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CONTRIBUTION TO THE KNOWLEDGE OF THE SPRING BUTTERFLY FAUNA (LEPIDOPTERA: PAPILIONOIDEA) OF EASTERN SULTANATE OF OMAN

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Abstract

The butterfly fauna of the eastern Sultanate of Oman has been in general poorly studied with a total of 56 species recorded so far for the region. We aimed to survey the distribution of butterflies on a wider scale, focusing particularly on some rare species with limited records. During our surveys in spring 2023 we compiled records from 35 locations recording a total of 39 butterfly species. Among these, we found three new locations for a rare white *Euchloe transcaspica amseli* extending its known range further south. Other interesting records include *Eurema hecabe solifera* with a second record for the region and *Gegenes nostrodamus* recorded for the second time in Oman. Records of these and some other selected species are discussed in detail. Further surveys, particularly of the eastern Hajar Mountains, would be valuable to complement our research.
KEYWORDS: butterflies, distribution, Hajar Mountains, checklist

Izvleček PRISPEVEK K POZNAVANJU POMLADANSKE FAVNE DNEVNIH METULJEV (LEPIDOPTERA: PAPILIONOIDEA) VZHODNEGA DELA SULTANATA OMAN

Favna metuljev vzhodnega dela sultanata Oman je v splošnem slabo raziskana s skupno 56 vrstami do sedaj zabeleženimi v regiji. Naš cilj je bil raziskati razširjenost dnevnih metuljev v širšem obsegu, s poudarkom zlasti na nekaterih redkih vrstah z maloštevilnimi podatki. Med raziskavami spomladi 2023 smo pregledali 35 lokacij in zabeležili skupno 39 vrst dnevnih metuljev. Med njimi smo našli tri nove lokacije

za redko vrsto belina *Euchloe transcaspica amseli*, katere meje znanega območja razširjenosti smo pomaknili proti jugu. Zanimivi sta tudi najdbi belina *Eurema hecabe solifera* z drugo lokacijo v regiji in *Gegenes nostrodamus*, ki je bil šele drugič opažen v Omanu. Najdbe teh in nekaterih drugih izbranih vrst so obravnavane bolj podrobno. Nadaljnje raziskave, zlasti vzhodnega gorovja Hajar, bi bile dragocena dopolnitev naših raziskav.
KLJUČNE BESEDE: dnevni metulji, razširjenost, gorovje Hajar, seznam vrst

Introduction

The eastern part of the Sultanate of Oman is characterised by rugged mountain chains stretching almost contiguously from the Musandam Peninsula in the northwest to the Sur region in the southeast. These provide a formidable barrier to the weather fronts providing additional precipitation (up to 400 mm per year) in this otherwise very arid region (Larsen 1977, Patzelt 2015). The vegetation of the region can be subdivided into coastal (encompassing coastal plains east of the mountains, coastal pediments, and escarpments), major wadis with oases, and Hajar Mountains. These are characterised by pronounced Irano-Turanian floristic elements in drier Musandam and Eastern Hajar, and a more pronounced altitudinal zonation in Western Hajar including a high montane zone characterised by remnants of juniper woodlands (Patzelt 2015). Desert and semidesert environments west of the main mountain chain were only marginally covered by our surveys.

The butterfly fauna of the eastern part of Oman has been first studied relatively recently with a first overview published only in the seventies (Larsen 1977). This overview included 38 butterfly species for eastern Oman with surprisingly few true Palaearctic faunistic elements (Larsen 1984a). Larsen supplemented the list in his general overview of the fauna of the Arabian Peninsula (Larsen 1983) adding 10 new species records. In addition, his pioneering work was supplemented by a monograph with extensive information on species ecology and behaviour (Larsen & Larsen 1980). Further faunistic papers providing valuable information on butterfly fauna of the region were published by Gillett (1995, 1997), Feulner (2007), Cock (2009), Polak & Verovnik (2009), De Freina (2013), Otto (2014), Otto & Larsen (2014), Seizmair (2016), Fric et al. (2019), Cowan et al. (2020), and Schmidt et al. (2020). These publications added eight new butterfly species records bringing the sum of all recorded species to 56 in eastern Oman including the Musandam Peninsula.

As most of the studies mentioned above provide records only for a limited number of locations and/or species, our main aim was to add as many faunistic records as possible, surveying a larger area of eastern Oman. Although we focused on finding potential species-rich habitats and specifically searched for species with scarce or questionable historical records, all records are included in this overview. The more important species finds are discussed in detail.

