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Article

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Lithosiccia, a new genus with four new species from mainland Africa (Lepidoptera: Erebidae: Arctiinae: Lithosiini)

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Abstract
A new lichen moth genus, *Lithosiccia* **gen. n.** similar to *Siccia* Walker, 1854 and *Palaeosiccia* Hampson, 1900 is described and assigned to the subtribe Cisthenina. Two new combinations are introduced: *Lithosiccia juvenis* (Holland, 1893), **comb. n.** and *Lithosiccia major* (Kiriakoff, 1958), **comb. n.** Four new species are described: *Lithosiccia takanoi* **sp. n.** (Sierra Leone), *Lithosiccia mikra* **sp. n.** (western Uganda), *Lithosiccia bota* **sp. n.** (Gabon and Republic of the Congo), and *Lithosiccia smithi* **sp. n.** (Republic of the Congo, Democratic Republic of the Congo, Ivory Coast and Liberia). A lectotype is designated for *Nudaria juvenis* Holland, 1893 in order to stabilise the nomenclature. Adults and both male and female genitalia are illustrated.

Key words: Afrotropics, Cisthenina, lectotype, new combination, *Palaeosiccia*, *Siccia*.

Introduction

The lichen moth species *Nudaria juvenis* Holland, 1893 was described from the material collected by Reverend A.C. Good in the Ogooué River valley in Gabon (Holland 1893). Hampson (1900) combined it with the genus *Comacla* Walker, [1865] but later, Kiriakoff (1958) transferred the species to the genus *Manoba* Walker, 1863 which was considered to belong to Lithosiini at that time but has subsequently been assigned to the subfamily Nolini by Holloway & Miller (1995). Since Kiriakoff's paper was published, the taxonomic placement of *juvenis* has remained unclear; for example, it was assigned not to *Manoba* but *Nola* Leach, [1815] without explanation by De Prins & De Prins (2023). This species has also not been mentioned in the revision of the Nolini of Africa and the Western Palaearctic Region (Hacker *et al.* 2012) as well as in the recent comprehensive paper on the taxonomy of the genus *Manoba* (László *et al.* 2022), in which the Lithosiini species previously assigned to *Manoba* were all tentatively transferred to the genus *Stictane* Hampson, 1900.

Unfortunately, the only type specimen of "*Manoba*" *juvenis* found in CMNH (Pittsburgh, United States) lacks the abdomen and therefore its copulatory organs structure could not be examined. However, a short series of specimens of both sexes externally similar to the type was found in several European

institutional and private collections and having compared the genitalia morphology of these specimens with the externally similar *Siccia* Walker, 1854 and *Palaeosiccia* Hampson, 1900, several remarkable distinguishing features were discovered suggesting that the species belongs to a distinct lineage that represents a hitherto undescribed genus. Additionally, "*Stictane*" *major* (Kiriakoff, 1958) from the Ruwenzori Range was found to be congeneric to *juvenis* and is hereby combined with the new genus, the description of which is provided herein. Examination of the genitalia structures of specimens reminiscent of *juvenis* from West and Central African forests has revealed the existence of a further four species described as new to science in the present paper.

Material and methods

Abbreviations of the depositories used:
ANHRT = African Natural History Research Trust (Leominster, United Kingdom)
CMNH = Carnegie Museum of Natural History (Pittsburgh, United States)
GMF-B = research collection of Günter Müller (Freising, Germany & Bamako, Mali)
HNHM = Hungarian Natural History Museum (Budapest, Hungary)
MfN = Museum of Natural History, Berlin (Museum für Naturkunde, Berlin, Germany)
NHMUK (formerly BMNH) = Natural History Museum (London, United Kingdom)

Other abbreviations used:
AV = genitalia slide prepared by A.V. Volynkin
DRC = Democratic Republic of the Congo
HT = holotype
NP = National Park
PT = paratype
SL = sequence length

Morphological studies
The genitalia were dissected applying standard methods of preparation (Lafontaine & Mikkola 1987; Kononenko 2010), then stained with Eosin Y or Chlorazol Black and embedded 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 or Sigma 105 mm F2.8 EX DG Macro OS lenses while the photos of genitalia were taken using the same camera attached to a microscope with an LM-scope adapter. All pictures were processed using the Adobe Photoshop CC 2018 software.

Molecular studies
DNA barcodes were obtained by removing tarsal segments or whole legs from eight adult specimens of four morphologically recognised taxa of *Lithosiccia* **gen. n.** *Siccia caffra* (Hübner, [1808]) (accessed in the BOLD database) was selected as an outgroup taxon (see Table 1). Samples were submitted to the Canadian Centre for DNA Barcoding (CCDB, Biodiversity Institute of Ontario, University of Guelph) for DNA extraction, amplification and sequencing of cytochrome oxidase subunit I (COI-5P) through the Sequel (PacBio) pipeline at CCDB (Hebert *et al.* 2018). Sequences were aligned using MUSCLE and edited in MEGA version X (Kumar *et al.* 2018), genetic divergences within and between species were calculated using the Kimura 2-parameter model (Kimura 1980). Phylogenetic tree searches were performed using Maximum Likelihood (ML) in MEGA, the model parameters optimised for the dataset using the Bayesian Information Criterion (T92+G). The tree was visualised and annotated in FigTree version 1.4.4 and Adobe Photoshop CC 2018 software. The COI-5P sequences are available from the BOLD Systems website (www.boldsystems.org).

Label data
In the type label citations, information provided in quotation marks is transcribed verbatim. Different labels are separated by a slash ("/") while the different lines of the same label are separated by an upright slash ("|"). Any additional data are provided in square brackets.

Table 1. Specimen, barcode and collecting locality data for the 8 specimens of *Lithosiccia* **gen. n.** and a specimen of *Siccia caffra* used in the present study.

Species	Sex	Locality	Sample ID	Process ID	SL
L. juvenis	♂	Guinea, Nzérékoré Region, Ziéla	ANHRTUK00167550	ANLMO7973-23	656
L. juvenis	♀	Guinea, Nzérékoré Region, Ziéla	ANHRTUK-00193010	ANLMN1081-21	653
L. takanoi **sp. n.**, HT	♂	Sierra Leone, Moa River, Tiwai Island	ANHRTUK-00020605	ANLMN976-21	654
L. bota **sp. n.**, HT	♂	Gabon, Crystal Mts	ANHRTUK-00138940	ANLMN1161-21	655
L. bota **sp. n.**, PT	♂	Republic of Congo, Nouabalé-Ndoki NP	ANHRTUK00292873	ANLMO8089-23	655
L. smithi **sp. n.**, PT	♂	Republic of Congo, Nouabalé-Ndoki NP	ANHRTUK00293060	ANLMO8090-23	654
L. smithi **sp. n.**, PT	♂	Liberia, Krahn-Bassa Reserve	ANHRTUK-00101046	ANLMN748-21	654
L. smithi **sp. n.**, PT	♂	Ivory Coast, Taï NP	ANHRTUK-00046087	ANLMN975-21	655
S. caffra	♀	South Africa, Gauteng, Hekpoort	BIOUG02076-F01	LSAFR1201-12	658

Taxonomic part

Lithosiccia gen. n.

https://zoobank.org/urn:lsid:zoobank.org:act:12B9A5B3-152F-4870-AEA4-E924A0CC5ED0

