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Cossidae of the Socotra Archipelago (Yemen)

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Abstract

The faunistic composition of the family Cossidae (Lepidoptera) of the Socotra Archipelago is revised. Five species are recognized, including two new species (*Mormogystia brandstetteri* and *Meharia hackeri*), and dubious identifications and records are discussed. Adults and genitalia are illustrated and bionomic details, DNA barcodes and a synonymic checklist for Socotran cossids are provided. A review of their distribution reveals that at least 80 percent of Socotra's cossids are unique to the archipelago, which is renowned for its endemism. A checklist listing all the species from generas *Meharia, Mormogystia*, *Aethalopteryx, Azygophleps*, as well as the synonymy and distribution is provided.

Keywords

Lepidoptera, Cossidae, *Meharia, Mormogystia*, *Aethalopteryx, Azygophleps,* new species, Socotra, Yemen

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Introduction

This paper results from a collaborative project "The Lepidoptera of Socotra Islands/ Yemen – an integrative study of the fauna for reconstruction of evolutionary scenarios and for determination of conservation needs", between the Zoologische Staatssammlung, (München, Germany), the Nature Research Centre (Vilnius, Lithuania) and Museum of Socotra Archipelago Conservation & Development Programme (Hadibo, Socotra, Yemen).

Socotra, which lies 240 km east of the Horn of Africa and 380 km south of the Arabian Peninsula, is a well-known source of material for biogeography and evolution studies – a living laboratory with a high degree of endemism. It was explored by both English (described by Hampson 1899) and Austrian (described by Rebel 1907) natural history expeditions just before the turn of the 20th century, but it remained effectively inaccessible during the 1900s due to its geographic isolation, extreme natural conditions and military concerns. Wranik's 1999 summary of existing natural history knowledge addressed Lepidoptera conservation issues of the Socotra Archipelago, but was based primarily on information gained during those earlier expeditions. Collaboration of one of us (AS) with the SCDP, collecting from late February to early March and November 2008, March 2009 and January provided new data contributing to the understanding of Socotra's Cossidae fauna.

The Socotra Archipelago consists of four islands with Socotra (130 kilometres in length and 30–40 kilometres in width) accounting for 95% of the archipelago's land mass. Socotra, regarded as one of the most alien looking places on earth, 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 to 700 m, and (3) the Haghier Mountains in the centre of the island, which rise to 1,519 m (Miller and Cope 1996)

Socotra is a tropical desert with average highs between 27°C and 34°C and annual rainfall of only 130–170 mm. Rain is more intense in the higher mountains, which form the most important watershed and where many periodical watercourses run to the north and south. Permanent springs can also be found there, especially on the northern side. Otherwise, springs and streams are sporadic relying on rainfall. Climate conditions, rainfalls and major wind systems are dominated by seasonal monsoons of the Indian Ocean with most rain occurring during the Northern Hemisphere winter. The monsoon season causes strong winds and high seas, which cut off the island completely during the time of the southwest monsoon from May to September (Miller and Cope 1996, Wranik 1999).

The Socotra Archipelago is thought to have been part of the Gondwana supercontinent before it detached during the Miocene. In Tertiary times, Socotra was separated as part of a fault block from the African-Arabic tectonic plate and was formed coincident with the Gulf of Aden. As a result of its extremely long isolation, Socotra is of major biogeographical interest and more than one third of all its plants and possibly

animals are found nowhere else. Botanists rank Socotra's flora, including the extraordinary dragon´s blood tree *Dracaena cinnabari*, to be among the most important and endangered island floras of the world. It is generally suggested that the endemic plants and animals are relicts and descendants of ancient flora and fauna, which have survived since the Mesozoic era (Miller and Cope 1996, Wranik 1999).

Socotra Archipelago fauna is composed of tropical-subtropical arboreal and eremic elements derived from African, Asian or south-Arabian and endemic origins (Wranik 1999). No comprehensive investigations of the insular fauna of Socotra are available and ambiguous taxonomic definitions have repressed faunistic analysis and development of species checklists. Wranik (1999) examined a limited number of groups including Odonata in which only one of 20 species is endemic and Saltatoria where over half of about 50 species are endemic. Wranik found Tenebrionidae to have the highest level of endemism: most of about 30 species are endemic, indicating a Somalarabic relationship, while others are may be relicts from a more ancient fauna already extinct on the mainland.

About 250 species of Lepidoptera are currently reported from Socotra in the literature including 30 species of Rhopalocera (Hacker 1999), 89 Noctuidae (Hacker and Saldaitis 2010), over 40 Pyralidae (Hacker 1999), 28 Geometridae (Hausmann 2009) and others from less studied groups. Rebel (1907) suggested that 1/3 of the Lepidoptera fauna of the Socotra Archipelago was endemic, with a dominance of Afrotropical relationships.

We present five Cossidae species from Socotra, excluding *Eremocossus proleuca* (Hampson, 1896) and *Azygophleps inclusa* (Walker, 1856) which were mistakenly attributed to Socotra by Hampson (1903), Rebel (1907) and Hacker (1999). *E. proleuca* which was erroneously synonymized by Wiltshire (1980) as *E. reibellii* (Oberthür, 1876) does not occur on Socotra but was probably confused with one of the two new Cossidae species described in this paper. *Azygophleps inclusa* is distributed only in tropical Africa and differs from the similar *Azygophleps larseni* which is distributed in the Arabian peninsula and Socotra island.

Materials and methods

Material was collected in February through early March and November 2008, March 2009 and January 2010 using artificial light.

DNA barcodes (658 base pairs of Cytochrome Oxidase Subunit I 5' region, (COI-5P) were sequenced by Paul Hebert's laboratory at the University of Guelph for 15 Cossidae specimens.

Abbreviations

LT locus typus (type locality)

Abbreviations of depositories

ASV	private collection of Aidas Saldaitis (Vilnius, Lithuania)
BMNH	Natural History Museum (London, UK)
JBW	private collection of Johann Brandstetter (Winhöring/Kronberg, Germany)
LLE	private collection of Lutz Lehmann (Eisenhüttenstadt, Germany)
MNHN	Muséum National d'Histoire Naturelle (Paris, France)
MWM/ZSM	Museum Thomas Witt (Munich, Germany)/Zoologische Staatssammlung, München (Germany)
NRCV	Nature Research Centre (Vilnius, Lithuania)
RYB	private collection of Roman Yakovlev (Barnaul, Russia)
SCDP	Museum of Socotra Archipelago Conservation & Development Programme

Systematic accounts

Genus *Mormogystia* Schoorl, 1990
http://species-id.net/wiki/Mormogystia

Mormogystia Schoorl, 1990, Zool. Verhandelingen 263: 75–78. Type species – *Cossus reibellii* Oberthür, 1876.

Diagnosis. *Mormogystia* is distinguished from all other Cossidae genus by having large silvery areas on the forewing.

Description. Medium sized, brightly coloured moths. Male antennae bipectinate with very short processes; female antennal pecten much reduced. Large silvery areas on the forewing forming fasciae make this the only Cossidae genus to have such a high contrast pattern. Hindwings are uniform.

Male genitalia. Uncus elongate, with tapering or rounded broad apex; arms of gnathos short, fused to form a medium-size gnathos densely covered with small spines; valvae shovel-shaped, with pronounced sacculus and a large triangular costal projection; transtilla projections short, thick and uncinate; juxta saddle-shaped, with long lateral projections directed upwards; saccus massive, semicircular; aedeagus short, straight, thick; vesica opening located dorsoapically, its edges with short, spiny processes; vesica without cornutus.

