Ecologica Montenegrina
ISSN 2336-9744 (online) | ISSN 2337-0173 (print)

Ecologica Montenegrina 54: 44-52 (2022)
This journal is available online at: www.biotaxa.org/em
https://dx.doi.org/10.37828/em.2022.54.6

Article

https://zoobank.org/urn:lsid:zoobank.org:pub:FEA10EFD-E485-4B47-A05F-429A4E7A4750

Two new peculiar species of the genus *Siccia* Walker from Mali and Ivory Coast (Lepidoptera: Erebidae: Arctiinae)

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Received 6 June 2022 | Accepted by *V. Pešić*: 17 June 2022 | Published online 2 July 2022.

Abstract
Two new species of the genus *Siccia* Walker, 1854 are described from West Africa: *S. kravchenkoi* Volynkin, Müller, Prozorov & Saldaitis, **sp. n.** (southern Mali) and *S. kabadougou* Volynkin, **sp. n.** (north-western Ivory Coast). Adults, male and female genitalia of the new and similar species are illustrated.

Key words: Lithosiini, Cisthenina, West Africa.

Introduction

The genus *Siccia* Walker, 1854 belongs to the subtribe Cisthenina Bendib & Minet, 1999 of the tribe Lithosiini Billberg and is widely distributed in the Afrotropics. The check-list of the genus from mainland Africa was provided by Kühne (2007), who described twelve new species. Subsequently, one species was excluded from the genus and transferred to the genus *Meganola* (Nolidae: Nolinae) (László & Volynkin 2019), one species was transferred to *Siccia* from the genus *Afrasura* Durante, 2009 (Volynkin 2019a), and four additional species were described by Ivinskis & Saldaitis (2008), Hacker (2016), and Volynkin (2019b). Currently the genus comprises 37 valid species but many more species await description. The genus is currently under revision by the senior author of the present paper. Species of the genus are small or medium-

sized moths with similar external appearances characterised by the whitish or grey wing colouration and blackish patterns consisting of spots and transverse lines.

In the course of studying the Lithosiini material collected in Mali and Ivory Coast, two unidentified peculiarly darker species of *Siccia* were found. The comparison of the genitalia structures of these species with other taxa in the genus has confirmed their specific distinctness and they are described below as species new to science.

Material and methods

Abbreviations of the depositories used: ANHRT = African Natural History Research Trust (Leominster, UK); ASV = research collection of Aidas Saldaitis (Vilnius, Lithuania); GMF-B = research collection of Günter Müller (Freising, Germany & Bamako, Mali); MWM/ZSM = Museum Witt Munich in the Bavarian State Collection of Zoology (Museum Witt München designated to Zoologische Staatssammlung München, Munich, Germany); NHMUK (formerly BMNH) = Natural History Museum (London, UK); WIGJ = World Insect Gallery (Joniškis, Lithuania). Other abbreviations used: AV = genitalia slide prepared by A.V. Volynkin; HT = holotype; PT = paratype. In the holotype labels citations, different labels are separated by a slash ("/") while the different lines of the same label are separated by an upright slash ("|").

The genitalia were dissected and mounted in Euparal on microscope slides. The photos of adults were taken using a Nikon D3100/AF-S camera equipped with a Nikkor 18–55 mm lens 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.

Descriptions of the new species

Siccia kravchenkoi Volynkin, Müller, Prozorov & Saldaitis, **sp. n.**
https://zoobank.org/urn:lsid:zoobank.org:act:9C6DD2D8-E950-4941-9738-388B7D606F54
(Figs 1–3, 9, 10, 15)

Type material. **Holotype** (Figs 1, 9): male, "Mali 396m | 75km SSW of Bamako, | near Ouronina | (mosaic forest savanna) | 12°6'11.2"N 8°24'40.0"W | ix.2009, Müller, G. & al. leg." / "Slide | AV6775♂ | A. Volynkin" (WIGJ).