Type species: *Lithosiccia smithi* **sp. n.**

Diagnosis. The new genus is hereby assigned to the tribe Cisthenina and its species (Figs 2–15) are externally reminiscent of *Palaeosiccia* (type species: *Palaeosiccia punctata* Hampson, 1900) (Figs 16, 17) due to their relatively broad forewing and the bipectinate male antenna but are distinguished by the brown or ochreous forewing ground colour (it is off-white or pale greyish in *Palaeosiccia*), and the dark, greyish-brown or grey hindwing ground colour in males, which is markedly paler, off-white or slightly suffused with grey in the similar genus. Compared to another Cisthenina genus occurring in the Afrotropics, *Siccia* (type species: *Siccia caffra* Walker, 1854) (Figs 18, 19), species of *Lithosiccia* have a relatively broader and darker coloured forewing, but the reliable generic identification requires the examination of the copulatory organs. The male genital capsule of *Lithosiccia* (Figs 20–29) is distinguished from both *Palaeosiccia* (Fig. 30) and *Siccia* (Fig. 31, see also Volynkin (2023)) by the structure of the valva, which is clearly subdivided into the broad and long sacculus with an elongate and narrow distal process, and the costa extended distally into a narrow sclerotised process (called the 'cucullus' herein). Additionally, the tegumen of *Lithosiccia* has broad but weakly sclerotised lobes anteriorly, which protrude into the intersegmental membrane connecting the genitalia with the abdomen cuticle, the feature characteristic of the genus. Another feature characteristic of the genus is the ductus ejaculatorius opening on the ventral side of the phallus whereas in *Palaeosiccia*, *Siccia* and other related genera, it opens dorsally. The female genitalia of the new genus (Figs 32, 33) are distinguished from *Palaeosiccia* (Fig. 34) by the lack of the antevaginal plate and the lateral subostial plates, the corpus bursae bearing broad and dense clusters of robust spines, and the well-developed appendix bursae situated laterally or postero-laterally whereas it is reduced and situated postero-ventrally in the aforementioned genus. Compared to *Siccia* (Fig. 35, see also Volynkin (2023)), the female genitalia of *Lithosiccia* lack the lateral subostial lobes. Additionally, the 8th and the 7th abdominal sternites of *Lithosiccia* bear lateral gelatinous pockets which are not found in *Palaeosiccia* or *Siccia*.

Description. **External morphology of adults**. Male antenna shortly bipectinate, female antenna setose-serrulate. Body brown. Forewing ground colour from pale ochreous brown to deep brown. Forewing markings dark brown or blackish. Transverse lines irregularly zigzagged or sinuous, indistinct in certain species. Proximal cellular spot small, dot-shaped. Discal spot large and various in shape. Hindwing brown or greyish-brown, discal spot diffuse. **Male genitalia**. Uncus elongate and slender, medially dilated and distally tapered, with tiny claw-shaped tip. Tuba analis weakly setose. Arms of tegumen fused in dorsal third and anteriorly tapered, with broad but weakly sclerotised lobes anteriorly protruding into the intersegmental membrane. Vinculum shorter than tegumen, more or less U-shaped. Valva clearly subdivied into dorsal and ventral (saccular) parts. Dorsal part of valva distally narrow and well-sclerotised, downcurved in certain species. Sacculus broad, with setose or spinulose dorsal margin. Distal saccular process elongate and narrow, almost straight. Juxta weakly sclerotised, trapezoidal, in certain species with two short and serrulate apical processes. Phallus large, cylindrical, almost straight or slightly upcurved distally. Ductus ejaculatorius originates anterio-ventrally. Vesica broad, sack-like, with short diverticula of various shapes, and large horn- or plate-like distal cornutus; in certain species with additional proximal plate-like cornutus or cluster of

spines. **Female genitalia**. Papilla analis broad, trapezoidal, weakly setose. Apophyses long and thin. Postvaginal area with scobinated cluster. Ostium bursae broad. Ductus bursae short and broad, weakly sclerotised, with short gelatinous antrum in certain species. Corpus bursae with sclerotised posterior and membranous anterior sections, former bearing clusters of numerous robust spines protruding into anterior section laterally in certain species. Appendix bursae short, situated postero-ventrally or laterally, basally spinulose in certain species. 7th (and 6th in certain species) abdominal sternite(s) with lateral gelatinous pockets.

Molecular data. The pairwise distances between morphospecies are in the range of 4.11–8.77%. At the current stage it is impossible to evaluate the intrapopulational divergences due to the limited number of specimens sampled, the only example available being two specimens of *L. juvenis* from Guinea which have identical COI sequences. The intraspecific divergences between different populations of the same species vary significantly with pairwise distances in the range of 0.46–3.95% (Fig. 1).

Distribution. Species of the genus are distributed in rainforests of West and Central Africa.

Etymology. The genus name is an aggregate of the genus-group names *Lithosia* Fabricius, 1798 and *Siccia* and refers to the close relationship with *Siccia* and the valva clearly subdivided into the dorsal and ventral parts like in many genera of the subtribe Lithosiina.

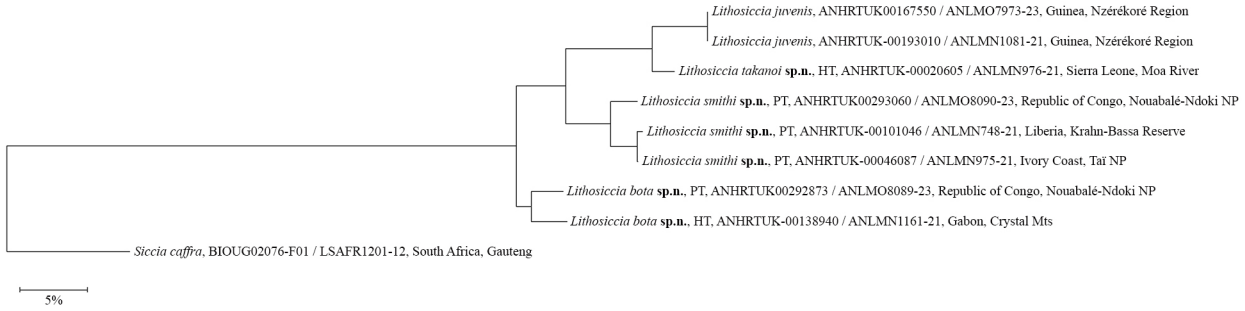


Figure 1. Phylogenetic tree of the genus *Lithosiccia* from Afrotropics recovered from the ML analysis of COI barcodes.

Species content of *Lithosiccia*
– *L. juvenis* (Holland, 1893), **comb. n.**
– *L. takanoi* **sp. n.**
– *L. major* (Kiriakoff, 1958), **comb. n.**
– *L. mikra* **sp. n.**
– *L. bota* **sp. n.**
– *L. smithi* **sp. n.**

Lithosiccia juvenis (Holland, 1893), **comb. n.**
(Figs 2–5, 20–22, 32)

Nudaria juvenis Holland, 1893, *Psyche*, 6: 412 (Type locality: [Gabon] "Valley of the Ogové River").

Type material examined. Photographs of the **lectotype** (hereby designated) (Fig. 2): male without abdomen, "Nudaria juvenis | ♂ Type. Holl. | Ogové Valley" / "Comacla | juvenis, Holl. | Fide Hampson" / rink label "Holo Type No. | -255- | Carn.Mus.Ent." / "202" / "Nudaria juvenis Holl. | ♂ Holotype. Abdomen | removed by H. Clench 1954 | over" / "Specimen with | abdomen lost | or damaged." / QR-code label with unique number "CMNH-IZ | 724,303" (CMNH).

Additional material examined. **GUINEA**: 1 male, 1 female, 540–600m, 619km ESE of Conakry, Nzérékoré Region, Prefecture Lola, Ziela env., x.2017, 7°42'N, 8°21'W, Local collectors leg., gen. prep. Nos.: AV6919 (male), AV6706 (female) (ANHRT); 1 male, Konakry [Conakry], Macenta Prefecture, Ziama Forest, 550m, Mt. Nimba, November 2016, G. Petrányi, V.D. Kravchenko & G.C. Müller leg. (GMF-B); **CAMEROON**: 1 male, Johann-Albrechts Höhe [Barombi] Station, L. Conradt [leg.], 1896 / Ex Oberthür Coll., Brit. Mus. 1927-3 / Closely similar in pattern to *juvensis* Holland, though smaller in wingspan, det.

