrical processes (*C. smithi* sp. nov., *C. bimaculata* (Dewitz, 1879) comb. rev. and *C. subrosea* (Aurivillius, 1893) comb. nov.).

### *Camerunia orphne* (Schaus, 1893)

Figs 1–8, 37–38, 48, 54

*Homochroa orphne* Schaus, 1893: 30, pl. 1 fig. 7. Type locality: “Sierra Leone”.

*Camerunia insignis* Aurivillius, 1893: 211. Type locality: “Camerun interior; Gabun”.

*Camerunia orphne* – Aurivillius 1901b: 27. — Gaede 1927: 306, pl. 46 fig. c. — Kitching *et al.* 2018: suppl. material 1.

*Camerunia insignis* – Aurivillius 1901b: 27 (syn.).

## Diagnosis

The largest species of the genus, *C. orphne* cannot be easily confused with any other species of *Camerunia*, with perhaps the exception of *C. smithi* sp. nov., which is smaller and distributed allopatrically. In both these species, a dark brown basal patch is present on the forewing, but the discal markings are comprised of dots in *C. smithi*, whereas in *C. orphne*, it is a bar as wide as the cell, along the medial vein. The configuration of the male genitalia is most similar to *C. flava* and *C. albida*, with the flattened, apically rounded lateral processes of the tegumen, but the long, clavate, denticulate, apical process of the gnathos is unique to *C. orphne*.

## Type material

### Holotype of *Homochroa Orphne*

SIERRA LEONE • ♂ (Fig. 2); “No. 19248 / W. Schaus / Collection. [black border; partially handwritten] // TYPE / No. / A.M.N.H. [red card] // *Homochroa / orphne* / Type. Schs, [handwritten in Schaus’s hand]”; AMNH.

### Lectotype of *Camerunia insignis* (by present designation)

CAMEROON • ♂ (Fig. 3); “Kamer. / int. / Pr. // 272. [handwritten] // *Camerunia / insignis* / Aur. ♂ typ. [handwritten] // 16,1. [handwritten]”; MfN.

### Paralectotype of *Camerunia insignis*

GABON • ♀ (Fig. 8); “Gabun / 1890. Mocquerys [black border] // *Camerunia / insignis* / Aur. ♀ typ. [handwritten] // 16,1. [handwritten]”; MfN.

## Other material examined (24 ♂♂, 10 ♀♀)

CAMEROON • 1 ♂; [unspecified locality]; D.G. Rutherford leg.; OUMNH. – North • 1 ♀; Bascho [= Bashéo]; 28 Aug. 1906; A. Schultze leg.; MfN. – South • 1 ♂, 1 ♀; Bitje; 610 m a.s.l.; G. Bates leg.;

NHMUK. – **Southwest** • 1 ♀; Bibundi; 15–30 Oct. 1904; G. Tessmann leg.; MfN • 1 ♂, 1 ♀; Victoria; P. Preuss leg.; MfN • 1 ♂; same locality as for preceding; 1892; G. Zenker leg.; MfN.

CENTRAL AFRICAN REPUBLIC – **Nana-Grébizi** • 1 ♀; Fort Crampel; NHMUK.

DEMOCRATIC REPUBLIC OF CONGO – **Lualaba** • 1 ♂; Kapanga; Mar. 1934; F.G. Overlaet leg.; RMCA.

GABON – **Estuaire** • 1 ♂; Monts de Cristal; 8 Dec. 1990; 700 m a.s.l.; P. Basquin leg.; RCPB.

GHANA – **Ashanti** • 2 ♂♂; [unspecified locality]; Mar. 1907; G.C. Dudgeon leg.; NHMUK • 1 ♀; Friapere Forest; 1913; NHMUK.

GUINEA – **Mamou** • 2 ♂♂; Chute de Ditinn; 10°49'08" N, 12°11'30" W; 771 m a.s.l.; 18–25 Sep. 2019; M. Geiser, M. Leno, S. Koivagui, W. Miles, L. Mulvaney and S. Sáfián leg.; ANHRT.

IVORY COAST – **Montagnes** • 1 ♂; Mont Tonkoui; 7°27'15" N, 7°38'12.6" W; 1200 m a.s.l.; Jun. 2016; ANHRT. – **Woroba** • 1 ♀; Dolla Ranch; 7°58'07.7" N, 07°34'35.7" W; 481 m a.s.l.; 1–5 Jun. 2018; M. Aristophanous, W. Miles, P. Moretto and Y. Outtara leg.; ANHRT.

LIBERIA – **Maryland** • 1 ♂; Cape Palmas; Seaton leg.; NHMUK. – **Nimba** • 1 ♀; Bahn; 7°02' N, 8°47' W; 457 m a.s.l.; 24 Sep. 1953; W. Peters leg.; NHMUK • 1 ♂; Nimba Mountains, Mount Gangra summit; 7°32'45.82" N, 08°38'09.36" W; 974 m a.s.l.; 17–25 Mar. 2017; S. Sáfián and G. Simonics leg.; ANHRT.

NIGERIA – **Enugu** • 1 ♀; Ogruga [= Ogrugru]; NHMUK.

REPUBLIC OF CONGO – **Cuvette-Ouest** • 1 ♂; Odzala-Kokoua National Park, Bangassou Forest near Lobo; 0°32'50" N, 14°51'47" E; 400 m a.s.l.; 21–26 Sep. 2024; M. Bashford, G. László, M. Talani and A. Volynkin leg.; ANHRT.

SIERRA LEONE • 2 ♂♂, 1 ♀; [unspecified locality, but most likely Freetown]; P. Bainbridge leg.; NHMUK. – **North West** • 1 ♂; Batkanu; F.G. FitzGerald leg.; NHMUK. – **Northern** • 3 ♂♂; Kalainkay, near Kamabai; 9°10'52" N, 11°56'44" W; 80 m a.s.l.; 3–6 Nov. 2015; R. Goff leg.; ANHRT. – **Western Area** • 1 ♂; Freetown; 19 Apr. 1917; P.A. Buxton leg.; OUMNH • 1 ♂; Wilberforce; 9 Nov. 1911; C.A. Foster leg.; OUMNH.

TOGO – **Plateaux** • 2 ♂♂; Forêt de Missahohe, Kpalime; 6°56'41" N, 0°34'30" E; 610 m a.s.l.; 31 Jul. 2013; P. Moretto leg.; ANHRT.

## Redescription

### Male (Figs 2–6, 48)

FOREWING LENGTH. 28–40 mm.

UPPERSIDE. Ground colour of head, thorax and abdomen brown; vertex creamy-white, patagium mahogany, tegula with paler beige scales turning darker mahogany posteriorly. Antenna bipectinate, brown. Abdomen covered with greyish scales and tufts of bronze, longer ciliate scales medially forming crest which runs along abdomen. Each abdominal segment with bronze scales along posterior margin, giving abdomen banded appearance. Eighth sternite truncate posteriorly, weakly sclerotised, its surface punctate. Wing veins and termen well-defined with dark brown scaling. Forewing triangular, rounded at apex, outer margin gently arcuate, almost straight; ground colour beige to brown. Basal marking

dark chocolate turning black towards anal margin, under half length of cell; its outer margin arcuate, slightly sinuate, with white fascia on inner (and sometimes outer) edge of border. Antemedial fascia dark brown, indistinct, following margin of basal marking. Discal marking black with greyish-white scaling internally, in form of bar along outer edge of medial vein. Postmedial fasciae dark brown, arcuate, evenly crenulate, outer of two more indistinct; fasciae arising almost perpendicularly from dark brown spot on costa, sharply curving inward at vein M2 and terminating almost perpendicularly along anal margin. Space CuA1 and dorsal portion of CuA2 with well-defined darker brown marking filling space between postmedial fasciae. Submarginal fasciae dark brown, crenulate, broadly running in parallel with postmedial fasciae; inner of two arising from small dark brown marking on costa, outer arising from dark brown rectangular sub-apical marking perpendicular to costa. Subterminal area irrorated with darker scales and dark brown triangular patch, its inner margin arising ventrad of apex, widening proximad as far as submarginal fascia in space M2 and terminating along termen around vein CuA1. Fringe brown with pale greyish-white scales forming dots at termination points of veins.

**HINDWING.** Outer margin arcuate; ground colour pale yellow, sometimes with ferruginous tint basally. Postmedial fascia dark brown, arcuate and angled at vein M2, weakly crenulate, terminating at dark brown spot along anal margin. Submarginal fascia dark brown, composed of dark brown lunules between veins running parallel with postmedial fascia. Subterminal fascia dark brown, strongly crenulate. Fringe as on forewing.

**UNDERSIDE.** Ground colour of body golden yellow; wings yellow, veins and termen well-defined with dark brown scaling. Forewing costa highlighted with gold scaling to apex. Postmedial and submarginal fasciae often absent but when present, similar to upperside but finer and not bilineate. Dark brown patch in subterminal area often present but less well-defined. Hindwing postmedial, submarginal and subterminal fasciae as on upperside but better defined. Both postmedial and submarginal fasciae often bilineate, outer of both less well-defined.

**MALE GENITALIA** (Figs 37–38). Uncus reduced, fused with tegumen. Tegumen broad with pair of long flattened, apically rounded, truncate lateral projections, its inner surface setose. Gnathos with long clavate process, serrate basally becoming smooth towards its rounded apex. Valve trapezoidal, apically bifurcate. Costa with short, blunt, distal process at apex; costal margin slightly concave. Sacculus well-defined, third width of valve at base, tapering towards apex before broadening into short, pointed distal process. Juxta trapezoid, proximally V-shaped, distally bifurcate, with broad u-shaped emargination; each process heavily serrated. Vinculum V-shaped. Saccus cylindrical, rounded at apex. Phallus slightly longer than valve, gently curved medially; carina scobinate; coecum rounded. Vesica with scobination.

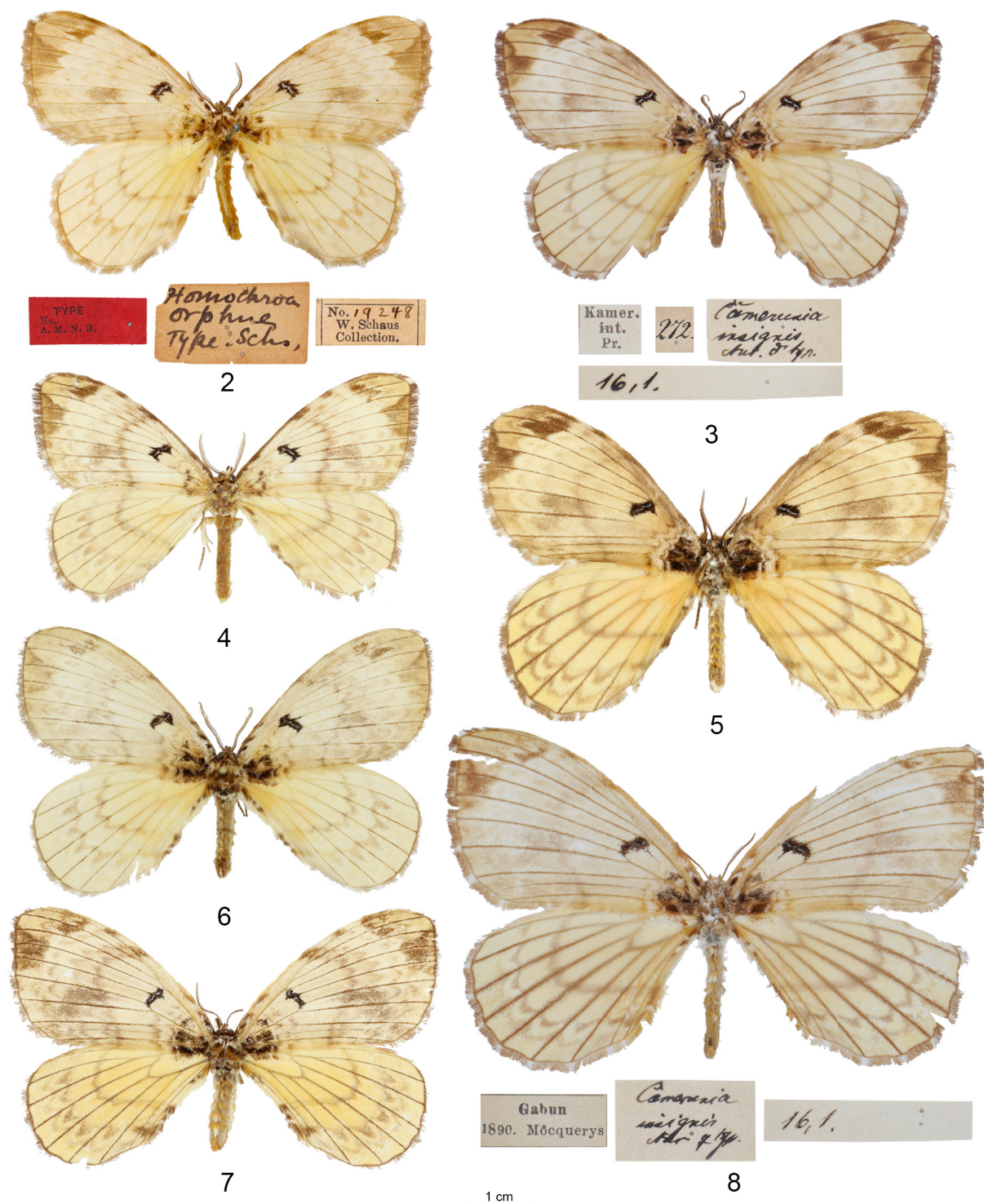
### **Female** (Figs 7–8)

FOREWING LENGTH. 36–48 mm.

Similar to male but larger, and rami of antenna half the length.

### **Variation**

Specimens from southern Cameroon, Gabon and D.R. Congo are in general larger (especially the females) and the males often display a strong pinkish hue at the base of the hindwing (Figs 5, 8). In the male genitalia, the extent of the serrations at the base of the clavate process of the gnathos varies greatly among individuals across its range.



**Figs 2–8.** *Camerunia orphne* (Schaus, 1893), adults. **2.** Holotype of *Homochroa orphne* Schaus, 1893, ♂ (AMNH). **3.** Lectotype of *C. insignis* Aurivillius 1893, ♂ (MfN). **4.** ♂, Sierra Leone, Kalainkay (ANHRT). **5.** ♂, Cameroon, Bitje (NHMUK). **6.** ♂, Guinea, Chute de Ditinn (ANHRT). **7.** ♀, Ivory Coast, Dolla Ranch (ANHRT). **8.** *C. insignis*, paralectotype, ♀ (MfN).

### Molecular characterisation

This species has been assigned three BINs: BOLD:AAO6637 (West Africa), BOLD:AAV7630 (D.R. Congo) and BOLD:ABZ1011 (Gabon). Intraspecific PWDs were 0.0–3.6% (n = 6) diverging from its nearest neighbour, *C. subrosea* (Aurivillius, 1893) comb. nov. by 8.6–11.2% (n = 4).

### Larval foodplant

Unknown.

### Distribution (Fig. 54)

This species is distributed in forested and savanna-forest mosaic habitats from Sierra Leone in the west to Central African Republic in the east and southward to Lualaba Province of D.R. Congo. It is known from Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Nigeria, Cameroon, Central African Republic, Gabon, Republic of Congo and Democratic Republic of Congo. It is likely present in Benin and Equatorial Guinea and may be found in Angola.

### Remarks

The holotype of *Homochroa orphne* (Fig. 2) was collected by Lieutenant-Colonel William George Clements of the Royal Army Medical Corps, who was stationed in Sierra Leone for 13 months in 1891–92. A list of the lepidopteran species collected during his tour of service was published in 1893 with the assistance of the American entomologist William Schaus, who after his travels in Central and South America had settled at Ormonde Lodge, Twickenham, London by 1890 (contrary to Heinrich & Chapin (1942) who stated 1901 – see Mitglieder-Verzeichniss in ‘Berliner Entomologische Zeitschrift’ (1890) and NHMUK Entomology Accessions Register for 1892). Perhaps the scientific endeavours of Godman & Salvin and their team of specialists working on the ‘Biologia Centrali-Americana’ publications to which Schaus had contributed by sharing Lepidoptera specimens, had enticed him to become London-based. Although Clements (1893: iii) stated that his specimens originated “with very few exceptions” from the “rocky peninsula of Sierra Leone” [= Western Area Peninsula], he sent several non-lepidopteran specimens to NHMUK from military cantonments in Freetown (Tower Hill Barracks [B.M. 1891–132] and Kortright Hill [B.M. 1892–11]), and it is assumed the type locality of the majority of the Lepidoptera taxa is in the broader Freetown Municipality. Although the publication in which the original description appears is co-authored, the authorship of the new taxa should be attributed solely to Schaus (and not to Schaus & Clements as seen in some web sources), for Clements clearly stated in the introduction (Schaus & Clements 1893: vi) that the descriptions are “from his [Schaus] pen”. It appears Schaus retained the majority of Clements’ Sierra Leonean Lepidoptera in his own collection after publication (Clements donated the remainder of the non-lepidopteran specimens he collected directly to NHMUK in 1893 [B.M. 1893–20]), and the types of the taxa described in the 1893 paper are now housed in AMNH (and not USNM as stated by Prozorov *et al.* 2023).

