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Revision of the genus *Palaeugoa* Durante, 2012, with descriptions of seven new species (Lepidoptera: Erebidae: Arctiinae: Lithosiini)

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Abstract

The paper provides the taxonomic revision of the genus *Palaeugoa* Durante, 2012. Seven new species are described: *P. moa* Volynkin & László, **sp. nov.** (Sierra Leone), *P. smithi* Volynkin & László, **sp. nov.** (Gabon, Cameroon, Republic of the Congo, Democratic Republic of the Congo, Uganda), *P. megala* Volynkin & László, **sp. nov.** (Rwanda), *P. takanoi* Volynkin & László, **sp. nov.** (Gabon), *P. asafis* Volynkin & László, **sp. nov.** (Cameroon), *P. aristophanousi* Volynkin & László, **sp. nov.** (Gabon) and *P. ngoko* Volynkin & László, **sp. nov.** (Cameroon). *Nolidia peregrina* Hacker, 2014 described in the family Nolidae is transferred to the genus *Palaeugoa* Durante, 2012 of the family Erebidae: *Palaeugoa peregrina* (Hacker, 2014), **comb. nov.** The lectotype of *Xanthetis spurrelli* Hampson, 1914 is designated. Adults, male and female genitalia of all species discussed are illustrated in 27 colour and 29 black and white figures.

Key words: Sub-Saharan Africa, Afrotropical Region, lectotype, new combination, Nolidae, Nolinae, taxonomy.

Introduction

Palaeugoa Durante, 2012 was erected as a monotypic genus for *Xanthetis spurrelli* Hampson, 1914 described from Ghana (Durante 2012). Five years later, the second species of the genus, *P. secunda* Volynkin, 2017 was described from the coastal lowland forests of Sierra Leone. The third species, *P. camerunensis* (Strand, 1912) was transferred to *Palaeugoa* from the genus *Asura* Walker, 1854 by Volynkin *et al.* (2019). Durante suggested the genus to be closely related to *Eugoa* (unassigned to any tribes of Lithosiini) based on the "dorsal processes of the tegumen and short and stout uncus" (Durante 2012). However, in *Palaeugoa* the uncus is weakly sclerotized, dorso-ventrally flattened and fully fused with tuba analis whereas in *Eugoa*, the uncus is conspicuously more robust and clearly separated from tuba analis. Furthermore, the processes treated by Durante as part of the tegumen, in fact erect from the valval costal margin, representing transtillar processes. Other characters of the male and female genitalia of the genus suggest closer link to the members of the subtribe Nudariina. Volynkin *et al.* (2019) provisionally placed it in the *Asura/Mitochrista* generic complex, although such characters as the uncus fused with tuba analis and the

ground plan of the female genitalia are unique in the generic complex. These characters suggest a potentially closer connection with certain groups of the genus *Cyana* Walker, 1854 (e.g. the subgenera *Isine* Karisch, 2013, *Volitivulpecula* Karisch, 2013, *Cornutivulpecula* Karisch, 2013, *Strigivulpecula* Karisch, 2013). To clarify the systematic position of the genus, comprehensive molecular studies would be necessary.

In the Lithosiini collections held at the African Natural History Research Trust, Leominster, the Natural History Museum, London, and the Bavarian State Collection of Zoology, Munich, series of various unidentified Lithosiini species reminiscent of *Palaeugoa* were found. Examination of their genital structures has proved that three of them belong to yet undescribed species, the description of which are provided in the present paper. Additionally, among the unidentified Lithosiini materials housed in the aforementioned museums as well as in the Museum of Natural History, Berlin, five additional species with dark wing pattern were located by the authors. The comparison of the genitalia of these species revealed their congenerity with the yellowish *P. spurrelli* and its allies, forming separate species groups within *Palaeugoa*. One of these peculiar species was erroneously assigned in the subfamily Nolinae of Nolidae and described as *Nolidia peregrina* Hacker, 2014 from Uganda (Hacker 2014). In the current paper, we transfer *N. peregrina* to the family Erebidae, subfamily Arctiinae, tribe Lithosiini and place it in the genus *Palaeugoa*: *Palaeugoa peregrina* (Hacker, 2014), **comb. nov.**, in addition, describe four further allied species as new to science.

Material and methods

Abbreviations of the depositories used: ANHRT = African Natural History Research Trust, Leominster, UK; MWM/ZSM = Museum Witt in the Bavarian State Collection of Zoology (Museum Witt München / Zoologische Staatssammlung München), Munich, Germany; NHMUK (formerly BMNH) = Natural History Museum, London, UK; MFN = Museum of Natural History, Berlin (Museum für Naturkunde), Berlin, Germany; ZSM = the Bavarian State Collection of Zoology (Zoologische Staatssammlung München), Munich, Germany.

The genitalia were dissected and mounted in euparal on microscope slides. The photos of adults were taken using a Nikon D3100/AF-S camera equipped with a Nikkor, 18–55 mm lens. The photos of genitalia were taken by the same camera attached to a microscope with an LM-scope adapter. All pictures were processed using the Adobe Photoshop CC 2018® software.

Systematics

Palaeugoa Durante, 2012

Palaeugoa Durante, 2012, *European Journal of Taxonomy*, **22**: 5 (Type species: *Xanthetis spurrelli* Hampson, 1914, by original designation).

Diagnosis. The male genitalia of the species of the genus are characterized by the combination of the following characters: (1) the uncus is short, dorso-ventrally flattened and fully fused with the tuba analis (such an uncus structure is unique within the *Asura/Miltochrista* generic complex, but similar to certain groups of *Cyana* having, however, only the tip of uncus separated from the tuba analis); (2) the transtilla either bears a large process (*P. spurrelli* and *takanoi* species groups) or is strongly thickened, spinulose and fused with the dorsal part of the anellus (*P. peregrina* species-group); (3) the sacculus bears one or two processes, of which the distal one is well-separated from the cucullus. The female genitalia are characterized by (1) the broad and well-sclerotized 8th abdominal segment; (2) the short or reduced apophyses anteriores; (3) the presence of antevaginal plate; (4) the tubular and membranous ductus bursae (in other species of the *Asura/Miltochrista* generic complex the ductus bursae is dorso-ventrally flattened and sclerotized, with the exceptions of *Barsochrista* N. Singh & Kirti, 2016 and the subgenus *Nebulene* Volynkin & Černý, 2018 of the genus *Ovipennis* Hampson, 1900 where the ductus bursae is also membranous but short and broad); (5) the very broad and membranous appendix bursae, which is larger than or about the same size of the corpus bursae (this character is also unique within the *Asura/Miltochrista* generic complex and similar to that of the genus *Cyana*).

Distribution. The genus is widespread in the rainforests of West and Central Africa.

Species content of the genus *Palaeugoa*

P. spurrelli species-group

- *spurrelli* (Hampson, 1914)
- *moa* Volynkin & László, **sp. nov.**
- *secunda* Volynkin, 2017
- *camerunensis* (Strand, 1912)
- *smithi* Volynkin & László, **sp. nov.**
- *megala* Volynkin & László, **sp. nov.**

P. takanoi species-group

- *takanoi* Volynkin & László, **sp. nov.**
- *asafis* Volynkin & László, **sp. nov.**

P. peregrina species-group

- *peregrina* (Hacker, 2014), **comb. nov.**
- *aristophanousi* Volynkin & László, **sp. nov.**
- *ngoko* Volynkin & László, **sp. nov.**

Taxonomic account

The *P. spurrelli* species-group

Diagnosis. The members of the species-group are characterized by the bright yellow or pale orange wing and body colouration. In the male genitalia, the species-group is distinguished by the combination of the following features: (1) the anellus is membranous (it is partially covered in very small spinules only in *P. smithi*); (2) the transtillae bear large lobe-like processes which are interconnected by a thick-walled membrane or fused basally; (3) the cucullus is broad, with a relatively long membranous ventral part; (4) the costal process may bear an elongate but short crest.

Description. External morphology of adults. Small moths with forewing length 6.5–12 mm in males and 9.5–11 mm in females (the female of *P. megala* is unknown). Sexual dimorphism limited: females slightly larger than males with slightly longer and broader forewing. Antennae of both sexes sparsely ciliate. Body and wing colouration varies from bright yellow to pale orange with some pinkish suffusion in certain species. Forewing pattern diffuse, brownish. Subbasal line shortly zigzagged, sometimes interrupted into series of dots. Antemedial lines irregularly undulate, interrupted, consisting of series of dots. Medial line more or less parallel with and running close to the antemedial line, irregularly undulate, may be interrupted at veins. Postmedial line irregularly zigzagged, strongly curved outwards opposite the cell, its posterior end curved towards tornus. Subterminal line broad, irregularly undulate, running parallel with the postmedial line, interrupted into series of spots of different sizes. Terminal line is represented by a row of small dots at veins which sometimes connected to each other by a pale suffusion. Cilia colouration as forewing ground colour. Hindwing considerably paler than forewing, without pattern.

Male genitalia. Uncus short, dorso-ventrally flattened, broad at base, tapered distally, rounded apically, weakly sclerotized, sparsely setose, fully fused with tuba analis. Tuba analis thick, membranous, subscaphium weakly setose. Tegumen short and narrow. Anellus membranous (weakly spinulose in *P. smithi*). Juxta broad but short, ribbon-like, weakly sclerotized, in some species with a conspicuous medial process directed ventrally. Vinculum short, broad, U-shaped. Transtillae with large lobe-like flattened processes, which may be connected with thick-walled intrategumenal membrane or fused into one plate (as in *P. smithi*). Valva elongate, moderately broad. Costa with an elongate but short transverse crest on its inner surface (absent in *P. camerunensis* and *P. smithi*). Cucullus broad, setose, with large membranous ventral part. Sacculus narrow, with elongate and apically pointed distal process, in some species (viz. in *P. smithi* and *P. megala*) also with an elongate and apically pointed medial process directed postero-dorsally. Aedeagus elongate and narrow, nearly straight, without processes (except in *P. camerunensis* where slightly sinuous bearing a plate-like medio-dorsal crest). Vesica relatively short, with several short granulated diverticula, in some species (*P. smithi* and *P. megala*) also with one or two elongate diverticula bearing one

or a few spines apically. Distal plate of vesica absent. **Female genitalia.** Papillae anales rectangular with rounded corners, weakly setose. Apophyses posteriores long and thin. Apophyses anteriores very short and thin (in *P. camerunensis* and *P. smithi*) or fully reduced (in *P. spurrelli* and *P. secunda*). Postvaginal area of 8th abdominal segment weakly sclerotized, rugose and weakly dentate, or thick-walled membranous and slightly rugose (in *P. camerunensis*). Ostium bursae moderately broad, with membranous dorsal margin; antevaginal plate broad but very short, band-like, weakly sclerotized. Ductus bursae short, narrow, thick-walled membranous, longitudinally rugose. Corpus bursae elliptical, posterior end moderately sclerotized and rugose; medial section weakly sclerotized, longitudinally rugose and densely covered in short spinules; anterior section densely spinulose or scobinated. Appendix bursae broad, globular or elliptical, membranous or weakly setose, erected laterally, with basal section narrow, weakly sclerotized and rugose.

Palaeugoa spurrelli (Hampson, 1914)

(Figs 1–3, 28–31, 51)

Xanthetis spurrelli Hampson, 1914, *Catalogue of the Lepidoptera Phalaenae in the British Museum*. Supplement 1: 728, fig. 241 (Type locality: [Ghana] “Gold Coast, Bibianaha”).

Type material examined. Lectotype (hereby designated) (Figs 1, 28): male, “Gold Coast. Bibianaha. 70 miles N.W. of Dimkwa. 700 ft. H.G.F. Spurrell. 1911-244.” / blue ring type label “SYNTYPE” / “Arctiidae genitalia slide No. 301” / QR-code label with a unique number “NHMUK010914367” (NHMUK).

Paralectotypes: 1 female, “Gold Coast. Bibianaha. 700 ft. XII.1911. H.G.F. Spurrell. 1911-275.” / blue ring type label “SYNTYPE” / “*Xanthetis spurrelli* type ♀ Hmps.” / QR-code label with a unique number “NHMUK010914367” (NHMUK); 1 female, “Gold Coast. Bibianaha. 700 ft. XII.1911. H.G.F. Spurrell. 1911-275.” / red ring type label “Type” / “*Xanthetis spurrelli* type ♀ Hmps.” (NHMUK).