Paratypes: 51 specimens of both sexes with the same data as in the holotype (ASV, GMF-B, WIGJ); 3 males, 2 females, the same data as in the holotype, accession number: ANHRT:2022.7, unique numbers: ANHRTUK 00201142–00201146, gen. prep. Nos.: AV6773, AV6776 (males), AV6774 (female) (ANHRT); 2 males, 1 female, Southern Mali, 80 km SW of Bamako, near Ouronina Forest, 420m, ix.2015, leg. [G.] Müller, K. [*recte*: V.] Kravchenko, M. Traore & al. (GMF-B).

Diagnosis. *Siccia kravchenkoi* **sp. n.** (Figs 1–3) and *Siccia kabadougou* **sp. n.** (Fig. 4) clearly differ from all other congeners in the blackish-brown forewing ground colour with ochreous-orange suffusion and spots along the costal and outer margins, and the intense dark brownish-grey suffusion on the hindwing. Their dark colouration is vaguely reminiscent of only the Arabian *Siccia buettikeri* Wiltshire, 1988 (Figs 7, 8) which is, however, significantly larger than the new species and has a markedly different forewing pattern, and male and female copulatory organs (Figs 13, 14). The male genitalia structures of *S. kravchenkoi* **sp. n.** and *S. kabadougou* **sp. n.** are most similar to those of the sympatric *Siccia conformis* Hampson, 1914 (Figs 5, 6) which is widespread in various regions of Africa.

In the male genital capsule, *S. kravchenkoi* **sp. n.** (Figs 9, 10) differs from *S. conformis* (Fig. 12) in the distally dilated uncus (it is evenly narrow in the congener), the longer juxta, the markedly longer apical process of the valva, and the shorter distal saccular process. The phallus of the new species is strongly upcurved medially whereas it is only slightly upcurved sub-proximally in *S. conformis*. The vesica of *S. kravchenkoi* **sp. n.** is shorter and markedly narrower than in the congener, lacks a broad cluster of granulation, and bears a long and robust spine-like cornutus distally with one or two smaller spine-like cornuti laterally whereas the vesica of *S. conformis* bears a row of 2–4 short conical cornuti laterally. The female genitalia of *S. kravchenkoi* **sp. n.** (Fig. 15) differ clearly from *S. conformis* (Fig. 16) in the markedly broader posterior gelatinous section of the corpus bursae bearing two heavily sclerotised dentate plates

