

The Kingdom of Saudi Arabia (KSA)
The National Center for Wildlife (NCW)

Response to the request of the International Union for the Conservation of Nature (IUCN) for additional information in regard to the nomination of 'Uruq Bani Ma'arid Protected Area (UBM) to the World Heritage List.

Dates of receipt of IUCN request letter:

Date of submission of the additional information: February 28th 2023

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Background

This report includes NCW's responses to IUCN's request for additional information pertaining to the nomination of UBM to the World Heritage List as part of IUCN's review process of natural and mixed World Heritage Sites and preparation of their recommendation to the World Heritage Committee in its 45th meeting which will be held in Saudi Arabia in September 2023.

The Structure of the report following the same sequence presented by IUCN in the request letter which includes four subheadings addressing additional information requested under criteria vii, ix, and x respectively. The following include each IUCN request followed by NCW's response.

- 1. Regarding criterion (vii), the Panel has noted the presence of zibars, which appear to be particularly well developed as a geomorphological feature in the nominated property. The Panel would be grateful if the State Party could please provide further information on the zibars found in the nominated property.*

NCW's response

The spectrum of sand dune landforms that characterize the distinctive landscape of the part of Ar-Rub' al-Khali within the nominated property is composed of complex linear or longitudinal dunes ('uruq, singular 'irq in Arabic), barchanoid dunes, and dome-shaped dunes called zibars (McClure, 1978; Alwelaie, 1997 a. and b.; Edgell, 1990 and 2006; Kumar & Abdullah 2011). The 35 giant complex linear dunes for which the site is named dominate the landscape and are the largest dunes of their kind examined by a United States Geological Survey study of global sand

seas (Breed, et al., 1979, pp. 367-368). They are up to 200 km in length, with a wavelength between dune crests that ranges between 2.5 km and 4.5 km, and the crests, which include the highest points in the protected area, rise up to more than 160 meters above the limestone plateau that is exposed in the interdunal corridors (*shiqaa*) between them. This makes them the largest linear sand dunes in the Arabian Peninsula and among the largest dunes of this type on Earth. They are relatively stable and have not changed noticeably within the three decades since the site has been surveyed and designated a protected area.

On the flanks of the *'uruq* and in the interdunal corridors, low, stable, rounded, dome-shaped dunes called *zibars* also occur. They have no discernible slip faces, are less than 10 meters high, and are composed of mostly coarse-grained sand, the fine grains of sand having been removed by deflation; they are considered to be residual from crescentic and transverse dunes (Holm, 1960; Cooke et al. 1993). Lastly, within the interdunal corridors beneath the high *'uruq*, fleets of small, mobile barchanoid dunes of roughly oval form move westward to and over the Tuwayq Escarpment at a rate of several meters per year, engulfing camps, roads, and other structures in their path.

References:

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Cooke, R.U.; Warren, A.; Goudie, A.S. 1993. Desert Geomorphology. CRC Press London. pp. 395-396. ISBN 1-85728-017-2.

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Kumar, A. and Abdullah, M.M. 2011 "An overview of Origin, Morphology and Distribution of Desert Forms, Sabkhas and Playas of the Rub' al Khali Desert of the Southern Arabian Peninsula," *Earth Science India* Vol. 4(III), July 2011, 105-135 <http://www.earthscienceindia.info/>

McClure, H. A. 1978. Ar Rub' Al Khali. In: S. S. Al-Sayari and J. G. Zölt (eds.), *Quaternary Period in Saudi Arabia*. Springer-Verlag. 334 p.

2. *The Panel noted that the photographic record in the dossier regarding criterion (vii) could be strengthened, and would be grateful if the State Party could please provide a representative set of photographic documentation of the features and landscapes regarded as meeting criterion (vii).*

NCW's response

Table no (1) below includes the list of additional high-resolution photographic documentation of the features and landscapes of UBM in relationship to criterion vii:

No	Photograph description	Photographer	Date of photography	Location within UBM
1	Complex linear dune ('irq) at sunset, with barchanoid dunes in foreground	Othman A Llewellyn	2009	'Irq Qarnayn
2	Vegetation at dune edges		Feb 2023	Ghudayy area
3	View from the Tuwayq Escarpment crest, looking southwest			The Tuwayq Escarpment, Khashm al-Qarnayn
4	Dense acacia woodland where drainage is blocked by dunes		Feb 2023	Junction of the sands with the limestone plateau, Shiqqat al-Qarnayn
5	Sand ripples at sunset	Othman A Llewellyn	2009	Linear dunes of Ar-Rub' al-Khali
6	Linear dune ('irq) with plateau vegetation in foreground		Feb 2023	Junction of the sands with the limestone plateau, 'Irq Masdud
7	The head of an incised wadi.		Feb 2023	The Tuwayq limestone plateau, Wadi Sadid

8	An incised wadi in the limestone plateau		Feb 2023	The Tuwayq limestone plateau, Al-Khishbi area
9	Detail of an incised wadi in the limestone plateau		Feb 2023	The Tuwayq limestone plateau, Al-Ma'zilah
10	Interweaving of Ar-Rub' al-Khali sands and plateau ecosystems		Feb 2023	Intersection of Ar-Rub' al-Khali sands and the limestone plateau 'Irq al-Abtar
11	The vegetation of an incised wadi		Feb 2023	Wadi Umm Rajid, in the Tuwayq plateau
12	Transverse sand dunes of Ar-Rub' al-Khali		Feb 2023	Umm ash-Shawk area
13	Relatively dense vegetation at the edge of the dunes		Feb 2023	'Irq al-Bayda'
14	Complex linear dunes ('uruq) and interdune corridors	Zuhair Amr	Dec 2018	Western sector of al-'Uruq dunes

The above listed photographs are included in electronic format as a separate folder in the memory drive attached to this report named criterion vii photographs.

3. *Regarding criterion (ix), the Panel considers the case for this criterion could be strengthened by focusing on the ongoing ecological processes in the hyper-arid environment of the nominated property. We would be grateful if the State Party could provide a strengthened statement on the key ecological processes that are of significance in the nominated property, together with clarity on their integrity. This could both include the degree to which the ecosystems are evolving under substantially natural processes, and confirmation that these processes are free from threats.*

NCW's response

3.1. Ecological processes in desert ecosystems

Ecological processes in desert ecosystems include all physical processes and the plant and animal activities which influence the state of ecosystems and contribute to the maintenance of their integrity and genetic diversity, and thereby their evolutionary potential. The particular processes that make up the dynamics of an individual ecosystem are so numerous and their expressions so diverse that they defy simple characterization. They must be defined individually in each situation.

Ecological processes may be most easily appreciated in terms of their results, as identified by the movement of energy, materials, and nutrients; by the information which regulates these

functions; and by community changes following disturbance. Other measurements of component parts of the system, such as changes in populations of certain species, may serve as adequate indices of certain ecological processes if their role in the entire system can be ascertained.

The main ecological processes may be classified in a broad sense as (1) biogeochemical cycles, especially the hydrological cycle, (2) primary and secondary production, i.e., energy flow, (3) mineralization of organic matter in the soils and sediments, (4) storage and transport of minerals and biomass, and (5) regulation of the processes in (1) through (4), often by the activities of animals.

The above definition was taken from: "Ricklefs, R.E.; Naveh, Z.; Turner, R.E. 1984. Conservation of Ecological Processes. *The Environmentalist* 4: 6-16. [https://doi.org/10.1016/S0251-1088\(84\)90008-1](https://doi.org/10.1016/S0251-1088(84)90008-1)".

3.2. Key ecological processes in key UBM ecosystems

The Tuwayq Escarpment and its associated network of inland wadis play a vital role in the production of the biomass and organic matter which are essential to primary and secondary production processes. This role is supported by the relatively higher levels of precipitation and humidity within the nominated property and compared to other more arid areas to the east in Ar-Rub' al-Khali.

This results in higher organic matter in the respective soils and more suitability to support woody perennial plants, including the representative trees which are essential as feeding and shelter areas for the three flagship species of Oryx and Gazelles. The biophysical characteristics of these areas also provide a much-needed refuge for wildlife populations during peak summer months, without which, such animals would struggle much more to find needed forage and shelter.