Additional material examined. GUINEA: 1 male, Konakri, Macenta Prefecture, Zياما Forest, 550 m, 250 Watt, VIII.2016, Petrányi, G., Müller, G.C., Kravchenko, V.D. et al., Thomas Witt Stiftung; 10 males, 2 females, same locality and collectors, but XI.2016; 45 males, 4 females, same locality and collectors, but XII.2016, gen. slide Nos.: ZSM Arct. 2019-565, 2019-566, MWM 33751, MWM 33752 (males), MWM 33754 (female) (all prepared by Volynkin); 31 males, 4 females, the same locality and collectors, but 17.XI.–01.12.2016, gen. slide Nos.: MWM 33753, MWM 33852 (males), ZSM Arct. 2019-567 (female) (all prepared by Volynkin); 8 males, the same locality and collectors, but III.2017; 5 males, the same locality and collectors, but IV.2017 (MWM/ZSM); 1 male, Guinee Forestiere, Bossou Forest and Institut de Recherche Environnementale de Bossou (Lowland Forest-Farmland), 690m, 07°38'32"N, 08°30'30"W, 24–31.vi.2019, MV Light Trap, Dérozier, V., Suah Dore, J., Koivagui, S., Miles, W., Sáfián, S., Warner, R. leg., ANHRT:2019.11, gen. slide No.: AV5986 (ANHRT). **LIBERIA:** 1 male, Lofa county, Wologizi Mts, Rosewood Camp, 585m, 8°06'14.9"N, 9°58'27.3"W, 18.xi.–1.xii.2018, MV Light Trap, Sáfián, Sz., Simonics, G. leg., ANHRT:2018.43, gen. slide No.: AV5191; 1 male, female, Lofa County, Wologizi Mts, base camp forest, 611m, 8°07'17"N, 9°57'42"W, 20.xi.–01.xii.2017, MV Light Trap (125W), Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg., ANHRT:2017.33, gen. slide No.: AV 4451 (male), AV4476 (female) (ANHRT); 2 males, Lofa County, Foya Proposed Protected Area, 530m, 7°56'36"N, 10°16'36"W, 10–19.xi.2017, MV Light Trap (125W), Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg., ANHRT:2017.33, gen. slide Nos.: AV4452, AV5021; 2 males, Nimba Mts camp, ENNR, Nimba county, 1165m, 7°31'45"N, 8°31'37"W, 03–13.xii.2017, MV Light Trap (125W) Aristophanous, M., Sáfián, Sz., Simonics, G., Smith, L. leg. ANHRT:2017.33, gen. slide Nos.: AV4450, AV5196; 2 males, Nimba Mts., ENNR, Nimba county (Cellcom road), 1000–1100m, 7°32'45.88"N, 8°31'21.04"W, 02–14.xii.2017, Cold Cathode Light Bucket, Aristophanous, M., Sáfián, Sz., Simonics, G., Smith, L. leg., ANHRT:2017.33, gen. slide Nos.: AV5020, AV5195; 2 males, same site, but collected at 16–28.xii.2018 by Sáfián, Sz. and Simonics, G., gen. slide Nos.: AV5193, AV5194; 1 male, same site and collectors, 16–28.xii.2018, gen. slide No.: AV5137; 2 males, Nimba County, Nimba Mts., ENNR, Cellcom road, 750m, 7°33'3.78"N, 8°31'46.49"W, 16–28.xii.2018, Cold Cathode UV Light Trap (8 W), Sáfián, Sz., Simonics, G. leg., ANHRT:2018.43, gen. slide Nos.: AV5118, AV5136; 1 male, 494m, Nimba county, Nimba Mts., ENNR, Grassfield FDA Field Station, 7°29'32.45"N, 8°34'54.05"W, 22.xi.2018, Light Trap, Blended Bulb (250W), Sáfián, Sz., Simonics, G. leg., ANHRT:2018.43, gen. slide No.: AV5192; additional long series of both sexes from Lofa, Nimba and Sinoe Counties (ANHRT). **IVORY COAST:** 14 males, Tai

NP, Tai Research Station, 174m, 05°49'59.8"N, 07°20'32.0"W, 5–10.vii.2015, Light Trap, Aristophanous, M., Moretto, P., Ruzzier, E. leg., ANHRT: 2017.14, gen. slide Nos.: AV5189, AV5190, AV5981; 1 male, same site and collectors, 14–23.xi.2015, ANHRT:2017.16; 1 male, same site but collected at 25.iii.–17.iv.2017 by Aristophanous, A., Aristophanous, M., Geiser, M., Moretto, P., gen. slide No.: AV4488; 3 males, Abidjan, Banco Forest (Parc National du Banco), 39–48m, 05°23'03.8"N, 04°03'11.2"W, 21–30.iv.2017, MV Light Trap, Aristophanous, A., Aristophanous, M., Geiser, M., Moretto, P. leg. ANHRT:2017.25 (ANHRT). **GHANA:** 1 female, W Africa, Kumasi, 13 Jan. Lt. Sanders / E.R. Banks collection. B.M. 1928-208. / Arctiidae Brit. Mus. slide No. 5756; 2 males, Ashanti, 35 km E of Kumasi, 3 km NE of Kubease, 6°42'N, 1°20'W, 04.IV.2014, 240m, leg. J. & W. De Prins, De Prins Coll. BMNH (E) 2014-125, unique numbers: NHMUK 10915993 and 10915994, gen. slide Nos.: NHMUK010314589 and NHMUK010314590 (both prepared by Volynkin) (NHMUK).

Diagnosis. The forewing length is 7–9.5 mm in males and 10–11 mm in females. The species slightly varies in size, forewing width and the intensity of pinkish suffusion on the wings. *Palaeugoa spurrelli* is very similar externally to *P. secunda* and *P. moa* and reliable identification is possible only by the examination of the genitalia structures. In the male genitalia, the broad and setose transtillar process bearing a short but broad inner protrusion is characteristic for the species. The vesica of *P. spurrelli* may bear one or two tiny spinules on the tips of lateral and medial diverticula which may also be absent within the same population. The frequent lack of spines is probably due to their deciduous character and loss during copulation. The differences between *P. spurrelli*, *P. moa* and *P. secunda* are discussed in details below in the diagnoses of the two latter species.

Distribution. The species is known from Guinea, Liberia, Ivory Coast (new records) and Ghana (Hampson 1914).

The records from Cameroon (Delabye *et al.* 2020) and western Kenya (Kühne 2008) were based on misidentification representing other species of the genus (see below).

Palaeugoa moa Volynkin & László, **sp. nov.**

(Figs 4, 32)

Type material. Holotype (Figs 4, 32): male, “Sierra Leone, 120m, Tiwai Island, Moa River, N07°33'00”, W11°21'09”, 17–22.vi.2016, Light Trap, leg. Takano, Miles & Goff, ANHRT:2017.18” / “ANHRTUK 00026223”, gen. slide No.: AV5019 (ANHRT).

Diagnosis. The forewing length is 8 mm in the male holotype. The new species is externally indistinguishable from *P. spurrelli*, *P. secunda* and *P. camerunensis*. The male genital capsule of *P. moa* is most similar to that of *P. secunda*, but differs from it by the conspicuously broader base of the transtillar process, the considerably longer medial process of the juxta, and the larger costal process. The aedeagus of the new species differs from that of *P. secunda* by its more elongate proximal section. The vesica configurations of the two species are very similar, but the main chamber of the vesica is slightly narrower in *P. moa* than in *P. secunda*. In comparison to that of *P. spurrelli*, the genital capsule of *P. moa* has a conspicuously more elongate and distally narrower transtillar process lacking an inner triangular protrusion and a shorter but more prominent costal process. The vesica of the new species differs from that of *P. spurrelli* by its larger and longer medial diverticulum.

Female is unknown.

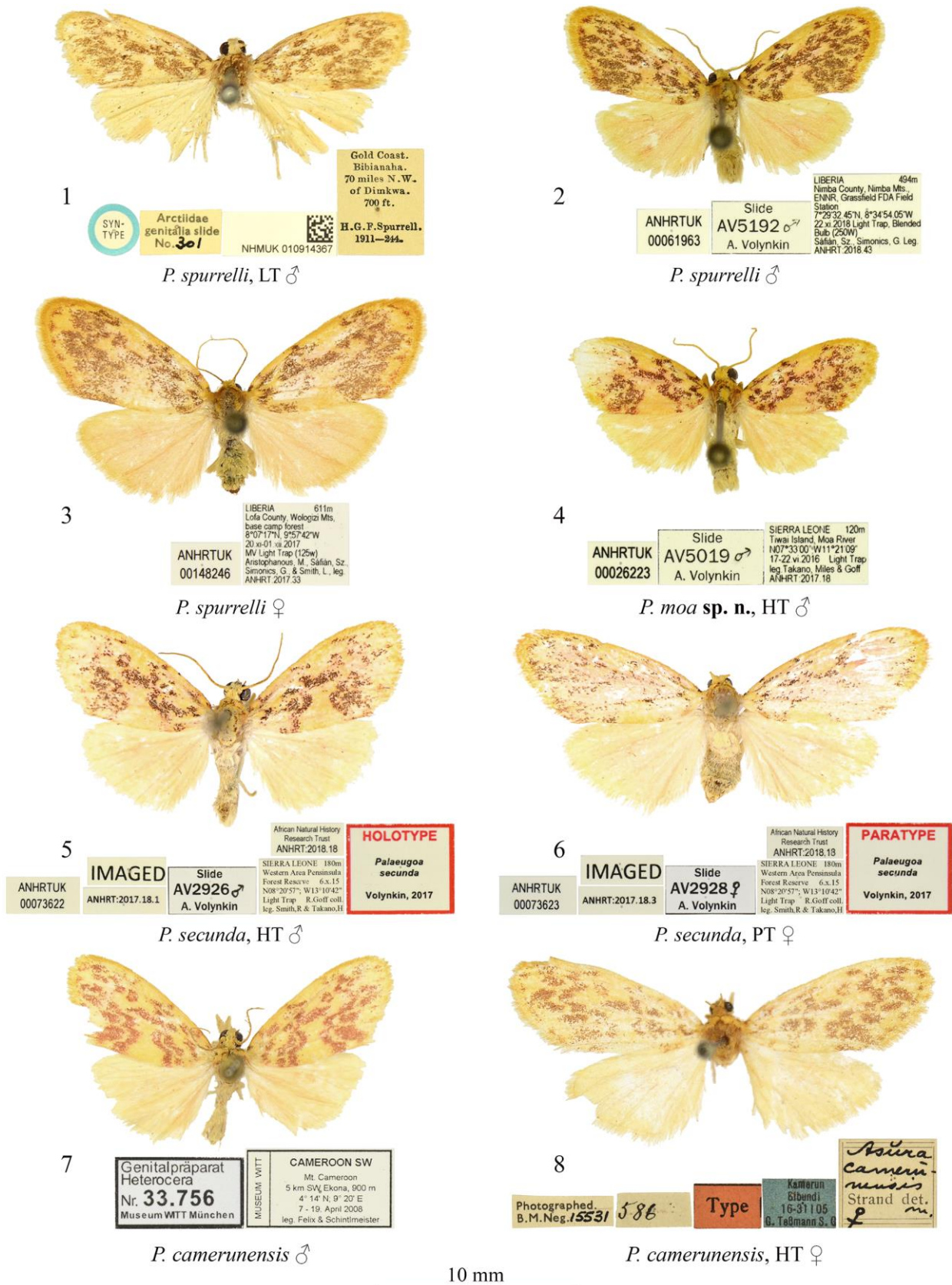
Distribution. The new species is known only from a primary lowland forest in the Tiwai Island of the Moa River in Sierra Leone.

Etymology. The specific epithet refers to the type locality by the Moa River.

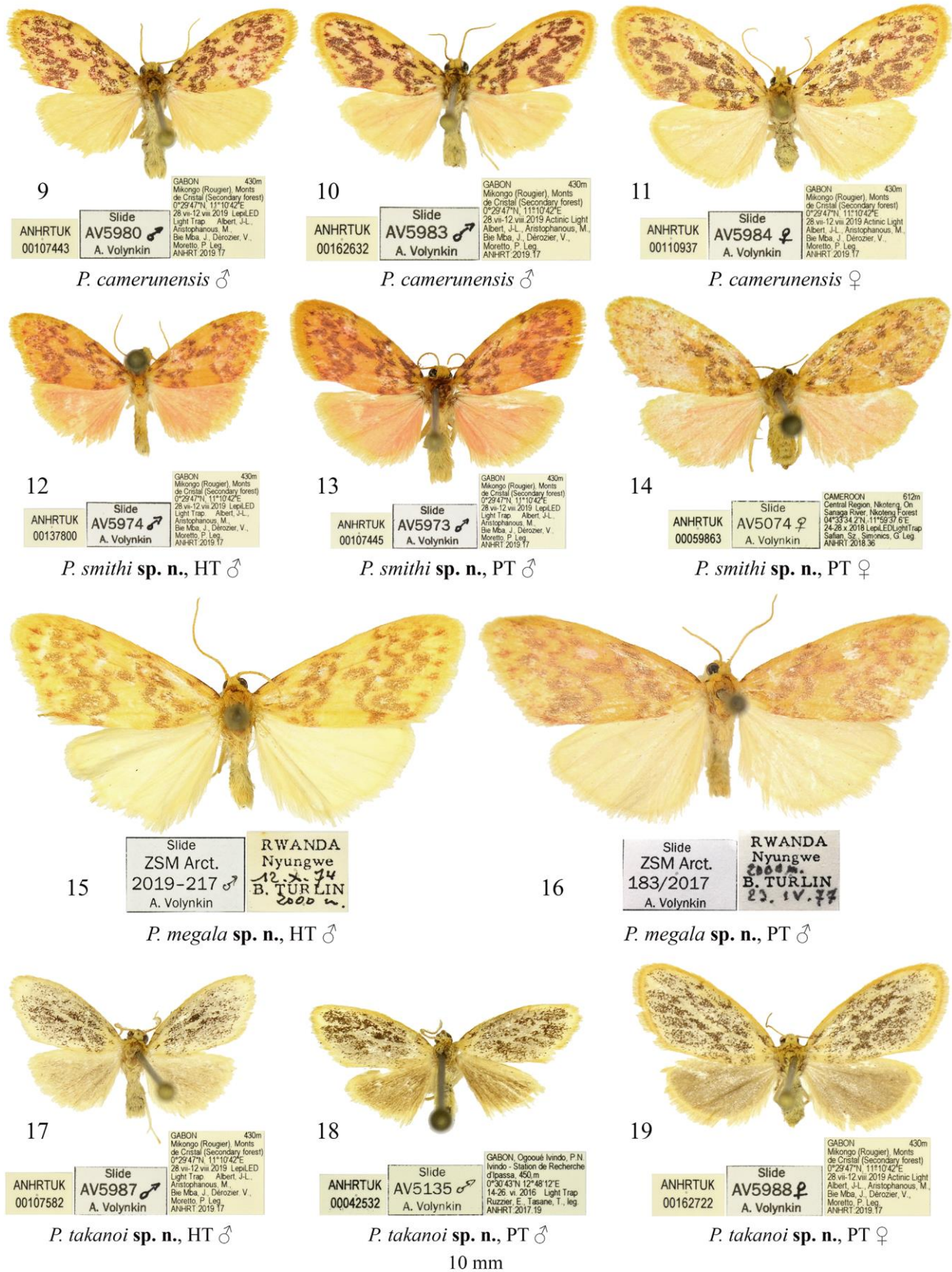
Palaeugoa secunda Volynkin, 2017

(Figs 5, 6, 33–35, 52)