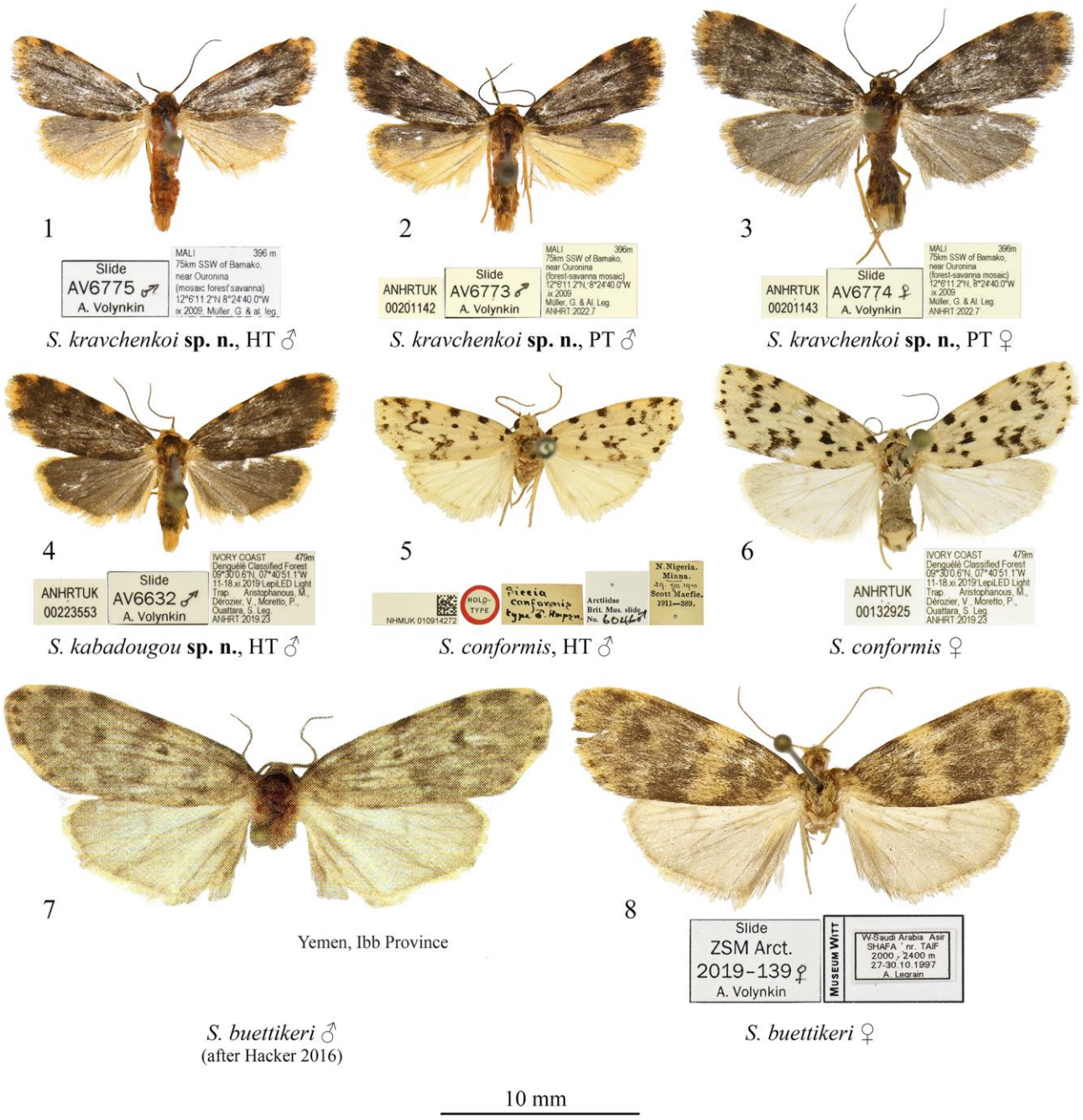
postero-laterally and laterally, connected by two narrow band-like and strongly dentate plates whereas the congener bears two clusters of weak serrulation anteriorly and postero-laterally at the base of the appendix bursae. The appendix bursae of the new species is short, broadly conical and weakly gelatinous whereas it is elongate, twisted and granulose in *S. conformis*. Additionally, compared to *S. conformis*, the apophyses anteriores of the new species are longer, the antrum broader, the anterior section of the ductus bursae longer and broader, and the anterior section of the corpus bursae shorter and narrower, lacking the signa.

The detailed comparison with *S. kabadougou* **sp. n.** is provided above in the diagnosis of the latter species.

