RESEARCH ARTICLE

New and poorly known species of *Crinipus* Hampson, 1896 (Lepidoptera: Sesiidae: Synanthedonini)

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Abstract

The Sesiidae genus *Crinipus* Hampson, 1896 is recorded from Central and West Africa for the first time. Seven species new to science are described and illustrated: *Crinipus nimbaensis* Bartsch & Sáfián **sp. n.** and *C. tigripes* Bartsch & Sáfián **sp. n.** from the Nimba Mountains of Liberia and Guinea, the former also recorded from Mont Tonkoui in Côte d'Ivoire; *C. tenebricus* Bartsch, Sáfián & Pühringer **sp. n.** from Eastern Ghana and *C. zebracox* Bartsch, Sáfián & Pühringer **sp. n.** from the Volta Region of Ghana; *C. nigrans* Bartsch & Sáfián **sp. n.** from a single specimen from Togo; *C. congoensis* Bartsch, Sáfián & Pühringer **sp. n.** from two specimens from Eala (east of Mbandaka), Democratic Republic of the Congo; and *C. riefenstahli* Bartsch, Sáfián & Pühringer **sp. n.** from one specimen from Kenya. More widespread is *C. auripes* (Hampson, 1910) **comb. n.**, which was described from Ghana and which we record from Liberia and Togo for the first time. The previously unknown male of this species is described, and the so-far misinterpreted female is redescribed. Further new combinations are introduced: *Crinipus fulvipes* (Hampson, 1910) **comb. n.**, *Crinipus geraropa* (Meyrick, 1927) **comb. n.** and *Crinipus sylphina* (Hampson, 1919) **comb. n.** A new junior subjective synonym of *Crinipus* is *Melisophista* Meyrick, 1927 **syn. n.** Species of *Brillantaisia* (Acanthaceae) are likely the host plants of many *Crinipus* species. A lectotype is designated for *Episannina albifrons* (Hampson, 1910). New country records of *C. vassei* (Le Cerf, 1917) are presented for Kenya, Malawi and Zimbabwe.

Keywords: Afrotropical Region, *Melisophista*, Nimba Mountains, Atewa Range, Togo Mountains, Acanthaceae, lectotype.

Zusammenfassung

Die Sesiiden-Gattung *Crinipus* Hampson, 1896 wird erstmals auch für Zentral- und Westafrika nachgewiesen. Sieben für die Wissenschaft neue Arten werden beschrieben und abgebildet: *Crinipus nimbaensis* Bartsch & Sáfián **sp. n.** und *C. tigripes* Bartsch & Sáfián **sp. n.** von den Nimba-Bergen in Liberia und Guinea, erstere außerdem vom Mont Tonkoui in Elfenbeinküste; *C. tenebricus* Bartsch, Sáfián & Pühringer **sp. n.** von Ostghana und *C. zebracox* Bartsch, Sáfián & Pühringer **sp. n.** von der Volta-Region in Ghana; *C. nigrans* Bartsch & Sáfián **sp. n.** anhand eines einzigen Exemplars aus Togo; *C. congoensis* Bartsch, Sáfián & Pühringer **sp. n.** anhand von zwei Exemplaren von Eala (östlich von Mbandaka), Demokratische Republik Kongo; und *C. riefenstahli* Bartsch, Sáfián & Pühringer **sp. n.** mit einem Exemplar aus Kenia. Weiter verbreitet ist *C. auripes* (Hampson, 1910) **comb. n.**, die aus Ghana beschrieben wurde und die wir zum ersten Mal aus Liberia und Togo belegen. Das zuvor unbekannte Männchen dieser Art wird beschrieben und das bislang fehlinterpretierte Weibchen neu beschrieben. Die folgenden Neukombinationen werden eingeführt: *Crinipus fulvipes* (Hampson, 1910) **comb. n.**, *Crinipus geraropa* (Meyrick, 1927) **comb. n.** und *Crinipus sylphina* (Hampson, 1919) **comb. n.** Ein neues jüngeres subjektives Synonym der Gattung *Crinipus* ist *Melisophista* Meyrick, 1927 **syn. n.** Arten von *Brillantaisia* (Acanthaceae) sind wahrscheinlich die Wirtspflanzen vieler *Crinipus*-Arten. Für *Episannina albifrons* (Hampson, 1910) wird ein Lectotypus designiert. Neue Ländernachweise der Art *C. vassei* (Le Cerf, 1917) werden für Kenia, Malawi und Zimbabwe vorgestellt.

Introduction

Hampson *in* Walsingham & Hampson (1896) described *Crinipus* and its type species *C. leucozonipus* based on three males and one female from Yemen. In a revision of the genus, Bartsch (2010) placed *Crinipus* in Synanthedonini, treated *Hypanthedon* Hampson, 1919 as a junior synonym and transferred three additional species into the genus, *C. marisa* (Druce, 1899), *C. pictipes* (Hampson, 1919) and *C. vassei* (Le Cerf, 1917). The life history and host plants remain unknown.

Knowledge of the clearwing moth (Lepidoptera: Sesiidae) fauna of Central and West Africa is poor, but an increasing number of recent articles have addressed species from this region (Bakowski et al. 2008; Bartsch 2008, 2018; Pühringer & Sáfián 2011; Sáfián & Pühringer 2016; Gorbunov & Gurko 2017; Sáfián & Bartsch 2018; Bartsch & Sáfián 2019, 2022; Bartsch & Wanke 2022;

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Bartsch & Weitzel 2022; Bartsch et al. 2023a, 2023b; Gorbunov 2023a, 2023b, 2023c). None of these articles provided evidence for the presence of species in the genus *Crinipus* in Central and West Africa. These were only known from East and Southern Africa as well as from the Arabian Peninsula north to the Levant (Bartsch 2010; Gorbunov 2014).

During extensive fieldwork in the Nimba Mountains, Liberia and Guinea, and in the Volta and Eastern Regions of Ghana, Szabolcs Sáfián came across numerous specimens of Sesiidae that were netted almost exclusively while resting on the leaves of, or flying in close proximity to, some mostly large species of *Brillantaisia* (Acanthaceae) (see Marshall & Hawthorne 2013). In addition, a female was observed possibly laying eggs on the stem of a *Brillantaisia* with whitish flowers.

A series of Liberian specimens were collected in November 2022 by Sáfián and Bartsch and on previous expeditions organised by the African Natural History Research Trust (ANHRT), in November 2017 and December 2018 in the East Nimba Nature Reserve. Sáfián also found specimens in a high-altitude forest in the Guinean Nimba (approx. 1,400 m), just below the peak of Mount Nimba (Mount Richard Molard) in June 2019, and further specimens were collected also in the East Nimba Nature Reserve during the COVID-19 period at the beginning of the rainy season in 2020. Careful examination revealed that these moths belong to at least five different species of *Crinipus* Hampson, 1896, four of which undescribed. The general behaviour of these specimens, including the observation of a potentially egg-laying female, suggests species of Acanthaceae as host plants with high probability.

In Ghana, the majority of specimens were collected between 2007 and 2023 in upland localities in the Eastern Region, on the slopes of the Atewa Range and in the Southern Scarp Forest Reserve, each at an altitude of about 600 m. Sáfián collected specimens in 2010 and 2011 in the Volta Region, Togo Mountains, in Amedzofe and in Likpe Mate, on an expedition organised together with Franz Pühringer and Norbert Pöll. Sáfián and Bartsch returned to Amedzofe and to the Southern Scarp Forest also in 2023. *Brillantaisia* were present in all these localities, at mid altitude between 500–700 m.

Examination of type specimens from a number of similar species and unidentified museum material led to the recognition of additional species belonging to *Crinipus*. They are transferred to this genus in this paper, and the new species are described.

Material and methods

Adults were collected by hand net. Specimens were photographed using a Visionary Digital photography system (LK Imaging System, Dun. Inc.) equipped with a Canon EOS 5DSR camera. The individual photos were stacked using Helicon Focus ver. 7.7.4. The stacked photos were processed in Adobe Photoshop CC. Male and female genitalia were dissected and prepared using standard techniques (e.g., Robinson 1976). Genitalia were embedded as permanent slides in Euparal and photographed with a Keyence VHX-5000 photomicroscope. The poor condition of some specimens did not allow for genitalia dissection. Furthermore, we refrained from examination of unique males (especially if holotypes) if the species could be identified from the external morphology and a DNA barcode was available.

Collecting data of holotypes are cited verbatim as on the label, with lines separated by a slash ("/"). The holotypes of the new species are deposited in the collections of the Royal Museum for Central Africa, Tervuren, Belgium (RMCA), the State Museum of Natural History Stuttgart, Germany (SMNS) and the collection of Franz Pühringer, St. Konrad, Austria (CFPS), later to be deposited in the Tyrolean State Museums, Innsbruck-Hall (TLMF). Paratypes are deposited in the African Natural History Research Trust, Leominster, United Kingdom (ANHRT), the Hungarian Natural History Museum, Budapest (HNHM), CFPS (later TLMF), RMCA and SMNS. New records originated from material kept in the Natural History Museum of Zimbabwe, Bulawayo (NMBZ), the National Museum of Kenya, Nairobi (NMKE) and the Natural History Museum, London, UK (NHMUK).

DNA barcoding.

DNA extraction, amplification and sequencing of the barcode fragment (658 bp near the 5' terminus of the mitochondrial *COX1* gene) were performed following standard protocols (deWaard et al. 2008), either in the Canadian Centre for DNA Barcoding, University of Guelph, Canada) or in SMNS. PCR amplification products from SMNS were sent to Macrogen for sequencing. The sequences were trimmed to the barcode region (658 bp), aligned in MUSCLE (Edgar 2004) and implemented in MEGA7 (Kumar et al. 2015). A phylogenetic tree of the genus *Crinipus* based on the *COX1* barcode sequences was constructed using MrBayes ver. 3.2.7a (Ronquist et al. 2012) on the trimmed alignment partitioned by 1st+2nd and 3rd codon positions, allowing the program to sample across substitution models. The final tree was formatted using FigTree ver. 1.4.4 (Rambaut 2018). Since, normally, only posterior probability (pp) values above 0.95 are considered highly supportive, pp values <0.5 were removed entirely. Monophyly of the tribe Synanthedonini and the genus *Crinipus* as recognised in this study was shown in a previous phylogeny combining RAxML (Stamatakis 2014) and MrBayes analyses on 3,600 Sesiidae species worldwide (Pühringer, unpublished). In that analysis, the sister-group(s) to *Crinipus* included the genera *Chlorosphecia* Bartsch & Sáfián, 2022, *Macrotarsipus* Hampson, [1893] (Oriental Region), *Macrotarsipodes* Le Cerf, 1916 and *Lepidopoda* Hampson, 1900, but with moderate support. These genera were located at the very base of Synanthedonini.