Material and Methods

Results presented in this paper are based on a single visit in spring 2023 in the first half of February. The sampling focussed particularly on the western Hajar Mountains and wadis coming from these mountains. Nevertheless, coastal regions around Muscat and semi-desert areas around Al Buraimi were also covered by the surveys (Tab. 1, Fig. 1). Due to the early season the highest peaks of Hajar were not surveyed, with the highest locations with recorded species at 1950 m.

Butterflies were determined based on external features using among others the monographs published by Larsen & Larsen (1980) and Larsen (1984b). The nomenclature mainly follows the African Butterfly Database (ABDB 2023) complemented by Wiemers et al. (2018) for the species present in Europe.

List of locations

The list of locations contains the relevant toponyms, coordinates, altitude, a short description of the habitat, and dates of the visits. Toponyms were extracted from Google Earth maps. The locations are numbered in the west-to-east direction as shown on the map (Fig. 1) and referred to in the results section for each species recorded (Tab. 1).

1. Al Buraimi, Mahdah, hills above 'Cave Park' resort; 24.359178°N, 55.885465°E; 320 m; calcareous rocky ridges almost devoid of vegetation; 9.II.2023
2. Al Buraimi, Al Khatwah oasis, the northern edge of the oasis and a small gully N of parking; 24.317065°N, 56.122963°E; 660 m; orchards in the oasis, small rocky wadi with sparse vegetation; 9.II.2023
3. Al Fath, Al Ayn, along the road N of the Ain Bani Saadah spring; 23.901219°N, 56.169313°E; 620 m; small gully with abundance of flowers, rocky limestone slopes; 10.II.2023
4. Al Buraimi, wadi Hatta, near the Hatta pools; 24.708703°N, 56.182569°E; 370 m; bushy vegetation along irrigation channel and open gravels; 9.II.2023
5. Al Khubayb, fringes of the oasis SE of the village; 23.665046°N, 56.244592°E; 450 m; well wooded wadi, palm oasis, rocky slopes; 10.II.2023
6. Sohar, oases near sewage treatment plant S of the town; 24.348462°N, 56.701631°E; 15 m; flat bushy wadis and field edges; 8.II.2023
7. Miskin, small side wadi on route to Suwayhat; 23.565496°N, 56.894175°E; 785 m; rocky slopes with solitary bushes and trees; 8.II.2023
8. Rustaq, Murri, at the entrance to the gorge S of the village; 23.452117°N, 57.062961°E; 735 m; gravels, fringes of oasis; 8.II.2023
9. Al Hamra, Al Suwair, in a small side wadi S of the village; 23.187439°N, 57.138029°E; 925 m; overgrown wadi with small bushes, rocky slopes; 12.II.2023
10. Jebel Shams, Misfah, wadi along the main road E of the village; 23.234839°N, 57.149694°E; 1445 m; wadi with gravels, flowering ruderal area; 12.II.2023

