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Micralarctia dudai, a new species from Socotra Island, Yemen (Lepidoptera: Erebiidae: Arctiinae)

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Received 3 October 2021 | Accepted by V. Pešić: 21 October 2021 | Published online 24 October 2021.

Abstract

A new species of the genus *Micralarctia* Watson, 1989, *Micralarctia dudai* sp. n. is described from Socotra Island. The diagnostic comparison is made with *Micralarctia stictographa* Hacker, 2016 known from mainland Yemen. Adults, male and female genitalia are illustrated.

Key words: Afrotropics, Arctiina, endemic, tiger moth.

Introduction

The Socotra Archipelago located 240 km east of the Horn of Africa and 380 km south of the Arabian Peninsula consists of four islands with Socotra (130 km long and 30–40 km wide) accounting for 95% of the archipelago's land mass. The island has three main geographical features: (1) narrow coastal plains, (2) a limestone plateau extending across most of the island with karst caves, deep valleys and steep escarpments from 300–700 m, and (3) the Haghier Mountains in the center of the island, which rise to 1519 m (Miller & Cope 1996). The characteristics of the natural conditions of Socotra Island was published by Miller & Cope (1996) and Borth *et al.* (2011). The fauna of the Socotra Archipelago is composed of tropical-subtropical arboreal and eremic elements derived from African, Asian or south Arabian origin with numerous endemics (Wranik 1999). More than 260 species of Lepidoptera are known from Socotra (Hacker 1999, 2016; Hausmann 2009; Hacker & Saldaitis 2010, 2011; Borth *et al.* 2011), of which only three species belong to the subfamily Arctiinae of the family Erebiidae: *Utetheisa pulchella* (Linnaeus, 1758), *Utetheisa lotrix socotrensis* Jordan, 1939 and *Brunia sokotrensis* (Hampson, 1900).

Over the course of four entomological expeditions carried out within the framework of “The Lepidoptera of Socotra Islands/Yemen – an integrative study of the fauna for reconstruction of evolutionary scenarios and for determination of conservation needs”, a collaborative project between the Bavarian State

Zoological Collection (Munich, Germany), the Nature Research Centre (Vilnius, Lithuania) and Museum of Socotra Archipelago Conservation & Development Programme (Hadibo, Socotra, Yemen), a short series of an unknown Arctiini species was collected by the senior author of the present paper. The specimens have remained unidentified for a long time having been omitted from the publication devoted to the moth fauna of the Arabian Peninsula (Hacker 2016). Examination of the male genitalia revealed that they belong to the genus *Micralarctia* Watson, 1989 (type species: *Micralarctia punctulatum* (Wallengren, 1860) (Figs 4, 7)), species of which are widespread in continental Africa with one recently described species from mainland Yemen (Watson 1989; Hacker 2016). Having compared the external and genital morphology of the Socotra specimens to the known congeners, a number of distinctive differences were found suggesting that they represent a hitherto undescribed species, the description of which is provided herein.

Material and Methods

Abbreviations of the depositories used: ANHRT = African Natural History Research Trust, Leominster, UK; ASV = collection of Aidas Saldaitis (Vilnius, Lithuania); GMF-B = collection of Günter Müller (Freising, Germany & Bamako, Mali); HH/ZSM = collection of Hermann H. Hacker (Staffelstein, Germany) designated to the Bavarian State Zoological Collection (Zoologische Staatssammlung München, Munich, Germany); WIGJ = World Insect Gallery (Joniškis, Lithuania). Other abbreviations used: AV = genitalia slide prepared by Anton V. Volynkin; HT = holotype; PT = paratype.

The genitalia were dissected and mounted in Euparal on microscope slides. The photographs of adults were taken using a Nikon D3100/AF-S camera equipped with a Nikkor, 18–55 mm lens while the genitalia were imaged using the same camera attached to a microscope with an LM-scope adapter. All photographs were processed using the Adobe Photoshop CC 2018 software.

Description of the new species

Micralarctia dudai sp. n.

