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**Michael Seizmair**  
 Associated Independent  
 Scientist, Department of  
 Entomology, Section  
 Lepidoptera, SNSB Bavarian  
 State Collection of Zoology  
 Munich, Munich, Germany

## Faunistic and taxonomic notes on eleven recently recorded species of Spilomelinae Guinée, 1854 (Lepidoptera, Crambidae) from the Arabian Peninsula with an updated checklist

**Michael Seizmair**

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### Abstract

Updates on the taxonomy and distribution of eleven species of the subfamily Spilomelinae Guinée, 1854 (Lepidoptera, Crambidae) are presented on the basis of samples collected in Oman (province Dhofar) and in south-western Saudi-Arabia (provinces Mekka and Asir) by the author. Three species are reported as new to the entomofauna of the Arabian Peninsula - *Hydriris ornatalis* (Duponchel, 1832), *Dysallacta negatalis* (Walker, 1859) and *Arnia nervosalis* Guinée, 1849. The presence of *Leucinodes laisalis* (Walker, 1859) on the Arabian Peninsula is re-confirmed. The species is furthermore reported as new to the entomofauna of Oman. Two further species are reported for the first time from Oman - *Marasmia poeyalis* (Boisduval, 1833) and *Herpetogramma licarsisalis* (Walker, 1859). Three species are reported as new to the entomofauna of Dhofar - *Antigastra catalaunalis* (Duponchel, 1833), *Spoladea recurvalis* (Fabricius, 1775), *Duponchelia fovealis* Zeller, 1847. The presence of *Glyphodes onychinalis* (Guenée, 1854) in Oman (Dhofar) and the presence of *Nomophila noctuella* (Denis & Schiffermüller, 1775) in Saudi-Arabia are re-confirmed. The male and female genitalia of *Dysallacta negatalis* (Walker, 1859) are described and figured for the first time. The male genitalia of *Glyphodes onychinalis* (Guenée, 1854) are redescribed and figured. The male and female genitalia of *Leucinodes laisalis* (Walker, 1859) and *Nomophila noctuella* (Denis & Schiffermüller, 1775), the male genitalia of *Herpetogramma licarsisalis* (Walker, 1859) and *Arnia nervosalis* Guinée, 1849, the female genitalia of *Marasmia poeyalis* (Boisduval, 1833) and *Duponchelia fovealis* Zeller, 1847 are figured for diagnostic purposes. An updated checklist of the Spilomelinae Guinée, 1854 known till date from the Arabian Peninsula is presented.

**Keywords:** Pyraloidea, fauna, distribution, morphology, Oman, Saudi-Arabia

### 1. Introduction

The subfamily Spilomelinae Guinée, 1854 is the most diverse subfamily of the Pyraloidea. It includes 4100 described species in 338 genera and accounts for 26% of the species of the Pyraloidea (Mally *et al.*, 2019, Nuss *et al.*, 2022) <sup>[1, 2]</sup>. According to the recent phylogenetic results in Mally *et al.* (2019) <sup>[1]</sup>, the subfamily is divided into 12 tribes, to which 89% of the genera have been assigned, the rest remaining incertae sedis.

From the Arabian Peninsula 43 species have been reported so far, 30% of which have been known till date exclusively from records before 1960 without recent confirmation. Major historical contributions to the study of the Arabian Spilomelinae Guinée, 1854 have been done in Butler (1884) <sup>[3]</sup>, Walsingham, Hampson (1896) <sup>[4]</sup>, Rebel (1907, 1930) <sup>[5, 6]</sup>, Hampson (1897, 1899, 1903, 1908) <sup>[7, 8, 9, 10]</sup> and in Ghesquière (1942) <sup>[11]</sup>. The regional focus of these historical studies is on the southern parts of the Arabian Peninsula – south-western Saudi-Arabia and Yemen. Rebel (1907, 1930) <sup>[5, 6]</sup> renders first contributions to the study of the fauna of the Sokotra archipelago. Important contributions to the knowledge of the Spilomelinae Guinée, 1854 in the northern parts of the Arabian Peninsula have been done after World War II. Pelham-Clinton (1977) <sup>[12]</sup> gives a first species list for the Northern Region of Oman. Asselbergs (2008) <sup>[13]</sup> gives a comprehensive faunistic revision of the Crambidae for the UAE, which includes records of 13 species of the Spilomelinae Guinée, 1854 for the Arabian Peninsula, seven of which were reported as new to the entomofauna of the UAE. Further recent contributions to the study of the Arabian Spilomelinae Guinée, 1854 include Gillett (1997) <sup>[14]</sup>, Büttiker, Gallagher (1980) <sup>[15]</sup>, Monks *et al.* (2019) <sup>[16]</sup> and Seizmair (2019, 2021, 2022) <sup>[17, 18, 19, 20, 21]</sup>. On the Arabian Peninsula three zoogeographical main zones intersect, namely the Palearctic, Oriental and Afrotropical Zones.

**Corresponding Author:**  
**Michael Seizmair**  
 Associated Independent  
 Scientist, Department of  
 Entomology, Section  
 Lepidoptera, SNSB Bavarian  
 State Collection of Zoology  
 Munich, Munich, Germany

In the northern parts (Northern Oman, UAE, NE- and NW Saudi-Arabia) fauna elements of the Palearctic and Oriental zones are predominant, whereas in the southern parts – Dhofar, Yemen, south-western Saudi-Arabia elements of the Afrotropical zone are in the majority (Hacker, 2016) <sup>[22]</sup>.

In this paper updates on the distribution and taxonomy of eleven species are given on the basis of samples collected by the author in Dhofar and south-western Saudi-Arabia in the years 2018 – 2019 and 2021 – 2022. Three species - *Hydriris ornatalis* (Duponchel, 1832), *Dysallacta negatalis* (Walker, 1859) and *Arnia nervosalis* Guinée, 1849 are reported as new to the entomofauna of the Arabian Peninsula. The male and female genitalia of *Dysallacta negatalis* (Walker, 1859) are described and figured for the first time. The male genitalia of *Glyphodes onychinalis* (Guenée, 1854) have been known from a partial drawing in Rathikanu and Chitra (2017) <sup>[23]</sup> and are re-described and figured in this paper.

## 2 Materials and Methods

### 2.1 Sampling

The specimens presented in this paper were collected in four research expeditions to Oman (province Dhofar) in the years 2018, 2019 and 2021 and in one expedition to south-western Saudi-Arabia (provinces Mekka and Asir) in 2022. The samples were captured by night by means of two light traps. The traps were equipped with lamps each consisting of four UV- Power-LEDs spanning a wave length spectrum of 365 nm – 385 nm. The trapping technique applied is described in Brehm (2017) <sup>[24]</sup>. The specimens were deposited in the private collection of the author.

### 2.2 Macro-Preparation and Dissection

The adults were photographed with a SONY HX400V after relaxation and subsequent preparation. For examining the genitalia, dissection, preparation and slide-mounting techniques were applied on the specimens on the basis of the protocol described in Robinson (1976) <sup>[25]</sup>. The preparation of the genitalia was done under a Motic stereomicroscope (SMZ-171). The slides were photographed with a ToupCam c-mount camera (ToupTek Inc., Zhejiang, China) under a resolution of 18 megapixels. The images were optimized by means of the imaging software Adobe Photoshop PS, Version 21.0.2.

