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## On the taxonomy of the Afrotropical genus *Crocossia* Hampson with descriptions of a new genus and a new species (Lepidoptera: Erebidae: Arctiinae: Lithosiini)

ANTON V. VOLYNKIN<sup>1,2</sup>

<sup>1</sup> African Natural History Research Trust, Street Court, Leominster, HR6 9QA, UK.

E-mail: [anton@anhrt.org.uk](mailto:anton@anhrt.org.uk);  <https://orcid.org/0000-0001-9447-4925>

<sup>2</sup> Altai State University, Lenina Avenue 61, RF-656049, Barnaul, Russia.

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### Abstract

The taxonomy of the footman moth genus *Crocossia* Hampson, 1914 is revised using morphological and molecular methods. Two species-group taxa are revived from synonymy to species level: *Crocossia phaeocraspis* Hampson, 1914 **stat. rev.** and *Crocossia divisa* (Gaede, 1924) **stat. rev.** A new genus and a new species are described: *Cragiosia* **gen. n.** (type species: *Ilema mesosticta* Hampson, 1911) and *Cragiosia smithi* **sp. n.** (Liberia and Guinea). A new combination is introduced: *Cragiosia mesosticta* (Hampson, 1911), **comb. n.** Adults as well as male and female genitalia of all species of *Crocossia* and *Cragiosia* **gen. n.** along with the type species of the allied genus *Cragia* Birket-Smith, 1965 are illustrated.

**Key words** Cameroon, *Cragia*, *Cragiosia*, Gabon, Guinea, Liberia, Lithosiina, new combination, Republic of Congo, revised status.

### Introduction

The Afrotropical footman moth genus *Crocossia* Hampson, 1914 belongs to the subtribe Lithosiina and was erected to solely include *Crocossia phaeocraspis* Hampson, 1914 described from male specimens of Ghanaian origin. Although the original description of *C. phaeocraspis* which included a black and white drawing of the male was quite informative (Hampson 1914: fig. 91), ten years later, Gaede (1924) described *Ilema divisa* Gaede, 1924 based on a single male from Cameroon, a taxon externally very similar to *C. phaeocraspis*, but compared only to *Ilema mesosticta* Hampson, 1911 (described from a single female from Nigeria), which was illustrated in colour in the same publication as the description of *C. phaeocraspis*. Subsequently, *C. phaeocraspis* was found to be sexually dimorphic by Kühne (2005) who synonymised *phaeocraspis* and *divisa* with *mesosticta*, and the genus *Crocossia* was accepted as comprising a single valid species (Krüger 2015). Nevertheless, further morphological and molecular studies have revealed that the true females of the species described as *phaeocraspis* and *divisa*, although externally reminiscent of *mesosticta*, are not conspecific to the holotype of the latter

and, moreover, are not congeneric to it. In addition, the populations of *Crococisia* from the regions west and east of the Dahomey Gap described as *phaeocraspis* and *divisa*, respectively are two distinct, morphologically well-distinguishable allopatric species and therefore those taxa are upgraded to species level in the present paper. In turn, “*Crococisia*” *mesosticta* is a species with limited sexual dimorphism, the genitalia of both sexes clearly different from the true *Crococisia* as well as all other known Lithosiina genera and, along with another similar, yet undescribed species from West Africa discovered in the course of the current study, represents a distinct lineage, which is described below as a new genus *Cragiosia* **sp. n.**

## Material and methods

Abbreviations of the depositories used: ANHRT = African Natural History Research Trust (Leominster, United Kingdom); MfN = Museum of Natural History, Berlin (Museum für Naturkunde, Berlin, Germany); NHMUK = Natural History Museum (London, United Kingdom); RMCA = Royal Museum for Central Africa (Tervuren, Belgium). Other abbreviations used: AV = genitalia slide prepared by A. Volynkin; ENNR = East Nimba Nature Reserve; HT = holotype; NNNP = Nouabalé-Ndoki National Park; PPA = Proposed Protected Area; PT = paratype.

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, or preserved in glycerol in micro vials pinned under the specimens. 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.

DNA barcodes were obtained by removing tarsal segments or whole legs from 38 adult specimens of *Crococisia* and 18 specimens of *Cragiosia* **gen. n.** *Cragia distigmata* (Hampson, 1901) (type species of *Cragia* Birket-Smith, 1965) was selected as an outgroup taxon (see Table). The tissues 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). Sequences were obtained using Single Molecule Real-Time sequencing through the Sequel II (PacBio) pipeline at CCDB (Hebert *et al.* 2018). Sequences were aligned using MUSCLE and edited in MEGA version X (Kumar *et al.* 2018), and 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), the analyses performed in MEGA with the model parameters optimised for the dataset using the Bayesian Information Criterion (TN93+G). The resulting tree was visualised and annotated in MEGA and Adobe Photoshop CC 2018 software. The COI-5P sequences listed in Table are available from the BOLD Systems website ([www.boldsystems.org](http://www.boldsystems.org)).

**Table.** Specimen, barcode and collecting locality data for the 38 specimens of *Crococisia*, 18 specimens of *Cragiosia* **gen. n.** and a specimen of *Cragia distigmata* used in the present study.

Species	Sex	Locality	Sample ID	Process ID
<i>Crococisia phaeocraspis</i>	♂	Liberia, Nimba Mts	ANHRTUK-00019268	ANLMN1637-21
<i>Crococisia phaeocraspis</i>	♀	Liberia, Nimba Mts	ANHRTUK-00026100	ANLMN1649-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Nimba Mts., ENNR	ANHRTUK00062101	ANLMO7058-23
<i>Crococisia phaeocraspis</i>	♂	Liberia, Nimba Mts, Cellcom Rd.	ANHRTUK-00061805	ANLMN1636-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Nimba Mts, Cellcom Rd.	ANHRTUK-00062068	ANLMN1648-21
<i>Crococisia phaeocraspis</i>	♀	Liberia, Wologizi Mts., Base camp forest	ANHRTUK-00020362	ANLMN1641-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Wologizi Mts., Base camp forest	ANHRTUK-00020764	ANLMN1640-21
<i>Crococisia phaeocraspis</i>	♀	Liberia, Wologizi Mts., Ridge camp	ANHRTUK-00026992	ANLMN1639-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Wologizi Mts., Ridge camp	ANHRTUK-00030142	ANLMN1638-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Foya PPA	ANHRTUK-00026070	ANLMN1642-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Foya PPA	ANHRTUK-00026091	ANLMN1644-21
<i>Crococisia phaeocraspis</i>	♂	Liberia, Foya PPA	ANHRTUK00026356	ANLMO7059-23
<i>Crococisia phaeocraspis</i>	♂	Liberia, Foya PPA	ANHRTUK00026922	ANLMO7057-23
<i>Crococisia phaeocraspis</i>	♀	Liberia, Foya PPA	ANHRTUK-00037299	ANLMN1645-21
<i>Crococisia phaeocraspis</i>	♀	Liberia, Foya PPA	ANHRTUK-00144907	ANLMN1643-21

