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## *Gastrolakaeis jaredkrameri* – a new lappet moth species from Central African forests (Lepidoptera, Lasiocampinae)

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### Abstract

A new species, *Gastrolakaeis jaredkrameri* **sp. n.**, is described from the forests of Cameroon, Gabon (Ipasa Makokou Biosphere Reserve is the type locality), and the Democratic Republic of the Congo. It is compared with the closely related *Gastrolakaeis epipolia* Tams, 1929 (type locality is in Cameroon), and *Gastrolakaeis greyi* Holland, 1893 (type locality is in Gabon).

**Key words** Afrotropical realm, biodiversity, Lasiocampinae, Selenepherini, taxonomy.

## Introduction

The family Lasiocampidae Harris, 1841 is the sole member of the superfamily Lasiocampoidea (Minet 1994; Regier *et al.* 2009; Zwick *et al.* 2011; Hamilton *et al.* 2019) containing 224 genera and 1,952 species (van Nieukerken *et al.* 2011). Five subfamilies are distinguished (Zolotuhin 2015): 1. the Afrotropical Chionopsychinae Aurivillius, 1927 with one genus *Chionopsyche* Aurivillius, 1909 containing three species (Zolotuhin 2010), arguably one of the archaic groups resembling the members of the family Eupterotidae (Lemaire & Minet 1998; Zwick 2008); 2. the Mediterranean 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 Poecillocampinae Tutt, 1902 that contains two tribes: the Palaearctic and Afrotropical Poecillocampini Tutt, 1902 with seven genera and about 30 species, and the Neotropical Macromphaliini Franclemont, 1973 with 15 genera and about 584 species (Becker & Heppner 1996); 4. the Holarctic Malacosominae Tutt, 1902 with one genus *Malacosoma* Hübner, 1820 and about 20 species (Stehr & Cook 1968; Zolotuhin 2015); and 5. the 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. Lees & Minet (2022) confirmed that the “tribes are not yet clearly established” in the note on Madagascan Lasiocampidae. 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.

The Lasiocampidae family is distributed globally, except in Socotra, Yemen (A. Saldaitis, pers. comm.), and New Zealand (Common, 1990). Among the eight global biogeographic realms, the most diverse fauna of the family Lasiocampidae is found in the Afrotropical realm. Its fauna includes 13 subspecies and 739 species in 103 genera, which can be divided into two distinct groups: continental and Madagascan, sharing only two genera: *Odontocheilopteryx* Wallengren, 1860 (Gurkovich & Zolotuhin 2009) and *Lechriolepis* Butler, 1880 (Lajonquière 1972; De Prins & De Prins 2025). They have no mutual species. The Madagascan genus *Napta* Guenée, 1865 (type species *Napta serratilinea* Guenée, 1865) previously included continental *Napta straminea* (Aurivillius, 1921), but this latter species was transferred to a separate genus (Prozorov *et al.*, 2024a). The continental fauna shares the genus *Anadiasa* Aurivillius, 1903; *Beralade* Walker, 1855; *Bombycopsis* C. Felder & R. Felder, 1874; *Sena* Walker, 1862; and *Streblote* Hübner, 1820 with the Palearctic realm (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 (Prozorov 2011; Prozorov *et al.* 2022). Caterpillars, pupae, and cocoons of some African and Madagascan Lasiocampidae are consumed as food (Latham *et al.* 2024), used for silk production (Peigler 1993), or as cultural objects (Peigler 1994).

*Gastroplakaeis* Möschler, 1887 (the type species is *G. forficulatus* Möschler, 1887) is a genus of lappet moths belonging to the tribe Selenepherini. It includes 14 valid African species (Prozorov *et al.*, 2024b; De Prins & De Prins, 2025). Upon investigating several entomological collections, a series of *Gastroplakaeis* adults was found (Figs. 1–5) that differed from any known species. Below, it is described as new.

## Material and methods

**Material.** Adult moths deposited in the following collections were examined, photographed, and dissected: ANHRT – African Natural History Research Trust (Leominster, UK); CGM – collection of Günter C. Müller (Freising, Germany); CMNH – Carnegie Museum for Natural History (Pittsburgh, PA, USA); MNHN – Museum national d’histoire naturelle (Paris, France); RMCA – Royal Museum for Central Africa (Tervuren, Belgium); SMNS – State Museum for Natural History (Stuttgart, Germany). Labels of adults are cited verbatim in quotes (“”), lines separated with a slash (/). Two males (Figs 8, 11) 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.