### 2.3 Determination and Morphological Analyses

Analyses of wing pattern characters and morphological structures in the specimens of the sample were done on the images. Structural ratios in external and internal characters were calculated on the images by means of the imaging software ToupView, Version 1.0 (ToupTek Inc., Zhejiang, China).

The specimens of the samples were determined by means of the diagnoses and figures given in Munroe (1973) <sup>[26]</sup>, Shaffer, Munroe (2007) <sup>[27]</sup>, Guillermet (2009) <sup>[28]</sup>, Slamka (2013) <sup>[29]</sup> and Mally *et al.* (2015) <sup>[30]</sup>.

### 2.4 Terminology and Abbreviations

The descriptions of wing pattern characters and genitalia follow the terminology in Maes (1995) <sup>[31]</sup>. The denotations of the veins follow Shaffer, Munroe (2007) <sup>[27]</sup>. Descriptions of character states in the male and female genitalia were furthermore adopted from Mally *et al.* (2019) <sup>[1]</sup>.

## 3. Results and Discussion

### 3.1 Systematic Part

Tribe Hydririni Minet, 1982

*Hydriris ornatalis* (Duponchel, 1832) (Fig 1A, 5A)

**Material:** Oman, Dhofar, Jebel Samhan, Viewpoint, 1400 m, 06-XI-2021, 1 ♀, slide no. 22GP012.

**Diagnosis:** Wingspan 16.4 mm. Frons beige, vertex brownish-beige. Forewing basal and antemedial areas brownish. Postmedial area beige, with a blackish band of bluish iridescence, which is right-angled near the CuA<sub>2</sub>. Area between the postmedial band and the termen brownish interspersed with greyish scales. Hindwing basis blackish, medial area beige, postmedial band of the same scaling as the forewing postmedial band, area between the postmedial band and the termen brownish with bluish iridescence. Antrum in the female genitalia strongly sclerotized. Corpus bursae, elongate, slender, with two signa, which are plaque-shaped and with numerous spicula (Slamka, 2013; Mally *et al.*, 2019; Fig 5A) <sup>[1, 29]</sup>.

**Distribution:** Palearctic – Southern Europe. Widely spread in the subtropical and tropical zones (Guillermet, 2009, Slamka, 2013, De Prins, De Prins, 2022) <sup>[28, 29, 32]</sup>. New to the entomofauna of the Arabian Peninsula.

Tribe Lineodini Amsel, 1956

*Leucinodes laisalis* (Walker, 1859) (Fig 1B, 3A, 5B)

**Material:** Oman, Dhofar, 4km W Dalkuth, 20-I-2018, 1 ♂, slide no. 21GP017-019, 21GP029, SZPYR0318, SZPYR0418, 05-XI-2018, 1 ♀, slide no. 21GP020, 03-II-2019, 1 ♂, 1 ♀, slide no. 21GP016, 21GP023, Jebel Al Qamar, 20 km E Sarfait, Road 47, 800 m, 21-I-2018, 3 ♂, 2 ♀, slide no. 21GP021, 21GP024, 21GP027-029, 06-XI-2018, 1 ♀, slide no. 21GP026, 04-II-2019, 1 ♂, 1 ♀, slide no. 21GP022, 21GP025, 02-XI-2021, 1 ♂, slide no. 22GP032. Saudi-Arabia, Province Mekka, Al Shafa Mt., 1700 m, 03-V-2022, 1 ♂, slide no. 22GP031.

**Diagnosis:** 19.5 mm – 31.4 mm. Labial palpus up-turned, greyish to brown. Vertex with whitish scales. Forewing scaling orange-brown to greyish. Fibula in the male genitalia broadened, developing immediately ventral of costa, strongly sclerotized. Sacculus broad, elongate, ranging over half of the valva. Saccus strongly elongated. Phallus apodeme with slim, finger-shaped, sclerotized process. Antrum in the female genitalia elongated, tubular, anterior end broadened, coiled (Mally *et al.*, 2015, Fig 3A, 5B) <sup>[30]</sup>.

**Distribution:** Australasian – Australia. Oriental – India, Malaysia. Palearctic: China, Spain, Portugal, Morocco, Great Britain (De Prins, De Prins, 2022) <sup>[31]</sup>, whereby in particular the European records are supposed to be interceptions, and thus not to refer to resident populations (Mally *et al.*, 2015) <sup>[30]</sup>. Afrotropical – Congo, Côte d'Ivoire, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Mozambique, Niger, Nigeria, Réunion, Senegal, Somalia, South Africa, Tanzania, Zimbabwe (De Prins, De Prins, 2022, Mally *et al.*, 2015) <sup>[30, 31]</sup>.

For the Arabian Peninsula, there have been historical records from Saudi-Arabia (Ghesquière, 1942) <sup>[11]</sup>. The presence of the species in Saudi-Arabia is re-confirmed.

**New to the entomofauna of Oman.**

**Remark:** The species is part of a species complex comprising eight species as described and listed in Mally *et al.* (2015)<sup>[30]</sup> for the first time, which can be distinguished only by internal character states (male, female genitalia). As these congeners have a potential to occur also on the Arabian Peninsula, all historical records of the genus *Leucinodes* Guinée, 1854 need verification.

Tribe Margaroniini Swinhoe & Cotes, 1889

*Antigastra catalaunalis* (Duponchel, 1833) (Fig 1C)

**Material:** Oman, Dhofar, 20 km E Sarfait, Road 47, Jebel Al Qamar, 25-XI-2019, 1 ♂.

**Diagnosis:** Wingspan 16.7 mm. Labial palpus elongate, acuminate, yellowish white. Forewing narrow, apex pointed, pale brownish, ferruginous on veins and termen. Hindwing yellowish-white.

**Distribution:** Palearctic – Mediterranean Basin, Levante, Iran, Iraq, Oriental – India, Malaysia, Sri Lanka. Australasian – Australia, Nearctic – USA, Mexico. Afrotropical – Cameroon, Congo, Gambia, Kenya, Mali, Mozambique, Namibia, Ruanda, Somalia, Sudan, Tanzania, Uganda, Zambia, Zimbabwe, South Africa, Mascarene and Malagasy Islands (De Prins, De Prins, 2022)<sup>[32]</sup>.

From the Arabian Peninsula, the species has been reported from Northern Oman (Pelham-Clinton, 1977)<sup>[12]</sup>, Saudi-Arabia (Walsingham, Hampson, 1896)<sup>[4]</sup>, the UAE (Asselbergs, 2008)<sup>[13]</sup> and Yemen (Rebel, 1907)<sup>[5]</sup>. New to the entomofauna of Dhofar.

*Dysallacta negatalis* (Walker, 1859) (Fig 1D, 3B, 5C)

**Material:** Oman, Dhofar, 20 km E Sarfait, Road 47, Jebel Al Qamar, 03-II-2019, 2 ♂, slide no. GPPYR5019, GPPYR0319, 4km W Dalkuth, 25-XI-2020, 1 ♀, slide no. 20GP003, 1 ♂, slide no. 20GP002, leg. et coll. M. Seizmair, Saudi-Arabia, Province Mekka, Al Shaafa Mt., 1700 m, 03-V-2022, 1 ♂, slide no. 22GP030.