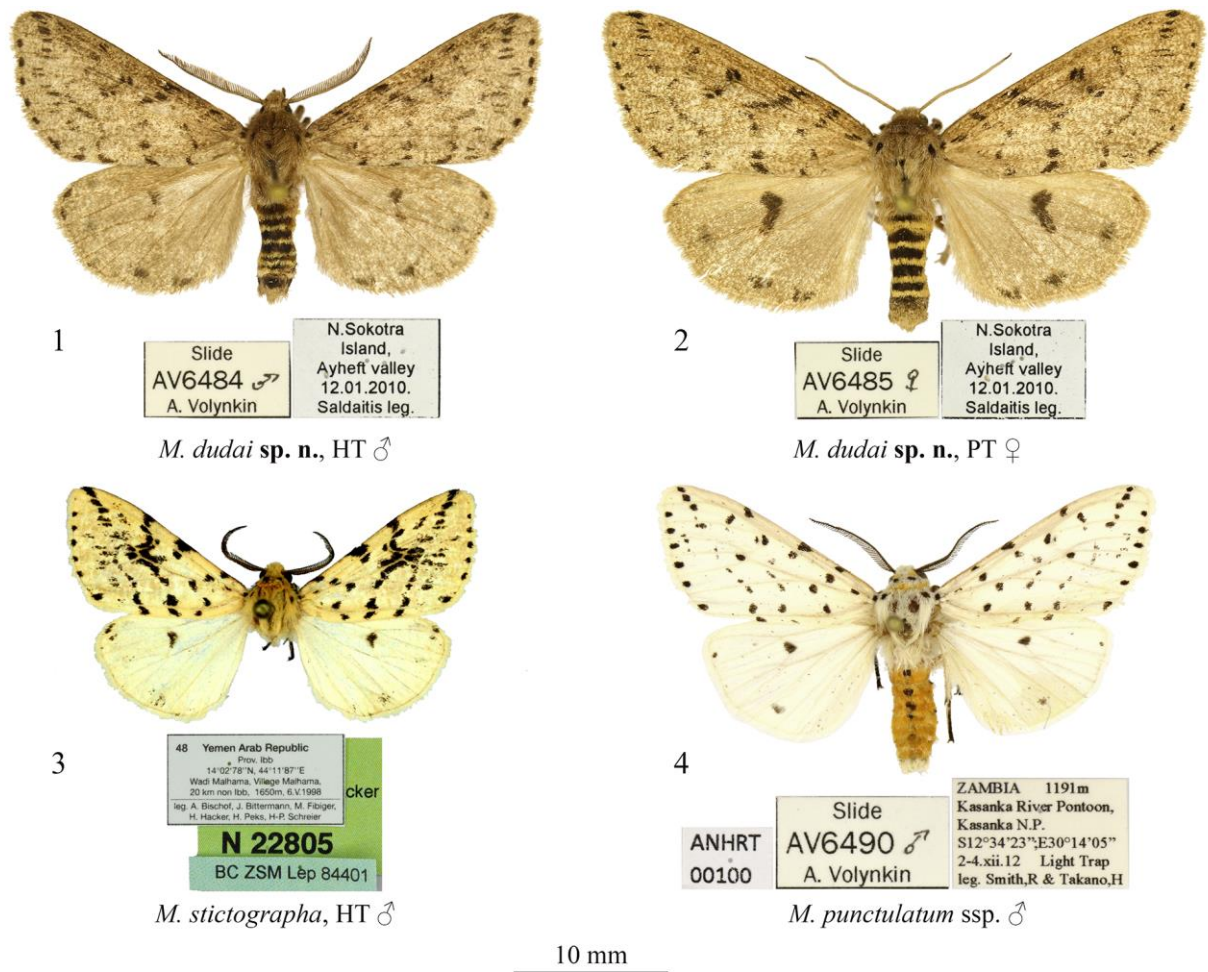
<https://zoobank.org/urn:lsid:zoobank.org:act:DE86CFC3-ABB4-458E-8DD0-DEC72EDA2462>

(Figs 1, 2, 5, 8, 9)

Type material. Holotype (Figs 1, 5): male, “N.Socotra Island, Ayheft valley 12.01.2010. Saldaitis leg.” / “Slide AV6484♂ A. Volynkin” (WIGJ).

