

<https://zoobank.org/urn:lsid:zoobank.org:pub:1805D51E-5DF7-4156-BB03-90242AFC63CD>

## ***Mutinondia*, a new genus for a new species from Zambia (Lepidoptera: Erebidae: Arctiinae: Lithosiini)**

ANTON V. VOLYNKIN<sup>1,2\*</sup> & HITOSHI TAKANO<sup>1,3</sup>

<sup>1</sup> *The African Natural History Research Trust (ANHRT), Street Court Leominster, Kingsland, HR6 9QA, UK.*

<sup>2</sup> *Altai State University, Lenina Avenue 61, RF-656049, Barnaul, Russia.*

<sup>3</sup> *E-mail: [hitoshi.takano@anhrt.org.uk](mailto:hitoshi.takano@anhrt.org.uk);  <https://orcid.org/0000-0002-2627-4881>*

*\* Corresponding author: [anton@anhrt.org.uk](mailto:anton@anhrt.org.uk);  <https://orcid.org/0000-0001-9447-4925>*

Received 14 November 2023 | Accepted by *V. Pešić*: 6 December 2023 | Published online 7 December 2023.

---

### Abstract

A new footman moth genus *Mutinondia* **gen. n.** is erected to solely include a new species *Mutinondia smithi* **sp. n.** from northeast Zambia. Adults as well as male and female genitalia of the new and similar taxa are illustrated.

**Key words:** footman moth, Lithosiina.

---

### Introduction

Several recent publications devoted to the generic classification of the Afrotropical Lithosiina, or footman moths (Krüger 2015, 2016; Volynkin 2021; Volynkin & László 2021) have highlighted the uncertainty of the generic assignment of a number of groups. During extensive studies of the Lepidoptera fauna of Zambia, a series of an unknown Lithosiina species was collected displaying a peculiar forewing pattern similar to that of the genus *Anaphosia* Hampson, 1903. The genital structures of both sexes of the species however are considerably different from the aforementioned genus as well as all other Old World Lithosiina genera suggesting that it belongs to a distinct lineage that not only represents a hitherto undescribed species but also a new genus, the descriptions of which are provided herein.

### Material and methods

Abbreviations of the depositories used: ANHRT = African Natural History Research Trust (Leominster, United Kingdom); MWM/ZSM = Museum Witt Munich in the Bavarian State Collection of Zoology (Museum Witt München / Zoologische Staatssammlung München, Munich, Germany); OUNHM = Oxford University Museum of Natural History (Oxford, United Kingdom). Other abbreviations used: AV = genitalia slide prepared by A.V. Volynkin; HT = holotype; PT = paratype.

The genitalia were dissected applying standard methods of preparation (Lafontaine & Mikkola 1987; Kononenko 2010), then stained with Eosin Y and embedded 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.

In the type label citations, information provided in quotation marks is transcribed verbatim. Different labels are separated by a slash (“/”) while the different lines of the same label are separated by an upright slash (“|”).

## Results

### Genus *Mutinondia* gen. n.

<https://zoobank.org/urn:lsid:zoobank.org:act:9A9CABBC-F4FC-43DE-BDE7-3AE4B73987A6>

Type species: *Mutinondia smithi* sp. n.

**Diagnosis.** The type species of the new genus (Figs 1, 2) is externally reminiscent of members of the genus *Anaphosia* (type species: *Anaphosia cyanogramma* Hampson, 1903) (Figs 7, 8) but distinguished by its noticeably smaller size, and the narrower forewing lacking the subterminal longitudinal stripes. The male genital capsule of *Mutinondia* gen. n. (Fig. 9) differs clearly from *Anaphosia* (Fig. 10) as well as other known Afrotropical Lithosiina genera in the presence of the apical thorn-shaped process of the costa. Among the known Old World Lithosiina genera, a similar thorn-shaped apical costal process is known in the Asiatic genera *Dubatoloviana* Bucek, 2012 and *Leucanithosia* Volynkin & Černý, 2023, but they are fundamentally different from *Mutinondia* gen. n. in both their external and genital morphology (Figs 3–6, 11, 12, 15, 16). The vesica of *Mutinondia* gen. n. has a distal plate, a feature typical of the subtribes Cistheniina, Clemensiina and most Nudariina but found only in very few Lithosiina genera. Additionally, compared to *Anaphosia*, the male genitalia of the new genus have a more elongate and distally slenderer uncus, a shorter, rectangular, and more weakly sclerotised vinculum (it is V-shaped in *Anaphosia*), and a vesica with a large distal diverticulum bearing a cluster of short but robust triangular cornuti whereas the vesica of *Anaphosia* is globular and bears a cluster of graniculi medially. In the female genitalia, *Mutinondia* gen. n. (Fig. 13) is distinct from *Anaphosia* (Fig. 14) due to the short and broad uncus, which is sclerotised posteriorly and gelatinous with a lateral pocket anteriorly whereas the corresponding structure of *Anaphosia* is elongate and evenly sclerotised. The corpus bursae of the new genus is pyriform, has a sclerotised posterior section, and an anterior section bearing two elliptical signa whereas that of *Anaphosia* is globular with a weakly sclerotised and rugose posterior end bearing two long ribbon-like signa.