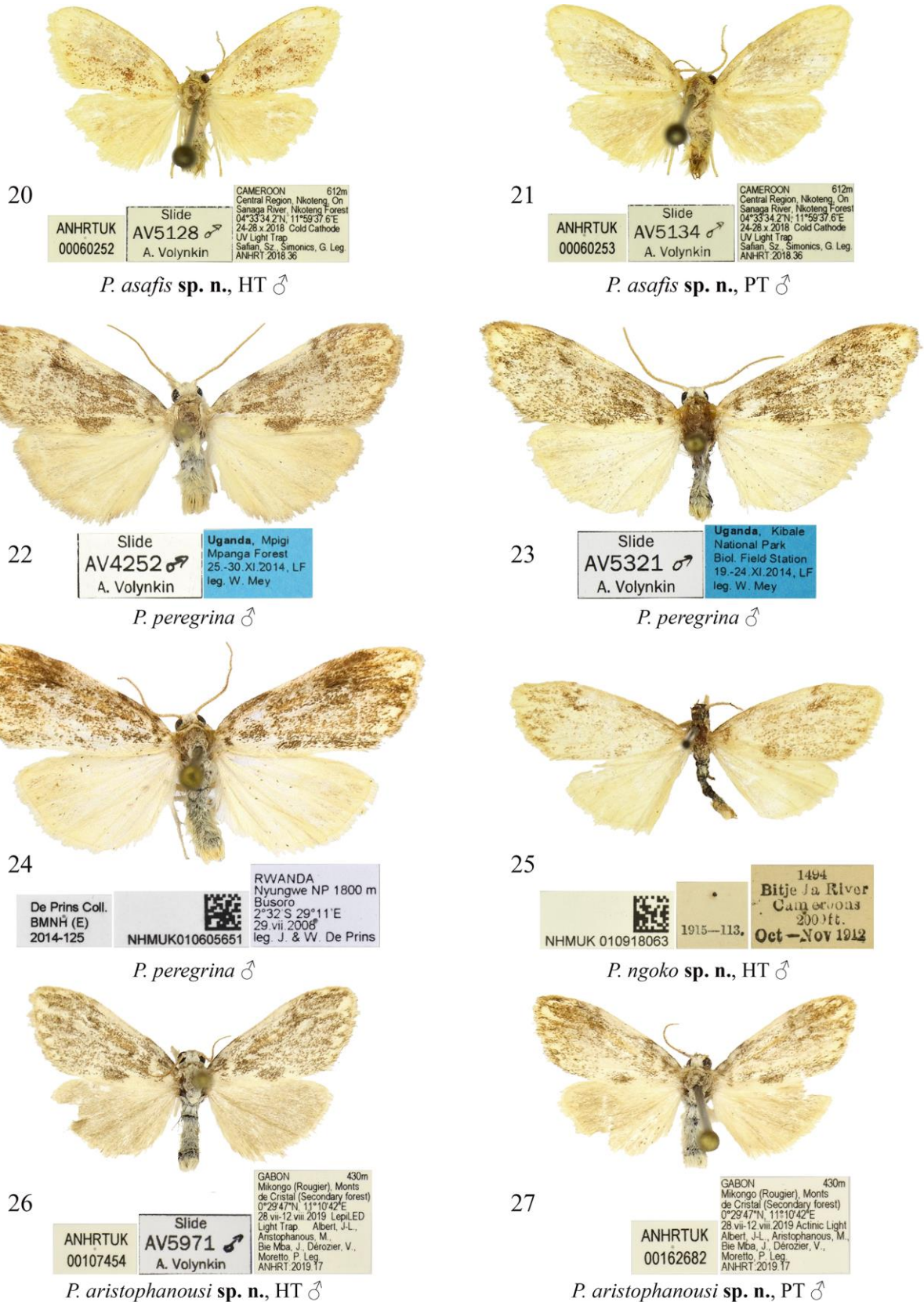
Palaeugoa secunda Volynkin, 2017, *Zootaxa* 4353 (2): 385, figs 1, 2, 5, 7 (Type locality: “Sierra Leone, 180 m, Western Area Peninsula Forest Reserve, N08°20'57”; W13°10'42””).



Figures 1–8. *Palaeugoa* spp., adults. Depositories of the specimens: 1 in NHMUK (©); 2–6 in ANHRT; 7 in MWM/ZSM; 8 in MFN



Figures 9–19. *Palaeogoa* spp., adults. Depositories of the specimens: 9–14, 17–19 in ANHRT; 15 and 16 in ZSM.



Figures 20–27. *Palaeugoa* spp., adults. Depositories of the specimens: 21, 21, 26 and 27 in ANHRT; 22 and 23 in MFN; 24 and 25 in NHMUK (©).

Type material examined. Holotype (Figs 5, 33): male, “Sierra Leone, 180m, Western Area Peninsula Forest Reserve, 6.X.15, N08°20'57", W13°10'42" Light Trap R. Goff coll. leg. Smith, R & Takano, H”; “ANHRT:2017.18.1”; “African Natural History Research Trust ANHRT:2018.18”; “IMAGED”; “ANHRTUK 00073622”; gen. slide No.: AV2926 (ANHRT).

Paratypes. SIERRA LEONE: 1 male, 1 female, with same data as the holotype, unique numbers: ANHRTUK 00073623, 00073624, gen. slide No.: AV2928 (female); 5 males, same site, 24.x.2015, unique numbers: ANHRTUK 00073625–00073629, gen. slide No.: AV2927; 3 males, 1 female, same site, 21.ix.2015, unique numbers: ANHRTUK 00073630–00073633, gen. slide Nos.: AV3010, AV3011, AV3012 (males), AV5991 (female) (ANHRT).

Additional material examined. SIERRA LEONE: 1 male, 1 female, Western Area Peninsula Forest Reserve, 180m, 21.ix.2015, N08°20'57", W13°10'42", Light Trap, R. Goff coll. leg. Smith, R. & Takano, H., ANHRT:2018.19 (ANHRT).

Diagnosis. The forewing length is 7.5–8.5 mm in males and 10 mm in females. *Palaeugoa secunda* is very similar externally to *P. spurrelli* and *P. moa*. Some male specimens of *P. secunda* have slightly broader forewing than that of the other two congeners, but the reliable identification requires examination of the genital structures. The male genital capsule of *P. secunda* differs from that of *P. spurrelli* by the conspicuously narrower and more elongate transtillar process lacking an inner triangular protrusion, the slightly longer juxta with shallower basal depression. In addition, the valva of *P. secunda* bears a conspicuously shorter medial dorsal process, and a much smaller, narrow-triangular costal process, which is elongate crest-like in *P. spurrelli*. The female genitalia of *P. secunda* are very similar to those of *P. spurrelli*, but distinguishable by the somewhat smaller papillae anales, the slightly stronger dentation of the postvaginal area of the 7th sternite, and the noticeably longer antevaginal plate which has a shallower medial depression at the ostium bursae. The corpus bursae of *P. secunda* has a slightly shorter area of spinulose scobination medially and a somewhat broader appendix bursae bearing more robust spinulose scobination compared to those of *P. spurrelli*. The differences between *P. secunda* and *P. moa* are discussed in the diagnosis of *P. moa*.

Distribution. The species is known only from the western coast of Sierra Leone, its type series was collected in the lowland forest of the Western Area Peninsula (Volynkin 2017).

Palaeugoa camerunensis (Strand, 1912)
(Figs 7–11, 36, 37, 53, 54)

Asura camerunensis Strand, 1912, *Archiv für Naturgeschichte* 78 (A) (9): 102 (Type locality: [Cameroon] “Bibundi in Kamerun”).

Type material examined. Holotype (by monotypy) (Fig. 8): female without abdomen, blue label “Kamerun, Bibundi, 16–31.I.[19]05, G. Tessmann S. G.” / “*Asura camerunensis* ♀ Strand det.” / red label “Type” / “586” / “Photographed. B.M. Neg.15531” (Coll. MFN).

Additional material examined. CAMEROON: 2 males, SW Cameroon, Mt. Cameroon, 5 km SW Ekona, 900m, 4°14'N, 9°20'E, 7–19.IV.2008, leg. Felix & Schintlmeister, gen. slide Nos.: MWM 33755, 33756 (prepared by Volynkin); 1 female, SW Cameroon, Dept. Meme, Ediki (S Kumba), ca. 50m, 24.I.1995, LF, leg. Aistleitner, coll. de Freina, gen. slide No.: MWM 33853 (prepared by Volynkin) (MWM/ZSM). **GABON:** 42 males, 3 females, Mikongo (Rougier), Monts de Cristal (Secondary Forest), 430m, 0°29'47"N, 11°10'42"E, 28.vii.–12.viii.2019, Actinic, LepiLED and MV Light Trap, Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., ANHRT:2019.17, gen. slide Nos.: AV5979, AV5980, AV5982, AV5983 (males), AV5984, AV5985 (females); 2 males, Nyonie (Lowland forest), 10m, 0°2'22"S, 9°20'25"E, 23–28.viii.2019, MV Light Trap, Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg. ANHRT:2019.17, gen. slide Nos.: AV5989, AV5990 (ANHRT). **DEMOCRATIC REPUBLIC OF THE CONGO:** 1 male, 17 km N Kisangani, Masako Field Station, 00°36'N 25°15'E, 388m, 2–8.II.2008, Gurkovich & Zolotuhin leg., gen. slide No.: MWM 33854 (prepared by Volynkin) (MWM/ZSM).

Diagnosis. The forewing length is 6.5–9 mm in males and 9.5–10 mm in females. The species is similar superficially to *P. spurrelli*, *P. moa* and *P. secunda*, but can be recognized by its paler yellow forewing ground colour and darker reddish wingpattern, especially the dots of the terminal line. However, worn specimens can be distinguished by the examination of the genitalia only. The male genital capsule of *P.*

camerunensis differs clearly from those of the three, aforementioned species by the broader uncus and distal section of tegumen. The transtillar process of *P. camerunensis* is more heavily sclerotized than that of the related species, elliptical with setae along its outer margin only, having a broad, plate-like base and a short subbasal ventral process on its inner margin, whereas that is weakly sclerotized, triangular or trapezoidal, covered in setae on the whole surface, lacking a plate-like base and a subbasal ventral process in *P. spurrelli*, *P. moa* and *P. secunda*. The juxta of *P. camerunensis* is conspicuously narrower than that of its congeners, lacking a medial ventral process which is characteristic for *P. spurrelli*, *P. moa* and *P. secunda*. The new species lacks the costal process of the valva which is present in the related species, in addition the ventro-apical margin of the cucullus is evenly rounded whereas that is conspicuously rounded-quadrangular in *P. spurrelli*, *P. moa* and *P. secunda*. The aedeagus of *P. camerunensis* differs from that of all other congeners by the presence of the characteristic dorso-medial sclerotized crest; moreover, it is slightly dilated sub-distally and tapered distally, whereas the aedeagi of the related species have more or less even width in their full length. The configuration of the vesica has a similar ground plan in the four allied species, but in *P. camerunensis* the medial section is more heavily granulated lacking a lateral diverticulum (which is present in *P. spurrelli*, *P. moa* and *P. secunda*); the dorsal diverticulum is narrower (which is rather globular in the congeners); the medial diverticulum bears one subdiverticulum only (whereas the analogous character in its congeners display two small subdiverticula); in addition, *P. camerunensis* has a further, distal diverticulum which is absent in *P. spurrelli*, *P. moa* and *P. secunda*. The female genitalia of *P. camerunensis* differ from those of *P. spurrelli* and *P. secunda* by the considerably less sclerotized and smooth-surfaced postvaginal area of the 7th sternite which is conspicuously rugose in the congeners and the presence of the apophyses anteriores which are fully reduced in *P. spurrelli* and *P. secunda*. In addition, *P. camerunensis* has a markedly narrower antevaginal plate with a sinuous posterior margin (which is rather concave in the related species), a somewhat longer ductus bursae, a more heavily sclerotized medial section and less scobinated and slightly shorter anterior section of the corpus bursae, and a conspicuously smaller, and less scobinated appendix bursae compared to those characters of *P. spurrelli* and *P. secunda*.

Distribution. The species was described from the coastal area of Cameroon (Strand 1912). Delabye *et al.* (2020) also reported the species from the country, misidentified as *P. spurrelli*. The recently discovered specimens from Gabon and the Democratic Republic of the Congo represent new country records. The species is presumably associated with the Guinea-Congolian lowland rainforest.

