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Leptometa cynthia – a new species from the Democratic Republic of the Congo (Lepidoptera, Lasiocampidae, Lasiocampinae, Argudini)

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Abstract
A new species of the genus *Leptometa* Aurivillius, 1927, *Leptometa cynthia* **sp. n.**, is described from the rich Congolian forests. The new species is compared with the morphologically closest and sympatric *Leptometa sapelensis* Aurivillius, 1927 (type locality "Nigeria: Sapele"). Adult males and their genitalia are illustrated.

Key words Afrotropical realm, biodiversity, Central Africa, Congolian forests, lappet moth.

Introduction

The family Lasiocampidae Harris, 1841 is a sole member of the superfamily Lasiocampoidea (Minet, 1994; Regier *et al*., 2009; Zwick *et al*., 2011; Hamilton *et al*., 2019) containing 224 genera and 1952 species (van Nieukerken *et al*., 2011). Five subfamilies are distinguished (see Zolotuhin, 2015): 1. the Afrotropic Chionopsychinae Aurivillius, 1927 with one genus *Chionopsyche* Aurivillius, 1909 containing three species (see Zolotuhin, 2010), arguably one of the archaic groups resembling in appearance members of the family Eupterotidae (Lemaire & Minet, 1998; Zwick, 2008); 2. the Mediterannean and South African Chondrosteginae Tutt, 1902 with four genera, two of which have brachypterous females, and about 20 species inhabiting mainly arid biotopes (Rougeot & Viette, 1978; de Freina & Witt, 1987; Zolotuhin, 2007; de Freina *et al*., 2015; Rajaei *et al*., 2023); 3. the cosmopolitan Poecilocampinae Tutt, 1902 that contains two tribes: Palaearctic and Afrotropic Poecilocampini Tutt, 1902 with seven genera and about 30 species, and Neotropical Macromphaliini Franclemont, 1973 with 15 genera and about 584 species (Becker & Heppner, 1996); 4. Holarctic Malacosominae Tutt, 1902 with so far one genus *Malacosoma* Hübner, 1820 and about 20 species (Stehr & Cook, 1968; Zolotuhin, 2015); and 5. Cosmopolitan Lasiocampinae Harris, 1841 – the most diverse group containing nine tribes: 1) Lachneini Grote, 1888; 2) Lasiocampini Harris, 1841; 3) Macrothylaciini Tutt, 1902; 4) Selenepherini Tutt, 1902; 5) Trabaliini Tutt, 1902; 6) Pinarini Kirby, 1892; 7) Gastropachini Stroem, 1891; 8) Odonestini Tutt, 1902; and 9) Argudini Zolotuhin, 2012 – the last discovery in the suprageneric system of the family. Zolotuhin with co-authors (2012a, 2012b) established and briefly described Argudini Zolotuhin, 2012 for one African and eleven Indomalayan genera based on the nucleotide sequences of the gene elongation factor-1 alpha (1168 bp) belonging to 49 species. However, detailed revision is required as prior conclusions are based on the limited investigation of morphologic features. Lees and Minet (2022) confirmed that "tribes are not yet clearly established" in the note on Madagascan Lasiocampidae. The statement applies to the entire family. Modern studies of African Lasiocampidae are concentrated on both specific and partially generic levels which will lead to a better understanding of the tribal system (Zolotuhin, 2007; Gurkovich & Zolotuhin, 2009a, 2009b, 2010; Joannou & Gurkovich, 2009; Joannou & Krüger, 2009; Zolotuhin & Gurkovich, 2009a, 2009b; Zolotuhin, 2010; Zolotuhin & Prozorov, 2010; Prozorov, 2011; Prozorov & Zolotuhin, 2012a, 2012b, 2012c, 2013a, 2013b, 2013c; Basquin, 2016; Prozorov, 2016a, 2016b, 2016c; Prozorov & Zolotuhin, 2016; Tujuba *et al*., 2019, 2023, 2024; Prozorov *et al*., 2021a, 2021b, 2022, 2023a, 2023b, 2023c, 2023d, 2023e, 2023f, 2023g, 2023h, 2023i, 2023j, 2023k, 2024a, 2024b, 2024c, 2024d, 2024e, 2024f; Cipolla, 2024; Friend *et al*., 2024; Müller *et al*., 2024; Sulak *et al*., 2024a, 2024b, 2024c; Tejuoso *et al*., 2024).