*Abbreviations* (apart from the depositories) *used*: GS – genitalia slide; HT – holotype; PT – paratype.

*Photography and postprocessing*. Adults were photographed using an Olympus C750UZ and a Nikon D3300 equipped with a Nikon 40mm f/2.8G lens and a Nikon R1C1 macro flash. The images of the genitalia were taken with a Leica MC170HD. The obtained images were edited using Adobe Photoshop CC 2014.2.2, Affinity Photo 2, and Affinity Publisher 2 software.

*Genitalia dissection*. Made following Hardwick (1950). The distal one-third of the abdomen was isolated and placed in a test tube containing 10–13% potassium hydroxide (KOH) solution. The tubes with abdomens and KOH were placed into a water bath for 30 minutes or left in a dry, cool place for approximately 48 hours to macerate. The abdomens were thereafter rinsed with water several times to remove any remaining scales and soft tissues. Washed abdomens were cleaned with a soft brush, and the genital apparatuses were dissected using tweezers and microscissors in a Petri dish under a stereo microscope. Phallus was extracted and vesica everted (Mikkola 2007, Zlatkov *et al.* 2022) using an insulin syringe and a 32G or 33G needle. Vesica was stained with Evans blue (Evans & Schulemann 1914, Cooksey 2013), while some clasping apparatuses were stained with Eosin Y (Caro 1892, Travis 1998). The dissected genitalia were rinsed in 50, 70, and 96% ethanol, mounted on a microscope slide embedded in Euparal (Gilson 1906, Neuhaus *et al.* 2017), and covered with a cover slip. Slides were deposited in the collections respective to the dissected adults.

## Results

### *Gastropalaeis jaredkrameri* sp. n.

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(Figs 1–6, 12–13, 18–19)

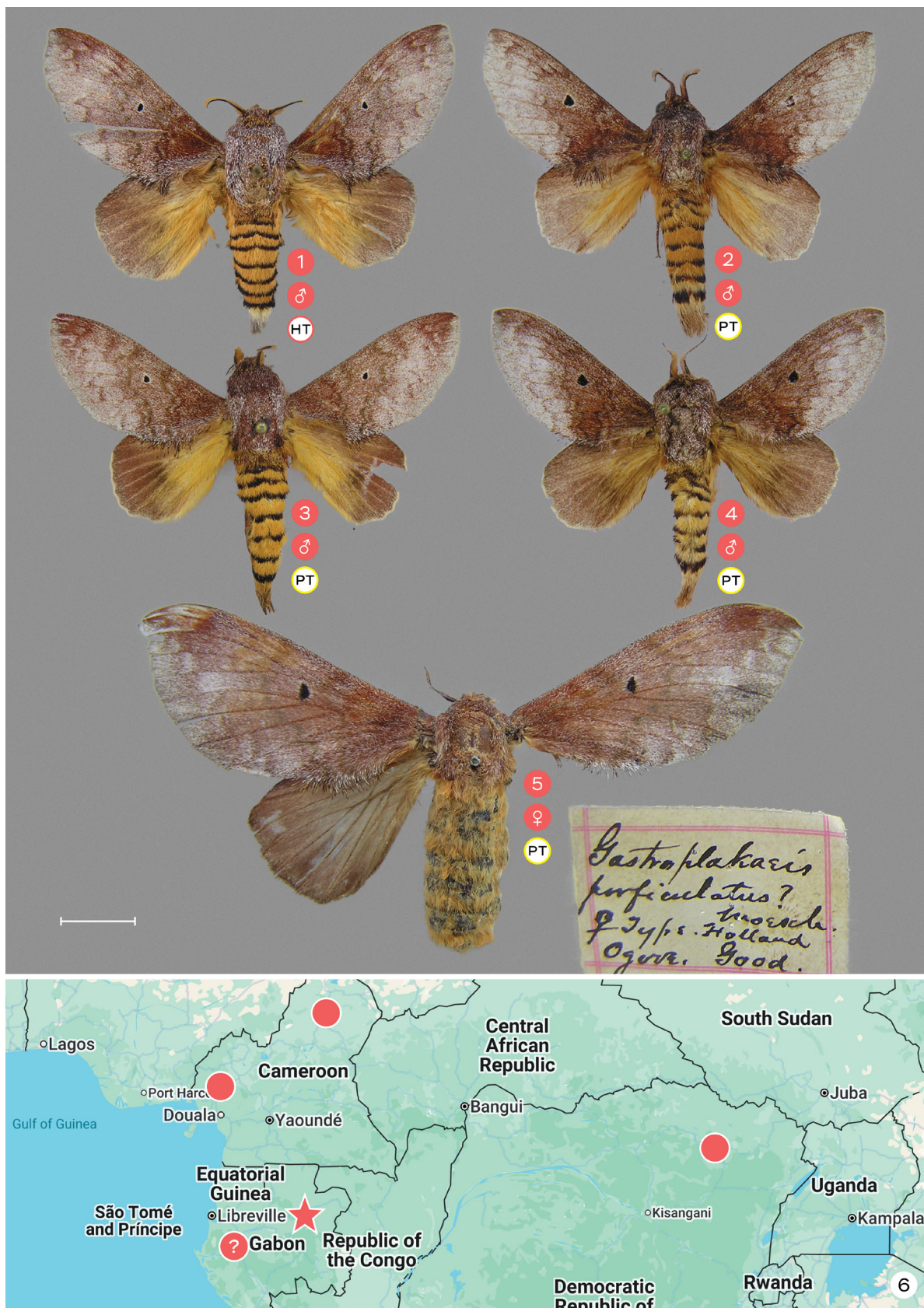
**Holotype**: male, [Gabon, Ipassa Makokou Biosphere Reserve] “GABON Ipassa / 16.V.1973 / G. Bernardi / J. Pierre / RCP 317”, GS 2011-015 (MNHN).