Palaeugoa smithi Volynkin & László, **sp. nov.**
(Figs 12–14, 38–40, 55)

Type material. Holotype (Figs 12, 38): male, “Gabon, 430m, Mikongo (Rougier), Monts de Cristal (Secondary forest), 0°29’47”N, 11°40’42”E, 28.vii.–12.viii.2019, LepiLED Light Trap, Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. Leg., ANHRT:2019.17” / “ANHRTUK 00137800”, gen. slide No.: AV5974 (ANHRT).

Paratypes. GABON: 56 males, 1 female, with the same date as the holotype, collecting methods include Actinic, LepiLED and MV light traps, unique numbers: ANHRTUK 00107445, 00107554–00107556, 00110935, 00110938, 00110939, 00110941, 00110943, 00110989, 00111112, 00111215–00111217, 00137794, 00137801, 00137802, 00137806, 00138685, 00138763, 00138768–00138771, 00138799, 00138801, 00138979–00138981, 00138986, 00152738, 00152741, 00153062, 00153063, 00153065–00153068, 00155635, 00156217, 00156218, 00158168, 00158169, 00160448, 00160478, 00160479, 00162629, 00162660, 00163118, 00163142, 00165223, 00165254, 00165597, 00165610, 00167921, 00167923, 00167925, gen. slide Nos.: AV5973, AV5975, AV5976; 1 male, Dilo ANPN camp, Ivindo (Secondary forest), 185m, 0°14’1”N, 12°17’49”E, 14–19.viii.2019, LepiLED Light Trap, Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., ANHRT:2019.17, unique number: ANHRTUK 00163062 (ANHRT). **CAMEROON:** 4 males, 1 female, Central Region, Nkoteng, On Sanaga River, Nkoteng Forest, 612m, 04°33’34.2”N, 11°59’37.6”E, 24–28.x.2018, LepiLED and Cold Cathode UV Light Trap, Sáfián, Sz., Simonics, G. leg., ANHRT:2018.36, unique numbers: ANHRTUK 00059682, 00059683, 00059772, 00060180, 00060181, gen. slide Nos.: AV5056, AV5073 (males), AV5074 (female) (ANHRT). **REPUBLIC OF THE CONGO:** 4 males, 1 female, Odzala Nat. Park, 400–500m, 0°23’N 14°50’E, 29.I.–3.III.1997, leg. Sinyaev & Murzin, gen. slide Nos.: MWM 33758, 33759, 33848, 33851 (males), MWM 33847 (female) (all prepared by Volynkin) (MWM/ZSM). **DEMOCRATIC REPUBLIC**

OF THE CONGO: 1 male, 1 female, 80 km SE Kisangani, village Batianionka, N0°05.8', E25°32.8', 19–21.II.2008, leg. Gurovich & Zolotuhin, gen. slide Nos.: MWM 33849 (male), MWM 33760 (female) (both prepared by Volynkin); 1 male, 17 km N Kisangani, Masako Field Station, 00°36'N, 25°15'E, 388m, 2–8.II.2008, Gurovich & Zolotuhin leg., gen. slide No.: MWM 33850 (prepared by Volynkin) (MWM/ZSM). **UGANDA:** 1 male, Western Region, Prov. Fort Portal, Lake Nkuruba, N°31.100', E30°18.146', 1–6.VII.2011, 1530m, leg. H. Sulak, gen. slide No.: MWM 33757 (prepared by Volynkin) (MWM/ZSM); 2 males, Mpigi, Mpanga Forest, 25–30.XI.2014, LF, leg. W. Mey, gen. slide No.: AV4273 (MFN).

Diagnosis. The forewing length is 6.5–8 mm in males and 8.5–9.5 mm in females. The new species differs externally from the other members of the *P. spurrelli* species-group by its smaller size, the darker orange-red colouration of the head, thorax and forewing densely suffused with pinkish scales, the considerably more reddish brown forewing pattern, and the intense pinkish suffusion on the hindwing which is pale yellow in the related species. The male genital capsule of *P. smithi* differs from that of the other congeners by the configuration of the transtillar processes which are fused into a common plate with a deep medio-distal depression, whereas the transtillar processes are detached in the other relatives. The valva shape of the new species is most similar to that of *P. megala* due to the presence of the medial saccular process (which is absent in *P. spurrelli*, *P. moa*, *P. secunda* and *P. camerunensis*), but differs from it by the straight costal margin (which is medially convex in *P. megala*) and the absence of a costal process (present in *P. megala*). In comparison with *P. megala*, the new species has considerably narrower apical part of the cucullus, a somewhat narrower distal saccular process which is less curved dorsally and a slightly less elongate medial saccular process with conspicuously broader base which is projected more distally than in *P. megala*. Furthermore, in *P. smithi* the anellus is weakly spinulose (membranous in other species of the *P. spurrelli* species-group), the juxta is short and broad, ribbon-like without a medio-ventral process (similarly to that of *P. camerunensis*), whereas in *P. megala*, the juxta is markedly longer and broader bearing a conspicuous medio-ventral process (as in *P. spurrelli*, *P. moa* and *P. secunda*). The aedeagus of *P. smithi* is slightly curved medially, evenly tapered distally (that of *P. spurrelli*, *P. moa*, *P. secunda* and *P. megala* is straight and evenly wide in its full length, whereas that is slightly S-curved and broadened proximally and subapically in *P. camerunensis*), having a well-developed coecum (which is very short in *P. camerunensis* and absent in the other four species). The vesica of the new species is considerably shorter and narrower than that of the other relatives, having an elongate medial diverticulum bearing robust cornuti apically varying in number from one to three, whereas the vesica of *P. moa*, *P. secunda* and *P. camerunensis* lack cornuti, that of *P. spurrelli* bears only very small spinules and that of *P. megala* is much broader having two long diverticula projecting adversely, both bearing robust apical cornuti varying in number from one to three. The female genitalia of *P. smithi* is easily distinguishable from those of the other members of the species-group by the markedly smaller corpus bursae having evenly sclerotized posterior section (that is rugose in other species) and evenly spinulose-scobinated medial and anterior sections (in other species the medial section is more heavily scobinated and may be weakly sclerotized). In addition, the new species has a conspicuously large and elongate appendix bursae projecting from the right side of the corpus bursae, whereas in the other species, that is shorter, more or less globular, projecting from the left side of the corpus bursae.

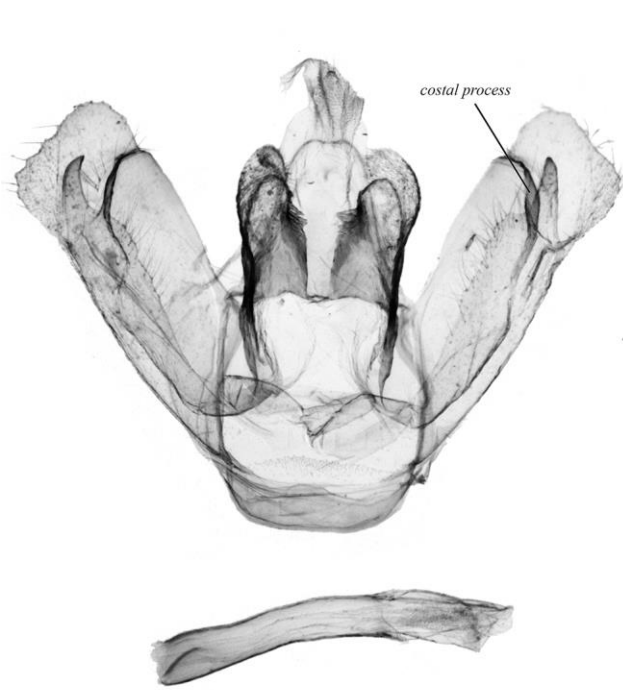
Distribution. *Palaeugoa smithi* is known to date from Cameroon, Gabon, the Republic of the Congo, the Democratic Republic of the Congo and Uganda, inhabiting the equatorial rainforests of central Africa.

Remark. Kühne (2008) reported and illustrated specimens referred as '*Asura spurrelli*' from western Kenya (Kakamega Forest) without genitalia illustration. The specimens illustrated are very similar to *P. smithi* and probably belong to this species. In the course of the preparation of this paper, the authors could not locate specimens from Kenya to confirm the identification by the genital morphology.

Etymology. The species is dedicated to Mr Richard Smith, founder and trustee of the African Natural History Research Trust, organiser of extensive entomological exploratory program in Sub-Saharan Africa.

***Palaeugoa megala* Volynkin & László, sp. nov.**
(Figs 15, 16, 41, 42)

Type material. Holotype (Figs 15, 41): male, "Rwanda, Nyungwe, 12.X.[19]74, B. Turlin [leg.], 2000m", gen. slide No.: ZSM Arct. 2019-217 (prepared by Volynkin) (ZSM).



28

P. spurrelli, LT

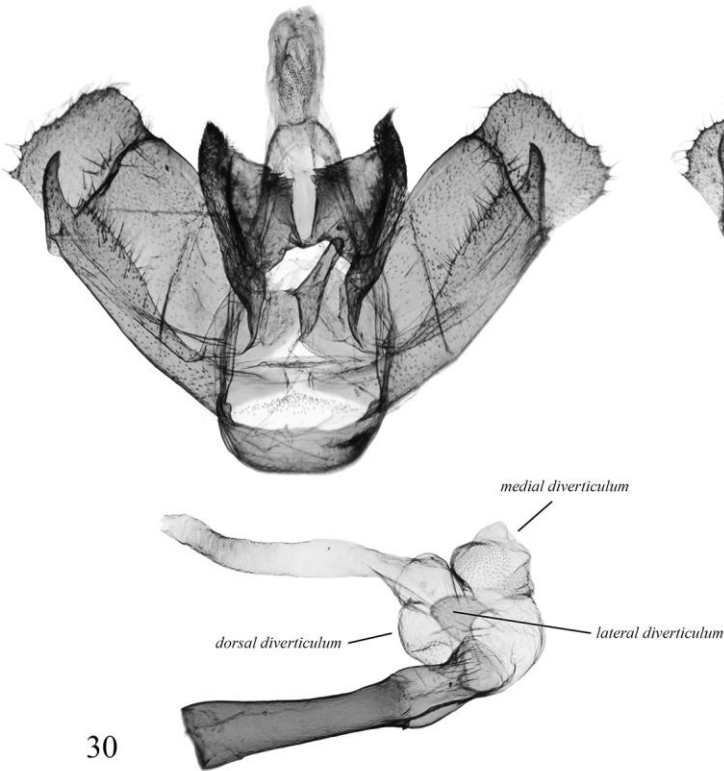
Ghana, Bibianaha, slide BMNH(E) Arct-301