..continued on the next page

Species	Sex	Locality	Sample ID	Process ID
<i>Crococia phaeocraspis</i>	♂	Liberia, Krahn-Bassa Reserve, Juboe River	ANHRTUK-00095392	ANLMN1646-21
<i>Crococia phaeocraspis</i>	♀	Liberia, Krahn-Bassa Reserve, Juboe River	ANHRTUK-00095393	ANLMN1647-21
<i>Crococia phaeocraspis</i>	♀	Guinea, Bossou Forest	ANHRTUK-00196069	ANLMN1633-21
<i>Crococia phaeocraspis</i>	♂	Guinea, Bossou Forest	ANHRTUK-00196109	ANLMN1632-21
<i>Crococia phaeocraspis</i>	♂	Guinea, Ziela env.	ANHRTUK-00196852	ANLMN1634-21
<i>Crococia phaeocraspis</i>	♀	Guinea, Ziela env.	ANHRTUK-00196923	ANLMN1635-21
<i>Crococia divisa</i>	♀	Cameroon, Wack (La Falaise)	ANHRTUK-00103186	ANLMN1661-21
<i>Crococia divisa</i>	♀	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00111323	ANLMN1660-21
<i>Crococia divisa</i>	♂	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00111326	ANLMN1650-21
<i>Crococia divisa</i>	♀	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00163007	ANLMN1658-21
<i>Crococia divisa</i>	♀	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00163008	ANLMN1651-21
<i>Crococia divisa</i>	♂	Gabon, Mikongo (Rougier)	ANHRTUK-00138925	ANLMN1654-21
<i>Crococia divisa</i>	♀	Gabon, Mikongo (Rougier)	ANHRTUK-00139197	ANLMN1656-21
<i>Crococia divisa</i>	♂	Gabon, Mikongo (Rougier)	ANHRTUK-00152785	ANLMN1653-21
<i>Crococia divisa</i>	♂	Gabon, Mikongo (Rougier)	ANHRTUK-00155659	ANLMN1652-21
<i>Crococia divisa</i>	♀	Gabon, Mikongo (Rougier)	ANHRTUK-00162810	ANLMN1657-21
<i>Crococia divisa</i>	♂	Gabon, Mikongo (Rougier)	ANHRTUK-00167772	ANLMN1655-21
<i>Crococia divisa</i>	♀	Gabon, Mikongo (Rougier)	ANHRTUK-00192634	ANLMN1659-21
<i>Crococia divisa</i>	♂	Republic of Congo, NNNP, Mbeli camp	ANHRTUK00276592	ANLMO7052-23
<i>Crococia divisa</i>	♂	Republic of Congo, NNNP, Mbeli camp	ANHRTUK00276593	ANLMO7051-23
<i>Crococia divisa</i>	♂	Republic of Congo, NNNP, Mombongo bai	ANHRTUK00276982	ANLMO7050-23
<i>Crococia divisa</i>	♀	Republic of Congo, NNNP, Mombongo camp	ANHRTUK00277458	ANLMO7053-23
<i>Crococia divisa</i>	♀	Republic of Congo, NNNP, Mombongo camp	ANHRTUK00277459	ANLMO7054-23
<i>Cragiosia mesosticta</i>	♀	Gabon, Mikongo (Rougier)	ANHRTUK-00139187	ANLMN1667-21
<i>Cragiosia mesosticta</i>	♂	Gabon, Mikongo (Rougier)	ANHRTUK-00139216	ANLMN1663-21
<i>Cragiosia mesosticta</i>	♂	Gabon, Mikongo (Rougier)	ANHRTUK-00193866	ANLMN1662-21
<i>Cragiosia mesosticta</i>	♀	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00149412	ANLMN1666-21
<i>Cragiosia mesosticta</i>	♂	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00163006	ANLMN1665-21
<i>Cragiosia mesosticta</i>	♂	Gabon, Ivindo, Dilo ANPN camp	ANHRTUK-00163009	ANLMN1664-21
<i>Cragiosia mesosticta</i>	♀	Republic of Congo, NNNP, Bomassa	ANHRTUK00275242	ANLMO7049-23
<i>Cragiosia mesosticta</i>	♂	Republic of Congo, NNNP, Mbeli bai	ANHRTUK00275933	ANLMO7047-23
<i>Cragiosia mesosticta</i>	♂	Republic of Congo, NNNP, Mbeli camp	ANHRTUK00291138	ANLMO7714-23
<i>Cragiosia mesosticta</i>	♀	Republic of Congo, NNNP, Mombongo bai	ANHRTUK00276983	ANLMO7055-23
<i>Cragiosia mesosticta</i>	♀	Republic of Congo, NNNP, Mombongo bai	ANHRTUK00276984	ANLMO7056-23
<i>Cragiosia smithi</i> sp. n., HT	♂	Liberia, Nimba Mts., ENNR	ANHRTUK-00060293	ANLMN1668-21
<i>Cragiosia smithi</i> sp. n., PT	♂	Liberia, Nimba Mts., ENNR	ANHRTUK-00061990	ANLMN1669-21
<i>Cragiosia smithi</i> sp. n., PT	♀	Liberia, Nimba Mts., ENNR	ANHRTUK-00062095	ANLMN1670-21
<i>Cragiosia smithi</i> sp. n., PT	♀	Liberia, Nimba Mts., ENNR	ANHRTUK-00062114	ANLMN1671-21
<i>Cragiosia smithi</i> sp. n., PT	♀	Liberia, Foya PPA	ANHRTUK-00142108	ANLMN1672-21
<i>Cragiosia smithi</i> sp. n., PT	♂	Liberia, Foya PPA	ANHRTUK-00148592	ANLMN1673-21
<i>Cragiosia smithi</i> sp. n., PT	♀	Liberia, Wologizi Mts., Base camp forest	ANHRTUK-00148330	ANLMN1674-21
<i>Cragia distigmata</i>	♂	Cameroon, Adamawa Plateau, Chute De Tello	ANHRTUK-00078445	ANLMN1749-21

For 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 a vertical bar (“|”). Any additional data are provided in square brackets.

The male and female genitalia terminology follows Volynkin (2024).

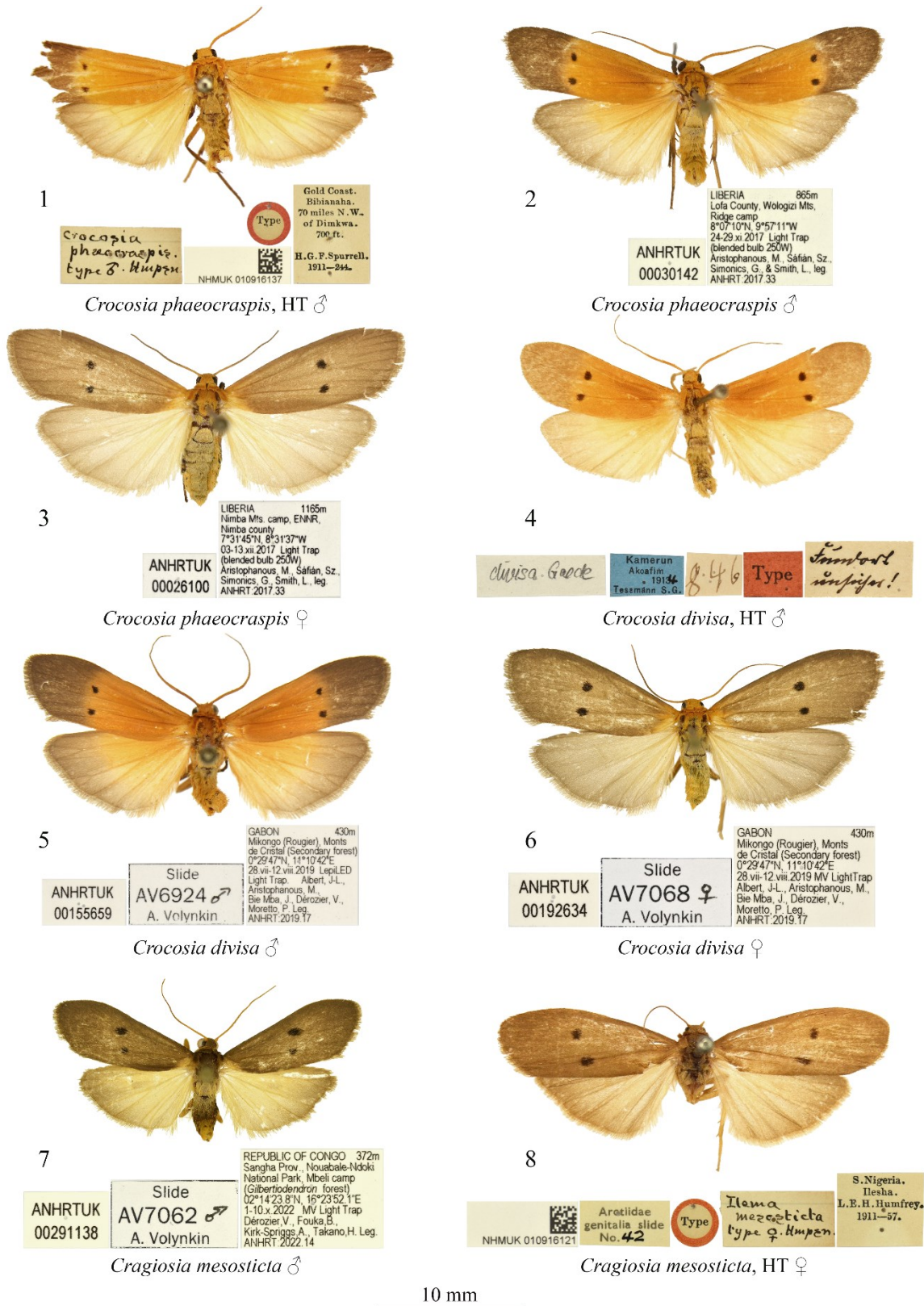
## Taxonomic part

### Genus *Crococia* Hampson, 1914

*Crococia* Hampson, 1914, *Catalogue of the Lepidoptera Phalaenae in the British museum (Supplement)*, 1: 470.

Type species: *Crococia phaeocraspis* Hampson, 1914, by original designation.

**Diagnosis.** Species of the genus (Figs 1–6) are externally reminiscent of members of the genera *Zobida* Birket-Smith, 1965 (illustrated by Krüger (2015)), *Cragia* (Figs 15, 16) and *Pseudocragia* Krüger, 2015 (illustrated by Krüger (2015)) with their pair of small black spots on the forewing but are characterised by the substantial sexual dimorphism: the male has an orange forewing with a greyish-brown outer third while the female forewing is unicolourous greyish-brown, with only slight orange suffusion basally.