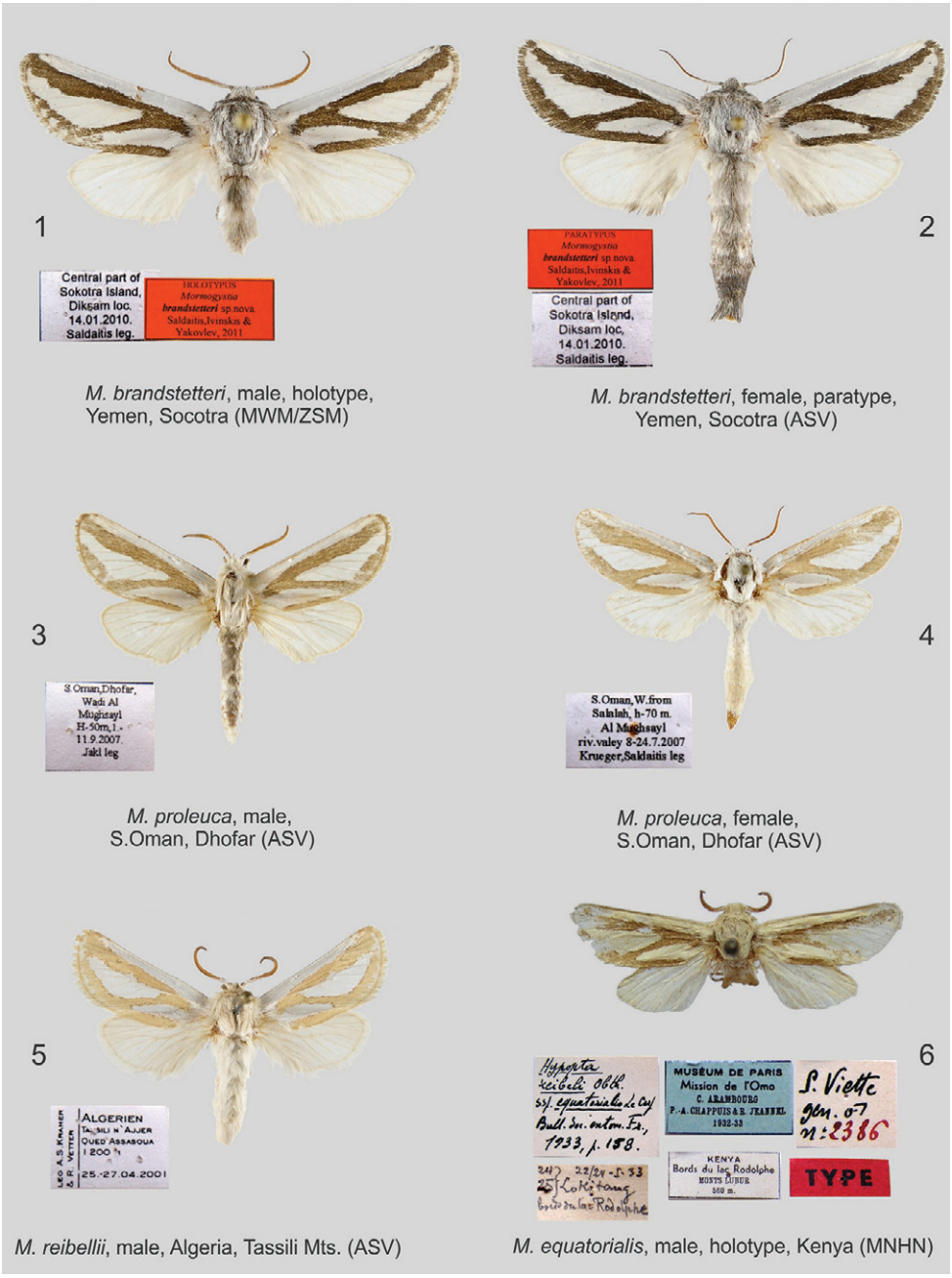
Female genitalia. Short oviductus; papillae anales wide, elliptic; apophyses posteriores ⅓ longer than apophyses anteriores; ostium broad, covered with falciform postvaginal plate; ductus wide, sclerotised; bursa membranous, sack-shaped, without signa.

Remarks. This small genus includes four species distributed in north Africa, Levante, Arabian peninsula and Kenya (Yakovlev 2011).

***Mormogystia brandstetteri* Saldaitis, Ivinskis & Yakovlev sp. n.**
urn:lsid:zoobank.org:act:48E8D1AE-EAD6-4DBD-AA0A-AC40BB375524
http://species-id.net/wiki/Mormogystia_brandstetteri
Figs 1, 2, 21, 27

Type material. Holotype ♂ (Fig. 1), central part of Socotra Island, Diksam loc., 14 January 2010, leg. A. Saldaitis (deposited in MWM/ZSM; slide No. BJ 1524). **Paratypes**: 77 ♂ and ♀ (Fig. 2), with same labels as holotype; Socotra Archipelago, Samha Island W., N 12°09', E 052°59', 23–24 February 2008, leg. A. Saldaitis; Socotra Archipelago, Abd al Kuri Island, Towanie vill. env., N 12°10', E 052°13', 25–27 February 2008, leg. A. Saldaitis; Socotra Island, Di Hamri loc., 1 March 2008, leg. Saldaitis; Socotra Island, Di Hamri loc., 20–21 November 2008, leg. Saldaitiene & Saldaitis; Socotra Island, hills near Hadibu, 21 March 2009, leg. A. Saldaitis; Socotra Island, Diksam canyon, 23 March 2009, leg. A. Saldaitis; W Socotra, Shuab, coast line, mangroves, 24 March 2009, leg. A. Saldaitis; N Socotra Island, Ayhft valley, 22 November 2008, leg. A. Saldaitis; S Socotra Island, Wadi Difarroha South side, 15 January 2010, leg. A. Saldaitis; N Socotra Island, Ayhft valley, 12 January 2010, leg. A. Saldaitis; N Socotra Island, Wadi Kam, 13 January 2010, leg. A. Saldaitis; N Socotra Island, top of Ayhft valley, 17 January 2010, leg. A. Saldaitis; E Socotra Island, sand dunes near Irisseyl loc., 18 January 2010, leg. A. Saldaitis; NE Socotra Island, Wadi Difarroha, North side, 19 January 2010, leg. A. Saldaitis (coll. ASV; JBW; LLE; MWM/ZSM; NRCV; RYB). Slide No. BJ 1532 (female).

Diagnosis. The new species differs from the related species *Mormogystia reibellii* (Oberthür, 1876) (Fig. 5), *M. proleuca* (Hampson in Walsingham et Hampson, 1896) (Figs 3, 4) and *M. equatorialis* (Le Cerf 1933) (Fig. 6) in external appearance, genitalia, DNA and distribution. The new species has a larger wingspan than its congeners: *M. brandstetteri* sp. n. 33–35 mm, *M. reibellii* 27–31 mm, *M. proleuca* 25–29 mm, *M. equatorialis* 26 mm. All species of the genus *Mormogystia* have a similar forewing pattern, but the ground colour of the new species is black as opposed to light ochre, light brown and brown, respectively, for *M. reibellii, M. proleuca* and *M. equatorialis.* The head, thorax and abdomen of *M. brandstetteri* are intense grey compared to light yellow in *M. reibellii* and light yellow and white in *M. proleuca* and *M. equatorialis.* Unlike the other species *M. brandstetteri* has a black costal spot on the ventral hindwing; in *M. reibellii* (Figs 23, 24) and *M. proleuca* (Fig. 22) uncus apically tapering, strongly sclerotised valvae not widening and not forming a straight angle; in *M. brandstetteri* uncus broad, apex of valvae form a straight angle; in M. *reibellii* and *M. proleuca* saccus rounded, apically without denticle, whereas in the new species saccus pointed, apically with a denticle; *M. proleuca* aedeagus at the basal end markedly narrowing, gradually widening towards apex; *M. reibellii* aedeagus of the same width from its middle to apex; in *M. brandstetteri* aedeagus widening at proximal end, gradually tapering towards apex. In the most closely related species, *M. proleuca*, the bursa is apically broader than basally (Fig. 28) unlike in the new species where the corpus bursae is significantly broader.



Figures 1–6. *Mormogystia* spp., adults. **1** *M. brandstetteri* , male, holotype, Yemen, Socotra (MWM/ZSM) **2** *M. brandstetteri,* female, paratype, Yemen, Socotra (ASV) **3** *M. proleuca,* male, S.Oman, Dhofar (ASV) **4** *M. proleuca,* female, S.Oman, Dhofar (ASV) **5** *M. reibellii,* male, Algeria, Tassili Mts. (ASV) **6** *M. equatorialis,* male, holotype, Kenya (MNHN);

Distribution. *M. brandstetteri* is endemic to the Socotra Archipelago while *M. reibellii* is distributed in North Africa and the northern part of the Arabian peninsula, *M. proleuca* is found in the southern part of the peninsula, and *M. equatorialis* is widespread in Kenya. Hampson (1903) and Rebel (1907) believed *M. proleuca* to be endemic to the Socotra Archipelago and later Hacker (1999) reported *M. reibellii* from Socotra, but the new species described herein was probably implied.

Molecular Analysis. While molecular results alone are insufficient to definitively separate *M. brandstetteri* from *M. proleuca*, they help corroborate the morphological evidence. Evolutionary distances using the Kimura two-parameter model for comparing four specimens of *M. brandstetteri* to four *M. proleuca* and to three *M. reibellii* specimens, was at least 1.55% and 5.65%, respectively.

Description. Male: Forewing costal margin length of holotype 15 mm, wingspan 33 mm; mean forewing length of paratypes 16 mm, wingspan 35 mm; head, thorax, abdomen and tegulae grey; antennae bipectinate, ½ the length of forewing; ground colour of forewing black, with white silvery pattern. Three white silvery patches form the pattern: fascia of even width runs along the entire costal margin, median fascia widening medially reaches the outer margin of forewing; lower silver patch originates at basal edge and extends along dorsal wing margin to middle. This patch enclosed by ground colour; adterminal line white; fringe grey. Dorsal surface of forewing greyish-white; costal, outer and dorsal margins greyish-black. Hindwing uniform, white, with greyish black spot at costal margin. **Female** (Fig. 2): Forewing length of allotype 23 mm, wingspan 48 mm; antennae filiform; wing pattern as in males. **Intraspecific variation.** Adterminal line in some specimens missing; contours of silvery spots forming the pattern vary; hindwings grey.