A complete list of specimens used for the analysis is presented in Supplementary File S1 along with sampling sites and ID numbers. CCDB-, BOX- and "FP Lep" numbers refer to the Barcode of Life Database (BOLD) (Ratnasingham & Hebert 2007). Sequences are also available from GenBank. Genetic distances (*p*-distances) were calculated using a custom Python script (F. Pühringer, unpublished) providing the proportion of nucleotide sites (in %) that differ between sequences (Supplementary File S2).

Results

Taxonomic acts

During this study, additional specimens of *Crinipus* were discovered amongst type material kept in the Natural History Museum, London (NHMUK). We consider *Melisophista* Meyrick, 1927 **syn. n.** a junior subjective synonym of *Crinipus*. The following new combinations are established: *Crinipus fulvipes* (Hampson, 1910) **comb. n.** from the Democratic Republic of the Congo, Katanga, transferred from *Chamanthedon* Le Cerf, 1916; *Crinipus auripes* (Hampson, 1910) **comb. n.** from Ghana, transferred from *Synanthedon* Hübner, [1819]; *Crinipus sylphina* (Hampson, 1919) **comb. n.** from Sierra Leone, Kamag-Bonse, transferred from *Episannina* Aurivillius, 1905; and *Crinipus geraropa* (Meyrick, 1927) **comb. n.** from Kenya, Embu, transferred from *Melisophista*.

In the original description of *Episannina albifrons*, Hampson (1910) referred to one male and two females as primary types, all caught together at the same locality in Ghana by the same collector. The two specimens mentioned as the females are misidentified and belong to *Crinipus auripes* **comb. n.** Accordingly, in order to stabilise the nomenclature, we here designate as lectotype the specimen mentioned as being a male and labelled "Lepidopoda / albifrons / type ♂ Hmpsn."; "S. Ashanti. / Obuassi. / IV–IX. / Dr.W.M.Graham. / 1909-29."; "GART / specimen ID: 22830 / […]"; "Type". Contrary to the original description and labelling, the lectotype is a female. The two specimens correctly mentioned as females and belonging to *C. auripes* become paralectotypes.

Crinipus Hampson, 1896

Crinipus Hampson *in* Walsingham & Hampson, 1896: 277. Type species: *Crinipus leucozonipus* Hampson, 1896, by monotypy.

Hypanthedon Hampson, 1919: 62. Type species: *Aegeria marisa* Druce, 1899, by monotypy.

Melisophista Meyrick, 1927: 371 **syn. n.** Type species: *Melisophista geraropa* Meyrick, 1927, by monotypy.

References

Hampson (1919: 53, 62); Dalla Torre & Strand (1925: 5, 59); Meyrick (1927: 371); Gaede (1929: 517, 522); Naumann (1971: 15, 18, 20); Heppner & Duckworth (1981: 41, 42, 44); Fletcher & Nye (1982: 46, 81, 99); Vári et al. (2002: 67); Pühringer & Kallies (2004: 43, 44).

Bartsch (2010) pointed to the strongly deviating genitalia structure of *Crinipus* within Synanthedonini. Its placement within this tribe is supported by overall appearance, including wing venation, and by genetic studies (barcoding) (Pühringer, unpublished). The genus is characterised as follows: proboscis well developed; labial palpus covered with short, smooth, ventrally somewhat roughened scales; frons and vertex smooth with strong gloss; antenna rather thin, clavate, ciliate in male, without serration or ciliae in female; thorax smooth, almost entirely without hair-like scales; hindleg with tibia and first tarsomere strongly tufted, tibia often black, medially and distally with whit-

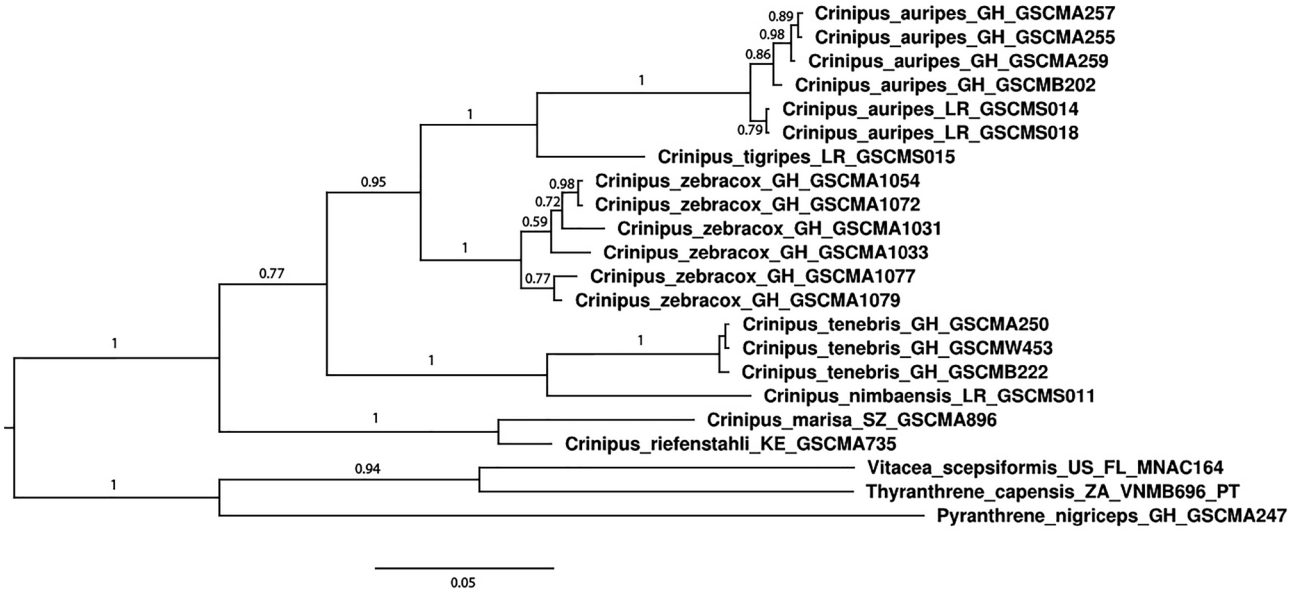


Fig. 1. Phylogenetic tree of the genus *Crinipus* based on 658 bp *COX1* barcode sequences (MrBayes, 800k generations, average standard deviation of split frequencies: 0.01; posterior probabilities <0.5 removed).



Fig. 2. *Crinipus nimbaensis* Bartsch & Sáfián **sp. n.** Male sitting on *Brillantaisia owariensis* leaf (Liberia, Nimba County, East Nimba NR). (Photo: Szabolcs Sáfián)

ish or orange-brown lateral spots; wing venation as typical for the tribe: R1–R3 not fused, stalks of R4/R5 and M3/CuA1 comparatively short; forewing discal spot often with a short, basally-pointing protrusion; anal tuft short, in female nearly absent; male genitalia with tegumen uniquely short and broad; gnathos absent or very small on tegumen base; uncus very long, ventro-distally bilobed, with a long row of bifurcate scales on ventral side of each lobe instead of a scopula androconialis as is the case in most Synanthedonini; valva with short, dorsad-bent distal protrusion and usually short crista sacculi; setae of valva with double tip; vesica simple, without diverticula, thorns or cornuti; female genitalia with antrum smooth, tubular, with a more or less long, caudally-directed, tubular, sometimes ventrally-pointed protrusion; corpus bursae round or oval, without signum.

Crinipus nimbaensis Bartsch & Sáfián sp. n.

(Figs. 2, 3, 4a, b, 5a, b, 6a, b, 7a, b, 24, 28, 29)

Type material

Holotype ♂ (Fig. 4a, b), with labels: "LIBERIA, Nimba County, / East Nimba NR, Cellcom / Road cc., 1020 m, 20. Nov. 2022, / 7°32′50.5″N 8°31′20.6″W, / netted on *Brillantaisia* sp., / D. Bartsch, Sz. Sáfián leg." (deposited in SMNS).

Paratypes (11♂, 18♀): 2♀, same data as holotype; 5♂, 1♀ (1♂, Fig. 5a, b), same locality, 18.XI.2022 (1♂, SMNS_Lep_002360; SMNS gen. prep. 3921; Fig. 24) (1♀, SMNS gen. prep. 3924; Fig. 28) (1♀, SMNS gen. prep. 3991; Fig. 29); 1♂, 1♀, same locality, 20.XI.2022; 5♀, same locality, 1000–1100 m, 10.VI.2020, 7°31′44″N 8°31′38″W; 1♀ (Fig. 6a, b), same locality, 1150 m, 19.XI.2022, 7°31′44.2″N 8°31′38.4″W; 1♀ (Fig. 7a, b), same locality, 1205 m, 16.XI.2022, 7°31′28.5″N 8°31′44.6″W, D. Bartsch, Sz. Sáfián leg. (SMNS). All specimens netted on *Brillantaisia* sp. 3♂, 1♀, Guinea, Nimba Mountains, Camp Richard Molard, 7°36′18.90″N, 8°25′29.90″W, 1382 m, 1–8.VI. 2019, on vegetation, Sz. Sáfián, P. Boireau leg. (deposited in SMNS). 2♂, 3♀, Liberia, Nimba county, East Nimba NR, Cellcom Road, Nimba Mts. camp, 1000–1100 m, 27.III–04.IV. 2017, 7°32′45.88″N 8°31′21.04″W, General coll., Sz. Sáfián, G. Simonics leg., ANHRT: 2018.24, ANHRT unique numbers: ANHRTUK00056606, ANHRTUK00056609, ANHRTUK00056610, ANHRTUK00056611, ANHRTUK00056612; 1♀, same locality, 10–24.III.2017, 7°32′47.50″N 8°32′1.33″W, 700 m, General coll., Sz. Sáfián, G. Simonics leg., ANHRT: 2018.24, General coll., ANHRT unique number: ANHRTUK00056615; 1♀, same locality, 28.XI–16.XII.2015, 7°32′33.7″N 8°31′21.2″W, at light, Sz. Sáfián leg., ANHRT: 2017.36, ANHRT unique number: ANHRTUK00029263; 1♀, same locality, 1165 m, 3–13.XII.

2017, 7°31′45″N 8°31′37″W, Gen. coll., M. Aristophanous, Sz. Sáfián, G. Simonics, L. Smith leg., ANHRT: 2017.33, ANHRT unique number: ANHRTUK00056482; 1♀, Ivory coast, Mont Tonkoui Peak, 1171 m, 20–27.V.2018, 7°27′15.21″N 7°38′12.5″W, General coll., M. Aristophanous, W. Miles, P. Moretto, Y. Outtara leg., ANHRT: 2018.28, ANHRT unique number: ANHRTUK00039286 (deposited in ANHRT).