10 mm

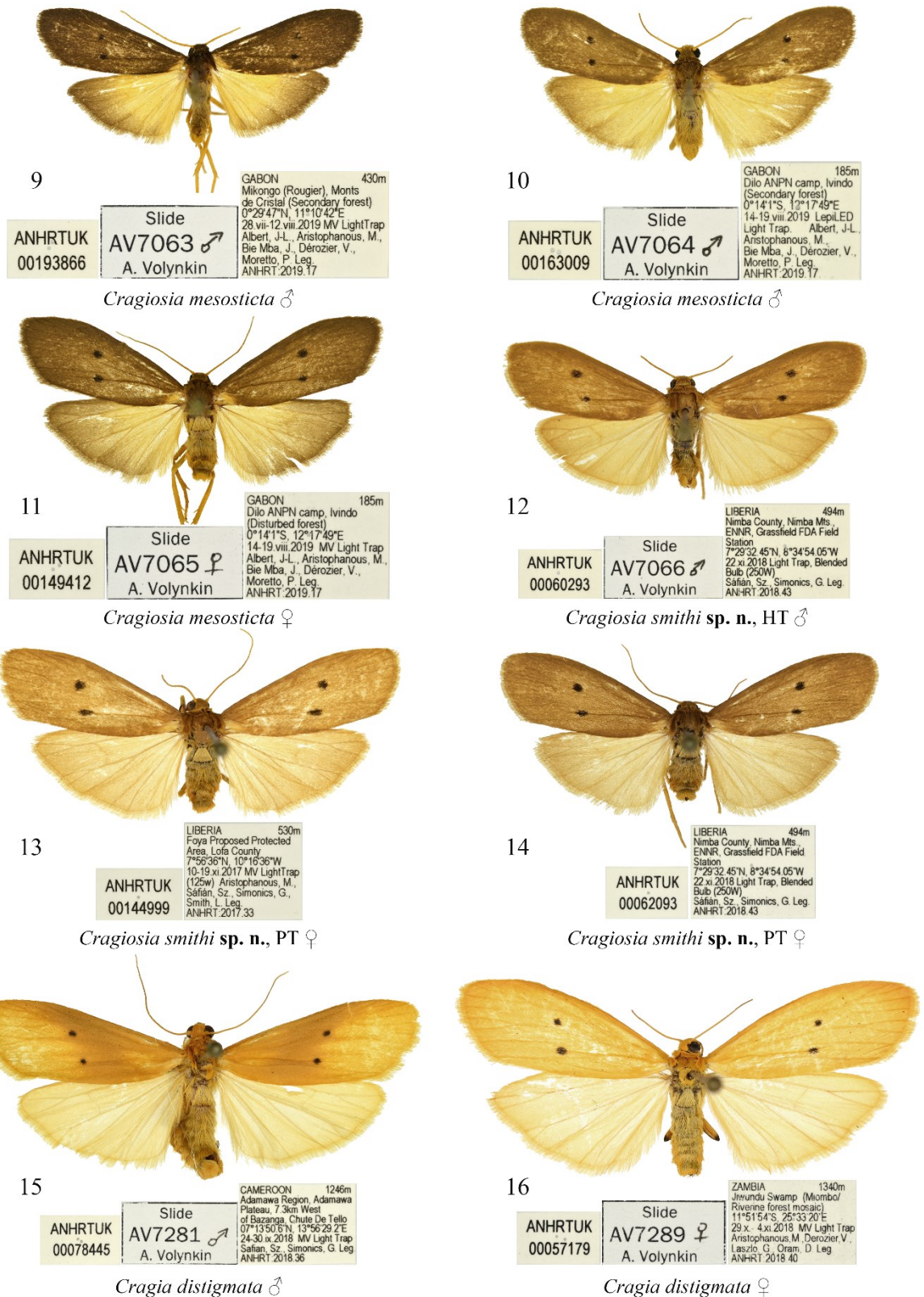
Figures 1–8. Adults of *Crocosia* (1–6) and *Cragiosia* gen. n. (7, 8) spp. Depositories of the specimens: 1 and 8 in NHMUK; 2, 3 and 5–7 in ANHRT; 4 in MfN.

The male genitalia of *Crocosia* (Figs 17–19) are similar to *Cragia* (Fig. 22) but differ in the following features. (1) In the valva, the sacculus is reduced, very short and lacks processes whereas in *Cragia* it is elongate, reaching the base of the valvula, and bears a medial process directed ventrad or inwards. (2)

The proximal end of the sacculus bears a weakly sclerotised ribbon-like ental process separated from its counterpart by a membrane whereas in *Cragia* the homologous processes are connected by the thin intersaccular bridge. (3) The costa is short, trapezoidal and occupies only the basal section of the dorsal margin of the valva whereas in *Cragia* it is elongate, occupying the majority of the dorsal margin of the valva. (4) The valval section of the transtilla is short, overlapping with the costa and bears a short, conical and serrulate ampulla. *Cragia* also has a similar (but larger) ampulla but the valval section of the transtilla in this genus is considerably longer and its distal part is extended into the medial section of the valva. (5) The diaphragmal section of the transtilla has a weakly sclerotised, ribbon-like tendon separated from its counterpart by the membrane (similar to *Cragia*). (6) The juxta is trapezoidal with a tapered and heavily sclerotised dorsal section, which has a broad V-shaped medial notch, its lateral ventral corners firmly articulated with the sacculi. Unlike *Crococisia*, the juxta in *Cragia* is broader, and its dorsal section is weakly sclerotised and fused with the anellus. (7) The anellus is membranous and firmly articulated with the phallus making it non-removable from the phallocrypt, whereas in *Cragia* the anellus bears hook-shaped valvella ventro-laterally, and the phallus is hardly removable from the phallocrypt. (8) The phallus of *Crococisia* is moderately broad (the length to width ratio is 2.0–2.2:1) and has a membranous, longitudinally wrinkled and expandable distal (external) section bearing a broad, plate-like and weakly sclerotised ventral carina forming an outer wall of the subbasal diverticulum. Unlike in *Crococisia*, the phallus of *Cragia* is broader (the length to width ratio is ca. 1.5–1.6:1), its distal section is more protruding posteriorly, non-expandable, and lacks the carina while the proximal (internal) section is markedly shorter. Among the Lithosiina genera, the similar longitudinally wrinkled and expandable distal section of the phallus is found in the genus *Brunia* Moore, 1878 (illustrated, e.g., by Holloway (2001), Bucsek (2017), and Volynkin (2022)) but in the latter, the carina is absent and the phallus is easily removable from the phallocrypt. (9) The vesica of *Crococisia* is broad, with a few diverticula of various shapes, and bears two strongly elongate, horn-like distal cornuti subapically and apically near the base of the vesica ejaculatorius, which originates distally, whereas in *Cragia* the vesica lacks the cornuti and has a vesica ejaculatorius originating proximo-ventrally. Birket-Smith (1965) erroneously treated the cornuti of *Crococisia* as valvella supporting his conclusion by the observation that certain muscles (assumed by the author as homologous to the muscles originating from the ventro-lateral processes of the juxta and inserted into the valvella in *Cragia*) are inserted into them. This treatment was followed by Krüger (2015), who did not examine the vesica structure. However, subsequent examination of the male genitalia musculature of *Crococisia* by the author of the present paper revealed no juxtal muscles inserted into those sclerotised structures of *Crococisia*. Although they are nearly as long as the phallus and their distal ends are extended distally from the phallus tube (and protected by the carinal process by a cover) (Figs 23–25), they are in fact situated on the distal section of the vesica and are therefore the true cornuti.

The female genitalia of *Crococisia* (Figs 30, 31) are characterised by the following features. (1) The ductus bursae is membranous and tubular, its posterior section is funnel-shaped, and the ventral margin of the ostium bursae bears an antevaginal plate divided into two lateral lobes. Compared to *Crococisia*, the ductus bursae of *Cragia* (Fig. 32) is shorter, broader, its anterior section is densely covered with spinulose scobination while the posterior section forms a broad (as wide as the anterior end of the 8<sup>th</sup> abdominal segment), more or less rectangular and gelatinous antrum bearing pockets to receive the male valvella during copulation, and the ventral margin of the ostium bursae is rugose, lacking the antevaginal plate. (2) The corpus bursae is pyriform, its anterior section is membranous while the posterior one is sclerotised, bears two short thick-walled and rugose posterior diverticula directed posteriorly, and a large, pyriform anterior diverticulum, which is directed anteriorly, with a membranous distal section, and a weakly sclerotised proximal section. At the base of the latter, the corpus bursae bears a short sclerotised pocket. Unlike *Crococisia*, in *Cragia* the corpus bursae has a tubular and densely spinulose posterior section (its scobination is extended into the ductus bursae), and a membranous and helicoid anterior section, which is longer than the posterior one; and the posterior section has a single pyriform and membranous diverticulum. (3) The appendix bursae is conical, proximally sclerotised and apically membranous, originating from the posterior section of the corpus bursae postero-laterally and directed posteriorly, whereas in *Cragia* the appendix bursae is not developed and the ductus seminalis originates from the anterior end of the helicoid anterior section of the corpus bursae.