The description of *Camerunia insignis* was based on a male and a female in Otto Staudinger’s collection, now in MfN. To preserve the stability of nomenclature by fixing the published name to a single specimen, the male specimen from Cameroon is hereby designated as the lectotype (Fig. 3). This specimen was collected by Paul Preuss in “Camerun interior”, which likely refers to Barombi station in the Southwest Region of Cameroon. Having departed Sierra Leone for Cameroon in 1888 (Anonymous 1900), Preuss joined the Zintgraff Expedition as a botanist and naturalist, where he was put in charge of Barombi station (Zintgraff 1895). Preuss had been collecting Lepidoptera for Staudinger since his arrival on the African continent (Anonymous 1901) and had supplied him with specimens from Barombi soon after his arrival in Cameroon, which Staudinger then shared with other entomologists for research purposes (e.g., Kirby 1890). After a brief return to Germany in 1889, Preuss was then permanently employed by the German Foreign Office (Auswärtiges Amt) as a scientific researcher in Cameroon and as an employee

of the government, Preuss had no option but to make his collections available to the state (Anonymous 1900). It was at this time that the MfN started to receive specimens from Preuss, not only from Barombi but also from Buea and Victoria [= Limbé] with Ferdinand Karsch working up the various insect groups (e.g., Karsch 1893) in several publications during the early 1890s. Although only “Kamer. / int.” appears on the label, Staudinger stated in his publications that Barombi station was located “im Hinterlande von Kamerun” (Staudinger 1891) and “im Inneren Kameruns” (Staudinger 1896) and thus it is assumed that this label refers to the Barombi station area. Staudinger attached square printed labels on cream paper with a black border (often cut off) for Preuss’ specimens (see lectotype label in Fig. 3), whereas those acquired by MfN directly from Preuss seem to be labelled with rectangular “Kamerun / Barombi-Stat. / Preuss S.” labels printed on blue paper.

The paralectotype female (Fig. 8) was collected by Albert Mocquerys, a commercial natural history collector based in Gabon during the early 1890s. It appears Staudinger was the sole recipient and distributor of Lepidoptera collected by Mocquerys in 1890, from “Gabun” and “Ogowé”, describing several new species of butterfly in 1892 from this material. Although no precise locality was provided for either, it is interesting to note that Staudinger (1892: 219) seemed to distinguish the two sites in reference to a species he had received in large numbers “von Gabun, vom Ogowé und auch von der Barombi-station [= from Gabon, from Ogowé and also from Barombi-station]”. This is further supported by Holland’s (1896) revisionary work on the Afrotropical HesperIIDae (for which Staudinger had made “all the types...and all the unnamed material in his vast collection” freely available for study (Holland 1896: 4)) where, of the numerous citations of material collected by Mocquerys, “Gaboon” and “Valley of the Ogowé” are once more kept separate. One might speculate that the “Gabun” locality on the label refers to the Gabon Estuary at Libreville, whereas “Ogowé” certainly refers to the Ogooué River, which he successfully navigated to Lambaréné mission in 1892 and from where he sent another shipment of specimens (e.g., Stempffer *et al.* 1974).

***Camerunia flava* Aurivillius, 1904**

Figs 1, 9–16, 39–40, 49, 55

*Camerunia flava* Aurivillius, 1904: 697, pl. 33 figs 5–6. Type locality: “[Malawi] Zomba; [Tanzania] Tanganyika; [Zambia] Stevenson road on the plateau between Nyassa and Tanganyika”.

*Camerunia lactiflora* Wichgraf, 1914: 393. Type locality: [Tanzania] “Tanganjikasee”.

*Hibrildes flava* – Hampson 1910: 453.

*Camerunia flava* – Strand 1911: 271. — Gaede 1927: 306, pl. 46 fig. c. — Pinhey 1962: 878. — Kiriakoff 1954: 11. — Forbes 1955: 94, 129. — Vári *et al.* 2002: 150. — Kitching *et al.* 2018: suppl. material 1. — Krüger 2020: 138.

*Camerunia flava* var. *lactiflora* – Gaede 1927: 306. — Vári *et al.* 2002: 150 (syn.).

**Diagnosis**

The uniform colouration of the wings of both sexes easily distinguishes this species from its congeners. The only species that can potentially be confused with it is *C. bimaculata* (Dewitz, 1879) comb. rev. but in the latter, the wings are of different shades (the forewing beige and the hindwing a rich yellow), a bold discal marking is more often than not present, and the postmedial and submarginal fasciae are indicated with dots along the veins and well-defined. The male genital capsule of *C. flava* is most like that of the phenotypically different *C. albida*, although in the latter, each of the lateral projections of the tegumen is broader and possesses two spines (absent in *C. flava*), one near its base and another, twice as long, along the dorsal margin. Additionally, in *C. albida* the spine-like formations of the gnathos are widely spaced and are the longest in the genus, and the phallic tube tapers towards the carina.



## Type material

### Lectotype of *Camerunia flava* (by present designation)

ZAMBIA • ♂ (Fig. 9); “Type [white disc with red border] // Stevenson Rd, / on the plateau / between Tanganyika / & Nyassa. / Coll.&Pres.by / Rev. A. Dewar. / 97–285. // *Camerunia / flava*. / type ♂. Auriv. [handwritten in G. Hampson’s hand] // BMNH(E)1626188 [QR Code]”; NHMUK.

### Paralectotypes of *Camerunia flava*

TANZANIA • ♀; “Tanganyika / 91.56. [handwritten]”; NHMUK.

ZAMBIA • ♂; “Stevenson Rd, / on the plateau / between Tanganyika / & Nyassa. / Coll.&Pres.by / Rev. A. Dewar. / 97–285.”; NHMUK • ♀; “Type [white disc with red border] // Zomba. / 99–337. / 8.XII.97 [partially handwritten] // *Camerunia / flava*. / type ♀ Auriv. [handwritten in G. Hampson’s hand] // BMNH(E)1626457 [QR Code]”; NHMUK.

### Holotype of *Camerunia lactiflora*

TANZANIA • ♂ (Fig. 10); “Type [handwritten in Wichgraf’s hand; red card with black margin] // V. Nyanza [handwritten in Wichgraf’s hand] // *Camerunia / lactiflora* Wf. [handwritten in Wichgraf’s hand] // J.J. Joicey coll. / B.M. 1928-81 [handwritten in Tams’ hand] // *Camerunia / lactiflora* / Wichgraf / 1914 / TYPE [handwritten in Tams’ hand] // BMNH(E)1627072 [QR Code]”; NHMUK.

### Other material examined (249 ♂♂, 31 ♀♀)

ANGOLA – **Moxico** • 1 ♂; Moxico District; 1219 m a.s.l.; Oct. 1928; T.A. Barns leg.; NHMUK.

BURUNDI – **Gitega** • 1 ♂; Gitega; 2 Mar. 1968; M. Fontaine leg.; RMCA.

CAMEROON – **Adamawa** • 1 ♂; Wack; 07°40′16.5″ N, 13°33′18.4″ E; 900 m a.s.l.; 2–21 Oct. 2018; S. Sáfián and G. Simonics leg.; ANHRT • 1 ♂; Yala Yarna; 1150 m a.s.l.; 5 Jul. 1975; P. Darge leg.; ANHRT.

DEMOCRATIC REPUBLIC OF CONGO – **Haut-Katanga** • 1 ♂; Elisabethville [= Lubumbashi]; 28 Nov. 1930; C. Seydel leg.; RMCA • 1 ♀; Etoile du Congo; Jan. 1913; Ternest leg.; RMCA • 1 ♂; La Kafubu; Apr. 1926; C. Seydel leg.; RMCA • 1 ♂; Likasi, Panda; 1372–1524 m a.s.l.; A.E.D. Ashe leg.; NHMUK • 2 ♂♂; Likosi [= Likasi]; OUMNH • 1 ♂; Luano; 25 Feb. 1957; C. Seydel leg.; RMCA • 1 ♂; Mwera; 10 Mar. 1957; T. de Caters leg.; RMCA • 1 ♂; same locality as for preceding; 23 Feb. 1982; RMCA • 1 ♂; Parc National de l’Upemba, Kaziba; 5–20 Feb. 1948; Mission G.F. de Witte leg.; RMCA. – **Haut-Lomami** • 1 ♂; Bukama; 23 Nov. 1925; C. Seydel leg.; RMCA. – **Haut-Uele** • 1 ♂; Dungu; NHMUK • 1 ♂; Parc National de la Garamba, Cellule I; 22 Apr. 1950; Mission H. De Saeger leg.; RMCA • 1 ♀; same data as for preceding; 10 May 1950; RMCA. – **Lualaba** • 1 ♂; Kafakumba; Dec. 1931; NHMUK • 1 ♂; Kalule Nord; Jan. 1948; C. Seydel leg.; RMCA • 1 ♂; Mutaka; Feb. 1955; T. de Caters leg.; RMCA. – **Tanganyika** • 1 ♀; Kiambi; 1911; D. Valdonio leg.; RMCA • 2 ♂♂, 1 ♀; Km 300 of Kindu [= Lubunda]; E. Russo leg.; RMCA • 1 ♂; Lusaka; 1901; NHMUK • 4 ♂♂; Region de M’Pala; M. Guillemé leg.; NHMUK.

MALAWI – **Central** • 1 ♂; Dzalanyama Forest; 1320 m a.s.l.; 24 Nov. 2002; P. Schmit leg.; ANHRT. – **Northern** • 1 ♂; Chintechi [= Chintechi]; Jan.–May 1924; T.H. Lloyd leg.; NHMUK • 1 ♂; Kasangazi, near Bandawe; 914 m a.s.l.; G. Prentice leg.; NHMUK • 1 ♂; Nkhorongo, Mzuzu; 1300 m a.s.l.; 1 Dec. 2002; P. Schmit leg.; RCPB. – **Southern** • 1 ♀; Chikala, near Lake Sheiwa; Feb. 1920; H. Barlow leg.; NHMUK • 1 ♂; Likomgala River, Zomba; Jan. 1922; H. Barlow leg.; NHMUK • 1 ♀; Maiwale; 1000 m a.s.l.; 9 Dec. 1929; W.A. Lamborn leg.; OUMNH • 2 ♂♂; Zomba; 914 m a.s.l.; Oct.–Dec. 1895; P. Rendall leg.; NHMUK • 2 ♂♂; same data as for preceding; Jan. 1895; NHMUK • 1 ♀; same locality as for preceding; Dec. 1922; H. Barlow leg.; NHMUK • 1 ♀; Zomba Plateau; Nov. 1920; H. Barlow leg.;



NHMUK • 1 ♂; same data as for preceding; Dec. 1920; NHMUK • 2 ♂♂; same data as for preceding; Jan. 1921; NHMUK.

**SOUTH SUDAN – Central Equatoria • 2 ♂♂; Kajokaji [= Kajo-Keji]; 10 Jul. 1913; NHMUK. – Western Equatoria • 1 ♂, 2 ♀♀; Tambura; NHMUK.**

**TANZANIA – Dodoma • 1 ♂; Kikori, Kondoa; 25 Feb. 1930; NHMUK. – Geita • 1 ♂; Geita Forest; 2°54.697' S, 32°06.168' E; 1234 m a.s.l.; 12 Dec. 2010; P. Darge leg.; ANHRT • 1 ♂; same data as for preceding; 24 Oct. 2011; ANHRT • 2 ♂♂; Katolo Village, Geita Forest; 2°53.552' S, 32°09.442' E; 1304 m a.s.l.; 15 Oct. 2011; P. Darge leg.; ANHRT. – Iringa • 1 ♂, 1 ♀; Lungemba Village; 8°11.460' S, 35°22.131' E; 1755 m a.s.l.; 24 Dec. 2011; P. Darge leg.; ANHRT • 1 ♂; Mufindi; 1955; P. Burdon leg.; NHMUK. – Kagera • 1 ♂; Biharamulo; 25 Oct. 2008; P. Darge leg.; ANHRT • 3 ♂♂; Kiyamyulwa; 2°08.708' S, 31°36.602' E; 1159 m a.s.l.; 27 Oct. 2008; P. Darge leg.; ANHRT • 1 ♂; same data as for preceding; 26 Mar. 2010; ANHRT • 2 ♂♂; same data as for preceding; 28 Mar. 2010; ANHRT • 1 ♂; Maninga; 2°09.189' S, 31°40.144' E; 1320 m a.s.l.; 4 Nov. 2008; P. Darge leg.; ANHRT. – Katavi • 5 ♂♂; Kinegela Village; 6°02.511' S, 30°55.726' E; 1384 m a.s.l.; 27 Dec. 2015; P. Darge leg.; ANHRT • 1 ♂; near Majalila Village; 6°07.636' S, 30°56.524' E; 6 Dec. 2012; P. Darge leg.; ANHRT • 1 ♂; route Kabungu/Sibweza; 6°30.556' S, 30°47.195' E; 1080 m a.s.l.; 21 Feb. 2012; P. Darge leg.; ANHRT • 3 ♂♂; Vikonge; 6°07.733' S, 30°56.464' E; 1287 m a.s.l.; 29 Feb. 2012; P. Darge leg.; ANHRT • 1 ♂; same data as for preceding; 26 Feb. 2012; ANHRT • 1 ♂; Vikonge “B”; 6°07.566' S, 30°56.528' E; 1280 m a.s.l.; 1 Dec. 2012; P. Darge leg.; ANHRT. – Kigoma • 1 ♂; Kasulu; 18 Nov. 1923; C.H.B. Grant leg.; NHMUK • 2 ♂♂; Masito escarpments from Mshamo village; 15 Dec. 2017; P. Darge leg.; ANHRT. – Mbeya • 4 ♂♂, 1 ♀; Mbeya; 28 Nov. 1950; H.B.D. Kettlewell leg.; NHMUK. – Njombe • 3 ♂♂; Iyayi savanna; 8°51.609' S, 34°31.278' E; 1400 m a.s.l.; 4 Apr. 2006; P. Darge leg.; ANHRT • 1 ♂; same data as for preceding; 9 Feb. 2008; ANHRT • 1 ♂; Kidungala savana; 9°08.523' S, 34°37.531' E; 1754 m a.s.l.; 3 Jan. 2011; P. Darge leg.; ANHRT • 1 ♂; Njombe; 1829–1981 m a.s.l.; 21 Jan. 1952; W. Peters leg.; NHMUK. – Rukwa • 2 ♂♂; Luafi Game Reserve; 7°26.985' S, 30°54.246' E; 1266 m a.s.l.; 5 Nov. 2007; P. Darge leg.; ANHRT • 5 ♂♂; Kalambo Forest Reserve; 8°21.596' S, 31°15.221' E; 1632 m a.s.l.; 22 Nov. 2009; P. Darge leg.; ANHRT • 3 ♂♂; Mbizi Mountains Forest Reserve; 7°53.014' S, 31°41.990' E; 2200 m a.s.l.; 10 Dec. 2015; P. Darge leg.; ANHRT. – Ruvuma • 1 ♂; Gumbiro; 10°02.249' S, 35°38.931' E; 1013 m a.s.l.; 24 Dec. 2009; P. Darge leg.; ANHRT • 2 ♂♂; near Kitai; 10°42.340' S, 35°12.339' E; 1020 m a.s.l.; 24 Mar. 2006; P. Darge leg.; ANHRT • 3 ♂♂; Magingo; 10°02.258' S, 35°38.945' E; 1030 m a.s.l.; 26 Mar. 2006; P. Darge leg.; ANHRT • 1 ♂; Songea; A. Reuss leg.; MfN • 1 ♂; Tabora; M. Wintgens leg.; MfN • 1 ♀; same locality as for preceding; 16 Mar. 1892; Baron L. Fischer; NHMW • 1 ♀; Ugano bei Songea; 10 Jan. 1934; F. Zimmer leg.; NHMW. – Tabora • 1 ♂; Lulanguu; 1148 m a.s.l.; 19 Nov. 1917; G.D.H. Carpenter leg.; OUMNH • 1 ♀; same data as for preceding; 18 Nov. 1917; OUMNH. – Tanga • 1 ♂; Shume forest, West Usambara Mts; 4°40.976' S, 38°14.464' E; 1876 m a.s.l.; 28 Nov. 2008; P. Darge leg.; ANHRT • 1 ♂; Tamota Forest; 5°35.531' S, 37°33.129' E; 731 m a.s.l.; 27 Nov. 2015; P. Darge leg.; ANHRT.**