**Diagnosis:** Wingspan 27.5 mm – 27.9 mm. Scaling of vertex, frons, labial and maxillary palpus black. Antenna filiform ciliate, flagellum black, ciliae darkish-grey. Thorax ochre. Legs darkish-grey. Ground of forewing upper side greyish-white. Anteterminal area darkish-fuscous to black. Terminal line concolorous with the ground. Fringe darkish-fuscous. Postmedial line darkish-brown to black, connected with the anteterminal area from M3 onwards. Discocellular spot black, reniform. Costal border yellowish-brown interspersed with small black stigmata. Hindwing ground concolorous with the forewing ground. Scaling of anteterminal area deep black, fading from M1 onwards. Postmedial line black, slightly blurred, connected with the anteterminal area at CuP. Medial and cubital veins with black scaling.

**Male genitalia (Fig 3B):** Uncus rod-shaped, posterior fifth down-curved, strongly tapered, acuminate, dorsally with a tuft of long, fine chaetae. Tuba analis tapered basally, broadened postbasally and distally, posterior end stout, subscaaphium present. Tegumen shoulders broadened, ovate. Transtilla concave. Valva 1,8 times as long as wide. Costa straight, basal costa with a slender, acuminate, posteriad-directed process. Ventral border slightly concave. Apex rounded. Basal sacculus rectangular shaped and strongly

broadened, distal sacculus concave, posterior end stout, sub-rectangular-shaped. Fibula rod-shaped, developing from its basis to the distal sacculus, with its posterior end acuminate, ventrad-directed, basis located immediately below the basal costa and with a finger-shaped, posteriad-directed process. Juxta basally broadened and strongly sclerotized, tapered and pencil-shaped in its post-basal and distal portions. Saccus v-shaped. Coremata sub-rectangular-shaped, strongly sclerotized laterally, coremata hair tufts very long. Phallus apodeme with a long, sclerotized strap ranging from the posterior end onwards over the entire coecum, vesical surface with a cluster of four elongate, acuminate cornuti.

**Female genitalia (Fig 5C):** Papillae anales of sub-triangular shape, 1.3 times as long as wide with several tufts of long setae on the lateral borders. Apophyses posteriores extremely elongate, double as long as the apophyses anteriores. Apophyses anteriores with a 90°-curvature in the proximal fourth. Ductus bursae membranous, strongly broadened medially, transition to the corpus bursae smooth. Ductus seminalis inserted in the medial enlargement. Colliculum present, strongly sclerotized. Antrum membranous, narrowed. Corpus bursae of ovoid shape, 2.3 times as long as wide, with two small, orbiform signa.

**Distribution:** Widely distributed in the Afrotropical, Oriental and Indo-Australian zones, recorded from Subsaharan Africa, India, Sri Lanka, Japan, and the eastern parts of Australia (Pinhey, 1975)<sup>[33]</sup>. From the Africa the species has been known so far from South Africa, Mozambique, Namibia, Kongo, Gambia, Mali and from Nigeria (Pinhey, 1975, De Prins, De Prins, 2022, Poltavsky *et al.*, 2018)<sup>[32, 33, 34]</sup>. New to the entomofauna of the Arabian Peninsula.

*Glyphodes onychinalis* (Guenée, 1854) (Fig 1E, 3C)

**Material:** Oman, Dhofar, 4 km W Dalkuth, 01-XI-2021, 1 ♂, slide no. 22GP014.

**Diagnosis:** Wingspan 13.0 mm. Frons, vertex and labial palpus whitish-grey. Presence of blackish basal, antemedial, medial, postmedial and subterminal bands in the forewing, which are suffused with greyish in the interior. Medial band h-shaped, constricted at M2. Postmedial band split into two blackish outer lines between the costa and R5, irrorated with yellowish in the interior, slanted towards the subterminal line with which it is in touch between M1 and CuA1, angled towards the medial line at CuA1, fused with the medial line at A1+A2 and at the Sc, thus forming an ocellus-shaped structure. Subterminal line straight, strongly broadened, fused with the terminal line. Fringe darkish-grey to blackish. Antemedial, postmedial and subterminal bands present in the hindwing, blackish. Antemedial band slightly angled at CuA2, dilated at A1+A2. Postmedial band slightly angled at CuA1. Presence of two subterminal bands fused at the costal border thus forming a bifurcate structure. The anterior subterminal band is strongly angled and pointwise in touch with the terminal line at CuA2 and fused with the postmedial line at CuP. The posterior subterminal line is straight and terminates between Rs and M1. Terminal line blackish. Fringe concolorous with the forewing fringe.

**Male genitalia (Fig 3C):** Uncus composed of a neck and beak forming an obtuse angle, with the neck basally dilated,

elongate, length of the neck relative to the length of the beak 1.5, scaphium present in the beak. Transition tegumen- basal uncus strongly sclerotized. Transtilla triangular-shaped, transtillum inferior elongate, down-curved, anteriad-directed. Valva double as long as broad, apex acuminate, with extensive tufts of chaetae at the postbasal and distal ventral border. Fibula present, slender, acuminate, directed ventrad. Basal and postbasal sacculus strongly dilated, lobe-shaped, distal sacculus tapered, acuminate, length of the distal end relative to the lobe 0.76. Juxta bilobed, lobes triangular-shaped, length of the split relative to the total length of the juxta 60%, basis strongly sclerotized, triangular-shaped, pointed anteriad. Saccus u-shaped, anteriorly strongly flattened, stout, with a small protruding keel antero-medially. Phallus apodeme with a ventral sclerite ranging over the entire coecum, and a rod-shaped sclerite in the posterior portion. Vesical surface bare from cornuti.

**Distribution:** Oriental - India, Indonesia (Borneo), Malaysia, Myanmar, Sri Lanka, Indo-Australian, Afrotropical – Ethiopia, Liberia, Congo, Mali, Côte d'Ivoire, Madagascar, Sierra Leone, South Africa (De Prins, De Prins, 2022)<sup>[32]</sup>.

For the Arabian Peninsula historical records exist for Saudi-Arabia Ghesquière (1942)<sup>[11]</sup> and Yemen (Walsingham, Hampson, 1896)<sup>[4]</sup>. The species was reported for the first time for the Province Dhofar of the Sultanate of Oman in Gillett (1997)<sup>[14]</sup>.

**Remarks:** The species shares the structure of the uncus – bipartite, composed of a neck and a beak which form an obtuse angle, character states in the phallus apodeme – absence of cornuti, presence of a sclerotized strap ranging over the entire ventral coecum, and the basic line pattern in the forewing with two species of the genus *Synclera* Lederer, 1883, namely *Synclera bleusei* Oberthür, 1887 and *Synclera interruptalis* Amsel, 1950. The genus *Glyphodes* Guenée, 1854 as a polyphyletic group has been discussed in Sutrisno (2003, 2006)<sup>[35, 36]</sup>. A solution for this situation should be implemented in a world-wide, integrative revision of the genera *Glyphodes* Guenée, 1854 and *Synclera* Lederer, 1883. Tribe Spilomelini Guenée, 1854 *Marasmia poeyalis* (Boisduval, 1833) (Fig 1F, 6A).