29

P. spurrelli

Ghana, Ashanti, slide NHMUK010314589 Volynkin



30

P. spurrelli

Liberia, Nimba County, slide AV5194 Volynkin

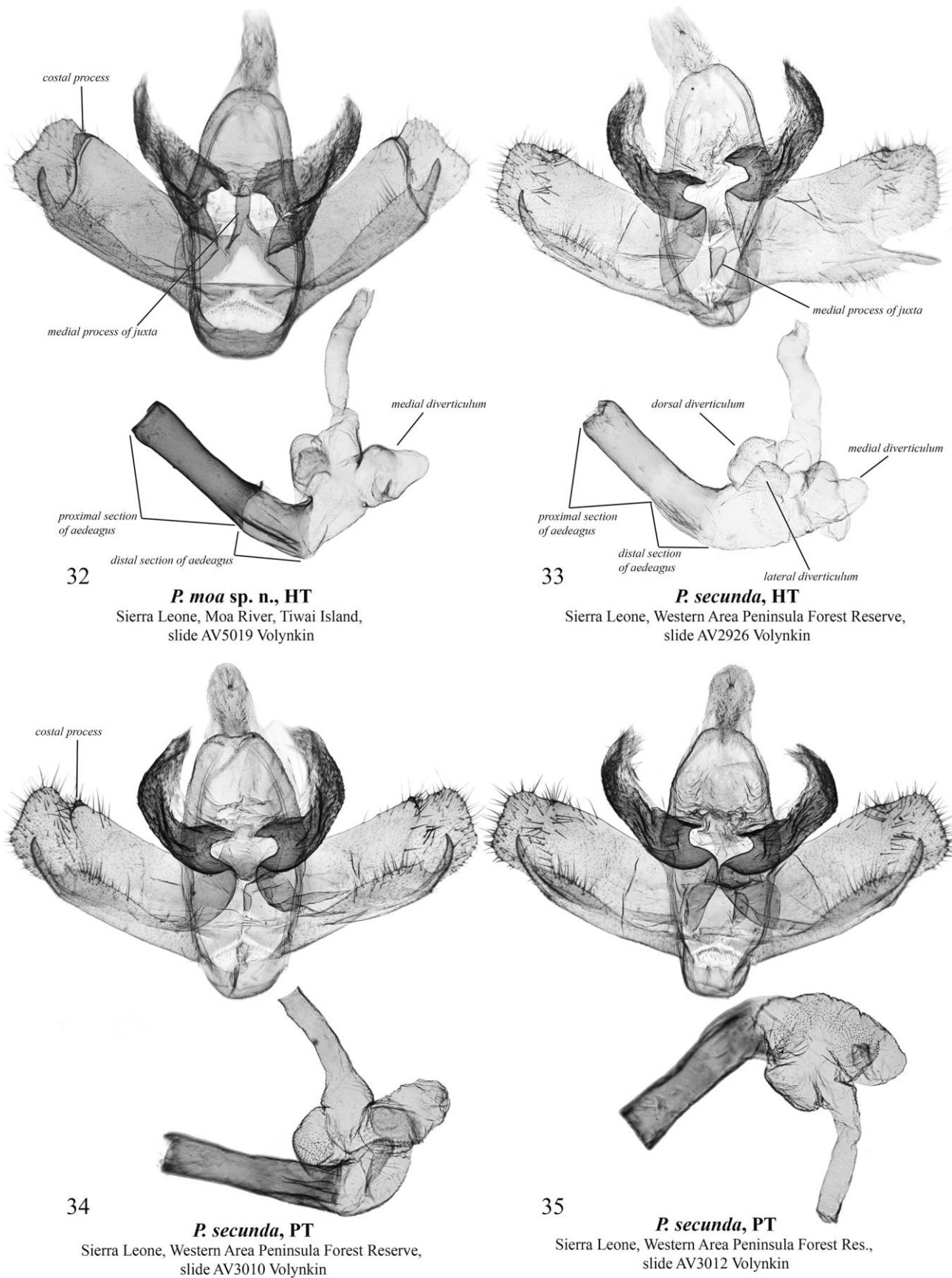


31

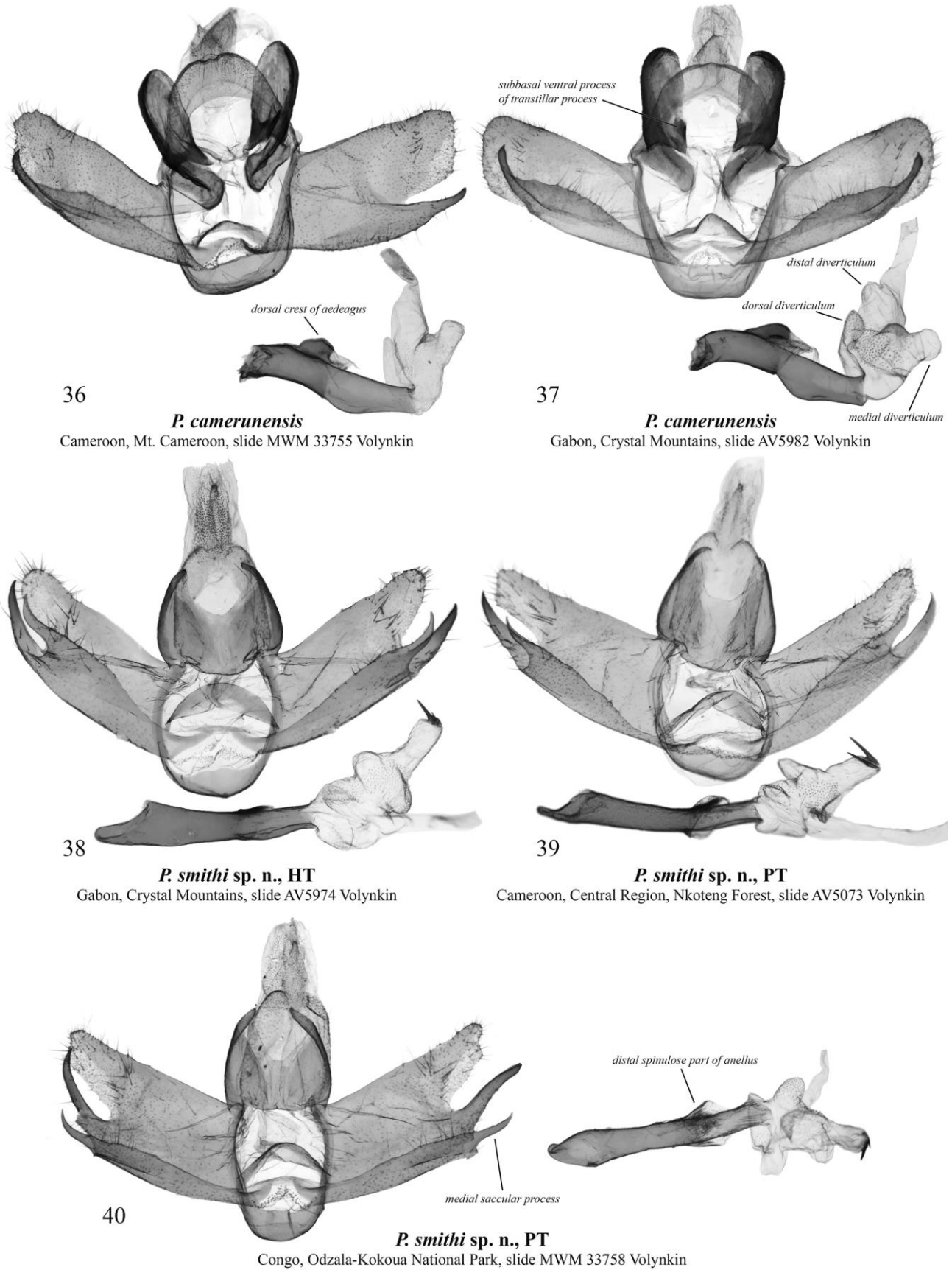
P. spurrelli

Liberia, Nimba County, slide AV5118 Volynkin

Figures 28–31. *Palaeugoa spurrelli*, male genitalia. Depositories of the specimens: 28 and 29 in NHMUK (©); 30 and 31 in ANHRT.



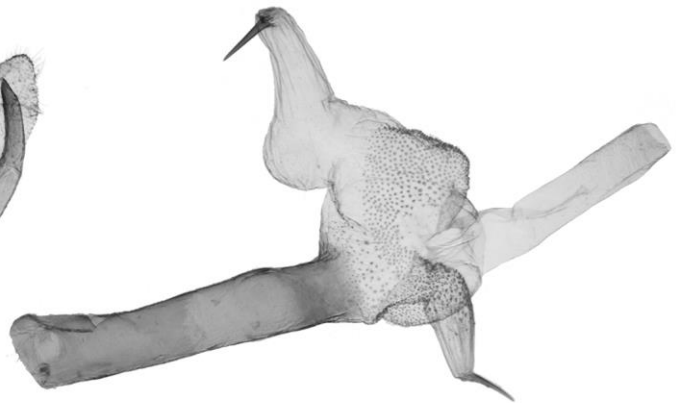
Figures 32–35. *Palaeogoa* spp., male genitalia. Specimens are deposited in ANHRT.



Figures 36–40. *Palaeugoa* spp., male genitalia. Depositories of the specimens: 36–39 in ANHRT; 40 in MWM/ZSM.

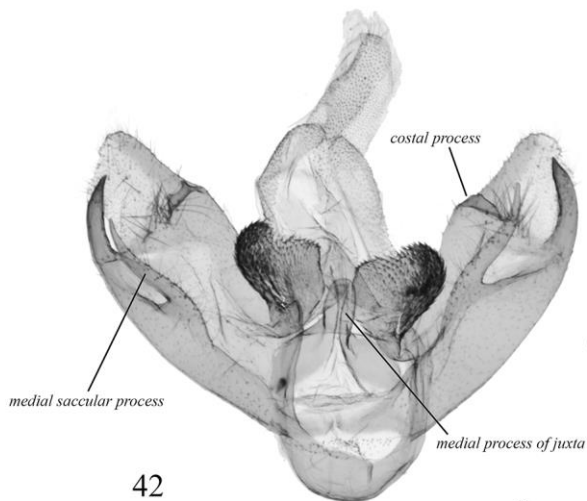


41

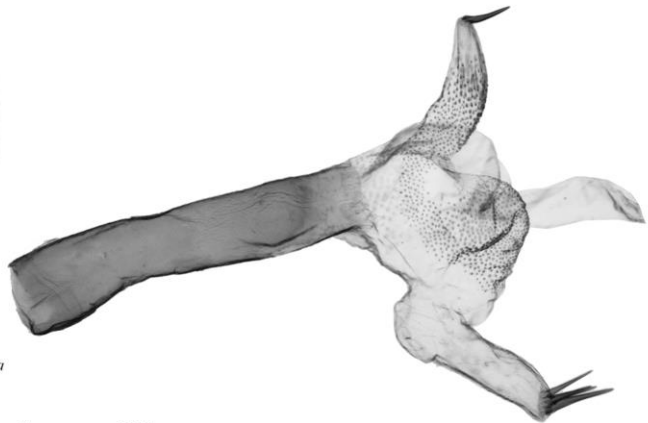


***P. megala* sp. n., HT**

Rwanda, Nyungwe Forest, slide ZSM 2019-217 Volynkin

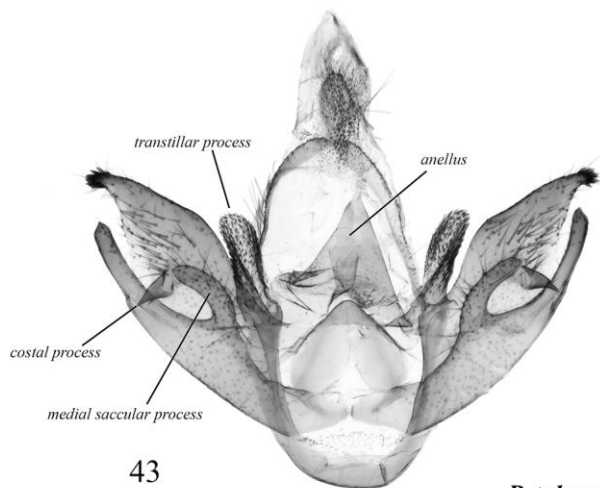


42



***P. megala* sp. n., PT**

Rwanda, Nyungwe Forest, slide ZSM 183-2017 Volynkin



43



***P. takanoi* sp. n., HT**

Gabon, Crystal Mountains, slide AV5987 Volynkin

Figures 41–43. *Palaeugoa* spp., male genitalia. Depositories of the specimens: 41 and 42 in ZSM; 43 in ANHRT.

Paratypes. RWANDA: 1 male, Nyungwe, 2000m, 23.IV.[19]77, B. Turlin [leg.], gen. slide No.: ZSM Arct. 183/2017 (prepared by Volynkin) (ZSM); 1 male, Nyungwe NP, 2000m, Kamiranzowu Swamp, 2°29'S, 29°08'E, 6.VIII.2008, leg. J. & W. De Prins, De Prins Coll. BMNH (E) 2014-125, gen. slide No.: NHMUK010315267 (prepared by Volynkin) (NHMUK).

Diagnosis. The forewing length of the new species is 11.5–12 mm in males. *Palaeugoa megala* can easily be distinguished from all other species of the *P. spurrelli* species-group by its considerably larger size. The male genital capsule of the new species is most similar to that of *P. smithi* due to the presence of a medial saccular process, but differs from it clearly by the broader uncus, the shorter, densely spinulose and detached transtillar processes (in *P. smithi* those are longer, fused into one smooth-surfaced plate with a deep medio-distal depression), the membranous anellus (which is weakly spinulose in *P. smithi*) and the presence of a large medio-ventral process of juxta (absent in *P. smithi*). In addition, the new species has somewhat wider vinculum, convex costal margin of valva (straight in *P. smithi*), a well-developed costal process (absent in *P. smithi*), broader cucullus compared to those of *P. smithi*. The medial saccular process of *P. megala* is considerably longer, somewhat thicker, narrower at base and erected medially, whereas that is shorter and narrower in *P. smithi* having a markedly broader basal section erected distally. The distal saccular process of the new species is somewhat more robust, more curved dorsally compared to that of *P. smithi*. The aedeagus of *P. megala* is conspicuously larger than that of *P. smithi*, it is straight, equally wide in its full length with a very short coecum, whereas that of *P. smithi* is slightly arched medially and gradually tapered distally, having a well-developed coecum. The vesica of *P. megala* is markedly broader than that of *P. smithi*, having two elongate, adversely projected lateral diverticula bearing robust cornuti apically, whereas that of *P. smithi* has a single, shorter diverticulum directed distally, bearing apical cornuti. Female is unknown.

Distribution. The species is known from Rwanda only, the type specimens were collected in the high elevation rainforest of the Nyungwe Forest.

Etymology. ‘Megalo’ is a Latin transliteration of the Greek word ‘μεγάλο’ meaning ‘large’. The specific epithet refers to the size of the new species which is the largest in the species-group.

The *P. takanoi* species-group

Diagnosis. The members of the species-group are characterized by their pale creamy forewing ground colour with dark greyish indistinct pattern and suffusion between the veins. The male genitalia of the species-group display the combination of the following distinctive characters: (1) the anellus is weakly sclerotized (that is membranous in the *P. spurrelli* species-group, whereas it is thick-walled and densely covered in numerous robust spines in the *P. peregrina* species-group); (2) the transtillar processes are narrow and fully detached (those are larger, lobe-like and interconnected by the intrategumenal membrane or fused in the *P. spurrelli* species-group, while represented by a densely spinulose medio-ventral thickening of transtilla in the *P. peregrina* species-group); (3) the cucullus is distally tapered and heavily sclerotized, its ventral membranous section is very short and narrow, situated basally (whereas in the *P. spurrelli* and *P. peregrina* species-groups the cucullus is broad, lobe-like, with a large ventral membranous section); (4) the costal process is well-developed, pointed, claw-like, directed ventrally (whereas that is represented by an elongate but very short crest or even may be absent in the *P. spurrelli* and *P. peregrina* species-groups). The female genitalia differ from those of the *P. spurrelli* species-group by (1) the broad antevaginal plate (which is narrow, ribbon-like in the *P. spurrelli* species-group); (2) the conspicuously lateral direction of the corpus bursae in right-angle with the axis of the ductus bursae (in the *P. spurrelli* species-group the corpus bursae is directed more or less anteriorly); and (3) the complex configuration of appendix bursae consisting of three well-separated sections (which is simply globular with a narrow neck-like base in the *P. spurrelli* species-group).