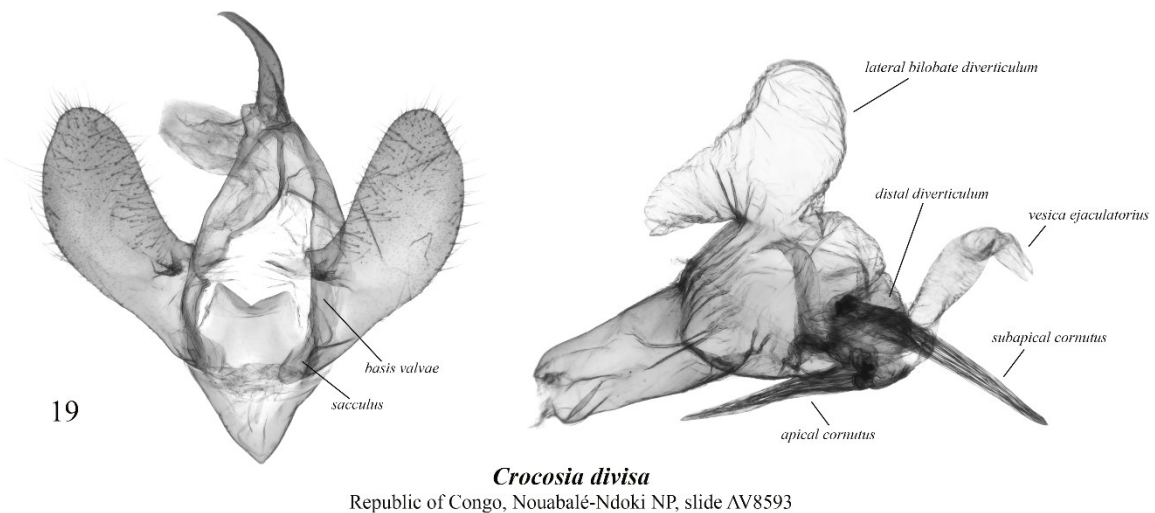
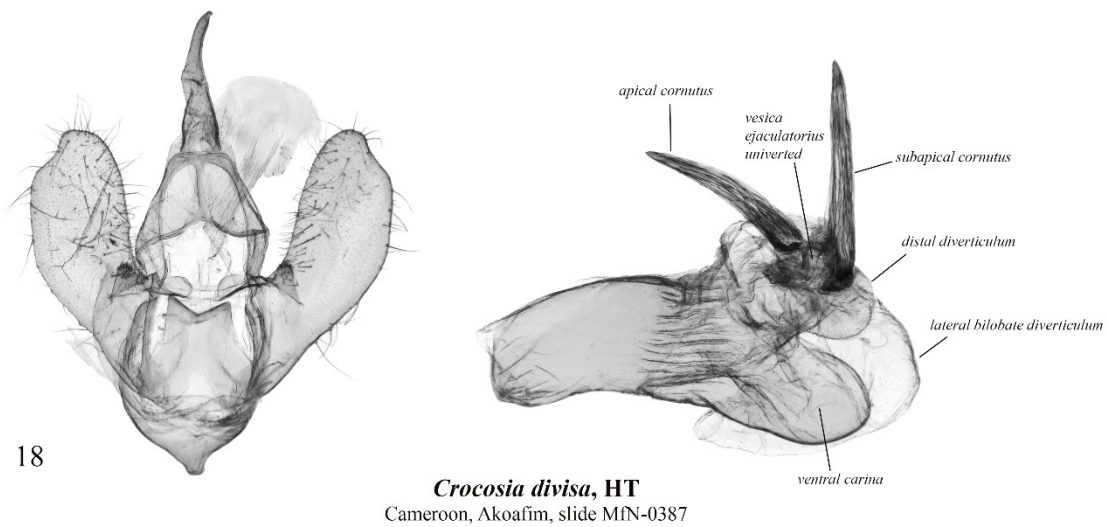
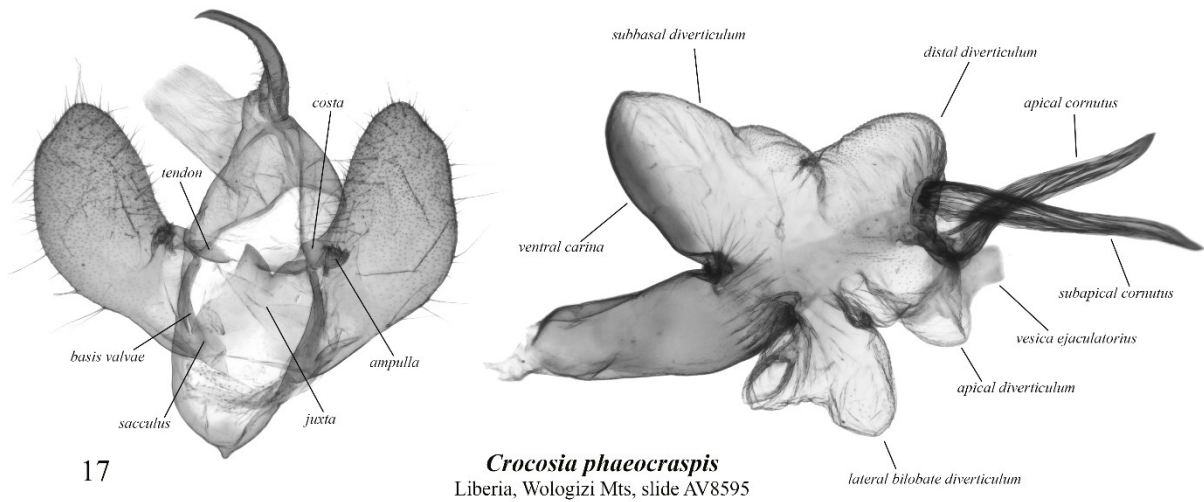
The diagnostic comparison with *Cragiosia* **gen. n.** (Figs 7–14, 20, 21, 33–35) is provided below in the diagnosis of the latter.



10 mm

Figures 9–16. Adults of *Cragiosia* gen. n. (9–14) and *Cragia* (15, 16) spp. The specimens are deposited in ANHRT.

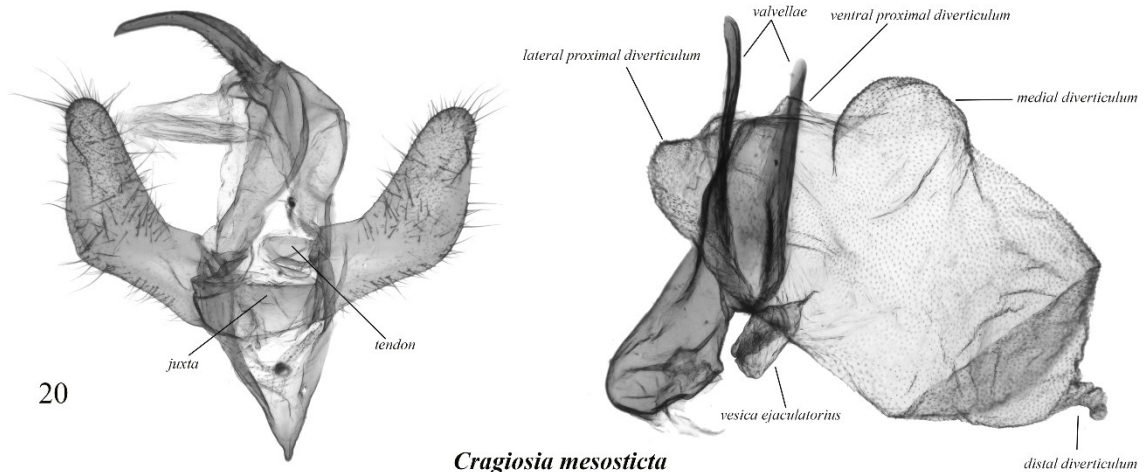
**Distribution.** The genus is widespread in rainforests of the Guineo-Congolian Region reaching western Kenya (Kakamega Forest) in the east.



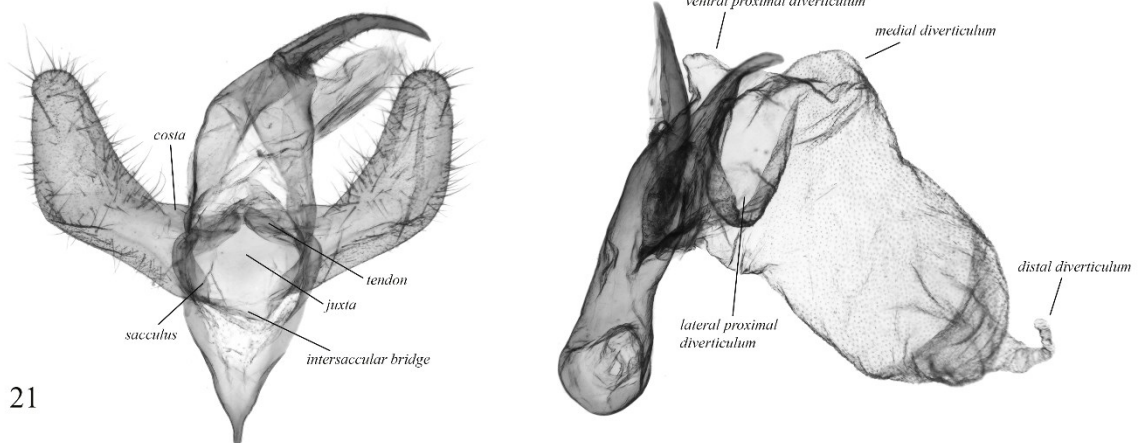
**Figures 17–19.** Male genitalia of *Crocosia* spp. Depositories of the specimens dissected: 17 and 19 in ANHRT; 18 in MfN.

**Molecular data.** Although they display substantial and stable morphological differences, two allopatric species of the genus were recovered as polyphyletic (Fig. 36). The intraspecific divergences were in the ranges of 0.00–2.84% in *C. phaeocraspis* and 0.00–2.99% in *C. divisa*, while the pairwise

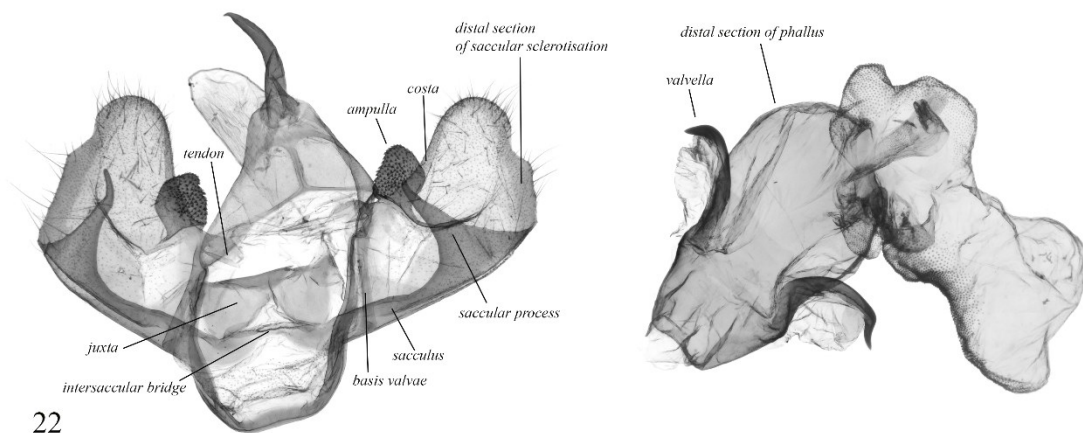
distances between *C. phaeocraspis* and *C. divisa* were 0.00–2.83%. Thus, *Crocasia* is another example of a group in which the COI marker is not informative for purposes of species delimitation, this phenomenon being quite widespread among various genera of Lepidoptera (e.g., Schmidt & Sperling 2008; László & Hausmann 2022, etc.).