**ZAMBIA – Central • 1 ♀; Broken Hill [=Kabwe]; 1311 m a.s.l.; 1 Dec. 1931; C.R.S. Pitman leg.; NHMUK • 2 ♂♂; Changwena Falls; 13°22'48" S, 29°33'18" E; 1456 m a.s.l.; 27–30 Jan. 2019; V. Dérozier, L. Mulvaney and H. Takano leg.; ANHRT • 1 ♂; Forest Inn, Mkushi; 13°43'19" S, 29°09'26" E; 1240 m a.s.l.; 28–29 Feb. 2017; D. Oram, W. Miles and L. Mulvaney leg.; ANHRT • 1 ♂; same locality as for preceding; 18 Feb. 2019; V. Dérozier, L. Mulvaney and H. Takano leg.; ANHRT • 2 ♂♂; Kabwe, Kasanka National Park; 12°32'28" S, 30°12'42" E; 1187 m a.s.l.; 30 Nov.–1 Dec. 2012; R. Smith and H. Takano leg.; ANHRT • 1 ♂; Kasanka River Pontoon, Kasanka National Park; 12°34'23" S, 30°14'05" E; 1191 m a.s.l.; 2–4 Dec. 2012; R. Smith and H. Takano leg.; ANHRT • 3 ♂♂; Lake Wasa, Kasanka National Park; 12°33'19" S, 30°17'43" E; 1193 m a.s.l.; 5 Dec. 2012; R. Smith and H. Takano leg.; ANHRT • 1 ♂; Mayukuyuku, Kafue National Park; 14°54'55" S, 26°03'47" E; 1080 m a.s.l.; 21–26**

Nov. 2013; R. Smith, H. Takano and D. Oram leg.; ANHRT. – **Copperbelt** • 1 ♂; Forestry office, Chati; 12°51' S, 27°41' E; 1200 m a.s.l.; 3 Nov. 1969; S.M. Tanner leg.; ANHRT • 1 ♂; Greystone, Kitwe; 12°55'50" S, 28°14'29" E; 1179 m a.s.l.; 1–4 Nov. 2012; R. Smith and H. Takano leg.; ANHRT • 1 ♂; Jan Fisher Farm, Chingola; 12°36'10" S, 27°55'48" E; 1365 m a.s.l.; 14–17 Nov. 2019; M. Bashford, W. Miles and L. Mulvaney leg.; ANHRT • 2 ♂♂; N'kana; L. Ellison leg.; NHMUK • 1 ♂; Ponduckie, Chati; 12°51' S, 27°41' E; 1200 m a.s.l.; 5 Nov. 1969; S.M. Tanner leg.; ANHRT. – **Eastern** • 1 ♂; Chengirani; 14°17'51.0" S, 31°20'06.3" E; 1000 m a.s.l.; 25 Nov. 2023; M. Bashford, A. Collins, G. László, L. Morgan and A. Volynkin leg.; ANHRT. – **Luapula** • 1 ♂; Ntumbachushi Falls; 9°51'12" S, 28°56'40" E; 1166 m a.s.l.; 3–4 Nov. 2014; R. Smith, H. Takano and D. Oram leg.; ANHRT • 1 ♂; same locality as for preceding; 1–3 Feb. 2019; V. Dérozier, L. Mulvaney and H. Takano leg.; ANHRT. – **Lusaka** • 1 ♀; Lusaka; Feb. 2007; C. Di Gennaro leg.; ANHRT • 2 ♂♂; Rufunsa Ranch, Lower Zambezi National Park; 15°22' S, 29°18' E; 1137 m a.s.l.; 14–16 Dec. 2012; R. Minetti leg.; ANHRT. – **Muchinga** • 6 ♂♂, 1 ♀; Benyanga village; 10°40'41" S, 33°27'45" E; 1250 m a.s.l.; 7–12 Feb. 2023; G. László, L. Morgan and A. Volynkin leg.; ANHRT • 1 ♂; Danger Hill; 11°35.50' S, 31°34.24' E; 1703 m a.s.l.; 16 Nov. 2011; R. Minetti leg.; ANHRT • 1 ♂; same locality as for preceding; 11°37'38" S, 31°33'56" E; 1684 m a.s.l.; 13–15 Dec. 2023; G. László, L. Morgan and A. Volynkin leg.; ANHRT • 11 ♂♂, 1 ♀; Jombo village; 10°27'01" S, 33°14'30" E; 1400 m a.s.l.; 30 Nov.–5 Dec. 2023; M. Bashford, A. Collins, G. László, L. Morgan and A. Volynkin leg.; ANHRT • 2 ♂♂, 3 ♀♀; Kapishya Hot Springs; 11°10'13" S, 31°36'00" E; 1437 m a.s.l.; Jan. 2015; M. Harvey leg.; ANHRT • 4 ♂♂; same data as for preceding; Jan.–Mar. 2017; ANHRT • 7 ♂♂; same data as for preceding; Jan.–Mar. 2016; ANHRT • 5 ♂♂; same collecting data as for preceding; Dec. 2014; ANHRT • 4 ♂♂; same data as for preceding; 14–16 Mar. 2017; ANHRT • 5 ♂♂, 1 ♀; same locality as for preceding; 22 Nov.–8 Dec. 2015; R. Smith, H. Takano and D. Oram leg.; ANHRT • 3 ♂♂; same data as for preceding; 17–21 Nov. 2016; ANHRT • 1 ♂; same locality as for preceding; 1–5 Mar. 2017; D. Oram, W. Miles and L. Mulvaney leg.; ANHRT • 3 ♂♂, 1 ♀; Kalungu; 9°40'52" S, 32°42'50" E; 1280 m a.s.l.; 22–24 Nov. 2016; R. Smith, H. Takano and D. Oram leg.; ANHRT • 1 ♂; same locality as for preceding; 5–8 Mar. 2017; D. Oram, W. Miles and L. Mulvaney leg.; ANHRT • 1 ♂; same data as for preceding; 11 Mar. 2017; ANHRT • 1 ♂; Lukulu River, Lavushi Manda National Park; 12°15'05" S, 30°53'43" E; 1285 m a.s.l.; 27–29 Nov. 2012; R. Smith and H. Takano leg.; ANHRT • 1 ♂; Makutu Mts, gully at foot of main ridge; 10°27'27" S, 33°12'51" E; 1570 m a.s.l.; 2–4 Dec. 2023; M. Bashford, A. Collins, G. László, L. Morgan and A. Volynkin leg.; ANHRT • 4 ♂♂; Mama Muwowo's Lodge, Muyombe; 10°32'40" S, 33°26'05" E; 1230 m a.s.l.; 6–7 Dec. 2023; G. László, L. Morgan and A. Volynkin leg.; ANHRT • 4 ♂♂; Mpika; Nov. 1950; H.B.D. Kettlewell leg.; NHMUK • 2 ♂♂; Mutinondo Wilderness Area; 12°27'06" S, 31°17'30" E; 1460 m a.s.l.; 26–29 Nov. 2016; R. Smith, H. Takano and D. Oram leg.; ANHRT. – **Northern** • 1 ♂; Abercorn [= Mbala]; Feb. 1934; D. Vesey-FitzGerald leg.; NHMUK • 14 ♂♂, 6 ♀♀; Chilambwe Falls; 9°50'13" S, 30°43'35" E; 1420 m a.s.l.; 8–9 Nov. 2014; R. Smith, H. Takano and D. Oram leg.; ANHRT • 25 ♂♂; same locality as for preceding; 8–12 Feb. 2019; V. Dérozier, L. Mulvaney, R. Smith and H. Takano leg.; ANHRT • 1 ♂; Chisimbe Falls; 10°06'31" S, 30°55'02" E; 1320 m a.s.l.; 27–29 Apr. 2013; R. Smith, H. Takano and D. Oram leg.; ANHRT • 1 ♂; Lumangwe Falls; 9°32'33" S, 29°23'17" E; 1187 m a.s.l.; 4–7 Feb. 2019; V. Dérozier, L. Mulvaney, R. Smith and H. Takano leg.; ANHRT • 1 ♂; Ndole Bay; 08°28'42" S, 30°26'59" E; 777 m a.s.l.; 23–25 Nov. 2012; R. Smith and H. Takano leg.; ANHRT. – **Northwestern** • 1 ♂; Kalene Hill; 11°11'11" S, 24°12'05" E; 1440 m a.s.l.; 6 Nov. 2018; M. Aristophanous, V. Dérozier, G. László and D. Oram leg.; ANHRT • 1 ♂; Hillwood, Ikelenge; 11°16'02" S, 24°18'59" E; 1400 m a.s.l.; 25–27 Nov. 2014; R. Smith and H. Takano leg.; ANHRT • 1 ♂; Jiwundu Swamp; 11°51'54" S, 25°33'20" E; 1340 m a.s.l.; 25–30 Oct. 2017; M. Carter, A. Lloyd, W. Miles, D. Oram and R. Smith leg.; ANHRT • 2 ♂♂; Nyangombe Falls; 11°48'25" S, 24°32'12" E; 1300 m a.s.l.; 15–17 Nov. 2018; M. Aristophanous, V. Dérozier, G. László and D. Oram leg.; ANHRT • 4 ♂♂, 1 ♀; same locality as for preceding; 17–23 Nov. 2019; M. Bashford, W. Miles, L. Mulvaney and R. Smith leg.; ANHRT • 1 ♂; Solwezi; 28 Nov. 1917; H.C. Dollman leg.; NHMUK • 3 ♂♂; Zambezi Rapids; 11°07'30" S, 24°11'06" E; 1205 m a.s.l.; 4–9 Nov. 2018; M. Aristophanous, V. Dérozier, G. László and D. Oram leg.; ANHRT.

UGANDA – **Northern** • 1 ♂; Abim, Lebwor Hills; Aug. 2016; J.P. Lequeux leg.; RCPB • 1 ♂; Ajulu, Gulu District; 1035 m a.s.l.; 10 Apr. 2010; P. Schmit leg.; RCPB.

### **Literature records**

MALAWI • Livingstonia (Pinhey 1962).

### **Redescription**

**Male** (Figs 9–14, 49)

FOREWING LENGTH. 34–42 mm.

UPPERSIDE. Ground colour of head, thorax and wings yellow; abdomen black. Antenna bipectinate, dark brown with beige scaling along entire length of shaft. Abdomen scattered with pale straw-coloured ciliate scales and tufts of yellow, longer ciliate scales medially forming crest running along abdomen. Each abdominal segment with reddish-orange scales along posterior margin giving abdomen banded appearance. Eighth sternite gently concave posteriorly, heavily sclerotised along midline; its surface covered throughout in fine punctures. Forewing triangular, rounded at apex; outer margin almost straight but rounded at tornus. Postmedial fascia pale brown, gently arcuate and weakly defined (almost invisible in some). Postmedial fascia from underside weakly showing through, often placed distally of one on upperside. Submarginal fascia from underside weakly showing through in some specimens. Fringe dark yellow. Hindwing outer margin evenly rounded. Postmedial fascia arcuate broadly following margin. Submarginal fascia from underside weakly showing through. Fringe dark yellow.

UNDERSIDE. Ground colour of head, thorax and abdomen golden yellow. Tibia and tarsi of fore- and mid-legs greyish-brown, tarsi of hindlegs slightly paler. Ground colour of wings as on upperside. Fasciae on both wings better defined than on upperside, submarginal fasciae slightly crenulate.

MALE GENITALIA (Figs 39–40). Uncus reduced, fused with tegumen. Tegumen broad with pair of long, flattened, apically rounded, truncate lateral projections; inner surface basally with apically arcuate pad, heavily spinulose along outer margin; entire surface heavily setose. Gnathos emarginate distally, heavily spinulose on either side of emargination. Valve elongate, triangular and cleft (about halfway along valve). Costa bifurcate at apex; costal margin slightly concave. Saccus well-defined, tapering apically into gently curved distal process. Juxta trapezoid, distally U- or V-shaped. Vinculum V-shaped. Saccus cylindrical, rounded at apex. Phallus slightly longer than valve, gently curved medially; coecum rounded. Vesica with scobination.

**Female** (Figs 15–16)

FOREWING LENGTH. 30–37 mm.

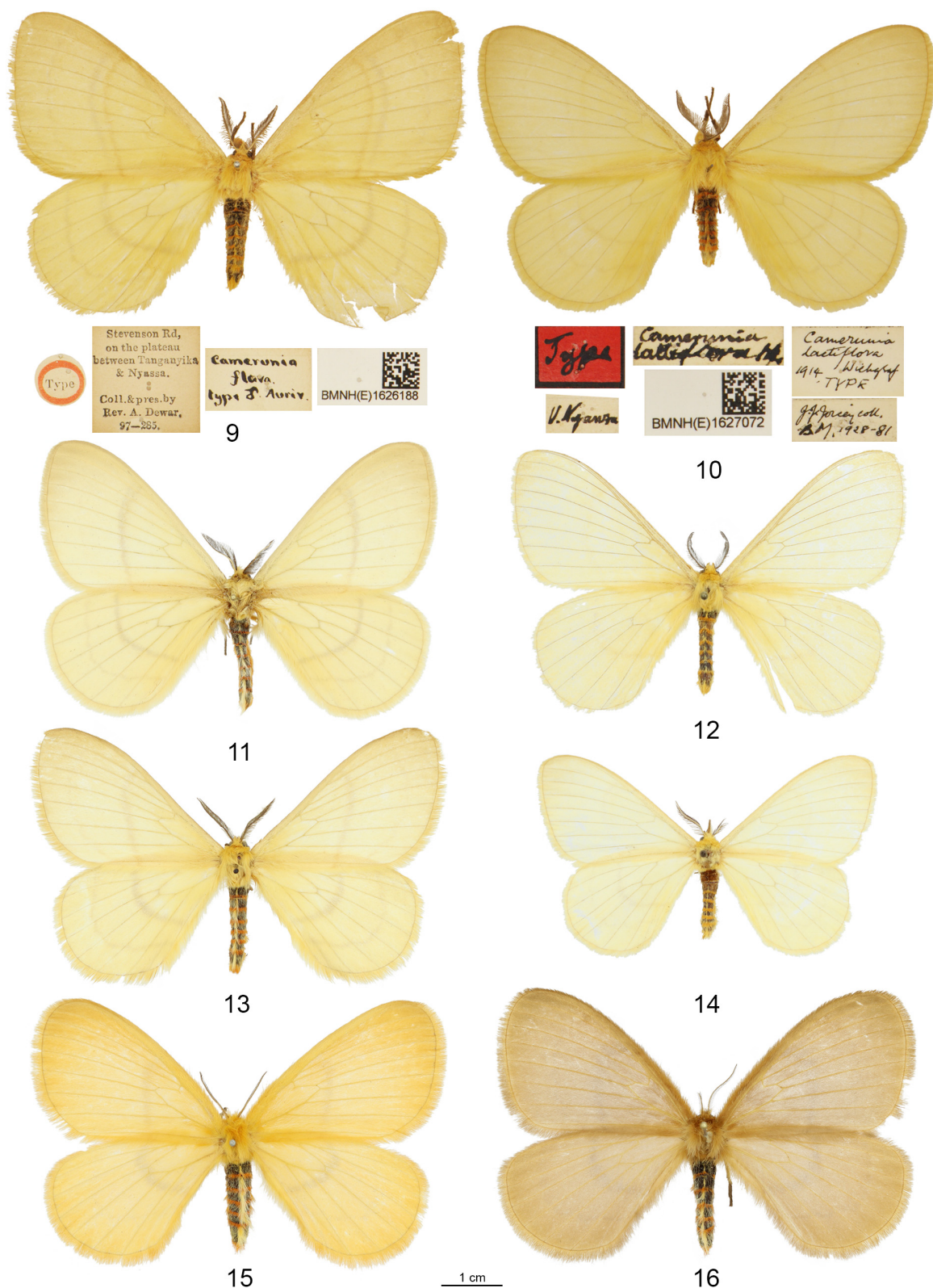
Similar to male but rami of antenna shorter and ground colour of head, thorax and wings ranging from canary-yellow through to brown.