Description. Small moths with forewing length 6.5–8 mm in males and 8.5 mm in females. Sexual dimorphism limited: female slightly larger than male with somewhat more elongate and broader forewing. Antennae of both sexes sparsely ciliate. Body and wing colouration pale brownish or creamy. Forewing pattern indistinct, represented by a suffusion of dark greyish scales between veins. Hindwing with pale suffusion of dark scales. **Male genitalia.** Uncus short, dorso-ventrally flattened, weakly sclerotized and densely setose, fully fused with the tuba analis. Tuba analis broad, membranous, subscaphium weakly setose. Tegumen short and narrow. Anellus weakly sclerotized (in *P. asafis* bearing two clusters of short denticles). Juxta weakly sclerotized, broadly triangular with rounded corners and a broad and deep medio-basal

incision. Vinculum short and broad, U-shaped. Valva moderately broad and elongate, its costal margin medially convex. Cucullus setose, strongly tapered distally, apically pointed (in *P. asafis*) or narrowly rounded with a bunch of short spinules in *P. takanoi*. Costal process claw-like, relatively short and narrow, apically pointed, directed ventrally. Sacculus relatively narrow, with a long and narrow distal process and a shorter, narrow, curved medial process. Aedeagus narrow, medium long, with well-developed coecum. Vesica short and moderately broad, with two or three short, globular diverticula and one cluster of robust cornuti. Distal plate of vesica absent. **Female genitalia.** Papillae anales broadly trapezoidal with rounded corners, sparsely setose. Apophyses thin, apophyses posteriores ca. 3 times longer than apophyses anteriores. Ostium bursae moderately broad. Antevaginal plate moderately sclerotized, broad reverse-trapezoidal with undulate posterior margin. Ductus bursae short and relatively narrow, tubular, thick-walled membranous, slightly wrinkled. Corpus bursae teardrop-shaped, directed in right angle to ductus bursae axis, its distal (broader) section densely covered in small spinules; apical section thick-walled and slightly wrinkled. Appendix bursae markedly longer than corpus bursae, consists of three sections: basal section perpendicular to ductus bursae axis, medially dilated-globular, heavily sclerotized, thick-walled and slightly wrinkled; medial section directed antero-laterally, strongly tapered, thick-walled and slightly wrinkled; distal section directed anteriorly, dilated, globular, basal section densely covered in fine denticles, medial and distal sections sparsely spinulose.

Palaeugoa takanoi Volynkin & László, **sp. nov.**

(Figs 17–19, 43, 56)

Type material. Holotype (Figs, 17, 43): male, “GABON, 430m, Mikongo (Rougier), Monts de Cristal (Secondary Forest), 0°29'47"N, 11°10'42"E, 28.vii.–12.viii.2019, LepiLED Light Trap, Albert, J.-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., ANHRT:2019.17” / “ANHRTUK 00107582”, gen. slide No.: AV5987 (ANHRT).

Paratypes. GABON: 6 males, 1 female with the same data as the holotype, with collecting methods including MV, LepiLED and actinic light traps, unique numbers: ANHRTUK 00107566, 00111224, 00111225, 00148650, 00156196, 00162598, 00162722, gen. slide No.: AV5988 (female); 1 male, Ogooue Ivindo P.N. Ivindo, Station de Recherche, d'Ipassa, 450m, 0°30'43"N, 12°48'12"E, 14–26.VI.2016, Light Trap, Ruzzier, E., Tasane, T. leg., ANHRT:2017.19, unique number: ANHRTUK 00042532 (ANHRT).

Diagnosis. The forewing length of the new species is 6.5–7 mm in males and 8.5 mm in female. *Palaeugoa takanoi* differs externally from the related *P. asafis* by its pale yellow head and thorax (those are creamy in *P. asafis*), the yellow costa, terminal area and cilia of the forewing (in *P. asafis* these are agree with the ground colour), the more intense blackish suffusion between the veins, (which is reddish brown and more diffuse in *P. asafis*), and the intense dark grey suffusion on the hindwing (whereas in *P. asafis* the hindwing is only sparsely suffused with pale brownish scales medially). The male genital capsule of the new species differs clearly from that of *P. asafis* by the medially dilated uncus (which is considerably narrower with parallel margins in *P. asafis*), the thick-walled membranous anellus (which bears two clusters of small denticles in *P. asafis*) and the conspicuously more elongate juxta bearing a short conical apical protrusion (which is shorter in *P. asafis* lacking a protrusion). The valva of *P. takanoi* is markedly narrower with slightly convex costal margin (that is considerably broader, with its costal margin bearing a large rounded-triangular medio-dorsal protrusion in *P. asafis*). The tip of the cucullus of *P. takanoi* is narrowly rounded, bearing a bunch of fine spinules (which is apically pointed lacking spinules in *P. asafis*). The costal process of the valva is much shorter and basally broader in the new species than in *P. asafis*, in addition, the transtilla process of *P. takanoi* is finger-like and densely spinulose, whereas that is wide, lobe-like, bearing a cluster of long, acute cornuti in the related species. The medial saccular process is gently curved and apically rounded in the new species, whereas that is slightly S-shaped and apically pointed in *P. asafis*; the distal saccular process is considerably longer and slightly thicker in *P. takanoi* than in *P. asafis*. The aedeagus of the new species is considerably shorter and somewhat thicker than that of *P. asafis*. The vesica of *P. takanoi* is much thicker than that of *P. asafis*, bearing two subbasal granulated diverticula dorsally, (whereas *P. asafis* has only one subbasal diverticulum), the medio-ventral diverticulum of the new species is considerably broader than that of *P. asafis*, and the distal chamber of the vesica is much broader in *P. takanoi* than in its congener, bearing a broad cluster of robust cornuti which are less numerous and somewhat smaller in *P. asafis*. As the female of *P. asafis* is unknown the female genital morphology of *P. takanoi* is compared to that of the *P.*

spurrelli species-group: the new species has a considerably broader antevaginal plate, its corpus bursae is perpendicular to the axis of the ductus bursae (in the *P. spurrelli* species-group that is directed more or less anteriorly), in addition, its appendix bursae is conspicuously enlarged, consisting of three sections whereas that of the *P. spurrelli* species-group is simply globular with a narrow neck-like base.

Distribution. The new species is known to date only from Gabon, however, it is supposedly more widely distributed in the central-western African lowland rainforests.

Etymology. The species is dedicated to the knowledgeable entomologist Dr Hitoshi Takano (ANHRT), specialist of *Catharsius* dung beetles, Rhopalocera and Sphingidae, organizer and participant of several entomological expeditions in Africa.

***Palaeugoa asafis* Volynkin & László, sp. nov.**

(Figs 20, 21, 44, 45)

Type material. Holotype (Figs 20, 44): male, “CAMEROON, 612m, Central Region, Nkoteng, On Sanaga River, Nkoteng Forest, 04°33'34.2"N, 11°59'37.6"E, 24–28.x.2018, Cold Cathode UV Light Trap, Safian, Sz., Simonics, G. Leg. ANHRT:2018.36” / “ANHRTUK 00060252”, gen. slide No.: AV5128 (ANHRT).

Paratype: male, with the same data as the holotype, unique number: ANHRTUK 00060253, gen. slide No.: AV5134 (ANHRT).

Diagnosis. The forewing length is 8 mm in males. *Palaeugoa asafis* can be distinguished from *P. takanoi* by its creamy head and thorax (which are pale yellow in *P. takanoi*), the monochromatic forewing ground colour (in *P. takanoi* the forewing costa, terminal area and ciliae are bright yellow), the reddish brown and more diffuse suffusion between the veins (in *P. takanoi* the suffusion is blackish and much more intense), and the paler hindwing with a slight brownish suffusion medially (which is strongly and evenly suffused with dark grey scales in *P. takanoi*). The male genital capsule of *P. asafis* differs from that of *P. takanoi* by the evenly narrow uncus (which is medially broadened in *P. takanoi*), the presence of two clusters of small denticles on anellus (in *P. takanoi* the anellus lacks sclerotized structures) and the shorter juxta without a protrusion whereas the juxta is longer, bearing a short conical apical protrusion in *P. takanoi*. The valva of the new species is broader and somewhat shorter with the costal margin having a large rounded medio-dorsal protrusion, whereas that of *P. takanoi* is narrower with slightly convex costal margin, in addition the cucullus of *P. asafis* is apically pointed without spinules whereas that is narrowly rounded bearing a cluster of small spinules in *P. takanoi*. The new species has much longer, basally narrower and more curved costal process compared to that of the related species and shorter and broader, lobe-like transtillar processes directed distally, bearing numerous long and robust cornuti along its outer margin whereas that is finger-like, shortly dentate, and directed dorsally in *P. takanoi*. The medial saccular process is slightly S-curved and apically pointed in *P. asafis*, whereas that is evenly arched and rounded apically in *P. takanoi*, in addition, the distal saccular process is considerably shorter and somewhat narrower in the new species than in its congener. The aedeagus of the two related species are similarly straight tubular with well-developed coecum, but that of *P. asafis* is somewhat smaller than that of *P. takanoi* if compared to the size of the genital capsule. The vesica of *P. asafis* is markedly narrower than that of *P. takanoi*, bearing one dorsal granulated diverticulum subbasally (there are two subbasal diverticula in *P. takanoi*), the medio-ventral diverticulum is conspicuously narrower than that of *P. takanoi*, and the distal chamber of the vesica is much smaller than that of *P. takanoi* armed with a narrow cornuti field consisting of a cluster of smaller spines, whereas the analogous cornuti field is more extensive, consisting of more robust spines in *P. takanoi*. Female is unknown.

Distribution. The type specimens of the new species were collected in a dryer lowland rainforest in central Cameroon.

Etymology. ‘Asafis’ is a Latin transliteration of the Greek word ‘ασαφής’ meaning ‘indistinct’. The specific epithet refers to the species’ indistinct pattern.

The *P. peregrina* species-group

Diagnosis. Members of the species-group differ from those of other *Palaeugoa* lineages by their more densely ciliate male antennae and the pale creamy yellow wing colouration with greyish brown forewing

pattern consisting of indistinct shades and intense suffusion between veins. The male genitalia are characterized by the combination of the following characters: (1) the anellus is broad, thick-walled, densely covered in robust spines; (2) the transtillar processes are modified into a densely spinulose medio-ventral thickening fused with the anellus distally; (3) the cucullus is elongate, apically rounded, with a relatively long membranous ventral part; (4) the costal process is represented by a very short crest; (5) the aedeagus bears one or two characteristic longitudinal distal crests.

Description. External morphology of adults. Small moths with forewing length 8–11.5 mm in males. Male antennae densely ciliate. Body pale creamy yellow with admixture of brown scales. Forewing ground colour pale creamy yellow, pattern greyish brown, indistinct, represented by an extensive spot at wing base, an indistinct shade in the antemedial area, a longitudinal shade in the cell, a large elongate medial patch at anal margin, a dense suffusion along the costal margin near apex and a sparse suffusion between veins. Forewing cilia pale greyish brown. Hindwing pale creamy yellow with pale brownish suffusion. **Male genitalia.** Uncus short, dorso-ventrally flattened, weakly sclerotized and setose, fully fused with the tuba analis. Tuba analis broad, membranous, subscaphium weakly setose. Tegumen short and narrow. Anellus broad, thick-walled, densely covered in robust spines. Juxta weakly sclerotized, broad, trapezoidal or triangular, basally concave. Vinculum short but wide, with well-developed, broad saccus. Transtilla thickened and densely spinulose, fused with dorsal part of anellus distally. Valva relatively short and moderately broad, costal margin convex medially, cucullus narrow, apically rounded, weakly setose, ventral membranous section relatively long. Costal process very short, crest-like, erected in right angle to costal margin. Sacculus moderately wide, with a medium long, robust distal process and a short but broad medial process directed ventrally. Aedeagus relatively large when compared to the size of the genital capsule, bearing one or two conspicuous, longitudinal distal crests. Vesica short but relatively broad, with three or four diverticula with scobination, granulation or clusters of spines. Distal plate of vesica narrow and very weakly sclerotized or absent (in *P. peregrina*).

Female unknown.

Palaeugoa peregrina (Hacker, 2014), **comb. nov.**
(Figs 22–24, 46, 47)

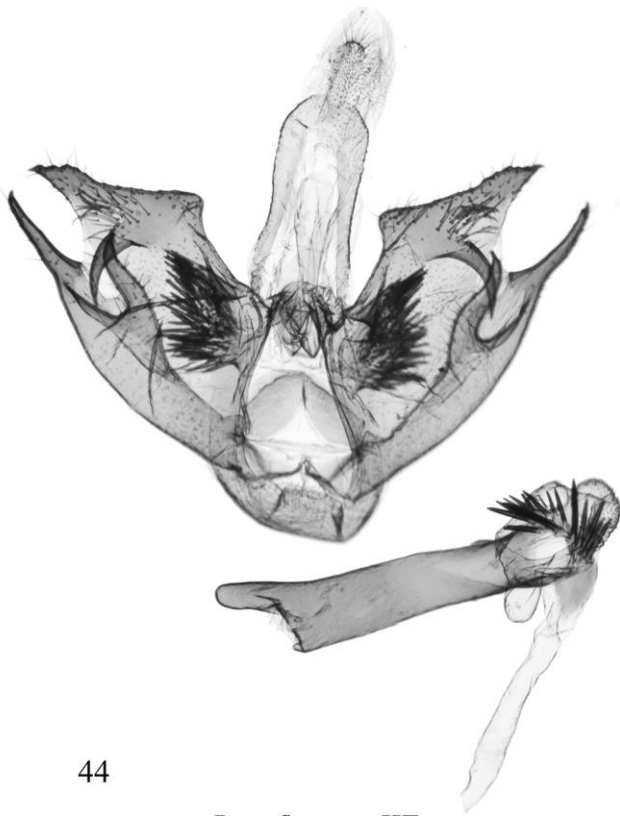
Nolidia peregrina Hacker, 2014, *Esperiana*, 19: 141, figs A, B (Type locality: “Uganda, Western District, Kibale National Park, 1500 m”).

