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To cite this article: Joseph Monks, Steven Ross, Michael Geiser, Jurate De Prins, Mostafa Sharaf, Nigel Wyatt, Shadia Al Rijeibi & Andrew Polaszek (2019) A preliminary survey of the insect fauna of the Hajar Mountain Range, Oman, *Journal of Natural History*, 53:15-16, 939-963, DOI: [10.1080/00222933.2019.1611969](https://doi.org/10.1080/00222933.2019.1611969)

To link to this article: <https://doi.org/10.1080/00222933.2019.1611969>



Published online: 06 Jun 2019.



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A preliminary survey of the insect fauna of the Hajar Mountain Range, Oman

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ABSTRACT

The Hajar Mountain Range of Northern Oman is an important centre of species endemism, and of biogeographical interest as a crossroads between the Afrotropical and Palaearctic regions. Despite this, the invertebrate fauna of the region is largely unknown, with very little dedicated research or surveys having been undertaken until now. Here we present the invertebrate species collected and identified from five different survey locations within the Hajar Mountains. This preliminary checklist contains 296 records, of which 36 are new records for Oman. Our surveys also discovered two new species of ant: *Lepisiota omanensis* collected from Jebel Qahwan Reserve and at the base of Jebel Akhdar, and *Anochetus annetteae* from Hibra Village in the Nakhl Region.

ARTICLE HISTORY

Received 20 September 2017
Accepted 16 April 2019

KEYWORDS

Biodiversity; biogeography;
Al Hajar Mountains; Middle
East; Arabian Peninsula

Introduction

The Sultanate of Oman forms part of the Arabian Peninsula covering an area of 309,501 km². It is bordered to the north and east by the Persian Gulf and Oman Sea; to the west by Saudi Arabia and the United Arab Emirates; and to the South by Yemen. Oman is an area of particular interest from a biogeographical point of view, as it is a meeting point between the biodiversity associated with the Afrotropical and Palaearctic regions. Oman has two mountain ranges, the Hajar Mountains in the north and the Dhofar Mountains in the south, which are likely to have acted as refugia for species during periods of past climate change (El-Keblawy 2014).

Our study was located in the Hajar Mountains, a 700 km long mountain chain running the length of Oman's northern coastline with a small portion in the United Arab Emirates. The mountains are bordered on one side by the Gulf of Oman and on the other by vast gravel deserts that stretch to the Dhofar Mountains in the south of the country (Ghazanfar 2004). The range is composed of steep, jagged mountains, canyons and dry river beds (wadis), rising steeply from the northern coastline to a highest point

on Jebel Shams at around 3000 m (Gebauer et al. 2007). As elevation increases, temperature and evapotranspiration decrease, with mean annual temperatures at 2000 m of 18°C, 25°C at 1070 m and 29°C at sea level (Luedeling et al. 2007). However, mean temperatures in isolation are of limited value. For example, on Jebel Shams the temperature in January regularly falls to 1–3°C, and on lower altitudes but above 500 m it regularly exceeds 40°C between May and September. This vast range must impact many species (M. Ebejer, personal communication). Mean annual precipitation ranges from 75 mm in the lowlands to 400 mm in the higher reaches of the mountains (Kwarteng et al. 2009). Due to the hot, arid conditions, vegetation is generally sparse across the mountain range, but with higher coverage in drainage lines and at altitude. Species richness of plants is greatest between 1000–1500 m (Ghazanfar 1998). Vegetation cover is also influenced by the underlying geology, which is mostly ophiolites. However, Cretaceous limestone is also present, and part of a more complex system (Hawasina) and on its own is exposed far less than ophiolites and schists. However, water and pH probably influence the composition of the flora more than the type of rock (M. Ebejer, personal communication).

Due to the range's close proximity to Iran, the flora of the Hajar Mountains is closely associated with the Palaearctic region (Patzelt 2015). For example, *Juniperus seravschanica* is found in the high altitude region of Jebel Akhdar, and the nearest populations of this species are found in Iran, Pakistan and Kazakhstan (Adams et al. 2014). Glacial events, resulting in the drying up of the Arabian Gulf, most recently c. 17,000–18,000 BP, have facilitated invasions of species into Oman from the Palaearctic region (El-Keblawy 2014).

The Hajar Mountains are known as an important centre of species endemism in the region (Miller and Nyberg 1991; Ghazanfar 2004; Brinkmann et al. 2009; Carzana and Arnold 2012). For example, of the 703 plant species found in the Hajar Mountains, 24 are Endemics, 6 Near Endemics and 28 Regional Endemics (Patzelt 2015). In terms of fauna, the Hajar Mountains are also home to 12 endemic reptile species (Carzana and Arnold 2012) and one endemic large mammal, the Arabian Tahr, *Arabitragus jayakari* (Insall 2008). Substantially less is known about the insect fauna inhabiting the region. To our knowledge, this paper is the first work on multiple orders of insects from the Hajar Mountains since the Oman Flora and Fauna Survey of 1975 (publ. 1977), which surveyed the limestone massif of Jebel Akhdar (contains Jebel Shams), the highest point of the Hajar Mountains (Brinkmann et al. 2009). Insect research has also been sparse elsewhere in Oman, limiting our understanding of the diversity and representation of insect species. Certain groups, such as moths (Wiltshire 1977a, 1977b, 1980, 1985; Wiltshire 1988; Hausmann 1998, 2009; Bengtsson 2002; Polaszek 2016a, 2016b and references therein) have received more attention, while other groups, such as the chalcid wasps (Chalcidoidea), are virtually unstudied with only 18 records currently listed (Noyes 2018).

In stark contrast, the insect fauna of neighbouring UAE has been extremely well-studied in just the last decade (van Harten 2008, 2009, 2010, 2011, 2014, 2017). In an intensive project involving 150 specialists, more than 6000 insect and spider species have been documented from the UAE (Schmid-Egger, personal communication). Among

these are 400 species new to science recorded in the last 10 years (Howarth 2019). A large proportion of these were recorded from the small part of the Western Hajar Mountains that penetrate the northeast corner of UAE. Inevitably, a large percentage of the arthropods recorded from the UAE have now been found to occur in, or will eventually be recorded from, the Oman Hajar Mountains. Availability of the UAE faunistic work greatly facilitated the identification of many species in this study, in particular where mentioned below under specific orders.

This study aimed to increase our understanding of insect species biodiversity and representation within the Hajar Mountains by focusing collection in five separate study locations in the mountain chain.

Methodology

The main collections were carried out in the following areas of the Hajar Mountains: Jebel Akhdar (Western Hajar Mountains; see [Figure 1](#)), As Saleel Natural Park (see [Figure 2](#)), Jebel Qahwan Reserve, Ra's ash Shajar (Eastern Hajar Mountains), and Wadi Khuair (Muscat). The collections took place from October 2013–June 2014, November 2014, April 2015 and January–February 2016.



Figure 1. Habitat typical of the *Sideroxylon mascatense*-*Olea europea* plant community found at 1500–2200 m in the western Hajar Mountains. Similar to the Jebel Akhdar survey site.



Figure 2. (P1010406). Habitat typical to the *Euphorbia larica*-*Moringa peregrina* plant community of the lowland Hajar Mountains. Similar to the As Saleel Natural Park survey site.

More limited collecting took place in Hibra Village (Batinah Coastal Region), the Oman Botanic Garden, Wadi Khoud (near Muscat), Lizugh Village, near Ra's Al-Haad, near Wadi Al-Arbein, Wadi Mayh, Wadi Quriyat (Eastern Hajar Mountains), near Birkat Al-Mouz, near Biwa Village, near Buwah Village, near Fins Village, near Siwa Village, and near Taww Village.

The first author collected specimens using light traps, a Malaise trap, yellow pan traps, pitfall traps and hand nets. All traps were emptied daily, while Malaise traps were emptied weekly. Traps were set during the months and years given for each record below. The specimens were dry-mounted and identified at the Natural History Museum (London, UK) using determined material and the relevant literature. The specimens have been deposited in the Oman Natural History Museum (ONHM), National Museum of Wales, Cardiff, UK (NMC) and the Natural History Museum, London, UK (NHMUK). Identifying authorities were as follows: Coleoptera: M. Geiser; Hymenoptera (except Formicidae): A. Polaszek; Hymenoptera: Formicidae: M. Sharaf; Diptera: N. Wyatt (additional Diptera identifications by J. Deeming & M. Ebejer); Lepidoptera: J. de Prins (additional Lepidoptera identifications by W. de Prins, D. Agassiz and A. Zilli). Other identifications were by J. Monks.