D.S. Fletcher 1956, unique number: NHMUK 010917795, gen. prep. No.: NHMUK010315785 (prepared by Volynkin) (NHMUK).

Notes. (1) *Nudaria juvenis* was described based on a male but without the exact number of specimens being mentioned (Holland 1893). In order to stabilise the nomenclature, the specimen labelled as "Holotype" and preserved in the CMNH collection is hereby designated as the lectotype. **(2)** The lectotype of *Lithosiccia juvenis* lacks the abdomen therefore its male genitalia structure remains unknown. Nevertheless, a short series of externally similar specimens from Guinea and Cameroon was found in various collections and, despite being smaller than the holotype, they are provisionally assigned to *L. juvenis* in the present paper. However, these specimens may represent a distinct, yet undescribed species but additional material from Gabon similar to the holotype is necessary for clarification.

Diagnosis. The forewing length is 8.5 mm in the male holotype, 7.0–8.0 mm in the non-type males and 8.0 mm in the female. *Lithosiccia juvenis* is externally reminiscent of *L. takanoi* and the detailed comparison of the adults and the male genitalia of these species is provided below in the diagnosis of *L. takanoi*. As the female of *L. takanoi* is unknown, the female genitalia of *L. juvenis* were compared with *L. smithi* instead (see below in the diagnosis of *L. smithi*).

Molecular data. The intraspecific divergence between the two DNA barcoded specimens is 0.00%. The pairwise distance between *L. juvenis* and the most similar *L. takanoi* is 4.11%.

Distribution. The species is currently known from Gabon (Holland 1893), western Cameroon, and south-eastern Guinea.

***Lithosiccia takanoi* sp. n.**

https://zoobank.org/urn:lsid:zoobank.org:act:33D73E82-E965-4B79-8EB2-9B247F920E78

(Figs 6, 23)

Type material. **Holotype** (Figs 6, 23): 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 | 00020605" / "Slide | AV4970♂ | A. Volynkin" (ANHRT).

Diagnosis. The forewing length is 7.5 mm in the male holotype. *Lithosiccia takanoi* is externally reminiscent of *L. juvenis* but distinguished by the somewhat shorter rami of the male antenna, the slightly narrower forewing with a somewhat more tapered apex and a more ochreous ground colour, the blackish-brown and more distinct forewing markings (they are brown in the congener), and the discal marking of the forewing inclined more inwardly. In the male genital capsule, *L. takanoi* differs from *L. juvenis* in the longer, broader and symmetrical cuculli (they are asymmetrical in the congener), the more robust setae of the sacculus, and the shorter and distally thicker distal saccular process. The phallus of *L. takanoi* is somewhat shorter than in the congener (in proportion to the tegumen-vinculum complex length). Compared to *L. juvenis*, the vesica of the new species is somewhat broader and bears a single massive cornutus whereas *L. juvenis* has a shorter and thinner cornutus along with a medial-dorsal diverticulum bearing an elongate cluster of spinules.

The female is unknown.

Molecular data. As only a single specimen was sequenced, the intraspecific variability of COI-5P sequences of this species could not be calculated. The divergence from *L. juvenis* is provided above. The pairwise distance between *L. takanoi* and another neighbour, *L. smithi* is in the range of 6.37–6.71%.

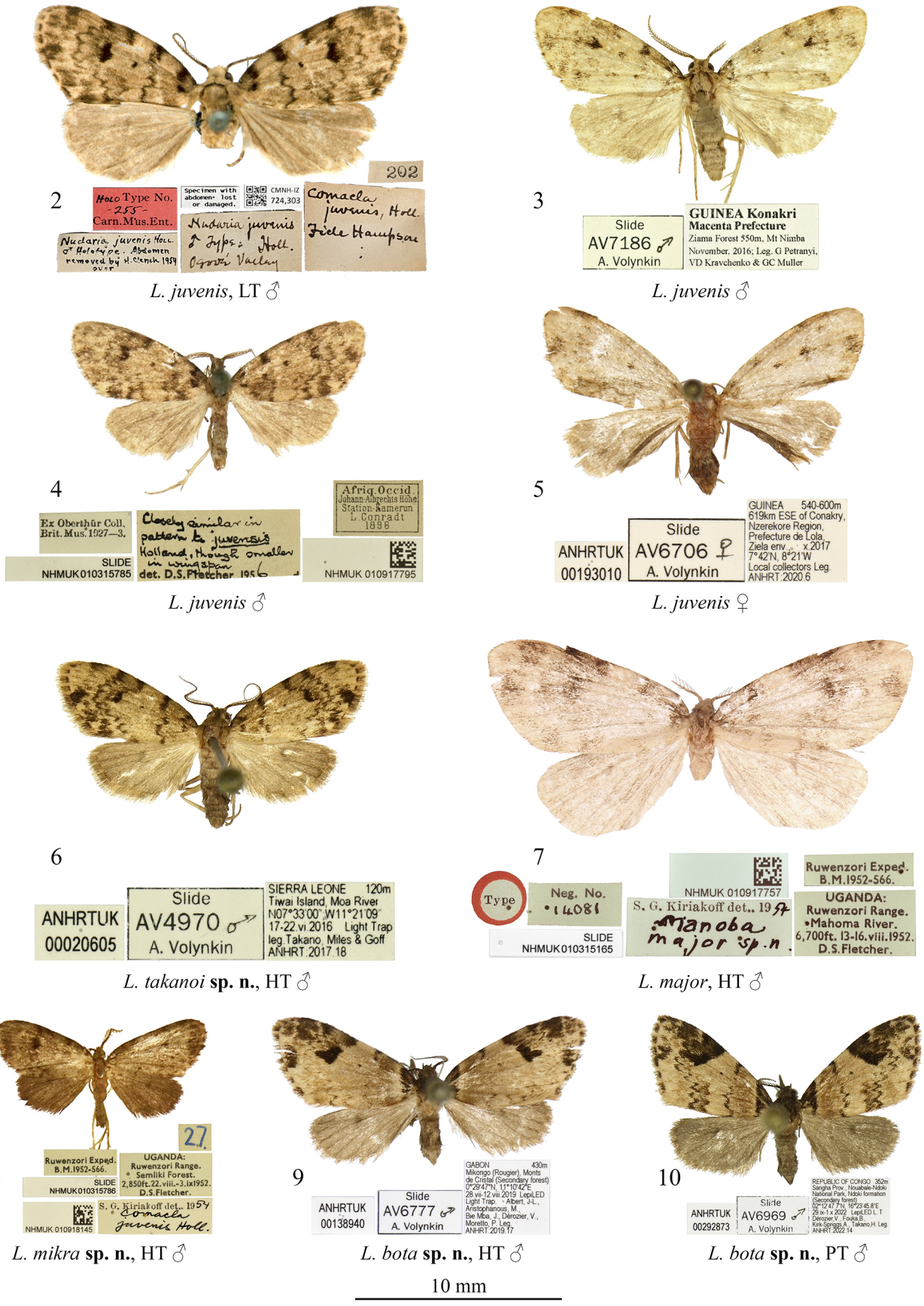
Distribution. The new species is currently known only from its type locality in south-eastern Sierra Leone.

Etymology. The new species is dedicated to the knowledgeable entomologist Dr Hitoshi Takano, Collections Manager, ANHRT, organiser and participant of several entomological expeditions in Africa and one of the collectors of the holotype. The name is a noun in the genitive case.