### **Variation**

Female specimens from Zomba and southern Malawi generally display a warm yellow ground-colour of the wings (Fig. 15) compared to the rest of the population, which is brown (Fig. 16). However, this appears to be a localised form; with there being no differences in the male phenotype or genitalia.

### **Larval foodplant**

Unknown.



**Figs 9–16.** *Camerunia flava* Aurivillius, 1904, adults. **9.** Lectotype, ♂ (NHMUK). **10.** Holotype of *C. lactiflora* Wichgraf, 1914, ♂ (NHMUK). **11.** ♂, Zambia, Chilambwe Falls (ANHRT). **12.** ♂, Cameroon, Wack (ANHRT). **13.** ♂, Malawi, Zomba (NHMUK). **14.** ♂, Sudan, Tambura (NHMUK). **15.** ♀, Malawi, Zomba (NHMUK). **16.** ♀, Zambia, Chilambwe Falls (ANHRT).

### Molecular characterisation

This species has been assigned three BINs: BOLD:AFG4533 (Cameroon), BOLD:AAU2961 (Tanzania), BOLD:ABX5434 (D.R. Congo) and BOLD:AFG4806 (Zambia). Intraspecific PWDs were 0.2–5.8% (n = 9) diverging from its nearest neighbour, *C. smithi* sp. nov. by 8.8–9.4% (n=2).

### Distribution (Fig. 55)

This species is widely distributed throughout woodland habitats and forest-savanna transitional zones in central and eastern Africa, with an isolated population in Cameroon. It is absent from the rainforests of the Congo Basin and is found no further west than the Cameroon highlands, and no further south than the Zambezi River. This species is known from Cameroon, D.R. Congo, South Sudan, Uganda, Rwanda, Tanzania, Malawi, Zambia and Angola. It is likely present in Burundi, Kenya and Mozambique, and may be found in the Central African Republic.

### Remarks

The two male and two female syntypes of *C. flava* are all held in NHMUK. To preserve the stability of nomenclature by fixing the published name to a single specimen, the best-preserved male specimen from the Stevenson Road, collected by Reverend Alexander Dewar, is designated as the lectotype (Fig. 9). The Stevenson Road was a thoroughfare that linked the northern end of Lake Malawi with the southern end of Lake Tanganyika, running broadly parallel to the Tanzania-Zambia border. Dewar served with the Free Church of Scotland at Livingstonia, Malawi, and founded the mission station at Mwenzo, where he was stationed between 1894–1896 (Jack 1901); it is most probable that the two male specimens were captured there. George Hampson noted that the two female specimens in the syntype series from Zomba, Malawi, and ‘Tanganyika’ differed slightly in appearance (Aurivillius 1904: 698). The Malawian specimen was collected by Brigadier-General Sir William Manning, deputy commissioner of British Central Africa at the time, and the Tanzanian specimen was collected by Alexander Carson, a London Missionary Society agent, likely originating from the southern half of Lake Tanganyika based on his published observations (Carson 1892) and other specimens he collected (Butler 1895).

In the original description of *C. lactiflora*, Wichgraf (1914) provided the type locality as Lake Tanganyika, but the label attached to the specimen suggests the specimen was taken at Lake Victoria (Fig. 10). It is presumed, however, that the former is the true type locality, as Wichgraf (1914) stated “Vom Bahnbau in der Nähe des Tanganjikasees [From the railway construction near Lake Tanganyika]” for another species described in the same paper. The Tanganyika Railway (*Tanganjikabahn*) linking Dar es Salaam with Kigoma was completed in early 1914, with the line to Kalenge, 30 km from the lake, opening to the public by October 1913 (Baltzer 1916). Although a railway line towards Lake Victoria (Ruandabahn) had been planned, it was only approved in 1914 (Baltzer 1916), and thus the locality data on the holotype specimen is likely a typographical error by Wichgraf. Gaede’s (1927) reference to Ethiopia for var. *lactiflora* is difficult to interpret and although possible that he had seen material from this region, it is unlikely.

### *Camerunia albida* Aurivillius, 1901

Figs 17–19, 41, 50, 56

*Camerunia albida* Aurivillius, 1901b: 27, fig. 17. Type locality: [Tanzania] “Nyangao”.

*Camerunia albida* – Gaede 1927: 306, pl. 46 fig. c. — Kitching *et al.* 2018: suppl. material 1.

## Type material

### Holotype

TANZANIA • ♂ (Fig. 17); “Typus [red card with black border] // Deutsch. Ost- / Afrika // *Camerunia* / *albida* Aur. typ [handwritten in Aurivillius’ hand] // NHRS-SRAH / 000001416”; NHRS.

## Diagnosis

This is the smallest species in the genus, and its creamy-white habitus is highly distinctive and perhaps most reminiscent of male *Hibrildes*, although in the latter, the wings are more translucent and lack markings except for the well-defined veins. The discal markings are similar to *C. bimaculata* (Dewitz, 1879) comb. rev. and *C. subrosea*, (Aurivillius, 1893) comb. nov. but in these two species, the markings are composed of two or three spots, rather than the four in *C. albida*. The apical patch and subterminal markings are not dissimilar to *C. orphne* and *C. smithi* sp. nov., but the ground colour of both these species is straw-yellow and the forewings display a distinctive dark basal patch. The eighth sternite of *C. albida* shares similarities with *C. smithi* in the heavily setose posterior margin and emarginate posterior margin, but in the latter, the sternite tapers posteriorly and the margin is deeply emarginate. The ground plan of the male genital capsule is most similar to *C. flava* but in the latter, the lateral projections of the tegumen are narrower, lacking the two long spines, and instead an apically arcuate pad with a heavily spinulose outer margin is present near the base of the inner surface. Furthermore, in *C. flava*, the gnathos is smaller and the spines are considerably shorter and more densely packed.

## Redescription

### Male (Figs 17, 50)

FOREWING LENGTH. 27 mm.

UPPERSIDE. Ground colour of head, thorax and wings creamy-white; abdomen pale brown. Vertex and patagium irrorated with brown scaling. Antenna bipectinate, dark brown. Abdomen irrorated with creamy-white scaling, abdominal segments with pale yellow scaling posteriorly giving banded appearance; anal tuft pale yellow. Eighth sternite gently concave anteriorly and weakly emarginate posteriorly, with some sclerotisation along midline; its surface covered throughout in fine punctures, heavily setose along posterior margin with longer setae medially. Forewing triangular, rounded at apex, outer margin gently arcuate; costa with brown scaling basally. Antemedial fascia dark brown, sinuate, indistinct. Cell bisected with longitudinal brown fascia running from base to medial vein. Dark brown scaling along vein CuP from base to outer margin. Discal marking black, quadruple, pair on either side of medial vein; outer pair larger with curved margins distad, inner pair smaller, one placed costad indistinct. Postmedial fascia dark brown, arcuate, gently crenulate; fascia arising perpendicularly just over halfway along costa and gently curved inwards at vein M1, terminating almost perpendicularly to anal margin. Large, broadly diamond-shaped, dark brown marking present at intersection of postmedial fascia and vein CuA1, about 5 mm wide and almost reaching veins on either side. Submarginal fascia dark brown, sinuate, running in line with postmedial fascia. Triangular apical patch, dark brown, its inner and outer edges placed equally just distad of submarginal fascia and proximad of subterminal area, respectively. Subterminal area dark brown, demarked proximally by sinuate margin arising near apex, broadening to be at its widest at vein M2, tapering towards vein CuA1 and petering out near tornus. Two indistinct dark brown spots placed proximad of the subterminal area in spaces CuA1 and CuA2. Fringe creamy-white (although unclear based on the limited remnants of the holotype).

HINDWING. Outer margin arcuate. Postmedial fasciae dark brown, arcuate, gently crenulate and generally indistinct, although better defined towards anal margin. Submarginal fasciae composed of dark brown lunules between veins, widest in space CuA1. Subterminal area irrorated with dark brown scaling.



**UNDERSIDE.** Ground colour as on upperside, but body entirely creamy white except for brown legs and some pale yellow scaling. Postmedial fascia as on upperside but indistinct. Submarginal fascia as on upperside but slightly displaced distad and running closely in line with inner edge of apical patch. Subterminal margin as on upperside but indistinct. Hindwing postmedial and submarginal fasciae as on upperside, but finer.

**MALE GENITALIA** (Fig. 41). Uncus reduced, fused with tegumen. Tegumen broad with pair of long, flattened, apically rounded, truncate lateral projections, angled medially; its inner surface heavily setose with two spines, one long spine (about half the length of lateral projection) three-quarters of way along dorsal margin and smaller spine half the size, ventrally near base. Gnathos emarginate proximally, with pair of long curved spines dorsally and three pairs of long spines, each shorter proximally, either side of midline. Valve triangular and cleft (about two-thirds of way along valve). Costa blunt at apex. Saccus well-defined, tapering apically into gently curved distal process. Juxta trapezoid, proximally V-shaped, lateral margins tapering dorsad, distally weakly V-shaped. Vinculum V-shaped. Saccus triangular, rounded at apex. Phallus slightly longer than valve, gently curved medially, tapering towards carina; coecum rounded. Vesica with sparse scobination.

#### Female

Unknown.

#### Variation

Unknown.



17



18

19



20

1 cm

21

**Figs 17–21.** Species of *Camerunia* Aurivillius, 1893, adults. **17–19.** *C. albida* Aurivillius, 1901, holotype, ♂ (NHRS). **17.** Upperside view (left), underside view (right). **18.** Figure from Aurivillius (1901b). **19.** Figure from Gaede (1927). **20.** *C. smithi* sp. nov., holotype, ♂ (ANHRT), upperside view (left), underside view (right). **21.** *C. smithi*, paratype ♂ (ANHRT).



### **Larval foodplant**

Unknown.

### **Molecular characterisation**

Unknown.

### **Distribution** (Fig. 56)

This species is known only from the holotype male from coastal south-east Tanzania, a region that harbours numerous endemic species, including butterflies such as *Triskelionia compacta* (Evans, 1951) and other bombycoids such as the hawkmoth, *Rufoclanis macleeryi* Carcasson, 1968. It has been reported that much of the original forest in this general area has been degraded (Larsen & Congdon 2011).

### **Remarks**

Aurivillius (1901b) gave the type locality as Nyangao in south-eastern Tanzania, despite there being no indication of this on the labels attached to the type specimen (Fig. 17). Nyangao was a German mission station set up in 1896 (Hassing 1970) and a search of the literature revealed that at the turn of the 20<sup>th</sup> century, most entomological specimens from this locality were in the collection of Johann Ertl, who had in turn obtained them from the Missionary Benedictines of St Ottilien (Suffert 1904). Aurivillius was well-acquainted with Ertl and his collection, having described numerous Tanzanian species of Coleoptera Linnaeus, 1758 (mainly Cerambycidae Latreille, 1802) over a ten-year period (e.g., Aurivillius 1903). It is also known that Aurivillius (1901a) had specimens of Lepidoptera from Ertl in front of him at the time of the description of *C. albida*, and although only a single specimen is known of this taxon, its provenance is currently not in question. The species has been figured twice in the literature, the first in the original description (reproduced here in Fig. 18) and once more in Gaede (1927) (reproduced here in Fig. 19). Despite the differences in the depictions, the former being the most accurate and the latter with some artistic stylisation, it is believed they refer to the same unique holotype specimen.

### ***Camerunia smithi* sp. nov.**

urn:lsid:zoobank.org:act:319163B9-7853-44DD-AF06-C2B338E45C96

Figs 1, 20–21, 42–43, 51, 56

### **Diagnosis**

This distinctive species can only be confused with *C. orphne*, sharing with it the dark brown basal marking on the forewing but the latter is a larger insect, and the forewing discal marking forms a bar along the medial vein. Moreover, these two species are found in allopatry on either side of Rift Valley and thus there is unlikely to be any confusion in specimens with well-documented provenance. The male genitalia of *C. smithi* sp. nov. are of the *Camerunia bimaculata/subrosea* type, but those of *C. bimaculata/subrosea* differ from that of the new species in the gently curved lateral processes of the tegumen (angled in *C. smithi*), the smaller but more spinulose gnathos, the apices of the valves hooked ventrad (straight in *C. smithi*) and the longer, narrower saccus.

### **Etymology**

The new species is dedicated with great pleasure to Richard Smith, Chairman of the Board of Trustees, ANHRT, for his outstanding and continued support of and contribution to African entomology through the institution he founded.

## Type material

### Holotype

TANZANIA • ♂ (Fig. 20); “TANZANIE : Morogoro Re- / gion, Kaguru Mts., 1870m., / 06°22.367’S., 036°55.820’E., / 7-XI-2013 (Ph. Darge) // Ex. Coll. Ph. Darge / ANHRT:2019.20 // ANHRTUK / 00207258”; ANHRT.

### Paratypes

TANZANIA • 6 ♂♂; same data as for holotype; ANHRT.

## Description

### Male (Figs 20–21, 51)

FOREWING LENGTH. 29–32 mm.

Ground colour of body dark chocolate-brown. Vertex and thorax sparsely irrorated with white scales. Antenna bipectinate, dark brown. First abdominal segment with dense tuft of white scales anteriorly; first two segments darker than ground colour, irrorated with white scales. Remaining segments with tufts of longer ciliate scales medially forming crest which runs along abdomen. Eighth sternite with deep concavity posteriorly, and heavy sclerotisation latero-anteriorly; its surface evenly covered in fine punctures and heavily setose posteriorly. Anal tuft irrorated with white scales. Forewing triangular, rounded at apex, outer margin gently arcuate, almost straight; ground colour pale straw. Basal marking, dark chocolate, almost half length of cell; its outer margin arcuate, slightly sinuate, with white fascia on the inner edge of border. Costa with dark spot between basal marking and discal marking. Discal marking black, comprising three fine spots on outer edge of medial, one each at junctures of veins M1–M3, spot at M2 being smallest and longitudinally elongate. Postmedial fascia, dark brown, bilineate, arcuate, evenly crenulate, outer of two more indistinct; fasciae arising almost perpendicularly from dark brown spot on costa, sharply curving inward at vein M2 and terminating almost perpendicularly along anal margin. Space CuA1 and dorsal portion of CuA2 with well-defined darker brown marking filling space between postmedial fasciae. Submarginal fasciae dark brown, bilineate, crenulate, broadly running in parallel with postmedial fascia; inner of two arising from small dark brown marking on costa with two longitudinal dark brown markings proximad along veins M3 and CuA1; outer arising from three well-defined dark brown markings with rounded margins distad, sometimes conjoined proximad, forming subapical patch. Subterminal fascia dark brown, crenulate, following outer margin. Subterminal area with olive brown triangular patch, its inner margin arising at apex, widening proximad as far as subterminal fascia in space M2 and terminating along termen around vein CuA1. Fringe olive brown with pale straw-coloured scales forming dots at termination points of veins.

HINDWING. Outer margin arcuate; ground colour pale yellow. Postmedial fascia dark brown, bilineate, arcuate and angled at vein M2, weakly crenulate, outer of two indistinct, terminating at dark brown spot along anal margin. Submarginal fascia dark brown, bilineate, running in parallel with postmedial fascia, the inner crenulate and indistinct, the outer composed of dark brown lunules between veins, terminating at dark brown spot along anal margin. Subterminal fascia dark brown, crenulate. Termen highlighted with olive-brown scales. Fringe as on forewing but irrorated with yellow scales.

UNDERSIDE. Ground colour of body and wings yellow, legs brown. Forewing markings showing through from upperside, but only postmedial fascia and submarginal triangular patch weakly marked. Hindwing veins and termen well-defined with dark brown scaling. Postmedial, submarginal and subterminal fasciae as on upperside but better defined.

MALE GENITALIA (Figs 42–43). Uncus reduced, fused with tegumen. Tegumen broad with pair of long, cylindrical, apically pointed lateral projections, medially hooked inward; its inner surface heavily setose.