In contrast, the biophysical dynamics which occurs in Ar-Rub' al-Khali areas provides extended grazing areas for these wildlife species during winter months which are characterized by irregularly distributed rainfalls, resulting in the development of temporary grazing areas which are easily discovered by wildlife and hence, permit wider distribution and higher population numbers of key species, especially during reproduction periods.

The dynamics between the networks of functioning ecosystems within the nominated property represents an unusual complex of ecological processes which maintain and support the survival of viable populations of target species, strengthening their opportunity to be successfully

reintroduced into the wild. This is supported by the fact that the above “edge effect” (where the sands of the Empty Quarter interweave with the Tuwayq cuesta) results from a complex set of ecological processes which are dynamic and not static. There is strong evidence that this was the location where the last group of *Oryx* survived in the wild, as reported in the late 1970’s.

The efforts to fully understand the above dynamic nature of ecological processes in the nominated property is a continuous process through which the NCW aims to improve the effectiveness of the management by applying an adaptive management approach including law enforcement and wildlife protection schemes which are supported by continuous monitoring using ecosystem-level indicators.

3.3. Examples of species reliction, adaptation, and speciation processes in UBM

The nominated property is a globally unique example of ongoing ecological processes in a landlocked, hyper-arid desert area, where plant and animal communities are continuously adapting to life in ever-changing microhabitats and ecological niches. Here, mobile wind-blown dunes provide an exceptional, well-oxygenated substrate for sand-diving invertebrates and reptiles.

Despite being the largest sea of wind-blown sand on Earth, the hyper-arid ecosystem of Ar-Rub’ al-Khali is quite young, originating during the Late Quaternary period, with the earliest low-rounded dunes dating to the Mid-Pleistocene (see nomination dossier, section 2.2. on History and Development). It is best seen in the context of the successive waves of aridity and humidity that have swept over the Arabian Peninsula during the last 700,000 years.

In this context, the site serves as an outstanding window on the adaptations of a range of plant and animal communities of the nominated property to its current hyper-arid conditions, and the ecological and evolutionary processes of reliction, endemism, and speciation.

What makes this window outstanding is its location where the dynamic, yet stable ecosystem of the Ar-Rub’ al-Khali windblown sands intersects that of the Jabal Tuwayq limestone plateau. This dynamic stability is supported by the nominated property’s ecosystem complexity. Its ecosystem dynamics depend on the interaction of floral and faunal components, giving rise to its unique trophic pyramid, with primary producers (plants), herbivores, such as the thorny-tailed lizard, oryx, gazelles, rodents, and Arabian hare, to primary carnivores, such as the desert monitor lizard, the snakes, the raptors, the sand cat, sand fox, red fox, and honey badger, to the smaller lizards and the bats, which are strictly insectivorous. This represents a robust trophic network that supports the flow of nutrients and energy among all living components of the ecosystem.

The hyper-arid ecosystem of Ar-Rub' al-Khali is characterized by extremely low biodiversity but high endemism (Mandaville, 1986, nomination dossier sections 2.1.1. general description of the Property and 2.1.5 on flora). This ecosystem is dependent on the interaction of sand-adapted animals and plants.

Its dominant flora consists of Arabian endemic and near-endemic species and subspecies: *Calligonum crinitum* sbsp. *arabicum*, *Cornulaca arabica*, *Limeum arabicum*, *Tribulus macropterus* var. *arabicus*, and *Cyperus macrorrhizus*. They are highly adapted to the hyper-arid climate and to the characteristics of windblown sands: the *Calligonum*, the largest shrub of the sand dune ecosystems, and dominant in the mobile crests of the larger linear dune systems, has evolved structural adaptations including drought-deciduous petioles and extremely long roots that gather moisture from a wide area, a bole and rootstock that can survive being buried as mobile sands engulf it and exposed as they retreat. The *Tribulus* is in the process of speciation, and while some taxonomists consider it to be an endemic subspecies of *T. macropterus*, others consider it a separate species, *T. arabicus*.