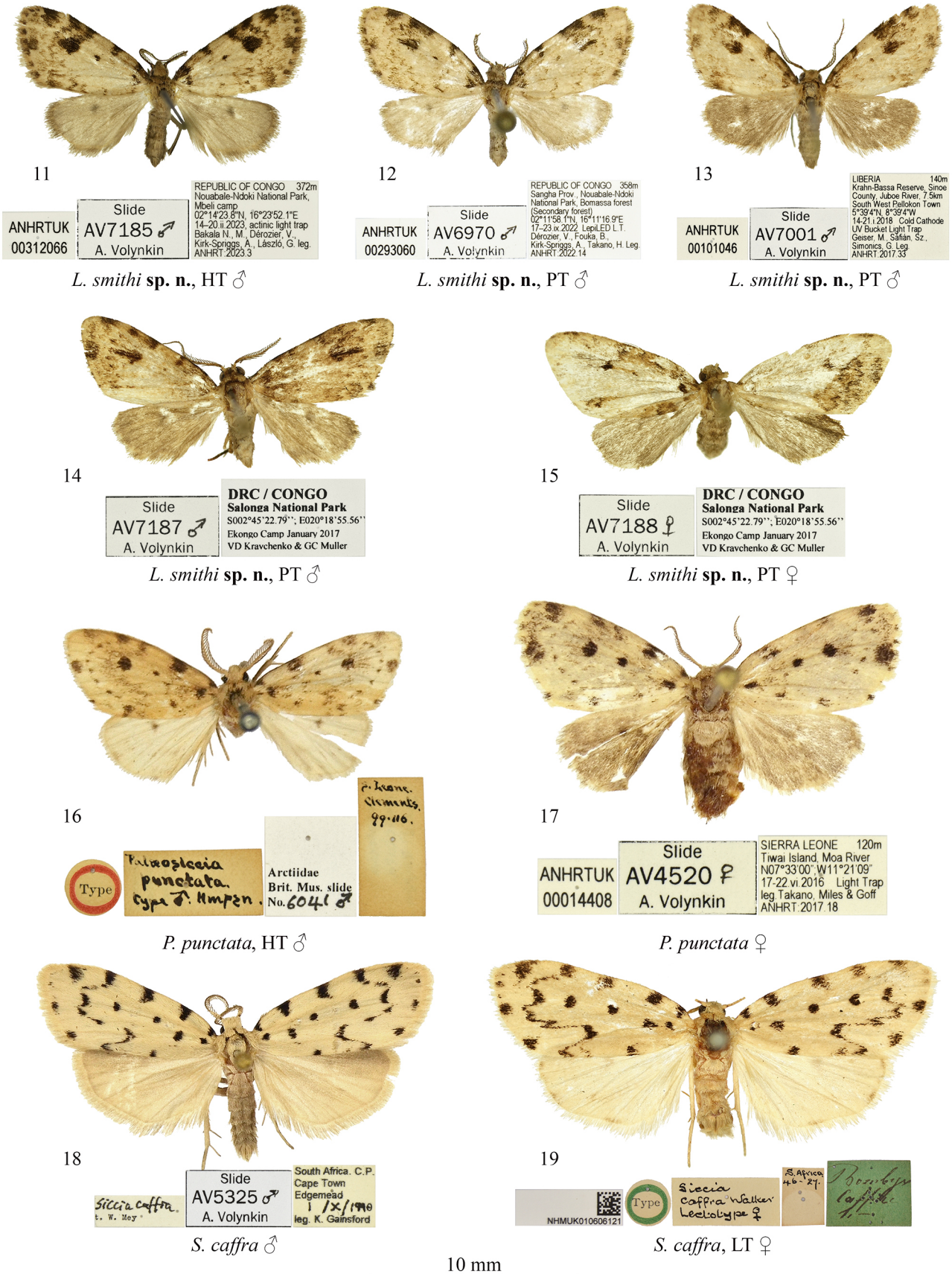
Lithosiccia major (Kiriakoff, 1958), **comb. n.**

(Figs 7, 24)

Manoba major Kiriakoff, 1958, *Ruwenzori Expedition 1952*, 1 (2): 7, figs 13, 61 (Type locality: [Uganda] "Ruwenzori, Mahoma River, 6700 ft").



Figures 2–10. *Lithosiccia* spp.: adults. Depositories of the specimens: 2 in CMNH (photo by V. Verdecia); 3 in GMF-B; 4, 7 and 8 in NHMUK (©The Trustees of NHMUK); 5, 6, 9 and 10 in ANHRT.



Figures 11–19. *Lithosiccia smithi* (11–15), *Palaeosiccia punctata* (16, 17), and *Siccia caffra* (18, 19): adults. Depositories of the specimens: 11–13 and 17 in ANHRT; 14 and 15 in GMF-B; 16 and 19 in NHMUK (©The Trustees of NHMUK); 18 in MfN.

Type material examined. **Holotype** (Figs 7, 24): male, “Uganda: | Ruwenzori Range. | Mahoma River. | 6,700ft. 13–16.viii.1952. | D.S. Fletcher.” / “Ruwenzori Exped. | B.M.1952-566.” / “S. G. Kiriakoff det.. 1954 | Manoba | major sp. n.” / red ring “Type” label / “Neg. No, | 14081” / QR-code label with unique number: NHMUK 010917757” / “Slide | NHMUK010315165” (NHMUK).

Note. The species was assigned to the genus *Palaeosiccia* by Kühne (2007) without an explanation, probably due to the external similarity. Later, the species was assigned to the externally dissimilar *Stictane* Hampson, 1900 by László *et al.* (2022). However, its male genitalia structure clearly matches that of *Lithosiccia*.

Diagnosis. The forewing length is 10.0 mm in the male holotype. *Lithosiccia major* is the largest known species in the genus, which is most externally reminiscent of *L. juvenis* but differs in the markedly longer rami of the male antenna, the broader forewing with a more elongate apex and a larger discal marking. Since the species is known only from the single holotype specimen, which is worn, the more detailed comparison of its forewing pattern with *L. juvenis* is currently impossible. In the male genital capsule, *L. major* is similar to *L. takanoi* but has a longer uncus, a markedly shorter, narrower and almost straight cucullus (it is downcurved in the congener), a thinner setae of the sacculus, and a proximally broader distal saccular process. The phallus of *L. major* is somewhat broader than in *L. takanoi* (in proportion to the tegumen-vinculum complex size). The vesica of the holotype could not be fully everted therefore the detailed comparison of its shape with *L. takanoi* is currently impossible. However, compared to *L. takanoi*, the vesica of *L. major* bears a markedly shorter, thinner and almost straight medial cornutus (it is slightly curved in the congener), and a plate-like, rugose proximal cornutus dorsally.

The female is unknown.

Molecular data. Currently unavailable for this species.

Distribution. The species is currently known only from its type locality in western Uganda (Kiriakoff 1958).

***Lithosiccia mikra* sp. n.**

https://zoobank.org/urn:lsid:zoobank.org:act:3A32AF2F-AACB-4B3F-BF00-E866586AC59C

(Figs 8, 25)

Type material. **Holotype** (Figs 8, 25): male, “Uganda: | Ruwenzori Range. | Semliki Forest. | 2,850ft. 22.viii.–3.ix.1952. | D.S. Fletcher.” / “Ruwenzori Exped. | B.M.1952-566.” / “S. G. Kiriakoff det.. 1954 | Comacla | juvenis Holl.” / “27” / QR-code label with unique number” NHMUK 010918145” / “Slide | NHMUK010315786” (NHMUK).