The Lasiocampidae family is spread all around the world but is not found in Socotra (orig. data) and New Zealand (Common, 1990). Among the eight biogeographic realms on Earth, the most diverse fauna of the family Lasiocampidae is found in the Afrotropical realm. The fauna is projected to include more than 750 species in 120 genera (orig. data). Afrotropical Lasiocampidae can be divided into two distinct groups: continental and Madagascan. They share only two genera: *Odontocheilopteryx* Wallengren, 1860 (see Gurkovich & Zolotuhin, 2009b) and *Lechriolepis* Butler, 1880 (see Lajonquière, 1972). They have no mutual species. The Madagascan genus *Napta* Guenée, 1865 (type species *Napta serratilinea* Guenée, 1865) used to include continental *Napta straminea* (Aurivillius, 1921), but the latter was moved into a separate genus (see Prozorov *et al*., 2024b). The continental fauna shares the genus *Anadiasa* Aurivillius, 1903; *Beralade* Walker, 1855; *Bombycopsis* Felder & Felder, 1874; *Sena* Walker, 1862; and *Streblote* Hübner, 1820 with the Palearctic realm (see Speidel & Hassler, 1989;

Joannou & Krüger, 2009; Zolotuhin *et al*., 2009; Zolotuhin, 2015); and *Estigena* Moore, 1860; *Trabala* Walker, 1856; and *Streblote* with the Indomalayan realm (see Prozorov, 2011; Prozorov *et al*., 2022).

The genus *Leptometa* Aurivillius, 1927 contains nine valid taxa, six of them were recently described (Prozorov *et al*., 2023h; Sulak *et al*., 2024a). Below we describe a new Congolese species morphologically reminiscent of *Leptometa sapelensis* Aurivillius, 1927 (Figs 1–3).

Abbreviations of the depositories used:

CDB – collection of Daniel Buttafuoco (New York, USA);
CGM – collection of Günter Müller (Freising, Germany);
USTTB – l'Université des Sciences, des Techniques et des Technologies de Bamako (Bamako, Mali).

Other abbreviations used:

DRC – the Democratic Republic of the Congo;
GS – genitalia slide;
HT – holotype;
PT – paratype.

Material and Methods

Some adults (Figs 1, 5) were collected near the Ekongo camp (2.75613S, 20.31538E), Mai-Ndombe, DRC using a traditional white screen lit with a Sylvania Mini-Lynx Blacklight BL368 and a chain of locally made auto-traps with similar bulbs. A Honda EU 20i generator provided the electricity for the screen and the traps.

Genitalia preparations were made following Hardwick (1950). Distal one third of the abdomen of each specimen was put into a separate 50 ml Falcon tube with 10 ml of 13% solution of potassium hydroxide (KOH). Several tubes with abdomens and KOH were placed into a small pot with hot water for 30 minutes. The tubes thereafter were removed from the pot and the abdomens were rinsed with water several times to remove any remaining scales and soft tissue. Cleaned abdomens were then transferred into separate cells of the Corning Costar 96 Well Cell Culture Cluster with a small quantity of water to keep them moist during preparation. Sequentially, abdomens were cleaned with a soft brush and dissected using Dumont Tweezers Style 5 and "no name" micro scissors in a Petri dish under the microscope. Aedeagus was extracted and vesica everted (Mikkola, 2007; also see Zlatkov *et al*., 2022) with an insulin syringe and a 32G or 33G needle for mesotherapy. Male's vesica was stained with the Evans blue (Evans & Schulemann 1914; Cooksey 2013). The dissected genitalia were rinsed in 50, 70 and 96% ethanol and then mounted on a microscope slide in Euparal and covered with a cover slip.