The fauna consists largely of psammophile species that are well equipped by both physical and behavioral adaptations to survive in such habitats. In the first survey of 'Uruq Bani Ma'arid invertebrates, conducted in 2021, two species discovered are endemic to the nominated property, namely *Gynecaptera* cf. *arabica* and *Monomorium* sp. (under description). Also, 20 species of invertebrates are endemic to the Arabian Peninsula and found in the sands of Ar-Rub' al-Khali including one scorpion (*Leiurus arabicus*), eleven beetles (*Karumia inaequalis*, *Thorictus arabicus*, *Cryptotrogus kruppi*, *Mycetocharina arabica*, *Adelostoma subtile sabulosum*, *Ammogiton buettikeri*, *Ammogiton sonyae*, *Cyphostethe wittmeri*, *Microtelus nejdanus*, *Oxycara saudarabica*, and *Sclerum sulcatum sulcatum*, five wasps (*Enicospilus splendidus*, *Eucremastus flavus*, *Macroocula atuberculata*, *Macroocula khorimensis*, *Macroocula zulfiensis*), two thrips (*Eremiothrips aldryhimi*, *Eremiothrips unicolor*) and one moth (*Anumeta zaza*).

In addition, 11 invertebrate species that are near-endemic to Arabia were reported. Among these is *Zophosis migeanuxi*, a desert-adapted darkling beetle species. This species has adapted to capture water vapor using an ingenious series of tips and bumps on its wing scales. Water droplets start to form on the tips and then flow off the waxy bumps to be collected by the beetle. This structure allows the beetle to survive in an incredibly arid environment. The beetle can trap water or fog by sticking the back part of its body facing the foggy wind. The shell is made of a slick wax that resembles Teflon, so water easily flows off its body and into its mouth (Seely et al., 2005). The structures behind this process are believed to be hydrophilic peaks surrounded by hydrophobic areas; water carried by the fog settles on the hydrophilic peaks of the smooth bumps on the elytra of the beetle and forms fast-growing droplets that once large enough to move against the wind roll down towards the head (Hamilton et al., 2003). The most common fog-collecting behavior of Desert Darkling beetles that so act is either

to suck precipitated water from fog-wetted sand, or from ridges pushed up by beetles or from trenches perpendicular to the wind that drives the fog (Parker and Lawrence, 2001).

Seventeen species of reptiles have been recorded from 'Uruq Bani Ma'arid. Most of them are psammophiles, including the eastern sandfish skink *Scincus mitranus*, Arabian toad-headed agama *Phrynocephalus arabicus*, the Arabian sand boa *Eryx jayakari*, Middle Eastern short-fingered gecko *Stenodactylus doriae*, Arabian short-fingered gecko *Trigonodactylus arabicus*, Schmidt's fringe-toed lizard *Acanthodactylus schmidti*, and the Arabian horned or sand viper *Cerastes gasperettii*. Two Arabian endemic psammophile reptiles that are typical of the sands of Ar-Rub' al-Khali, are the Arabian sand boa and the eastern sand skink have adaptations that enable them to move beneath the surface of the sand. Other Arabian endemic and near-endemic psammophile reptiles occurring in the nominated property include the Arabian horned or sand viper, which is well known for its sidewinding movement on sand surfaces and which buries itself in the sand to ambush prey. The Arabian toad-headed agama uses the same strategy of submersion in the sand to evade predators. These two species are near-endemic to the Arabian Peninsula, as are two of the three species of fringe-toed lizards that occur in the nominated property, *Acanthodactylus pheodurus* and *Acanthodactylus schmidti*.

Males of Lichtenstein's sandgrouse *Pterocles lichtensteinii*, the least known Arabian species of sandgrouse, have specialized belly feathers, able to trap and carry water, thus proving a source of hydration for their chicks.

The physiological and behavioral adaptations of the endemic Arabian oryx *Oryx leucoryx* to the conditions of hyper-aridity and heat that characterize the site are discussed elsewhere in the nomination file (nomination dossier section 2.1.5.2. on Fauna). The Arabian sand gazelle *Gazella marica*, is even more highly adapted to the drought and heat of the Arabian deserts; with its smaller biomass and ability to range far quickly in search of forage following rains, it can survive in parts of Ar-Rub' al-Khali that are not known to have supported the Arabian oryx. The Arabian sand cat *Felis margarita*, has ears set on the side, rather than the top of its head, enhancing its ability to stalk prey in sites with little vegetation cover. Rüppell's sand fox *Vulpes rueppelli*, Cheesman's gerbil *Gerbilus cheesmani*, and the lesser Egyptian jerboa *Jaculus jaculus* are likewise examples of well adapted to survive in such extreme sand desert habitats with defined interaction through trophic pyramids.