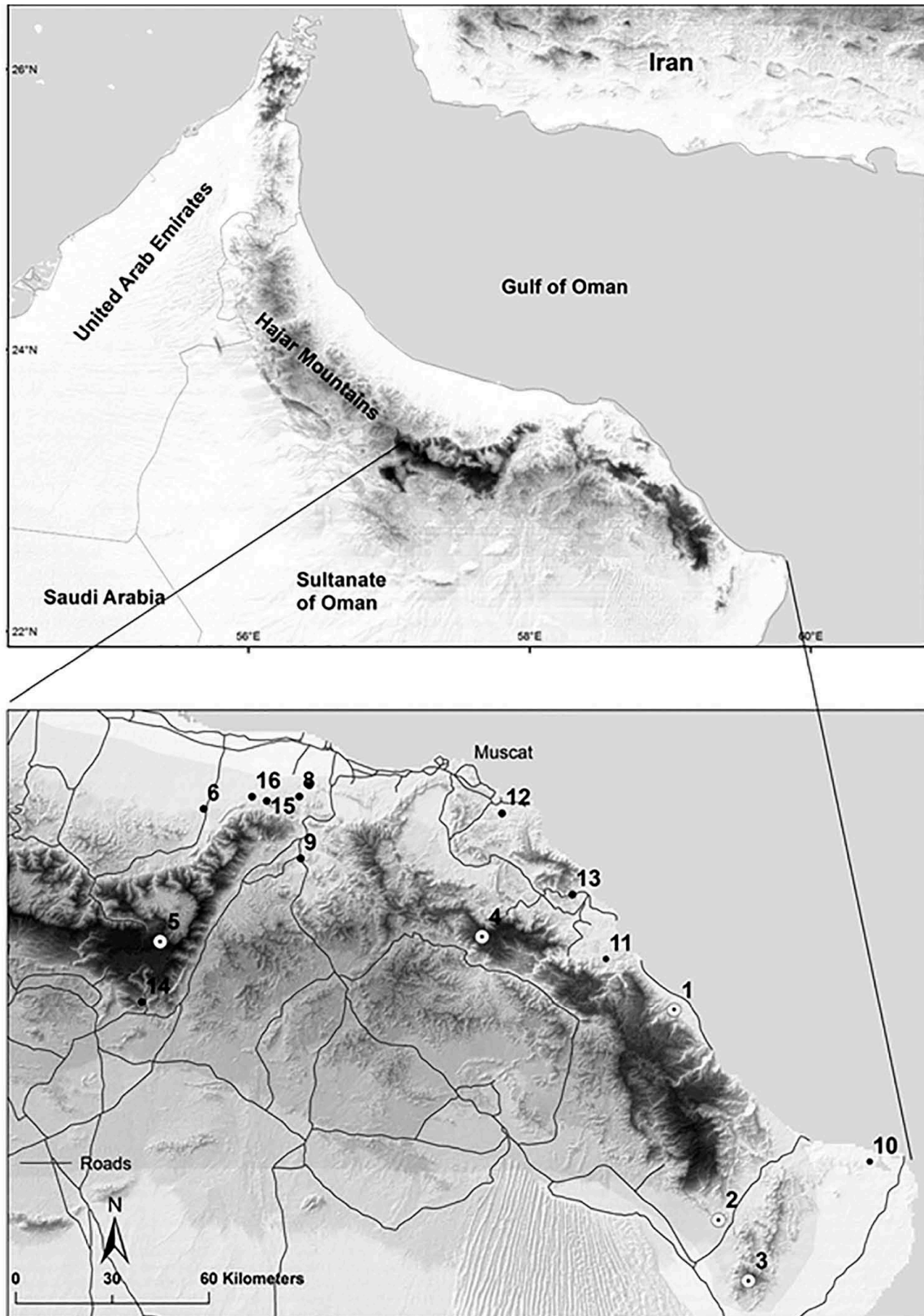


Figure 3. Map of the Hajar Mountains showing the main collecting sites (white circles) and additional collecting sites (black circles). (1) Ra's ash Shajar, (2) As Saleel National Park, (3) Jebel Qahwan Reserve, (4) Wadi Khuair, (5) Jebel Akhdar Sanctuary for Natural Sceneries, (6) Hibra Village, (7) Oman Botanic Gardens, (8) Wadi Al Khoud, (9) Lizugh Village, (10) Ra's Al-Haad, (11) Wadi Al-Arbein, (12) Wadi Mayh, (13) Quriyat, (14) Birkat Al-Mouz, (15) Buwah Village & (16) Taww Village.

Site characteristics

As Saleel natural park (AS, Figure 3 (2))

The surface geology of As Saleel consists of limestone/chert mountains to the north and east, which have numerous pockets of fossilised corals and other remains of ancient seabeds. The west of the park consists of alluvial shingle deposits, sand and gravel are found in the central area, and the south-east is mostly sand. Collectively all of the plains materials are alluvial drift deposits originating from the mountains to the north. Water is scarce in As Saleel, the park receives an average of 148 mm of rainfall per year, and there is only one mountainside spring with permanent surface water in the park.

The flora of As Saleel displays elements of both desert and low-altitude montane vegetation. The park is dominated by *Vachellia tortilis* with four other tree species present but rare including *Ziziphus spina-christi*, *Maerua crassifolia*, *Prosopis cineraria* and *Acacia ehrenbergiana*. Shrub cover includes *Fagonia indica*, *Indigofera arabica*, *Tephrosia apollinea*, and *Placama aucheri*, among others. Grasses and herbs are common in the understory and include herbs such as *Dichanthium foveolatum* and *Aerva javanica* and the grasses *Aristida*, *Eragrostis* and *Stipagrostis* species. Sampling in the area was conducted between the elevations of 199–322m a.s.l.

Jebel Qahwan reserve (JQ, Figure 3 (3))

Geologically, Qahwan is the northernmost continuation of the 'Haushi-Huqf basement uplift', along the south-eastern continental margin of Oman. The crystalline basement of Qahwan is largely composed of gneisses, amphibolites and granites of Proterozoic and early Palaeozoic age (Searle 2014), with later limestone deposits on the mountain surface. Considering Qahwan only receives an average annual precipitation of 148 mm of rain, there are a surprising number of permanent sources of surface water, with up to 33 pools existing on the mountain.

Vegetation in Jabal Qahwan is sparse but diverse, due to the many habitat conditions found on the mountain. Vegetation is most concentrated in the many wadis, basins and drainage lines. Wadis at the base of the mountain are dominated by large *Ziziphus spina-christi*, *Vachellia tortilis*, and *V. nilotica* trees, bushes of *Aerva javanica* and grasses such as *Sporobolus spicatus*. *Ficus cordata* subsp. *salicifolia* are also occasionally seen in shaded areas. The steep rocky slopes of the mountain have very thin soils that are dominated by *Euphorbia larica*, *Echinops erinaceus*, *Blepharis ciliaris*, bunch grasses (*Aristida adscensionis*) and scattered *V. nilotica* trees. Rarer species found on Qahwan include the succulent *Caralluma flava*, and the regional endemic *Dipcadi biflorum* (Ghazanfar 1996). Sampling took place on the lower half of the mountain between the elevations of 305–485 m a.s.l.

Jebel Akhdar sanctuary for natural sceneries (JA, Figure 3 (5))

Jabal Akhdar is dominated by limestone surface geology throughout the plateau. Vegetation has a relatively uniform environment across the plateau and is most influenced

by exposure to sunlight, slope and moisture availability. Due to its high elevation (1800 to 2400 m), Jabal Akhdar receives considerably more rain than other areas sampled, with an annual average precipitation of 310 mm. There are also many small pools on the plateau associated with the many wadi drainage lines.