Material examined. **UGANDA:** 1 male, Mpigi, Mpanga Forest, 25–30.XI.2014, LF, leg. W. Mey, gen. slide No.: AV4252 (MFN); 1 male, Kibale National Park, Biological Field Station, 19–24.XI.2014, LF, leg. W. Mey, gen. slide No.: AV5321 (MFN); **RWANDA:** 1 male, Nyungwe NP, 1800m, Busoro, 2°32'S, 29°11'E, 29.VII.2008, leg. J. & W. De Prins, De Prins Coll. BMNH (E) 2014-125, gen. slide No.: NHMUK010315266 (prepared by Volynkin) (NHMUK).

Diagnosis. The length of the forewing is 10–11.5 mm in males. *Palaeugoa peregrina* differs externally from its two relatives by its markedly larger size and the more intense brownish suffusion in the subterminal area of forewing. The male genital capsule of *P. peregrina* differs from that of the other members of the species-group by the much longer spines on the ventral part of anellus, the conspicuously angled medial section of the costal margin of the valva forming a medio-dorsal triangular protrusion (in *P. aristophanousi* and *P. ngoko* the costal margin is gently rounded) and the robust, curved and densely setose medial saccular process which is considerably shorter and smooth in *P. aristophanousi* and *P. ngoko*. The aedeagus of *P. peregrina* differs from those of *P. aristophanousi* and *P. ngoko* by the broadened and spinulose distal section of the dorsal distal crest, whereas that is evenly narrow and smooth in *P. aristophanousi* and *P. ngoko*. The vesica of *P. peregrina* is similar to that of *P. aristophanousi*, but differs from it by the absence of a subbasal ventral diverticulum, the less elongate medial diverticulum, and the more extensive cluster of cornuti on the ventral diverticulum. The configuration of the vesica of the new species and *P. ngoko* are conspicuously different, expressed by the different positions of diverticula and the presence of robust cornuti on the dorsal diverticulum in *P. ngoko*, whereas the dorsal diverticulum is only finely spinulose in *P. peregrina*.

The female is unknown.

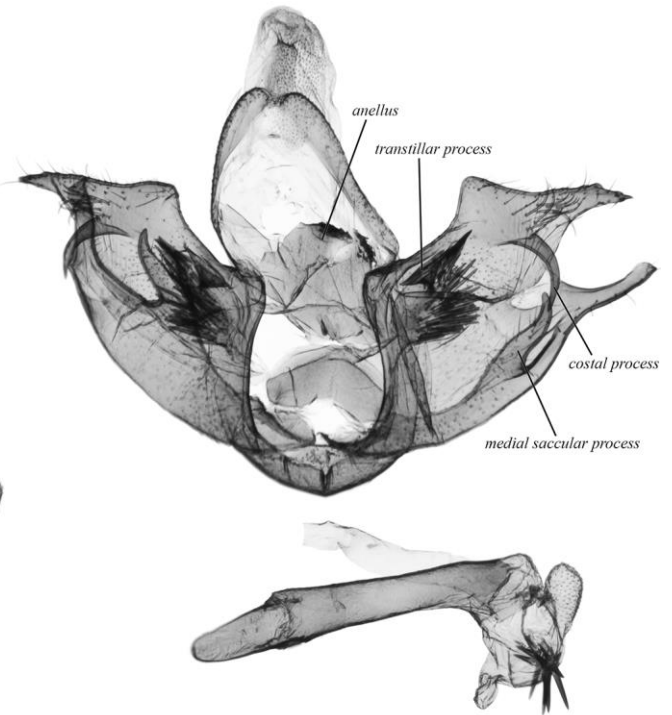
Distribution. The species is hitherto known only from Uganda and Rwanda.



44

P. asafis sp. n., HT

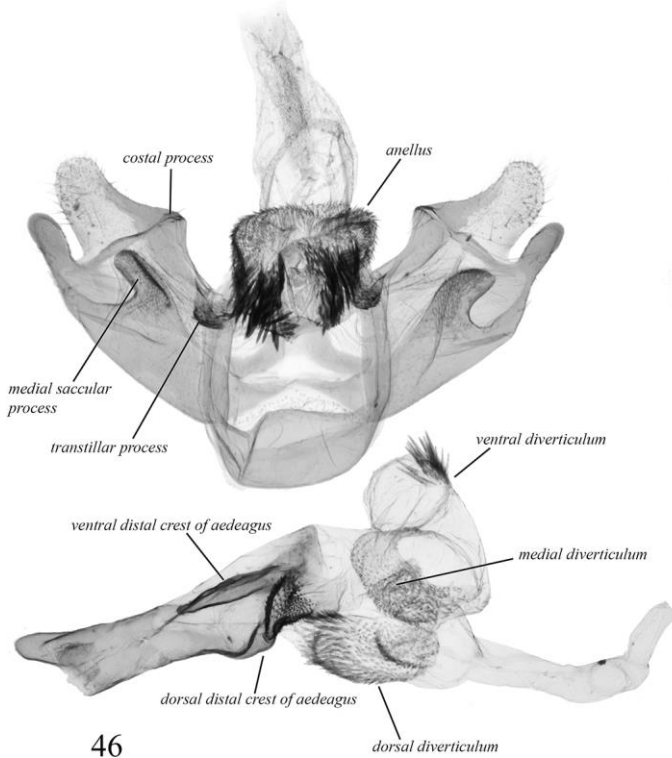
Cameroon, Central Region, Nkoteng Forest, slide AV5128 Volynkin



45

P. asafis sp. n., PT

Cameroon, Central Region, Nkoteng Forest, slide AV5134 Volynkin



46

P. peregrina

Uganda, Kibale National Park, slide AV5321 Volynkin

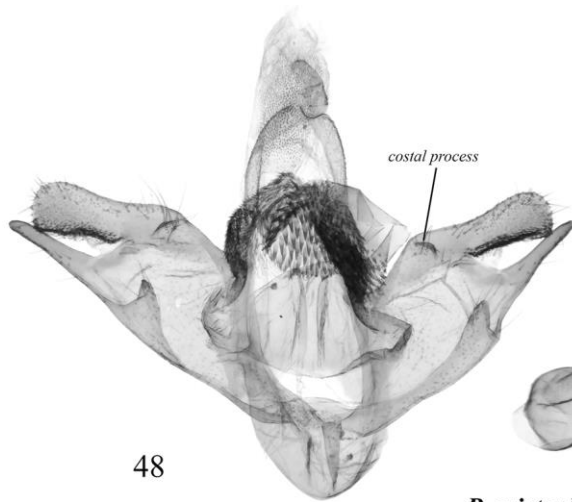


47

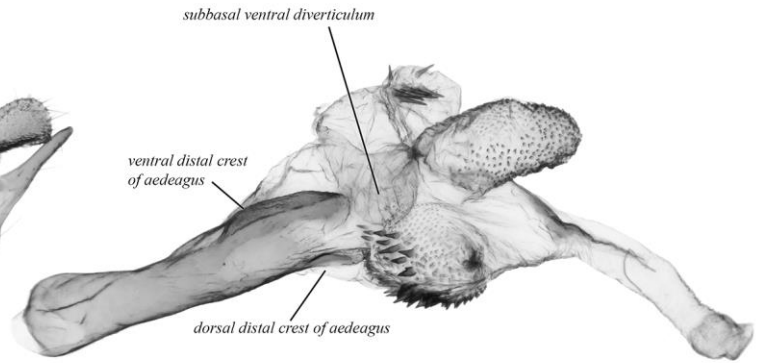
P. peregrina

Rwanda, Nyungwe Forest, slide NHMUK010315266 Volynkin

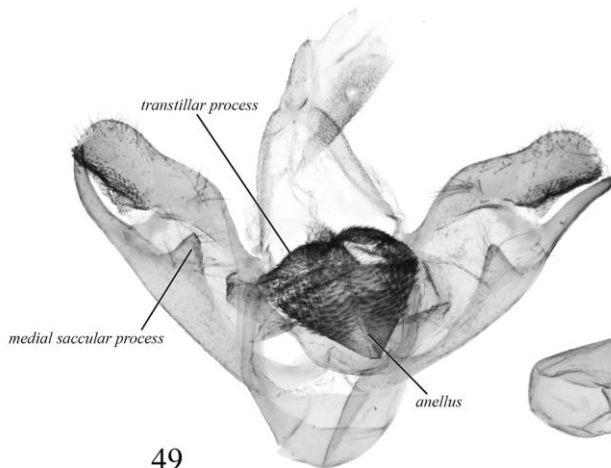
Figures 44–47. *Palaeugoa* spp., male genitalia. Depositories of the specimens: 44 and 45 in ANHRT; 46 in MFN; 47 in NHMUK (©).



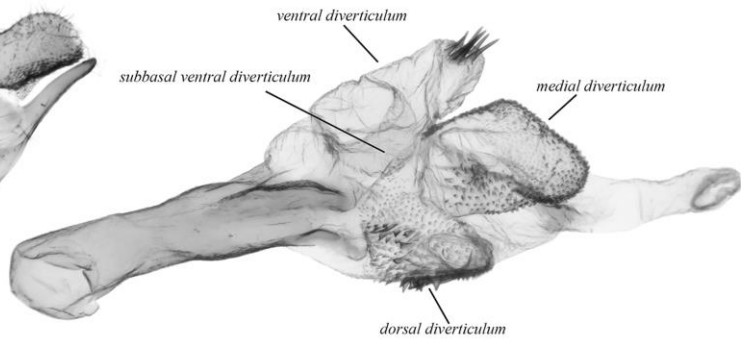
48



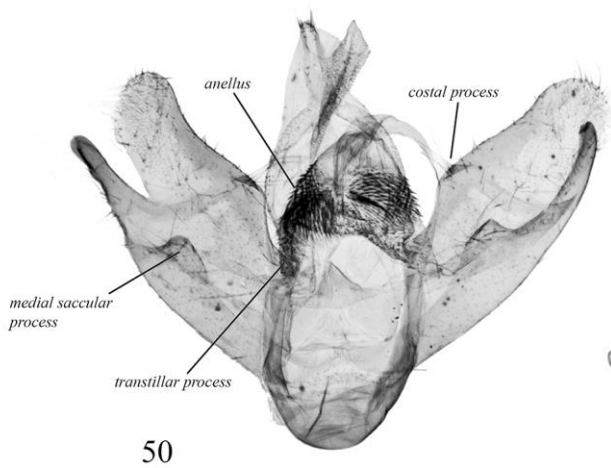
***P. aristophanousi* sp. n., HT**
Gabon, Crystal Mountains, slide AV5971 Volynkin