**Description. External morphology of adults** (Figs 1, 2). Sexual dimorphism limited: female with somewhat more expressed forewing markings than male. Head ochreous yellow. Antenna blackish, filiform in both sexes. Thorax ochreous yellow. Forewing elongate and narrow, with almost parallel costal and anal margins; outer margin slightly convex. Forewing ground colour creamy-yellow, all margins edged with carbon black. Ante- and postmedial transverse lines broad, slightly oblique, and dilated at anal margin. Forewing cilia carbon black. Hindwing uniform ochreous yellow. Abdomen ochreous yellow. **Male genitalia** (Fig. 9). Uncus elongate and slender, laterally flattened, evenly downcurved, gradually tapered distally and apically pointed. Tegumen with narrow and moderately sclerotised arms fused in posterior quarter. Vinculum equal to tegumen in length, with short and more or less rectangular saccus. Valva lobular, slightly distally dilated. Costa distally dilated and forming short and rounded cucullus-like protrusion bearing short thorn-shaped apical process ventrally. Ventral plate of costa situated medially and directed perpendicularly to the valva axis. Processus distalis plicae broad, semiglobular, and setose. Sacculus narrow, somewhat dilated medially, and with short, upcurved and apically pointed distal process distally not reaching the apical costal process. Juxta weakly sclerotised, shield-like with deep triangular anterior notch. Phallus somewhat shorter than tegumen-vinculum complex, broad and cylindrical, slightly dilated medially, and with short and rounded coecum. Vesica broad, basally curved ventrad, with three large diverticula. Subbasal dorsal diverticulum narrow and conical, weakly granulose basally, directed distally. Subbasal lateral diverticulum sack-like and curved, and directed dorsally. Medial diverticulum broad, with somewhat conical dorsal end, and bearing broad cluster of scobination and numerous short but robust triangular cornuti of various sizes. Distal plate of vesica (basal plate of vesica ejaculatorius) elongate and narrow, distally tapered,

heavily sclerotised. **Female genitalia** (Fig. 13). Papilla analis trapezoidal with rounded corners, weakly setose. Apophyses thin, apophysis posterioris somewhat thinner and ca. twice longer than apophysis anterioris. 8<sup>th</sup> abdominal segment ventrally modified: with two triangular and setose lateral lobes and membranous postvaginal area. 7<sup>th</sup> abdominal segment membranous around ostium bursae. Ostium bursae broad. Ductus bursae short, its posterior section sclerotised and with longer dorsal wall having rugose posterior end slightly protruding into postvaginal area of 8<sup>th</sup> segment. Anterior section of ductus bursae gelatinous and with rounded lateral pocket anteriorly on left side. Corpus bursae pyriform, its posterior, narrower section sclerotised. Anterior section of corpus bursae elliptical, membranous with two elliptical and serrulate signa of different lengths. Appendix bursae originating from posterior section of corpus bursae ventro-laterally, with broad and basally sclerotised, sack-like proximal section, and short and conical membranous distal section curved posteriorly.

**Etymology.** The genus name is derived from the type locality of its type species, Mutinondo Wilderness Area in northeast Zambia. The gender is feminine.