Description. **Adults**. **Male** (Figs 1, 2). Forewing length 8.0 mm. Antenna blackish-brown and ciliate. Head ochreous-orange with brown spot dorsally. Thorax brown, tegula and patagia brown, edged with ochreous-orange scales. Forewing elongate, narrowly triangular with almost medially straight costal margin, ground colour blackish-brown with slight orange suffusion along anal margin. Cell with two black spots: one sub-proximally, small and dot-like, the other discal, larger and reniform. Costal margin with five ochreous-orange spots: one in subbasal area, small and diffuse, one in proximal part of medial area, elongate and distinct, one in distal part of medial area, shorter and diffuse, one outwardly from discal spot, distinctly trapezoid, and one subapically, small, triangular and distinct. Terminal area ochreous-orange with blackish spot medially. Forewing cilia ochreous-orange. Hindwing ochreous-yellow with intense dark brownish-grey suffusion along costal margin and weaker suffusion medially. Discal spot semilunar and diffuse. Hindwing cilia ochreous-yellow with admixture of dark brownish-grey scales apically and medially. Abdomen pale ochreous-brown with lateral tufts of hair-like androconial scales. **Male genitalia** (Figs 9, 10). Uncus elongate, slender, distally dilated and apically tapered with tiny claw-shaped tip. Tegumen with weakly sclerotised and strongly posteriorly dilated arms. Tuba analis tubular medially and distally and strongly dilated basally, scaphium slender but well sclerotised. Vinculum somewhat shorter than tegumen, U-shaped, with small sparse corema medially. Valva elongate, dilated medially and tapered distally, with elongate, narrow, apically pointed and somewhat down curved apical process, and short triangular subapical ventral process. Sacculus narrow with very short, broadly triangular distal process directed dorsally. Juxta short but broad, band-like with deep anterior medial depression. Phallus elongate and tubular, upcurved medially and slightly dilated distally with short, apically rounded and slightly upcurved coecum. Vesica sack-like, shorter than phallus, with posteriorly directed conical lateral diverticulum, one large slightly curved claw-like cornutus dorsally and one or two similar but smaller cornuti medially-laterally. **Female** (Fig. 3). Forewing length 8.5–9.5 mm. Antenna blackish-brown and ciliate with shorter cilia than in male. Forewing somewhat broader and with more diffuse costal ochreous-orange spots than in male. Hindwing uniform dark brownish-grey with slight orange suffusion along anal margin, discal spot indistinct. Hindwing cilia ochreous-orange with intense admixture of brownish-grey scales. Abdomen brown with admixture of ochreous-orange scales and pale ochreous corethrogyne distally. **Female genitalia** (Fig. 15). Papilla analis irregularly pentagonal with rounded corners, weakly setose. Apophyses elongate and thin, anterior apophysis somewhat shorter than posterior one. Antrum dorso-ventrally flattened, sclerotised, funnel-shaped with asymmetrical posterior section with right side protruding more postero-laterally, connected to anterior section of ductus bursae by short gelatinous commissure. Anterior section of ductus bursae dorso-ventrally flattened, sclerotised, shorter than antrum, slightly dilated anteriorly with heavily sclerotised left anterior section protruding to posterior section of corpus bursae. Posterior section of corpus bursae gelatinous with trapezoid protrusion on left side and two heavily sclerotised dentate plates postero-laterally (at junction with ductus bursae) and laterally on right side and connected by two narrow band-like and strongly dentate plates. Constricted junction of anterior and posterior sections of corpus bursae scobinated with irregular gelatinous protrusion on right side. Anterior section of corpus bursae globular and weakly gelatinous. Appendix bursae short, broadly conical, membranous, positioned postero-laterally on right side.

Distribution and bionomics. The new species is known from southern Mali. The type locality is located amongst rocky hills with small seasonal water streams at the edge of the flood plain of the River Niger. This area is classified as woody savannah, within the forest/savannah transition belt (Torello-Raventos *et al.* 2013) (Fig. 17). The most common trees in the area are *Vitellaria paradoxa* C.F. Gaertn. (Sapotaceae), *Anogreissus leocarpus* (DC.) Guill. & Perr. (Combretaceae), *Daniella oliveri* (Rolfe) Hutch. & Dalziel (Caesalpiniaceae), *Isoberlina doka* Craib & Stapf (Fabaceae), *Monotes kerstingii* Gilg (Dipterocarpaceae), *Khaya senegalensis* (Desr.) A.Juss. (Meliaceae), *Pterocarpus eribaceus* Poir. (Fabaceae) and *Terminalia macroptera* Guill. & Perr. (Combretaceae) (Rian *et al.* 2009).

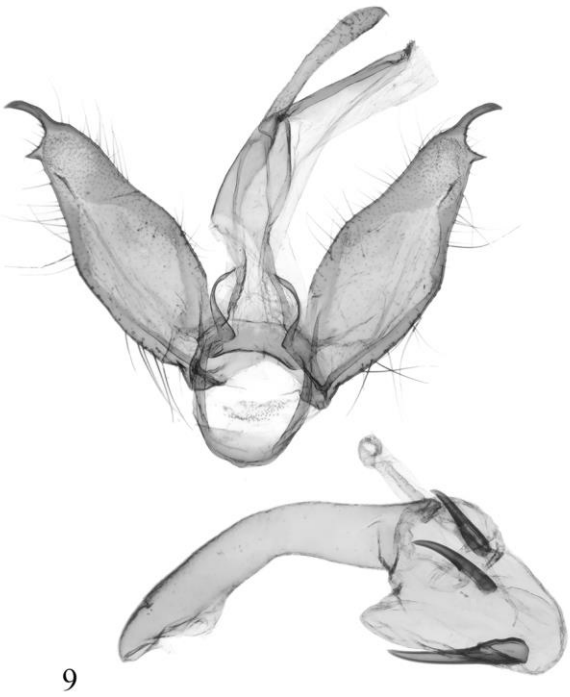
Etymology. The new species is dedicated to the memory of the late Prof. Dr Vasiliy D. Kravchenko (Tel-Aviv, Israel), a devoted lepidopterist and friend of the authors.