**Paratypes** (22 males, 1 female). **Cameroon**: 1 male, “5°1’17.65”N 9°46’10.39”E / CAMEROON, SW-Region, / 7 km S Bangem, Ebonmin, / coffee plantation, 1470 m asl / 29. October 2011, MV-lamp” (SMNS); 1 male, “CAMEOON 900m / North Region, Wack (La Falaise) / 07°40’16.5”N, 13°38’18.4”E / 2-21.x.2018 LepiLED Light Trap / Safian, Sz., Simonics, G. Leg. / ANHRT:2018.36”, individ. numb. ANHRTUK 00114485 (ANHRT). **Gabon**: “Gastropalaeis / forficulatus? / Moesch. / ♀ Type. Holland / Ogove. Good.” (CMNH); 1 male, “GABON, Ogooué Ivindo, PN / Ivindo – Station de Recherche / d’Ipassa, 450 m / 0°30’43”N 12°48’12”E / 14-26. vi. 2016 Light Trap / Ruzzier, E., Tasane T., leg. / ANHRT 2017.19”, individ. numb. ANHRTUK 0039015 (ANHRT). **DRC**: 1 male, “Rep. Congo (Zaire) / 17km N Kisangani / MASAKO Field Stat. / 00°36’N 25°15’E / 388 m 2.–8.II.2008 / Gurovich/Zolotuhin”, GS 29024 (CGM); 1 male, “COLL. MUS. CONGO / Uele: Paulis / 7-I 1956 / Dr M. Fontaine”, individ. numb. 000005111, GS 2010-44 (RMCA); 1 male, same data but 15-6-1960, individ. numb. 000005112 (RMCA); 1 male, “Uele: Paulis / 12-III-1960 / Dr M. Fontaine” (RMCA); and 16 males with unrecorded label data (RMCA).

**Diagnosis**. Adults of *G. jaredkrameri* sp. n. may only be confused with either of sympatric *G. epipolia* or *G. greyi*, but it differs from both by a reddish tinge in the wing coloration and greyish white subterminal and terminal fields on the forewing (compare Figs 1–5 and 7–10); whereas clasping apparatuses are nearly identical (compare Figs 12–13 and 14–17), the distal margin of the eighth sternite of *G. jaredkrameri* sp. n. has better pronounced denticles than *G. epipolia* (compare Figs 18–19 and 20–21), and somewhat less sclerotized than in *G. greyi* (compare Figs 18–19 and 22–23).