**Material:** Oman, Dhofar, 4km W Dalkuth, 01-XI-2021, 1♀, slide no. 22GP013.

**Diagnosis:** Wingspan 16.3 mm. Forewing and hindwing ground concolorous, yellowish white. Forewing with black, oblique, slightly angled antemedial, medial and postmedial lines and a black discocellular spot. Forewing subterminal area suffused with fuscous, terminal line blackish, fringe greyish-brown. Hindwing with blackish antemedial and medial lines, which form a v-shaped structure, postmedial line absent. Subterminal area, termen and fringe like those of the forewing. Ostal chamber in the female genitalia tube-shaped with granulate areas in the anterior half. Antrum strongly sclerotized. Ductus bursae posteriorly broadened, with the posterior half of the dilatation with scobinate areas. Corpus bursae of ellipsoid shape, with a spine-shaped signum (Shaffer, Munroe, 2007; Fig 6A)<sup>[27]</sup>.

**Distribution:** Australasian - Australia, Cook Islands, Fiji, Solomon Islands. Oriental- India, Indonesia (Java), Papua New Guinea, Singapore, Sri Lanka. Palearctic – Japan. Afrotropical – Angola, British Indian Ocean Territory, Burundi, Cameroon, Cap Verde, Malagasy and Mascarene Islands, Congo, Cote d'Ivoire, Equatorial Guinea, Kenya, Mali, Mozambique, Namibia, Nigeria, Sudan (De Prins, De Prins, 2022)<sup>[32]</sup>.

For the Arabian Peninsula, the species has been reported from Saudi-Arabia (Ghesquière, 1942), Yemen (Ghesquière, 1942, Rebel, 1907)<sup>[5, 11]</sup> and the UAE (Asselbergs, 2008)<sup>[13]</sup>. New to the entomofauna of Oman.

**Remark:** The species is externally differentiated from the similar *Marasmia trapezalis* (Guenée, 1854), which has been reported from Oman (Büttiker, Gallagher, 1980)<sup>[15]</sup> in the absence of the hindwing postmedial line.

Tribe Herpetogrammatini Mally, Hayden, Neinhuis, Jordal & Nuss, 2019

*Herpetogramma licarsisalis* (Walker, 1859) (Fig 2A, 4A).

**Material:** Oman, Dhofar, 4 km W Dalkuth, 03-XI-2021, 1♂, slide no. 22GP033.

**Diagnosis:** Wingspan 22.4 mm. Vertex darkish-brown to blackish, frons greyish, labial palpus basally and in segment 1 greyish, in segments 2 and 3 darkish-brown to blackish. Forewing ground darkish greyish-brown, presence of darkish antemedial and postmedial lines and a blackish discocellular spot. Hindwing ground concolorous with the forewing ground, with the presence of a curved postmedian line. Fringe greyish-brown. Ventral border of the valva in the male genitalia concave medially, basal sacculus broadened, ovate, postbasal and distal sacculus tapered, fibula elongate developing parallel to the sacculus, distal end down-curved, ventrad-directed. Juxta strongly sclerotized basally, with the lobes sub-triangular shaped. Vesical surface of the phallus apodeme with a cluster of six cornuti varying in size, posterior end of the phallus with a ring-shaped sclerite with numerous small spicula (Slamka, 2013; Guillermet, 2009; Fig 4A)<sup>[28, 29]</sup>.

**Distribution:** Australasian – Hawaii, New Zealand, Solomon Islands. Oriental - Andaman Islands, Hong Kong, India, Indonesia (Borneo), Malaysia (Sarawak), New Guinea, Philippines, Sri Lanka. Palearctic – Levante, Southern Europe (Mediterranean Basin), China. Afrotropical – British Indian Ocean Territory, Cameroon, Cape Verde, Congo, Ethiopia, Sudan, Mali, South Africa, Zimbabwe, Malagasy and Mascarene Islands, Sierra Leone, St. Helena (De Prins, De Prins, 2022)<sup>[32]</sup>.

For the Arabian Peninsula the species has been reported till date from Yemen, Saudi-Arabia and the UAE (Asselbergs, 2008, Guillermet, 2009)<sup>[13, 28]</sup>. New to the entomofauna of Oman.

**Remark:** The species is distinguished from the other externally similar Afrotropical congeners - *Herpetogramma minoralis* (Warren, 1892), *Herpetogramma neloolis* (Walker, 1859), *Herpetogramma brunnealis* (Hampson, 1913), *Herpetogramma dorcalis* (Guenée, 1854) of the group B sensu Guillermet (2009)<sup>[28]</sup> by the shape of the fibula and the number of the cornuti. Tribe Hymeniini Swinhoe, 1900

*Spoladea recurvalis* (Fabricius, 1775) (Fig 2B).

**Material:** Oman, Dhofar, Jebel Al Qamar, 20 km E Sarfait, 800 m, Road 47, 06-XI-2018, 1♂, 1♀, 24-XI-2019, 1♀, 03-XI-2021, 1♀, 4 km W Dalkuth, 06-XI-2018, 2♀, Ayn Anthoum Waterfalls, 15 km E Salalah, 22-XI-2019, 2♂, 06-XI-2021, 1♂, Jebel Samhan, Viewpoint, 1400 m, 23-XI-2019, 1♂.

**Diagnosis:** Wingspan 16.4 mm – 21.0 mm. Ground deep brown. Forewing with a whitish out-curved medial band, a whitish postmedian band ranging from the costa to M1 and two white terminal spots. Hindwing with a broad whitish medial band and two white terminal spots.

**Distribution:** Widely distributed in the Afrotropical, Australasian and Oriental zones. Reported from Southern Europe (Slamka, 2013; De Prins, De Prins, 2022) <sup>[29, 32]</sup>.

On the Arabian Peninsula, the species has been reported from Northern Oman (Pelham-Clinton, 1977) <sup>[12]</sup>, Yemen (Butler, 1884, Rebel, 1907) <sup>[3, 5]</sup>, Saudi-Arabia (Walsingham, Hampson, 1896) <sup>[4]</sup> and the UAE (Asselbergs, 2008) <sup>[13]</sup>. New to the entomofauna of Dhofar.

Tribe Steniini Guenée, 1854.

*Duponchelia fovealis* Zeller, 1847 (Fig 2C, 6B)

**Material:** Oman, Dhofar, Jebel Samhan, Viewpoint, 1400m, 06-XI-2021, 1♀, slide no. 22GP037.

**Diagnosis:** Wingspan 16.7 mm. Ground greyish-brown. Forewing antemedial and postmedial lines pale, angled towards the termen, terminal and subterminal fields darker than the rest of the wing, reniform stigma present. Hindwing postmedial line pale, wavy (Asselbergs, 2008; Slamka, 2013) <sup>[13, 29]</sup>. Corpus bursae in the female genitalia ovate, membranous, slightly granulated at the anterior end. Ductus bursae slightly sclerotized medially, width relative to length 80%, length of the ductus bursae relative to the corpus bursae 40%, antrum with two sclerotized lobes, apophyses anteriores with triangular-shaped dilatations in the posterior third, length of the apophyses posteriores relative to the apophyses anteriores 70% (Slamka, 2013; Fig 6B) <sup>[29]</sup>.

**Distribution:** Palearctic – Levante, Northern Africa, Canary Islands, Southern Europe (Mediterranean Basin) (Slamka, 2013, De Prins, De Prins, 2022) <sup>[29, 32]</sup>. Afrotropical – Cameroon, Congo, Cap Verde, Gambia, Kenya, Liberia, Mauretania, Mozambique, South Africa, Seychelles, Réunion (De Prins, De Prins, 2022) <sup>[32]</sup>.