1  
 ANHRTUK 00229302  
 Slide AV7061 ♂  
 A. Volynkin  
 ZAMBIA 1460m  
 Mutinondo Wilderness Area,  
 Mpika, Northern Prov.  
 12°27'06"S, 31°17'30"E  
 14-17.ii.2019 MV Light Trap  
 Derocler, V. Mulvaney, L.,  
 Takano, H. Leg.  
 ANHRT 2019.4

*Mutinondia smithi* sp. n., HT ♂



3  
 MALAYSIA, Pahang distr.  
 Endau Rompin State park  
 Camping by The Kincon River, 50 m  
 2°37'10.4"N, 103°20'10.9"E  
 1.3.2011 - 13.3.2011  
 leg. Karol Bucek

*Dubatoloviana trimacula* ♂



5  
 Slide ZSM Arct.  
 2021-001 ♂  
 A. Volynkin  
 BORNEO  
 SABAH, Mt. Trus Madi  
 6°28'N, 116°21'E  
 900-1000 m,  
 III - IV, 1996  
 leg. local collectors

*Leucanithosia leucanioides* ♂



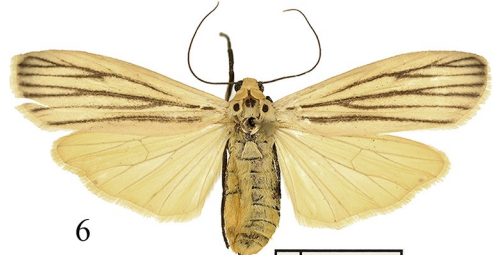
2  
 ANHRTUK 00139563  
 ZAMBIA 1460m  
 Mutinondo Wilderness Area,  
 Mpika, Northern Prov.  
 12°27'06"S, 31°17'30"E  
 14-17.ii.2019 Light Trap  
 Derocler, V. Mulvaney, L.,  
 Takano, H. Leg.  
 ANHRT 2019.4

*Mutinondia smithi* sp. n., PT ♀



4  
 Slide ZSM Arct.  
 2021-096 ♀  
 A. Volynkin  
 MALAYSIA, Pahang distr.  
 Endau Rompin State park  
 Camping by The Kincon River, 50 m  
 2°37'10.4"N, 103°20'10.9"E  
 1.3.2011 - 13.3.2011  
 leg. Karol Bucek

*Dubatoloviana trimacula* ♀



6  
 Slide ZSM Arct.  
 2021-320 ♀  
 A. Volynkin  
 BORNEO  
 SABAH, Mt. Trus Madi  
 6°28'N, 116°21'E  
 900-1000 m,  
 III - IV, 1996  
 leg. local collectors

*Leucanithosia leucanioides* ♀



7  
 ANHRTUK 00201292  
 Slide AV7258 ♀  
 A. Volynkin  
 ZAMBIA 1420m  
 Chilambwe Falls,  
 Kafubu River  
 S09°50'13";E30°43'35"  
 8-9.xi.14 Light Trap  
 leg. Smith, Takano & Oram