11. Jebel Shams, Dar as Sawda, small wadi SE of the village; 23.237063°N, 57.190813°E; 1950 m; overgrazed open woods, steep rocky slopes; 12.II.2023
12. Al Hamra, wadi Ghul, upstream from Al Hajir village; 23.161486°N, 57.202728°E; 790 m; canyon with narrow strip of palm groves, rocky slopes; 12.II.2023
13. Al Hamra, in a side wadi W of the town; 23.107106°N, 57.208750°E; 730 m; rocky wadi with dominant *Salvadora persica* L. bushes; 11.II.2023
14. Al Hamra, Misfat Al Abriyeen, along the path to the spring NE of the village; 23.142619°N, 57.313641°E; 960 m; oasis with cultivated terraces, bushy and rocky slopes; 11.II.2023
15. Rustaq, Ain Umq, along the road in a narrow canyon SE of the village; 23.242986°N, 57.365476°E; 770 m; rocky slopes with solitary trees; 7.II.2023
16. Rustaq, Snake canyon, at the entrance to the canyon at Bait Bimah; 23.210485°N, 57.385648°E; 860 m; rocky slopes with bushes and trees, gravels; 7.II.2023
17. Rustaq, Snake canyon, along the road from Al Hail above the canyon; 23.213948°N, 57.387853°E; 940 m; screes with flowering crucifers; 7.II.2023
18. Rustaq, Al Zamah, at the exit of the Snake canyon; 23.212429°N, 57.403730°E; 740 m; gravels with small ponds, rocky and bushy slopes; 7.II.2023
19. Rustaq, at the SE edge of the oasis at Al Alayiah Fort; 23.386400°N, 57.439302°E; 350 m; oasis with orchards, ruderal vegetation along paths; 7.II.2023
20. Rustaq, Al Awabi, in the oasis N of the river; 23.310159°N, 57.534637°E; 495 m; oasis with orchards, ruderal vegetation along the road and paths; 6.II.2023
21. Jebel Akhadar, wadi Ban Habib, in the wadi at an abandoned village; 23.070683°N, 57.602141°E; 1850 m; wadi fringed with woods, small orchards; 13.II.2023
22. Rustaq, Qaryat Al Alya, along the trail into the gorge; 23.178464°N, 57.657414°E; 940 m; rocky slopes, with bushes and solitary trees ; 6.II.2023
23. Jebel Akhadar, terraces along trail E of Al Ain village; 23.073604°N, 57.664542°E; 1940 m; steep rocky slopes, cultivation on terraces; 13.II.2023
24. Ad Dakhiliyah, Birkat Al Mouz, first part of the west branch of wadi Muaydin; 22.993706°N, 57.666594°E; 760 m; oasis, rocky and bushy slopes along irrigation channel; 13.II.2023
25. Nakhl, Wakan village, along the trail above the village; 23.142265°N, 57.731806°E; 1540 m; orchards on terraces, flowering almond trees; 6.II.2023
26. Nakhl, Ain Al Thawarah hot springs; 23.375582°N, 57.828026°E; 345 m; small patches of greens and bushes along the river; 5.II.2023
27. Hibra, northern part of the oasis at the village; 23.504367°N, 57.835917°E; 230 m; ruderal vegetation, abandoned lots with bushes; 5.II.2023
28. Buwah, in the gorge E of the village; 23.483501°N, 58.049684°E; 230 m; overgrazed rocky slopes with acacias, gravels; 5.II.2023
29. Muscat, Al Ansab, trail to the lagoons in the reserve; 23.564256°N, 58.329550°E; 40 m; ruderal vegetation along the road, small woods; 5.II.2023

30. Muscat, Qurum Beach, along the fence at the parking near mangroves; 23.622578°N, 58.475582°E; 5 m; ruderal area, halophytic vegetation; 3.II.2023
31. Muscat, Darsat, at rest station with The Cave restaurant; 23.615571°N, 58.532750°E; 70 m; parkland, rocky slopes with ruderal vegetation; 3.II.2023
32. Muscat, Hamriya, small wadis along Yiti road 2 km SE of the town; 23.561950°N, 58.560206°E; 170 m, shallow flower rich wadi, limestone rocky hills; 4.II.2023
33. Muscat, Hamriya, small wadis along Yiti road 4 km SE of the town; 23.549142°N, 58.579739°E; 160 m; shallow flower rich wadi, steep rocky slopes, 4.II.2023
34. Yiti, small wadi on SW side of the oasis; 23.505001°N, 58.653369°E; 25 m; sandy wadi lined with bushes and trees; 4.II.2023
35. Yiti, Bandar Al Khairan, along the track to Meaad beach; 23.512000°N, 58.745776°E; 40 m; rocky slopes with bushes and solitary acacia trees; 4.II.2023

Results

During our surveys a total of 35 localities in the eastern part of Oman were visited and overall, 39 butterfly species were recorded (Tab. 1).

Tab. 1. The distribution of butterflies and skippers (Lepidoptera: Papilionoidea) in the eastern Sultanate of Oman. Numbering of the localities corresponds to the list of localities in Materials and Methods section.

Species	Distribution
PAPILONIDAE	
Papilioninae	
Papilio machaon muetingi Seyer, 1976	20, 21, 25
Papilio demoleus Linnaeus, 1758	2, 6, 8, 14, 19, 20, 27, 28, 31
PIERIDAE	
Pierinae	
Pontia daplidice (Linnaeus, 1758)	11, 23
Pontia glauconome (Klug, 1829)	4, 9, 10, 12, 16, 20, 28, 31, 32, 33, 34
Euchloe transcaspica amseli Gross & Ebert 1975	1, 3, 17, 32
Belenois aurota (Fabricius, 1793)	2, 14, 16, 20, 23, 25, 27, 31, 32, 33
Colotis amata calais (Cramer, 1775)	13, 14
Colotis phisadia (Godart, 1819)	13, 14, 29
Colotis danae eupompe (Klug, 1829)	35
Colotis liagore (Klug, 1829)	5, 7, 8, 9, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 32, 33, 34, 35
Colotis fausta (Olivier, 1804)	7, 8, 12, 14, 17, 18, 23, 25, 28, 32, 33
Coliadinae	
Catopsilia florella (Fabricius, 1775)	7, 9, 12, 14, 16, 20, 23, 33
Eurema hecabe solifera (Butler, 1875)	19