The dominating tree species on the plateau were *Juniperus seravschanica*, *Olea europaea* subsp. *cuspidata* and *Sideroxylon mascatense*, with *Vachellia gerrardii* and *Sageretia thea* increasing in dominance in valleys and depressions with higher moisture availability. The shrub layer is dominated by *Dodonaea viscosa* and *Euryops arabicus*, and *Grewia erythraea* and *Sageretia thea* are also common. Wadi areas were dominated by *V. gerrardii* and *Ziziphus spina-christi* trees. The herbaceous cover on the plateau is composed of grasses such as *Aristida adscensionis*, *Cenchrus ciliaris*, *Cymbopogon schoenanthus*, and *Cymbopogon commutatus*. The main flowering plant species includes *Helichrysum glumaceum*, *Salvia aegyptiaca*, *Teucrium mascatense* and *Teucrium stocksianum* (Schlecht et al. 2009). Sampling took place at elevations 2225–2384m a.s.l.

Ra's ash Shajar (RS, Figure 3 (1)) and Wadi Khuair, Muscat (WK, Figure 3 (4))

The characteristics of Ra's ash Shajar and Wadi Khuair are described together due to the similarities of the two sites. Both sites are dominated by limestone parent materials with small ophiolite outcroppings also occurring at the Wadi Khuair site. Ra's ash Shajar receives approximately 148 mm of rain per year and has numerous permanent water holes, whereas Jabal Khuair receives an average of 100 mm per annum and has no permanent surface water.

The dominant tree species in both areas is *Vachellia tortilis*, but in wadis and lines of drainage *Ziziphus spina-christi*, *Rhus aucheri*, *Moringa peregrine*, and *Ficus cordata* subsp. *salicifolia* increase in dominance. Flowering plants in wadis included *Aerva javanica* and *Fagonia bruguieri*, and the grasses *Cymbopogon schoenanthus* and *Cyperus conglomeratus*. *V. tortilis* is the dominant tree on rocky hill slopes. Although rare, flowering plants on hill slopes include *Launaea bornmuelleri*, *Lavandula subnuda*, *Blepharis ciliaris*, *Aerva javanica*, *Euphorbia larica* and *Ochradenus arabicus*, and the grasses *Cymbopogon schoenanthus* and *Pennisetum setaceum*. Sampling in the areas took place between the elevations of 34–308m a.s.l.

Results

This paper lists 8 orders, 87 families, 244 genera and 296 collection records from the Hajar Mountains, of which 196 were identifiable to species (see Table 1 for new records for Oman). Identification to species-level was most successful for Lepidoptera, followed by Coleoptera and Diptera. A large number of specimens collected during the survey are not recorded here as it was not possible to identify them even to genus level. This was either due to a lack of published keys or other papers to facilitate identification, or a lack of access to particular taxon specialists. The lack of records is noticeable in particular for the Apoidea which were found in abundance but not identifiable for the reasons above. Unless stated otherwise, all

Table 1. New species records for Oman.

Order	Family	Subfamily	Genus	Species
Blattodea	Blattidae	Blattinae	<i>Shelfordella</i>	<i>S. arabica</i>
Coleoptera	Bostrichidae	Bostrichinae	<i>Bostrychoplites</i>	<i>B. zickeli</i>
			<i>Calopertha</i>	<i>C. truncatula</i>
	Chrysomelidae	Cryptocephalinae	<i>Cryptocephalus</i>	<i>C. chikatunovi</i>
		Eumolpinae	<i>Colasposoma (Falsonerissus)</i>	?
		Galerucinae	<i>Nymphius</i>	<i>N. emir</i>
	Malachiidae	Malachiinae	<i>Malachiomimus</i>	<i>M. cf. buettikeri</i>
	Coccinellidae	Coccinellinae	<i>Cheilomenes</i>	<i>C. sexmaculatus</i>
	Meloidae	Meloinae	<i>Hycleus</i>	<i>H. cf. gratiosus</i>
		Nemognathinae	<i>Zonitoschema</i>	<i>Z. rubricolor</i>
	Curculionidae	Entiminae	<i>Pseudobarirrhinus</i>	<i>P. conicus</i>
Hymenoptera	Aphelinidae	Coccophaginae	<i>Pteroptrix</i>	<i>P. arabicus</i>
			<i>Encarsia</i>	<i>E. lutea</i>
			<i>Encarsia</i>	<i>E. sophia</i>
	Trichogrammatidae	Trichogrammatinae	<i>Trichogramma</i>	<i>T. euproctidis</i>
	Formicidae	Formicinae	<i>Lepisiota</i>	<i>L. elegantissima</i>
	Psychidae	Placodominiae	<i>Placodoma</i>	<i>P. palaestinella</i>
	Plutellidae	Plutellinae	<i>Plutella</i>	<i>P. xylostella</i>
	Cosmopterigidae	Antequerinae	<i>Alloclita</i>	<i>A. cerritella</i>
		Cosmopteriginae	<i>Eteobalea</i>	<i>E. sumptuosella</i>
	Choreutidae	Choreutinae	<i>Choreutis</i>	<i>C. aegyptiaca</i>
Lepidoptera	Tortricidae	Olethreutinae	<i>Crociosema</i>	<i>C. plebejana</i>
	Cossidae	Mehariinae	<i>Meharia</i>	<i>M. incurvariella</i>
	Pyralidae	Epipaschiinae	<i>Otjipagapaga</i>	<i>O. dentilinealis</i>
		Phycitinae	<i>Ancylosis</i>	<i>A. nubeculella</i>
			<i>Acrobasis</i>	<i>A. minutalis</i>
			<i>Asalebria</i>	<i>A. adiudicata</i>
			<i>Cherchera</i>	<i>C. abatesella</i>
			<i>Epicrocis</i>	<i>E. pseudododiscomaculella</i>
			<i>Epicrocis</i>	<i>E. safadalis</i>
			<i>Faveria</i>	<i>F. cineracella</i>
			<i>Etiella</i>	<i>E. zinckenella</i>
			<i>Pempelia</i>	<i>P. arida</i>
			<i>Phycita</i>	<i>P. arabica</i>
	Crambidae	Crambinae	<i>Amselia</i>	<i>A. heringi</i>
		Spilomelinae	<i>Synclera</i>	<i>S. bleusei</i>
	Erebidae	Arctiinae	<i>Utetheisa</i>	<i>U. amhara</i>
		Boletobiinae	<i>Eublemma</i>	<i>E. fastrei</i>
				<i>E. pallidula</i>
	Noctuidae	Xyleninae	<i>Caradrina</i>	<i>C. atriluna</i>
				<i>C. flava</i>

specimens were collected by the first author (JM) and are deposited in the Natural History Museum, London, UK (NHMUK). Additional notes on biology and distribution are provided where available and/or appropriate.

Order: Orthoptera; family: Gryllacrididae; subfamily: Lezininae
near *Lezina armata* (Popov, 1984) [AS ii.2014]

Order: Blattodea; family: Blattidae; subfamily: Blattinae
Shelfordella arabica (Bei-Bienko, 1938) New record [JK v.2014]

Order: Mantodea; Family: Empusidae; Subfamily: Blepharodinae
Blepharopsis mendica (Fabricius, 1775) [AS ii.2014; JQ iii.2014]

Subfamily: Empusinae

Empusa hedenborgii (Stal, 1871) [AS ii. 2014; JQ iii,iv.2014]

Family: Eremiaphilidae; subfamily: Eremiaphilinae

Eremiaphila sp. [AS ii.2014]

Family: Mantidae; subfamily: Mantinae

Sphodromantis viridis Forskal, 1775 [JQ iii.2014]

Subfamily: Miomantinae

Microthespis dmitriewi (Werner, 1908) [RS xi.2013; JQ iii,iv.2014]

Family: Iridopterygidae; subfamily: Nilomantinae

Nilomantis floweri (Werner, 1907) [JQ iii.2014]

Order: Hemiptera; family: Caliscelidae; subfamily: Ommatidiotinae

Adenissus riadicus (Dlabola, 1985) [JQ iii.2014] Deposited: NMC

Family: Flatidae; subfamily: Flatinae

Juba sp. [JQ iii.2014] Deposited: NMC

Family: Fulgoridae; subfamily: Dorysarthrinae

Dorysarthrus sp. [JA i.2014] Deposited: NMC

Family: Nogodinidae; subfamily: Nogodininae

Philbyella sp. [JQ iii.2014] Deposited: NMC

Family: Cicadellidae; subfamily: Deltocephalinae

Goniagnathus sp. [AS ii.2014] Deposited: NMC

Korana sp. [AS ii.2014; JQ iii.2014]