In contrast, the Jabal Tuwayq ecosystem with its limestone escarpment and plateau is one of the less arid ecosystem types of the Arabian Desert and its biodiversity is richer than that of adjacent ecosystem types. The incised wadis support a diverse plant community dominated by *Vachellia tortilis* with other *Vachellia* spp., *Maerua crassifolia*, *Leptadenia pyrotechnica*, and a dwarf shrub community of several perennial and annual herbs and grasses. Stands of *Haloxylon persicum* are found on the western edge of the sands in Wadi Ghudayy. Perennial grasses such

as *Panicum turgidum* and *Stipagrostis* spp., and herbaceous species such as *Fagonia indica*, and dwarf shrubs, including *Haloxylon salicornicum*, *Dipterygium glaucum*, and the endemic *Limeum arabicum*, grow on the limestone plateau and on gravels in the interdune corridors. The reptiles of the Tuwayq escarpment include the small-scaled Egyptian thorny-tailed lizard *Uromastyx aegyptia microlepis* is an Arabian endemic subspecies. The widespread desert monitor lizard *Varanus griseus* is a significant predator of the nominated property. Other rock dwelling lizards include Arnold's rock gecko *Pristurus minimus* and a *Mesalina* that is suspected to be a new species (Cunningham, 2010; Aloufi et al., 2022). Carnivores of this ecosystem include the Red Fox *Vulpes vulpes* and the honey badger *Mellivora capensis*. A cave in the vicinity of the nominated Property harbors over 200 individuals of the Greater Mouse-tailed Bat, *Rhinopoma microphyllum*; they are believed to feed within it.

The nominated property even harbors a few species that are typical of the biodiverse 'Asir Escarpment, albeit at the extreme edge of their range, in marginal conditions: there are unusual stands of *Moringa peregrina* and *Commiphora myrrha*, and small stands of *Ziziphus spina-christi* occur where sufficient groundwater collects on the wadi floors. On the basis of characteristics of the trees that make up this *Ziziphus* grove, it has been identified as a variety endemic to the nominated property, i.e., *Z. spina-christi* var. *divaricata*. Here is a natural laboratory in which the processes of reliction, leading possibly toward speciation, may be studied and monitored. These are examples of what is currently known.

More detailed and long-term studies of ecosystem functioning, ecological and evolutionary processes in the nominated property are planned for the future.

3.4. Integrity of key ecological processes

The dynamic yet stable ecosystems of 'Uruq Bani Ma'arid, along with all their biotic components, remain viable and protected from human interventions by the site's remoteness and harshness, as well as its management provisions. Apart from global climate change, the effects of which cannot be quantified or predicted in detail, these processes are occurring under essentially natural conditions. The drivers of desertification in Saudi Arabia, such as tree-cutting, overgrazing, off-road driving, and hunting, were never pronounced on the nominated property and protected area management authority is in the position to control and avert them in collaboration with the community of local livestock owners and the ecotourism sector.

The site's management plan ensures that it will be effectively managed to avert such threats. The NCW is expanding the core wilderness zone of the nominated property, which is being extended from the previous 2,400 sq. km. to 6,847.5 sq. km. to maintain the ecological processes in the high 'irq dunes, the interdunal corridors, and the all-important drainages without the impacts of overgrazing by livestock.

All features exemplifying the OUVs of 'Uruq Bani Ma'arid are encompassed in its boundaries. The relevant formations and features, causative processes and ancillary habitats are included. The size of the nominated property ensures that all elements are well conserved, appropriate to maintaining ongoing dynamic processes. The extensive dune-systems are continuously refreshed by entirely natural processes.

References:

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DOI: <https://doi.org/10.1017/S0269727000008988>

Parker, A. and Lawrence, C.R. 2001. Water capture by a desert beetle. *Nature*, 414:33-34.

Seely, M.K., Henschel, J.R., Hamilton and W.J. 2005. Long-term data show behavioral fog collection adaptations determine Namib Desert beetle abundance. *South African Journal of Science*, 101:570-572.

