

A new species of the genus *Otroeda* Walker, 1854 from West Africa (Lepidoptera, Erebidæ, Lymantriinae)

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Summary. A new species of the Lymantriinae genus *Otroeda* Walker, 1854, *Otroeda smithi* n. sp. is described from West Africa based on specimens from Wologizi Mts in Liberia, Ankasa in Ghana and Diécké forest in Guinea. The new species is closely related to *Otroeda cafra* (Drury, 1782) based on their genitalia configuration, but externally similar to *Otroeda nerina* (Drury, 1782) and *Otroeda jonesi* (Sharpe, 1891). Comparative figures of adults and genitalia are provided.

Résumé. Une nouvelle espèce de Lymantriinae du genre *Otroeda* Walker, 1854, *Otroeda smithi* n. sp. est décrite d'après des exemplaires provenant d'Afrique occidentale, de Wologizi Mts au Liberia, d'Ankasa au Ghana et de la Forêt de Diécké en Guinée. D'après les armures génitales, la nouvelle espèce est plutôt parente d'*Otroeda cafra* (Drury, 1782), alors que du point de vue externe, elle ressemble plus à *Otroeda nerina* (Drury, 1782) ou à *Otroeda jonesi* (Sharpe, 1891). Des figures comparatives des adultes et des armures génitales des différentes espèces sont fournies.

Keywords. Lepidoptera, Noctuoidea, Erebidæ, Lymantriinae, *Otroeda*, West Africa, Liberia, Ghana, Guinea, new species, taxonomy.

Acronyms

ANHRT: African Natural History Research Trust, Leominster, U.K., NHMUK: The Natural History Museum, London, U.K., LG: genitalia slides prepared by Gyula M. László

Introduction

The genus *Otroeda* Walker, 1854 is one of the most spectacular moth genera in the Afrotropics comprising eye-catching large species with highly characteristic triangular wing shapes and conspicuous wing patterns reminiscent of certain butterfly species (e.g. *Charaxes lydiae* Holland, 1917 or the female of *Cymothoe beckeri* (Herrich-Schäffer, 1858)). Owing to their peculiar external appearance, the taxonomy of *Otroeda* is considered to be well known although the most recent comprehensive study on the genus was published nearly a hundred years ago (JORDAN, 1924). It is, however, in need of revision using modern taxonomic methods and the knowledge of the distribution of the taxa requires updating.

In the course of the identification of the *Otroeda* material preserved in the holdings of ANHRT and in the research collection of the senior author, a series of a conspicuously dark coloured *Otroeda* species reminiscent of *Otroeda nerina* (Drury, 1782) and *Otroeda jonesi* (Sharpe, 1891), but with markedly different wing pattern and wing shape was found. The peculiar specimens were collected in Liberia, Ghana and Guinea occurring sympatrically with *O. nerina*. Dissection of the genitalia of the specimens revealed their surprisingly close taxonomic relationship to the externally strikingly different, rather widespread species, *Otroeda cafra* (Drury, 1782). As there are no other species with similar habitus and genital morphology known in the genus, the species is described here as new to science, ***Otroeda smithi* n. sp.**

Materials and methods

The genital apparatuses were dissected, stained with Eosin red and mounted in Euparal on microscope slides applying standard methods of preparation (LAFONTAINE & MIKKOLA, 1987). Photos of adults were taken using either a Nikon D90 SLR camera equipped with Nikkor AF Micro 60 mm lens or a Canon EOS 700D equipped with a 18-55 mm lens. Genitalia were photographed using a Canon EOS 700D camera mounted on a Wild M7A stereomicroscope.

Description of the new species

***Otroeda smithi* n. sp.** (Figs 1-3, 7-9, 13-14)

Holotype: male, "Liberia, 865m, Lofa county, Wologizi Mts, Ridge Camp 8°07'10"N, 9°57'11"W, 24-29.xi.2017 Light Trap (blended bulb 250W), Aristophanous, M., Sáfián, Sz., Simonics, G. & Smith, L. leg. ANHRT:2017.33", unique number: ANHRTUK 00019973, slide No.: LG 4943 (coll. ANHRT) (**Figs 1, 7 & 13**). **Paratypes:** Ghana. 1 male, Ankasa, Western Region, III-2000, leg. E. & C. Joly, slide No.: LG 5226 ([barcode number] CTBB-2474), in coll. Th. Bouyer, (**Figs 3, 9 & 14**). Guinea. 4 males, Guinée Conakry, Ft classée de Diécké, 14/26-III-2003, [leg.] E. Vingerhoedt & Ph. Léonard, slide No.: LG 5227 ([barcode number] BC-TB3795 and BC-TB3796 : **figs 2 & 9**), in coll. Th. Bouyer.