Family: Notonectidae; subfamily: Anisopinae

Anisops sp. [JQ iv.2014] Deposited: NMC

Subfamily: Notonectinae

Enithares lineatipes Horvath, 1889 [JQ iv.2014] Deposited: NMC

Family: Veliidae; subfamily: Veliinae

Velia sp. [JA v. 2014] Deposited: NMC

Order: Coleoptera

Family: Carabidae; subfamily: Brachininae

Pheropsophus africanus (Dejean, 1825) [Lizugh Village iv.2015] Col. R. Kamnitzer

Subfamily: Cicindellinae

Lophyra histrio (Tschitscherine, 1903) [Lizugh Village iv.2015] Col. R. Kamnitzer

Myriochila melancholica (Fabricius, 1798) [Lizugh Village iv.2015] Col. R. Kamnitzer

Subfamily: Lebiinae

Merizomena sp. [JQ iv.2014]

Family: Bostrichidae; subfamily: Bostrichinae

Bostrychoplites zickeli (Marseul, 1867) New record [AS ii. 2014]

Calopertha truncatula (Ancey, 1881) New record [AS ii.2014] Deposited: ONHM

Phonapate uncinata (Karsch, 1881) [JQ iv.2014]

Sinoxylon sp. [JQ iv.2014] Deposited: ONHM

Family: Dermestidae; subfamily: Attageninae

Attagenus fasciatus (Thunberg, 1795) [Lizugh Village iv 2015] Col. R. Kamnitzer

Attagenus sp.[AS ii.2014] Deposited: ONHM

Family: Buprestidae; subfamily: Buprestinae

Anthaxia sp. [JQ iv.2014]

Subfamily: Chrysochroinae

Lampetis sp. [AS ii.2014]

Sphenoptera sp [JQ iv.2014]

Subfamily: Julodinae

Julodis euphratica (Laporte & Gory, 1835) [near Ra's Al-Haad iii.2016]

Subfamily: Polycestinae

Acmaeodera arabica (Gory, 1840) [near Al-Bidyay iv.2016]

Acmaeoderella spp. [AS ii.2014; JQ iv.2014]

Xantheremia sp. [JQ iv.2014] Deposited: ONHM

Family: Heteroceridae; subfamily: Heterocerinae

Heterocerus cf. *magnus* (Mamitza, 1933) [JA v.2014]

Family: Cerambycidae; subfamily: Cerambycinae

Derolus iranensis arabicus (Sama, 2008) [JQ iv.2014]

Subfamily: Lamiinae

Idactus iranicus (Breuning, 1975) [JQ: iv.2014]

Family: Chrysomelidae; subfamily: Chrysomelinae

Chrysolina grata brancuccii (Daccordi, 1982) [WK i.2014]

Subfamily: Cryptocephalinae

Acolastus arabicus (Lopatin, 1982) [JQ iv.2014] Deposited: ONHM

Cryptocephalus chikatunovi (Lopatin, 2008) New record [WK i.2014]

Subfamily: Eumolpinae

Chloropterus politus (Berti & Rapilly, 1973) [WK i.2014; JQ iv.2014]

Colasposoma (Falsonerissus) sp. New record [JA v.2014]

Macrocoma sp. [JA v.2014]

Subfamily: Galerucinae

Nymphius emir (Lopatin, 2006) New record [WKair vi.2014] Deposited: ONHM

Phyllotreta cf. *cheiranthi* (Weise, 1903) [JA v 2014]

Subfamily: Pachymerinae

Caryedon sp. [WK i. 2014] Deposited: ONHM

Family: Cleridae; subfamily: Clerinae

Opilo desertorum (Gerstmeier, 2010) [AS ii.2014]

Family: Malachiidae; subfamily: Malachiinae

Malachiomimus cf. *buettikeri* (Wittmer, 1980) New record [JQ iv.2014]

Family: Coccinellidae; subfamily: Coccinellinae

Cheilomenes sexmaculatus (Fabricius, 1781) New record [JQ iv.2014] Deposited: ONHM

Family: Dytiscidae; Dytiscinae

Hydaticus sp. [Lizugh Village iv.2015] Col. R. Kamnitzer

Subfamily: Laccophilinae

Laccophilus maindroni maindroni (Regimbart, 1897) [JQ iv.2014] Deposited: ONHM

Family: Nitidulidae; subfamily: Carpophilinae

Carpophilus sp. [JQ iv.2014] Deposited: ONHM

Family: Elateridae; subfamily: Agrypninae

Agrypnus omanensis (Platia & Schimmel, 1997) [JQ iv.2014]

Subfamily: Cardiophorinae

Cardiophorus sp. [JQ iv.2014]

Paracardiophorus sp. [JA v.2014]

Family: Scarabaeidae; subfamily: Cetoniinae

Stalagmosoma cynanki (Gory & Percheron, 1833) [RS xi.2013; AS ii.2014]

Deposited: ONHM

Subfamily: Dynamopodinae

Orubesa sp. [AS ii.2014]

Subfamily: Dynastinae

Oryctes sp.

Lizugh Village: April 2015

Col. R. Kamnitzer

Subfamily: Melolonthinae

Schizonycha sp. [WK iii. 2014]

Deposited: ONHM

Subfamily: Rutelinae

Adoretini sp. [RS: xi 2013; JQ: iv 2014]

Deposited: ONHM

Subfamily: Scarabaeinae

Gymnopleurus sp. [LV: iv 2015]. Col. R. Kamnitzer

Onthophagus sp. [AS: ii 2014]

Deposited: ONHM

Family: Anthicidae

Subfamily: Anthicinae

Anthelephila multiformis (Kejval, 2002) [JQ iv.2014]

Deposited: ONHM

Family: Meloidae

Subfamily: Meloinae

Hycleus cf. *gratiosus* (Marseul, 1870) **New record.** [JQ. iv. 2014]

Lydomorphus angusticollis suturellus (Haag-Rutenberg, 1880) [AS: ii. 2014]

Deposited: ONHM

Subfamily: Nemognathinae

Zonitoschema rubricolor (Pic, 1924) **New record**. [JQ: iv 2014]

Family: Tenebrionidae

Subfamily: Alleculinae

Mycetocharina sp. [WK: iii 2014]

Subfamily: Pimeliinae

Adesmia arabica (Reitter, 1916) [AS: ii 2014]

Deposited: ONHM

Adesmia cancellata (Klug, 1830) [AS: ii 2014; JQ: iv 2014]

Deposited: ONHM

Cyphostethe wittmeri (Kaszab, 1979) [JQ: iv 2014]

Deposited: ONHM

Mesostena puncticollis (Solier, 1835) [AS: ii 2014]

Deposited: ONHM

Oxycara sp. [AS: ii 2014]

Deposited: ONHM

Pimelia arabica (Klug, 1830) [AS: ii 2014]

Stegastopsis arabica (Allard, 1883) [WK: iii 2014]

Tentyriini spp. [AS: ii 2014; JA: v 2014]

Deposited: ONHM

Thriptera kraatzi (Haag-Rutenberg, 1876) [AS: ii 2014]

Deposited: ONHM

Subfamily: Stenochiinae

Praeugena gagatina (Mäklin, 1863) [JQ: iv 2014]

Subfamily: Tenebrioninae

Cheirodes brevicollis (Wollaston, 1864) [AS: ii 2014]

Family: Curculionidae

Subfamily: Entiminae

Pseudobarirrhinus conicus (Magnano, 2009) **New record** [JQ: iv 2014]

Order: Lepidoptera

Family: Psychidae

Subfamily: Placodomininae

Placodoma palaestinella (Rebel, 1902), **New record** [AS: ii 2014; WK: iii 2014]

Subfamily: Oiketicinae

Amicta mauretanica arabica (Wiltshire, 1949) [JQ: xi 2014]

Family: Tineidae

Subfamily: Tineinae

Trichophaga bipartitella (Ragonot, 1892) [AS: ii 2014]

Subfamily: Perissomasticinae

Perissomastix versicolor (Gaedike, 2009) [RS: xi 2013; AS: ii 2014; JQ: xi 2014]

Family: Plutellidae

Subfamily: Plutellinae

Plutella xylostella (Linnaeus, 1758), **New record** [AS: ii 2014]

Family: Elachistidae

Subfamily: Ethmiinae

Ethmia sp., nr. *vitalbella* (Christoph, 1887) [AS: ii 2014]