Figures 1–8. *Siccia* spp.: adults. Depositories of the specimens: 1 in WIGJ; 2–4 and 6 in ANHRT; 5 in NHMUK (©The Trustees of NHMUK); 7 is after Hacker (2016); 8 in MWM/ZSM.

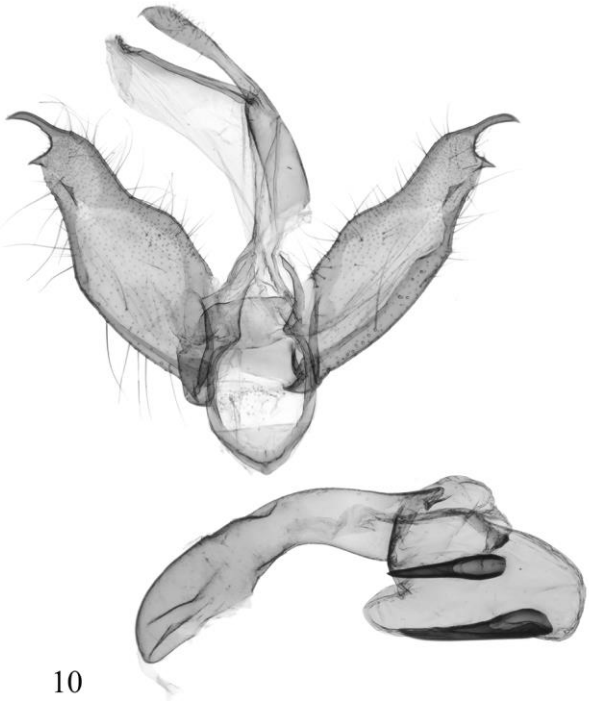
Siccia kabadougou Volynkin, **sp. n.**
https://zoobank.org/urn:lsid:zoobank.org:act:7FBF9525-DCB9-4CDD-809D-BB2A74590553
(Figs 4, 11)

Type material. **Holotype** (Figs 4, 11): male, “Ivory Coast 479m | Denguélé Classified Forest | 09°30'0.6"N, 07°40'51.1"W | 11–18.xi.2019 LepiLED Light | Trap. Aristophanous, M., | Dérozier, V., Moretto, P., | Ouattara, S. Leg. | ANHRT:2019.23” / “Slide | AV6632♂ | A. Volynkin” / “ANHRTUK | 00223553” (ANHRT).