Diagnosis

Otroeda smithi sp. n. resembles externally *O. nerina* (Drury, 1782) (Figs 4, 10) and *O. jonesi* (Sharpe, 1891) (Figs 5, 11) but is distinguished by the slightly, but noticeably concave forewing outer margin (which is straight in the other species) and the fewer whitish submarginal patches (there are two patches in the medial section and one near the apex in the new species, whereas there is a row of six submarginal patches in the other species). Furthermore, the M and CuA veins of the hindwing are highlighted in bright orange, while the hindwing veins are not highlighted in *O. nerina* and *O.*

jonesi. The differences between *O. smithi* and the two similar species are perhaps most clearly expressed in the pattern of the hindwing underside. The new species has a considerably smaller orange or creamy-white area variegated with dark greyish brown longitudinal streaks between the veins in the basal half and narrow, anteriorly rounded, blackish brown patches in the subterminal area between veins M2 and CuA2, lacking white subterminal patches. The hindwing underside of *O. nerina* is densely suffused with pale greyish brown scales in the basal area and uniformly orange in the medial area while in *O. jonesi* it is pale whitish grey in its anterior three-quarters with an orange area in the posterior quarter. A row of conspicuous, ovoid whitish subterminal patches is also present in *O. nerina* and *O. jonesi*.

Despite the external similarity, the male genital morphology of *O. smithi* (Figs 13 & 14) suggests no close affinity to either *O. nerina* or *O. jonesi* (Figs 15 & 16) based on its robust, somewhat trunk-like uncus and strongly reduced saccular process (the other species have much shorter and slimmer unci and well-developed saccular processes).

The configuration of the male genitalia suggests *O. smithi* is closely related to the externally strikingly different *O. cafra* (Drury, 1782) (Fig. 17), both species possessing a similarly robust uncus and reduced saccular process of the valva. The new species however has a somewhat thicker uncus and a slightly shorter and basally broader valva bearing a very short, rounded, crest-like saccular lobe (in *O. cafra* the saccular lobe is lacking or is represented by a short wrinkle only). The aedeagus of *O. smithi* (Figs 13c & 14c) is somewhat longer with a wider, straight caecum penis (that is conspicuously curved in its congener), with the everted vesica displaying considerably longer subbasal diverticula and much smaller medial sclerotization compared to those of *O. cafra* (Fig. 17c). The 8th tergite of the new species (Figs 13b & 14b) bears a markedly slimmer, apically less curved sclerotized medio-distal process compared to that of *O. cafra* (Fig. 17b).

The female is unknown.

Description of male:

Forewing length 44-53 mm.

Antenna bipectinate, rami rather long at base, somewhat longer in the medial section, suddenly shortening in the apical section, blackish brown.

Head relatively small, labial palps short, porrect, straight, apically pointed, dorsally and laterally blackish, ventrally whitish; frons and vertex black; compound eyes relatively small, globular. Thorax blackish dorsally with some whitish suffusion in the medial part of collar and inner margin of tegulae; ventral side of thorax covered densely by bright brownish orange hair scales; abdomen blackish brown dorsally, yellowish brown laterally, bright orange brown ventrally with blackish patches of various sizes at the anterior margin

of each segments. Legs blackish, with a short whitish section at the distal end of each segment.

Forewing long and broad, rather triangular, basal half of costal margin straight, then evenly arched towards rounded apex, outer margin slightly concave, ventral margin almost straight. Forewing ground colour blackish brown, veins A, CuA and M3 covered by whitish-cream scales; medial area with a relatively broad, pale greyish white elongate band between veins Sc and distal fifth of CuA2 covering latter vein almost in its full length. Postmedial area with an elongate, oblique subcostal whitish or creamy patch, bright and broad between veins Sc and M2, then faded and tapered, connected by a sparse whitish suffusion to the ventral submarginal patch. Submarginal area with three whitish patches, the ventral one the largest in size, rounded, bright white, situated between veins CuA1 and M3, the medial patch much smaller, indistinct, of irregular shape, situated between veins M3 and M2, and the dorsal patch ovoid, bright whitish, situated subapically. Terminal area and short ciliae uniformly black.