Family: Scythrididae

Subfamily: Scythridinae

Scythris sp., nr. *kebirella* (Amsel, 1935) [JQ: xi 2014]

Family: Cosmopterigidae

Subfamily: Antequerinae

Alloclita cerritella (Riedl, 1993), **New record** [JQ: xi 2014]

Subfamily: Cosmopteriginae

Eteobalea sumptuosella (Lederer, 1855), **New record** [AS: ii 2014]

Eteobalea sp. [AS: ii 2014]

Family: Pterophoridae

Subfamily: Agdistinae

Agdistis sp. [AS: ii 2014]

Subfamily: Pterophorinae

Megalorhipida angusta (Arenberger, 2002) [JQ: xi 2014]

Family: Choreutidae

Subfamily: Choreutinae

Choreutis aegyptiaca (Zeller, 1867), **New record** [AS: ii 2014]

Family: Tortricidae

Subfamily: Olethreutinae

Crociosema plebejana (Zeller, 1847), **New record** [JQ: xi 2014]

Dasodis cladographa (Diakonoff, 1983) [JQ: xi 2014]

Family: Cossidae

Subfamily: Cossinae

Mormogystia reibellii (Oberthür, 1876) [AS: ii 2014]

Deposited: ONHM

Subfamily: Mehariinae

Meharia acuta (Wiltshire, 1982) [RS: xi 2013; JQ: xi 2014]

Meharia incurvariella (Chrétien, 1915), **New record** [JQ: xi 2014]

Family: Pieridae

Subfamily: Pierinae

Colotis liagore (Klug, 1829) [JQ: xii 2014]

Family: Lycaenidae

Subfamily: Polyommatainae

Anthene amarah (Guérin-Méneville, 1847) [Nr. Birkat Al Mouz: i 2016]

Tarucus balkanicus (Freyer, 1843)

Jebel Qahwan Reserve: December 2014

Family: Nymphalidae

Subfamily: Danainae

Danaus chrysippus (Linnaeus, 1758) [JQ: iv & xi 2014]

Family: Pyralidae

Subfamily: Galleriinae

Lamoria anella (Denis & Schiffermuller, 1775) [JA: v 2014]

Subfamily: Epipaschiinae

Otjipagapaga dentilinealis (Hampson, 1906), **New record** [AS: ii 2014]

Subfamily: Phycitinae

Acrobasis minutalis (Asselbergs, 2008), **New record** [JQ: iii 2014]

Ancylosis biflexella (Lederer, 1855) [AS: ii 2014; JQ: iii 2014]

Deposited: ONHM

Ancylosis nubeculella (Ragonot, 1887), **New record** [AS: ii 2014]

Phycita arabica (Asselbergs, 2008), **New record** [JQ: xi 2014]

Family: Crambidae

Subfamily: Crambinae

Amselia heringi (Amsel, 1935), **New record** [AS: ii 2014]

Ancylolomia micropalpella (Amsel, 1951) [JQ: xi 2014]

Euchromius vinculellus (Zeller, 1847) [JQ: iv & xi 2014]

Subfamily: Glaphyriinae

Evergestis sp., nr. *laristanalis* (Amsel, 1961) [AS: ii 2014; WK: iii 2014]

Noorda blitealis (Walker, 1859) [AS: ii 2014; JQ: iii & xi 2014]

Deposited: ONHM

Subfamily: Pyraustinae

Achyra nudalis (Hübner, 1796) [RS: xi 2013]

Subfamily: Spilomelinae

Antigastra catalaunalis (Duponchel, 1833) [AS: ii 2014]

Deposited: ONHM

Nomophila noctuella (Denis & Schiffermuller, 1775) [AS: ii 2014; JA: v 2014]

Deposited: ONHM

Synclera bleusei (Oberthür, 1888), **New record** [RS: xi 2013]

Family: Geometridae

Subfamily: Geometrinae

Hemidromodes sabulifera (Prout L.B, 1922) [RS: xi 2013; AS: ii 2014; JQ: iii & xi 2014]

Deposited: ONHM

Neromia integrata (Hausmann, 2009) [AS: ii 2014]

Neromia pulvereisparsa (Hampson, 1896) [JQ: xi 2014]

Subfamily: Sterrhinae

Idaea sanctaria (Staudinger, 1900) [JQ: iii 2014]

Deposited: ONHM

Palaeaspilates sublutearia (Wiltshire, 1977) [JQ: xi 2014]

Problepsis ocellata (Butler, 1886) [JA: v 2014]

Deposited: ONHM

Pseudosterrha rufistrigata (Hampson, 1896) [RS: xi 2013; JQ: iii & xi 2014]

Deposited: ONHM

Scopula caesaria walkeros (Wiltshire, 1980) [JQ: iii 2014]

Scopula harteni (Hausmann, 2009) [JQ: iii 2014]

Subfamily: Larentiinae

Pasiphila palaearctica (Brandt, 1938) [AS: ii 2014; JQ: xi 2014; JA: v 2014]

Xanthorhoe wiltshirei (Brandt, 1941) [AS: ii 2014]

Subfamily: Ennominae

Hyperythra swinhoei (Butler, 1880) [JQ: iii 2014]

Zamarada latilimbata (Rebel, 1948) [AS: ii 2014]

Deposited: ONHM

Family: Erebidae

Subfamily: Arctiinae

Creataloum arabicum (Hampson, 1896) [RS: xi 2013; JQ: iii 2014]

Deposited: ONHM

Utetheisa amhara (Jordan, 1939), **New record** [AS: ii 2014]

Utetheisa pulchella (Linnaeus, 1758) [AS: ii 2014]

Deposited: ONHM

Subfamily: Erebinae

Acantholipes circumdata (Walker, 1858) [AS: ii 2014; JQ: iii & xi 2014]

Deposited: ONHM

Drasteria yerburyi (Butler, 1892) [JQ: iii 2014]

Deposited: ONHM

Pandesma robusta (Walker, 1858) [AS: ii 2014]

Deposited: ONHM

Heteropalpia Rhabdophera exarata (Mabile, 1890) [AS: ii 2014]

Heteropalpia Rhabdophera robusta omana (Wiltshire, 1988) [JQ: xi 2014]

Tytroca dispar (Püngeler, 1904) [AS: ii 2014; JQ: iii & xi 2014]

Deposited: ONHM

Ulotrichopus tinctipennis (Hampson, 1902) [AS: ii 2014]

Deposited: ONHM

Subfamily: Hypeninae

Zekelita ravalis (Herrich-Schäffer, 1851) [JQ: iii 2014]

Subfamily: Lymantriinae

Casama innotata (Walker, 1855) [AS: ii 2014; JQ: iii 2014]

Deposited: ONHM

Family: Nolidae

Subfamily: Chloephorinae

Churia typhla (Wiltshire, 1977) [JA: v 2014]

Earias insulana (Boisduval, 1833) [RS: xi 2013]

Selepa docilis (Butler, 1881) [JA: v 2014]

Family: Noctuidae

Subfamily: Acontiinae

Acontia asbenensis hemipentha (Rothschild, 1921) [JQ: iii 2014]

Deposited: ONHM

Drasteroides ellisoni (Wiltshire, 1977) [JQ: xi 2014]

Epharmottomena leucodonta (Hampson, 1926) [JQ: iii 2014]

Deposited: ONHM

Epharmottomena tenera (Brandt, 1939) [AS: ii 2014]

Deposited: ONHM

Subfamily: Eustrotiinae

Acantiola sancta (Staudinger) [AS: ii 2014; JQ: iii 2014]

Deposited: ONHM

Ozarba diaphora (Staudinger) [AS: ii 2014; JQ: iii & xi 2014]

Deposited: ONHM

Ozarba tamsina (Brandt, 1948) [JQ: iii 2014]

Deposited: ONHM

Pseudozarba mesozona (Hampson, 1896) [AS: ii 2014; JQ: iii & xi 2014]

Deposited: ONHM

Subfamily: Boletobiinae

Antarchaea erubescens (Bang-Haas, 1910) [JA: v 2014]

Eublemma fastrei (Fibiger & Legrain, 2009), **New record** [AS: ii 2014]

Eublemma gayneri (Rothschild, 1901) [AS: ii 2014]

Eublemma pallidula (Herrich-Schäffer, 1851), **New record** [AS: ii 2014]

Eublemma parva (Hübner, 1808) [AS: ii 2014; JQ: xi 2014]