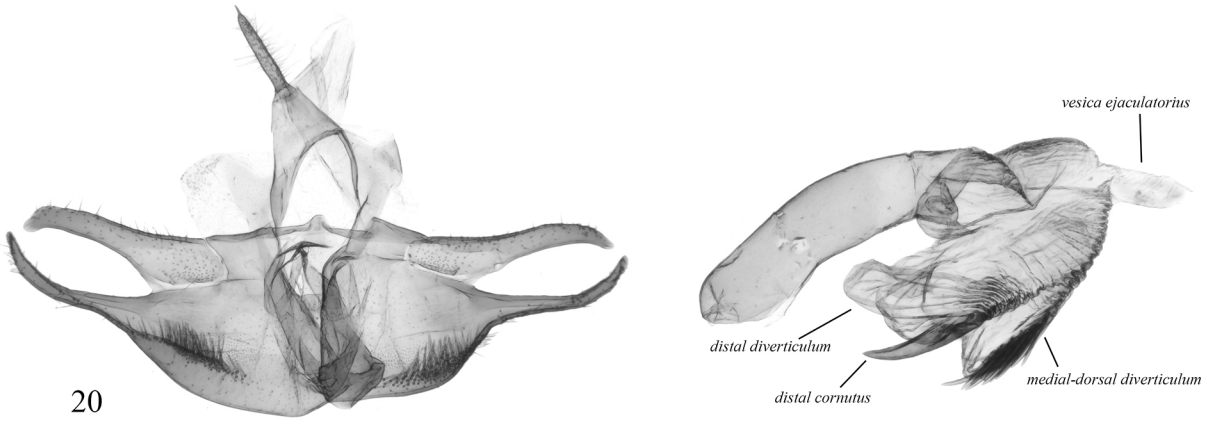
Diagnosis. The forewing length is 5.0 mm in the male holotype. *Lithosiccia mikra* is the smallest known species in the genus. It is externally vaguely reminiscent of *L. juvenis* but distinguished by the smaller size, the more rounded forewing apex, the dark brown forewing ground colour (it is pale brown in the congener), the indistinct forewing markings (except the relatively large discal marking), and the dark brown hindwing ground colour, which is pale greyish-brown in *L. juvenis*. The male genital capsule of the new species is most similar to *L. takanoi* but differs in the longer uncus, the shorter, narrower, distally tapered and less downcurved cucullus (it is subapically dilated in the congener), the markedly shorter and thinner setae of the sacculus, and the shorter, narrower and apically tapered distal saccular process, which is apically rounded in *L. takanoi*. The phallus of *L. mikra* is broader than in *L. takanoi*. In the vesica structure, the new species differs from its congeners in the lack of the rugose stripe, the longer distal cornutus, which is more protruding from the vesica surface, and the longer and utricular distal diverticulum which is conical in other species in the genus.

The female is unknown.

Molecular data. Currently unavailable for this species.

Distribution. The new species is currently known only from its type locality in western Uganda.

Etymology. The specific epithet is derived from the Greek ‘μικρό’ meaning ‘small’ and refers to the relatively small size of the new species. The name is a noun in the nominative singular in apposition.

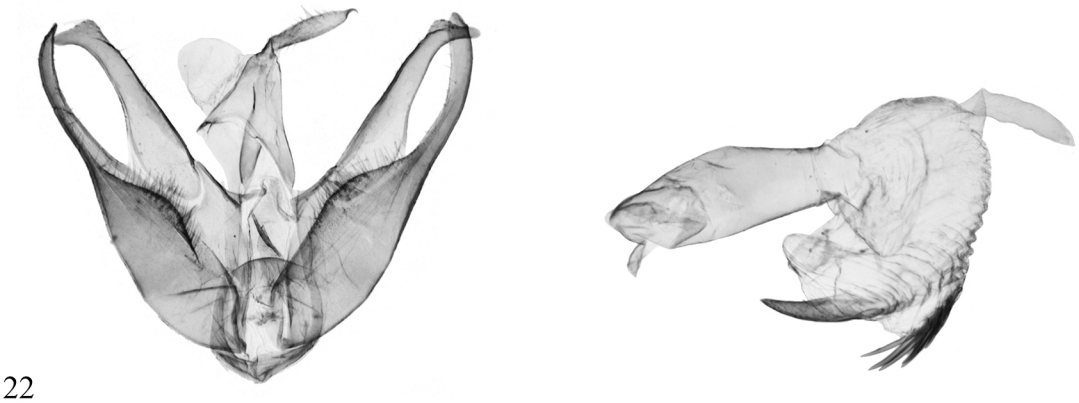


20

L. juvenis
Guinea, Nzerekore Region, slide AV6919

21

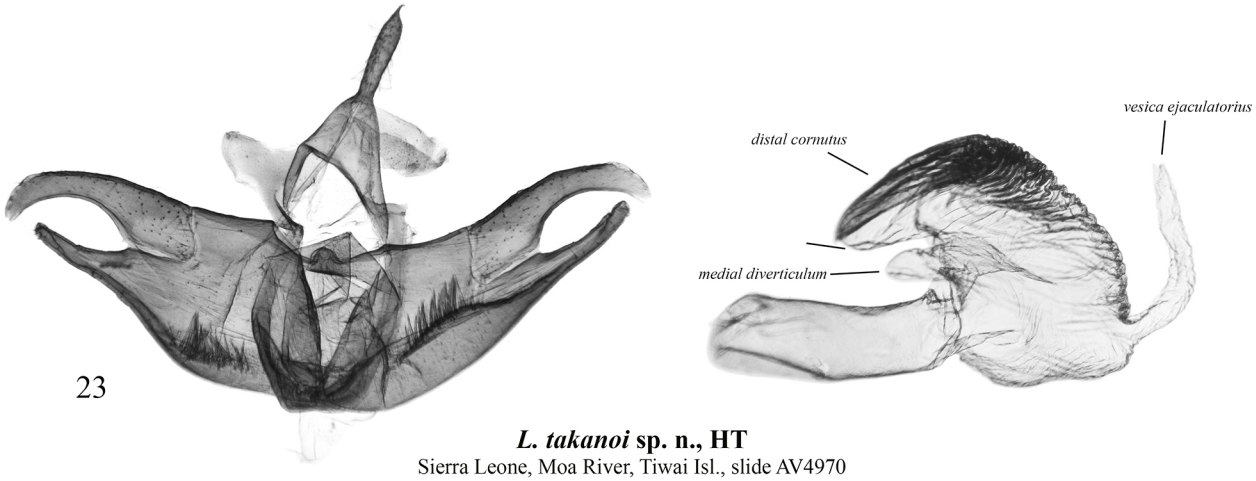
L. juvenis
Guinea, Nzerekore Region, slide AV7186