4. Regarding criterion (x), the Panel would be grateful if the State Party could please further expand the justification for criterion (x) in line with point 2 above and provide one consolidated species list detailing all species recorded in the nominated property, including plant species and invertebrates. This list should indicate:

- the currently valid species name (following the IUCN Red List of Threatened Species: <https://www.iucnredlist.org/>),
- the global conservation status of each species (Critically Endangered, Endangered, Vulnerable, Near-threatened, Least Concern) according to the IUCN Red List of Threatened Species, when available,
- information on distribution (endemic to nominated property, endemic to State Party, endemic to region), size of the population or percentage of the global population, if this data is available.

NCW's response

4.1. photographic documentation

Table no (2) below includes the list of additional high-resolution photographic documentation of the features and landscapes of UBM in relationship to criterion x:

No	Photograph description	Photographer	Date of photography	Location within UBM
1	Mature thorny-tailed lizard <i>Uromastyx aegyptia microlepis</i> at its burrow		June 2021	Ar-Rukn, southern part of the protected area
2	NCW staff conducting a planning survey	Kamaan Al-Kamaan	3 March 2021	Wadi Sadid area
3	NCW staff conducting a vegetation survey	Kamaan Al-Kamaan	3 March 2021	Wadi Sadid area
4	<i>Tribulus macropterus</i> var. <i>arabicus</i>		May 2021	'Irq Umm Qasir, central part of the protected area
5	<i>Leptadenia pyrotechnica</i> and <i>Vachellia tortilis</i>		Oct 2021	'Ushayran, southern part of the protected area
6	Male Sand Gazelle <i>Gazella marica</i> resting in the shade of an acacia		April 2019	Ash-Shubhanah area
7	Arabian Oryx <i>Oryx leucoryx</i> at a shrub of <i>Calligonum crinitum</i> sbsp. <i>arabicum</i>		Sept 2019	'Irq Umm Sudud
8	Lappet-faced Vulture <i>Torgos tracheliotos</i> on nest, with chick		2016	Abu 'Ulbah area
9	<i>Maerua crassifolia</i> is one of the most important plants in UBM,		June 2019	Shiqqat Umm Sudud

	providing fodder for ungulates and nectar for insects			
10	Asian Houbara Bustard <i>Chlamydotis macqueenii</i> in 'Uruq Bani Ma'arid		10 May 2022	'Irq Umm ash-Shawk
11	<i>Ammogiton buettikeri</i> Kaszab, 1981			Not applicable
12	<i>Cryptotrogus kruppi</i> Sabatinelli & Pontuale, 1998			Not applicable

The above listed photographs are included in electronic format as a separate folder in the memory drive attached to this report named criterion x photographs.

- 4.2. The excel sheet included in appendix (1) attached to this report and included as a separate file in the submitted memory drive includes the complete species list for the UBM and details the species names, the global conservation status, species distribution, and the available data on population size and/or percentage of the global population.