For the Arabian Peninsula, the species has been reported from Northern Oman (Pelham-Clinton, 1977) <sup>[12]</sup>, the UAE (Asselbergs, 2008) <sup>[13]</sup>, Yemen (Hampson, 1897) <sup>[7]</sup> and Saudi-Arabia (Walsingham, Hampson, 1896) <sup>[4]</sup>. New to the entomofauna of Dhofar.

Tribe Nomophilini Kuznetzov & Stekolnikov, 1979

*Arnia nervosalis* Guinée, 1849 (Fig 2D, 4B)

**Material:** Oman, Dhofar, Jebel Al Qamar, 20 km E Sarfait, 800 m, Road 47, 02-XI-2021, 1♂, slide no. 22G039, Jebel Samhan, Viewpoint, 1400 m, 06-XI-2021, 1♂, slide no.

22GP040.

**Diagnosis:** Wingspan 16.5 mm. Antenna filiform, serrate, with ling greyish ciliae in the male. Ground greyish-brown. Discocellular stigma present in the forewing, orbiform. Uncus in the male genitalia thumb-shaped, posterior end sclerotized, with short chaetae. Tegumen trapezoid, transition posterior tegumen – basal uncus smooth. Valva oblong, apex obliquely rounded towards the costa, basal costa inflated. Basal sacculus strongly broadened, rounded, distal sacculus with a thorn-shaped, anteriad-directed process. Fibula present, developing below the basal costa, the basis linguiform with a small, thorn-shaped process. Juxta strongly broadened, bi-lobed, with the lobes rounded. Vinculum broad, elongate, terminating in a u-shaped, narrowed saccus. Saccus with a protruding keel ventro-apically. Vesical surface of the phallus apodeme with two lobe-shaped, dentate cornuti (Slamka, 2013, Fig 4B) <sup>[29]</sup>.

**Distribution:** Palearctic – Southern Europe (Mediterranean Basin), Northern Africa, Levante, Southern Iran. New to the entomofauna of the Arabian Peninsula.

**Remark:** The Arabian specimens differ externally from the nominate subspecies and the Iranian subspecies *hyrcanalis* Amsel, 1961 in the shape of the forewing discocellular spot, which is strongly expanded and contrasted with the ground. The taxonomic assessment of the Arabian populations requires study of further material.

*Nomophila noctuella* (Denis & Schiffermüller, 1775) (Fig 2E, 4C, 6C)

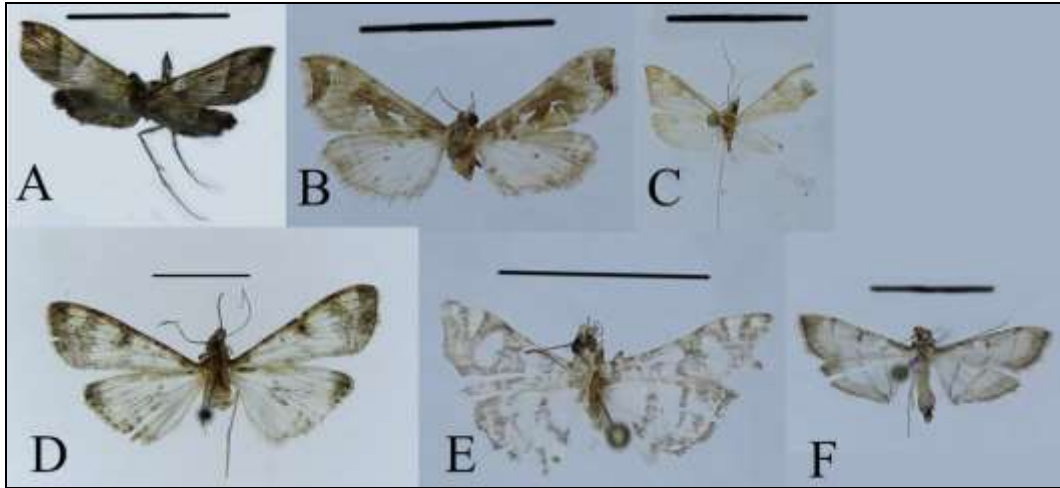
**Material:** Saudi-Arabia, Prov. Mekka, Maysaan, Al Atta, 2400m, 29-IV-2022, 1♀, Al Baha Region, 5km S Baljurashi, 02-V-2022, 3♂, Prov. Asir, 3 km SW Bani Amr, 30-IV-2022, 1♂, 1♀, slide no. 22GP035 – 036.

**Diagnosis:** Wingspan 26.9 mm – 32.4 mm. Forewing long, narrow suffused with fuscous, with orbicular and reniform stigmata varied in size and in intensity. Hindwing light brown, fringe whitish with a dark sub-basal line. Cornutus in the vesical surface of the phallus apodeme sinuate. Diverticulum of the ductus bursae sclerotized (Asselbergs, 2008, Munroe, 1973, Fig 4C, 6C) <sup>[13, 26]</sup>.

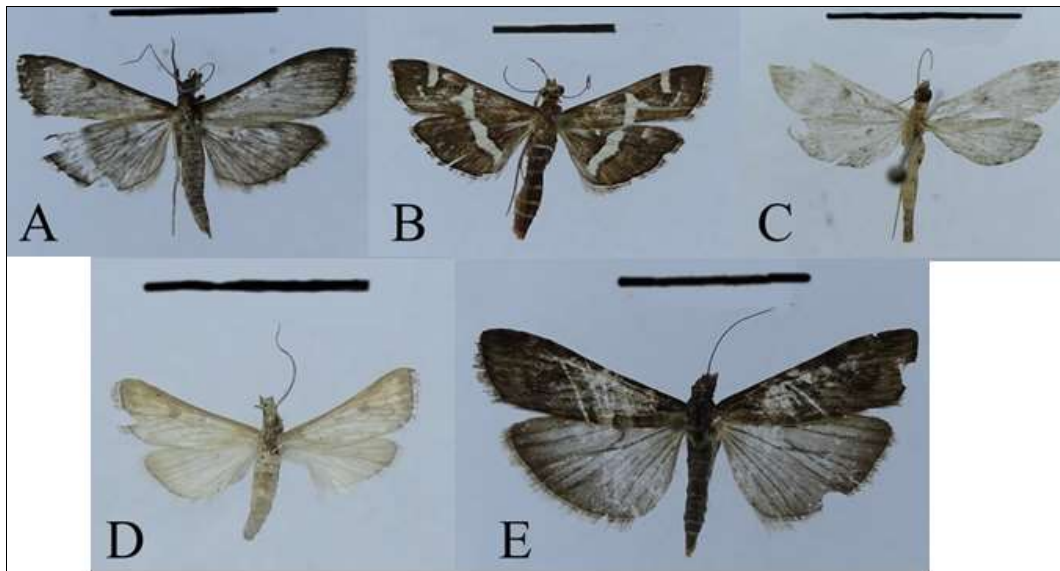
**Distribution:** Widely distributed in the Old World – Australasian, Oriental, Afrotropical, Palearctic (Munroe, 1973, De Prins, De Prins, 2022) <sup>[26, 32]</sup>.