Male genitalia (Fig. 21). Uncus broad, slightly narrower than its length; apex wide, slightly rounded; arms of gnathos long and strong; gnathos very broad, with rounded apex; apex of saccus gradually tapering, with a pointed denticle; valvae symmetrical, with straight margins, gradually widening apically; costal margin with strong and wide sclerotisation; apex flat; arms of transtilla medium sized, strong, denticle-shaped; juxta large, strongly sclerotised, belt-shaped with a small indentation apically and a conspicuous boat-shaped margin at the basal area; aedeagus strong, straight, large, widening at the proximal end; vesica simple, wide, without cornuti.

Female genitalia (Fig. 28). Papilla analis narrow, covered with short, thin setae; apophysis posterioris 1.4 times longer than apophysis anterioris; antevaginal plate belt-shaped, pointed at the ends; ductus bursae sclerotised; corpus bursae shaped like a long narrow sac, not sclerotised; signa absent.

Bionomics and distribution. Both males and females of the new species were strongly attracted to light and were distributed in almost all habitats of Socotra Island as well as the smaller islands of the archipelago – Samha and Abd al Kuri. *Acacia* is a likely food plant for *M. brandstetteri* as larvae of the closely allied species *Mormogystia proleuca* feed on *Acacia* [Hampson, 1896]. Also, the new species is especially abundant in the central part of the island, in deeper canyons or rich oasis-like valleys where for-

ests haven't been cut for fuel like elsewhere on the island. Diksam canyon (Fig. 30), a prime locality *for M. brandstetteri,* contains the following plants: *Acacia pennivenia, Jatropha unicostata, Lycium socotranum, Gnidia socotrana, Buxus hildebrandtii, Croton socotranus, Leucas virgata, Cissus hamaderohensis, Punica protopunica, Ficus vasta, Euphorbia socotrana, Jathropha unicostata, Lycium socotranum, Gnidia socotrana, Buxus hildebrandtii, Trichocalyx* sp.*, Mitolepis intricata, Ballochia* spp.*, Aloe perryi, Adenium obesum, Asparagus africanus, Seddera fastigiata, Aerva lanata, Rhinacanthus scoparius, Levandula nimmoi, Ocimum forskahlei, Cissus hamaderohensis* (Miller and Cope 1996). *M. brandstetteri* flies with several other Socotra Archipelago endemic moths such as *Meharia yakovlevi* Saldaitis & Ivinskis, 2010, *Aethalopteryx diksami* Yakovlev & Saldaitis, 2010, (Cossidae), *Pelosia sokotrensis* (Hampson, 1900), *Siccia butvilai* Saldaitis & Ivinskis, 2008, (Arctiidae), *Cerocala socotrensis* Hampson, 1899, *Agrotis brachypecten* Hampson, 1899, *Leucania diopsis* Hampson, 1905 and *Mythimna sokotrensis* Hreblay, 1996 (Noctuidae).

Etymology. The new species is dedicated to our good friend Johann Brandstetter, an eminent German painter and entomologist.

Genus *Meharia* Chrétien, 1915

http://species-id.net/wiki/Meharia

Meharia Chrétien, 1915, Ann. Soc. Ent. Fr. 84: 367. Type – species: *Meharia incurvariella* Chrétien, 1915.

Synonymy: *Blalia* Rungs, 1943; Rungs, [1943], 1942, Bull. Soc. Sc. Nat. Maroc. 22: 174. Type species – *Blalia vittata* Rungs, [1943].

Diagnosis. *Meharia* is distinguished from all other Cossidae genus by a number of apomorphous characters: the specific "tineoid appearance", the reduction of the lateral processes of the juxta, the specific dorsolateral sclerotization of the asymmetric aedeagus and the specific ribbon – like epiphysis.

Description. These are small to medium sized moths, females larger; eyes naked; male and female antennae bipectinate along their length; proboscis reduced; legs long, slender; foretibia bearing a ribbon-like epiphysis; forewing elongate, rounded on the outer margin; forewing pattern has alternate dark and pale spots and bands transversely; hindwing uniform.

Male genitalia. Simple; uncus unpaired, short, beak-shaped; tegumen massive; arms of gnathos short, slightly broadened distally, fused to form small gnathos; valvae short, broad, with no harpe and processes costally; juxta without lateral processes, simple; saccus protruding backwards, small; aedeagus rather long, slightly curved and asymmetical due to dorsoapical sclerotisation.

Female genitalia. Ovipositor lobes short, slightly acute apically, covered with relatively short, thick bristles, in the shape of triangular sclerites, with long and rather wide apophyses posteriores on the lower part, strongly widening oar-like in

the cranial fourth and bearing a slender membranous-like border; tergite and sternite of the 8th segment fused to form a complete circle; sternite slightly swollen, membranous caudally; tergite strongly elongate, bearing a pair of apophyses anteriores, widening oar-like cranially, approximately as long as ½ the length of apophyses posteriores; opening of ostium strongly protruding cranially, located on membrane between the 7th and 8th segments; ostium membranous, with poorly sclerotized lateral bands; antrum membranous, tube-shaped, 1½ times longer than the 8th tergite, narrowing sharply, separate form membranous ductus bursae; corpus bursae membranous, saccular, without signa.

Remarks. Eleven species of *Meharia* have been reported so far (Yakovlev and Saldaitis 2008), primarily from the deserts and arid mountains of the Western Palearctic and Africa.

***Meharia hackeri* Saldaitis, Ivinskis & Yakovlev sp. n.**
urn:lsid:zoobank.org:act:730024CA-3646-4660-9FBD-C307773D0E94
http://species-id.net/wiki/Meharia_hackeri
Figs 9, 10, 13, 14

Type material. Holotype ♀ (Fig. 9), NE Socotra Island, Wadi Difarroha, North side, 19 January 2010. leg. A. Saldaitis (deposited in MWM/ZSM); (slide No PI 2011/1) **Paratypes**: 3 ♀ (Fig. 10), S Socotra Island, Wadi Difarroha, South side, 15 January 2010. leg. A. Saldaitis; (coll. ASV; MWM/ZSM); (slide No BJ 1523).

Diagnosis. The new species differs from the related species *Meharia acuta* Wiltshire, 1982 (Figs 8, 12) by forewing pattern, DNA and distribution. In *M. acuta,* the basal spot at the costal wing margin is missing. *Meharia hackeri* has a straight basal fascia at the costal wing margin for ¼ the length of forewing and a narrow white fascia, with a wide interruption antemedially and a narrow interruption tornally, running along the entire inner margin. *M. acuta* has no such fascia, but has a wide subterminal band. DNA barcodes clearly separate *M. hackeri* from *M. acuta*. Three identical sequences of *M. hackeri* were compared to those of a single *M. acuta* specimen resulting in a significant 7.48% variation.

M. acuta is distributed in the Arabic peninsula, *M. hackeri* is endemic to Socotra Island.

Description. Female: Forewing costal margin length of holotype 10 mm, wingspan 21 mm; forewing length of paratypes 11 mm, wingspan 22 mm; antennae slightly longer than half the length of forewing; bipectinate, color white, black at base; head and tegular yellowish-white; labial palpi yellowish brown, white at base; ground colour of forewings yellowish-brown with white longitudinal fascia forming wing pattern, basal fascia in the costal area straight, running to ¼ the length of forewing, curved fascia extending medially from inner margin to ⅔ the length of forewing, its extension ends at terminal wing margin, medially the fascia and its interrupted portion in terminal area bordered by dark brown scales with black inserts; narrow white fascia, widely in-

terrupted antemedially and narrowly interrupted tornally, runs along the entire inner margin, cilia yellowish-white, ventral forewing brown; hindwing greyish-yellow, cilia light brown, ventral hindwing brown.

Male genitalia: unknown.

Female genitalia (Figs 13, 14): Papilla analis triangular, covered with short, thin, very long setae; apophysis posterioris about the same length as papilla analis; apophysis anterioris very short, broad, with V-shaped sclerotisation apically; ostium concave; antrum weakly sclerotised basally with a loop forming very narrow ductus bursae; corpus bursae not sclerotised, shaped like a small sac.