Etymology

Named after the type locality, the Nimba Mountains of Liberia, Ivory Coast and Guinea. Noun in apposition.

Description

This species exhibits distinct sexual dimorphism: males are sparsely orange-yellow marked, with narrow margins of the fore and hindwings, and females are predominantly white marked, with broad, black margins on the forewings.

Holotype with alar expanse 18.5 mm, forewing 7.5 mm, antenna 7.0 mm, body length 10.0 mm. Head: labial palpus black, ventrally orange-yellow, basal portion of second palpomere dorsally whitish-yellow; frons almost entirely pure white, medially some brownish-grey scales; vertex shiny black with some orange-yellow scales laterally and occipitally; pericephalic scales orange-yellow, laterally and ventrally paler yellow; antenna black, back side with a narrow longitudinal line of orange-yellow scales, ventrally in basal and medial portion brownish-black, scapus ventrally and laterally whitish-yellow. Thorax: Patagia glossy black, laterally with an orange-yellow spot; mesothorax shiny black, dorsally with some orange-yellow scales on anterior part and on inner margin of tegulae, laterally with an orange-yellow stripe from patagia to forewing base; metathorax black, dorso-lateral scale tufts dark grey, distally orange-yellow. Legs: Foreleg with coxa black with some orange-yellow scales, basally and laterally orange-yellow; femur black, distally with some orange-yellow scales; tibia laterally with long, tufted scales, dorsally black, ventrally orange-yellow with dark grey scales in proximal portion; tarsus dorsally black with scattered orange-yellow scales, densest distally, ventrally orange-yellow. Midleg glossy black; femur distally



Fig. 3. *Crinipus nimbaensis* Bartsch & Sáfián **sp. n.** Female basking on vegetation (Liberia, Nimba County, East Nimba NR). (Photo: Szabolcs Sáfián)



Figs. 4–7. *Crinipus nimbaensis* Bartsch & Sáfián **sp. n.** (4a, b) holotype ♂. (5a, b) paratype ♂. (6a, b, 7a, b) paratypes ♀. All specimens: Liberia, Nimba County, East Nimba NR. (a dorsal, b ventral).

with an orange-yellow ventral patch and dense, grey, hair-like scales on ventral edge; tibia medially and distally with some erect, orange-yellow lateral scales; tarsus dorsally black, distally with a yellow patch, ventrally orange-yellow. Hindleg glossy black; femur ventro-distally with an orange-yellow patch and black, hair-like scales on ventral edge; tibia dorsally and on inner side strongly tufted, laterally and ventrally mainly smooth, medially and distally with small lateral scale tufts and an orange-yellow ring; first tarsomere strongly tufted, ventrally smooth, dorsally black with some orange-yellow scales distally, ventrally orange-yellow with some black scales; other tarsomeres dorsally black with a pale yellow patch distally, ventrally orange-yellow. All pairs of spurs orange-yellow with some dark grey scales. Wings: Forewing with transparent areas well developed, posterior one reaching to hindwing discal spot, external one stretching between veins R5 and CuA1, apical area absent; discal spot and costal and anal areas quite broad, black; veins, margins and fringes black. Hindwing hyaline; discal spot small, triangular, slightly extended below vein M2; margins narrow; veins, margins and fringes black. Abdomen: Tergites slightly roughened, shiny black with some scattered orange-yellow scales, densest dorsally on tergite 2 and laterally on tergites 3–5; sternites black with narrow orange-yellow posterior margin; anal tuft black, medially orange-yellow, dorsally with some orange-yellow scales.

Male genitalia (Fig. 24). Valva triangular, dorsal margin concave; apical protrusion bare, rather large; medial part with row of sclerotised setae parallel to ventral margin, long and dense; crista sacculi dorsad-bent, with long row of setae ventrally and short row dorsally.

Female. Larger than male, with alar expanse 19.5–22.0 mm. Labial palpus black, second palpomere dorsally in proximal portion, as well as ventrally, white, third palpomere ventrally white; pericephalic scales laterally and ventrally white; scapus only laterally orange-yellow. Thorax black with narrow white stripe laterally. Legs almost entirely black; scale tufts shorter than in male; forecoxa basally with a white lateral patch; midtibia distally, hindtibia medially and distally, as well as mid and hindtarsus distally, with a white ring; all pairs of spurs ventrally white. Forewing with a broad black apical area with basad-pointing, short tooth-like projections between median veins, external transparent area round, much narrower than in male. Hindwing with discal spot long, caudally tapering, reaching anal angle of discal cell. Abdomen predominantly black, tergites 2–3 with a narrow, white, lateral patch, tergite 4 with a dorsally narrow, laterally broad white posterior margin; anal tuft dorsally with some white scales.

Female genitalia (Figs. 28, 29). Papillae anales and segment eight short and broad; apophyses anteriores broad, slightly shorter than posteriores; ostium bursae with short, rounded protrusion, antrum broad, tubular, as long as segment 8; ductus bursae two and a half times as long as antrum, narrow, posteriorly enlarged; corpus bursae oval.

Variation

Both sexes vary slightly in size, with alar expanse 16.0–18.5 mm in males and 19.5–22.0 mm in females, but differ considerably in the intensity and extent of the yellow or white markings. Males from Guinea have the markings of the hindtibia a more extensive pale yellow. Some males have the medial portion of the frons extensive silver-grey; the labial palpus ventrally, the pericephalic scales laterally and the markings of the legs and abdomen whitish-yellow; tibiae of all legs predominantly black, tibia of foreleg ventrally dirty yellow, of midleg distally and of hindleg medially and distally with a pale yellow narrow ring; abdomen with some pale yellow scales laterally on tergites 3–5, posteriorly on tergite 7 and on medial portion of anal tuft. Females with the white markings often more or less reduced and sometimes appearing almost entirely black.

Diagnosis

Based on morphological and molecular characteristics, *C. nimbaensis* **sp. n.** and *C. tenebricus* **sp. n.** and *C. nigrans* **sp. n.** (described below) form a clearly defined lineage within the genus. Members of this lineage differ from all other species in the genus, in both sexes, by the short posterior transparent area of the forewing that ends well proximad of the discal spot (reaches discal spot in other species). Females further differ by the broad apical area and discal spot of the forewing (apical area absent or very narrow, discal spot narrow in other species). Females of *C. leucozonipus* Hampson, 1896, the type species of the genus, are somewhat similar due to the small transparent areas of the forewings, but are much smaller, with alar expanses of 11–14 mm and with transparent areas indistinctly defined, with broader veins in the external one.

Distribution, habitat and behaviour

So far, only known from the upland forests of the Nimba Mountains of Liberia and Guinea, and from Mont Tonkoui in Côte d'Ivoire. This is the most common species of the genus in the Nimba Mountains. Males and females can be found on roadsides on the broad leaves of the stately, 1.5–2.5 m high, purplish-blue flowering *Brillantaisia owariensis* P. Beauv. (Fig. 1) (Gilbert 2023 [det. J. Ignasi and Carel Jongkind]). The top shoots of the plant, which allow a good all-round sight, are clearly preferred. Some females also fly on flocks of a smaller, 0.5–1.0 m high, purplish-blue flowering species of *Brillantaisia* (likely *B. lamium* [Nees] Benth.). Females are active from the late morning to midday (Fig. 2), while males were mainly observed between 2 and 4 p.m.



Figs. 8–10. *Crinipus* species: 8–9. *Crinipus tenebricus* Bartsch, Sáfián & Pühringer **sp. n.** (8a, b) holotype ♂. (9a, b) paratype ♀. Ghana, Eastern Region, Atewa Range. 10a, b. *Crinipus nigrans* Bartsch & Sáfián **sp. n.** holotype ♀. (a dorsal, b ventral).

Crinipus tenebricus Bartsch, Sáfián & Pühringer sp. n.

(Figs. 8a, b, 9a, b, 30)

Type material

Holotype ♂ (Fig. 8a, b), with labels: "Ghana, Eastern Region, 610 m, / Southern Scarp FR, Apaa, / 6,38°N, 0,45°E, / 21.10.2011, / Pühringer, Sáfián & Pöll leg."; "Barcoding of Life / CCDB-14564 C08" (in CFPS; will later be deposited in TLMF).

Paratypes (2♀): 1♀ (Fig. 9a, b), Ghana, Kyebi (Kibi) District, Eastern Region, Atewa Range, Sagyimaase, forestry access road, 22–30.X.2007, Sáfián Sz., Walker A., Davey S. & Onstein R. leg. (FP Lep 00607); 1♀, same locality, 13–21.X.2007, leg. Sz. Sáfián (BOX-2218 A07) (Pühringer gen. prep. FP 12/35; Fig. 30) (both deposited in SMNS). [Both paratypes are damaged and have lost a large portion of their scales.]

Etymology

From the Latin "tenebricus" (dark), because of the blackish colouration. Noun in apposition.

Description

Holotype with alar expanse 15.5 mm, forewing 6.5 mm, antenna 5.5 mm, body length 8.0 mm. Body almost completely dark grey-black, differently coloured hereof are: Head: Labial palpus with second and third palpomere ventrally pale ochre; frons with pearly shine, laterally white, medially grey; vertex glossy black, pericephalic scales dorsally ochre with some black scales, laterally white; antenna dorsally black with steel-blue gloss, ventrally dark brown with black tip, scape ventrally ochre with some erect pale grey scales at base. Thorax: Patagia glossy black, some grey scales between patagia and forewing base. Legs: Forecoxa dark grey, laterally slightly lighter, lightest near base; femur of mid and hindleg with small, ochre-grey, ventro-distal patch; tibia and first tarsomere of hindleg tufted, tibia laterally in middle part and distally with indistinct grey rings; tarsus of all legs ventrally whitish-yellow, first tarsomere with narrow white ring distally; pairs of spurs of all legs with outer spur white, inner spur ventrally grey-black, dorsally whitish-grey. Wings: forewing with transparent areas well developed, anterior one not reaching discal spot, external one large, apical area very narrow; discal spot and costal area broad. Hindwing hyaline; discal spot, small, triangular, slightly extended below vein M2; margins narrow; fringes blackish-grey. Abdomen: sternites dark brownish-grey with pearly gloss, anal tuft well developed, short. Male genitalia not examined.