Paratypes: YEMEN: 3 males, 1 female, same data as in the holotype, gen. prep. No.: AV6485 (prepared by Volynkin) (female) (ASV, GMF-B & WIGJ); 1 male, N Socotra Island, top of Ayheft valley, 17.i.2010, Saldaitis leg. (GMF-B); 1 male, h-500m, Socotra Isl., Ayhft riv. valley, 25.xi.2008, Saldaitene & Saldaitis leg. (ANHRT); 1 male, NE Socotra Island, Wadi Difarroha, North side, 19.i.2010, Saldaitis leg., gen. prep. No.: Hacker 24735 (ASV); 1 female, E Socotra island, Dishaall loc. (Shey), 16.i.2010, Saldaitis leg., gen. prep. No.: Hacker 24736 (WIGJ).

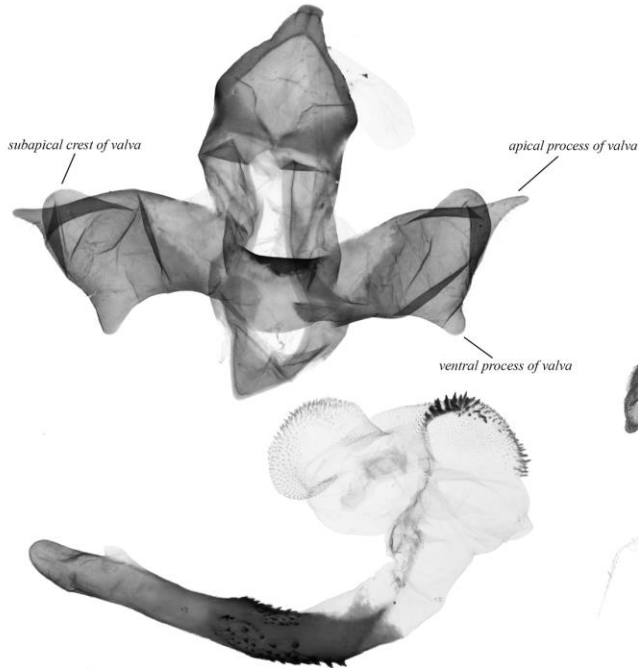
Diagnosis. The new species (Figs 1, 2) clearly differs externally from other congeners (Figs 3, 4; also illustrated by Watson (1989): figs 43–48) in its pale brown body and wings colouration and the more diffuse forewing markings. The male genital capsule of *M. dudai* sp. n. (Fig. 5) is most similar to that of *M. stictographa* Hacker, 2016 (Fig. 6) known from the continental part of Yemen. However, compared to *M. stictographa*, the valva of the new species is wider basally and somewhat more dilated distally, the apical process of the valva is narrower, the ventral process of the valva is somewhat wider, and the subapical crest of the valva is wider and longer. Additionally, the uncus of the new species is somewhat narrower apically than in *M. stictographa*. The phallus of *M. dudai* sp. n. bears somewhat larger spines distally than that of *M. stictographa*. Since the female of *M. stictographa* is unknown, we compare the female genitalia of the new species (Fig. 8) to other species of the genus (illustrated by Watson (1989): figs 126, 132–135). Compared to its congeners, the female genitalia of the new species have a markedly longer ductus bursae and a wider and longer postvaginal plate.



Figures 1–4. *Micralarctia* spp.: adults. Depositories of the specimens: 1 in WIGJ; 2 in GMF-B; 3 in HH/ZSM; 4 in ANHRT.