**Description**. **Male** (Figs 1–4). *Head*. Flagellum covered with brown and greyish scales. Head dorsally mottled with straw reddish brown, straw, and greyish scales. *Thorax* dorsally mottled with straw reddish brown, straw, and greyish scales. *Forewing* length: 26–27 mm. Somewhat semilanceolate with slightly convex costal margin, rounded apex, convex, slightly wavy outer margin with more or less pronounced obtuse tornal and anal angles. Colour reddish brown with scattered greyish scales, getting denser from basal area towards outer margin. Pattern consists of brown, doubled, wavy ante- and





**Figures 1–6.** Adults and map with collection localities of *Gastrophilakaeis jaredkrameri*. 1. Gabon, Ipassa Makokou Biosphere Reserve, GS 2011-005 (MNH). 2–4. DRC, Isiro (RMCA). 3. GS 000005111. 5. Gabon, Ogooué River (CMNH). Scale bar – 1 cm. 6. Map: star marks the type locality, circles – paratypes, question mark – inexact locality in the valley of the Ogooué River for the paratype female. Photos © V. V. Zolotuhin; map data ©2025 Google.

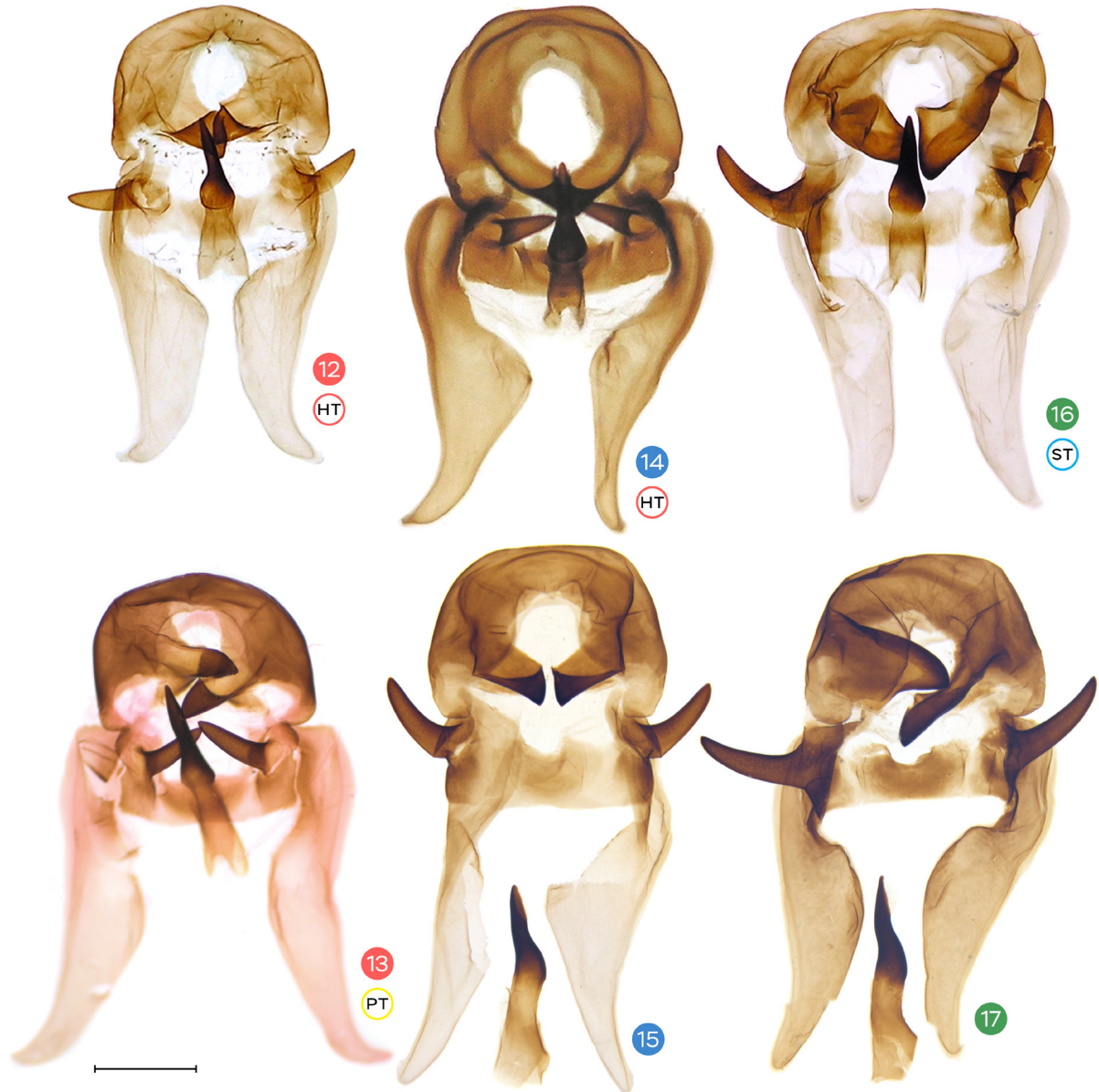




**Figures 7–11.** Adults of *Gastroplakaeis* spp. 7–8. *G. epipolia*. 7. Cameroon, Efoulan, GS 2008-06 (CMNH). 8. DRC, Ekongo camp, GS Lasio 0720 (CGM). 9–11. *G. greyi*. 9. Gabon, Ogooué River, GS 2008-11 (CMNH). 