9

***S. kravchenkoi* sp. n., HT**
Mali, near Ouronina, slide AV6775 Volynkin

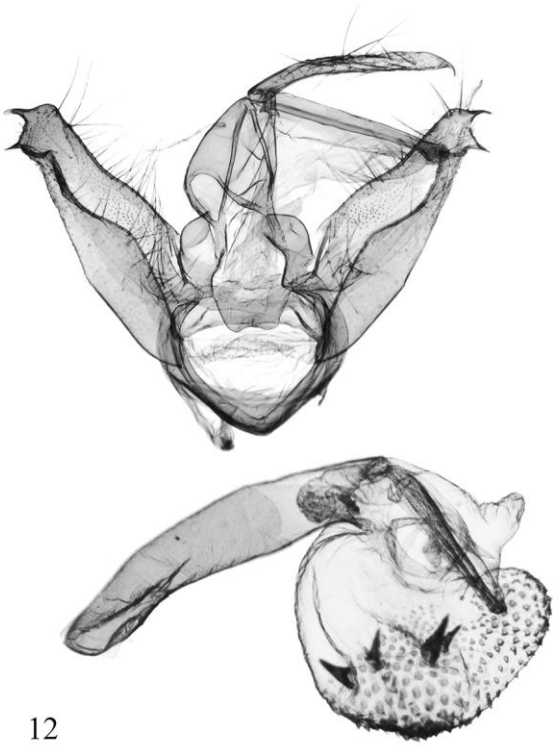


10

***S. kravchenkoi* sp. n., PT**
Mali, near Ouronina, slide AV6773 Volynkin

11

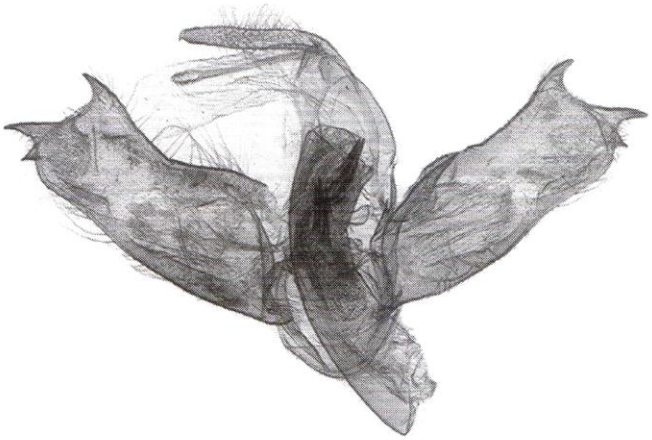
***S. kabadougou* sp. n., HT**
Ivory Coast, Denguélé Forest, slide AV6632 Volynkin



12

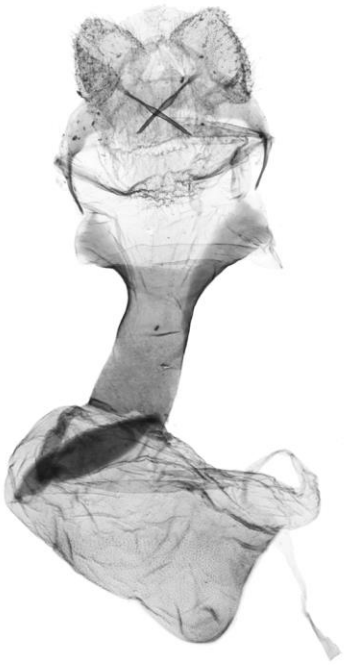
S. conformis
Togo, Fazao-Malfakassa NP, slide AV5226 Volynkin

Figures 9–12. *Siccia* spp.: male genitalia. Depositories of the specimens dissected: 9 in WIGJ; 10–12 in ANHRT.



13

S. buettikeri
Yemen, Ibb Prov., slide Hacker 22669
(after Hacker 2016)



14

A. buettikeri
W Saudi Arabia, Asir Region,
slide ZSM Arct. 2019-139 Volynkin

15

***S. kravchenkoi* sp. n., PT**
Mali, near Ouronina, slide AV6774 Volynkin

16

S. conformis
Togo, Fazao-Malfakassa NP, slide AV5227 Volynkin

Figures 13–16. *Siccia* spp.: male (13) and female (14–16) genitalia. Depositories of the specimens dissected: 13 is after Hacker (2016); 14 in MWM/ZSM; 15 and 16 in ANHRT.

Diagnosis. The male of *S. kabadougou* **sp. n.** (Fig. 4) is very similar to *S. kravchenkoi* **sp. n.** (Figs 1, 2) but is distinguished by the somewhat more subapically convex costal margin of the forewing, the presence of two smaller ochreous-orange costal spots in the subbasal area (vs. one larger spot in *S. kravchenkoi* **sp. n.**), and the uniform dark brownish-grey hindwing with only slight ochreous-orange suffusion along the anal margin whereas the hindwing of the congener is ochreous-yellow with an intense dark brownish-grey suffusion along the costal margin and weaker suffusion medially. The male genital capsule of the new species (Fig. 11) differs from that of *S. kravchenkoi* **sp. n.** (Figs 9, 10) in the more medially convex dorsal margin of the valva, the rounded and ventrally protruding valva apex with a markedly shorter distal process directed ventrally-distally (whereas it is directed distally in the congener), the shorter ventral subapical process, and the longer, narrowly triangular distal saccular process. Compared to *S. kravchenkoi* **sp. n.**, the phallus of *S. kabadougou* **sp. n.** is less curved medially and has a more apically tapered and upcurved coecum. The vesica shape of the new species is similar to that of *S. kravchenkoi* **sp. n.** but the dorsal cornutus is shorter (in proportion to the phallus length), only slightly larger than the lateral one, and the lateral diverticulum is absent.