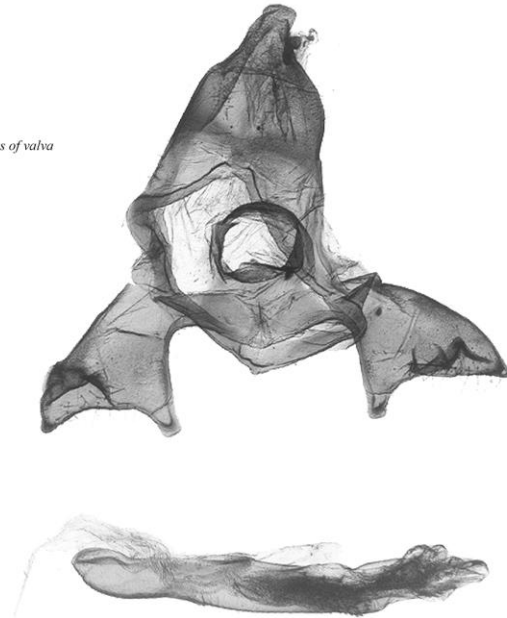
Description. External morphology of adults (Figs 1, 2). Forewing length 15–17 mm in males and 19–20 mm in females. Male antenna bipectinate with short branches, female antenna filiform. Sexual dimorphism limited: female somewhat larger than male and having slightly more distinct wing markings. Head and thorax pale brown. Forewing ground colour pale brown with slight dark brown suffusion. Forewing markings dark brown, diffuse. Basal spot round, small. Antemedial line zigzagged, interrupted into spots of various sizes. Medial line angled on vein Cu, with almost straight posterior section interrupted into tree elongate spots of various lengths. Discal spot consisting of two pairs of short dash-like spots at bases of upper discocellular and M3 veins. Postmedial line smoothly curved outwards between Cu2 and R veins, disappearing at costal margin. Subterminal line zigzagged, interrupted into short longitudinal double dashes on veins. Terminal line interrupted into transverse dashes between veins. Cilia pale brown. Hindwing pale brown, somewhat paler than forewing, with dark brown markings. Discal spot broad, semilunar, medially interrupted in male. Subterminal line interrupted into four diffuse spots of more or less rectangular shape. Terminal line represented by one or two spots at apex. Abdomen dark brown with ochreous rings. **Male genitalia** (Fig. 5). Uncus broad, more or less triangular with convex lateral margins and trapezoid tip, dorso-ventrally swollen and down curved, basally fused with narrow membranous tuba analis. Tegumen short with wide arms. Vinculum equal in length to tegumen, with V-shaped saccus. Valva lobe-like, dilate distally, curved inwards. Distal process of valva elongate, narrowly triangular and apically rounded. Ventral process of valva broad, triangular and apically rounded, curved inwards. Subapical crest broad, rounded. Juxta broad, almost rectangular with somewhat concave posterior and convex anterior margins. Phallus tubular, narrow, with two clusters of short but robust dentation distally. Carina short, triangular. Vesica tubular proximally and sack-like distally, curved dorsally, with cluster of short spine-like cornuti of various sizes medially and semi-globular diverticulum distally bearing spinulose scobination. **Female genitalia** (Fig. 8). Papilla analis

trapezoid with rounded corners, weakly setose. Apophyses elongate and thin, equal in length, apophysis anterioris somewhat wider basally than apophysis posterioris. Ostium bursae broad. Postvaginal plate broad, heavily sclerotised and swollen, with convex posterior margin. Antevaginal plate broad, heavily sclerotised, horseshoe-shaped, with rugose lateral margins fused with 8th abdominal segment. Ductus bursae elongate, dilated posteriorly, dorso-ventrally flattened, heavily sclerotised with thin gelatinous lateral margins. Corpus bursae membranous, subdivided into two sections by medial constriction. Posterior section of corpus bursae sack-like; anterior section teardrop-shaped. Appendix bursae positioned postero-laterally on left side, conical basally, twisted medially and tubular distally, with teardrop-shaped bulla apically.