Eublemma thermobasis (Hampson, 1910) [JQ: iii 2014]

Family: Noctuidae

Subfamily: Xyleninae

Caradrina atriluna (Guenée, 1852), **New record** [JA: v 2014]

Caradrina flava (Oberthür, 1876), **New record** [RS: xi 2013; JQ: xi 2014]

Sesamia sp., ?*cretica* (Lederer, 1857) [JQ: xi 2014]

Spodoptera exigua (Hübner, 1808) [AS: ii 2014]

Subfamily: Condicinae

Condica viscosa (Freyer, 1831) [RS: xi 2013; AS: ii 2014; JQ: iii & iv 2014]

Dysmilichia phaulopsis (Brandt, 1938) [JQ: iii 2014]

Subfamily: Heliothinae

Heliothis nubigera (Herrich-Schäffer, 1851) [AS: ii 2014]

Deposited: ONHM

Subfamily: Oncocnemidinae

Cleonymia chabordis (Oberthür, 1876) [JA: v 2014]

Deposited: ONHM

Order: Diptera

Family: Tabanidae

Subfamily: Tabaninae

Haematopota coronata Austen, 1908 [JQ: iv 2014]

Family: Asilidae

Subfamily: Asilinae

Neolophonotus papei Bosák & Hradský, 2011 [JA: v 2014]

Neomochtherus sp. [JA: v 2014]

Promachus rectangularis Loew, 1854 [JA: v 2014]

Family: Mythicomyiidae

Subfamily: Platypyginae

Cyrtosia sp. [WK: i 2014]

Subfamily: Leilaiyinae

Leylaiya sp. [AS: ii 2014]

Family: Bombyliidae

Subfamily: Heterotropinae

Heterotropus sp. [AS: ii 2014]

Subfamily: Bombyliinae

Systoechus sp. [JA: v 2014]

Subfamily: Anthracinae

Anthrax sp. [JQ: iv 2014]

Exoprosopa linearis Bezzi, 1924 [JA: v 2014]

Spogostylum sp. [WK: vi 2014]

Family: Therevidae

Subfamily: Phycinae

Acathrito sp. [JQ: iv 2014]

Family: Hybotidae

Subfamily: Tachydromiinae

Platypalpus sp. [JA: v 2014]

Family: Dolichopodidae

Subfamily: Diaphorinae

Asyndetus sp. [JQ: iv 2014]

Subfamily: Medeterinae

Medetera sp. [JA: v 2014]

Deposited: ONHM

Subfamily: Sciapodinae

Condylostylus longicornis (Fabricius, 1775) [JQ: iv 2014]

Family: Phoridae

Subfamily: Metopininae

Megaselia sp. [WK: i 2014; AS: ii 2014; JQ: iv 2014]

Family: Syrphidae

Subfamily: Syrphinae

Simosyrphus (Ischiodon) aegyptius (Wiedemann, 1830) [AS: ii 2014]

Deposited: ONHM

Subfamily: Eristalinae

Eristalinus taeniops (Wiedemann, 1818) [JA: v 2014]

Deposited: ONHM

Family: Pipunculidae

Subfamily: Pipunculinae

Eudorylas sp. [JQ: iv 2014; JA: v 2014]

Family: Sarcophagidae

Subfamily: Paramacronychiinae

Wohlfahrtia sp. [AS: ii 2014]

Subfamily: Sarcophaginae

Sarcophaga hirtipes Wiedemann, 1830 [WK: i 2014]

Deposited: ONHM

Sarcophaga ruficornis (Fabricius, 1794) [JQ: iv 2014]

Deposited: ONHM

Sarcophaga sp. [JA: v 2014]

Deposited: ONHM

Subfamily: Miltogramminae

Taxigramma multipunctata (Rondani, 1859) [JA: v 2014]

Family: Tephritidae

Subfamily: Dacinae

Neoceratitis efflatouni (Hendel, 1931) [AS: ii 2014]

Subfamily: Tephritinae

Dioxyna sp. [JA: v 2014]

Katonaia sp., nr. *aida* Hering, 1938 [JQ: iv 2014; JA: v 2014]

Metasphenisca sp., nr. *hazela* Munro, 1947 [JQ: iv 2014]

Metasphenisca negeviana (Freidberg, 1974) [JQ: iv 2014; JA: v 2014]

Trupanea sp. [AS: ii 2014]

Trupanea stellata (Fuesslin, 1775) [JA: i 2014]

Family: Agromyzidae

Subfamily: Phytomyzinae

Liriomyza sp. [AS: ii 2014]

Phytomyza sp. [WK: i 2014]

Pseudonapomyza sp. [AS: i 2014]

Family: Chloropidae

Subfamily: Oscinellinae

Pselaphia flava Sabrosky, 1957 [AS: ii 2014]

Family: Heleomyzidae

Subfamily: Trixoscelidinae

Trixoscelis sp. [AS: ii 2014]

Family: Sphaeroceridae

Subfamily: Limosininae

Kimosina sp. [AS: ii 2014]

Family: Ephydriidae

Subfamily: Gymnomyzinae

Athyroglossa sp. [AS: ii 2014; JQ: iv 2014]

Deposited: ONHM

Family: Anthomyiidae

Subfamily: Anthomyiinae

Anthomyia amoena (Macquart, 1851) [JA: v 2014]

Anthomyia ornata (Bigot, 1885) [JA: v 2014]

Deposited: ONHM

Anthomyia sp., nr. *whitei* Ackland, 2001 [AS: ii 2014; JA: v 2014]

Delia platyura (Meigen, 1826) [JA: v 2014]

Delia sp. [AS: ii 2014; JA: v 2014]

Deposited: ONHM

Family: Muscidae

Subfamily: Coenosiinae

Coenosia attenuata Stein in Becker, 1903 [WK: i 2014; AS: ii 2014; JA: v 2014]

Coenosia humilis Meigen, 1826 [AS: ii 2014; JA: v 2014]

Limnophora aculeipes Stein, 1913 [AS: ii 2014]

Limnophora rufimana (Strobl, 1893) [AS: ii 2014]

Lispe nana Macquart, 1835 [WK: i 2014]

Deposited: ONHM

Lispe pectinipes (Becker, 1903) [AS: ii 2014]

Pygophora sp. [AS: ii 2014]

Subfamily: Muscinae

Musca albina Wiedemann, 1830 [AS: ii 2014]

Musca domestica Linnaeus, 1758 [AS: ii 2014]

Deposited: ONHM

Musca lucidula (Loew, 1856) [AS: ii 2014]

Musca sorbens Wiedemann, 1830 [AS: ii 2014]

Subfamily: Atherigoninae

Atherigona humeralis (Wiedemann, 1830) [JA: v 2014]

Atherigona naqvii Steyskal, 1966 [AS: ii 2014]

Subfamily: Phaoniinae

Helina coniformis (Stein in Becker, 1903) [AS: ii 2014]

Deposited: ONHM

Family: Calliphoridae

Subfamily: Chrysomyinae

Chrysomya albiceps (Wiedemann, 1819) [AS: ii 2014; JQ: iv 2014]

Deposited: ONHM

Chrysomya megacephala (Fabricius, 1794) [JQ: iv 2014]

Deposited: ONHM

Chrysomya sp. [JQ: iv 2014]

Subfamily: Polleniinae

Pollenia sp. [JA: v 2014]

Family: Tachinidae

Subfamily: Exoristinae

Acemyia sp. [AS: ii 2014]

Exorista xanthaspis (Wiedemann, 1830) [JA: v 2014]

Deposited: ONHM

Subfamily: Phasiinae

Genus Nr. *Rondaniooestrus* [JA: v 2014]

Subfamily: Goniinae

Pallexorista sp. [JA: v 2014]

Subfamily: Tachininae

Macquartia sp., nr. *tenebricosa* (Meigen, 1824) [JA: v 2014]

Family: Rhiniidae

Subfamily: Rhiniinae

Isomyia terminata (Wiedemann, 1830) [JA: v 2014]

Rhyncomya bullata Deeming, 1996 [AS: February 2014; JQ: iv 2014]

Rhyncomya sp. [JA: v 2014]

Deposited: ONHM

Family: Oestridae

Subfamily: Oestrinae

Oestrus ovis Linnaeus, 1758 [JQ: iv 2014]

Deposited: ONHM

Order: Hymenoptera

Family: Aphelinidae

Subfamily: Coccophaginae

Encarsia lutea (Masi, 1909) **New record** [Oman Botanic Garden: iv 2016]. Col. S. Al Rijeiby

Encarsia sophia (Girault & Dodd, 1915) **New record** [Oman Botanic Garden: i 2017]. Col. S. Al Rijeiby

Note: Both the species above were reared from whiteflies of the *Bemisia tabaci* species complex on *Grewia villosa*. Mating was observed in *E. lutea*, footage of which can be seen at this link: <https://vimeo.com/218456567>. Recent molecular studies suggest that both parasitoid species may be complexes of distinct biological species, though extremely similar morphologically.