Group	Scientific Species Name	Common Name	Red List Status (Global) (if known)	% of population within nominated property	Source of population estimate	Component parts of the nominated property (if relevant)	Endemic to property	Endemic to State Party/Parties	Endemic to region
Mammals	<i>Oryx leucoryx</i>	Arabian Oryx	VU	19%	Number of mature individuals	These species are protected in the reserve	No	No	Yes
Mammals	<i>Gazella marica</i>	Arabian Sand Gazelle	VU	25%	Number of mature individuals	These species are protected in the reserve	No	No	No
Mammals	<i>Gazella arabica</i>	Arabian Mountain Gazelle	VU	2%	Number of mature individuals	These species are protected in the reserve	No	No	Yes
Mammals	<i>Lepus capensis</i>	Arabian Hare	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Felis margarita</i>	Arabian Sand Cat	LC	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Mammals	<i>Felis lybica</i>	Arabian Wildcat	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Vulpes vulpes</i>	Arabian Red Fox	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Mellivora capensis</i>	Ratel or Honey Badger	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Vulpes rueppelli</i>	Rüppell's Sand Fox	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Jaculus loftusi</i>	Arabian Jerboa	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Acomys dimidiatus</i>	Arabian Spiny Mouse	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Gerbillus cheesmani</i>	Cheesman's Gerbil	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Gerbillus henleyi</i>	Pygmy Gerbil	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Gerbillus nanus</i>	Balochistan gerbil or dwarf gerbil	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Hemiechinus aethiopicus</i>	Ethiopian Hedgehog	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Rhinopoma microphyllum</i>	Lesser Mouse-tailed Bat	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Rhinopoma cystops</i>	Egyptian Mouse-tailed Bat	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Rhinolophus clivosus</i>	Geoffroy's / Arabian /Cretzschmar's Hoopoe	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Asellia tridens</i>	Trident Leaf-nosed Bat	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Mammals	<i>Pipistrellus kuhlii</i>	Kuhl's Pipistrelle	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Acanthodactylus boskianus</i>	Bosk's fringed-toed Lizard	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Acanthodactylus opheodurus</i>	Snake-tailed fringed-toed Lizard	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Acanthodactylus schmidti</i>	Schmid's fringe-toed Lizard	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Bunopus tuberculatus</i>	Baluch Rock Gecko	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Mesalina brevirostris</i>	Blanford's Short-Nosed Desert Lizard	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Phrynocephalus arabicus</i>	Arabian toad-headed agama	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Pristurus minimus</i>	Arnold's Rock Gecko	LC	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Reptiles	<i>Pseudotrapelus sinaitus</i>	Sinai Agama	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Ptyodactylus hasselquistii</i>	Fan-footed Gecko	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Scincus mitranus</i>	Arabian Sandfish Skink	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Stenodactylus doriae</i>	Short-fingered Gecko	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Stenodactylus slevini</i>	Slevin's Sand Gecko	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Trigonodactylus arabicus</i>	Sand Dune Gecko	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Uromastix aegyptia</i>	Egyptian Spiny-tailed Lizard	VU	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Varanus griseus</i>	Desert Monitor Lizard	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Pseudotrapelus aqabensis</i>	Aqaba Agama	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Trapelus flavimaculatus</i>	Yellow-spotted Agama	LC	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Reptiles	<i>Psammophis schokari</i>	Schokari Sand Racer	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Platyceps rhodorachis</i>	Desert Racer	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Cerastes gasperetti</i>	Arabian Horned Viper	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Reptiles	<i>Eryx jayakari</i>	Arabian Sand Boa	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Ammoperdix heyi</i>	Sand Partridge	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Torgos tracheliotos</i>	Lappet-faced Vulture	EN	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Neophron percnopterus</i>	Egyptian Vulture	EN	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Circaetus gallicus</i>	Short-toed Snake-eagle	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Circus aeruginosus</i>	Western Marsh- Harrier	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Circus macrourus</i>	Pallid Harrier	NT	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Buteo rufinus</i>	Long-legged Buzzard	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Upupa epops</i>	Common Hoopoe	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Falco tinnunculus</i>	Common Kestrel	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Chlamydotis macqueenii</i>	Asian Houbara (Macqueen's Bustard)	VU	no data available	Not studied	These species are protected in the reserve	No	No	No