Bionomics and distribution. Known only from the central part of Socotra Island. *M. hackeri* is likely endemic to Socotra Island. All specimens were collected in mid-January; *M. hackeri* females were attracted to light and appear to have a very local distribution as the species was discovered only in Difarroha Valley (Fig. 31). The new species was collected in the central part of the country in an oasis-type valley dominated by various tree and shrub species such as: *Jatropha unicostata, Lycium socotranum, Gnidia socotrana, Buxus hildebrandtii, Croton socotranus, Punica protopunica, Ficus vasta, Euphorbia socotrana, Jathropha unicostata, Mitolepis intricata, Aloe perryi, Adenium obesum* (Miller and Cope 1996). It flies with several other Socotra Archipelago endemic moths such as *Meharia yakovlevi* Saldaitis & Ivinskis, 2010, (Cossidae), *Pelosia sokotrensis* (Hampson, 1900), (Arctiidae), *Cerocala socotrensis* Hampson, 1899, *Agrotis brachypecten* Hampson, 1899, *Plecoptera butkevicii* Hacker & Saldaitis, 2010, *Acantholipes canofusca* Hacker & Saldaitis, 2010, *Stenosticta wiltshirei* Hacker, Saldaitis & Ivinskis, 2010 (Noctuidae).

Etymology. The new species name is dedicated to Hermann Hacker, a prominent German lepidopterist, who has contributed much to the investigation of macro-moths of the Arabian peninsula and Africa.

Meharia yakovlevi Saldaitis & Ivinskis, 2010

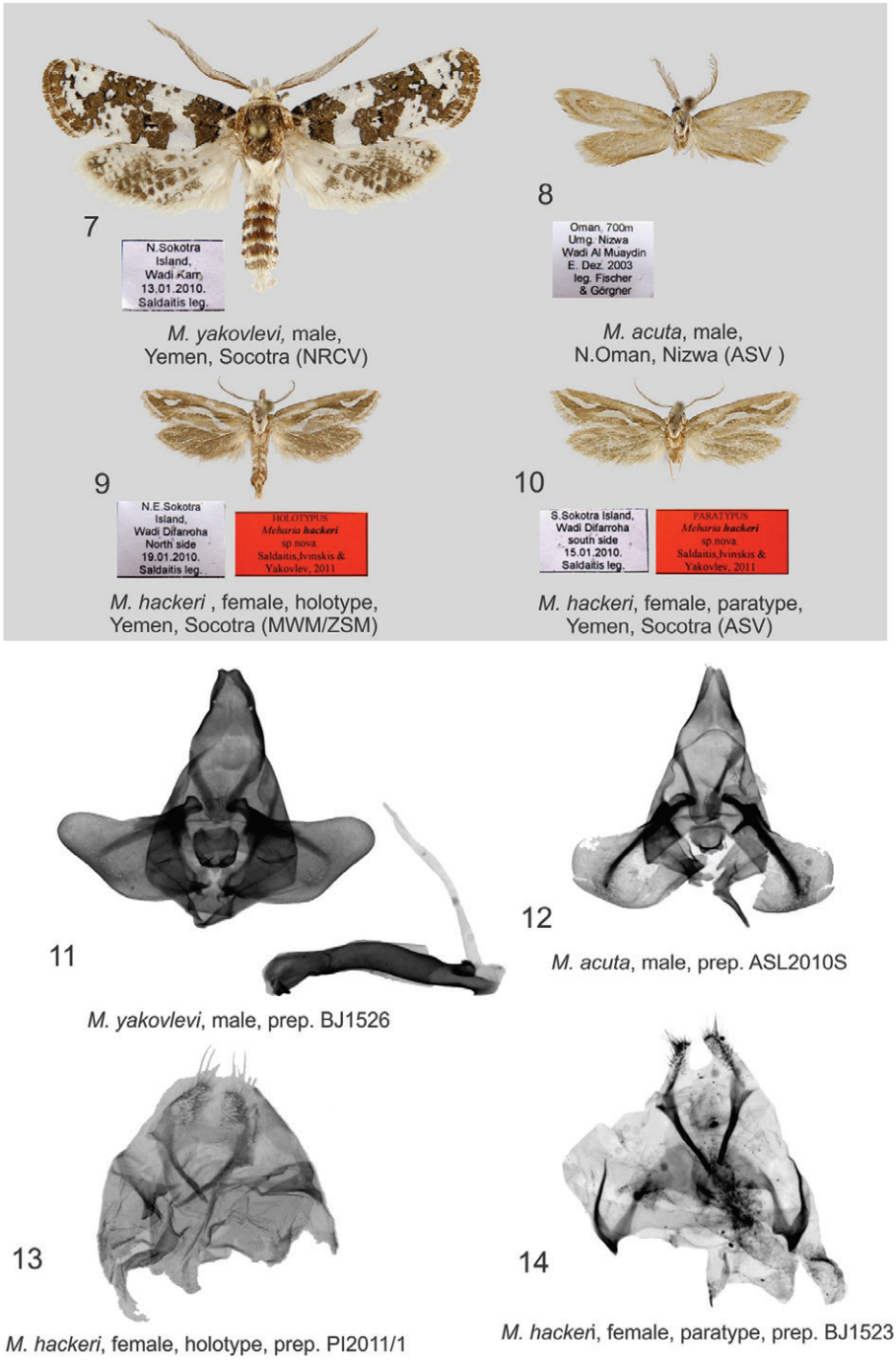
http://species-id.net/wiki/Meharia_yakovlevi

Figs 7, 11

Meharia yakovlevi Saldaitis & Ivinskis, 2010a, Esperiana 15: 379.

Description. Male genitalia (Fig. 11): The authors examined the genital structures of several more male specimens, noting that the valvae are variable in shape being slightly narrower and slightly concave in costal and dorsal areas. The vesica is narrow, long, and almost the same length as aedeagus.

Distribution. This species was described from a single male. This specimen was collected in Hadibu environs, in the hills covered by dense shrubby vegetation dominated by the following plants: *Rhus thyrsiflora, Buxus hildebrandtii, Carphalea obovata, Sterculia africana, Dracaena cinnabari, Rhus thyrsiflora, Carphalea obovata, Tamarindus indica, Commiphora socotrana, C. ornifolia, C. parvifolia, Boswellia ameero, B. elongata, B. bullata, B. dioscorides, B. nana, Punica protopunica, Aca-*



Figures 7–14. *Meharia* spp., adults and genitalia. **7** *M. yakovlevi,* male, Yemen, Socotra (NRCV) **8** *M. acuta,* male, N.Oman, Nizwa (ASV) **9** *M. hackeri ,* female, holotype, Yemen, Socotra (MWM/ZSM) **10** *M. hackeri,* female, paratype, Yemen, Socotra (ASV) **11** *M. yakovlevi,* male, prep. BJ1526 **12** *M. acuta,* male, prep. ASL2010S **13** *M. hackeri,* female, holotype, prep. PI2011/1 **14** *M. hackeri,* female, paratype, prep. BJ1523;

cia pennivenia, Cephalocroton socotranus, Indigofera socotrana, Dirachma socotrana, Allophylus rubifolius, Maerua socotrana, Acridocarpus socotranus, Sterculia africana, Zizyphus spina–christi, Ficus vasta, F. salicifolia, Arthrocarpum gracile, Ormocarpum caeruleum (Miller and Cope 1996). In January 2010, five more specimens were collected (1 ♂, N Socotra Island, Wadi Kam, 13 January 2010, leg. A. Saldaitis (Fig. 7); 2 ♂ central part of Socotra Island, Diksam loc., 14 January 2010, leg. A. Saldaitis; 2 ♂ S Socotra Island, Wadi Difarroha South side, 15 January 2010, leg. A. Saldaitis). *M. yakovlevi* appears to be a very rare and local species showing a slightly higher abundance in the central part of the country with oasis-like valleys and canyons with relict woody vegetation. These habitats were dominated by the following plants: *Jatropha unicostata, Lycium socotranum, Gnidia socotrana, Buxus hildebrandtii, Croton socotranus, Punica protopunica, Ficus vasta, Euphorbia socotrana, Jathropha unicostata, Mitolepis intricata, Aloe perryi, Adenium obesum* (Miller and Cope 1996).

Genus *Aethalopteryx* Schoorl, 1990

http://species-id.net/wiki/Aethalopteryx

Schoorl, 1990, Zool. Verhandelingen 263: 174–175. Type species – *Phragmatoecia atrireta* Hampson, 1910.

Diagnosis. *Aethalopteryx* is distinguished from close *Trismelasmos* Schoorl, 1990, *Acosma* Yakovlev, 2011, *Strigocossus* Houlbert, 1916 and *Azygophleps* Hampson, 1892 genus by having cup-shaped antennae in both sexes, forewings with slight reticulated patterns and reduced arms in males gnathos and particularly genital structure of the females.

Description. Medium sized moths. Male and female antennae cup-shaped; forewing elongate with slight reticular pattern, often with a spot in the costal area and spots in the postdiscal area; hindwing with indistinct reticular pattern.