*Anaphosia cyanogramma* ♀

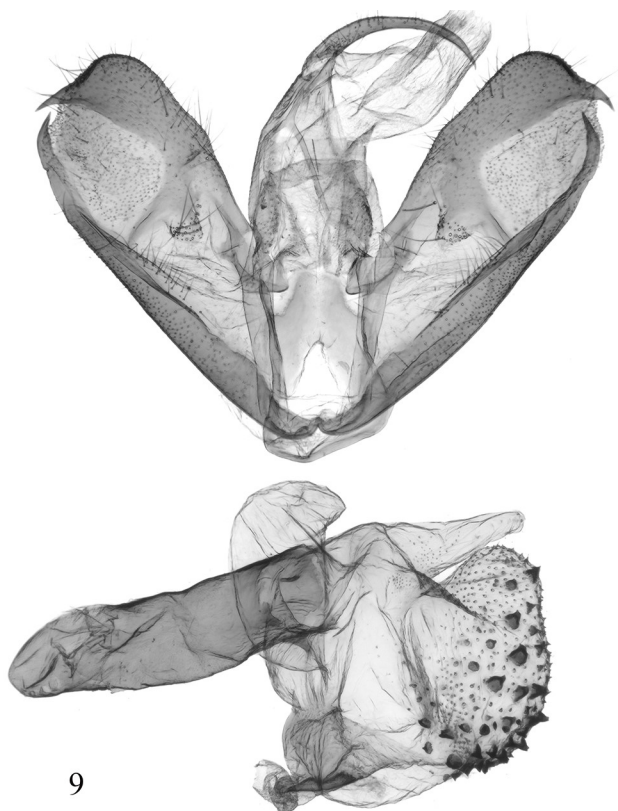


8  
 ANHRT 00088  
 Slide AV7259 ♂  
 A. Volynkin  
 ZAMBIA 1191m  
 Kasanka River Pontoon,  
 Kasanka N.P.  
 S12°34'23";E30°14'05"  
 2-4.xii.12 Light Trap  
 leg. Smith, R & Takano, H

*Anaphosia cyanogramma* ♂

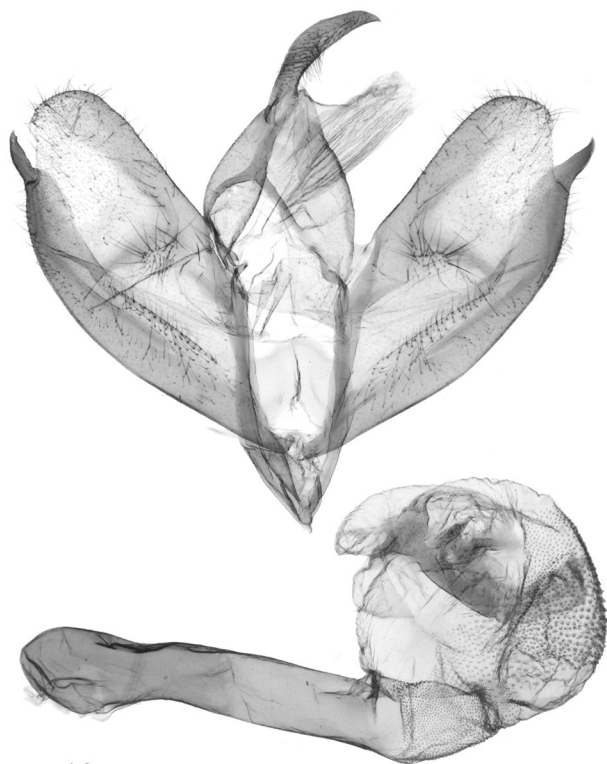
10 mm

**Figures 1–8.** Lithosiina spp., type species of the corresponding genera: adults. Depositories of the specimens: 1, 2, 7 and 8 in ANHRT; 3–6 in MWM/ZSM.