10. Gabon, Ogooué River (CMNH). 11. DRC, Ekongo camp, GS Lasio 0724 (CGM). Scale bar – 1 cm. Photos © A.M. Prozorov (8, 11) & V. V. Zolotuhin (7, 9–10).

postmedial lines, black discal spot with greyish outer contour, and reddish brown ziczac subterminal line. Cilia brown and greyish. *Hindwing* somewhat oval with wavy outer margin. Background colour brown with scattered greyish scales everywhere apart from basal and anal area where it is orange, veins also may be covered with orange scales. Cilia greyish. *Abdomen*. Dorsally with orange and black stripes, tip greyish or straw, getting brown distally. *Genitalia* (Figs 12–13). Tegumen helmet-like. Socii cone-shaped, getting harder sclerotized distally. Vinculum medially split into a pair of elongated somewhat

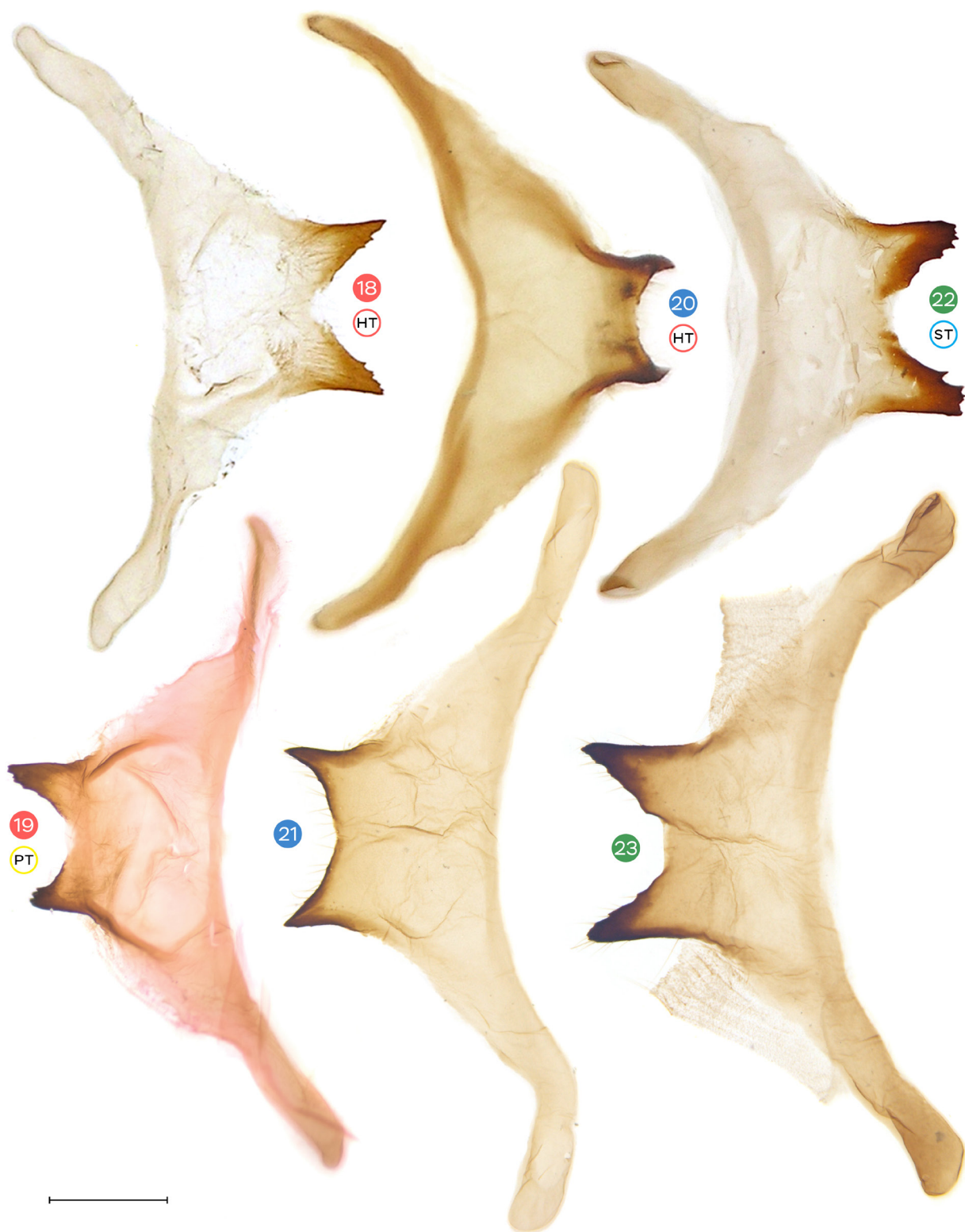
triangular projections. Valvae short, cone-shaped, apically blunt. Juxta an oval plate. Phallus claw-like with tiny vesica opening ventrally. Eighth sternite (Figs 18–19) is trapezoid with two big dents and smaller denticles along distal margin, laterobasal apodemes long. **Female** (Fig. 5). Externally similar to male, but overall larger in size (forewing length is 41 mm), has shorter rami, broader forewings, darker hindwings, and lacks black stripes on abdomen dorsally. *Genitalia* not studied.