***Cragiosia mesosticta***  
Gabon, Crystal Mts, slide AV7063



***Cragiosia smithi* sp. n.**  
Liberia, Nimba Mts, slide AV7066



***Cragia distigmata***  
Cameroon, Adamawa Plateau, slide AV7281

**Figures 20–22.** Male genitalia of *Cragiosia* gen. n. (20, 21) and *Cragia* (22) spp. The specimens dissected are deposited in ANHRT.

**Species content of *Crocisia***

- *C. phaeocraspis* Hampson, 1914, **stat. rev.**
- *C. divisa* (Gaede, 1924), **stat. rev.**

***Crocisia phaeocraspis* Hampson, 1914, **stat. rev.****  
(Figs 1–3, 17, 30)

*Crocisia phaeocraspis* Hampson, 1914, *Catalogue of the Lepidoptera Phalaenae in the British museum (Supplement)*, 1: 470, fig. 91 (Type locality: [Ghana, Bibiani] “Gold Coast, Bibianaha”).

**Type material examined. Holotype** (by monotypy) (Fig. 1): ♂, “Gold Coast. [Ghana] | Bibianaha. [Bibiani] | 70 miles N. W. | of Dimkwa. [Dunkwa] | 700 ft. | H.G.F.Spurrell. | 1911–244.” / red ring “Type” label / QR-code label with unique ID “NHMUK 010916137” (NHMUK).

**Additional material examined. GUINEA:** 8 ♂♂, 9 ♀♀, 690m, Guinée Forestière, Bossou Forest and Institut de Recherche Environnementale de Bossou (lowland forest / farmland), 07°38'32"N, 08°30'30"W, 24–31.vi.2019, MV & 8W UV cold cathode light traps, Dérozier, V., Suah Dore, J., Koivagui, S., Miles, W., Sáfián, Sz., Warner, R. leg.; 6 ♂♂, 2 ♀♀, 625m, Guinée Forestière, Forêt Classée de Ziama, Sérédou (lowland forest / farmland), 08°21'26"N, 09°17'48"W, 9–16.vii.2019, MV light trap, Dérozier, V., Koivagui, S., Miles, W., Sáfián, Sz., Warner, R. leg.; 1 ♀, 1400–1725m, Guinée Forestière, Monts Nimba UNESCO World Heritage Site, Mont Richard Molard camp and ridge (high-altitude grassland and forest), 07°36'19"N, 08°25'30"W, 1–7.vii.2019, 250W blended light trap, Dérozier, V., Miles, W., Sáfián, Sz. leg.; 66 ♂♂, 45 ♀♀, 540–600m, 619km ESE of Conakry, Nzerekore Region, Prefecture Lola, Ziela env., x.2017, 7°42'N, 8°21'W, Local collectors leg.; **LIBERIA:** 10 ♂♂, 1 ♀, 611m, Lofa County, Wologizi Mts, base camp forest, 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., gen. prep. No.: AV6923♂; 2 ♂♂, 585m, Lofa County, Wologizi Mts, Rosewood Camp, 8°06'14.9"N, 9°58'27.3"W, 18.xi.–1.xii.2018, MV light trap, Sáfián, Sz., Simonics, G. leg.; 1 ♀, 551m, Wetezu camp, Wonegizi Nature Reserve, Lofa County, 8°4'57.11"N 9°34'47.86"W, 19–27.iii.2019, cold cathode UV light trap (8W), Sáfián, Sz., Koivogui, S. leg.; 11 ♂♂, 10 ♀♀, 865m, Lofa County, Wologizi Mts, Ridge camp, 8°07'10"N, 9°57'11"W, 24–29.xi.2017, light trap (blended bulb 250w), Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg.; 4 ♂♂, 1 ♀, 140m, Sinoe County, Krahn-Bassa Reserve, Juboe River, 7.5km SW Pellokon Town, 5°39'4"N, 8°39'4"W, 14–20.i.2018, MV & blended bulb 250w light traps, Geiser, M., Sáfián, Sz., Simonics, G. leg.; 1 ♀, 103m, Sinoe County, 6.5 km NW of Jacksonville, forest near Solve Problem Village, 5°26'25"N 9°7'39.9"W, 23–27.i.2018, MV light trap, Geiser, M., Sáfián, Sz., Simonics, G. leg.; 1 ♂, 5 ♀♀, 1165m, Nimba Mts, camp, ENNR, Nimba County, 7°31'45"N, 8°31'37"W, 3–13.xii.2017, MV 125W and blended bulb 250W light traps, Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg.; 1 ♂, 750m, Nimba County, Nimba Mts., ENNR, Cellcom Road, 7°33'3.78"N, 8°31'46.49"W, 16–28.xii.2018, cold cathode UV light trap (8w), Sáfián, Sz., Simonics, H. leg.; 1 ♀, 1000–1100m, Nimba Mts., ENNR, Nimba County (Cellcom road), 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.; 1 ♂, 1 ♀, 230m, Lofa County, Zuwulor Village School, 7°54'52"N, 9°31'08"W, 8.xi.2017, light trap (blended bulb 250W), Aristophanous, M., Sáfián, Sz., Simonics, G., & Smith, L., leg.; 3 ♂♂, 3 ♀♀, 883m, Lofa County, Wologizi Mts., Ridge Camp 2, 8°7'20.79"N, 9°56'50.75"W, 22–31.xi.2018, light trap, blended bulb (250W), Sáfián, Sz., Simonics, G. leg.; 1 ♂, 1 ♀, 494m, Nimba County, Nimba Mts., ENNR, Grassfield FDA Field Station, 7°29'32.45"N, 34°34'54.05"W, 22.xi.2018, light trap, blended bulb (250W), Sáfián, Sz., Simonics, G. leg.; 1 ♂, 750m, Nimba County, Nimba Mts., ENNR, Cellcom Road, 7°33'3.78"N, 8°31'46.49"W, 16–28.xii.2018, cold cathode UV light trap (8w), Sáfián, Sz., Simonics, H. leg.; 23 ♂♂, 22 ♀♀, 530m, Lofa County, Foya Proposed Protected Area, 7°56'36"N, 10°16'36"W, 10–19.xi.2017, MV (125w), blended bulb (250w) and cold cathode traps, Aristophanous, M., Sáfián, Sz., Simonics, G., & Smith, L., leg., gen. prep. Nos.: AV8576♀, AV8577♀, AV8578♀; **IVORY COAST:** 2 ♂♂, 1 ♀, 174m, Taï NP, Taï Research Station (SRET), 05°50'00"N, 07°20'32.0"W, 25.iii.–17.iv.2017, MV light trap, Aristophanous, A., Aristophanous, M., Geiser, M., Moretto, P. leg.; 4 ♀♀, 174m, Taï NP, Taï Research Station (SRET), 05°49'59.8"N, 07°20'32.0"W, 5–10.vii.2015, light trap, Aristophanous, M., Moretto, P., Ruzzier, E. leg.; 1 ♀, same locality and collectors

but 14–23.xi.[20]15; 1 ♂, MAN, Mt. Tonkoui, 07°27'15.0"N 7°38'12.6"W, 1200m, 24–27.xi.2014, UV trap, P. Moretto leg. (all in ANHRT).

**Diagnosis.** The forewing length is 10.5–13.0 mm in males and 11.0–13.5 mm in females. *Crococisia phaeocraspis* is superficially very similar to *C. divisa* and identification requires the examination of the genitalia structures. The male genital capsules and phalli of the two species are very similar and reliable differences are found only in the vesica configurations. Compared to *C. divisa*, the vesica of *C. phaeocraspis* is longer, broader, and has a longer and broader subbasal diverticulum, a broader distal diverticulum, and a well-developed apical diverticulum (it is vestigial in the congener). Additionally, both the cornuti of *C. phaeocraspis* are directed distally whereas in *C. divisa*, the subapical cornutus is directed distally while the apical one is directed latero-anteriorly. The differences between *C. phaeocraspis* and *C. divisa* are more substantial in the female genitalia: in the former the apophysis posterioris is shorter, the lobes of the antevaginal plate are shorter, the corpus bursae is markedly broader with a broader sclerotised area, the anterior diverticulum bursae is considerably longer and distally broader, and the sclerotised pocket is larger and situated more anteriorly than in *C. divisa*.

**Distribution.** The species is currently known from Guinea, Liberia, Ivory Coast and Ghana.

***Crococisia divisa* (Gaede, 1924), stat. rev.**

(Figs 4–6, 18, 19, 31)

*Ilema divisa* Gaede, 1924, *Mitteilungen aus dem Zoologischen Museum in Berlin*, 11 (2): 238 (Type locality: [Cameroon] “Kamerun”).

*Eilema phaeocraspis*: Kiriakoff (1958: 11); de Toulgoët (1977: 69).

*Ilema mesosticta*: Kühne (2008: 157).

**Type material examined. Holotype** (by monotypy) (Figs 4, 18): ♂, blue label “Kamerun [Cameroon, South Region] | Akoafim [ca. 02°21'N 12°56'E] | 1914 [amended from 1913] | Tessmann S.G.” / red label “Type” / “Fundort | unsicher!” [Locality | uncertain!] / “846” / “divisa Gaede”, gen. prep. No. MfN-0387 (prepared by Volynkin) (MfN).