Encarsia indigoferae Polaszek & Manzari, 2008 [WK: i 2017]. Col. A. Polaszek

Pteroptrix arabicus (Ferrière, 1970) **New record**. [Wadi Quriyat: iii 1988]. Col. unknown

Family: Bradynobaenidae

Subfamily: Apterogyninae

Macroocula sinaica (Invreia, 1963) [RS: xi 2013; AS: February 2014]

Family: Crabronidae

Subfamily: Nyssoninae

Bembix oculata Panzer, 1801 [Old road to Sur: April 2015; Wadi Mayh: April 2015]

Family: Formicidae

Subfamily: Formicinae

Camponotus acvapimensis Mayr, 1862 [AS: ii 2014]*Camponotus atlantis* Forel, 1890 [JA: v 2014]*Camponotus sericeus* (Fabricius, 1798) [JA: v 2014]*Camponotus xerxes* Forel, 1904 [AS: ii 2014; JQ: iv & xi 2014; JA: v 2014]*Camponotus* sp. [JA: v 2014]*Cataglyphis albicans* (Roger, 1859) [AS: ii 2014]*Cataglyphis flavobrunnea* Collingwood & Agosti, 1996 [AS: ii 2014]*Cataglyphis holgerseni* Collingwood & Agosti, 1996 [JA: v 2014]*Nylanderia jaegerskioeldi* (Mayr, 1904) [JQ: xi 2014]*Polyrhachis lacteipennis* Smith, 1858 [Lizugh Village: iv 2015]. Col. R. Kamnitzer

Subfamily: Myrmicinae

Crematogaster acaciae Forel, 1892 [AS: ii 2014]*Lepisiota elegantissima* (Collingwood & van Harten, 2011 in Collingwood et al. 2011)
[Ghubrah Canyon: i 2016]

Deposited: ONHM

Lepisiota omanensis Sharaf & Monks, 2016 (in Sharaf et al. 2016) [JQ: iv 2014]

Deposited: ONHM

Lepisiota spinisquama (Kuznetsoc-Ugamsky, 1929) [AS: ii 2014; JQ: xi 2014]*Monomorium venustum* (Smith, 1858) [JQ: xi 2014]*Trichomyrmex mayri* (Forel, 1902) [JQ: xi 2014; JA: v 2014]

Subfamily: Ponerinae

Anochetus annetteae Sharaf (in Sharaf et al. 2017) [Hibra Village: iv 2015]. Col. M. Sharaf

Deposited: ONHM

Family: Halictidae

Subfamily: Halictinae

Lasioglossum ablenum (Bluthgen, 1934) [Oman Botanic Gardens: ii 2017]*Lasioglossum mose* Ebmer, 1974 [Oman Botanic Gardens: ii 2017]*Halictus humkalensis* (Bluthgen, 1936) [JA: v 2014]

Deposited: ONHM

Halictus lucidipennis Smith, 1853 [Oman Botanic Gardens: ii 2017]*Halictus tibialis* Walker, 1871 [Nr. Bima Village: iii 2018]

Subfamily: Nomiinae

Nomia vespoides Walker, 1871 [Siya Village: iii 2018]*Pseudapis nilotica* (Smith, 1875) [Wadi Mayh: iii 2018]

Family: Megachilidae

Subfamily: Megachilinae

Megachile felix (Pasteels, 1979) [Nr. Fins Village: iii 2018]

Family: Apidae

Subfamily: Apinae

Amegilla savignyi (Lepelletier, 1841) [AS: ii 2014]

Deposited: ONHM

Eucera (Synhalonia) sp. [Ghubrah Canyon: i 2016]

Apis florea (Fabricius, 1787) [JA: v 2014]

Deposited: ONHM

Apis mellifera (Linnaeus, 1758) [AS: ii 2014; JA: v 2014]

Deposited: ONHM

Family: Megaspilidae

Subfamily: Megaspilinae

Dendrocerus sp. [WK: i 2017] Col. A. Polaszek

Family: Mutillidae

Subfamily: Pseudophotopsidinae

Pseudophotopsis binghami Bischoff, 1920 [AS: ii 2014]

Family: Pompilidae

Subfamily: Pepsinae

Ageniella sp. [JQ: iv 2014; JA: v 2014]

Deposited: ONHM

Hemipepsis sp. [JQ: iv 2014]

Deposited: ONHM

Subfamily: Pompilinae

Agenioideus sp. [AS: ii 2014]

Deposited: ONHM

Aporinellus sp. [JA: v 2014]

Deposited: ONHM

Family: Scoliidae

Subfamily: Scoliinae

Scolia erythrocephala Fabricius, 1798 [Lizugh Village: iv 2015]

Subfamily: Campsomeriinae

Campsomeriella thoracica (Fabricius, 1793) [Hibra Village: iv 2015]

Family: Tiphiidae

Subfamily: Myzininae

Poecilotiphia sp. [AS: ii 2014]

Family: Trichogrammatidae

Subfamily: Trichogrammatinae

Trichogramma euproctidis (Girault, 1911) **New record** [Wadi Al Khoud: i 2017]

Col. A. Polaszek

Family: Vespidae

Subfamily: Eumeninae

Delta dimidiatipenne (de Saussure, 1852) [Ghubrah Canyon: vi 2016]

Delta hottentottum elegans (de Saussure, 1852) [Nr Birkat al Mouz ii 2016; Ghubrah Canyon: ii, iv & vi 2016; Nr. Taww Village: iii 2016; Old Road to Sur iv 2016; Nr Samail Village iv 2016; Nr. Buwah Village: x 2016]

Delta lepeleterii (de Saussure, 1852) [Nr. Taww Village: iii 2016; Yiti Road: iii 2016]

Ischnogasteroides leptogaster (Walker, 1871) [JQ: xi 2014; Nr Ra's as Haad iii 2016]

Subfamily: Masarinae

Jugurtia jemenensis Kostylev, 1935 [Nr. Wadi Al-Arbein: iv 2016]. Col. A. Polaszek

Subfamily: Polistinae

Polistes wattii (Cameron, 1900) [Ra's ash Shajar: xi 2013; Wadi Khuair: i & vi 2014; JQ: iv & xi 2014; Lizugh Village: iv 2015]

Deposited: ONHM

Subfamily: Vespinae

Vespa orientalis (Linnaeus, 1771) [RS: xi 2013; Wadi Khuair: i & vi 2014; JQ: iv & xi 2014]

Deposited: ONHM

Acknowledgements

This research was made possible by the National Field Research Centre for Environmental Conservation and the Earthwatch Institute. Both were working in the Sultanate of Oman for the Diwan of Royal Court as part of the Oman Earthwatch Programme 2009–2015.

The authors also acknowledge the support of the Ministry of Environment and Climate Affairs for its ongoing guidance to this project and providing the necessary research permits for As Saleel National Park, Jebel Qahwan Reserve and Al Jebel Akhdar Sanctuary for Natural Sceneries.

We also thank the Office for Conservation of the Environment, Diwan of Royal Court for permission to survey at Ra's ash Shajar.

In addition, the authors thank the staff of the Oman Botanic Gardens for their assistance during part of the fieldwork.

JM would like to thank the Linnean Society (Anne Sleep Award) and Emirates Natural History Group, Abu Dhabi Chapter (ENHG Research and Conservation Fund) for the generous funding they provided for fieldwork.

AP would like to thank the Anglo Omani Society (London, UK) for their very generous support of several Oman-based projects, including expeditions to the Hajar Mountains.