Figure 17. Type locality of *Siccia kravchenkoi* **sp. n.**: the view of the valley from the upland nearby the collecting site by Ouronina (June of 2021).

Description. **Adult male** (Fig. 4). Forewing length 8.0 mm in holotype. Antenna blackish-brown and ciliate. Head ochreous-orange with brown spot dorsally. Thorax brown, tegula and patagia brown, edged with ochreous-orange scales. Forewing elongate and narrowly triangular with slightly subapically convex costal margin, ground colour blackish-brown with slight orange suffusion along anal margin. Cell with two black spots: one sub-proximally, small and dot-like, the other discal, larger and reniform. Costal margin with six ochreous-orange spots: two in subbasal area, small and diffuse, one in proximal part of medial area, elongate and distinct, one in distal part of medial area, shorter and diffuse, one outwardly from discal spot, trapezoid and distinct, and one subapically, small, triangular and distinct. Terminal area ochreous-orange with blackish spot medially. Forewing cilia ochreous-orange. Hindwing uniform dark brownish-grey with slight orange suffusion along anal margin. Hindwing cilia ochreous-orange with two spots of darker brownish-grey scales apically and medially. Abdomen brown with admixture of ochreous-orange scales, and

lateral tufts of hair-like androconial scales. **Male genitalia** (Fig. 11). Uncus elongate, slender, distally dilated and apically tapered with tiny claw-shaped tip. Tegumen with weakly sclerotised and strongly posteriorly dilated arms. Tuba analis tubular medially and distally and strongly dilated basally, scaphium slender but well sclerotised. Vinculum somewhat shorter than tegumen, U-shaped, with small sparse corema medially. Valva elongate, with dilated medial section with strongly convex dorsal margin, and narrower distal section with parallel margins. Valva apex with broad rounded protrusion distally-ventrally and short, straight, narrowly triangular and apically pointed apical process directed distally-ventrally. Subapical ventral process very short, triangular, denticle-like. Sacculus narrow with short, narrowly triangular distal process directed dorsally. Juxta short but broad, band-like with deep anterior medial depression. Phallus elongate and tubular, somewhat upcurved medially and slightly dilated proximally and distally. Phallus coecum short, broad and straight basally, and narrowly conical, with apically rounded and upcurved tip. Vesica sack-like, shorter than phallus, with one large and slightly curved claw-like cornutus dorsally and one similar but somewhat smaller cornutus medially-laterally. Vesica ejaculatorius originating subbasally on ventral side and having small semiglobular ventral protrusion and elongate and thin basal plate.

Female unknown.

Distribution. The new species is known only from its type locality in north-western Ivory Coast.

Etymology. The species is named after the Kabadougou Kingdom which once flourished in north-western Ivory Coast, where the type specimen was collected.

Acknowledgements

The senior author expresses his sincere thanks to the following colleagues for their kind assistance during the visits to collections under their care: Dr Axel Hausmann, Dr Wolfgang Speidel and Mr Ulf Buchsbaum (ZSM), and Dr Alberto Zilli and Mr Geoff Martin (NHMUK).

The following collaborative partners and authorities are thanked for the diverse administrative and technical assistance provided during the field work. Mali: Scientific Research in Mali was authorised by the University of Sciences, Techniques and Technology of Bamako (USTTB), Malaria Research & Training Center (MRTC). Ivory Coast: Scientific Research in Ivory Coast was authorised by the Ministère de l'Enseignement Supérieur et de la Recherche Scientifique. The Office Ivoirien des Parcs et Réserves (OIPR) and the Société de Développement des Forêts (SODEFOR) are thanked for authorising access to protected forests and providing export permits.

The authors declare that to the best of their knowledge they conform to the national regulations and meet with the conditions and requirements of International Conventions concerning collecting/export and handling of the specimens presented in this Article.

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