Female. Alar expanse 21.0 mm, forewing 9.5 mm, antenna 6.5 mm, body length 9.5 mm. Paler than male, brownish-grey, differently coloured are: Head: Labial palpus ventrally white. Thorax: Patagia laterally with white patch. Legs: Forecoxa laterally white; femur of mid- and hindleg distally with white, lateral spot, tibia of midleg laterally in middle part and distally with some white scales; hindtibia with white ring in middle part and distally; tarsus of all legs brownish-grey. Wings: Forewing margins, apical area and discal spot much broader than in male; transparent areas well developed. Hindwing hyaline, margins and discal spot narrow. Abdomen: terminal tergites with some white scales laterally; anal tuft reduced.

Female genitalia (Fig. 30) Papillae anales and segment eight short and broad; apophyses anteriores as long as posteriors; ostium bursae ventrally slightly concave, antrum tubular, proximally somewhat broadened, shorter than segment 8; ductus bursae short, twice as long as antrum, anteriorly enlarged; corpus bursae oval.

Variation unknown.

Diagnosis

Crinipus tenebricus **sp. n.** is very similar to the previous species, *C. nimbaensis* **sp. n.** Males differ from this species as well as from all other congeners by the almost completely black colour, without whitish, ochre, brown or orange markings on the body and legs. Females share with *C. nimbaensis* **sp. n.** the broad margins, apical area and discal spot of the forewings, but have body browner, tergite 4 brownish-grey, not whitish, and less conspicuous hindleg scale tufts.

Distribution, habitat and behaviour

Only known from middle-high altitudes of the Southern Scarp Forest and Atewa Range in Ghana's Eastern Region. The specimens were found on roadsides in upland forests, where the females were sitting on the broad leaves of a large *Brillantaisia* species (*B. owariensis*?). The only known male was caught in flight at 1:20 p.m.

Crinipus nigrans Bartsch & Sáfián sp. n.

(Figs. 10a, b, 31)

Type material

H o l o t y p e ♀ (Figs. 10a, b, 31), with labels: "FO: 7054, Togo, / 07°00′59″N, 00°40′46″E, / Lomnava, NE von Huimé (NE von Kpa), / Région des Plateaux, 290 mNN, / A / leg. A. Ssymank, 18.04.2008"; "SMNS_Lep_002535"; "SMNS Lepidoptera / Präparat-Nr. / 3989 / Bartsch GU 2024-14 / D. Bartsch fec." (deposited in SMNS).

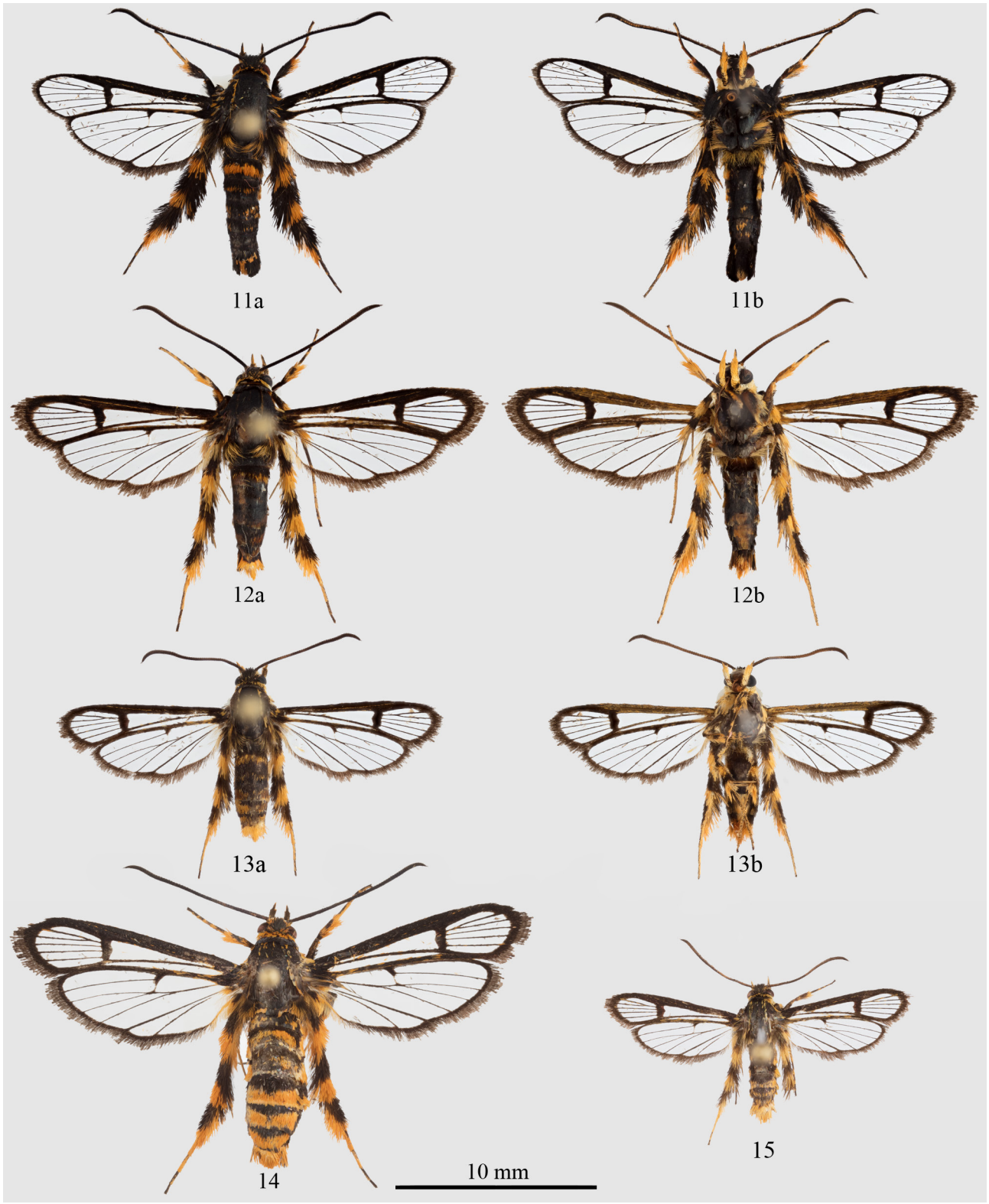
Etymology

From the Latin "nigrans" (black, dark-coloured), due to the predominantly blackish colour of the only known specimen. Noun in apposition.

Description

Holotype with alar expanse 21.5 mm, forewing 9.0 mm, antenna 6.5 mm, body length 10.5 mm. Head: Labial palpus dark grey, ventrally white; frons shiny dark grey, laterally white; vertex glossy black; pericephalic scales dorsally pale ochre, laterally white; antenna black-brown, scape ventrally yellow-white with erect white scales basally. Thorax: black-grey; laterally a pale grey stripe between patagia and forewing base; dorso-lateral scale tufts of metathorax black-grey, laterally mixed with white. Legs: Dark grey; all pairs of spurs with outer spur white. Foreleg with coxa laterally white in proximal part; tibia with some erect scales dorsally and ventrally, distally white; first and second tarsomere distally white. Femur of mid- and hindleg with grey, hair-like scales on ventral edge and white patch ventro-distally; tibia of midleg medially and distally with some erect scales, laterally a white patch in middle part, distally white; hindleg with tibia and first tarsomere tufted, tibia in middle part and distally with a white lateral patch; tarsomeres distally white. Wings: Margins, apical area and discal spot broad black; transparent areas small, external one consists of 3 short cells. Hindwing hyaline, margins and discal spot narrow. Abdomen: tergites 2–4 laterally as well as tip dorsally with some white scales; anal tuft reduced.

Female genitalia (Fig. 31) Apophyses anteriores shorter than posteriores; antrum forming a well sclero-



Figs. 11–15. *Crinipus auripes* (Hampson, 1910) **comb. n.** (11a, b) ♂. (12a, b, 13a, b) ♀. Liberia, Nimba County. (14, 15) ♀. Ghana, Eastern Region. (a dorsal, b ventral).

tised, 0.4 mm long, round, protruding tube; ductus bursae more than twice as long as antrum, with numerous irregular longitudinal folds; corpus bursae oval.

Male unknown.

Diagnosis

The only known specimen, a female, is rather similar to those of *Crinipus nimbaensis* **sp. n.** and *C. tenebricus* **sp. n.** It differs by the broader forewing margins, discal spot and apical area, the significantly smaller external transparent area and the slightly wider hindwing margin, and in the genitalia by the slightly longer and narrower antrum; and from *C. tenebricus* **sp. n.** further by the longer ductus bursae.

Distribution, habitat and behaviour

Unknown.

Crinipus auripes (Hampson, 1910) comb. n.

(Figs. 11a, b, 12a, b, 13a, b, 14, 15, 32, 33)

Lepidopoda auripes Hampson, 1910: 152 [nec *Ichneumenoptera auripes* Hampson, 1893]. Holotype: ♂ [sic!] (examined), Gold Coast [Ghana], Ashanti, Obuassi (NHMUK).

Synanthedon auripes (Hampson, 1910): Hampson (1919: 62); Dalla Torre & Strand (1925: 12); Gaede (1929: 522); Pühringer & Kallies (2004: 27).

Synanthedon hampsoni Heppner & Duckworth, 1981: 31, unnecessary replacement name for *Lepidopoda auripes* Hampson, 1910.

Specimens examined

1♂ (Fig. 11a, b), Liberia, Nimba County, East Nimba NR, Cellcom Road cc., 1205 m, 16.XI.2022, 7°31′28.5″N 8°31′44.6″W, netted on *Brillantaisia* sp., D. Bartsch & Sz. Sáfián leg. (SMNS_Lep_002368); 1♀ (Fig. 12a, b), same locality, Camp at 1152 m, 7°31′44″N 8°31′36″W, 1.VI.2020, Sz. Sáfián leg.; 1♀ (Fig. 13a, b), same locality, 700–750m, 7°31′N 8°31′W, 17.VI.2020, netted on leaf, Sz. Sáfián leg. (SMNS_Lep_002363); 1♂, 1♀, same locality, 700–750m, 7°31′N 8°31′W, 17.VI.2020, Sz. Sáfián leg.; 1♀, Ghana, Eastern Region, Atewa Range, Sagyimase, forestry access road, 11–20.X.2009, leg. Sz. Sáfián (FP Lep 00612, Pühringer gen. prep. FP 12/27; Fig. 32); 1♀, same locality, 11–20.X.2009, leg. Sz. Sáfián, A. Walter, S. Davey, R. Onstein; 1♀, Ghana, Eastern Region, Bunso Arboretum, 12–20.X.2009, leg. Sz. Sáfián, A. Walter, S. Davey, R. Onstein (FP Lep 00614); 1♀, Ghana, Eastern Region, Southern Scarp Forest Reserve, Dwenase, 17.X.2009, leg. Sz. Sáfián, A. Walter, S. Davey, R. Onstein (FP Lep 00616) (SMNS gen. prep. 3992; Fig. 33); 4♀ (Figs. 14, 15), Ghana, Eastern Region, Southern Scarp Forest Reserve, 6°23′10.8″N, 0°26′23.8″E, 21.X.2023, netted on *Brillantaisia owariensis*, leg. Sz. Sáfián, D. Bartsch & G. Győri; 1♀, Ghana, Onuem Nyamibe Shelterbelt, 6,1°N 1,35°W, 5.XII.2011, leg. Sz. Sáfián; 1♀, Ghana, Volta Region, roadside near Amedzofe, 6°50′05.39″N, 0°25′34.19″E, 5.X.2023, netted on *Brillantaisia owariensis*, leg. Sz. Sáfián, D. Bartsch & G. Győri (deposited in SMNS). 1♀, Ghana, Volta region, Amedzofe, 770 m, 6.84°N 0.43°E, on leaf (11:20 a.m.), 15.X.2011, leg. F. Pühringer, Sz. Sáfián & N. Pöll (CCDB-14564 A12) (deposited in CFPS); 1♀, Togo, Ikavi-Kopé, at river Ekébé, Cyper, Région des Plateaux, 7°36′10″N, 0°44′31″E, 535 m, 21.IV.2008, E, leg. A. Ssymank (deposited in SMNS).