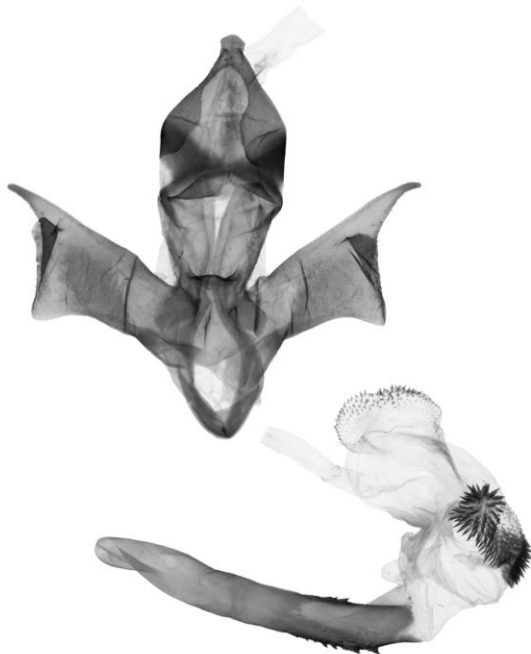
5

M. dudai sp. n., HT
Yemen, Socotra Island, slide AV6482



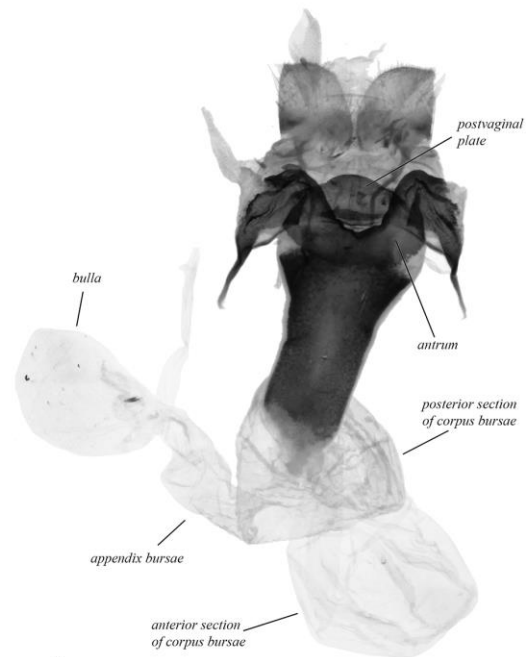
6

M. stictographa HT
Yemen, Idd Prov., slide Hacker 22805



7

M. punctulatum ssp.
Zambia, Kasanka N.P., slide AV6490



8

M. dudai sp. n., PT
Yemen, Socotra Island, slide AV6483

Figures 5–8. *Micralarectia* spp.: male (5–7) and female (8) genitalia. Depositories of the specimens dissected: 5 in WIGJ; 6 in HH/ZSM; 7 in ANHRT; 8 in GMF-B

Distribution. The new species is endemic to Socotra Island where it is local and was found only in three localities with similar vegetation. Most of the specimens were collected in the Ayhft Valley, one of the most fertile localities on Socotra with subtropical rainforest and a species-rich flora comprising ca. 70% of all known species from the island (Fig. 9).



Figure 9. North of Socotra Island, Ayhft Valley, the type locality of *Micralarctia dudai* sp. n. (photo by A. Saldaitis).

Etymology. The species is dedicated to Mr Juozas Dûda, founder and director of the World Insect Gallery (Joniškis, Lithuania).

Acknowledgements

The senior author expresses his sincere thanks to Mr Mohammed Amer, Mr Ahmed Saeid Suliman, Mr Salem Dahag Ali and Mr Fouad Naseeb Saeed Khamees (Museum of Socotra Archipelago Conservation & Development Programme, Hadibo, Socotra, Yemen) for their comprehensive assistance in organising the expeditions to the Socotra Archipelago. The second author thanks the following collaborative partners for administrative and technical assistance provided during ANHRT field work in Zambia: Ms Rhoda Kachali (Department of National Parks and Wildlife, 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.

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