Hindwing paler than forewing, dark brownish grey, terminal area and ciliae uniformly blackish; Rs, M1 and A veins covered by creamy-orange scales, M and Cu veins highlighted by bright orange or yellowish scales; submarginal area with a series of ovoidal orange or yellowish patches between veins.

Forewing underside ground colour somewhat paler than that of upperside with elements of wing pattern markedly larger than on upperside. Underside of hindwing dark blackish brown with extensive orange or off white area between veins Rs and CuA2 variegated by relatively broad, longitudinal, dark greyish brown streaks in the basal half of hindwing; orange area interrupted by narrow, anteriorly rounded, blackish brown submarginal patches between veins M2 and CuA2; submarginal area without white subterminal patches.

Male genitalia (Figs 13 & 14)

Uncus robust, projecting ventrad, heavily sclerotized, broad at base, rather long, slightly dilated medially, apically bifid with two short, more or less quadrangular lobes with rounded corners; tegumen short, rather broad, apically rounded; valva short, broad at base, costal margin straight in its proximal two-thirds, then angled dorsad, apically quadrangular with a short, triangular crest projecting ventrad; ventral valval margin straight in its basal third, then angled dorsad, rendering distal section of valva to suddenly taper towards its quadrangular apex; sacculus narrow, running along whole ventral margin, with a very short, elongate, rounded crest-like saccular lobe medially, projecting ventrad; fultura inferior rather large, distal margin strongly sclerotized, medio-distally slightly laced; vinculum rather short, broadly rounded. Aedeagus very short, caecum penis straight, apically rounded; ventral margin of aedeagus arcuate, without carinal process; ostium vesicae conspicuously wide, stretching through the two-third length of aedeagus. Vesica membranous, extremely thick at base, very short with two elongate, finger-like subbasal diverticula projecting posteriorly near the apex of aedeagus and a short, sack-like anterior diverticulum near the ostium ducti ejaculatorii of aedeagus; medial section of vesica with a small, but heavily sclerotized amorphous patch. Eighth tergite with an elongate-triangular sclerotization medially, continued in a heavily sclerotized, medium long, apically slightly curved and pointed, claw-like process overhanging the distal margin of the segment; eighth sternite with a conspicuous, broad, U-shaped sclerotization.

Derivatio nominis

The new species is dedicated to Mr Richard SMITH, founder and director of the African Natural History Research Trust, whose efforts in running a research institute and museum as well as organising extensive entomological fieldwork projects in Sub-Saharan Africa has and will result in an immense contribution to the knowledge of the taxonomy, biogeography and phylogeny of Afrotropical insects.

Distribution

The apparently very rare *Otroeda smithi* is known only from the Wologizi Mts in Liberia, Ankasa National Park in West Ghana and Diécké Forest in Eastern Guinea. It is possibly a species restricted to the Upper Guinean Forests.

Acknowledgements

The authors are grateful to Alberto ZILLI and Geoff MARTIN (NHMUK) for the opportunity to study the *Otroeda* type material of the NHMUK, to Eric VINGERHOEDT, Philippe LÉONARD and Claude & Eric JOLY who kindly provided the material in the first author's collection and to Hitoshi TAKANO (ANHRT) for the linguistic corrections to the manuscript.

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Specimen's data's of additional material used on the plates.

Figs 4, 10 & 15. *Otroeda nerina* (Drury, 1782), Ivory Coast, 174m, Tai NP., Tai Research Station, (SRET), 05°50'00"N, 07°20'32.0W, 25.III.-17.IV.2017, General Collecting, Aristophanous, A., Aristophanous, M., Geiser, M., Moretto, P. leg. ANHRT:2017.25, in coll. ANHRT. **Figs 5, 11 & 16.** *Otroeda jonesi* (Sharpe, 1891), Gabon, 430m, Mikongo (Rougier), Monts de Cristal (Secondary Forest), 0°29'47"N, 11°10'42"E, 28.vii.-12.viii.2019, Gen. Coll., Albert, J-L., Aristophanous, M., Bie Mba, J., Dérozier, V., Moretto, P. leg., ANHRT:2019.17, genitalia slide No.: LG 5228, in coll. ANHRT. **Figs 6, 12 & 17.** *Otroeda cafra* (Drury, 1782), Liberia, 168m, Sinoe County, Pellokon Town

(clinic) 5°40'43"N, 8°35'26"W, 22.i.2018, Light Trap (Blended bulb 250W), Geiser, M., Sáfián, Sz., Simonics, G. leg., ANHRT:2017.33, in coll. ANHRT.