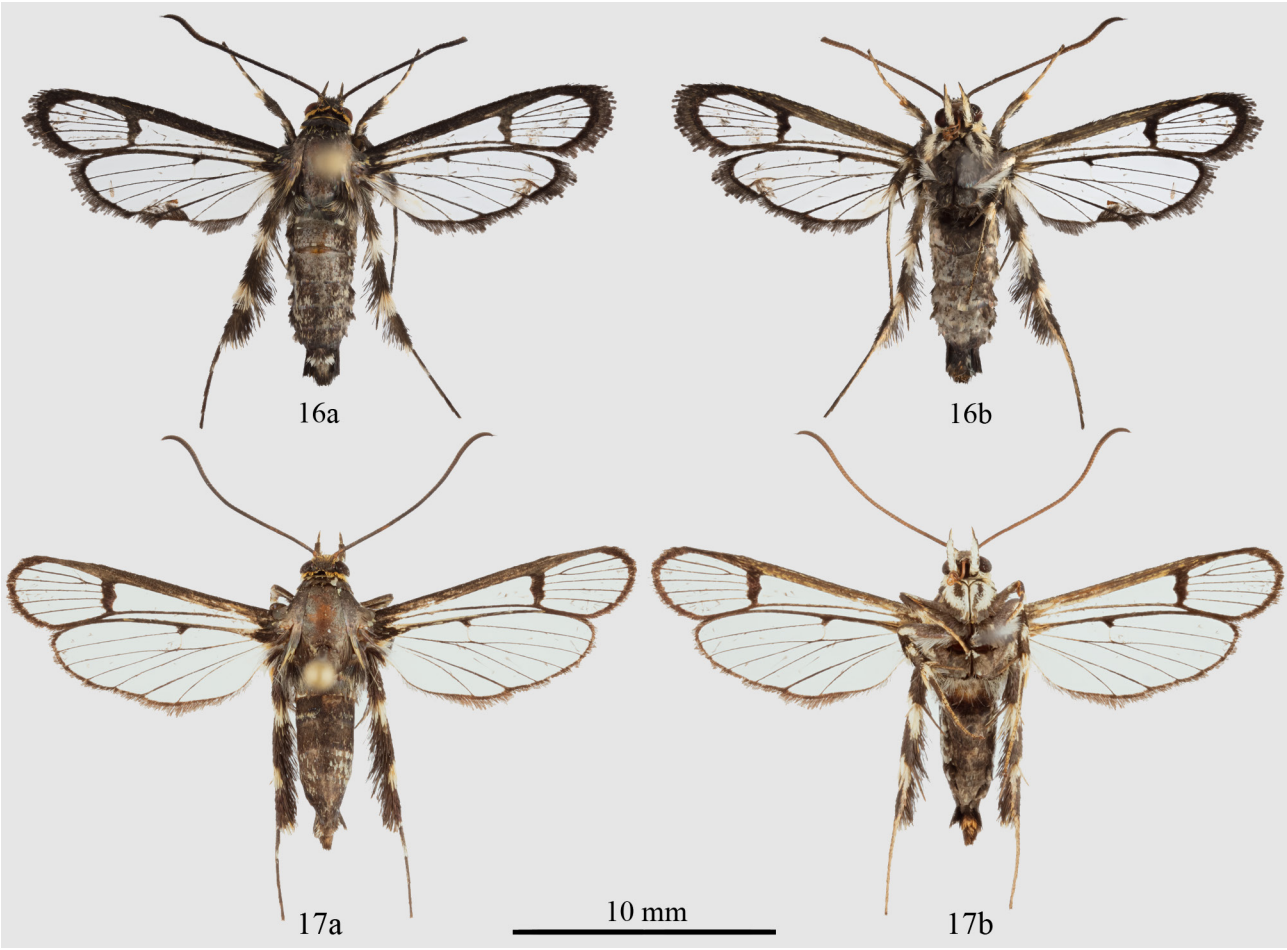
First description of male

Alar expanse 20.5 mm, forewing 8.5 mm, antenna 6.5 mm, body length 11.0 mm. Head: Labial palpus black, ventrally orange, first palpomere and basal portion of second dorsally orange; frons strongly glossy, medial portion dark grey, next to eyes pure white; vertex shiny black; pericephalic scales dorsally orange, mixed with black, laterally orange-yellow, partially white, ventrally orange-yellow; antenna black, ventrally dark brown except for black tip, some orange-yellow scales subdistally, scapus ventrally orange-yellow to white. Thorax: Patagia glossy black, laterally some yellow scales; mesothorax shiny black, tegula with orange scales anteriorly and at inner margin; scapular spot at forewing base orange; metathorax black, dorso-lateral scale tufts mixed black and orange. Legs: Foreleg black; edges of coxa anteriorly orange; tibia with lateral scale tuft, ventrally and distally orange; tarsomeres distally narrow orange, ventrally orange. Mid and hindleg black; femur with orange-brown hair-like scales on ventral edge; midtibia medially and distally with erect, partially orange scales; midtarsus with orange ring distally, ventrally orange; hindtibia dorsally, laterally and on inner side strongly tufted, ventrally roughened, in middle part and distally each an orange ring; hindtarsus with first tarsomere dorsally and laterally strongly tufted, distally orange, inner side orange, in proximal half densely mixed with black; other tarsomeres dorsally black, ventrally orange with some black scales. All pairs of spurs with outer spur completely orange, inner spur black, dorsally orange. Wings: Forewing with transparent areas well developed, posterior one extends beyond discal spot, external one large, between veins R5 and CuA1, apical area absent; discal spot, veins, costal and anal area narrow, black; fringes blackish-grey. Hindwing hyaline; discal spot, small, triangular, slightly extended below vein M2; margins narrow; discal spot, veins and margins black; fringes blackish-grey, on inner margin pale grey. Abdomen: Tergites slightly roughened, shiny black; tergites 1–3 with orange lateral stripe; tergite 2 with wide, orange, horizontal stripe; tergites 3–5 with some scattered orange scales; sternites smooth, black; anal tuft black, some orange scales basely, narrow orange in the middle.

Genitalia not examined.

Redescription of female

Alar expanse 15.5–27.0 mm, forewing 6.5–12.0 mm, antenna 5.5–8.5 mm, body length 8.0–10.0 mm. Head: Labial palpus orange-yellow, intensely orange towards tip, first palpomere laterally black, second laterally and dorsally on distal half black, third laterally black; frons strongly glossy, dark grey medially, next to eyes white;



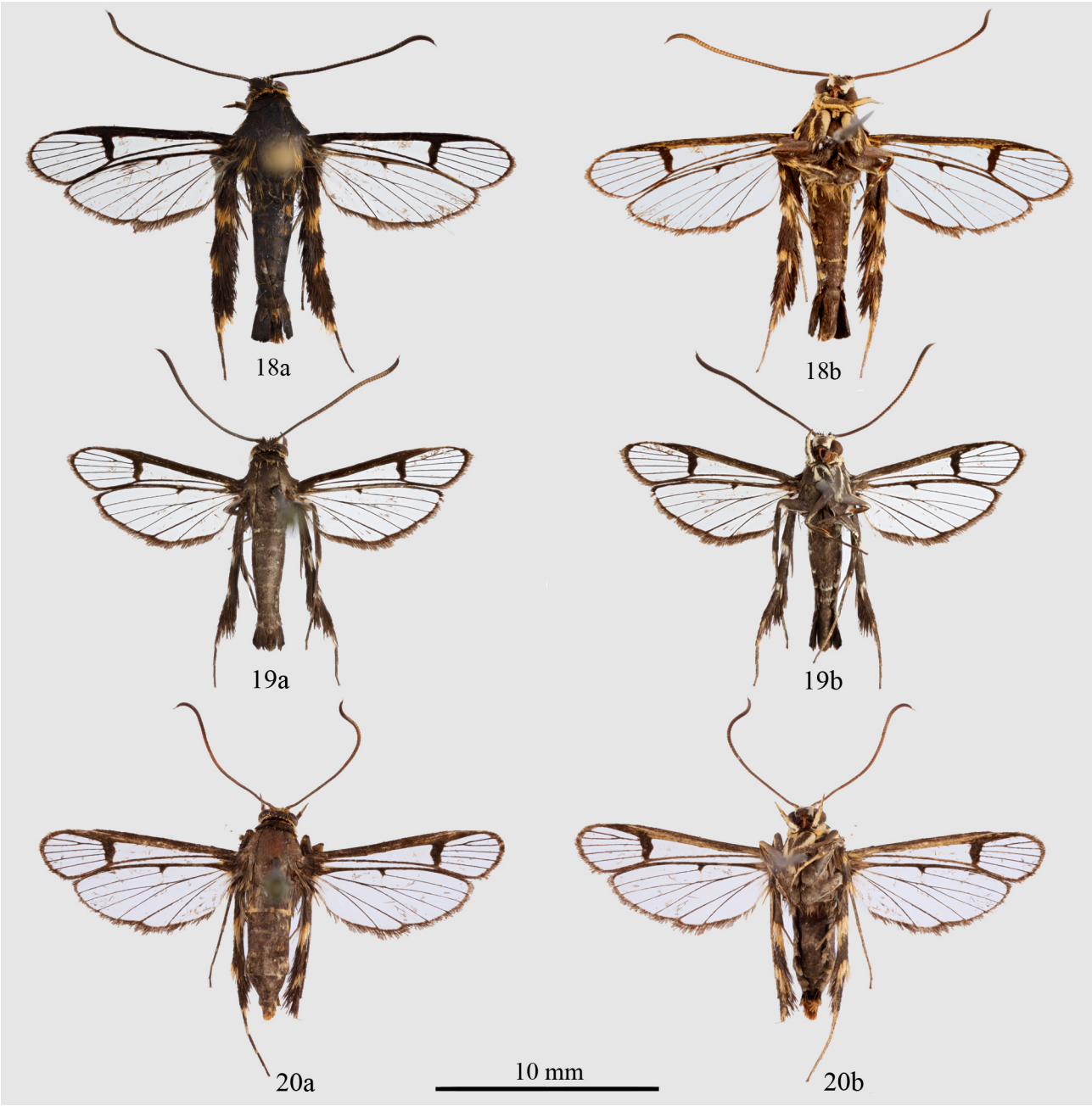
Figs. 16–17. *Crinipus tigripes* **sp. n.** (16a, b) holotype ♀. (17a, b) paratype ♀. Liberia, Nimba County, East Nimba NR. (a dorsal, b ventral).