Gnathos bilobed, with small, dense cluster of spines, either side of midline. Valve triangular and cleft (about half way along valve). Costa blunt at apex with tiny spine ventrally. Sacculus well-defined, tapering into curved distal process rounded at apex. Juxta trapezoid, proximally V-shaped, lateral margins gently tapering dorsad, distally V-shaped. Vinculum V-shaped. Saccus triangular, short (as long as gnathos), rounded at apex. Phallus slightly longer than valve, curved at coecum but otherwise straight; coecum rounded; carina weakly scobinate. Vesica with sparse scobination.

#### Female

Unknown.

#### Variation

Based on the short series of males, the extent of the discal markings varies slightly, the smallest longitudinally elongate spot missing in some individuals.

#### Larval foodplant

Unknown.

#### Molecular characterisation

The new species has been assigned the BIN BOLD:AFF5559. The intraspecific PWD was 0.0% (n = 2) diverging from its nearest neighbour, *C. flava* by 8.8–9.4% (n = 9).

#### Distribution (Fig. 56)

The new species is known only from the seven male specimens from the type locality in Mamiwa-Kisara Forest Reserve, Ukaguru Mountains, Tanzania, and it is almost certainly restricted to this forest block. The Ukagurus form part of the Eastern Arc Mountains, well-known for their exceptional biodiversity and single-locality endemics. The Mamiwa-Kisara Forest Reserve constitutes the largest tract of montane forest in the Ukagurus, which is home to numerous endemic species, although habitat degradation has recently been reported at this site (Lawson *et al.* 2023). Recent discoveries of narrow-ranged bombycoid species in this chain of mountains include *Temnora smithi* Takano, 2022, known only from a small patch of montane forest in the Mahenge Mountains (Takano 2022).

#### *Camerunia bimaculata* (Dewitz, 1879) comb. rev.

Figs 1, 22–27, 44–45, 52, 56

*Dreata bimaculata* Dewitz, 1879: 33, pl. 2 fig. 5. Type locality: [Angola] “dem 10° S.B. und zwischen dem 17–22° O.L. von Greenw.”

*Camerunia bimaculata* – Aurivillius 1901b: 27 (comb.)

*Catajana bimaculata* – Strand 1910: 98. — Gaede 1927: 306, pl. 46 fig. d. — Kiriakoff 1954: 11. — Vári *et al.* 2002: 150. — Kitching *et al.* 2018: suppl. material 1. — Krüger 2020: 138.

*Hemijana bimaculata* – Forbes 1955: 94, 129.

#### Diagnosis

*Camerunia bimaculata* (Dewitz, 1879) comb. rev. is a highly distinctive insect taxon that cannot readily be confused with any of its congeners. It shares a yellow ground colour of the wings with *C. flava*, but in the latter, both sets of wings are of the same colour and the forewing lacks the discal markings as well as fasciae. The general pattern of the wings is somewhat reminiscent of that of *C. subrosea* (Aurivillius, 1893) comb. nov., but in the latter, the forewings generally have a slightly pinkish tinge, whilst the hindwings range from rosy-red to pink. The male genitalia of *C. bimaculata* are most similar to those

of *C. subrosea*, but in the latter, a digitate basal process is present along the ventral margin of the lateral process of the tegumen (absent in *C. bimaculata*), the spines of the gnathos are more densely packed together arising closer to the midline, the apex of the saccular process is triangular and pointed (rounded in *C. bimaculata*), and the phallic tube is shorter and more robust.

## Type material

### Holotype

ANGOLA • ♂ (Fig. 22); “21768 // guinea / inter. / Pogge [green paper; handwritten] // *Bimaculata* / Dwtz. \* [green paper; handwritten] // *Bimaculata* / Dwtz. Mittheill. / J. Münchener ent. / Vereins. 1879. p.33. / t.II. f.5 [green paper; handwritten]”; MfN.

### Other material examined (58 ♂♂, 7 ♀♀)

ANGOLA – **Bié** • 1 ♀; Bihé [= Kuito]; F.S. Arnot leg.; NHMUK. – **Malanje** • 1 ♂; Fort Don Carlos; 20 Sep. 1903; W.J. Ansorge leg.; NHMUK. – **Moxico** • 1 ♂; Moxico District; 1219 m a.s.l.; Oct. 1928; T.A. Barns leg.; NHMUK.

DEMOCRATIC REPUBLIC OF CONGO – **Haut-Katanga** • 1 ♂; Elisabethville [= Lubumbashi]; 14 Jan. 1948; C. Seydel leg.; RMCA • 1 ♂; same collecting data as for preceding; 26 Nov. 1955; RMCA • 1 ♂; Likasi; 1924; NHMUK • 1 ♂; Luena; 25 Sep. 1983; RMCA • 1 ♂; Mwera; 23 Feb. 1982; RMCA • 1 ♂; Parc National de l’Upemba, Kaswabilenga; 700 m a.s.l.; 15 Sep.–6 Nov. 1947; Mission G.F. de Witte leg.; RMCA. – **Lualaba** • 1 ♂; Kafakumba; Mar. 1929; NHMUK • 1 ♀; Kangagi [= Kangaji]; Jan. 1927; F.G. Overlaet leg.; RMCA • 1 ♂; Kolwezi; Jan. 1953; V. Allard leg.; RMCA.

MALAWI – **Southern** • 1 ♂; between Fort Mangoche and Chikala Boma; 1219 m a.s.l.; 21 Mar. 1910; S.A. Neave leg.; NHMUK.

TANZANIA – **Rukwa** • 1 ♂; Kalambo Forest Reserve; 8°21.596’ S, 31°15.221’ E; 1632 m a.s.l.; 22 Nov. 2009; P. Darge leg.; ANHRT.

ZAMBIA – **Central** • 1 ♂; Kasanka River Pontoon, Kasanka National Park; 12°34’23” S, 30°14’05” E; 1191 m a.s.l.; 2–4 Dec. 2012; R. Smith and H. Takano leg.; ANHRT. – **Copperbelt** • 1 ♀; Mwengwa; 23 Feb. 1914; H.C. Dollman leg.; NHMUK. – **Luapula** • 1 ♂; Mumbuluma Falls; 1190 m; 12 Jan. 2018; P. Schmit leg.; RCPB. – **Muchinga** • 3 ♂♂; Benyanga village; 10°40’41” S, 33°27’45” E; 1250 m a.s.l.; 7–12 Dec. 2023; G. László, L. Morgan and A. Volynkin leg.; ANHRT • 1 ♂; Kalungu; 9°40’52” S, 32°42’50” E; 1280 m a.s.l.; 22–24 Nov. 2016; R. Smith, H. Takano and D. Oram leg.; ANHRT • 6 ♂♂; same locality as for preceding; 5–8 Mar. 2017; D. Oram, W. Miles and L. Smith leg.; ANHRT • 3 ♂♂; same data as for preceding; 11 Mar. 2017; ANHRT • 1 ♂; Mama Muwowo’s Lodge, Muyombe; 10°32’40” S, 33°26’05” E; 1230 m a.s.l.; 29–30 Nov. 2023; M. Bashford, A. Collins, G. László, L. Morgan and A. Volynkin leg.; ANHRT • 3 ♂♂; same locality as for preceding; 6–7 Dec. 2023; G. László, L. Morgan and A. Volynkin leg.; ANHRT • 1 ♀; Mpika; Nov. 1950; H.B.D. Kettlewell leg.; NHMUK. – **Northwestern** • 1 ♂, 1 ♀; Chitunta Plain; 11°29’12” S, 24°24’18” E; 1396 m a.s.l.; 29 Nov.–4 Dec. 2019; M. Bashford, W. Miles and L. Mulvaney leg.; ANHRT • 1 ♂; dambo near Kanyama; 11°25’36” S, 24°40’00” E; 1375 m a.s.l.; 4–7 Dec. 2019; M. Bashford, W. Miles and L. Mulvaney leg.; ANHRT • 2 ♂♂; Hillwood, Ikelenge; 11°16’02” S, 24°18’59” E; 1400 m a.s.l.; 23–30 Nov. 2019; M. Bashford, W. Miles, L. Mulvaney and R. Smith leg.; ANHRT • 1 ♂; Jiwundu Swamp; 11°51’54” S, 25°33’20” E; 1340 m a.s.l.; 25–30 Oct. 2017; M. Carter, A. Lloyd, W. Miles, D. Oram and R. Smith leg.; ANHRT • 1 ♂; same locality as for preceding; 29 Oct.–4 Nov. 2018; M. Aristophanous, V. Dérozier, G. László and D. Oram leg.; ANHRT • 1 ♂; Kambishi, Jiwundu; 11°54’39” S, 25°29’05” E; 1340 m a.s.l.; 18–19 Oct. 2014; R. Smith, H. Takano and D. Oram leg.; ANHRT • 1 ♂; Lukwakwa, West Lunga National Park; 12°39’40” S, 24°26’13” E; 1147 m a.s.l.; 4–8 Nov. 2013; R. Smith, H. Takano and D. Oram leg.; ANHRT

• 2 ♂♂; same locality as for preceding; 9–15 Nov. 2018; M. Aristophanous, V. Dérozier, G. László and D. Oram leg.; ANHRT • 1 ♂; Nkwaji, Mwinilunga; 11°36'22" S, 24°33'17" E; 1316 m a.s.l.; 29 Oct.–3 Nov. 2013; R. Smith and H. Takano leg.; ANHRT • 1 ♂; same locality as for preceding; 3–10 Nov. 2017; M. Carter, A. Lloyd, W. Miles, D. Oram and R. Smith leg.; ANHRT • 1 ♂; Solwezi; 2 Nov. 1917; H.C. Dollman leg.; NHMUK • 1 ♀; Zambezi Rapids; 11°07'30" S, 24°11'06" E; 1205 m a.s.l.; 4–9 Nov. 2018; M. Aristophanous, V. Dérozier, G. László and D. Oram leg.; ANHRT. – **Southern** • 7 ♂♂; Bruce-Miller Farm, Choma; 16°38'12" S, 27°01'30" E; 1179 m a.s.l.; 28 Feb.–8 Mar. 2019; Dérozier, M. Imakando, W. Miles and L. Mulvaney leg.; ANHRT • 1 ♂; Kalomo; C.W. Brames Hall leg.; NHMUK • 3 ♂♂; Musuku Lodge, Bruce-Miller Farm, Choma; 16°38'44.4" S, 27°03'32.6" E; 1227 m a.s.l.; 28 Feb.–8 Mar. 2019; V. Dérozier, M. Imakando, W. Miles and L. Mulvaney leg.; ANHRT. – **Western** • 1 ♂; 30 km S of Mongu; 15°36.78' S, 23°19.13' E; 4 Dec. 2017; R. Minetti leg.; ANHRT • 2 ♂♂; Ndanda; 15°04'44" S, 23°45'59" E; 1090 m a.s.l.; 10–11 Nov. 2013; R. Smith, H. Takano and D. Oram leg.; ANHRT.

ZIMBABWE • 1 ♂; Mashonaland; H.B. Dobbie leg.; NHMUK. – **Harare** • 1 ♀; Salisbury [= Harare]; Dec. 1898; G.A.K. Marshall leg.; NHMUK.

## Redescription

### Male (Figs 22–25, 52)

FOREWING LENGTH. 30–35 mm.

UPPERSIDE. Ground colour of head, thorax, forewings and abdomen beige; vertex dark greyish-brown, patagium slightly golden, hindwing yellow. Antenna bipectinate, dark brown. Eighth sternite truncate posteriorly, weakly sclerotised; its surface covered evenly in fine punctures with scattering of deeper punctures. Forewing triangular, rounded at apex, outer margin gently arcuate; costa with golden scaling. Antemedial fascia indicated by dark brown dots along veins, sinuate, poorly defined, arising at cubital and terminating along anal margin. Discal marking black, double, one on either side of medial vein, inner smaller than outer; outer sometimes split in half by vein M2. Postmedial fascia dark brown, arcuate, with darker dots along veins; fascia arising perpendicularly just over halfway along costa and gently curved inwards at vein M1, terminating perpendicularly to anal margin. Submarginal fascia indicated by dark brown dots along veins, running in line with the postmedial fascia. Fringe pale beige irrorated with golden scales.

HINDWING. Outer margin arcuate, slightly angled at vein M2. Postmedial and submarginal fasciae dark brown, arcuate, showing through from the underside. Fringe pale beige irrorated with golden scales.

UNDERSIDE. Legs and to lesser degree abdomen densely covered in long carmine ciliate scales, giving different appearance to upperside. Ground colour of wings golden with ferruginous tinge. Postmedial fascia dark brown, fine, placed slightly distad of and straight than that on upperside. Submarginal fascia dark brown, fine, placed slightly distad of and more arcuate than that on upperside. Hindwing veins well-defined with dark brown scaling. Postmedial and submarginal fasciae dark brown, arcuate, almost running parallel to each other, inner of two slightly broader, the outer gently crenulate. Subterminal fascia dark brown, sinuate, indistinct or absent in some individuals.

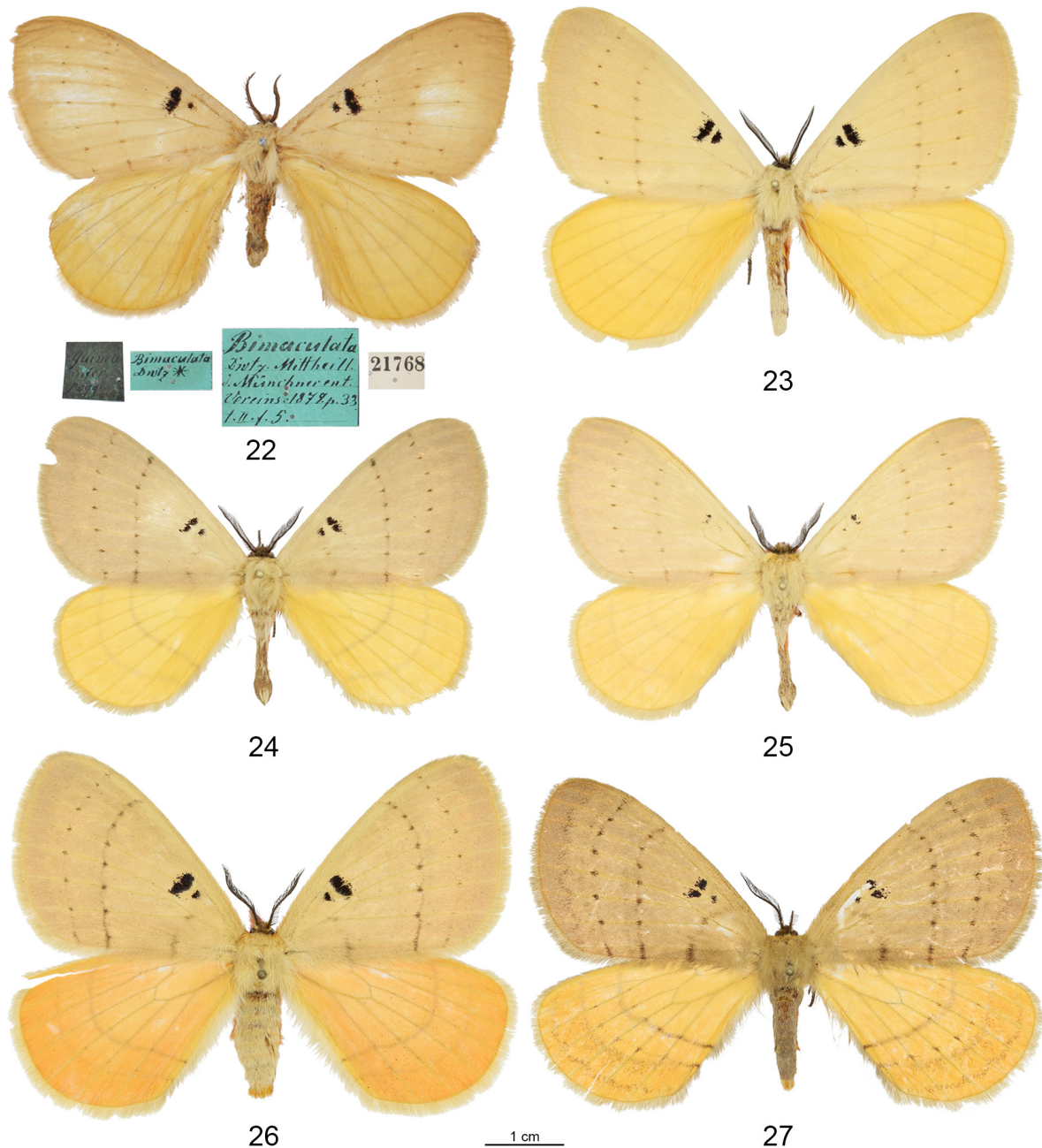
MALE GENITALIA (Figs 44–45). Uncus reduced, fused with tegumen. Tegumen broad with pair of long, cylindrical, apically pointed lateral projections, gently curved inward; their inner surface weakly setose. Gnathos with sparse cluster of spines of varying length, either side of midline. Valve triangular and cleft (about one-third of way along valve). Costa curved ventrad at apex, tapering to blunt point. Sacculus well-defined with curved distal process, rounded at apex. Juxta trapezoid, proximally V-shaped, lateral margins tapering cranially, distally with deep U-shaped concavity. Vinculum V-shaped. Saccus

cylindrical, rounded at apex. Phallus as long as valve, gently curved medially; coecum rounded. Vesica with scobination.