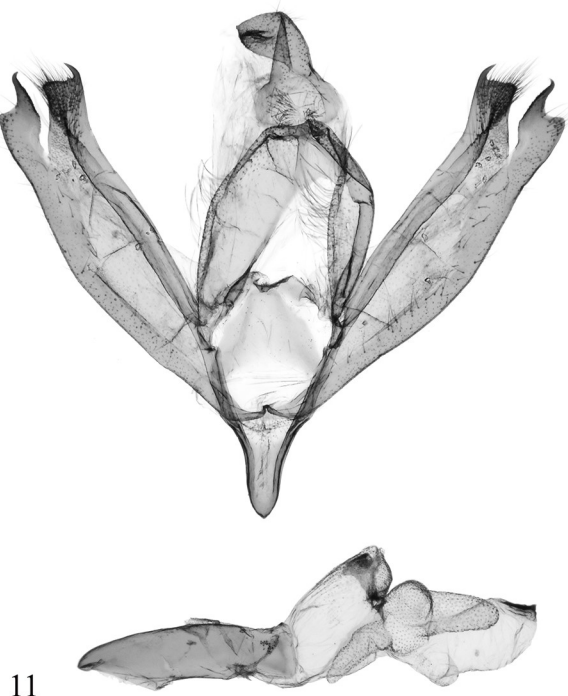
9

*Mutinondia smithi* sp. n., HT  
Zambia, Mutinondo Wilderness, slide AV7061



10

*Anaphosia cyanogramma*  
Zambia, Chilambwe Falls, slide AV7258



11

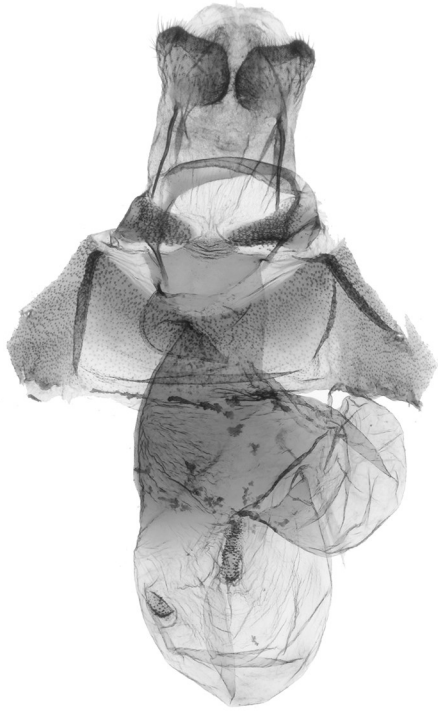
*Dubatoloviana trimacula*  
W Malaysia, Pahang, slide ZSM Arct. 2021-095



12

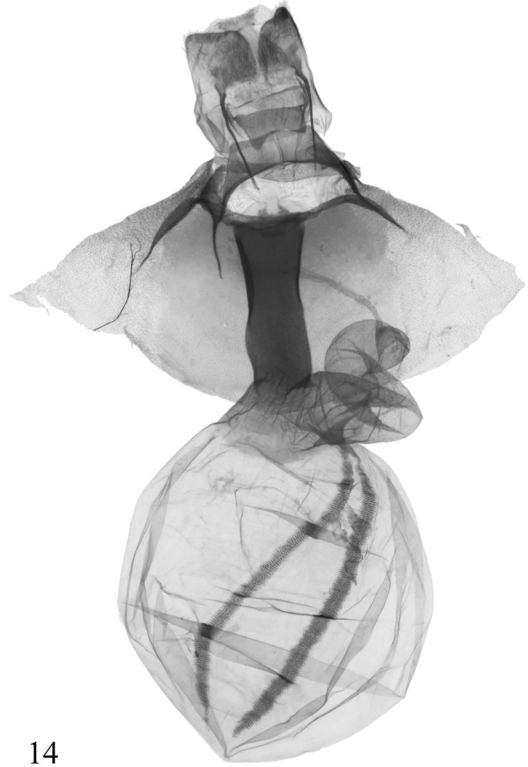
*Leucanithosia leucanioides*  
Malaysia, Borneo Isl., Sabah, slide ZSM Arct. 2021-001

**Figures 9–12.** Lithosiina spp., type species of the corresponding genera: male genitalia. Depositories of the specimens dissected: 9 and 10 in ANHRT; 11 and 12 in MWM/ZSM.



13

*Mutinondia smithi* sp. n., PT  
Zambia, Mutinondo Wilderness, slide AV7146



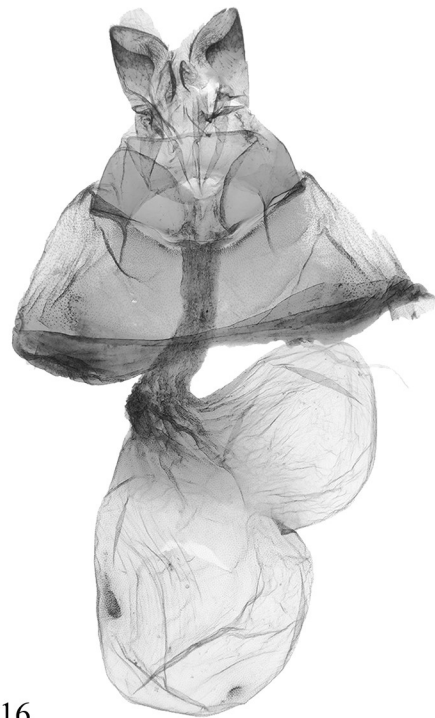
14

*Anaphosia cyanogramma*  
Zambia, Kasanka NP, slide AV7259



15

*Dubatoloviana trimacula*  
W Malaysia, Pahang, slide ZSM Arct. 2021-096



16

*Leucanithosia leucanioides*, LT  
Malaysia, Borneo Isl., Sarawak, slide AV7336

**Figures 13–16.** Lithosiina spp., type species of the corresponding genera: female genitalia. Depositories of the specimens dissected: 13 and 14 in ANHRT; 15 in MWM/ZSM; 16 in OUMNH.