Male genitalia. Uncus long, thin, basally considerably narrower than width of tegumen; arms of gnathos reduced; tegumen massive; valvae with slightly uneven margins and with rounded apex; saccus massive, semicircular; juxta broad, with wide leaf-shaped lateral processes; aedeagus slightly bent, vesica with a long belt-shaped sclerite forming the projection of lateral aedeagus wall.

Female genitalia. Form short oviductus; papilla analis elongate, gradually narrowing; apophyses posteriores twice the length of apophyses anteriores which are furcate at basal part; ductus membranous, broad, very short; corpus bursae shaped like a long narrow sac, with a star-shaped signum on the lateral surface; bulla located in basal third of bursa on a long membranous ductus.

Remarks. Thirty-four species of *Aethalopteryx* have been reported (Yakovlev 2011), primarily from the east Africa with some distributed elsewhere in Africa or in the Arabian peninsula.

Aethalopteryx diksami Yakovlev & Saldaitis, 2010

http://species-id.net/wiki/Aethalopteryx_diksami
Figs 20, 26

Aethalopteryx diksami Yakovlev & Saldaitis, 2010, Esperiana Memoir 5: 334, Pl. 20: fig. 5.

Description. Male genitalia (Fig. 26). The authors examined several more male specimens and found some variation in the genital structures. Valvae of newly examined specimens were significantly wider; apex rounded; costal margin even; vertical juxta processes not tapering, with obtuse apices; vesica simple, long, tapering, almost the same length as aedeagus.

Distribution. A newly described species, highly local, known only from the central part of Socotra Island from two valleys: the Diksam canyon (Fig. 30) and the Difarroha valley (Fig. 31), which are characterized by the following relict woody vegetation: *Dracaena cinnabari, Buxus hildebrandtii, Croton socotranus* and numerous other endemic plants (Miller and Cope 1996).

Genus *Azygophleps* Hampson, 1892

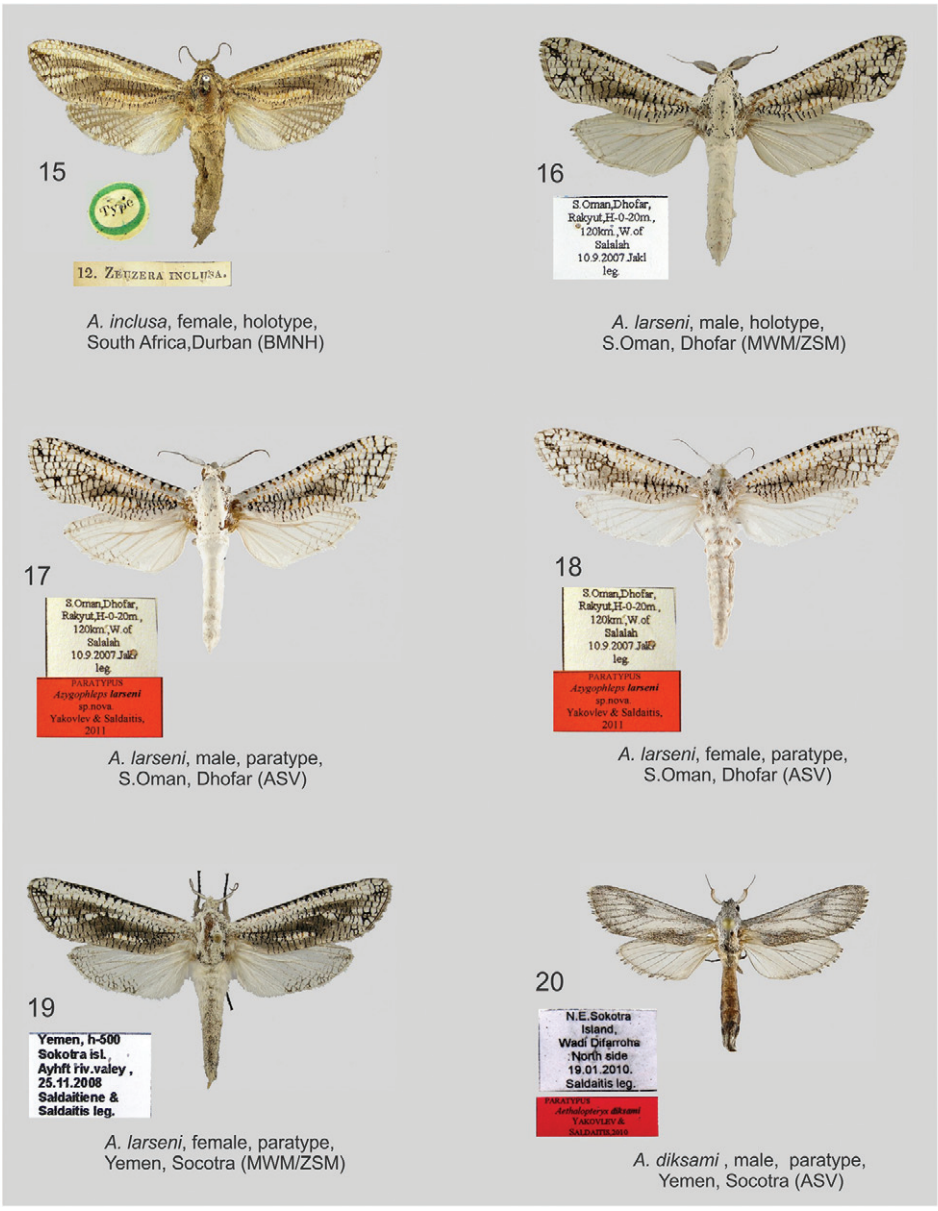
http://species-id.net/wiki/Azygophleps

Azygophleps Hampson, 1892, Fauna Brit. India **1**: 309.Type species – *Hepialis scalaris* Fabricius, 1775.

Synonymy: *Azygophlebs* Aurivillius, 1925, Ergeb. Zweit. Deutsch. Zentral-Afrika-Exped. 1910–1911: 1349; An incorrect subsequent spelling of *Azygophleps* Hampson, 1892.

Diagnosis. *Azygophleps* is distinguished from similar genera such as *Sansara* Yakovlev, 2004, *Strigocossus* Houlbert, 1916 and *Aethalopteryx* Schoorl, 1990 by its females' apically bipectinate antennae, its long forewings rounded at the apex, the abscence of arms in its males' gnathos, its thick aedeagus, and a short, wide ductus and corpus with a small star-like signum in its females.

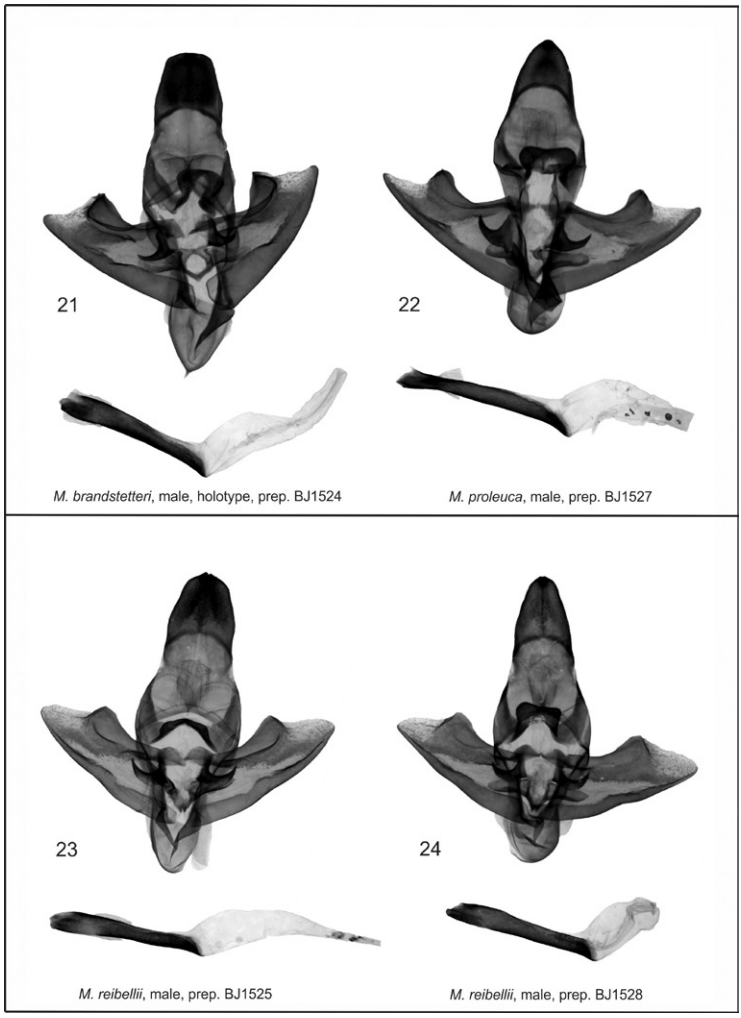
Description. Medium sized moths. Male antennae cup-shaped, those of female bipectinate (apically with gradually reducing pectin); forewing long, with rounded



Figures 15–20. *Azygophleps* spp. and *Aethalopteryx* spp., adults. **15** *A. inclusa,* female, holotype, South Africa, Durban (BMNH) **16** *A. larseni,* male, holotype, S.Oman, Dhofar (MWM/ZSM) **17** *A. larseni,* male, paratype, S.Oman, Dhofar (ASV) **18** *A. larseni,* female, paratype, S.Oman, Dhofar (ASV) **19** *A. larseni,* female, paratype, Yemen, Socotra (MWM/ZSM) **20** *A. diksami* , male, paratype, Yemen, Socotra (ASV);

apex, with dense reticular pattern formed by transverse lines and spots; hindwing lightly coloured and uniform.