**Female** (Figs 26–27)

FOREWING LENGTH. 34–37 mm.

Similar to male with no difference in rami length of the antenna. Some individuals with a salmon hue to the hindwing upperside.



**Figs 22–27.** *Camerunia bimaculata* (Dewitz, 1879) comb. rev., adults. **22.** Holotype of *Dreata bimaculata* Dewitz, 1879, ♂ (MfN). **23–25.** ♂♂, Zambia, Kalungu (ANHRT). **26.** ♀, Zambia, Zambezi Rapids (ANHRT). **27.** ♀, Zambia, Chitunta Plain (ANHRT).



### Variation

The extent of the discal markings varies greatly from well-marked individuals (Fig. 23) to those where the markings are almost invisible (Fig. 25).

### Larval foodplant

Unknown.

### Molecular characterisation

This species has been assigned two BINs: BOLD:AAO8836 (NW Zambia) and BOLD:AAO8634 (NE Zambia). Intraspecific PWDs were 0.0–4.0% (n = 5), diverging from its nearest neighbour, *C. subrosea* (Aurivillius, 1893) comb. nov. by 6.0–6.8% (n = 4).

### Distribution (Fig. 56)

The species is widely distributed in Central Zambezian Miombo woodland habitats in Angola, southern D.R. Congo, Zambia, Zimbabwe, Malawi and the extreme south-west of Tanzania, where it appears not to cross beyond the Rukwa Rift. It will likely be present in northern Mozambique and potentially Botswana.

### Remarks

The holotype was collected by Paul Pogge on Alexander von Homeyer's expedition to Angola and southern D.R. Congo under the auspices of the Deutsche Gesellschaft zur Erforschung Äquatorial-Afrikas. Setting off from Luanda in February 1875, the party travelled to Pungo Andongo, where several members of the expedition (including von Homeyer) fell ill. Pogge continued further inland, firstly to Kimbundo with the topographer Anton Lux, who also became incapacitated with illness, before reaching Mussumba, the residence of the ruler of the Lunda Kingdom, Mwata Yamvo in December 1875 (Pogge 1880). According to Dewitz's (1879) publication, the holotype was collected between 17° and 22° longitude along the 10<sup>th</sup> parallel south, which, when cross-referenced with Pogge (1880), refers to a region between Sanza and Difunda (on the Kasai River), all of which falls within modern-day Angola. For the purposes of placing a point on the distribution map, the midpoint of the aforementioned coordinates, 19°30' E along Pogge's route (just to the east of his Kimbundo, approximately 10°12' S) was selected. The type locality is stated as being from Guinea in some web sources, doubtless due to Dewitz's (1879: 23) explanation that Pogge "von der Guinea-küste...in's Innere vordrang [= advanced into the interior... from the Guinea coast]", even though the word Guinea was not once mentioned by Pogge (1880) in his book. Guinea, or in this instance Niederguinea, referred to the region from Cameroon to Angola in the 19<sup>th</sup> Century, as can be seen in many German atlases of the time (e.g., Kiepert *et al.* 1873).

### *Camerunia subrosea* (Aurivillius, 1893) comb. nov.

Figs 1, 28–35, 46–47, 53, 57

*Jana subrosea* Aurivillius, 1893: 209. Type locality: [South Africa] "Transvaal".

*Hemijana ruberrima* Rothschild, 1917: 490. Type locality: [Angola] "Bibé" [sic = Kuito].

*Hemijana subrosea* f. *distincta* Berio, 1937: 379. Type locality: [Zambia] "Monge" [sic = Monze].

*Jana subrosea* – Distant 1897: 205.

*Hemijana subrosea* – Aurivillius 1901b: 22. — Gaede 1927: 302, pl. 46 fig. a. — Pinhey 1975: 130, pls 28 and 30 fig. 571. — Vári *et al.* 2002: 150. — Kitching *et al.* 2018: suppl. material 1. — Krüger 2020: 138.

*Hemijana ruberrima* – Gaede 1927: 302. — Vári *et al.* 2002: 150 (syn.).

## Diagnosis

*Camerunia subrosea* (Aurivillius, 1893) comb. nov. is the smallest species of the genus, and despite similar wing patterns to *C. bimaculata* (Dewitz, 1879) comb. rev., it is easily identified by its rosy-pink hindwing, which is yellow in its congener. The male genitalia of *C. subrosea* are also most similar to those of *C. bimaculata*, but in the latter, the lateral processes of the tegumen lack the basal process along the ventral margin, the spines of the gnathos are less densely packed and arise further from the midline, the apex of the saccular process is blunt (triangular and pointed in *C. subrosea*) and the phallic tube is longer and thinner.

## Type material

### Lectotype of *Jana subrosea* (by present designation)

SOUTH AFRICA • ♂ (Fig. 28); “Transvaal [handwritten] // *Hemijana / subrosea* / Aur. typ. [handwritten] // 12 (1). [handwritten]”; MfN.

### Paralectotype of *Jana subrosea*

SOUTH AFRICA • ♂; “Typus [red card with black border] // 927. // *Hemijana / subrosea* Aur. [handwritten in Aurivillius’ hand] // NHRS-SRAH / 000001440”; NHRS.

### Lectotype of *Hemijana ruberrima* (by present designation)

ANGOLA • ♂ (Fig. 29); “Type [white disc with red border] // Bihe, / Angola / [Pemberton] [black border] // *Hemijana / ruberrima* / Type Rothsch. [handwritten in Rothschild’s hand] // BMNH(E)1627075 [QR Code]”; NHMUK.

### Paralectotype of *Hemijana ruberrima*

ANGOLA • ♂; “Bihe, / Angola / [Pemberton] [black border]”; NHMUK.

## Other material examined (27 ♂♂, 4 ♀♀)

ANGOLA – **Moxico** • 1 ♂; Km 879 Benguela Railway [= Cangonga (see Hance & van Dongen 1956)]; 17 Sep. 1927; NHMUK. – **Lunda Sul** • 1 ♂; Xa-Sengue [= Xassengue]; 10 Apr. 1937; M.A. Excell leg.; NHMUK.

BOTSWANA • 1 ♂; [unspecified locality]; 1892; MfN.

DEMOCRATIC REPUBLIC OF CONGO – **Haut-Lomami** • 1 ♂; Kaniama; Mar.–Jul. 1932; A.J.J. Massart leg.; RMCA. – **Kasaï** • 2 ♂♂; Mukishi; 1928; A. Becquet leg.; RMCA. – **Kasaï-Central** • 1 ♂; Dimbelenge; 30 Oct. 1950; M. Fontaine leg.; RMCA • 1 ♂; same data as for preceding; 4 Nov. 1950; RMCA • 1 ♂; same data as for preceding; 29 Nov. 1950; RMCA • 1 ♂; same data as for preceding; 5 Jan. 1951; RMCA • 1 ♂; same data as for preceding; 10 Feb. 1951; RMCA • 1 ♂; same data as for preceding; 30 May 1953; RMCA • 1 ♂; Luluabourg [= Kananga]; 6 Jun. 1953; M. Fontaine leg.; RMCA. – **Lomami** • 3 ♂♂; Kabinda; J. Schwetz leg.; RMCA • 1 ♂; Penge; 16 Jan. 1926; C. Seydel leg.; RMCA. – **Lualaba** • 1 ♀; Kapanga; May 1934; F.G. Overlaet leg.; RMCA • 1 ♀; Kolwezi; 3 Nov. 1952; S. Gilbert leg.; RMCA. – **Sankuru** • 1 ♂; Badingale; 12 Jan. 1950; P. Hostie leg.; RMCA.

TANZANIA – **Kagera** • 1 ♂; Maninga; 2°09.189’ S, 31°40.144’ E; 1320 m a.s.l.; 4 Nov. 2008; P. Darge leg.; ANHRT. – **Tabora** • 1 ♀; Tabora; Mar. 1915; A. Reuss leg.; MfN.

SOUTH AFRICA • 1 ♂; [unspecified locality]; E. Holub leg.; NHMW • 1 ♂; Transvaal; MfN. – **Gauteng** • 1 ♂; Johannesburg; 1829 m a.s.l.; Dec. 1898; J.P. Cregoe leg.; NHMUK • 1 ♂; Modderfontein; Feb. 1921; A.V. Langshaw leg.; NHMUK • 1 ♂; Pretoria; W.L. Distant leg.; NHMUK. – **Mpumalanga** • 1 ♂; Balmoral; 5 May 1902; E.E. Hamm leg.; OUMNH.

ZAMBIA – **Copperbelt** • 1 ♀; Forestry office, Chati; 12°51' S, 27°41' E; 1200 m a.s.l.; 5 Nov. 1969; S.M. Tanner leg.; ANHRT. – **Northwestern** • 1 ♂; Hillwood, Ikelenge; 11°16'02" S, 24°18'59" E; 1400 m a.s.l.; 21–28 Oct. 2013; R. Smith, H. Takano, L. Chmurova and L. Smith leg.; ANHRT. – **Western** • 1 ♂; Ndanda; 15°04'44" S, 23°45'59" E; 1090 m a.s.l.; 10–11 Nov. 2013; R. Smith, H. Takano and D. Oram leg.; ANHRT.

### Redescription

**Male** (Figs 28–33, 53)

FOREWING LENGTH. 21–27 mm.

UPPERSIDE. Ground colour of body and forewing ranging from beige to pale-brown, irrorated with rosy-pink scales; hindwing ranging from rosy-red to pink. Antenna bipectinate, dark brown with pale beige scaling along entire length of shaft. Eighth sternite gently arcuate posteriorly, weakly sclerotised; its surface covered evenly in fine punctures with scattering of deeper punctures. Forewing triangular, slightly rounded at apex, outer margin gently arcuate. Antemedial fascia dark brown, gently sinuate arising perpendicular to the costa and terminating along anal margin. Discal marking black, triple, two on outer edge of medial vein, other on inner (sometimes very faint or absent). Postmedial fasciae dark brown, arcuate, arising perpendicularly nearly two-thirds along costa and curved inwards at vein M1, terminating perpendicularly to anal margin; outer of two diffuse (or entirely absent), becoming fainter towards costal margin. Submarginal fascia dark brown, arcuate, slightly sinuate, broadly running in line with postmedial fascia. Region between submarginal and subterminal fasciae with diffuse dark brown scaling in some individuals. Subterminal fascia dark brown, crenulate, indistinct, and following outer margin. Fringe mixture of pink, brown and greyish-white scales.

HINDWING. Outer margin arcuate. In some individuals, postmedial and submarginal fasciae weakly showing through from underside. Subterminal fascia dark brown, indistinct and best-defined at tornus present in some individuals. Fringe with more pink scales than on forewing.

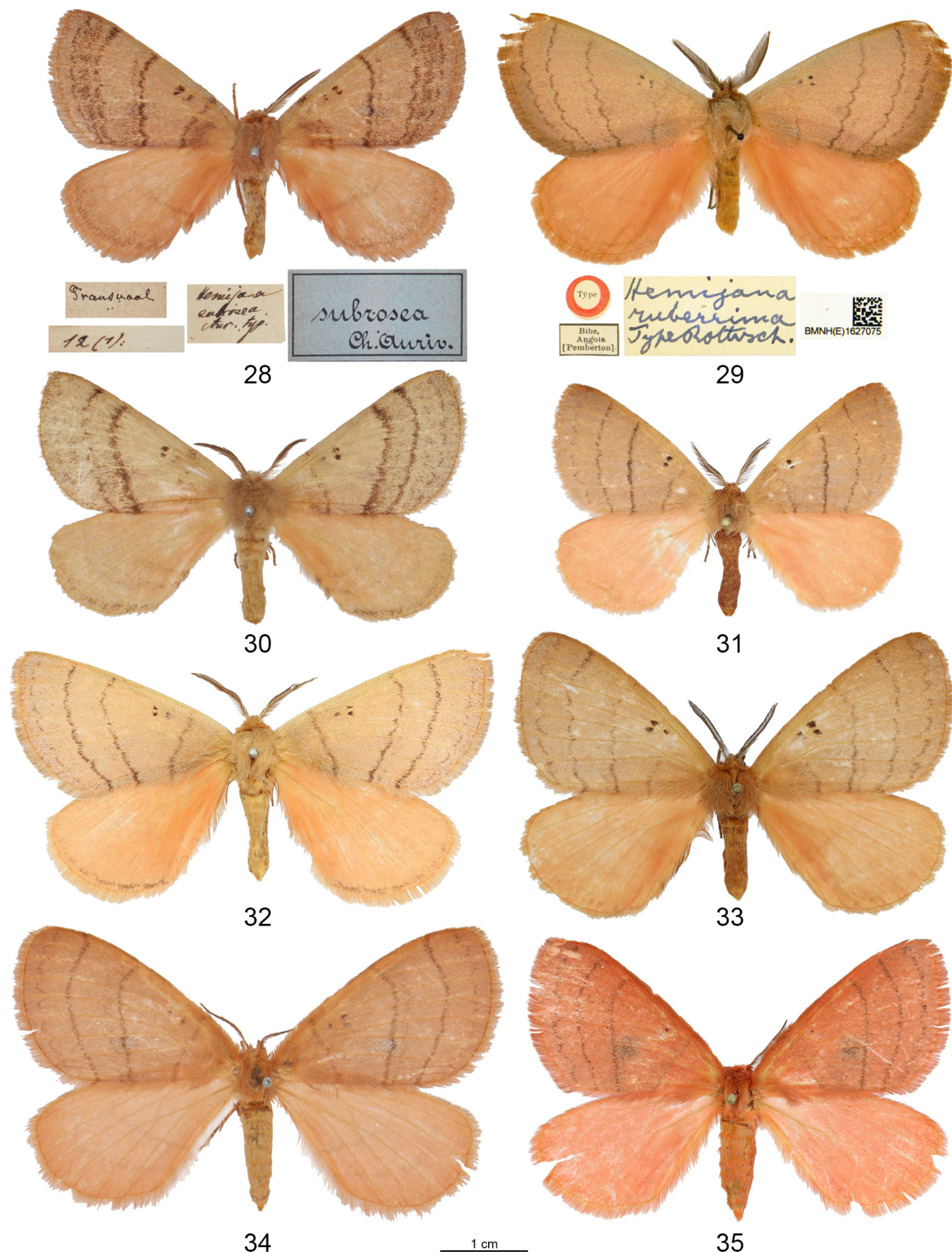
UNDERSIDE. Legs and abdomen irrorated with long carmine ciliate scales. Ground colour of wings brown with rusty tinge. Submarginal fascia dark brown, fine, placed slightly distad to that of upperside, and only well-defined near the costa. Hindwing postmedial and submarginal fasciae dark brown, arcuate or slightly angled, almost running parallel to each other, outer gently crenulate.

MALE GENITALIA (Figs 46–47). Uncus reduced, fused with tegumen. Tegumen broad with pair of long, cylindrical, apically pointed lateral projections, gently curved inward; ventral margin with short, truncate projection near base. Gnathos with dense cluster of spines, either side of midline. Valve triangular and cleft (about half the way along valve). Costa curved ventrad at apex, tapering to blunt point. Saccus well-defined tapering apically into curved distal process, with triangular apex. Juxta trapezoid, proximally V-shaped, lateral margins gently tapering dorsad, distally V-shaped. Vinculum V-shaped. Saccus cylindrical, rounded at apex. Phallus robust, as long as valve, almost straight; coecum rounded. Vesica with scobination.

**Female** (Figs 34–35)

FOREWING LENGTH. 27–30 mm.

Similar to male but rami of antennae nearly half as long. Some individuals with a deep crimson hue to the upperside.