vertex shiny blackish-brown, laterally with some orange scales; pericephalic scales dorsally orange-yellow, with some black scales, laterally white, ventrally yellow; antenna blackish-brown, ventrally brown, tip blackish-brown, scapus ventrally orange-yellow. Thorax: Patagia glossy black, anteriorly narrow orange-yellow, laterally with orange-yellow spot; mesothorax shiny black, inner margin of tegula and middle part of thorax with a fine longitudinal orange-yellow stripe, laterally an orange-yellow stripe from patagia to forewing base; metathorax black, dorso-lateral scale tufts mixed dark grey and orange-yellow. Legs: Foreleg with coxa yellow, distally grey, medially dark grey in proximal half; femur dark grey, distally and laterally densely mixed with yellow; tibia laterally with some erect scales, dorsally dark grey, medial and distal portion yellow, ventrally yellow; tarsus dorsally black, distally with narrow yellow ring, ventrally yellow. Mid and hindleg glossy blackish-grey; femur ventro-distally with yellow patch and yellow, hair-like scales on ventral edge; midtibia medially and distally with some erect, orange-yellow, lateral scales; hindtibia dorsally and on inner side tufted, laterally and ventrally roughened, medially and distally each an orange-yellow ring; tarsus dorsally black, distally with yellow ring, ventrally orange-yellow. All pairs of spurs orange-yellow with some grey scales. Wings: Forewing black, transparent areas well developed, posterior one not reaching discal spot, external one stretches between veins R5 and CuA1, apical area very narrow; discal spot rather narrow, costal area quite broad. Hindwing hyaline; discal spot small, triangular, slightly extended below vein M2; margins narrow; veins, margins black. Fringes of all wings dark grey. Abdomen: Tergites black; tergite 2 with wide, tergite 3 with indistinct, narrow, orange-yellow, transverse stripe; posterior half of tergites 4–5 orange-yellow, broadest laterally; tergite 6 orange-yellow with narrow black posterior margin; sternites 1–3 black, 4–6 orange-yellow; anal tuft orange-yellow with some black scales laterally and ventrally.

Female genitalia (Figs. 32, 33). Papillae anales and segment eight short and broad; apophyses anteriores basally broadened, somewhat shorter than posteriors; ostium bursae concave, antrum narrow, tubular, well sclerotised, somewhat shorter than segment 8; ductus bursae 3 times longer than antrum narrow, anteriorly enlarged; corpus bursae round-oval.

Variation

Unknown for males. Females vary considerably in size. A very small specimen (Fig. 14) from Ghana with an alar expanse of 15.5 mm was captured together with "normally sized" specimens of 24–27 mm. The extent and intensity of the orange-yellow markings on the legs and abdomen vary individually. In particular, abdominal tergites 3–5 can be nearly completely black in some specimens.



Figs. 18–20. *Crinipus zebracox* **sp. n.** (18a–b) holotype ♂. (19a–b) paratype ♂. (20a–b) paratype ♀. Ghana, Volta Region, Amedzofe. (a dorsal, b ventral).



Figs. 21–23. *Crinipus* species: (21a, b) *Crinipus riefenstahli* **sp. n.** holotype ♂. (22–23) *Crinipus congoensis* **sp. n.** (22a, b) paratype ♂. (23a, b) holotype ♀. Democratic Republic of the Congo, Eala. (a dorsal, b ventral).

Diagnosis

This and the following two species differ from the previous group of species in both sexes by the larger transparent areas and the greatly reduced apical area of the forewings. The bright orange markings on the legs and abdomen separate *C. auripes* **comb. n.** from almost all of its congeners. Superficially similar, richly marked males of *C. nimbaensis* **sp. n.** have smaller and weaker markings, the forewing discal spot broader and the posterior transparent area shorter, not reaching the discal spot. Orange marked males of *C. zebracox* **sp. n.** are darker and well separated by the pattern of the forecoxa. *Crinipus riefen-*

stahli has lighter yellow markings, the dorso-lateral scale tufts of the metathorax orange-yellow and the hindtibia dorsally yellow throughout, without dark interruptions.

Distribution, habitat and behaviour

This species seems to be the most widespread *Crinipus* species in West Africa, having been observed in Liberia, Ghana and Togo. The only male known to us flew low in the vegetation at 9:30 a.m., on a mountain ridge at the edge of a group of bushes in open grassland; it briefly sat on a leaf of a stately, around one metre high, white-blue flowering *Brillantaisia* sp. Females were netted while resting on leaves or flying low between stems of *Brillantaisia* sp. The species has been found in various upland forests, often at roadsides with large stands of various *Brillantaisia* spp.

Crinipus tigripes Bartsch & Sáfián sp. n.

(Figs. 16a, b, 17a, b, 34)

Type material

Holotype ♀ (Fig. 16a, b), with labels: "Liberia, Nimba County, / East Nimba NR, Cellcom / Road cc., 1020 m, 18.XI.2022, / 7°32′50.5″N 8°31′20.6″W, / netted on *Brillantaisia* sp., / D. Bartsch, Sz. Sáfián leg.", "SMNS_Lep_002364" (deposited in SMNS).

Paratypes (7♀): 4♀, same locality as holotype, 7°32′33.7″N 8°31′21.2″W, 700–1100 m, 28.XI–16.XII.2015, Sz. Sáfián leg. ANHRTUK 2017-36, ANHRT unique numbers: ANHRTUK00029260; ANHRTUK00029261 (Fig. 17a, b); ANHRTUK00029262; ANHRTUK00029264; 3♀, same locality, 7°31′45″N 8°31′37″W, 1165 m, 3–13.XII.2018, Aristophanous M., Sáfián Sz., Simonics G. & Smith L. leg., ANHRTUK 2017-33, ANHRT unique numbers: ANHRTUK00056480; ANHRTUK00056481; ANHRTUK00034345 (Bartsch gen. prep. 2024–12; Fig. 34) (deposited in ANHRT).

Etymology

From the Latin "tigris" (tiger) and "pes" (leg), after the black and white ringed hindlegs of this species. Noun in apposition.

Description

Holotype with alar expanse 21.5 mm, forewing 9.0 mm, antenna 6.5 mm, body length 10.5 mm. Head: Labial palpus black, first and second palpomere ventrally white, third ventrally yellow, basal portion of second dorsally white; frons glossy pearly grey, next to eyes white; vertex shiny black with some yellow scales; pericephalic scales yellow dorsally mixed with black, laterally and ventrally white; antenna black, ventrally dark brown. Thorax: Patagia glossy blackish-grey, anteriorly and laterally some pale yellow scales; mesothorax shiny blackish-grey, anteriorly some pale yellow scales, a whitish-yellow spot below forewing base; metathorax with dorso-lateral scale tufts blackish-grey. Legs: Foreleg dark grey; coxa white, medially and distally grey; tibia and tarsus distally and tarsus ventrally white. Mid and hindleg dark grey; femur ventro-distally with white spot; midtibia medially and distally with erect, white, lateral scales; midtarsus ventrally white, first tarsomere with white ring proximally and distally; hindtibia strongly tufted, ventrally roughened, medially and distally each a white ring; first tarsomere of hindleg strongly tufted on inner side, distally some white scales; other tarsomeres ventrally white. Pairs of spurs of all legs with outer spur white, inner spur dark grey, dorsally white. Wings: Forewing black, some white scales at wing base, posterior transparent area extends to discal spot, external one large, between veins R5 and CuA1, discal spot and apical area very narrow; fringes dark grey. Hindwing hyaline; discal spot, small, triangular, minimally extended below vein M2; margins narrow; discal spot, veins and margins black; fringes dark grey, on inner margin pale grey. Abdomen: Tergites blackish-grey; tergite 1 with two white lateral spots on posterior margin; other tergites laterally mottled with white, densest on tergite 3; sternites somewhat paler grey than tergites, sternites 3–5 palest; sternite 1 laterally with pale grey spot; anal tuft black, some white scales dorsally at base.

Female genitalia (Fig. 34) Papillae anales and segment eight relatively short and broad; apophyses anteriores somewhat shorter than posteriors, antrum with long, continuously narrowed, well sclerotised, distad pointing protrusion, longer than segment 8; ductus bursae narrow, slightly less than half as long as antrum; corpus bursae round.

Male. Unknown.