Adults were photographed with a Nikon D5600, a Nikon 40mm f/2.8G and a Nikon R1C1. Slides were photographed using a Leica MC170 HD. All images were processed with Photoshop CS6 and InDesign CS6.

Morphological terminology follows Prozorov et al. (2023h) and Volynkin (2024). Distribution map was made with Google My Maps service (https://www.google.com/maps/). Altitude for collecting sites was taken from Google Earth Pro if missing from labels. Ecoregions listed in the Distribution section of the species follow Dinerstein *et al.*, 2017.

Taxonomical part

***Leptometa cynthia* sp. n.**
https://zoobank.org/urn:lsid:zoobank.org:act:B5E7D9D2-CB29-4978-93FF-801CCC09E6E5
(Figs 4–6, 8)

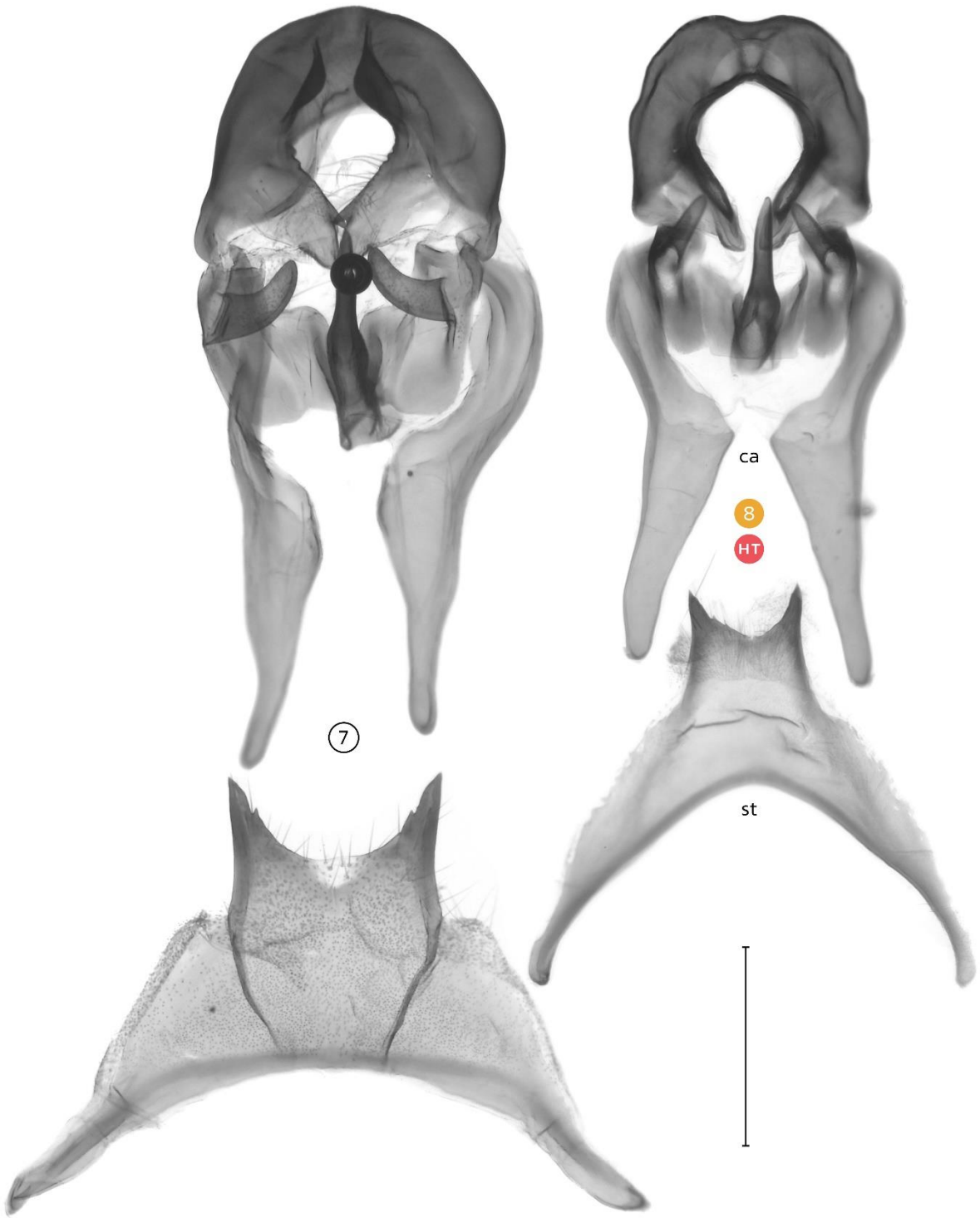
Holotype: ♂, "DR CONGO, Mai-Ndombe / Salonga NP, Ekongo camp / 02°45'23.09"S, 20°18'55.37"E, / January, 2018, leg. A., T. / Prozorovs, V. Kravchenko et al.," GS 0114 (CGM/USTTB).