NYMPHALIDAE	
Danainae	
Danaus chrysippus (Linnaeus, 1758)	2, 4, 5, 6, 8, 12, 14, 19, 20, 22, 23, 25, 26, 28, 29, 30, 31, 32, 33, 34, 35
Nymphalinae	
Vanessa cardui (Linnaeus, 1758)	1, 2, 3, 11, 14, 20, 22, 23, 25, 28, 29, 31, 32, 33
Junonia hierta cebrene Trimen, 1870	9, 14, 21, 24, 29, 32, 33, 35
Junonia orithya here Lang, 1884	12, 18, 19, 20, 22, 24, 25, 28, 32, 33, 35
Hypolimnas misippus (Linnaeus, 1764)	19, 20
Satyrinae	
Ypthima asterope (Klug, 1832)	2, 6, 12, 14, 19, 20, 24, 28
Ypthima bolanica Marshall, 1882	14, 22, 24
LYCAENIDAE	
Theclinae	
Myrina silenus (Fabricius, 1775)	12, 14, 19, 24, 26
Deudorix livia (Klug, 1834)	25
Polyommatinae	
Anthene amarah (Guérin-Méneville, 1849)	13, 22, 24, 34, 35
Lampides boeticus (Linnaeus, 1767)	1, 8, 19, 20, 21, 25, 28, 32
Tarucus rosaceus (Austaut, 1885)	2, 3, 5, 8, 10, 12, 13, 14, 15, 16, 19, 20, 22, 24, 27, 28, 31, 32, 33
Tarucus balkanicus (Freyer, 1844)	14, 16
Zizeeria karsandra (Moore, 1865)	2, 6, 20, 28, 30
Azanus jesous (Guérin-Méneville, 1849)	4, 5, 8, 10, 13, 16, 28, 31, 32, 33, 34, 35
Luthrodes parrhasius (Fabricius, 1775)	5, 20, 27, 28
Freyeria trochylus (Freyer, 1844)	2, 10, 14, 16, 24
Brephidium exilis (Boisduval, 1852)	20, 30
HESPERIIDAE	
Coeliadinae	
Coeliades anchises jucunda (Butler, 1881)	5, 7, 8, 9, 10, 12, 13, 14, 15, 16, 18, 20, 21, 22, 24, 25, 28
Pyrginae	
Gomalia elma (Trimen, 1862)	14, 20
Spialia doris (Walker, 1870)	9, 22
Spialia mafa higginsi Evans, 1937	14
Hesperiinae	
Pelopidas mathias (Fabricius, 1798)	6, 8, 20
Pelopidas thrax (Hübner, 1821)	2, 4, 19, 20, 24, 26, 28
Gegenes pumilio (Hoffmannsegg, 1804)	2
Gegenes nostrodamus (Fabricius, 1793)	20

Fig. 1. Approximate position of the butterfly sampling locations in northern Sultanate of Oman. The localities are numbered as in List of localities. The wider area of Jebel Shams is enlarged for clarity.

Discussion

Despite the early season and limited time available, 39 butterfly species were recorded during our surveys representing roughly 70 % of all species known for the eastern part of the Sultanate of Oman. Some notable exceptions represent species limited to the Musandam Peninsula: *Euchloe belemia* (Esper, 1800), *Pseudophilotes vicrama clara* (Christoph, 1887), *Plebejidea loewii* (Zeller, 1847); butterflies appearing later in the season: *Hipparchia parisatis* (Kollar, 1849); and extremely rare species with single or only a few known locations in the region: *Colotis chrysonome* (Klug, 1829) (Larsen 1983), *Colotis halimede* (Klug, 1829) (Larsen 1983), *Colotis evarne* (Klug, 1829) (Seizmair 2016), *Cigaritis acamas hypargyros* (Butler, 1886) (Larsen 1983, De Freina 2013, Schmidt et al. 2020), *Leptotes pirithous* (Linnaeus, 1767) (De Freina 2013), *Azanus ubaldus* (Stoll, 1782) (De Freina 2013), *Zizula hylax* (Fabricius, 1775) (Larsen 1983, Seizmair 2016), and *Spialia mangana* (Rebel, 1899) (Feulner 2007).