Male genitalia. Uncus medium-sized, apically hooked; arms of gnathos absent; tegumen medium sized, usually wider than basal part of uncus; valvae with almost

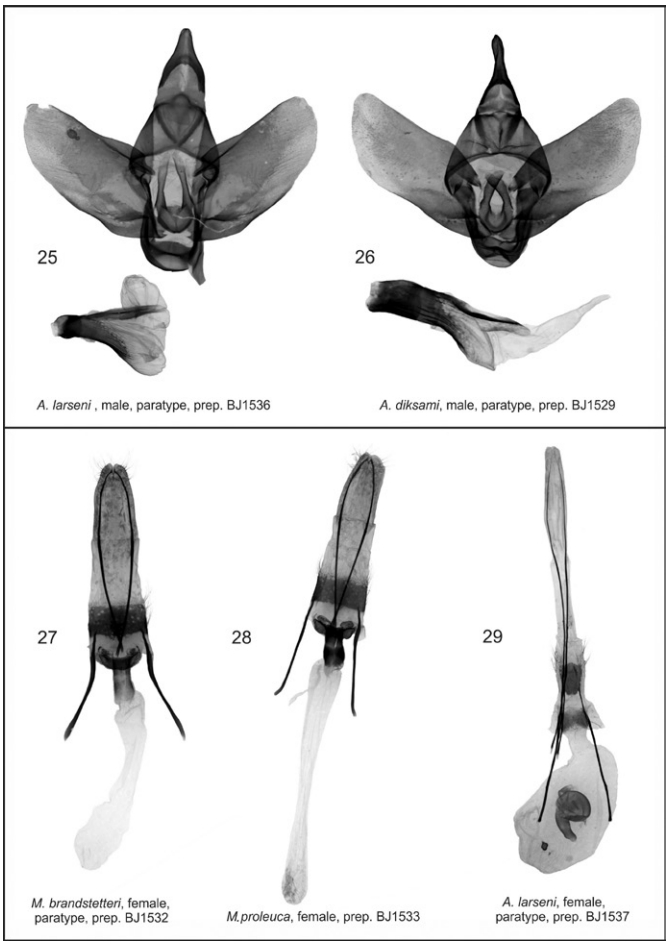


Figures 21–24. *Mormogystia* spp., males genitalia. **21** *M. brandstetteri,* male, holotype, prep. BJ1524 **22** *M proleuca,* male, prep. BJ1527 **23** *M. reibellii,* male, prep. BJ1525 **24** *M. reibellii,* male, prep. BJ1528;

straight margins and wide rounded apex; juxta medium-sized, with long, narrow, well-sclerotised lateral processes; saccus semicircular, massive; aedeagus thick, with long sclera forming aedeagus wall.

Female genitalia. Forming long ovipositor; papilla analis stretched, slightly tapering towards apex; apophyses posteriores more than twice as long as apophyses anteriores which are forked basally; ductus short, wide, sclerotised at base; corpus sac-shaped, with a small star-like signum; bulla located on the apical part of bursa.

Remarks. Twenty-eight species of *Azygophleps* have been reported (Yakovlev 2011), primarily throughout Africa with a few species distributed in the Arabian peninsula and Asia.



Figures 25–29. *Azygophleps sp.* and *Aethalopteryx* sp., male genitalia and *Mormogystia* spp. and *Azygophleps* sp., female genitalia. **25** *A. larseni ,* male, paratype, prep. BJ1536 **26** *A. diksami,* male, paratype, prep. BJ1529 **27** *M. brandstetteri,* female, paratype, prep. BJ1532; 28. *M proleuca,* female, prep. BJ1533; 29. *A. larseni ,* female, paratype, prep. BJ1537;

Azygophleps larseni Yakovlev & Saldaitis, 2011

http://species-id.net/wiki/Azygophleps_larseni

Figs 16–19, 25, 29

Azygophleps larseni Yakovlev & Saldaitis, 2011, Neue Entomologische Nachrichten 66: 84, Pl. 8: Figs 28–29.

Description. Female size and wing pattern similar to the male, however in Socotra specimens the pattern of the forewing is darker and the dorsal margin of hindwing has a reticular pattern. Antennae in females are cup-shaped as in males, but pecten are significantly shorter. Both female specimens from Socotra Island differ from typical *A.*





Figures 30, 31. *Mormogystia* sp. and *Meharia* sp., biotopes. **30** Central part of Socotra Island, Diksam Valley. Type locality of *Mormogystia brandstetteri* sp. n. **31** Northeast Socotra Island, Wadi Difarroha Valley. Type locality of *Meharia hackeri* sp. n.

larseni from Oman in external appearance. Without opportunity to compare *A. larseni* male genitalia we abstained from assigning the Socotra population to a separate taxon. Hampson (1903), Rebel (1907) and Hacker (1999) mistakenly attributed *Azygophleps inclusa* (Walker, 1856) (Fig. 15) to Socotra Island.

Male genitalia (Fig. 25). Oman's *A. larseni* male paratypus specimen's genitalia illustrated showing strong aedeagus, apically three times wider than proximally and simple, rounded, short vesica.

Female genitalia (Fig. 29). Papilla analis stretched, rounded apically; apophyses posteriores more than twice longer than apophyses anteriores which are forked at basal part; ductus short, wide, sclerotised basally; corpus sac-shaped, with a small star-like signum; bulla sclerotised, located on the median part of bursa.

Bionomics and distribution. This species is distributed in Iraq, Iran, Oman and mainland Yemen. Two specimens were caught in Socotra Island, ♀ (collecting date: Yemen, 500 m, Socotra isl., Ayhft riv. valley, 25 November 2008, Saldaitiene & Saldaitis leg.). *A. larseni* in Socotra is a very rare and local species. The Ayhft valley is a unique place in Socotra, with 80% of all vegetation found in Socotra Island. This valley is constantly fed by fresh water from the Haghier Mountains and its slopes are densely covered by tropical-type evergreen trees and shrubs: *Dracaena cinnabari, Rhus rhyrsiflora, Euryops arabicus, Buxus pedicillata, Gnidia socotrana, Cocculus balourii* and many other plants (Miller and Cope 1996).

Checklist of species

Genus *Mormogystia*

reibellii (Oberthür, 1876), *Hypopta reibellii* Oberthür, 1876, Et. Ent. 1: 40, pl. 4: fig. 1. LT: Biskra [Algeria]. Distribution: North part of Saudi Arabia, North Oman, UAE, Israel, Egypt, Algeria, Libya, Tunisia, Mauritania, Niger, Chad.

= *Hypopta mussolinii* Turati, 1927, Atti Soc. Ital. Scienze Naturali 66: 322, fig. 5. LT: Giarabub [NE Libya].

= *Hypopta cognata* Krüger, 1939, Ann. Mus. Libico Storia Nat. V. 1: 331–332, Tav. 13: fig. 13–14. LT: Beni Ulid [Libya].

=*Hypopta reibelli* – Wiltshire, 1980b, Jour. Oman Stud. Special report 2: 189; An incorrect subsequent spelling of *reibellii* Oberthür, 1876.

proleuca (Hampson in Walsingham et Hampson, 1896), **stat. n.**, *Eremocossus proleuca* Hampson in Walsingham et Hampson, 1896, Proc. Zool. Soc. London: 276, pl. 10: 24. LT: Aden, Yerbury [South Yemen]. Distributuion: Southern Saudi Arabia (Asir Mountains), South Oman (Dhofar), Yemen.

equatorialis (Le Cerf, 1933), *Hypopta reibeli* (sic!) Obt. ssp. *equatorialis* Le Cerf, 1933, Bull. Soc. Entomol. France: 158. LT: Lokitang, dans les monts Lubur, au Nord du lac Rodolphe [Lokitaung, Lake Turkana, N Kenya]. Distribution: N Kenya.

brandstetteri Saldaitis, Ivinskis & Yakovlev sp. n.