Thanks also to David Agassiz, Willy De Prins, Albert Legrain and Alberto Zilli for their assistance in identifying some of the moth specimens, to John Deeming and Martin Ebejer for help in identifying Diptera, and to Alain Pauly for identification of Halictidae.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

- Adams RP, Al-Farsi A, Schwarzbach AE. 2014. Confirmation of the southern-most population of *Juniperus seravschanica* in Oman by DNA sequencing of nrDNA and four cpDNA regions. *Phytologia*. 96:218–224.
- Bengtsson BA. 2002. Scythridids of the Arabian Peninsula, I: Oman (Lepidoptera, Scythrididae). *Phegea*. 30:105–118.

- Brinkmann K, Patzelt A, Dickhoefer U, Schlecht U, Buerkert A. 2009. Vegetation patterns and diversity along an altitudinal and a grazing gradient in the Jabal al Akhdar mountain range of northern Oman. *J Arid Environ.* 73:1035–1045. doi:[10.1016/j.jaridenv.2009.05.002](https://doi.org/10.1016/j.jaridenv.2009.05.002).
- Carranza S, Arnold EN. 2012. A review of the geckos of the genus *Hemidactylus* (Squamata: Gekkonidae) from Oman based on morphology, mitochondrial and nuclear data, with descriptions of eight new species. *Zootaxa.* 3378:1–95. doi:[10.11646/zootaxa.3378.1](https://doi.org/10.11646/zootaxa.3378.1).
- Collingwood CA, Agosti D, Sharaf MR, van Harten A. 2011. Order Hymenoptera, family Formicidae. *Arthropod Fauna of the UAE.* 4:405–474.
- El-Keblawy A. 2014. Impact of climate change on biodiversity loss and extinction of endemic plants of arid land mountains. *Journal of Biodiversity & Endangered Species.* 2:1. doi:[10.4172/2332-2543.1000120](https://doi.org/10.4172/2332-2543.1000120).
- Gebauer J, Patzelt A, Hammer K, Buerkert A. 2007. First record of *Grewia tenax* (Forssk.) Fiori in northern Oman, a valuable fruit producing shrub. *Genetic Resources and Crop Evolution.* 54:1153–1158.
- Ghazanfar SA. 1996. The genus *Dipcadi* (Hyadnthaceae) in the Arabian Peninsula. *Kew Bulletin.* 51:803–807. doi:[10.2307/4119738](https://doi.org/10.2307/4119738).
- Ghazanfar SA. 1998. Flora of the Sultanate of Oman. Vol 1: piperaceae to primulaceae. *Scripta Botanica Belgica.* 25:262.
- Ghazanfar SA. 2004. Biology of the central desert of Oman. *Turkish Journal of Botany.* 28:65–71.
- Hausmann A. 1998. New and interesting geometrid moths from the Oman (Lepidoptera, Geometridae). *Mitteilungen der Münchner Entomologischen Gesellschaft.* 88:85–98.
- Hausmann A. 2009. New and interesting geometrid moths from Dhofar, southern Oman (Lepidoptera, Geometridae). *Mitteilungen der Münchner Entomologischen Gesellschaft.* 99:111–128.
- Howarth B. 2019 A life without ‘bugs’ — euphoria or apocalypse? TedX presentation. UAE: Zayed University. [accessed 2019 Mar 22] <https://www.youtube.com/watch?v=V3MZREwVNYU>
- Insall DH. 2008. *Arabitragus jayakari*. In: IUCN 2010. IUCN Red List of Threatened Species. [accessed 2018 Apr 20] www.iucnredlist.org.
- Kwarteng AY, Dorvlo AS, Kumar GTV. 2009. Analysis of a 27-year rainfall data (1977–2003) in the Sultanate of Oman. *International Journal of Climatology.* 29:605–617. doi:[10.1002/joc.v29:4](https://doi.org/10.1002/joc.v29:4).
- Luedeling E, Siebert S, Buerkert A. 2007. Filling the voids in the SRTM elevation model: A TIN-based delta surface approach. *Journal of Photogrammetry and Remote Sensing.* 62:283–294. doi:[10.1016/j.isprsjprs.2007.05.004](https://doi.org/10.1016/j.isprsjprs.2007.05.004).
- Miller AG, Nyberg J. 1991. Patterns of endemism in Arabia. *Flora Et Vegetatio Mundi.* 9:263–279.
- Noyes JS. 2018. Universal Chalcidoidea Database. World Wide Web electronic publication. [accessed 2018 Oct 25] <http://www.nhm.ac.uk/chalcidoidea>
- Patzelt A. 2015. Synopsis of the flora and vegetation of Oman, with special emphasis on patterns of plant endemism. *Jahrbuch 2014 der Braunschweigischen Wissenschaftlichen Gesellschaft.* 282–317.
- Polaszek A. 2016a. The “ABC” of Oman insects; Agriculture, Biodiversity and Conservation. *Anglo-Omani Society Review.* 2016:93–95.
- Polaszek A. 2016b. One hundred years of Omani collections in the Natural History Museum. In: Dutton R, editor. *Field research in Oman: past, present and future.* Diwan of Royal Court + National Field Research Centre for Environmental Conservation, London; p. 54–60, 1–169.
- Schlecht E, Dickhoefer U, Gumpertsberger E, Buerkert A. 2009. Grazing itineraries and forage selection of goats in the Al Jabal al Akhdar mountain range of northern Oman. *J Arid Environ.* 73:355–363. doi:[10.1016/j.jaridenv.2008.10.013](https://doi.org/10.1016/j.jaridenv.2008.10.013).
- Searle MP. 2014. Preserving Oman’s geological heritage: proposal for establishment of world heritage sites, national geoparks and sites of special scientific interest (SSSI). *Geological Society.* 392(1):9–44. London, Special Publications. doi:[10.1144/SP392.2](https://doi.org/10.1144/SP392.2)
- Sharaf MR, Monks J, Aldawood AS, Polaszek A. 2017. *Anochetus* (Hymenoptera: Formicidae) in the Arabian peninsula, with description of a new species from Oman. *Proceedings of the Entomological Society of Washington.* 119(1):78–89. doi:[10.4289/0013-8797.119.1.78](https://doi.org/10.4289/0013-8797.119.1.78).

- Sharaf MR, Monks J, Polaszek A, Aldawood AS. 2016. A remarkable new species of the genus *Lepisiota* Santschi (Hymenoptera: Formicidae) from Oman and the United Arab Emirates, with a key to the Arabian species. *Journal of Natural History*. 50:1875–1887. doi:[10.1080/00222933.2016.1180722](https://doi.org/10.1080/00222933.2016.1180722).
- van Harten A. 2008. *Arthropod Fauna of the UAE 1*. Abu Dhabi (UAE): Dar Al Ummah publishing; p. 754.
- van Harten A. 2009. *Arthropod Fauna of the UAE 2*. Abu Dhabi (UAE): Dar Al Ummah publishing; p. 786.
- van Harten A. 2010. *Arthropod Fauna of the UAE 3*. Abu Dhabi (UAE): Dar Al Ummah publishing; p. 700.
- van Harten A. 2011. *Arthropod Fauna of the UAE 4*. Abu Dhabi (UAE): Dar Al Ummah publishing; p. 816 + 16.
- van Harten A. 2014. *Arthropod Fauna of the UAE 5*. Abu Dhabi (UAE): Dept President's Affairs; p. 744.
- van Harten A. 2017. *Arthropod Fauna of the UAE 6*. Abu Dhabi (UAE): Al Amal Press; p. 754.
- Wiltshire EP. 1977a. Lepidoptera: part I. Families Cossidae, Pyralidae, Geometridae, Sphingidae, Arctiidae, Lymantriidae and Noctuidae (Middle East Lepidoptera No. 36). *Journal of Oman Studies*. Special report no. 1:155–160.
- Wiltshire EP. 1977b. Lepidoptera: part II, A list of further Lepidoptera-Heterocera from Oman. *Journal of Oman Studies*. Special Report 1:161–176.
- Wiltshire EP. 1980. Moths of Dhofar. *Journal of Oman Studies*. Special Report no. 2:187–216.
- Wiltshire EP. 1985. New Heterocera from Oman (with revised list of the moths known from the Musandam Peninsula) [Middle East Lepidoptera no. 41]. *Journal of Oman Studies*. 7:39–48.
- Wiltshire EP. 1988. The larger moths (Macro-Heterocera) of the Wahiba Sands. *Journal of Oman Studies*. Special Report 3:347–360.