Variation

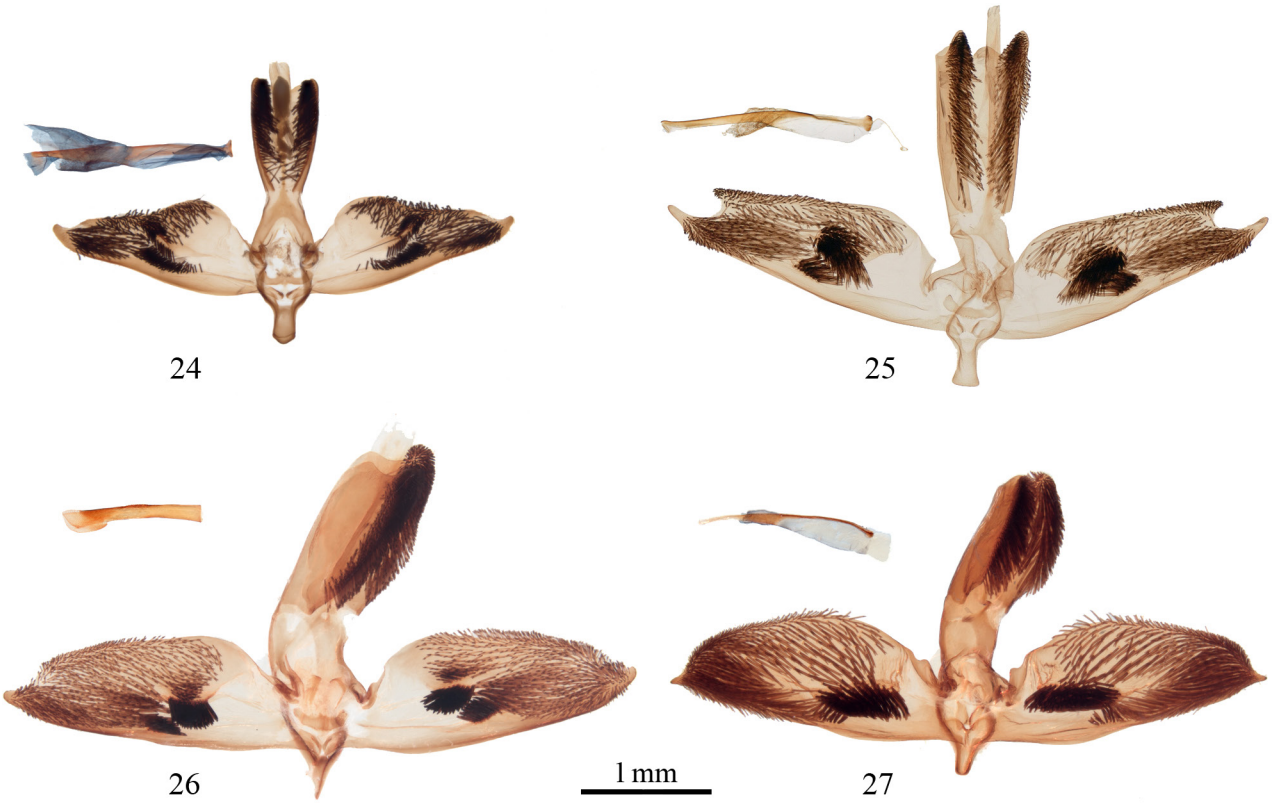
Size varies between 19–26 mm, colour and pattern show insignificant variation.

Diagnosis

Resembles congeners whose females also have forewings with narrow margins and a narrow discal spot. The most similar species, *C. zebracox* **sp. n.** and *C. auripes* **comb. n.**, are easily distinguished by the orange, not whitish, markings on the hindlegs and abdomen. Females of the syntopic *C. nimbaensis* **sp. n.** have apical area, margins and discal spot of the forewing broad and black.

Distribution, habitat and behaviour

Only known from primary forests at higher altitudes in the Nimba Mountains, Liberia. The holotype was collected in the early afternoon on a mountain ridge at the edge of primary forest, on a leaf of a *Brillantaisia* sp. Other females were similarly found flying or resting at the same location in previous years. One of them was observed while presumably egg-laying on the upper part of a stem, close to the inflorescence of a white flowering *Brillantaisia* sp.



Figs. 24–27. *Crinipus* ♂, Genitalia structure: (24) *Crinipus nimbaensis* **sp. n.** paratype. (25) *Crinipus zebracox* **sp. n.** paratype. (26) *Crinipus riefenstahli* **sp. n.** holotype. (27) *Crinipus congoensis* **sp. n.** paratype.

Crinipus zebracox Bartsch, Sáfián & Pühringer sp. n.

(Figs. 18a, b, 19a, b, 20a, b, 25, 35)

Type material

Holotype ♂ (Fig. 17a, b), with label: "Ghana, Volta Region, / Amedzofe, / 6,84°N, 0,43°E, / 27.XI.2010, / leg. Safian, Sz." (deposited in SMNS).

Paratypes (10♂, 2♀): 4♂, same data as holotype (1♂, Fig. 18a, b) (2♂, CCDB-04641 C08 and C10); 6♂, 2♀, Ghana, Volta Region, Likpe Mate, 7.19°N, 0.61°E, 28.XI.2010, Sz. Sáfián leg. (1♀, Fig. 19a, b) (1♂, CCDB-04612 G09, Pühringer gen. prep. FP 12/09, Fig. 25; 2♂, CCDB-04612 G11, CCDB-04641 C03; 1♀, CCDB-04641 A09, Pühringer gen. prep. FP 12/10, Fig. 35) (deposited in SMNS, CFPS).

Other material examined

Two specimens, a male and a female, from Togo, Région des Plateaux in SMNS, may well belong to *C. zebracox* **sp. n.**, but are not included in the type series due to their poor condition. Male: FO: 7063, Togo, 7°34′42″N, 0°41′37″E, Otjandjobo bei Zogbégan (SE von Kpa, Région des Plateaux, 500 mNN, B, leg. A. Ssymank, 21.04.2008 (SMNS_Lep_002534). Female: FO: 7064, Togo, 7°36′09″N, 0°42′20″E, Soto, am Fluß Owui, „schmaler Wal", Région des Plateaux, 490 mNN, C, leg. A. Ssymank, 21.04.2008.

Etymology

From "zebra" and "coxa", because of the black-brown and white-striped forecoxa. Noun in apposition.

Description

Holotype with alar expanse 21.5 mm, forewing 9.0 mm, antenna 6.5 mm, body length 10.5 mm. Head: Labial palpus black-brown, second palpomere dorsally with white patch in proximal part, second and third palpomere ventrally yellow-white; frons brown-grey, next to eyes white; vertex glossy black, laterally and between antenna bases mixed with some pale ochre scales; pericephalic scales dorsally pale ochre mixed with some black scales, laterally yellow-white; antenna black-brown, scape ventrally yellow-white with erect white scales basally. Thorax: black-brown, some yellow-orange scales at tegula margins, below forewing base and dorso-medial on mesothorax; dorso-ventral scale tufts of metathorax mixed black-brown and yellow-orange. Legs: Foreleg black-brown; coxa with two yellow-white longitudinal stripes, one on inner edge, tapering distally and one from outer edge, arcing distally towards inner edge; tibia on inner side and tarsus ventrally yellow,

tibia and first tarsomere distally with narrow yellow ring. Midleg black-brown; femur with ventral edge yellow; tibia with a yellow ring each medially and distally; tarsomeres ventrally and on inner side yellow, first two tarsomeres distally with narrow yellow ring. Hindleg black-brown; tibia with dense scale tufts on inner side and dorsally, medially and distally each a yellow ring; first tarsomere strongly tufted on inner side, distally with some yellow scales, other tarsomeres smooth, second on inner side yellow. Spurs of all legs brown-grey, outer spur laterally white. Wings: veins, margins, fringes and discal spots black-brown; forewing transparent areas very large; posterior one narrow, reaching discal spot; apical area absent; hindwing largely hyaline; discal spot short and narrow, ending at M2. Abdomen: black-brown; tergites sparsely mixed with yellow-orange scales; valvae dorsally yellow-orange.

Male genitalia (Fig. 25). Valva three times as long as wide, distally tapering with a wide, semi-circular notch distally; distal two thirds of dorsal margin as well as distal half of ventral margin straight; apical protrusion narrow large; medial part with short row of sclerotised setae parallel to ventral margin; crista sacculi densely covered with setae.

Female. Similar to male in size, colouration and shape of the transparent wing areas; scale tufts of legs less pronounced; anal tuft very small.

Female genitalia (Fig. 35). Papillae anales and segment eight short and broad; apophyses anteriores rather broad, shorter than posteriors; ostium bursae concave, ventrally with minute protrusion in middle; antrum smooth, rather broad, tubular, well sclerotised; ductus bursae twice as long as antrum, broad; corpus bursae round.

Variation

Both sexes vary little in size, with wing extension 18.0–21.5 mm for males and 19.5–22.0 mm for females. Many specimens, especially older ones, have the body markings whitish, not orange-yellow.

Diagnosis

Crinipus zebracox **sp. n.** differs from almost all congeners, with the exception of *C. leucozonipus*, by the pattern of the forecoxa. The latter species is smaller and has abdominal tergite 4 with a narrow white band.

Distribution, habitat and behaviour

Ghana, likely also in Togo. Same habitats and behaviour as mentioned for *C auripes* **comb. n.**

Crinipus riefenstahli Bartsch, Sáfián & Pühringer sp. n.
(Figs. 21a, b, 26)

Type material

Holotype ♂ (Figs. 21a, b, 26), with labels: "Kenia / Mombasa-Bamburi / 1–5.10.1993 / leg. Riefenstahl"; "Barcoding of Life / CCDB-04686 F10"; "SMNS Lepidoptera / Präparat-Nr. / 3990 / Bartsch GU 2024-15 / D. Bartsch fec." (deposited in SMNS).

Etymology

Named after our friend, the late Hans G. Riefenstahl, who collected the single known specimen.

Description

Holotype with alar expanse 18.5 mm, forewing 8.0 mm, antenna 5.5 mm, body length 10.0 mm. Head: Labial palpus white, first palpomere laterally with dark grey, basal patch, ventrally yellow, other palpomeres laterally mixed with grey-black, distally yellow; frons white, medially pale grey with pearly shine; vertex dark brown-grey, some yellow scales between antenna and ocellus; pericephalic scales dorsally yellow, laterally white; antenna dark brown-grey, scape ventrally white. Thorax: Dark brown-grey; patagia glossy with pale yellow spot laterally; tegula narrow framed in light yellow; mesothorax dorsally with narrow, pale yellow medial line, laterally a row of white and yellow scales between patagia and forewing; dorso-lateral scale tufts of metathorax yellow. Foreleg: Coxa with large, dark brown-grey medial spot, framed with white, laterally and distally yellow; femur dark brown-grey, laterally a white distal spot; tibia dorsally dark brown-grey, middle part and distally narrow white, laterally with tufted, proximally pale yellow, distally orange-yellow scales, ventrally yellow; tarsomeres dorsally dark brown-grey, distally and ventrally white with some black scales. Mid- and hindleg with coxa and femur dark brown-grey, ventral edge of the latter with long, white, hair-like scales; tibia of midleg with tufts of orange scales medially and distally; tibia and first tarsomere of hindleg with tufts of laterally orange, on inner side dark brown-grey scales, tibia further anteriorly completely and in subdistal portion laterally and ventrally dark brown-grey; smooth; tarsomeres dark brown-grey, distally white; on midleg ventrally white with some black scales. Spurs of all legs white. Wings: Veins, margins and discal spot black; forewing apical area absent, discal spot and margins narrow, transparent areas large. Abdomen dark brown-grey, mixed with some paler grey, laterally orange scales; anal tuft orange mixed with black scales.