Genus *Meharia*

philbyi Bradley, 1952, Entomologist, LXXXXV (1074): 241–242: LT: Arabia, Kashabiya [Saudi Arabia]. Distribution: Saudi Arabia, Yemen, Oman.

acuta Wiltshire, 1982, Fauna Saudi Arab., 4:276, pl. 1: fig. 3, 3a. LT: wadi Hanaka [Saudi Arabia]. Distribution: Saudi Arabia, Oman, Yemen.

hackeri Saldaitis, Ivinskis & Yakovlev sp. n.

tanganyikae Bradley, 1952, Entomologist, LXXXXV (1074): 242–244. LT: Tanganyika, Ngaruka. Distribution: E Africa.

semilactea (Warren et Rothschild, 1905), Novit. zool., 12: 32, pl. 4 (12). LT: Nakheila, R. Atbara [NW Sudan]. Distribution: Israel, Jordan, Saudi Arabia, Oman, UAE, Yemen, Egypt (Sinai peninsula), N Sudan, Morocco, Mauritania.

yakovlevi Saldaitis & Ivinskis, 2010a, Esperiana 15: 379. LT: hills near Hadibu, Socotra Island [Yemen]. N [North]. Distribution: Yemen (Socotra Isl.).

incurvariella incurvariella Chrétien, 1915, Ann. Soc. Ent. Fr., 1915: 368. LT: Biskra [Algeria]. Distribution: Algeria, Morocco.

= *Blalia vittata* Rungs, [1943], 1942, Bull. Soc. Sc. Maroc. 22 (1942): 174, pl. 1: fig. 17. LT: Maroc, Saharien, Od Khiruf [Morocco].

incurvariella persica (Wiltshire, 1946); *Blalia vittata persica* Wiltshire, 1946a, Proc. R. Ent. Soc. London, Ser. B, 15: 120. LT: Shiraz [Fars, SW Iran]. Distribution: Iran, Afghanistan, Pakistan.

tancredii Sutton, 1963, Ann. Mag. Nat. Hist. 6 (13): 365–366, fig. 1–2, 6. LT: Meyan Kaleh peninsula, N Iran. Distribution: N Iran.

scythica D. Komarov et Zolotuhin, 2005. Nota lepid. 28 (1): 52–53, fig. 1–4. LT: [Russia] Astrakhan Prov., Akhtuba Distr., passing-track Martovsky, outsk. Bolshoe Bogdo Mt. Distribution: Russia, Volgograd and Astrakhan regions.

fischeri Yakovlev & Saldaitis, 2008b, Eversmannia 15–16: 49. LT: Marokko [Morocco], Jbel Bani, 3 km S Tiggane, 18 km SW Tata. Distribution: Morocco.

avicenna Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Iran, Hashtijan, 90 km S Gom. Distribution: Iran.

Genus *Aethalopteryx*

atrirета (Hampson, 1910), *Phragmatoecia atrirета* Hampson, 1910a, Ann. Mag. Nat. Hist. 8 (6): 129; LT: Bechuanaland, Lake N'gami [Botswana]. Distribution: Botswana, S Africa.

obscurascens (Gaede, 1930), *Xyleutes obscurascens* Gaede, 1930, Gross-Schmett. Erde, 14: 547, Taf. 79h; LT: Maraquo, Centr. Abyss. [Central Ethiopia]. Distribution: Ethiopia.

obsolete (Gaede, 1930), *Xyleutes obscurascens obsolete* Gaede, 1930, Gross-Schmett. Erde, 14: 547, Taf. 79g; LT: White Nile [Central Sudan]. Distribution: Sudan, Tanzania, Swaziland.

steniptera (Hampson in Poulton, 1916), *Duomitus steniptera* Hampson in Poulton, 1916, Proc. Zoll. Soc. London: 166, pl. 2: fig. 31; LT: Somaliland, Mandera, 47 miles SW of Berbera [Somalia]. Distribution: Somalia.

pindarus (Fawcett, 1916), *Duomitus pindarus* Fawcett, 1916: 733; LT: Kenya, Kedai. Distribution: Kenya, Uganda, S Africa.

wiltshirei Yakovlev, 2009, Euroasian Entomol. J; LT: Saudi Arabia, Azir, Al Foqa, Olea-Dodonea Zone. Distribution: Saudi Arabia.

simillima (Hampson in Poulton, 1916), *Duomitus simillima* Hampson in Poulton, 1916, Proc. Zoll. Soc. London: 166, pl. 2: fig. 32; LT: Somalia, 47 miles SW of Berbera. Distribution: Somalia, Ethiopia.

grandiplaga (Gaede, 1930), *Xyleutes grandiplaga* Gaede, 1930: 547; LT: Chad, Oubangui, Chari, Bangui [Central African Rep.]. Distribution: Central African Rep., Congo.

tristis (Gaede, 1915), *Hyleutes tristis* Gaede, 1915, D. Ent. Ztschr. Iris, 28: 147–148. LT: Nama-Land [Namibia]. Distribution: Namibia, Kenya, S Africa.

mesosticta (Hampson in Poulton, 1916), *Duomitus mesosticta* Hampson in Poulton, 1916, Proc. Zool. Soc. London: 165, pl. 2, fig. 20; LT: Somalia, Mandera. Distribution: Somalia.

diksami Yakovlev & Saldaitis, 2010, Esperiana,Memoir 5:333–337; LT: C Socotra [Central Socotra] isld., Top of Diksam valley. Distribution: Socotra Island, Yemen.

squameus (Distant, 1902), *Duomitus squameus* Distant, 1902, Entomologist, 35: 213; LT: Transvaal, Pretoria (S Africa). Distribution: South Africa, Botswana, Mozambique, Malawi, Ghana, Angola, Tanzania.

= *Azygophleps atriplaga* Le Cerf, 1919b, Bull. Mus. Nat. Hist. Nat. 25: 30; LT: Rivière Kuando, frontière Sud-Est Angola-Rhodesia [Kwando Riv., W Angola].

dictyotephra (Clench, 1959), *Kyleutes* (sic!) *dictyotephra* Clench, 1959, Veröff. zool. St. Samml. Münch. 6: 13–14, pl. II: fig. 6–7; LT: SW Africa, Okahandja [Namibia]. Distribution: SW Africa.

nilotica Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Sudan, Blue Nile Prov., Wadi Medani. Distribution: Sudan.

anikini Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: S Africa, Free State, 15 km S Bloemhof, Sandveld N.R., S 47°43'55"; E 25°45'06". Distribution: S Africa.

forsteri (Clench, 1959), *Xyleutes forsteri* Clench, 1959, Veröff. zool. St. Samml. Münch. 6: 14–15, pl. II: fig. 8–9; LT: SW Africa, Okahandja [Namibia]. Distribution: SW Africa.

gyldenstolpei (Aurivillius, 1925), *Xyleutes gyldenstolpei* Aurivillius, 1925, Ark. Zoology, 17A (32): 20; LT: Ituri [Congo, Ituri prov.]. Distribution: Congo.

masai Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Kenya, Kibwezi; Distribution: Kenya.

elf Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Somalia m., Kisimayo. Distribution: Somalia.

politzari Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Somalia m., Caanole Fluss. Distribution: Somalia, Tanzania, Kenya.

gazelle Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Kenya, South Coast, Marenche forest. Distribution: Kenya.

rudloffi Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Swaziland, Ndzevane area, Matala near Nsogo, 240 m, Akazien, Agaven Buscland, S 26°58'; E 031°58'. Distribution: Swaziland.

kisangani Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Rep. Congo (Zaire), 17 km N Kisangani, Masako Field Stat., 388 m, N 00°36'; E 25°15', 02–08.02.2008. Distribution: Zaire.

sulaki Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Kenya, Eastern Province, Umg. Meru, 2 km NE Isiolo, S 00°21.623; E 37°36.231. Distribution: Kenya.

Genus *Azygophleps*

liturata (Aurivillius, 1879), *Zeuzera liturata* Aurivillius, 1879, Öfversigt af Kongl. Vetenskaps-Akademiens 7: 48–49 LT: Damara [Namibia]. Distribution: Namibia, Botswana, S Africa (Gründberg, 1910; Vári et al., 2002).

= *Zeuzera aurivillii Kirby, 1892, Cat. Lep. Het.* **1***: 872; Replacement name for Zeuzera liturata Aurivillius, 1879.*

leopardina Distant, 1902, Entomologist 35: 213–214; LT: Transvaal, Pretoria. Distribution: S Africa, Zambia, Namibia, Kenya.

= *Azygophleps borchmanni* Grünberg, 1910, Denkschriften Med.-Naturwiss. Ges. Jena. Vierter Bd.: 140; LT: Rietfontein [E Namibia].