**Additional material examined. CAMEROON:** 1 ♀, 900m, North Region, Wack (La Falaise), 07°40'16.5"N, 13°33'18.4"E, 2–21.x.2018, general coll., Sáfián, Sz., Simonics, G. leg., gen. prep. No.: AV8596♀ (ANHRT); **GABON:** 33 ♂♂, 25 ♀♀, 430m, Mikongo (Rougier), Monts de Cristal (secondary forest), 0°29'47"N, 11°10'42"E, 28.vii.–12.viii.2019, MV, actinic & LepiLED light traps, Albert, J.-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., gen. prep. Nos.: AV6924♂, AV6925♂, AV7068♀, AV7285♂; 3 ♂♂, 6 ♀♀, 185m, Dilo ANPN camp, Ivindo (secondary forest), 0°14'1"S, 12°17'49"E, 14–19.viii.2019, LepiLED light trap, Albert, J.-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., gen. prep. Nos.: AV8574♀, AV8592♀, AV8594♂, AV8597♀ (all in ANHRT); **REPUBLIC OF CONGO, NNP:** 1 ♂, 1 ♀, 352m, Ndoki formation camp, 02°12'48.5"N, 16°23'45.6"E, 23.vi.2022, MV light trap, Dérozier, V. leg.; 1 ♂, 2 ♀♀, 352m, Mombongo camp (moist mixed forest), 02°10'30.7"N, 16°08'37.7"E, 28.vi.2022, MV light trap, Dérozier, V. leg.; 3 ♀♀, 365m, Mondika camp, 02°21'50.63"N 16°16'25.82"E, 07–14.ii.2023, MV light trap, Bakala, N., M., Dérozier, V., Kirk-Spriggs, A., László, G. leg.; 1 ♂, 1 ♀, 380m, Bomassa (secondary forest), 02°12'25.7"N, 16°11'39.1"E, 18–22.vi.2022, act. light trap, Dérozier, V. leg.; 1 ♂, 2 ♀♀, 358m, 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.; 1 ♀, 341m, Bomassa camp (secondary forest), 02°12'36.9"N 16°11'30.2"E, 10–16.x.2022, LepiLED light trap, Dérozier, V., Fouka, B., Kirk-Spriggs, A., Takano, H. leg.; 1 ♀, same locality but 6–14.v.2023, MV light trap, Dérozier, V., Kirk-Spriggs, A., László, G., Mvouende, S. leg.; 2 ♂♂, 3 ♀♀, 370m, Mbeli camp (moist mixed forest), 02°12'48.5"N, 16°23'45.6"E, 25.vi.2022, MV light trap, Dérozier, V. leg.; 1 ♂, 311m, Mombongo baï (marshland), 02°10'14.4"N 16°08'27.9"E, 28.vi.2022, actinic light trap, Dérozier, V., Mékounou, P. leg.; 1 ♀, 375m, Mbeli baï (swamp forest), 02°15'30.4"N, 16°24'39.5"E, 25.vi.2022, actinic light trap, Dérozier, V. leg.; 6 ♂♂, 1 ♀, 372m, Mbeli camp (*Gilbertiodendron* forest), 02°14'23.8"N, 16°23'52.1"E, 1–10.x.2022, MV & actinic light traps, Dérozier, V., Fouka, B., Kirk-Spriggs, A., Takano, H. leg., gen. prep. No.: AV8593♂; 1 ♀, same locality but 14–20.ii.2023, Bakala, N., M., Dérozier, V., Kirk-Spriggs, A., László, G. leg. (all in ANHRT); **UGANDA:** 2 ♂♂, Kibale National Park, biol. field station, 19–24.xi.2014, light trap, W.

Mey leg. (MfN); 1 ♂, 1 ♀, Ruwenzori Range, Semliki Forest, 2,850 ft., 22.viii.–3.ix.1952, D.S. Fletcher leg. / Ruwenzori Exped. B.M. 1952-566, unique ID: NHMUK 014173062, gen. prep. Nos.: NHMUK014331135 (♂) (prepared by Volynkin), Arctiidae 43 (♀) (NHMUK); **KENYA**: 1 ♀, Western, Kakamega Forest, Rondo Retreat, 00°13'37"N 34°53'06"E, 1610m, Black/MV lights, 27.vii.2001, K. Maes leg. (ANHRT).

**Note.** The type locality of the species, Akoafim is an abandoned German colonial town situated north of the Aina River (Eckert 1912).

**Diagnosis.** The forewing length is 10.0–12.5 mm in males and 11.5–13.5 mm in females. *Crocossia divisa* is superficially very similar to the allopatric *C. phaeocraspis* and a detailed comparison is provided above in the diagnosis of the latter species.

**Distribution.** The species is currently known from Cameroon, Gabon, Republic of Congo, Uganda, and western Kenya. It is also present in Democratic Republic of Congo based on a photograph examined of a specimen in RMCA (accessed at <https://virtualcol.africamuseum.be>). Kühne's (2008, as *Ilema mesosticta*) record from Nigeria is highly likely based on the type locality of *Cragiosia mesosticta*, although its occurrence in southeastern Nigeria cannot be ruled out.

### ***Cragiosia* gen. n.**

<https://zoobank.org/urn:lsid:zoobank.org:act:0E0BE7B5-D8CA-4B91-A9D1-C5C43978BB8B>

**Type species:** *Ilema mesosticta* Hampson, 1911, by present designation.

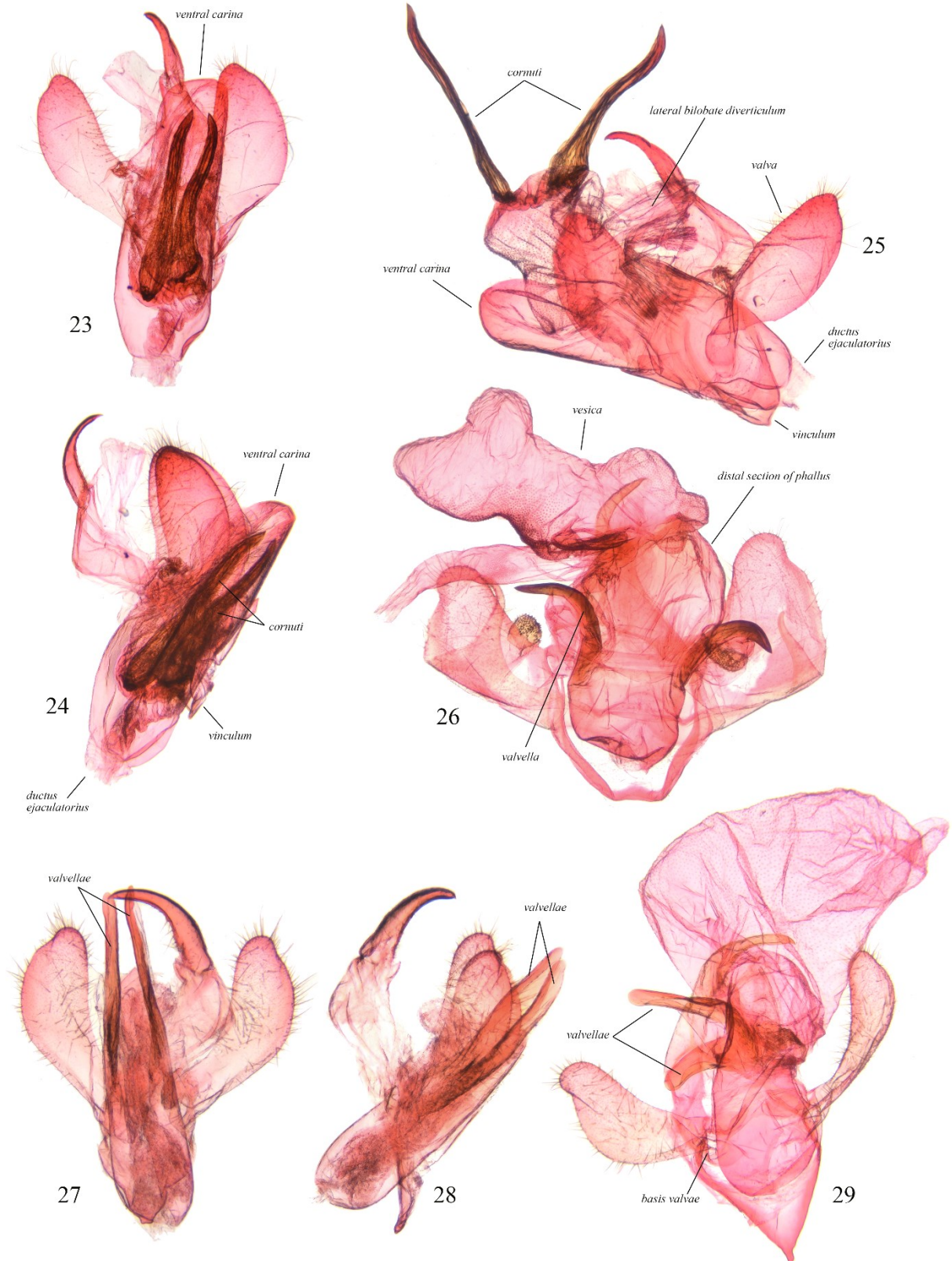
**Diagnosis.** Species of the new genus (Figs 7–14) display limited sexual dimorphism with the female having a somewhat broader forewing and are superficially reminiscent of females of *Crocossia* (Figs 3, 6), from which, however, they can easily be distinguished by the brown head and thorax (vs. rusty orange in *Crocossia*), the forewing lacking the rusty orange basal suffusion, which is characteristic of *Crocossia*, and the paler hindwing with an intense brownish-grey suffusion terminally.