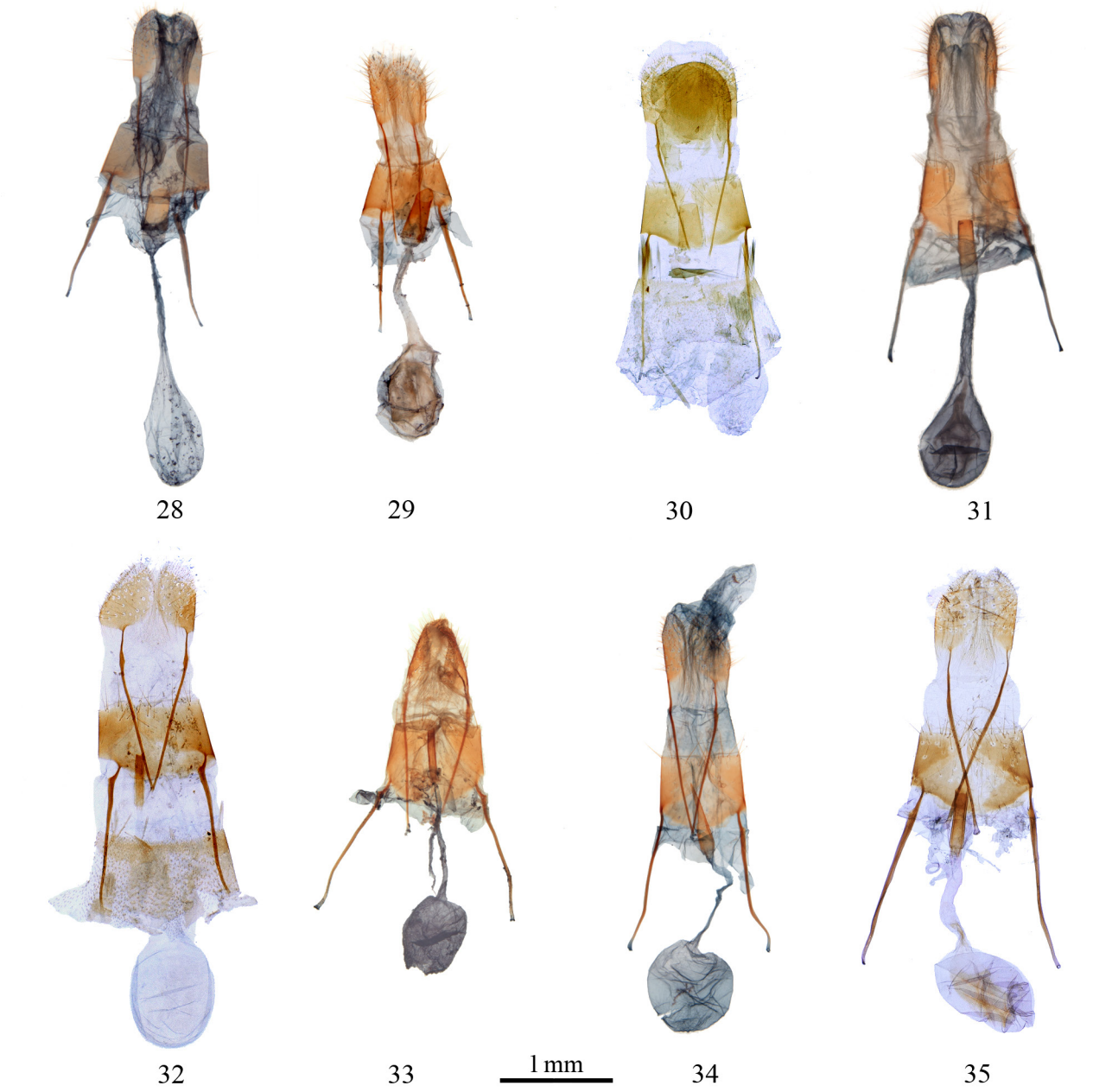
Male genitalia (Fig. 26). Valva ovoid, slightly concave distally; apical protrusion short, covered with sort setae; medial group of setae parallel to ventral margin, short and dense; crista sacculi short.

Diagnosis

The superficially similar West African species *C. zebracox* **sp. n.** and *C. auripes* **comb. n.** have the markings darker, orange-yellow, the dorso-lateral scale tufts of the metathorax darker, blackish or brownish-grey, and the hindtibia dorsally orange-yellow with dark interruptions.

Distribution, habitat and behaviour

Unknown.



Figs. 28–35. *Crinipus*, Genitalia structure, ♀: (28–29) *Crinipus nimbaensis* **sp. n.** paratypes. (30) *Crinipus tenebricus* **sp. n.** paratype. (31) *Crinipus nigrans* **sp. n.** paratype. (32–33) *Crinipus auripes* **comb. n.** Ghana, Eastern Region. (34) *Crinipus tigripes* **sp. n.** paratype. (35) *Crinipus zebracox* **sp. n.** paratype.

Crinipus congoensis **Bartsch, Sáfián & Pühringer sp. n.**
(Figs. 22a, b, 23a, b, 27)

Type material

Holotype ♀ (Fig. 23a, b), with label: "MUSÉE DU CONGO / Eala / 24.VII.1935 / J. Ghesquière"; "Barcoding of Life / CCDB-14647 G10" (deposited in RMCA). [We selected the female as the holotype due to its better preservation status.]

Paratype: 1♂ (Figs. 22a, b, 27), same locality and collector as holotype, IX.1935 (Bartsch gen. prep. 2024-16) (deposited in RMCA).

Etymology

Named after the Congo River. Noun in apposition.

Description

Holotype with alar expanse 23.5 mm, forewing 10.0 mm, antenna 7.0 mm, body length 11.5 mm. Head: Labial palpus white, laterally grey-black, except for anterior half of second palpomere; frons grey with pearly shine, laterally white; vertex dark brown-grey; pericephalic scales dorsally dark brown-grey, laterally white; antenna dark brown-grey, scape ventrally white. Thorax: Patagia dark brown-grey with white spot laterally; meso- and metathorax dorsally brown-grey, densely mixed with orange-brown scales, and fine orange-brown medial line, laterally grey mixed with whitish scales, a row of dirty yellow scales between patagia and forewing base; tegulae framed with orange-brown scales; dorsolateral scale tufts of metathorax dark brown-grey anteriorly, pale ochre distally. Legs: Dark brown-grey. Foreleg white, coxa in proximal two third white with longitudinal grey-black spot medially, distal third grey-black; femur distally white; tibia dorsally with pale ochre transverse stripes medially and distally, laterally ochre, ventrally white. Midleg with femur ventro-basally with small tuft of white scales, and white, distally each one ventral and one lateral spot; tibia proximally smooth, remaining part with tufts of dorsally orange-brown to white, ventrally orange-brown scales. Hindleg with femur distally white; tibia and first tarsomere with tufts of brown-grey, orange-brown, and white scales. Tarsus of all legs distally white, ventrally ochre; spurs grey-black. Wings: Veins, margins and discal spots dark brown-grey, forewing discal spot very narrow, apical area absent. Abdomen: Dark brown-grey, posterior margin of segments 2, 4–6 narrow white; tergites densely mixed with orange-brown scales; anal tuft orange-brown.

Female genitalia. Because of the obvious damage to the tip of the abdomen, and to preserve its important external characters, the genitalia of the single female were not examined.

Male. Pattern similar to female, but darker, markings ochre to orange-brown; scale tufts of mid- and hindleg orange-brown to brown, mixed with dark brown-grey scales; anal tuft ventrally black.

Male genitalia (Fig. 27). Tegumen rather long, with small, weak gnathos basally; uncus rather short; valva with setae of inner surface large, somewhat scattered, crista sacculi long, densely covered with setae, group of strong setae parallel to ventral margin, short and scarce, apical protrusion small and pointy; phallus slightly bent upward, distally very narrow.

Variation unknown.

Diagnosis

This species is distinctive due to the ochre to orange-brown pattern and the almost completely transparent wings with very narrow discal spots. The structure of the male genitalia clearly distinguishes it from all congeners. The tegumen is longer and has a small, difficult-to-see gnathos near the base (absent in all congeners), the uncus is shorter, the valva has the setae of the inner surface much larger and more scattered and a larger, elongate crista sacculi, and the phallus is curved and distally very narrow (straight, distally broader in all congeners).

Distribution, habitat and behaviour

Unknown. The type locality Eala [east of Mbandaka] is in the rainforest area of the northwestern lowlands of the Democratic Republic of the Congo, near the Congo River.

New records

Crinipus vassei (Le Cerf, 1917): 1♀, Kenya, Karura Forest, December 1970, M.P. Clifton (deposited in NMKE); 1♀, S. Rhodesia [= Zimbabwe], Marandellas, 2. November 1963 (deposited in NMBZ); 1♀, Zomba [= Malawi, Zomba], B.C.A., H. Barlow; 1♀, Nyassaland, Mt.Mlanje [= Malawi, Mount Mulanje], 12. February 1913, S.A.Neave, 1914–171 (both deposited in NHMUK).

Discussion

Knowledge about the distribution of *Crinipus* is expanding. The genus probably occurs in most regions of sub-Saharan Africa. In West Africa, it can be locally abundant in mid-altitude to submontane forest areas (e.g., Togo Mountains, Atewa Range, Nimba Mountains), where larger stands of various species of the broad-leaved flowering plants *Brillantaisia* occur. Although a trophic relationship between the plants and the West African *Crinipus* species could not be clearly established, the majority of specimens of all species were caught resting on the leaves of, or flying in close proximity to, these plants. On one occasion, a female was observed presumably egg-laying on a stem of *Brillantaisia*. As *Brillantaisia* species occur throughout the Equatorial Forest Zone, often at higher altitudes or following rivers, investigation of these plant stands, particularly during the rainy season, may allow for collection of further data on the distribution of *Crinipus* species and even the capture of further unknown species. Many *Crinipus* species in West Africa appear to have affinities to upland forest habitats, particularly streams and riverbanks, where *Brillantaisia* are usually common, but also wetter road verges and other microhabitats with the presence of excess water or humidity. It can be assumed that the *Crinipus* species found outside of the forest zone (e.g., *C. leucozonipus*, *C. marisa*) probably use other plants from the species-rich family Acanthaceae. Synthetic pheromone baits regularly used at the collection localities failed to attract any *Crinipus* specimens.

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Supplementary material:

Supplementary File S1. List of specimens used for DNA barcoding (with sampling sites and date, sequence length (bp), Sample/Process ID, GenBank accession, Institution). Available from: https://doi.org/10.5281/zenodo.15640448.

Supplementary File S2. DNA barcode distances in *Crinipus* (p-distances: percentage of nucleotide sites differing between sequences). Available from: https://doi.org/10.5281/zenodo.15640717.