= *Azygophleps leopardinae* – Dalla-Torre, 1923, Lep. Cat.: 43; An incorrect subsequent spelling of Azygophleps leopardina Distant, 1902.

nubilosa Hampson, 1910; 1910a, Ann. Mag. Nat. Hist. 8 (6): 129. LT: Uganda. Distribution: Uganda, Tanzania, S Africa.

atrifasciata Hampson, 1910; 1910b, Proc. Zool. Soc. London: 481; LT: NE Rhodesia, Kalungwisi distr., High Plateau [Zambia]. Distribution: Zimbabwe, Zambia, Uganda, Kenya, Angola, Malawi, S Africa.

regia (Staudinger, 1891), *Zeuzera* (?) *regia* Staudinger, 1891, Dtsch. Entomol. Ztschr. Iris **4**: 253; LT: Hadjin [Turkey]. Distribution: Turkey, Pakistan, Iran, Iraq.

= *Zeuzera regina* – Wiltshire, 1957, Lep. Iraq: 146; An incorrect subsequent spelling of regia Staudinger, 1891.

afghanistanensis (Daniel, 1964), *Zeuzera regia afghanistanensis* Daniel, 1964, Opuscula Zool. **77**: 6; LT: O-Afghanistan, Sarobi, Gulbahar [E Afghanistan]. Distribution: Afghanistan.

albofasciata (Moore, 1879), *Zenzera* (sic!) *albofasciata* Moore, 1879a, Descr. of new ind. lep. ins. from the coll. of the late Mr. W.S. Atkinson, M.A., F.L.S. & C.,

director of the Public Instruction, Bengal: 87; LT: Darjiling [India]. Distribution: India, Pakistan.

confucianus Yakovlev, 2006; 2006b, Tinea 19 (3): 205–207, figs, 18–19, 54; LT: China, SE Tibet, Markam; Distribution: China (SE Tibet, NW Sichuan, Yunnan, Guizhou, Qinghai).

inclusa (Walker, 1856), *Zeuzera inclusa* Walker, 1856, List. Spec. Lepid. Ins. Brit. Mus. **7**: 1534; LT: Port Natal [Durban, South Africa]. Distribution: Kenya, Tanzania, Zambia, Angola, Malawi, Mosambique, Botswana, South Africa, Lesotho, Uganda, Congo, Ghana, Sierra Leone, Guinea, Republic of Côte d'Ivoire.

= *Zeuzera petax* Wallengren, 1860, Wien. Entomol. Monatshcr 4 (2): 43; LT: Caffraria orientali [S Africa].

larseni Yakovlev & Saldaitis, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: S. [South] Oman, Dhofar, Rakyut. Distribution: Iraq, Iran, Oman, Yemen, Socotra island.

kovtunovitchi Yakovlev, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: Lesotho, 45 km Mokhothand. Distribution: Lesotho.

sheikh Yakovlev & Saldaitis, 2011, Neue Entomologische Nachrichten 66: 1–129. LT: W Saudi Arabia, N-Asir, 40 km W Taif, Distribution: Saudi Arabia, Yemen.

sponda (Wallengren, 1875), *Zeuzera sponda* Walengren, 1875, Öfver. Kongl. Vetenskaps-Akad. Förh. 32 (1): 96; LT: Transvaalia [S Africa, Transvaal]. Distribution: S Africa.

cooksoni Pinhey, 1968; 1968, Ann. Transvaal Mus. 25 (9): 156, pl. 13: fig. 2; LT: Muden, Natal. Distribution: Southern Africa (Natal prov.).

melanophele Hampson, 1910; 1910a, Ann. Mag. Nat. Hist. 8 (6): 130; LT: S Nigeria, Sapele [Kenya]. Distribution: Central Africa.

ganzelkozikmundi Yakovlev, 2009, Euroasian Entomol. J. 8 (3): 359–360; LT: Uele, Paulis [Congo]. Distribution: Camerun, Congo.

asylas (Cramer, 1779), *Phalaena asylas* Cramer, 1779, De uitlandsche kapellen voorkomende in de drie waereld-deelen Asia, Africa en America, by een verzameld en beschreeven: 61–62, pl. CXXXVII (C); LT: Cape [S Africa]. Distribution: Central to Southern Africa.

= *Zeuzera strigulosa* Walker, 1856, List Spec. Lep. Ins. Brit. Museum 7: 1534;LT: Cape [S Africa].

= *Zeuzera canadensis* Herrich-Schäffer, [1854], Sammlung aussereuropäscher Schmetterlinge: 58, Fig. 168; LT: Quebec (error).

pusilla (Walker, 1856), *Zeuzera pusilla* Walker, 1856, List Spec. Lep. Ins. Brit. Museum 7: 1538; LT: North India. Distribution: India.

albovittata Bethune-Baker, 1908, Ann. Mag. Nat. Hist. (8) 2: 263; LT: N Nigeria, Lokoja District; Distribution: Nigeria, Ghana, Uganda, Congo, Kenya, Guinea, Zimbabwe.

pallens (Herrich-Schäffer, [1854]), *Phragmataecia pallens* Herrich-Schäffer, [1854], Samml. aussereurop. Schmett. 1 (1), Taf. [35]: 169; LT: Guinea. Distribution: Sierra-Leone, Uganda, Nigeria, Cameroon, Kenya, Sudan.

simplex Aurivillius, 1905, Owk. f. Zool. 2 (12): 42; LT: [Nigeria]. Distribution: Nigeria.
liliyae Yakovlev, 2011, Neue Entomologische Nachrichten, 66: 1–129. LT: Tanzania, Mbulu in town, 1800 m, S 03°52'00", E 035°32'17". Distribution: Tanzania.
legraini Yakovlev & Saldaitis, 2011, Neue Entomologische Nachrichten, 66: 1–129. LT: Cameroon, Adamaoua, nr. Ngaoundéré, Ngaoundaba; Distribution: Cameroon.
godswindow Yakovlev & Saldaitis, 2011, Neue Entomologische Nachrichten, 66: 1–129. LT: RSA [Republic South Africa], Mpumalanga, nr. Graskop, 1750 m, God's Window Rd. Distribution: S Africa.
otello Yakovlev, 2011, Neue Entomologische Nachrichten, 66: 1–129. LT: Mauritania, Boghe. Distribution: Mauritania.
equatorialis Yakovlev, 2011, Neue Entomologische Nachrichten, 66: 1–129. LT: ♂, Congo, Odzala NP, 0,23N; 14,50E. Distribution: Congo.
scalaris (Fabricius, 1775), *Phalaena* (*Hepialus*) *scalaris* Fabricius, 1775, Syst, Ent.: 590; LT: China; Distribution: Pakistan, India, China, Sri-Lanka, Maynmar, Thailand, Cambodia, Bangladesh, Mauritania, Somali, Senegal, Republic of Côte d'Ivoire, Ghana, Nigeria, Congo, Kenya, Angola, Namibia, Tanzania, Sudan.
= *Zeuzera bivittata* Walker, 1865, List Lep. Het. Brit. Mus. 32 (suppl. 2): 586–587; LT: North Hindostan.
aburae (Plötz, 1880), *Zeuzera aburae* Plötz, 1880, Ent. Zeit. Stetting: 77; LT: Bei Aburi [Ghana]. Distribution: Zimbabwe, Kenya, Ghana, Cameroon, Sudan.
boisduvalii (Herrich-Schäffer, 1854), *Zeuzera boisduvalii* Herrich-Schäffer, 1854, Samml. aussereurop. Schmett., 1 (1): 58, Taf. 35: 167; LT: Gatam (Sierra Leone). Distribution: Africa (Guinea, Sierra Leone, Ghana, Cameroon, Nigeria, Sudan, Ethiopia, Kenya, Uganda, Congo, Zambia, Zimbabwe, Senegal, Malawi, Republic of Côte d'Ivoire).

Table 1. Voucher and GenBank numbers for barcoded individuals (deposited in NRCV).

Mormogystia proleuca	QUNOD300-10	HQ970475
Mormogystia proleuca	QUNOD301-10	HQ970476
Mormogystia proleuca	QUNOD302-10	HQ970477
Mormogystia proleuca	QUNOD303-10	HQ970478
Mormogystia reibellii	QUNOD304-10	HQ970479
Mormogystia reibellii	QUNOD305-10	HQ970480
Mormogystia reibellii	QUNOD307-10	HQ970482
Meharia hackeri	QUNOD309-10	HQ970483
Meharia hackeri	QUNOD310-10	HQ970484
Meharia hackeri	QUNOD311-10	HQ970485
Meharia acuta	QUNOD312-10	HQ970486
Mormogystia brandstetteri	QUNOD336-10	HQ970510
Mormogystia brandstetteri	QUNOD337-10	HQ970511
Mormogystia brandstetteri	QUNOD338-10	HQ970512
Mormogystia brandstetteri	QUNOD339-10	HQ970513

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