**Figures 12–17.** Clasper apparatuses of *Gastroplakaeis* spp. **12–13.** *G. jaredkrameri*. **12.** Ipassa Makokou Biosphere Reserve, GS 2011-005 (MNH). **13.** DRC, 17 km N Kisangani, GS 29024 (CGM). **14–15.** *G. epipolia*. **14.** Cameroon, Efoulan, GS 2008-06 (CMNH). **15.** DRC, Ekongo camp, GS Lasio 0720 (CGM). **16–17.** *G. greyi*. **16.** Gabon, Ogooué River, GS 2008-11 (CMNH). **17.** DRC, Ekongo camp, GS Lasio 0724 (CGM). Scale bar – 1 mm. Photos © A.M. Prozorov (13, 15, 17) & V. V. Zolotuhin (12, 14, 16).

**Note on the female.** As indicated by the single label on the female specimen (Fig. 5), it was collected by Dr. A. C. Good in the valley of the Ogooué River, in Gabon (Holland 1893), but mistakenly suggested that it is the type female of *G. forficulatus* that was described from Accra, Ghana, in 1887, six years before.





**Figures 18–23.** The eight sternites of *Gastroplakaeis* spp. **18–19.** *G. jaredkrameri*. **18.** Ipassa Makokou Biosphere reserve, GS 2011-005 (MNH). **19.** DRC, 17 km N Kisangani, GS 29024 (CGM). **20–21.** *G. epipolia*. **20.** Cameroon, Efoulan, GS 2008-06 (CMNH). **21.** DRC, Ekongo camp, GS Lasio 0720 (CGM). **22–23.** *G. greyi*. **22.** Gabon, Ogooué River, GS 2008-11 (CMNH). **23.** DRC, Ekongo camp, GS Lasio 0724 (CGM). Scale bar – 1 mm. Photos © A.M. Prozorov (**19, 21, 23**) & V. V. Zolotuhin (**18, 20, 22**).

**Distribution** (Fig. 6) and **bionomics.** The species was collected in January–March, May, and October from the altitudes between 450 and 1470 m within the following ecoregions: Cameroon

Highlands forests, Northwest and Northeast Congolian lowland forests (Olson *et al.* 2001, Dinerstein *et al.* 2017).

**Etymology.** This new species is dedicated in the loving memory of Jared Kramer. He was an outdoor enthusiast who never got cold, enjoyed hiking in the snow in his shorts, and ice skating on frozen lakes, especially Lake Surprise. Jared excelled in hockey and had an eye for flair. He designed and created hats and accessories, often upcycling materials to create one-of-a-kind nostalgia pieces. Jared was a proud father to Heath and a devoted husband to Ursula; he is missed by many.

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