From the Arabian Peninsula, there have been historical records from Yemen (Walsingham, Hampson, 1896) <sup>[4]</sup> and from Saudi-Arabia (Munroe, 1973) <sup>[26]</sup>, recent records from Northern Oman (Pelham-Clinton, 1977; Monks *et al.*, 2019) <sup>[12, 16]</sup> and the UAE (Asselbergs, 2008) <sup>[13]</sup>.

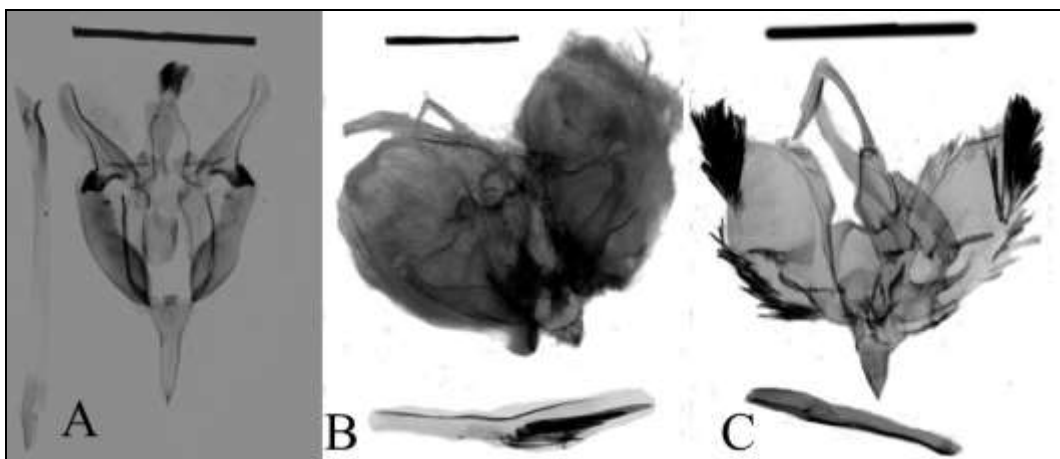
**Remark:** The species is differentiated from the Afrotropical congeners *Nomophila africana* Munroe, 1973 and *Nomophila brevispinalis* Munroe, 1973 in the elongate, sinuate cornutus in the male genitalia, in the female genitalia in the shape of the signum and in the shape and directedness of the diverticulum of the ductus bursae.



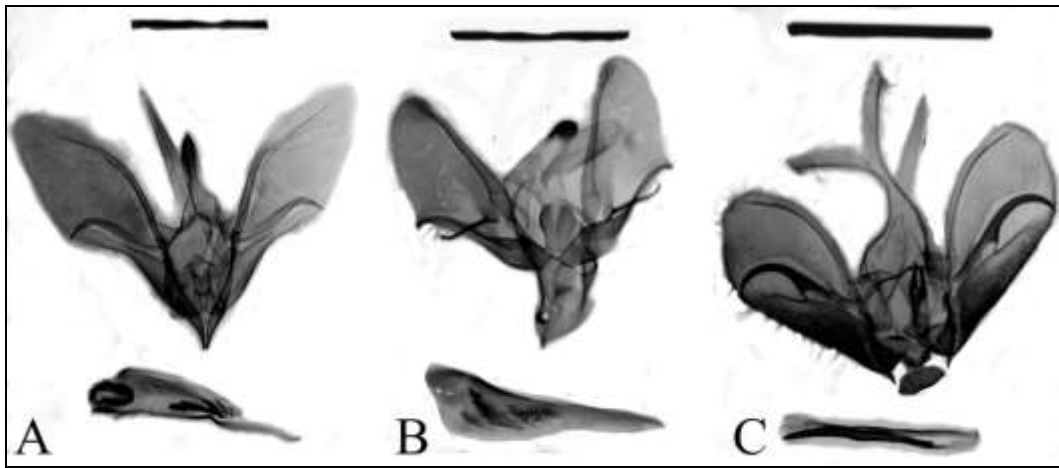
**Fig 1:** Adults. A: *Hydriris ornatalis* (Duponchel, 1832), ♀, slide no. 22GP012, B: *Leucinodes laisalis* (Walker, 1859), ♂, slide no. 21GP018, C: *Antigastra catalaunalis* (Duponchel, 1833), ♂, Oman, Dhofar, 20 km E Sarfait, Road 47, Jebel Al Qamar, 25-XI-2019, D: *Dysallacta negatalis* (Walker, 1859), ♂, slide no. 20GP002, E: *Glyphodes onychinalis* (Guenée, 1854), ♂, slide no. 22GP014, F: *Marasmia poeyalis* (Boisduval, 1833), ♀, slide no. 22GP013, Scalebar = 10mm.



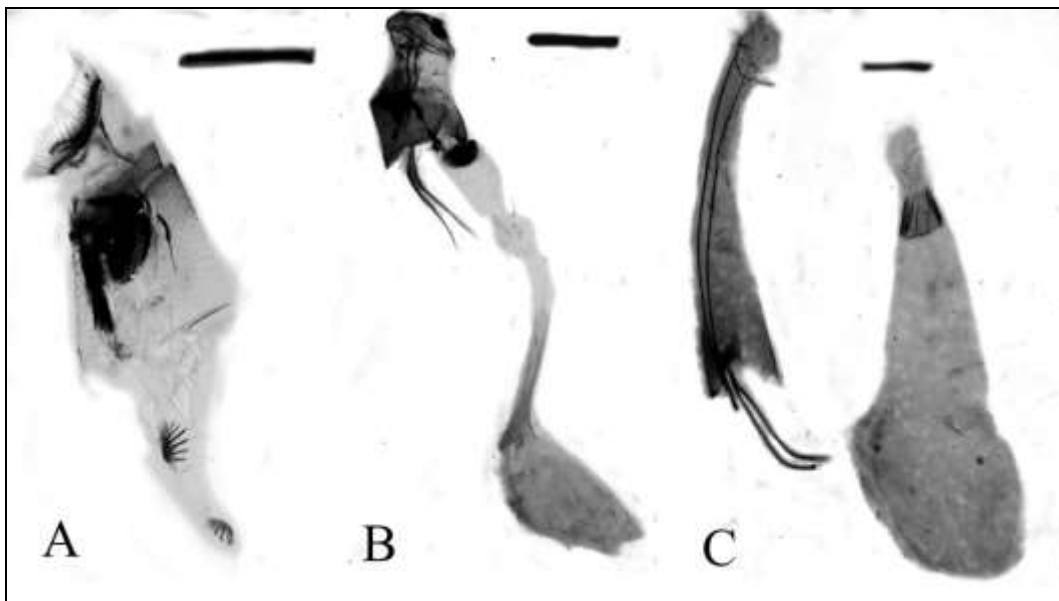
**Fig 2:** Adults. A: *Herpetogramma licarsisalis* (Walker, 1859), ♂, slide no. 22GP033, B: *Spoladea recurvalis* (Fabricius, 1775), Oman, Dhofar, Jebel Al Qamar, 20 km E Sarfait, 800 m, Road 47, 06-XI-2018, ♂, C: *Duponchelia fovealis* Zeller, 1847, ♀, slide no. 22GP037, D: *Armia nervosalis* Guinée, 1849, ♂, slide no. 22GP040, E: *Nomophila noctuella* (Denis & Schiffermüller, 1775), ♂, slide no. 22GP035, Scalebar = 10 mm.