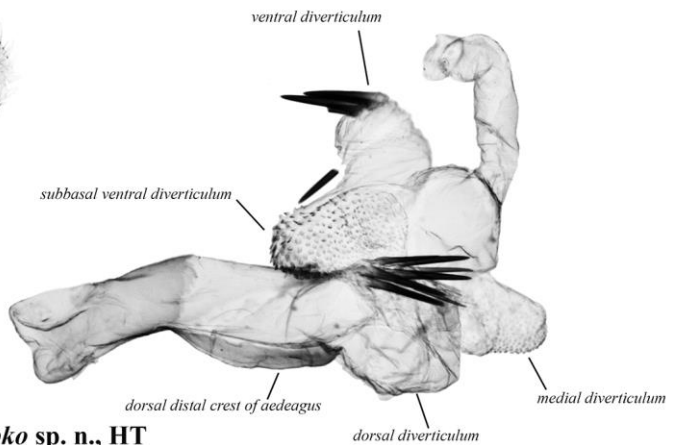
49



***P. aristophanousi* sp. n., PT**
Gabon, Komo-Océan Dept., Nyonié, slide AV5972 Volynkin

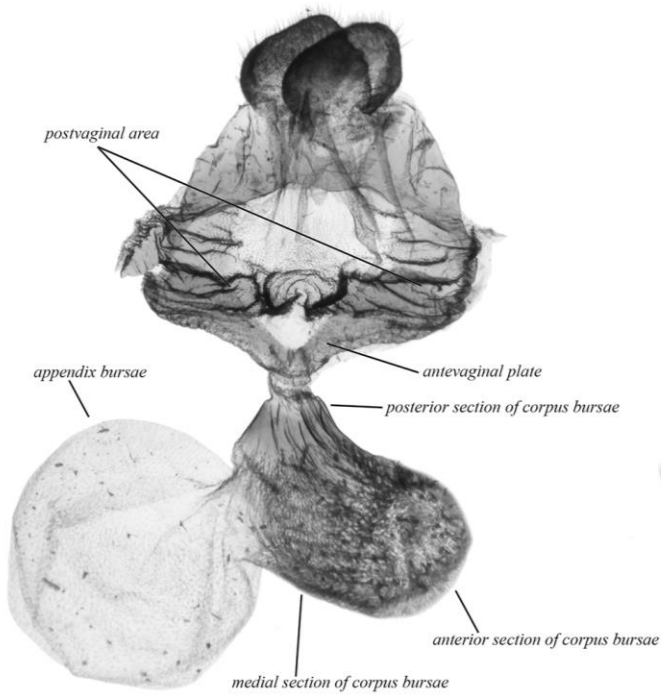


50



***P. ngoko* sp. n., HT**
Cameroon, Dja River, slide NHMUK010315725 Volynkin

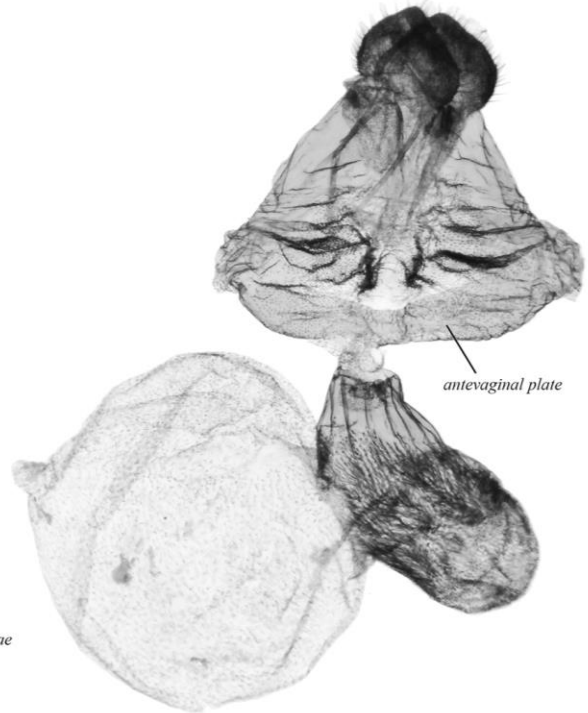
Figures 48–50. *Palaeogoa* spp., male genitalia. Depositories of the specimens: 48 and 49 in ANHRT; 50 in NHMUK (©).



51

P. spurrelli

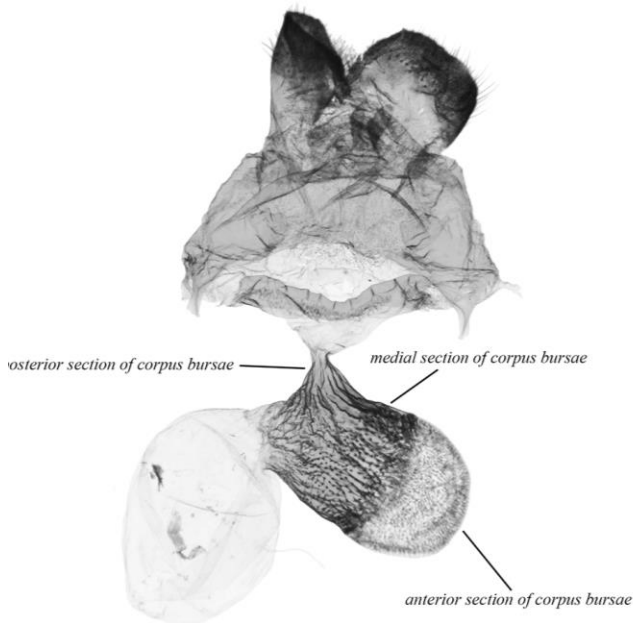
Liberia, Lofa County, Wologizi Mts,
slide AV4476 Volynkin



52

***P. secunda*, PT**

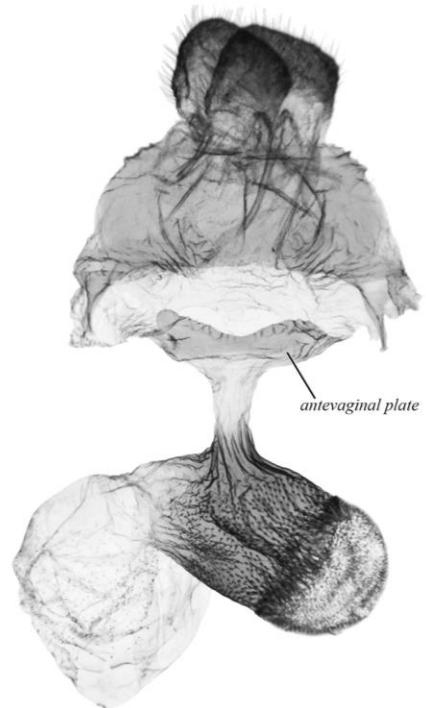
Sierra Leone, Western Area Peninsula
Forest Reserve, slide AV5991 Volynkin



53

P. camerunensis

SW Cameroon, Meme Dept., Ediki, slide MWM 33853 Volynkin



54

P. camerunensis

Gabon, Crystal Mountains, slide AV2928 Volynkin

Figures 51–54. *Palaeugoa* spp., female genitalia. Depositories of the specimens: 51, 52 and 54 in ANHRT; 53 in MWM/ZSM.

***Palaeugoa aristophanousi* Volynkin & László, sp. nov.**

(Figs 26, 27, 48, 49)

Type material. Holotype (Figs 26, 48): male, “GABON, 430m, Mikongo (Rougier), Monts de Cristal (Secondary Forest), 0°29'47"N, 11°10'42"E, 28.vii.–12.viii.2019, LepiLED Light Trap, Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., ANHRT:2019.17” / “ANHRTUK 00107454”, gen. slide No.: AV5971 (ANHRT).

Paratypes. GABON: 3 males, with the same data as the holotype, collecting method Actinic Light Trap, unique numbers: ANHRTUK 00162682, 00162741 and 00167930; 2 males, Nyonie (Lowland Forest), 10m, 0°2'22"S, 9°20'25"E, 23–28.viii.2019, MV Light Trap, Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., ANHRT:2019.17, unique numbers: ANHRTUK 00152561, 00152562, gen. slide Nos.: AV5972, LGNA1209 (ANHRT).

Diagnosis. The length of the forewing is 8–9 mm in males. *Palaeugoa aristophanousi* can be distinguished from *P. peregrina* and *P. ngoko* by its rather greyish forewing colouration and the conspicuously darker, pale greyish brown hindwing whereas the forewings are rather brownish-reddish, the hindwings are creamy yellowish in *P. peregrina* and *P. ngoko*. Additionally, the new species differs from *P. peregrina* by its markedly smaller size and the less elongate forewing. The male genital capsule of the new species differs from that of *P. peregrina* by the shorter spines on the ventral-part of anellus, the gently arched costal margin of the valva (which is strongly angled in *P. peregrina*) the narrower cucullus with heavily setose ventral margin (which is membranous in *P. peregrina*); the conspicuously narrower and slightly longer distal saccular process and the much shorter, triangular and non-setose medial saccular process which is longer and broader, slightly curved, finger-like and densely setose in *P. peregrina*. The aedeagus of the new species differs from that of *P. peregrina* by the narrower dorsal distal crest lacking a spinulose dilated distal plate. The vesica structure of *P. aristophanousi* is similar to that of *P. peregrina*, but differs by the presence of the subbasal ventral diverticulum, the more elongate medial diverticulum, and the conspicuously smaller cluster of cornuti on the ventral diverticulum. The comparison with male genitalia of *P. ngoko* is provided under the diagnosis of the latter species.

Distribution. The new species is hitherto known only from Gabon, nevertheless, it is presumably more widespread in the central-western African lowland rainforests.

Etymology. The new species is dedicated to Mr Marios Aristophanous distinguished entomologist, one of the collectors of the type series.

***Palaeugoa ngoko* Volynkin & László, sp. nov.**

(Figs 25, 50)

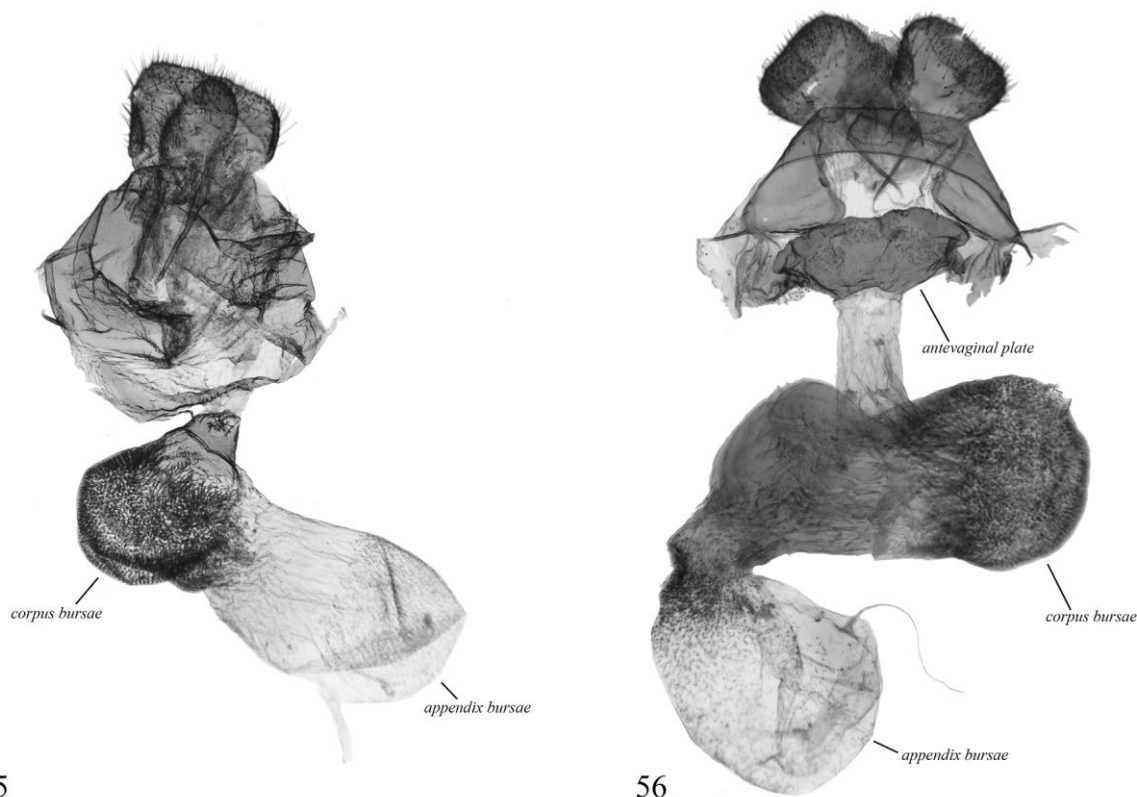
Type material. Holotype (Figs 25, 50): male, [CAMEROON] “1494, Bitje, Ja River, Cameroons, 2000 ft., Oct.–Nov. 1919” / “1915-113.” / QR-code label with a unique number “NHMUK010918063”, gen. slide No.: NHMUK010315725 (prepared by Volynkin) (NHMUK).

Diagnosis. The forewing length is 9 mm in the male holotype. *Palaeugoa ngoko* is reminiscent externally of *P. peregrina*, but differs by its smaller size and less intense brownish suffusion on the forewing. The male genital capsule of *P. ngoko* differs from that of *P. peregrina* by the conspicuously smaller spines on the ventral part of the anellus, the somewhat narrower valva with gently arcuate costal margin (which is strongly angled medially in *P. peregrina*), the broader cucullus, the much shorter, broadly triangular medial process of sacculus lacking setae (which is longer and broader, slightly curved, finger-like and densely setose in *P. peregrina*) and the conspicuously narrower and longer distal saccular process. In comparison with those characters of *P. aristophanousi*, the genital capsule of *P. ngoko* has smaller spines on the ventral surface of the anellus, slightly more elongate valva with somewhat less arched costal margin, broader cucullus lacking setae ventrally, basally broader but much shorter medial saccular process and somewhat broader and longer distal saccular process. The aedeagus of *P. ngoko* is most similar to that of *P. aristophanousi*, but in *P. ngoko* the ventral distal crest is absent, and the dorsal distal crest is conspicuously broader and longer. The vesica of the new species differs markedly from that of both related species by the ventral diverticulum bearing a cluster of three long and robust cornuti (whereas in *P. peregrina* and *P. aristophanousi* the ventral diverticulum is armed with a cluster of numerous short and fine spinules), in addition, the presence of a cluster of seven, long and robust cornuti which character is absent in *P. peregrina* and *P. aristophanousi*.

Further differences between the vesica configuration of *P. ngoko* and *P. aristophanousi* are the larger and heavily scobinated subbasal ventral diverticulum (which is smaller and granulated in *P. aristophanousi*), the membranous dorsal diverticulum (heavily scobinated and granulated in *P. aristophanousi*) and the smaller and less intensely granulated distal diverticulum of the new species.

Distribution. The new species is known by its single holotype collected in the historic locality of Bitje in South Cameroon.

Etymology. Ngoko is another name of the Dja River. The new species was presumably collected near the shores of the river.



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***P. smithi* sp. n., PT**

Cameroon, Central Region, Nkoteng Forest, slide AV5074 Volynkin

***P. takanoi* sp. n., PT**

Gabon, Crystal Mountains, slide AV5988 Volynkin

Figures 55–56. *Palaeugoa* spp., female genitalia. Specimens are deposited in ANHRT.

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