Figures 1–5. Adult males of *Leptometa* spp. **1–3.** *L. sapelensis*. **1.** DRC, Ekongo camp (CGM/USTTB). **2.** DRC, Kisangani (CDB). **3.** Gabon, Monts de Cristal, GS 0324 (CGM/USTTB). **4–6.** *L. cynthia* **sp. n.**, DRC. **4.** N of Ilebo (CGM/USTTB). **5.** Ekongo camp, GS 0114 (CGM/USTTB). **6.** Kisangani (CDB). Scale bar – 1 cm.

Paratypes: 6♂, same data as HT, but December 2017, June 2018 (CGM/USTTB); 4♂, "DRC, Kasaï-Occidental / NE Ilebo and Kasaï River / moist broadleaved forest / savanna mosaic, XII.1997" (CGM/USTTB); 2♂, "Zaïre Orientale / Sud Kisangani / Mai 1991" (CDB).

Description. **Male** (Figs 4–6). Flagellum, head and thorax covered with speckled brown and straw-colored scales. Abdomen dorsally yellow with black transversal stripes. *Forewing*. Length: 18.5–20 mm. Elongated, somewhat oval with smooth outer margin and rounded apex. Covered with brown and straw-colored scales; slightly wavy brown medial lines and blackish discal dot pronounced. Fringe speckled brown and straw-colored. *Hindwing*. Somewhat oval with slightly wavy outer margin. Covered with brown scales, getting darker between veins. Fringe brown. *Genitalia* (Fig. 8). Tegumen helmet-like without outgrowths. Socii mitten-like, the dorsal ridge is more sclerotized, loosely covered with setae. Valvae short, finger-shaped, basally widened and fused with juxta. Juxta an oval plate surrounding aedeagus. Aedeagus claw-like with tiny vesica everting dorsolaterally. Vinculum medially split into a pair of elongated somewhat triangular projections. The eighth sternite is trapezoid with the dentated caudal margin and elongated apodemes. **Female** remains unknown.

Diagnosis. *Leptometa cynthia* **sp. n.** differs from *L. sapelensis* with dark-colored hindwings (compare Figs 4–5 and 1–3); lacking dorsolateral outgrowths of vinculum (compare Figs 8 and 7).



Figures 7–8. Male genitalia of *Leptometa* spp. (CGM/USTTB). **7.** *L. sapelensis*, Gabon, Monts de Cristal, GS 0324 (CGM/USTTB). **8.** *L. cynthia* **sp. n.**, Ekongo camp, GS 0114 (CGM/USTTB). Scale bar – 1 mm.

Distribution. Central Congolian lowland forests in Mali.

Biology. Adults were collected in December–January and May–June from altitudes of 350–450 m. Preimaginal stages unknown.

Etymology. This species is named in honor of the senior author's beloved wife of 45 years, Cynthia A. Buttafuoco, who has let him indulge his strange pastimes, unusual interests and strong passion for collecting. Together they try to make the world a better place.

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