Among most widespread species *Danaus chrysippus* was the commonest recorded at 21 locations. Other common species occurring at half or more sites were: *Colotis liagore*, *Tarucus rosaceus*, and *Coeliades anchises jucunda*. The common occurrence

Fig. 2. The large and conspicuous Afrotropical skipper *Coeliades anchises jucunda* (Butler, 1881) was widespread in the Hajar Mountains. (photo: Jan Verovnik)

of the latter is particularly surprising as it is an Afrotropical species (Fig. 2) otherwise rare in other parts of Arabian Peninsula (Larsen 1983). This is likely explained by the common occurrence of its only known host plant in the region *Acridocarpus orientalis* A. Juss. (Larsen & Larsen 1980, Cock 2009), a low-growing tree commonly occurring on rocky terrain along road verges and at ruderal sites in the Hajar Mountains. We also recorded some rare and interesting species which are discussed in more detail below:

Pontia daplidice (Linnaeus, 1758)

The species was first reported for northern Oman by Larsen & Larsen (1980), however from a lower altitude location and presumably as a non-resident migrant. Further records from higher altitudes at Jebel Akhadar could indicate the presence of a permanent resident population (Larsen 1983). Similarly, isolated permanent populations occur in western Arabia in highlands above 2000 m (Pittaway 1986). We found the species at both Jebel Sahams and Jebel Akhadar (Figure 3) but only single fresh specimens possibly indicating the beginning of the flight season. Such early season finds to some extent corroborate its permanent resident status in the high mountains of eastern Oman.

Euchloe transcaspica amseli Gross & Ebert 1975

This is a very localised Irano-Turanian species known only from a handful of sites in eastern Oman and United Arab Emirates (Larsen 1983, Gillett 1997). It was

Fig. 3. *Pontia daplidice* (Linnaeus, 1758) was found only at the highest elevations in Jebel Shams and Jebel Akhadar. (photo: Jan Verovnik)

first mentioned for Oman by Larsen on Musandam Peninsula and Muscat based on museum specimens (Larsen 1977). The latter record was subsequently questioned based on known distribution and zoogeographic affiliation of the species (Larsen 1983). First confirmed records from mainland east Oman thus come from its far north-western corner from wadi Aboule and hills near Al Buraimi (Gillett 1997). The host plant of the species is likely *Diplotaxis harra* (Forssk.) Boiss. which grows abundantly in this region (Gillett 1997).

It came as no surprise that we found the species in low barren calcareous hills near Al Buraimi – Mahdah road (Figure 6), likely the same location visited by Gillett. Adults were quite numerous along the ridges and hilltops, sometimes up to 10 could be observed 'hilltopping' around prominent peaks. Due to strong winds, they only settled briefly on wind shielded side of the ridges, otherwise flying low to the ground and unexpectedly fast for such small butterflies. A single female was observed lower down in a small gully visiting an unidentified crucifer for nectaring (Figure 4). The species was found in a similar rocky habitat before Al Fath about 60 km to the south-east indicating a probably wider distribution of the species in this region.

More surprisingly, we were able to confirm the records for Muscat where the calcareous hills at the eastern edge of the city visually resemble the location near Al Buraimi. However, the host plants appear to be much more localised, and despite repeated searches only a single male of *Euchloe transcaspica amseli* was found. Finding the species above the well-known Snake Canyon in Jebel Shams at a much

Fig. 4. The localised and rare white *Euchloe transcaspica amseli* Gross & Ebert 1975 nectaring near Al Buraimi. (photo: Jan Verovnik)

higher altitude and on an ophiolitic substrate was beyond expectation. At least two specimens were seen on inaccessible steep screes visiting violet flowering crucifers, most likely *Physorhynchus chamaerapistrum* (Boiss.) Boiss. No larval host plants were seen at the location, nor at any of the nearest ones.