***Mutinondia smithi* sp. n.**

<https://zoobank.org/urn:lsid:zoobank.org:act:808FDFD2-BF0C-4CE0-A142-42F058FAC33A>

(Figs 1, 2, 9, 13)

**Type material. Holotype** (Figs 1, 9): male, “Zambia 1460m | Mutinondo Wilderness Area, | Mpika, Northern Prov. | 12°27'06"S, 31°17'30"E | 14–17.ii.2019 MV Light Trap | Dérozier, V., Mulvaney, L., | Takano, H. Leg. | ANHRT:2019.4” / “ANHRTUK | 00229302” / “Slide | AV7061♂ | A. Volynkin” (ANHRT).

**Paratypes:** 2 males and 17 females, the same data as in the holotype, MV, Actinic and LepiLED Light Traps, gen. prep. No.: AV7146♀ (ANHRT).

**Diagnosis.** The forewing length is 11.5–12.0 mm in both sexes. *Mutinondia smithi* sp. n. is externally vaguely reminiscent of members of the genus *Anaphosia* and the detailed diagnosis is provided above under the new genus description.

**Distribution and bionomics.** The new species is currently known only from its type locality, Mutinondo Wilderness Area in Muchinga Province, Zambia. The site lies on the Mesoproterozoic Irumide Belt to the west of the Luangwa Valley and consists of an undulating landscape of distinctive large granite inselbergs interspersed with undisturbed Miombo woodland and seasonally inundated grassland (Fig. 17). Specimens of the new species were caught at light traps set directly at the summit of or at the foot of these inselbergs and it is possible that the larvae feed on lichens that grow on these exposed outcrops. Moreover, despite sampling at this site for many years in different seasons, the type series was captured during one short sampling event during the rainy season which may suggest it has a short flight period. Numerous endemic species are known from this region including the butterfly *Charaxes mutinondoensis* Collins, Congdon & Bampton, 2017 and it is likely that this new species has a similarly restricted distribution.



**Figure 17.** Mutinondo Wilderness Area, northeast Zambia, type locality of the new species.

**Etymology.** The new species is dedicated to Richard Smith, Chairman of the Board of Trustees, ANHRT, who through organising and undertaking numerous entomological expeditions to Sub-Saharan Africa has enabled the discovery of numerous species new to science. The name is a noun in the genitive case.

### Acknowledgements

The senior author expresses his sincere thanks to the following colleagues for their kind assistance during the visits to their institutions: Axel Hausmann, Mei-Yu Chen, and Ulf Buchsbaum (ZSM) and James Hogan (OUMNH). The second author extends his grateful thanks to Lari and Mike Merrett of Mutinondo Wilderness Area for welcoming him and ANHRT teams on numerous occasions to this special site, and for championing scientific research in this region. The following collaborative partners are thanked for the diverse administrative and technical assistance provided during the field work: Ms Rhoda Kachali (Department of National Parks and Wildlife – ZAWA, Lusaka), Ms Claire Mateke and Ms Martha Imakando (Livingstone Museum, Livingstone). 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.

### References

- Krüger, M. (2015) *Generic classification of Afrotropical footman moths sensu stricto (Lepidoptera: Erebidae: Arctiinae: Lithosiini (partim.))*. *Transvaal Museum Monograph. Vol. 15*. Ditsong National Museum of Natural History, Pretoria, 176 pp.
- Krüger, M (2016) Revision of *Campter* Krüger and description of *Campteropsis*, a related new genus from South Africa (Lepidoptera: Erebidae: Arctiinae: Lithosiini). *Annals of the Ditsong National Museum of Natural History*, 6: 91–108.
- Volynkin, A.V. (2021) *Juxtilema*, a new genus for a new species from Zambia (Lepidoptera: Erebidae: Arctiinae: Lithosiini). *Bonn zoological Bulletin*, 70(2), 377–382.
- Volynkin, A.V. & László, G.M. (2021) *Kruegerilema*, a new genus for a new species endemic to São Tomé Island (Lepidoptera: Erebidae: Arctiinae: Lithosiini). *Bonn zoological Bulletin*, 70(2), 333–338. <https://doi.org/10.20363/BZB-2021.70.2.333>