The male genital capsule of *Cragiosia* gen. n. (Figs 20, 21) is similar to *Crocossia* (Figs 17–19) with its swollen uncus and the valva lacking costal and sacculus processes but is characterised by the presence of valvella, which are proximally firmly articulated with the phallus wall making an indivisible intromittent complex (Figs 27–29). The similar valvella structure is known in the genus *Cragia* (Figs 22, 26) although both the male genital capsule configuration as well as female genitalia structure differ markedly. However, unlike in *Cragiosia* gen. n., the valvella of *Cragia* are only weakly articulated with the phallus making it removable from the phallocrypt. Additionally, the male genital capsule of *Cragiosia* gen. n. differs from *Crocossia* in the shorter, more or less rectangular and evenly weakly sclerotised juxta (in *Crocossia*, it is trapezoidal with a more heavily sclerotised dorsal section having a medial notch), the presence of the intersaccular bridge (similar to *Cragia* while in *Crocossia*, the sacculi are separated by the diaphragm), the longer and broader tendon, and the editum lacking the ampulla. The phallus of the new genus lacks the long plate-like carina and has an evenly sclerotised and smooth body with a dorsally oblique distal opening whereas in *Crocossia*, the phallus has a weakly sclerotised, rugose and expandable distal section with an opening axis perpendicular to the body axis. The vesica of *Cragiosia* gen. n. is sack-like with several short diverticula and a vesica ejaculatorius originating proximally (similar to *Cragia*) whereas in *Crocossia* it bears two large, horn-shaped cornuti and its vesica ejaculatorius originates distally.

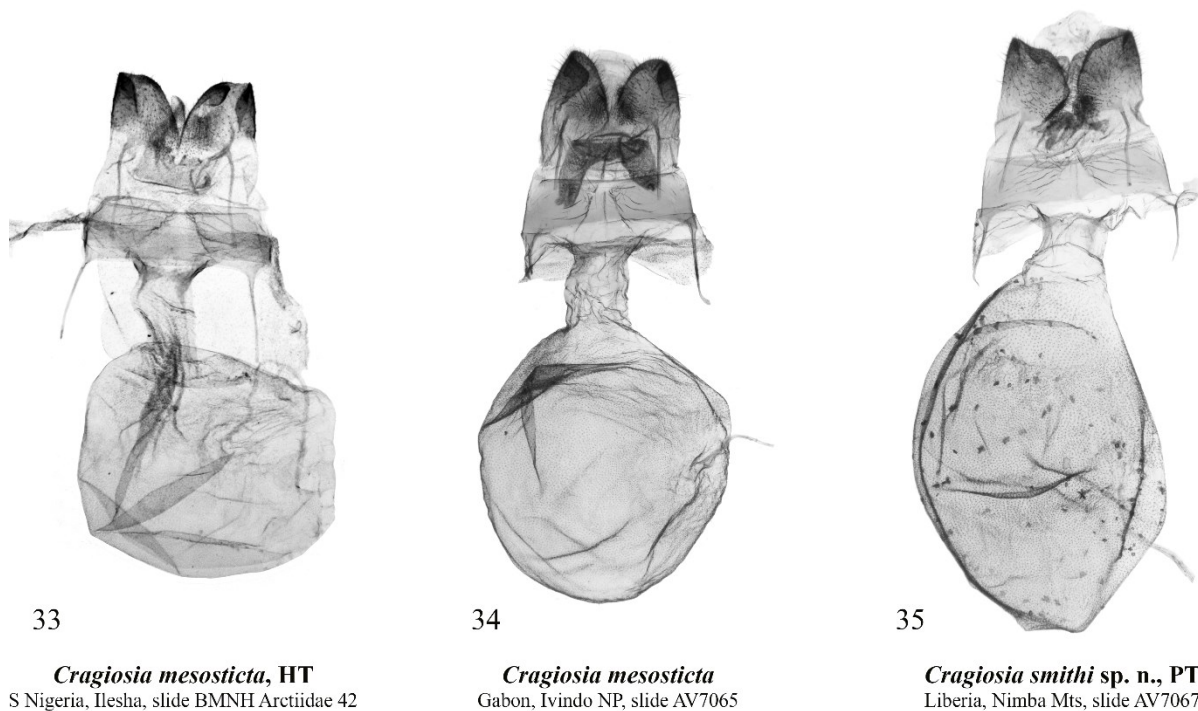
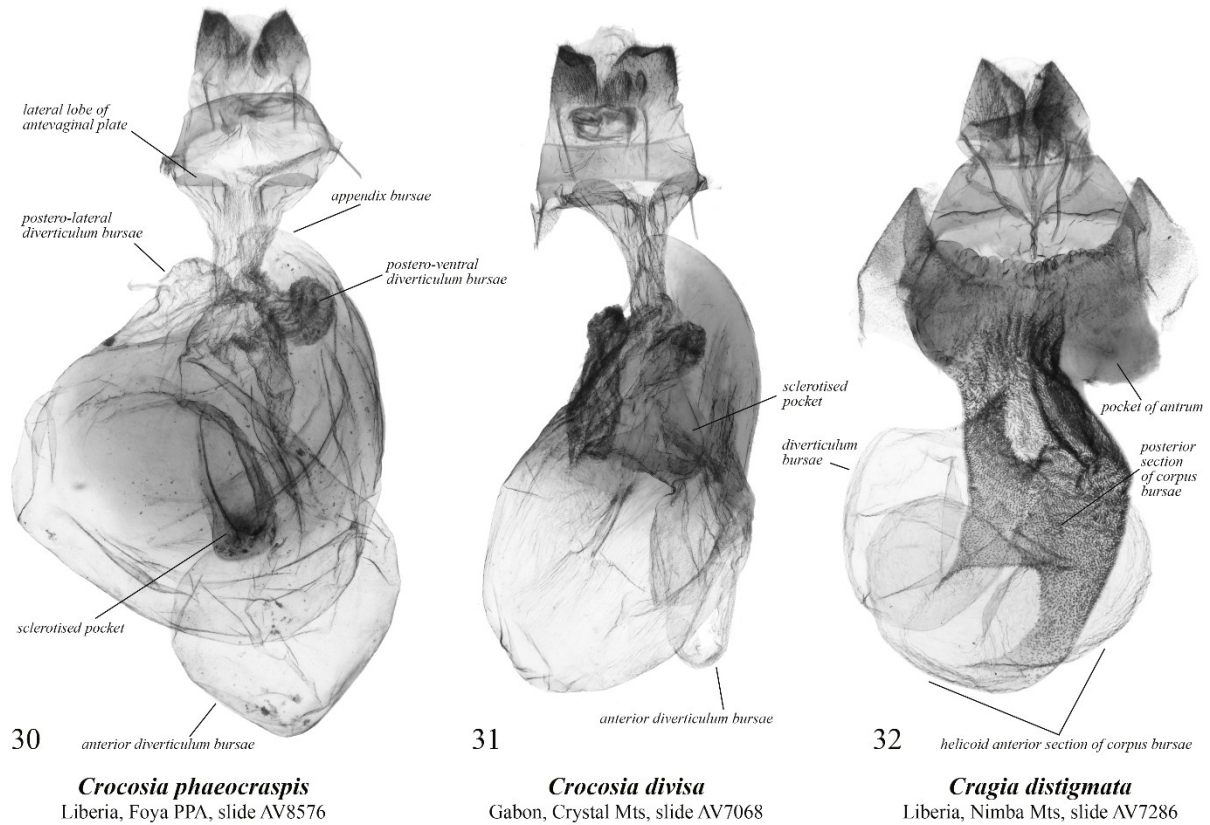
In the female genitalia, *Cragiosia* gen. n. (Figs 33–35) differs clearly from *Crocossia* (Figs 30, 31) in the lack of the antevaginal plate, the evenly tubular ductus bursae (it is posteriorly dilated in *Crocossia*), the elliptical and membranous corpus bursae lacking the diverticula (it is pyriform and posteriorly sclerotised in *Crocossia*), and the vestigial appendix bursae situated medially whereas it is well-developed, conical, proximally sclerotised and situated postero-laterally in *Crocossia*.

**Distribution.** The genus is widespread in rainforests of the Guineo-Congolian Region reaching the western Congo Basin in the east.

**Etymology.** The new genus name is an aggregate of the genus-group names *Cragia* and *Crocossia*, and refers to the male genitalia structure of the new genus partly displaying characters of those genera. The gender is feminine



**Figures 23–29.** Male genitalia of *Crocosia phaeocrapsis* (Guinea, ANHRTUK 000226946) (23–25), *Cragia distigmata* (Zambia, ANHRTUK 000201346) (26), and *Cragiosia mesosticta* (Republic of Congo, ANHRTUK 00275933): postero-ventral view (23 and 27), lateral view (24 and 28), and postero-ventral view with vesica everted (25, 26 and 29). The specimens dissected are deposited in ANHRT.



**Figures 30–35.** Female genitalia of *Crocosia* (30, 31), *Cragia* (32), and *Cragiosia* gen. n. (33–35) and spp. Depositories of the specimens dissected: 30–32 and 34, 35 are in ANHRT; 33 in NHMUK.

**Molecular data.** Species of the genus were recovered as monophyletic with intraspecific divergences in the range of 0–0.15% in *C. mesosticta* and 0% in *C. smithi* sp. n. The COI pairwise distance between *C. mesosticta* and *C. smithi* sp. n. was 2.35–2.51%.