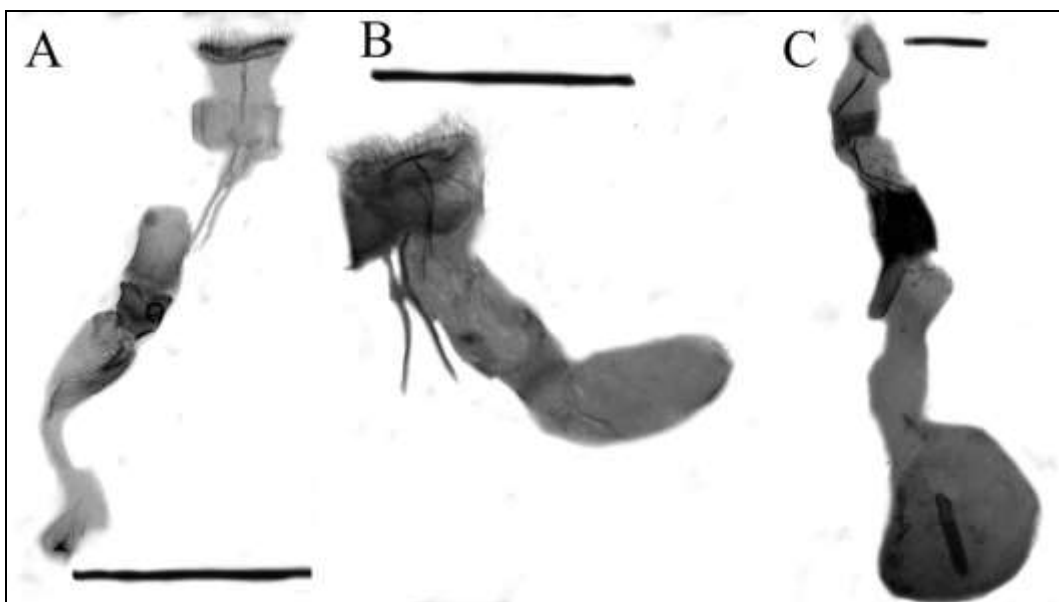
**Fig 3:** Male genitalia. A: *Leucinodes laisalis* (Walker, 1859), slide no. 21GP018, B: *Dysallacta negatalis* (Walker, 1859), slide no. 22GP030, C: *Glyphodes onychinalis* (Guenée, 1854), slide no. 22GP014, Scalebar = 1 mm.



**Fig 4:** Male genitalia. A: *Herpetogramma licarsisalis* (Walker, 1859), slide no. 22GP033, B: *Arnia nervosalis* Guinée, 1849, slide no. 22GP040, C: *Nomophila noctuella* (Denis & Schiffermüller, 1775), slide no. 22GP035, Scalebar = 1 mm.



**Fig 5:** Female genitalia. A: *Hydriris ornatalis* (Duponchel, 1832), slide no. 22GP012, B: *Leucinodes laisalis* (Walker, 1859), slide no. 21GP020, C: *Dysallacta negatalis* (Walker, 1859), slide no. 20GP003, Scalebar = 1 mm.



**Fig 6:** Female genitalia. A: *Marasmia poeyalis* (Boisduval, 1833), slide no. 22GP013, B: *Duponchelia fovealis* Zeller, 1847, ♀, slide no. 22GP037, C: *Nomophila noctuella* (Denis & Schiffermüller, 1775), slide no. 22GP036, Scalebar = 1 mm.

### 3.2 Updated Checklist of the Arabian Spilomelinae Guenée, 1854

known till date from the Arabian Peninsula follows the tribal subdivision proposed in Mally *et al.* (2019)<sup>[1]</sup>.