Colotis danae eupompe (Klug, 1829)

Although a widespread species in the Arabian Peninsula, it seems to be more restricted in eastern Oman where it was so far found only on the outskirts of the Eastern Hajar Mountains and coastal region south of Muscat (Larsen 1977, De Freina 2013, Seizmair 2016). Correspondingly, we found the species only at coastal hills at Bandar Al Khairan south of Muscat. Adults were commonly observed, flying along rocky ridges and settling on dwarfed trees of *Maerua crassifolia* Forssk. which were flowering in perfusion.

Eurema hecabe solifera (Butler, 1875)

This is a widespread tropical species occurring under oasis conditions also in drier regions. It is widespread in western Oman in the Dhofar region (Verovnik et al. 2022), but only reported for eastern Oman from Al Khatwah oasis (location 2) close to the United Arab Emirates border (Gillett 1997). The species is considered introduced to eastern Arabia and is present in a few locations in Saudi Arabia (Larsen 1983) and in the United Arab Emirates (Gillett 1997). Although we were unable to confirm

Fig. 5. The tropical species *Eurema hecabe solifera* (Butler, 1875) was found only in a single location in an oasis at Rustaq. (photo: Jan Verovnik)

Gillett's find, we found the species in an oasis close to Rustaq town (location 19) quite a distance away from the known site, and notably, on the east side of Hajar Mountains. This area has been well surveyed by different authors (Larsen 1983, Schmidt et al. 2020), so our find is a bit of a mystery. Either the species has a very localised distribution in this very big complex of oases, or it was recently introduced with agricultural products. Although we surveyed several similar sites in the region, the species was found just in one location but was relatively common there (Figure 5).

Brephidium exilis (Boisduval, 1852)

The species was accidentally introduced to eastern Arabia in 1995 in Sharjah, United Arab Emirates (Larsen 2000). It has subsequently spread along the coasts in the region as far as Muscat (Vis 2010) and Sur (De Freina 2013) in south-eastern Oman. We found the species abundantly on ruderal vegetation of the coastal strip of Qurum beach (location 30), a typical habitat of the species in Arabia (Pittaway et al. 2006). More surprisingly the species turned up at the edge of the Al Awabi oasis (location 20) quite a distance from the coast in the Rustaq area. Whether this is a permanent colonisation, or just a vagrant specimen remains to be resolved by further surveys.

Tarucus balkanicus (Freyer, 1844)

The distribution of this species is limited to the eastern Arabian Peninsula reaching Tuwaiq Hills in central Saudi Arabia in the west (Larsen 1983). It has been

Fig. 6. The habitat of *Euchloe transcaspica amseli* Gross & Ebert 1975 at Al Buraimi. (photo: Rudi Verovnik)

scarcely recorded in eastern Oman with most records from the Musandam Peninsula (Larsen 1983). In more recent literature it is reported only by De Freina (2013) from Jebel Shams and Jebel Akhadar. This corresponds well with our observations of the species on the western and eastern slopes of Jebel Shams (locations 14, 16). It is more telling, that the species was not recorded elsewhere despite checking numerous congener *T. rosaceus* at many sites. Thus, it appears that the species is limited to higher altitudes in eastern Oman.

Gegenes nostrodamus (Fabricius, 1793)

Due to its similarity with more common and widespread *Pelopidas* spp., this species was possibly overlooked in eastern Oman. There is only a single known location in Dhofar (Seizmair 2016), but there are two records from the United Arab Emirates (Gillett 1997). At least two different males were observed in Al Awabi oasis (location 20) drawing our attention by markedly paler coloration compared to other skippers. The presence of a distinct turf of long hairs at the base of the hindwing confirmed our determination (Lorković 1971). This is the first record of the species in eastern Oman and the second for the country.

In general, the butterflies were relatively scarce, but there was a stark contrast between locations with recent precipitation manifested by abundant flowering and drier locations. Thus, there were no fewer than 16 locations with five or less recorded species, while the locations at Al Awabi oasis (location 20) and Misfat Al Abriyeen (location 14) hosted 21 and 19 species respectively.

Our surveys provide a good overview of early-season butterfly fauna in eastern Oman, however species lists for a particular location, if extracted, are based only on single visits and should therefore not be considered comprehensive. We provide only a snapshot of local faunas, while repeated surveys, including in different seasons, would be needed for a better overview. Additionally, due to limited time, we only visited locations easily accessible by car excluding more remote but likely interesting locations. We hope our surveys will ignite further studies of the interesting butterfly fauna of the Sultanate of Oman. The most obvious region to focus on is the eastern Hajar Mountains with almost no data, and the hilly regions along the coast towards the United Arab Emirates.

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