**Figs 28–35.** *Camerunia subrosea* (Aurivillius, 1893) comb. nov., adults. **28.** Lectotype of *Jana subrosea* Aurivillius, 1893, ♂ (MfN). **29.** Lectotype of *Hemijana ruberrima* Rothschild, 1917, ♂ (NHMUK). **30.** ♂, South Africa, Transvaal (MfN). **31.** ♂, Zambia, Ndanda (ANHRT). **32.** ♂, South Africa, Balmoral (OUMNH). **33.** ♂, Tanzania, Maninga (ANHRT). **34.** ♀, Tanzania, Tabora (MfN). **35.** ♀, Zambia, Chati (ANHRT).

### Variation

The ground colour and extent of forewing markings, especially the fasciae, are highly variable among individuals of this species.

### Larval foodplant

*Pygmaeothamnus zeyheri* (Rubiaceae) (Staude *et al.* 2016).

### Molecular characterisation

This species has been assigned the BIN BOLD:AAI2018. Intraspecific PWDs were 1.1–2.5% (n = 4), diverging from its nearest neighbour, *C. bimaculata* (Dewitz, 1879) comb. rev. by 6.0–6.8% (n = 5).

### Distribution (Fig. 57)

Widely distributed across more open woodland habitats in southern and central Africa, including Angola, D.R. Congo, Tanzania, Zambia, Botswana and South Africa. It has also been recorded from Zimbabwe (Pinhey 1975) and may be found in Malawi and Mozambique.

### Remarks

In the original description of *Jana subrosea*, Aurivillius (1893) gave a range in wingspan and stated that the type material came from Staudinger's collection. To preserve the stability of nomenclature by fixing the published name to a single specimen, a male in MfN from Staudinger's collection is designated as the lectotype (Fig. 28). The handwritten label signifying the specimen as being a type (also attached to the lectotype of *C. insignis*) is believed to be written neither in Aurivillius nor Staudinger's hand, based on several inconsistencies in the style (namely the narrow spacing of the ligature and the long "y" in the word "typ.") and the fact that the combination *Hemijana subrosea* did not exist until after Staudinger's death. These specimens are also missing the characteristic "Origin." labels printed on purple paper that Staudinger used to identify types (see Takano 2024a), and it is possible that they were labelled by a curator from the MfN when the Staudinger types arrived at the museum. Although there are no printed ex-collection or locality labels indicating that this specimen belonged to Staudinger, the elongate label with two numbers written on it (in this case "12 (1).", or "16,1." in *C. insignis*) is found on other Staudinger specimens of butterflies and moths studied by the present author in MfN. A male in NHRS labelled as a type with an Aurivillius determination label is probably part of the type series, the number "927" referring to a locality (in this case Transvaal) based on another specimen in MfN from Arnold Schultze's collection with the handwritten label "927. / Trv.". This specimen, the only one labelled with the original combination "*Jana subrosea*", may also be part of the type series.

The two syntypes of *Hemijana ruberrima* were collected by Charles Hubert Pemberton in "Bihe" [= Kuito] during his journey through Angola in 1901–02, where he was predominantly collecting birds for Rothschild's Tring Museum but also Lepidoptera. To preserve the stability of nomenclature by fixing the published name to a single specimen, the best-preserved male specimen with Rothschild's handwritten type label is designated as the lectotype (Fig. 29). Little is known of Pemberton, a then 23-year-old trainee lawyer who only a few years prior to his departure had been sitting exams in Torquay (IALS Archives LSOC/9/20), or of his journey in Angola, but it is possible to piece together his route based on his collecting data from his natural history specimens, together with Tring Museum correspondence in the archives of NHMUK (DF/TM/1/156/17). Arriving at Luanda, he travelled down the Cuanza River from Barraca (May 1901) to Dondo (June), and then south through Calulo (July) and N'gungo (August) to Bailundo (September/October). He moved onto the Bié Plateau, exploring Kuito and the plains to the east (October–November) before heading southeast to Caconda (December) ending up in Humpata (January 1902). Based on the above itinerary, the lectotype was caught at the start of the rainy season,



and this particularly bright, pink specimen is similar to others from north-western Zambia captured at a similar time of year, perhaps linked to the bright red pre-rain leaf flushes of miombo trees.

Berio (1937) described a male specimen missing the transverse forewing fasciae as f. *distincta*, following Tams' examination and identification of the species. Similar poorly marked specimens have been examined by the present author, including a short series collected by Maurice Fontaine at Dimbelenge in RMCA (not figured) for which Gaede had proposed the manuscript name f. *impunctata*. The type locality of “Monge” is almost certainly a mistranscription or typographical error of Monze in southern Zambia, which the collector, Lidio Cipriani, passed through on several occasions on his second expedition to southern Africa (Cipriani 1931). In the same paper, Berio (1937) described several taxa collected by Cipriani in the Democratic Republic of Congo (“tra Coquilhatville e Stanleyville”) as well as at Chikuni, a mission station in southern Zambia (Cipriani 1929), and not the Congo as erroneously stated by Berio (e.g., see under *Desmeocraera cipriani* Berio 1937: 381). The specimen on which f. *distincta* was based was not examined as part of this study but it is likely to reside in MCSN (see Taberer & Giusti 2022) rather than in MZUF as stated in the original description.

***Hemijana griseola* Rothschild, 1917 syn. nov.**

Fig. 36

*Hemijana griseola* Rothschild, 1917: 490. Type locality: [South Africa] “Mooi River, Natal”

*Hemijana griseola* – Gaede 1927: 302. — Vári *et al.* 2002: 150. — Kitching *et al.* 2018: suppl. material 1. — Krüger 2020: 138.

*Poloma nigromaculata* – Aurivillius 1893: 210.

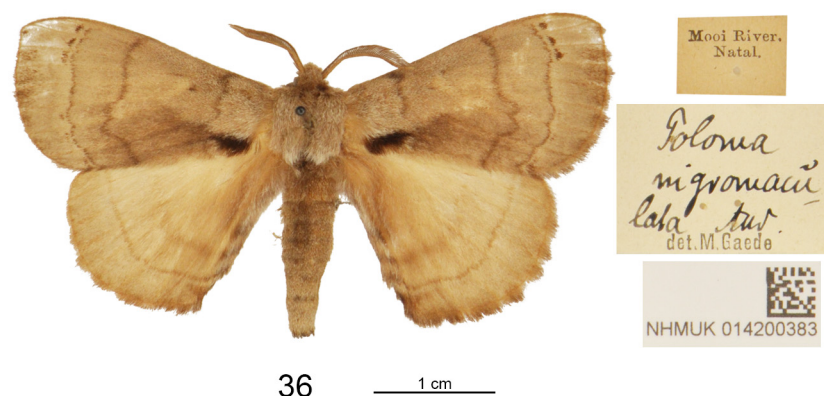
**Type material**

**Holotype**

SOUTH AFRICA • ♂ (Fig. 36); “Mooi River, / Natal. // *Poloma / nigromacu / lata* Aur. / der.M.Gaede [partially handwritten] // NHMUK 014200383 [QR code]”; NHMUK.

**Remarks**

A single male from the Rothschild collection in NHMUK matching the original description and with the label corresponding to the type locality is likely the (unlabelled) holotype of *Hemijana griseola* (Fig. 36). Rothschild's handwritten determination label appears to have become disassociated from the specimen



**Fig. 36.** *Hemijana griseola*, Rothschild, 1917 syn. nov., holotype, ♂ (NHMUK).

at some stage and is instead pinned to the holotype of *Poloma variegata* (Rothschild, 1917). This taxon is conspecific with *Poloma nigromaculata* (Aurivillius, 1893) as determined by Gaede and is herein synonymised with Aurivillius's taxon; thus *Hemijana griseola* Rothschild, 1917 syn. nov. = *Poloma nigromaculata* (Aurivillius, 1893). See Takano & Morgan (2025) for further figures of this species.

### Genus composition

- Camerunia orphne* (Schaus, 1893)  
 = *Camerunia insignis* Aurivillius, 1893  
*Camerunia flava* Aurivillius, 1904  
 = *Camerunia lactiflora* Wichgraf, 1914  
*Camerunia albida* Aurivillius, 1901  
*Camerunia smithi* sp. nov.  
*Camerunia bimaculata* (Dewitz, 1879) comb. rev.  
*Camerunia subrosea* (Aurivillius, 1893) comb. nov.  
 = *Hemijana ruberrima* Rothschild, 1917

### Identification key to the species of *Camerunia* Aurivillius, 1893

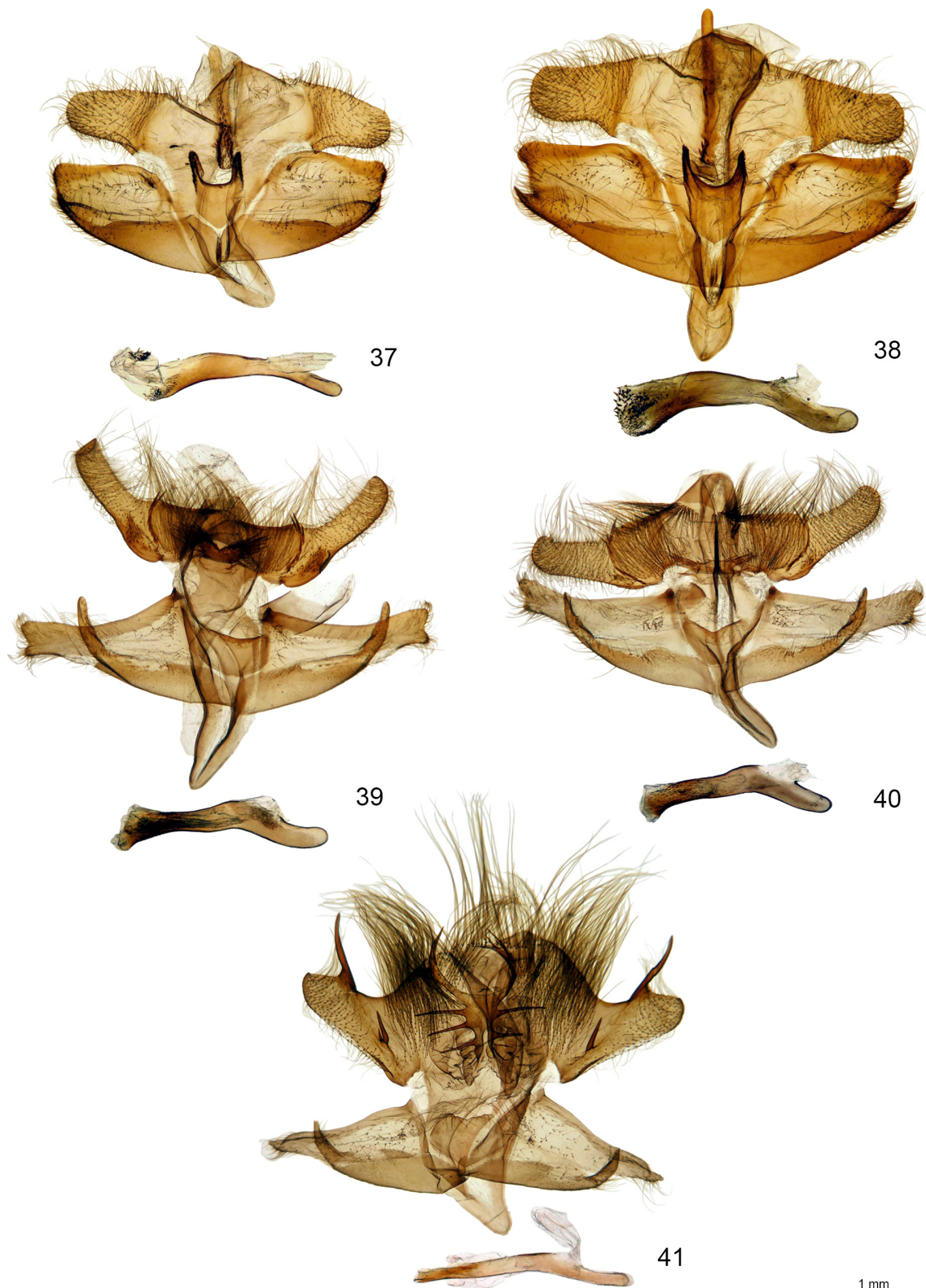
1. Forewing with dark basal marking ..... 2  
 – Forewing without dark basal marking ..... 3
2. Forewing discal marking as wide as cell. Dark spot along forewing postmedial fasciae in space CuA1 diffuse. Hindwing fringe brown with white markings at the termination of veins. Large species found in West and Central Africa ..... *C. orphne* (Schaus, 1893)  
 – Forewing discal marking indicated by two or three spots. Dark spot along forewing postmedial fasciae in space CuA1 well defined. Hindwing fringe uniformly pale yellow. Small species endemic to Tanzania ..... *C. smithi* sp. nov.
3. Ground colour of hindwings yellow ..... 4  
 – Ground colour of hindwings not yellow ..... 5
4. Forewing with large discal marking ..... *C. bimaculata* (Dewitz, 1879) comb. rev.  
 – Forewing without discal marking ..... *C. flava* Aurivillius, 1904
5. Ground colour of hindwings white ..... *C. albida* Aurivillius, 1901  
 – Ground colour of hindwings pink ..... *C. subrosea* (Aurivillius, 1893) comb. nov.

### Discussion

As a result of taxonomic analyses integrating morphological and genetic traits, the genus *Camerunia* is comprehensively revised and its generic boundary has been delimited. Two allied genera, *Hemijana* and *Catajana*, both described based mainly on differences in wing venation, are considered to be junior subjective synonyms of *Camerunia*. The genus now contains six species, the three species originally belonging to *Camerunia*, the type species of *Hemijana* and *Catajana*, and the new species described above.

Based on the genital morphology, the six species fall into two groups, one with flattened lateral processes of the tegumen (*C. orphne*, *C. flava* and *C. albida*) and another with cylindrical processes (*C. smithi* sp. nov., *C. bimaculata* (Dewitz, 1879) comb. rev. and *C. subrosea* (Aurivillius, 1893) comb. nov.). However, the results of the barcode analyses were discordant with this observation and moreover, when mapped onto the phylogram, species grouped on other perceived character sets (e.g., wing pattern or





**Figs 37–41.** *Camerunia* Aurivillius, 1893 species, male genitalia, clasper apparatus (above), phallus (below). **37–38.** *C. orphne* (Schaus, 1893). **37.** Sierra Leone (HT 025). **38.** Gabon (HT 029). **39–40.** *C. flava* Aurivillius, 1904. **39.** Zambia (HT 011). **40.** Cameroon (HT 010). **41.** *C. albida* Aurivillius, 1901, Tanzania, holotype.