The following checklist of Spilomelinae Guenée, 1854

**Table 1:** Updated checklist of the Spilomelinae Guenée, 1854 of the Arabian Peninsula

Species	Distribution (Arabian Peninsula)	References
<b>Hyririni Minet, 1982</b>		
<i>Hydriris ornatalis</i>	Oman (Dhofar)	This paper
<i>Lamprosema crocodora</i> (Meyrick, 1934)	Yemen	Waller, Bigger and Hillocks (2007) <sup>[37]</sup>
<i>Lamprosema inglorialis</i> Hampson, 1918	Yemen	Walsingham, Hampson (1896) <sup>[4]</sup>
<b>Lineodini Amsel, 1956</b>		
<i>Leucinodes laisalis</i> (Walker, 1859)	Saudi-Arabia, Oman (Dhofar)	Ghesquière (1942) <sup>[11]</sup> , this paper
<i>Leucinodes pseudobonalis</i> Mally, Korycinska, Agassiz, Hall, Hodgetts & Nuss, 2015	Saudi-Arabia, UAE	Asselbergs (2008) <sup>[13]</sup>
<b>Udeini Mally, Hayden, Neinhuis, Jordal &amp; Nuss, 2019</b>		
<i>Udea ferrugalis</i> (Hübner, 1796)	UAE, Yemen, Oman (Northern Region)	Asselbergs (2008) <sup>[13]</sup> , Pelham-Clinton (1977) <sup>[12]</sup> , Rebel (1930) <sup>[6]</sup>
<b>Agroterini Acloque, 1897</b>		
<i>Notarcha viridialis</i> Seizmair, 2021	Oman (Dhofar)	Seizmair (2021) <sup>[18]</sup>
<i>Patania aegrotalis</i> Zeller, 1852	Yemen	Rebel (1907) <sup>[5]</sup>
<b>Margaroniini Swinhoe &amp; Cotes, 1889</b>		
<i>Antigastra catalaunalis</i> (Duponchel, 1833)	Oman (Northern Region, Dhofar), Saudi-Arabia, Yemen, UAE	Pelham-Clinton (1977) <sup>[12]</sup> , Asselbergs (2008) <sup>[13]</sup> , Butler (1884) <sup>[3]</sup> , Rebel (1907) <sup>[5]</sup> , Walsingham, Hampson (1896) <sup>[4]</sup> , this paper
<i>Alytana bifurcalis</i> Seizmair, 2019	Oman (Dhofar)	Seizmair (2019) <sup>[17]</sup>
<i>Cirrhochrista seminivea</i> Seizmair, 2021	Oman (Dhofar)	Seizmair (2021) <sup>[19]</sup>
<i>Diaphania indica</i> (Saunders, 1851)	Oman (Northern Region), UAE, Yemen, Saudi-Arabia	Asselbergs (2008) <sup>[13]</sup> , Pelham-Clinton (1977) <sup>[12]</sup> , Ghesquière (1942) <sup>[11]</sup> , Butler (1884) <sup>[3]</sup> , Rebel (1907) <sup>[5]</sup>
<i>Dysallacta negatalis</i> (Walker, 1859)	Oman (Dhofar)	This paper
<i>Glyphodes onychinalis</i> (Guenée, 1854)	Saudi-Arabia, Yemen, Oman (Dhofar)	Ghesquière (1942) <sup>[11]</sup> , Walsingham, Hampson (1896) <sup>[4]</sup> , Gillett (1997) <sup>[14]</sup> , this paper
<i>Glyphodes leucomesalis</i> Seizmair, 2021	Oman (Dhofar)	Seizmair (2021) <sup>[18]</sup>
<i>Hodebertia testalis</i> Fabricius, 1794	Saudi-Arabia, Yemen	Walsingham, Hampson (1896) <sup>[4]</sup> , Butler (1884) <sup>[3]</sup> , Rebel (1907) <sup>[5]</sup>
<i>Maruca vitrata</i> (Fabricius, 1787)	Oman (Dhofar), UAE	Asselbergs (2008) <sup>[13]</sup> , Gillett (1997) <sup>[14]</sup>
<i>Omiodes indicata</i> (Fabricius, 1775)	Saudi-Arabia	Walsingham (1911) <sup>[38]</sup>
<i>Palpita vitrealis</i> (Rossi, 1797)	Oman (Dhofar), Yemen	Seizmair (2022) <sup>[21]</sup> , Butler (1884) <sup>[3]</sup>
<i>Palpita subflavalis</i> Seizmair, 2022	Oman (Dhofar)	Seizmair (2022) <sup>[21]</sup>
<i>Synclera traducalis</i> (Zeller, 1852)	Saudi-Arabia, UAE, Yemen	Guillemet (2009) <sup>[28]</sup> , Asselbergs (2008) <sup>[13]</sup> , Butler (1884) <sup>[3]</sup>
<i>Synclera bleusei</i> Oberthür, 1887	Oman (Northern Region)	Monks <i>et al.</i> (2019) <sup>[16]</sup>
<b>Spilomelini Guenée, 1854</b>		
<i>Marasmia poeyalis</i> (Boisduval, 1833)	Saudi-Arabia, UAE, Yemen, Oman (Dhofar)	Ghesquière (1942) <sup>[11]</sup> , Rebel (1907) <sup>[5]</sup> , Asselbergs (2008) <sup>[13]</sup> , this paper
<i>Marasmia trapezalis</i> (Guenée, 1854)	Oman, Saudi-Arabia	Walsingham, Hampson (1896) <sup>[4]</sup> , Büttiker, Gallagher (1980) <sup>[15]</sup>
<i>Orphanostigma abruptalis</i> (Walker, 1859)	Yemen	Rebel (1907) <sup>[5]</sup>
<b>Herpetogrammatini Mally, Hayden, Neinhuis, Jordal &amp; Nuss, 2019</b>		
<i>Eurrhyarodes bracteolalis</i> (Zeller, 1852)	Oman (Northern Region)	Pelham-Clinton (1977) <sup>[12]</sup>
<i>Eurrhyarodes tricoloralis</i> (Zeller, 1852)	UAE	Asselbergs (2008) <sup>[13]</sup>
<i>Herpetogramma licarsisalis</i> (Walker, 1859)	Yemen, Saudi-Arabia, UAE, Oman (Dhofar)	Guillemet (2009) <sup>[28]</sup> , Asselbergs (2008) <sup>[13]</sup> , this paper
<i>Herpetogramma debilis</i> Seizmair, 2021	Oman (Dhofar)	Seizmair (2021) <sup>[18]</sup>
<b>Hymeniini Swinhoe, 1900</b>		
<i>Spoladea recurvalis</i> (Fabricius, 1775)	Oman (Northern Region, Dhofar), Yemen, Saudi-Arabia, UAE	Pelham-Clinton (1977) <sup>[12]</sup> , Butler (1884) <sup>[3]</sup> , Rebel (1907) <sup>[5]</sup> , Walsingham, Hampson (1896) <sup>[4]</sup> , Asselbergs (2008) <sup>[13]</sup>
<b>Trichaeini Mally, Hayden, Neinhuis, Jordal &amp; Nuss, 2019</b>		
<i>Prophantis smaragdina</i> (Butler, 1875)	Yemen	Guillemet (2009) <sup>[28]</sup>
<b>Steniini Guenée, 1854</b>		
<i>Bradina triangularis</i> Seizmair, 2021	Oman (Dhofar)	Seizmair (2021) <sup>[20]</sup>
<i>Dolicharthria paediualis</i> (Walker, 1859)	Oman (Northern Region), Yemen	Walsingham, Hampson (1896) <sup>[4]</sup>
<i>Dolicharthria daralis</i> (Chrétien, 1911)	Oman (Northern Region)	Pelham-Clinton (1977) <sup>[12]</sup>
<i>Dolicharthria grisealis</i> (Hampson, 1899)	Yemen	Hampson (1899) <sup>[8]</sup>
<i>Duponchelia fovealis</i> Zeller, 1847	Oman (Northern Region, Dhofar), UAE, Yemen, Saudi-Arabia	Pelham-Clinton (1977) <sup>[12]</sup> , Hampson (1897) <sup>[7]</sup> , Walsingham, Hampson (1896) <sup>[4]</sup> , Asselbergs (2008) <sup>[13]</sup> , this paper
<i>Hymenoptychis sordida</i> Zeller, 1852	UAE	Asselbergs (2008) <sup>[13]</sup>
<i>Metasia prionogramma</i> (Meyrick, 1886)	Yemen	Hampson (1903) <sup>[9]</sup>
<i>Metasia profanalis</i> (Walker, 1866)	Yemen	Walsingham, Hampson (1896) <sup>[4]</sup>
<b>Nomophilini Kuznetsov &amp; Stekolnikov, 1979</b>		
<i>Arnia nervosalis</i> Guinée, 1849	Oman (Dhofar)	This paper
<i>Bocchoris dispersalis</i> (Zeller, 1852)	Saudi-Arabia, Yemen	Ghesquière (1942) <sup>[11]</sup> , Butler (1884) <sup>[3]</sup>
<i>Nomophila noctuella</i> (Denis & Schiffermüller, 1775)	Yemen, Saudi-Arabia, Oman (Northern Region), UAE	Walsingham, Hampson (1896) <sup>[4]</sup> , Munroe (1973) <sup>[26]</sup> , Pelham-Clinton (1977) <sup>[12]</sup> , Asselbergs (2008) <sup>[13]</sup> , Monks <i>et al.</i> (2019) <sup>[16]</sup>



<i>Pardomima zanclophora</i> (Martin, 1955)	Saudi-Arabia	Martin (1955) <sup>[39]</sup>
<i>Sameodes cancellalis</i> (Zeller, 1852)	Yemen	Rebel (1907) <sup>[5]</sup>
<b>Species of genera incertae sedis</b>		
<i>Syllepte trifidalis</i> (Hampson, 1908)	Yemen	Hampson (1908) <sup>[10]</sup>
<i>Pileocera opacalis</i> Rebel, 1927	UAE	Asselbergs (2008) <sup>[13]</sup>

## Conclusion

Faunistic and taxonomic updates were given for eleven species of the Spilomelinae Guinée, 1854 from the Arabian Peninsula, three of which were reported for the first time from the Arabian Peninsula: *Hydriris ornatalis* (Duponchel, 1832), *Dysallacta negatalis* (Walker, 1859) and *Arnia nervosalis* Guinée, 1849. The presence of *Leucinodes laisalis* (Walker, 1859) on the Arabian Peninsula was re-confirmed. The male and female genitalia of *Dysallacta negatalis* (Walker, 1859) were described for the first time. The male genitalia of *Glyphodes onychinalis* (Guenée, 1854) were re-described and figured. Currently, 47 species have been known from the Arabian Peninsula, which were compiled in an updated checklist.

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## Conflict of Interest Statement

The author declares that there are no conflicts of interest, neither of personal nor of material kind that could have influenced the results of this work.

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