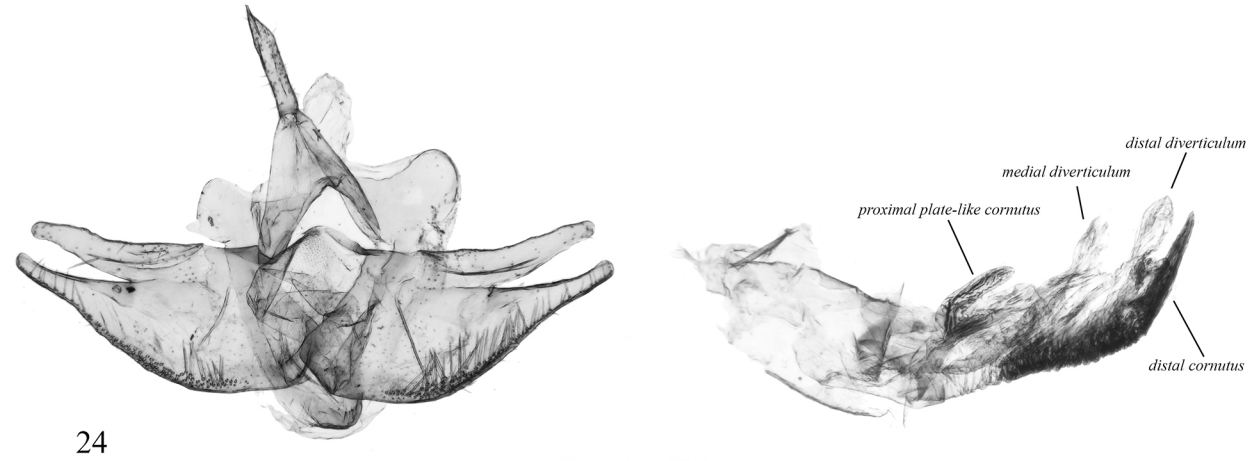
22

L. juvenis
Cameroon, Barombi Mbo Lake, slide NHMUK 010315785 Volynkin

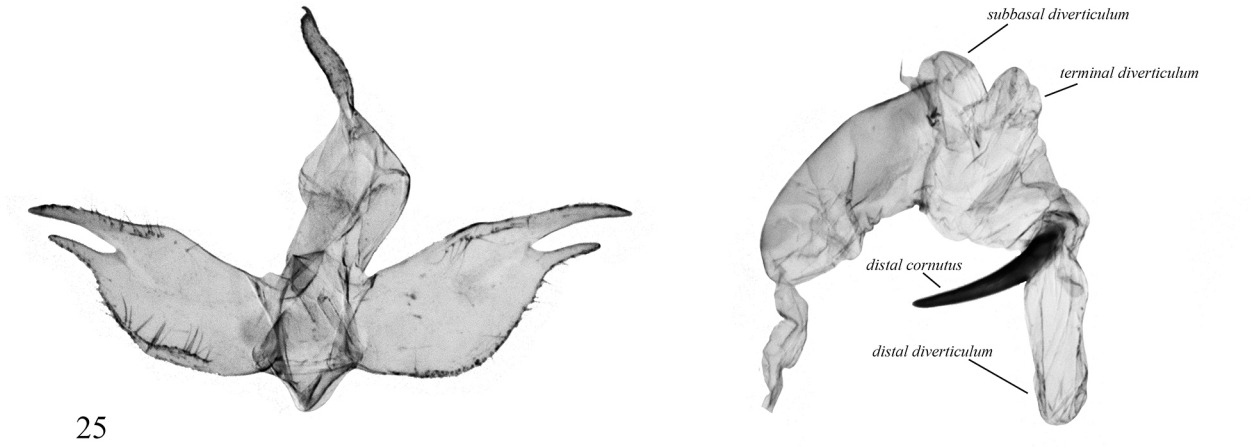
Figures 20–22. *Lithosiccia juvenis*: male genitalia. Depositories of the specimens dissected: 20 in ANHRT; 21 in GMF-B; 22 in NHMUK (©The Trustees of NHMUK).



***L. takanoi* sp. n., HT**
Sierra Leone, Moa River, Tiwai Isl., slide AV4970

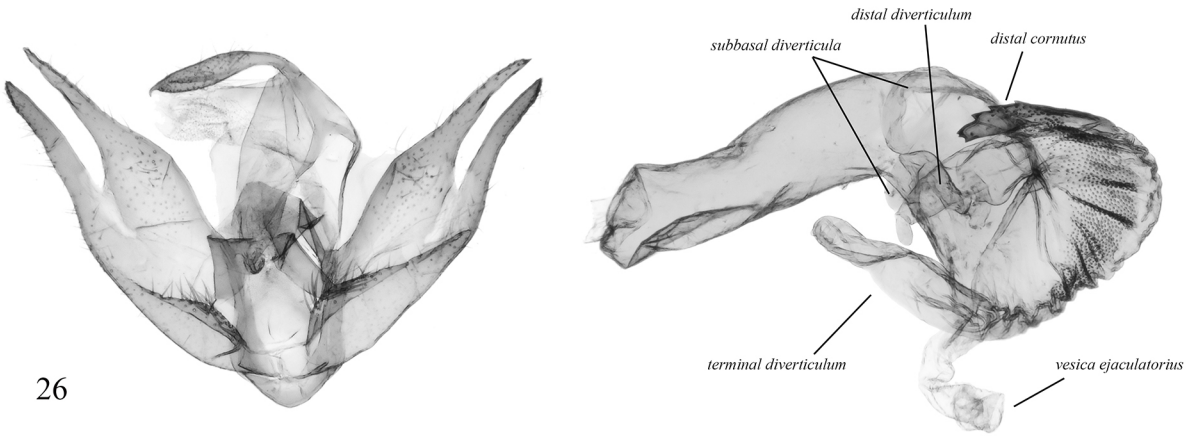


***L. major*, HT**
Uganda, Ruwenzori Range, slide NHMUK010315165



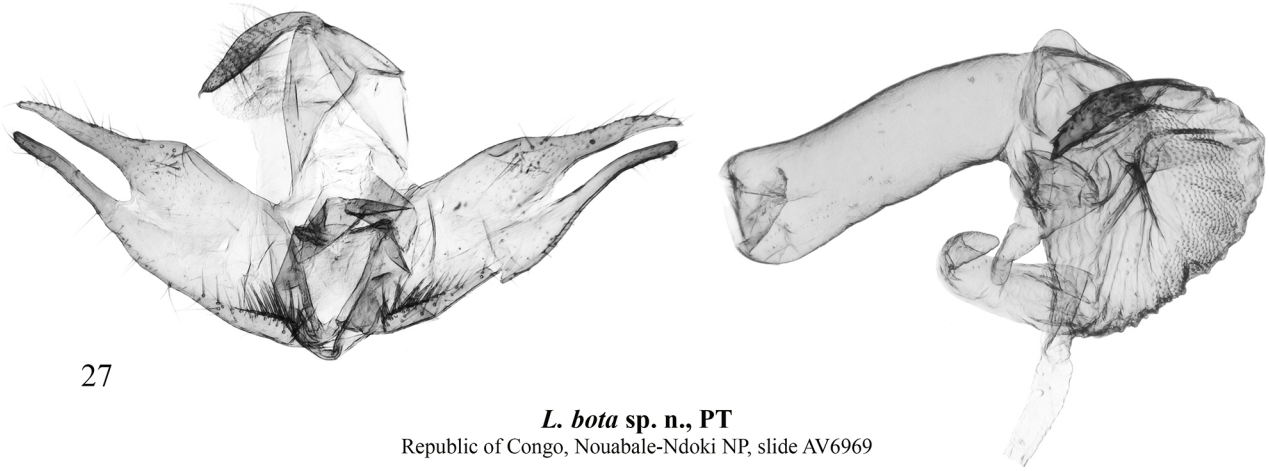
***L. mikra* sp. n., HT**
Uganda, Ruwenzori Range, slide NHMUK010315786 Volynkin

Figures 23–25. *Lithosiccia* spp.: male genitalia. Depositories of the specimens dissected: 23 in ANHRT; 24 and 25 in NHMUK (©The Trustees of NHMUK).



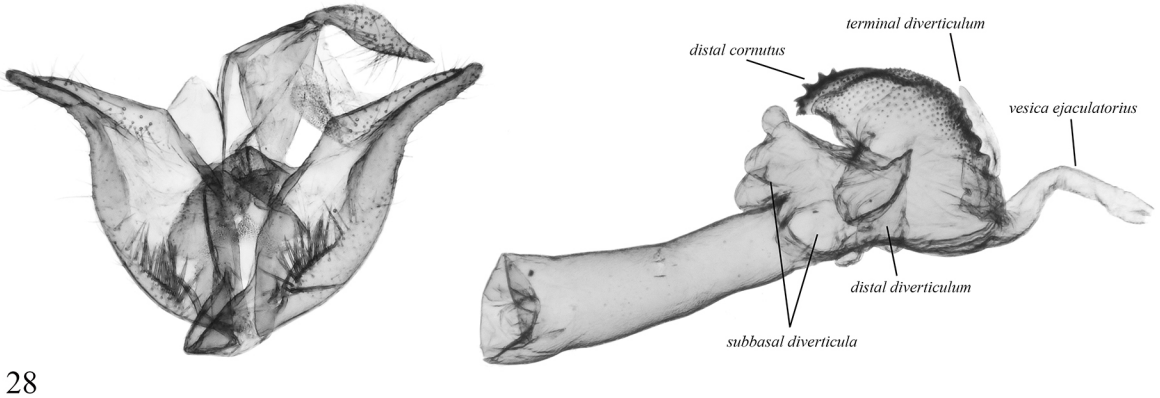
26

***L. bota* sp. n., HT**
Gabon, Crystal Mts, slide AV6777



27

***L. bota* sp. n., PT**
Republic of Congo, Nouabale-Ndoki NP, slide AV6969



28

***L. smithi* sp. n., HT**
Republic of Congo, Nouabale-Ndoki NP, slide AV7185

Figures 26–28. *Lithosiccia* spp.: male genitalia. The specimens dissected are deposited in ANHRT.