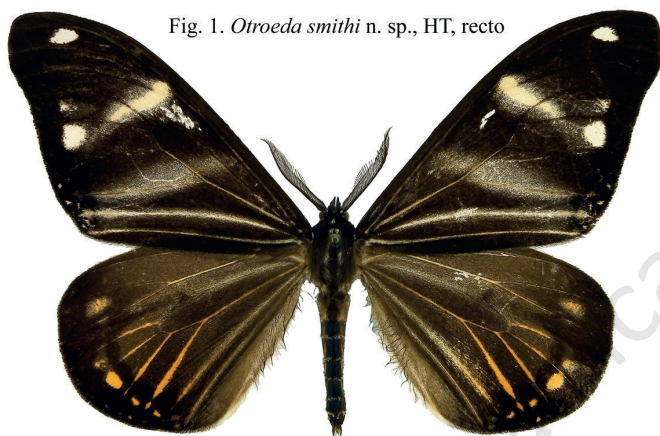


Fig. 1. *Oteroeda smithi* n. sp., HT, recto



Fig. 2. *Oteroeda smithi* n. sp.
PT, recto (Guinea)



Fig. 3. *Oteroeda smithi* n. sp.
PT, recto (Ghana)

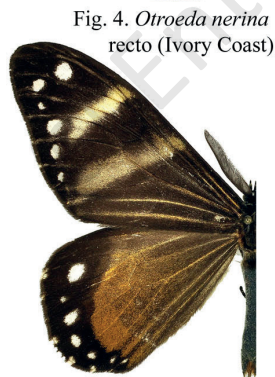


Fig. 4. *Oteroeda nerina*
recto (Ivory Coast)



Fig. 5. *Oteroeda jonasi*
recto (Gabon)



Fig. 16. *Oteroeda cafra*
recto (Ivory Coast)

Figs 1-6. *Oteroeda* species (recto) (Photos 1, 4, 5 & 6: G. László, photos 2 & 3: Th. Bouyer) (Life size)

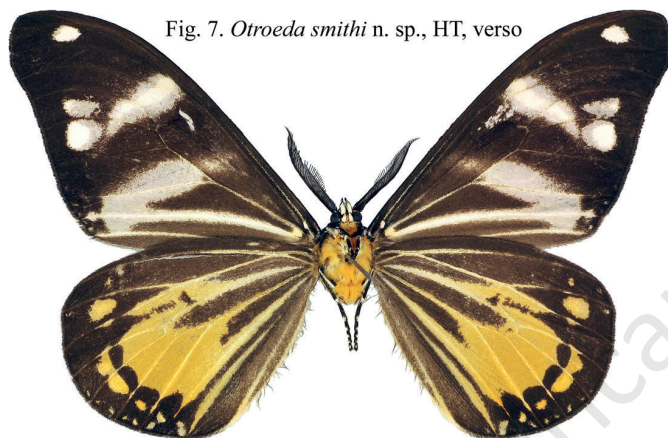


Fig. 7. *Otroeda smithi* n. sp., HT, verso



Fig. 8. *Otroeda smithi* n. sp.
PT, verso (Guinea)

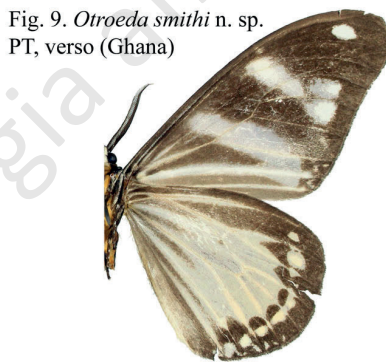


Fig. 9. *Otroeda smithi* n. sp.
PT, verso (Ghana)



Fig. 10. *Otroeda nerina*
verso (Ivory Coast)



Fig. 11. *Otroeda jonasi*
verso (Gabon)



Fig. 12. *Otroeda cafra*
verso (Ivory Coast)



Figs 13-17. *Otroeda* species, genital armature, a = genitalia without aedeagus, b = 8th tergite and sternite, c = aedeagus, lateral view (Photos: G. László)