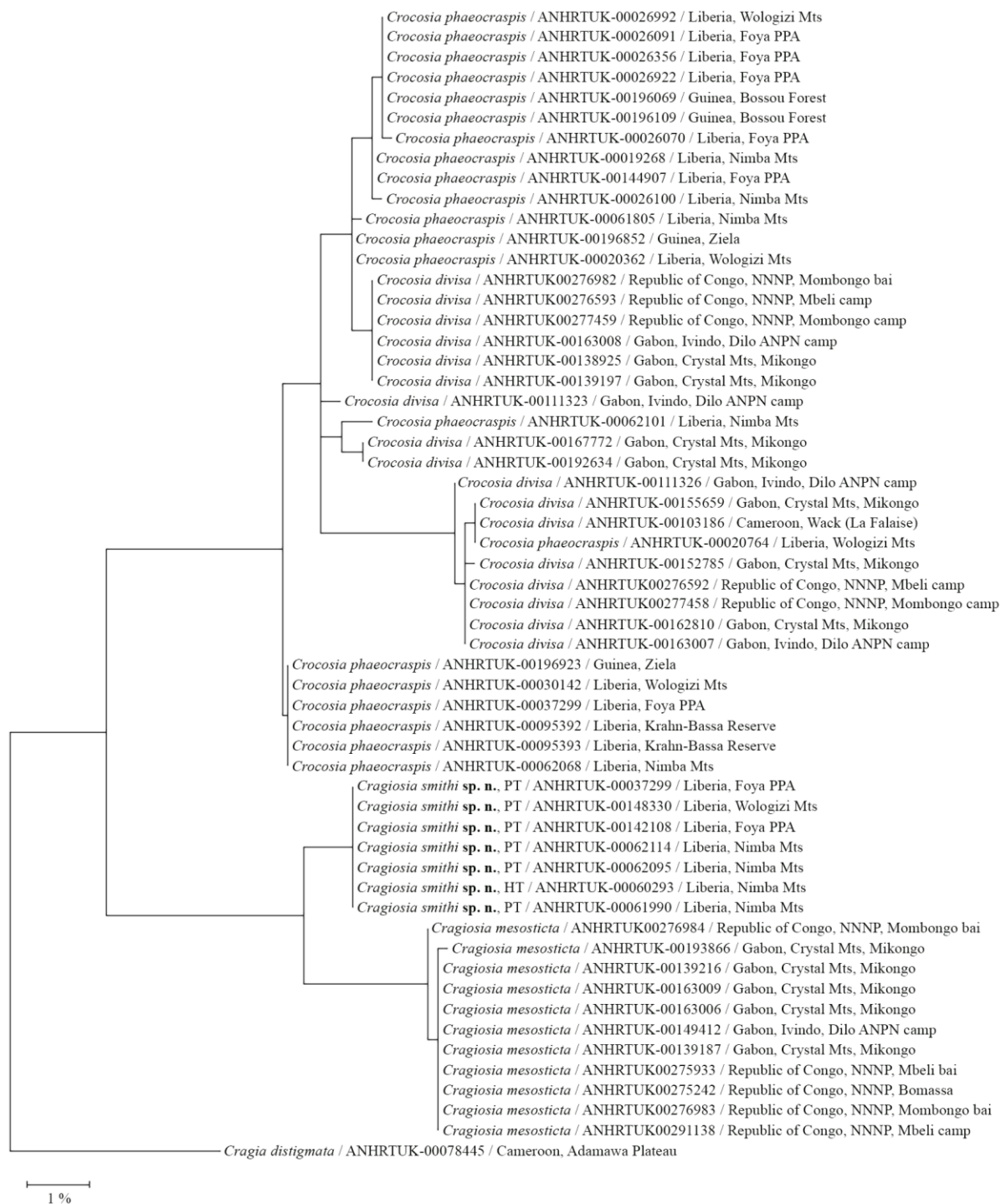
**Species content of *Cragiosia* gen. n.**– *C. mesosticta* (Hampson, 1911), **comb. n.**– *C. smithi* **sp. n.*****Cragiosia mesosticta* (Hampson, 1911), **comb. n.****

(Figs 7–11, 20, 33, 34)

*Ilema mesosticta* Hampson, 1911, *The Annals and magazine of natural history*, (8) 8 (46): 401 (Type locality: “S Nigeria, Ilesha”).**Type material examined. Holotype** (by monotypy) (Figs 8, 33): ♀, “S. Nigeria. | Ilesha. | L.E.H. Humphrey. | 1911–57.” / “Ilema | mesosticta | type ♀. Hmpsn.” / red ring “Type” label / “Arctiidae | genitalia slide | No. 42” / QR-code label with unique ID “NHMUK 010916121” (NHMUK).**Additional material examined. GABON:** 2 ♂♂, 3 ♀♀, 430m, Mikongo (Rougier), Monts de Cristal (secondary forest), 0°29'47"N, 11°10'42"E, 28.vii.–12.viii.2019, MV, actinic & LepiLED light traps, Albert, J.-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., gen. prep. No.: AV7063♂; 2 ♂♂, 2 ♀♀, 185m, Dilo ANPN camp, Ivindo (secondary forest), 0°14'1"S, 12°17'49"E, 14–19.viii.2019, LepiLED and MV light traps, Albert, J.-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., gen. prep. Nos.: AV7064♂, AV7065♀ (ANHRT); **REPUBLIC OF CONGO**, NNNP: 7 ♂♂, 2 ♀♀, 372m, Mbeli camp (*Gilbertiodendron* forest), 02°14'23.8"N, 16°23'52.1"E, 1–10.x.2022, MV, LepiLED and actinic light traps, Dérozier, V., Fouka, B., Kirk-Spriggs, A., Takano, H. leg., gen. prep. Nos.: AV7062♂, AV8555♂; 3 ♂♂, 365m, Mondika camp, 02°21'50.63"N 16°16'25.82"E, 07–14.ii.2023, MV and LepiLED light traps, Bakala, N., M., Dérozier, V., Kirk-Spriggs, A., László, G. leg.; 2 ♀♀, 311m, Mombongo baï (marshland), 02°10'14.4"N 16°08'27.9"E, 28.vi.2022, actinic light trap, Dérozier, V., Mékounou, P. leg.; 1 ♂, 1 ♀, 358m, 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.; 2 ♀♀, 380m, Bomassa (secondary forest), 02°12'25.7"N, 16°11'39.1"E, 18–22.vi.2022, act. light trap, Dérozier, V. leg.; 1 ♂, 375m, Mbeli baï (swamp forest), 02°15'30.4"N, 16°24'39.5"E, 25.vi.2022, actinic light trap, Dérozier, V. leg., gen. prep. No.: AV8570♂ (all in ANHRT).**Diagnosis.** The forewing length is 10.0–11.0 mm in males and 11.5–12.5 mm in females. The detailed comparison with the allopatric *C. smithi* **sp. n.** is provided below in the diagnosis of the new species.**Distribution.** The species is currently known from Nigeria, Gabon, and Republic of Congo.***Cragiosia smithi* **sp. n.****<https://zoobank.org/urn:lsid:zoobank.org:act:3CBE067A-E6C4-4DE1-B94C-9C06299C5FB4>

(Figs 12–14, 21, 35)

**Type material. Holotype** (Figs 12, 21): ♂, “Liberia 494m | Nimba County, Nimba Mts, | ENNR, Grassfield FDA Field | Station | 7°29'32.45"N, 8°24'54.05"W | 22.xi.2018 Light Trap, Blended | Bulb (250W) | Sáfián, Sz., Simonics, G. Leg. | ANHRT:2018.43” / unique ID “ANHRTUK | 00060293” / “Slide | AV7066♂ | A. Volynkin” (ANHRT).**Paratypes. LIBERIA:** 4 ♂♂, 6 ♀♀, same data as holotype, gen. prep. Nos.: AV7067♀, AV8565♂; 5 ♀♀, 530m, Lofa County, Foya Proposed Protected Area, 7°56'36"N, 10°16'36"W, 10–19.xi.2017, MV light trap (125w) and 8w actinic light bucket trap, Aristophanous, M., Sáfián, Sz., Simonics, G., & Smith, L. leg.; 2 ♀♀, 865m, Lofa County, Wologizi Mts, Ridge camp, 807'10"N, 9°57'11"W, 24–29.xi.2017, light trap (blended bulb 250w), Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg.; 1 ♀, 611m, Lofa County, Wologizi Mts, base camp forest, 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.; **GUINEA:** 1 ♀, 700m, Guinée Forestière, Monts Nimba UNESCO World Heritage Site, Serengbara Village to Yie River Valley (lowland forest / farmland), 07°36'56"N, 08°26'54"W, 1–8.vii.2019, 250W blended light trap, Dérozier, V., Koivagui, S., Miles, W., Sáfián, Sz., Warner, R. leg. (all in ANHRT).



**Figure 36.** Maximum Likelihood tree of *Crocosia* and *Cragiosia* gen. n. based on COI-5P sequenced. Scale indicates substitution rate per site.

**Diagnosis.** The forewing length is 10.0–12.0 mm in males and 12.0–13.5 mm in females. *Cragiosia smithi* sp. n. is superficially distinguished from *C. mesosticta* by the paler, brown forewing ground colour (it varies from dark greyish-brown to blackish-brown in *C. mesosticta*), and the paler hindwing with slight brown suffusion at the apex and along the outer margin whereas in *C. mesosticta*, the suffusion is more intense, darker greyish-brown, and occupies the distal third to a half of the hindwing. The male genital capsules of the two species are very similar and display only difference in the valvella shape, which are proximally broader and distally tapered in the new species whereas in *C. mesosticta* they are slightly dilated apically. The phalli of *C. smithi* sp. n. and *C. mesosticta* are alike.

In the vesica, the new species differs from *C. mesosticta* in the narrower lateral proximal diverticulum, the longer ventral proximal diverticulum, the somewhat shorter and narrower medial diverticulum, and the somewhat longer distal diverticulum. In the female genitalia, *C. smithi* sp. n. can be easily distinguished from *C. mesosticta* by the shorter apophysis anterioris, the markedly shorter ductus bursae, and the considerably longer and more elliptical corpus bursae.

**Distribution.** The new species is currently known from Liberia and Guinea.

**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 including the current one. 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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