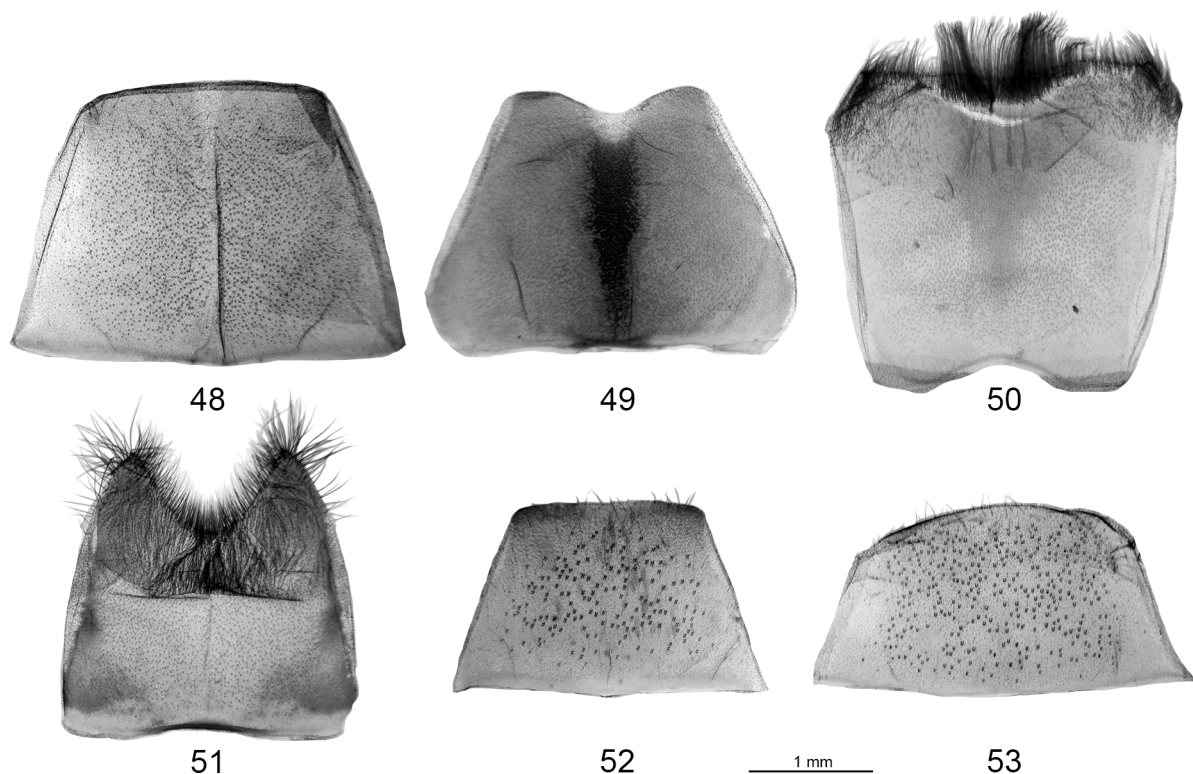


**Figs 42–47.** *Camerunia* Aurivillius, 1893 species, male genitalia, clasper apparatus (above), phallus (below). **42.** *C. smithi* sp. nov., Tanzania, holotype (HT 086). **43.** *C. smithi* sp. nov., Tanzania, paratype (HT 015). **44–45.** *C. bimaculata* (Dewitz, 1879 comb. rev., Zambia. **44.** HT 087. **45.** HT 027. **46–47.** *C. subrosea* (Aurivillius, 1893). **46.** South Africa (HT 028). **47.** Zambia (HT 030).

ciliate scale tufts of the abdomen) were equally incongruent. It must be noted that the genetic analyses were based on a small fragment of the mitochondrial gene and taxon sampling was incomplete. Further analyses utilising other mitochondrial and nuclear markers, together with the inclusion of *C. albida*, an isolated species with unique characters in the male genitalia, are required to clarify relationships among the taxa.

Although members of this genus are widely distributed, two of the six species, *C. albida* and *C. smithi* sp. nov., are narrow-range species known only from their type localities in East Africa, and the type species of the genus, *C. orphne*, is found mainly in the Guinean forests and their transition zones. The distribution of the remaining three species, *C. flava*, *C. bimaculata* (Dewitz, 1879 comb. rev. and *C. subrosea* (Aurivillius, 1893) comb. nov. are centred around the miombo woodlands of southern Central Africa. Although their modern-day ranges broadly overlap, it is interesting to note that in the south, *C. flava* does not appear to cross the Zambezi River, but *C. bimaculata* and *C. subrosea* reach South Africa, and in the north *C. subrosea* and *C. flava* cross the Rukwa Rift into Tanzania, whereas *C. bimaculata* does not.

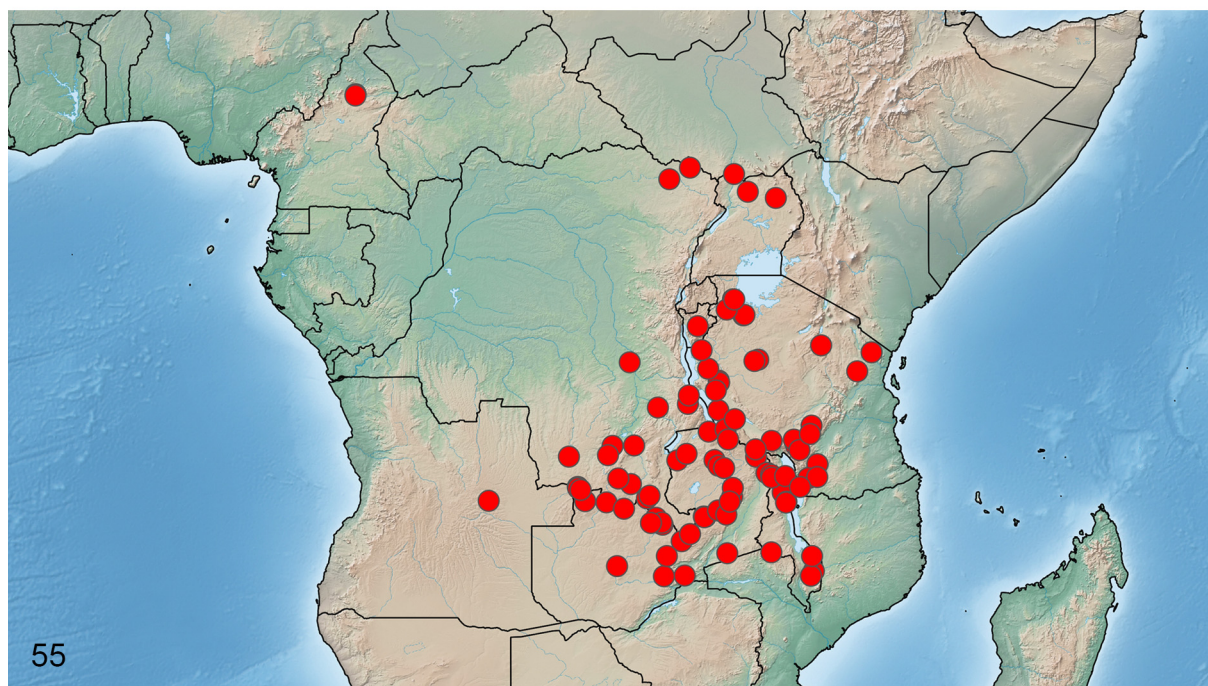
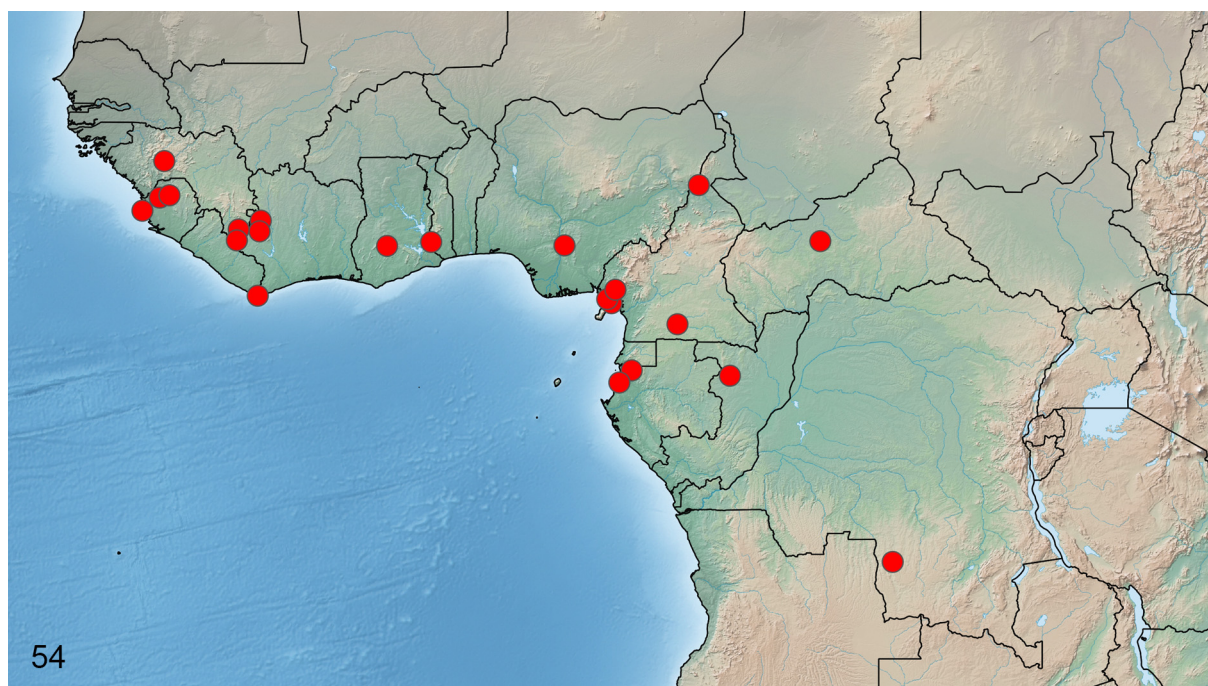
Over 400 specimens were examined as part of this revisionary work and, as reported in other groups of Janinae (Takano 2024b), female specimens were found to be uncommon in collections, constituting only one in eight specimens (and unknown in two species). Females of *Camerunia* are infrequently attracted to light but when they are, large numbers of males often congregate as observed on at least two occasions in northern Zambia by the present author. Furthermore, over three-quarters of the material examined was collected in the past 20 years, indicating the general scarcity of specimens in historical collections and



**Figs 48–53.** *Camerunia* Aurivillius, 1893 species, male eighth abdominal sternite. **48.** *C. orphne* (Schaus, 1893) (HT 029). **49.** *C. flava* Aurivillius, 1904 (HT 011). **50.** *C. albida* Aurivillius, 1901, holotype (ANHRT). **51.** *C. smithi* sp. nov. holotype (HT 086). **52.** *C. bimaculata* (Dewitz, 1879) comb. rev. (HT 087). **53.** *C. subrosea* (Aurivillius, 1893) (HT 028).



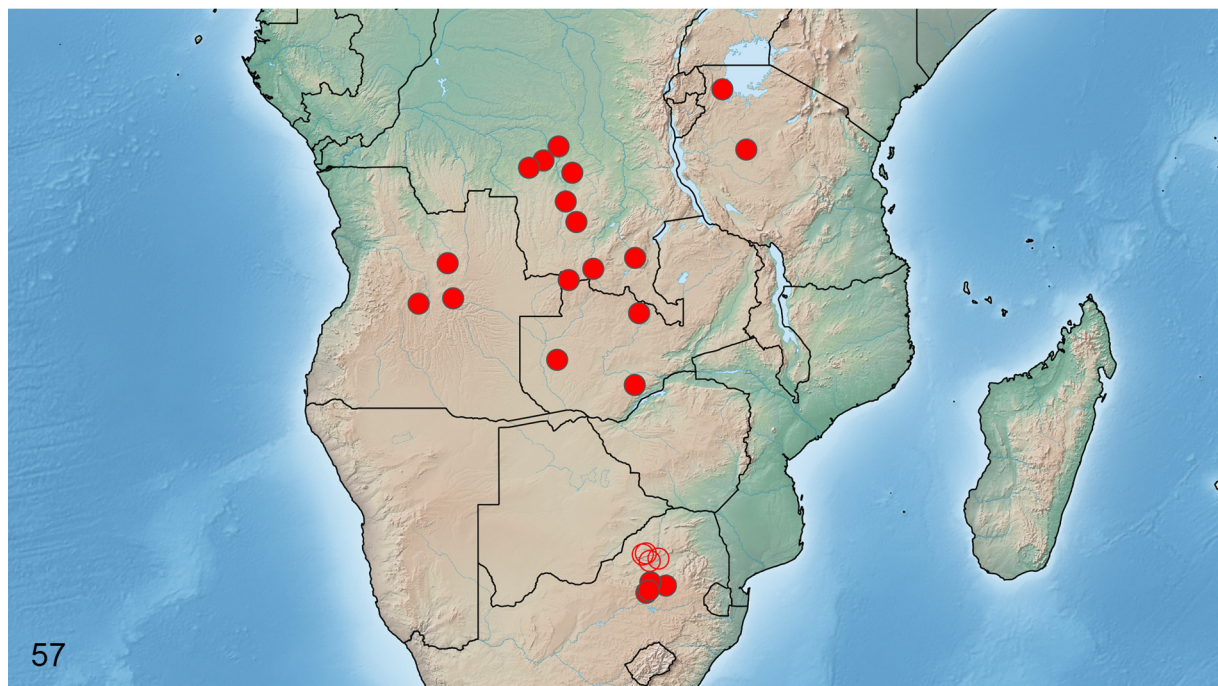
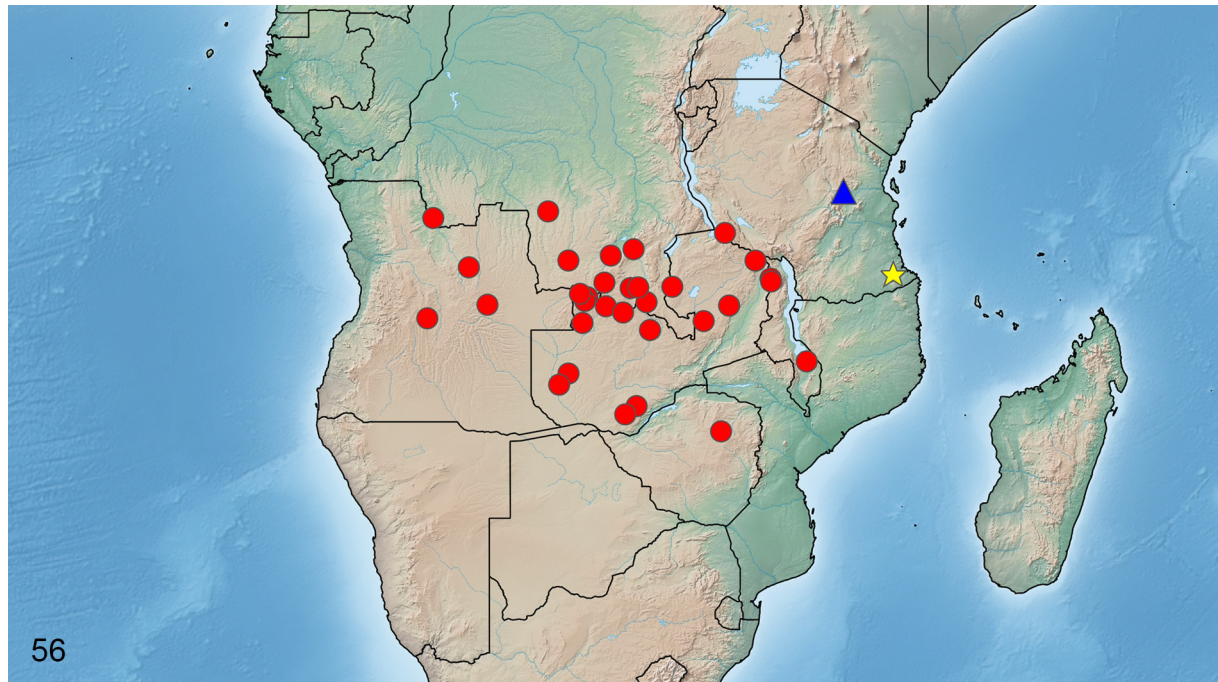
the need for careful and considerate faunistic assessments in an era when biodiversity conservation is paramount. The discovery of a highly distinct new species of *Camerunia* from a small forest fragment in the Eastern Arc Mountains of Tanzania highlights once more the high levels of endemism in this extremely biodiverse region and reinforces the importance in undertaking further biological inventories, especially for nocturnal insects, and protecting what remains of these extraordinary ecosystems (Takano 2022).



**Figs 54–55.** Distribution maps of *Camerunia* Aurivillius, 1893 species. **54.** *C. orphne* (Schaus, 1893). **55.** *C. flava* Aurivillius, 1904.



The synonymy of two genera with *Camerunia* leaves 20 genera in Janinae, some remaining in a state of disarray (e.g., *Jana* Herrich-Schäffer, 1854). But despite their large size and beautiful appearance, natural groupings are unclear due to the extreme plasticity of the genitalia (Forbes 1955) and paraphyletic assemblages, such as the “*Ganisa*-group” proposed by Oberprieler *et al.* (2003), have arisen as a result. Moreover, the DNA barcode region of Janinae is highly variable in some genera (e.g., *Camerunia*)



**Figs 56–57.** Distribution maps of *Camerunia* Aurivillius, 1893 species. **56.** *C. bimaculata* (Dewitz, 1879) comb. rev. (red circles), *C. smithi* sp. nov. (blue triangle) and *C. albida* Aurivillius, 1901 (yellow star). **57.** *C. subrosea* (Aurivillius, 1893) (open circles represent records from iNaturalist).

whereas in others, it has proven insufficient to separate species (e.g., *Vianga* Fletcher, 1982 – see Takano 2024b). To provide a robust higher-level classification, future systematic work within a molecular and morphological phylogenetic framework is necessary to form a structure from which further generic revisions can be undertaken.

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