***Lithosiccia bota* sp. n.**
https://zoobank.org/urn:lsid:zoobank.org:act:4F75D401-3B0F-48CF-A226-15ADB2B8F39F
(Figs 9, 10, 26, 27)

Type material. **Holotype** (Figs 9, 26): 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 | 00138940" / "Slide | AV6777♂ | A. Volynkin" (ANHRT).

Paratypes. **REPUBLIC OF CONGO**: 1 male, 352m, Sangha Prov., Nouabalé-Ndoki National Park, Ndoki formation (Secondary forest), 02°12'47.7"N, 16°23'45.8"E, 29.ix.–1.x.2022, LepiLED L. T., Dérozier, V., Fouka, B., Kirk-Spriggs, A., Takano, H. leg., gen. prep. No.: AV6969 (ANHRT); 1 male, 372m, Nouabalé-Ndoki National Park, Mbeli camp, 02°14'23.8"N, 16°23'52.1"E, 14–20.ii.2023, actinic light trap, Bakala, N., M., Dérozier, V., Kirk-Spriggs, A., László, G. leg. (ANHRT).

Diagnosis. The forewing length is 7.0–7.5 mm in males. *Lithosiccia bota* is externally reminiscent of *L. takanoi* and *L. juvenis* but differs from them in the broader forewing, the brown subbasal area of the forewing, the large, high boot-shaped discal marking of the forewing (it is more or less reniform in the aforementioned congeners), and the larger brown spots at the costal margin postmedially and subapically. The male genital capsule of the new species is similar to *L. mikra* and *L. smithi* but distinguished from the former species in the medially thicker uncus, the longer cucullus, and the markedly longer distal saccular process, which nearly reaches the tip of the cucullus. The phallus of *L. bota* is longer than in *L. mikra* (in proportion to the tegumen-vinculum complex length). Compared to *L. mikra*, the vesica of the new species is markedly longer and broader, has two subbasal diverticula (vs. one in the congener), a strongly elongate and utricular terminal diverticulum (it is short and semiglobular in *L. mikra*), a shorter and plate-like distal cornutus with a dentate outer margin (it is horn-shaped in the congener), and a shorter and conical distal diverticulum, which is utricular in *L. mikra*. Additionally, unlike *L. mikra*, the vesica of *L. bota* bears a rugose and granulose cluster stretching from the base of the terminal cornutus to the base of the distal cornutus. The detailed comparison with *L. smithi* is provided below in the diagnosis of this species.

The female is unknown.

Molecular data. Two specimens of *L. bota* from Gabon and Republic of the Congo diverge from each other by 3.95% while the pairwise distance between *L. bota* and the nearest neighbour, *L. smithi* is in the range of 6.56–7.57%.

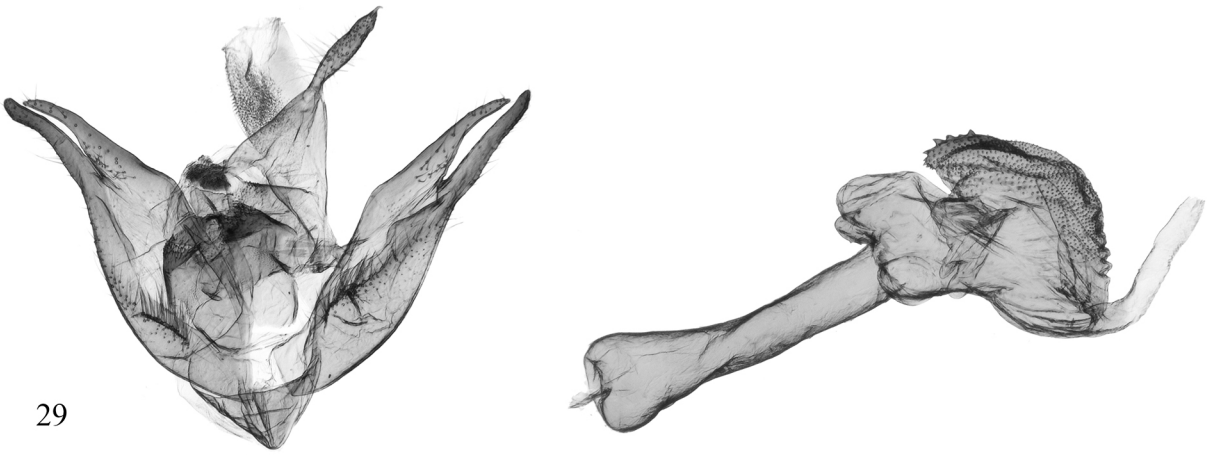
Distribution. The new species is currently known from Gabon and Republic of the Congo.

Etymology. The specific epithet is derived from the Greek 'μπότα' meaning 'a high boot' and refers to the high boot-shaped discal marking of the forewing. The name is a noun in the nominative singular in apposition.

***Lithosiccia smithi* sp. n.**
https://zoobank.org/urn:lsid:zoobank.org:act:5A52E835-D2EC-4B81-9978-9323F45B195A
(Figs 11–15, 28, 29, 33)

Type material. **Holotype** (Figs 11, 28): male, "Republic of Congo 372m | Nouabale-Ndoki National Park, | Mbeli camp | 02°14'23.8"N, 16°23'52.1"E | 14–20.ii.2023, actinic light trap | Bakala, N., M., Dérozier, V., | Kirk-Spriggs, A., László, G. leg. | ANHRT:2023.3" / "ANHRTUK | 00312066" / "Slide | AV7185♂ | A. Volynkin" (ANHRT).

Paratypes. **REPUBLIC OF CONGO**: 1 male, the same data as holotype (ANHRT); 1 male, 358m, Sangha Prov., Nouabalé-Ndoki National Park, Bomassa forest (Secondary forest), 02°11'58.1"N, 16°11'16.9"E, 17–23.ix. 2022, LepiLED L.T., Dérozier, V., Fouka, B., Kirk-Spriggs, A., Takano, H. leg., gen. prep. No.: AV6970 (ANHRT); **DRC**: 1 male, 1 female, Salonga National Park, 02°45'22.79"S 20°18'55.56"E, Ekongo Camp, January 2017, V.D. Kravchenko & G.C. Müler, gen. prep. Nos.: AV7187 (male), AV7188 (female) (GMF-B); **IVORY COAST**: 1 male, 174m, Taï NP, Taï Research Station (SRET), 05˚50'00"N, 07˚20'32.0"W, 25.iii.–17.iv.2017, MV light, Aristophanous, A., Aristophanous, M., Geiser, M., Moretto, P. leg., gen. prep. No.: AV4967 (ANHRT); **LIBERIA**: 1 male, 140m, Krahn-Bassa Reserve, Sinoe County, Juboe River, 7.5km South West Pellokon Town, 5˚39'4"N, 8˚39'4"W, 14–21.i.2018, Cold Cathode UV Bucket Light Trap, Geiser, M., Sáfián, Sz., Simonics, G. leg., gen. prep. No.: AV7001 (ANHRT).

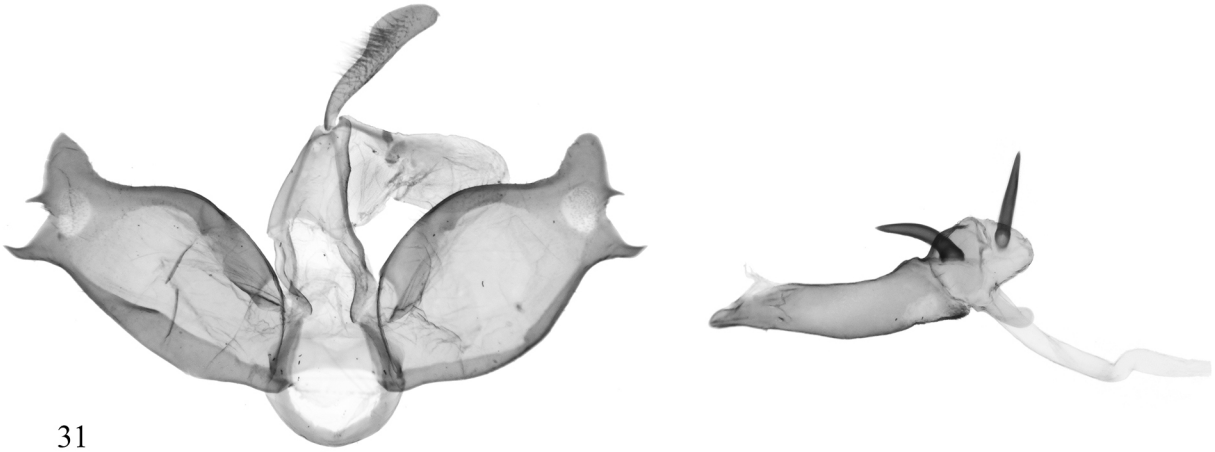


29

***L. smithi* sp. n., PT**
Liberia, Krahn-Bassa Reserve, slide AV7001

30

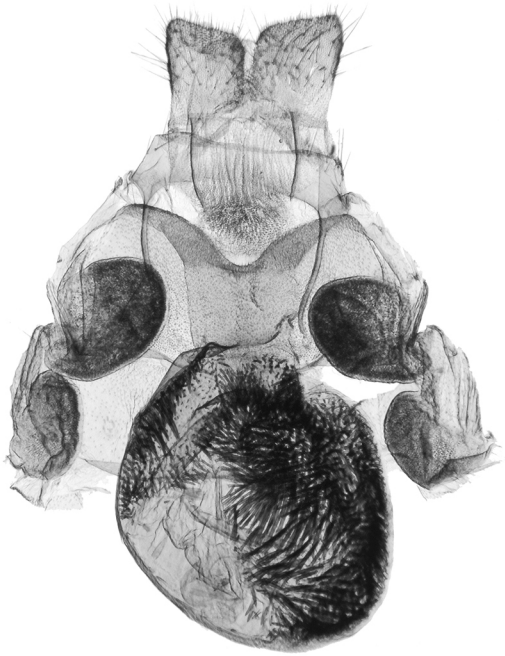
P. punctata
Sierra Leone, Western Area Peninsula, slide AV3178



31

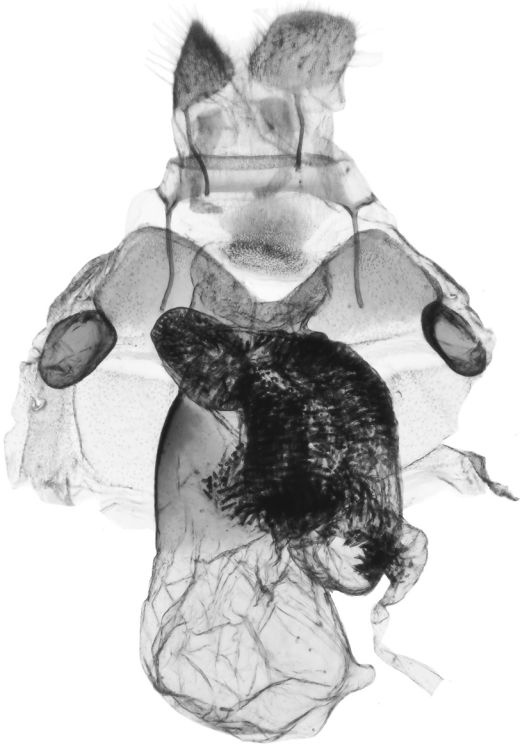
S. caffra
RSA, Gauteng Prov., Pretoria, slide AV5722

Figures 29–31. *Lithosiccia smithi* (29), *Palaeosiccia punctata* (30), and *Siccia caffra* (31): male genitalia. Depositories of the specimens dissected: 29 and 30 in ANHRT; 31 in HNHM.



32

L. juvenis
Guinea, Nzerekore Reg., slide AV6706



33

***L. smithi* sp. n., PT**
DRC, Salonga NP, slide AV7188

34

P. punctata
Sierra Leone, Moa River, slide AV4520

35

S. caffra
RSA, Cape Town, slide AV5326

Figures 32–35. *Lithosiccia* spp. (32, 33), *Palaeosiccia punctata* (34), and *Siccia caffra* (35): female genitalia. Depositories of the specimens dissected: 32 and 34 in ANHRT; 33 in GMF-B; 35 in MfN.

Diagnosis. The forewing length is 7.0–7.5 mm in males and 8.0 mm in the female. *Lithosiccia smithi* is most externally reminiscent of members of the genus *Palaeosiccia* rather than other congeners but distinguished by the shorter rami of the male antenna, the markedly narrower forewing with less distinct markings, and the dark brownish-grey male hindwing, which is off-white in *Palaeosiccia*. Despite the superficial similarity to *Palaeosiccia*, the male genitalia structures of the new species are typical of the genus *Lithosiccia* and are most similar to *L. bota*, from which, however, the male genital capsule of *L. smithi* differs in the medially narrower uncus, the broader vinculum, the heavily serrate anellus (it is smooth in the congener), the somewhat downcurved cucullus, and the upcurved and slightly longer distal saccular process. The phallus of *L. smithi* is longer and distally narrower than in *L. bota*. Compared to *L. bota*, the vesica of the new species is narrower and shorter, has a markedly shorter and narrower terminal diverticulum, a shorter and distally broader distal diverticulum, and bears a shorter and narrower distal cornutus. As the female of *L. bota* is unknown, the female genitalia of *L. smithi* were compared with *L. juvenis* instead, from which the new species differs in the shorter ductus bursae with a caliciform gelatinous antrum (it is absent in the congener), the elongate and sack-like corpus bursae with a membranous anterior section having a short diverticulum and a posterior section having a spinulose diverticulum postero-ventrally and a broad cluster of spines on the right side at the junction with the appendix bursae whereas in *L. juvenis*, the corpus bursae is shorter and rounded, lacking diverticula but bearing a smaller cluster of spines postero-laterally on the left side and a broad lateral cluster of robust spines occupying the right half of the structure. The appendix bursae of *L. smithi* is proximally broad and spinulose and distally tubular whereas it is very short, conical and membranous in *L. juvenis*. Additionally, the female of *L. smithi* has lateral gelatinous pockets, which are smaller than in the congener, only on the 7th sternite whereas *L. juvenis* has an additional, second pair of lateral gelatinous pockets on the 6th sternite.

Molecular data. The intraspecific variability of COI-5P sequences of the species is in the range of 3.13–3.29% between the populations from West Africa and Gabon. The pairwise distance between two specimens from Liberia and Ivory Coast is 0.46%. *Lithosiccia smithi* diverges from its nearest neighbours, *L. takanoi* and *L. juvenis* by 6.37–6.71% and 7.22–7.89%, respectively.

Distribution. The new species is currently known from Liberia, Ivory Coast, Republic of the Congo and Democratic Republic of the Congo.

Etymology. The new species is dedicated to Mr Richard Smith, Chairman of the Board of Trustees, ANHRT, who, through organising and undertaking numerous entomological expeditions to Sub-Saharan Africa has enabled the discovery of numerous species new to science. The name is a noun in the genitive case.

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The author declares that to the best of his knowledge he conforms to the national regulations and meets with the conditions and requirements of international conventions concerning collecting/export and handling of the specimens presented in this Article.

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