Aves	<i>Pterocles exustus</i>	Chestnut-bellied Sandgrouse	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Pterocles lichtensteinii</i>	Lichtenstein's Sandgrouse	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Columba livia</i>	Rock Dove	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Streptopelia turtur</i>	European Turtle Dove	VU	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Bubulcus ibis</i>	Cattle Egret	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Streptopelia decaocto</i>	Eurasian Collared Dove	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oena capensis</i>	Namaqua Dove	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Bubo ascalaphus</i>	Pharaoh Eagle-owl	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Athene noctua</i>	Little Owl	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Caprimulgus aegyptius</i>	Egyptian Nightjar	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oriolus oriolus</i>	Eurasian Golden Oriole	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Lanius nubicus</i>	Masked Shrike	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Lanius collurio</i>	Red-backed Shrike	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Lanius isabellinus</i>	Isabelline Shrike	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Lanius excubitor</i>	Great Grey Shrike	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Lanius minor</i>	Lesser Grey Shrike	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Lanius meridionalis</i>	Southern Grey Shrike	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Corvus ruficollis</i>	Brown-necked Raven	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Eremopterix nigriceps</i>	Black-crowned Sparrow Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Alaemon alaudipes</i>	Greater Hoopoe Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Ramphocoris clotbey</i>	Thick-billed Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Calandrella brachydactyla</i>	Greater Short-toed Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Ammomanes deserti</i>	Desert Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Ammomanes cinctura</i>	Bar-tailed Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Eremalauda dunnii</i>	Dunn's Lark	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Ptyonoprogne rupestris</i>	Eurasian Crag Martin	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Hirundo rustica</i>	Barn Swallow	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Acrocephalus griseldis</i>	Basra Reed-warbler	EN	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Hippolais languida</i>	Upcher's Warbler	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Phylloscopus trochilus</i>	Willow Warbler	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Cercotrichas podobe</i>	Black Scrub-robin	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Phylloscopus collybita</i>	Common Chiffchaff	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Sylvia nana</i>	Asian Desert Warbler	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Sylvia communis</i>	Common Whitethroat	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oenanthe oenanthe</i>	Northern Wheatear	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oenanthe melanura</i>	Blackstart	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oenanthe isabellina</i>	Isabelline Wheatear	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oenanthe deserti</i>	Desert Wheatear	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oenanthe monacha</i>	Hooded Wheatear	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Oenanthe leucopyga</i>	White-crowned Wheatear	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Muscicapa striata</i>	Spotted Flycatcher	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Passer domesticus</i>	House Sparrow	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Aves	<i>Bucanetes githagineus</i>	Trumpeter Finch	LC	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ablaberoides abyssinicus</i>	Scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Acanthophilus helianthi</i>	Safflower fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Acantholyctus cornifrons</i>	Powderpost beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Achrus albicosta</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Acmaeodera arabica</i>	Metallic wood-boring beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Acrosternum millierei</i>	Stink bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Actorthia frontata</i>	Stiletto fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Acyrtosiphon pisum</i>	Pea aphid	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Adelostoma subtile sabulosum</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Adesmia cancellata cancellata</i>	Pitted beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes

Insecta	<i>Agenioideus waltlii</i>	Spider wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Agrotis ipsilon</i>	Black cutworm	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Alloxytropus anomalus</i>	Window fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Amegilla byssina</i>	Digger bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	no
Insecta	<i>Amegilla mucorea</i>	Digger bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Amegilla punctifrons</i>	Digger bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ammogiton buettikeri</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Ammogiton sonyae</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Ammophila cf. gracillima</i>	Thread-waisted wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ammophila poecilocnemis</i>	Thread-waisted wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Antepipona kassalensis</i>	Potter wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anthaxia abdita</i>	Metallic wood-boring beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anthicus crinitus</i>	Flower beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anthrax dentatus</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anthrenus pulchellus</i>	Carpet beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Anthrenus verbasci</i>	Varied carpet beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anumeta asiatica</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Anumeta cestis</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anumeta hilgerti</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anumeta spilota</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Anumeta zaza</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Apentanodes arabicus</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Aphis craccivora</i>	Cowpea aphid	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Aphodius arabicus</i>	Small dung beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Apoclea inarticulata</i>	Robber fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Apomecyna lameerei</i>	Longicorn	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Apterogyna olivieri</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Arcuator stigmaticus</i>	Grass fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Armada fletcheri</i>	Owlet moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Atherigona orientalis</i>	Pepper fruit fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Atherigona theodori</i>	Wheat stem maggot	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Atomophora macrophthalma</i>	Capsid bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Attagenus beali</i>	Carpet beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Attagenus posticalis</i>	Carpet beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Attagenus vanharteni</i>	Carpet beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Austroagallia torrida</i>	Spotted leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Badezorus signaticornis</i>	Capsid bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Bagrada poecilia</i>	Painted bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Baris granulipennis</i>	Melon weevil	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Batracomorphus signatus</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Bembix chopardi</i>	Sand wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Bembix hauseri</i>	Sand wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Bembix rochei</i>	Sand wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Bembix rufiventris</i>	Sand wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Blaesoxipha rufipes</i>	Flesh fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Brenskea coronata</i>	Scavenger scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Bruchidius buettikeri</i>	Bean beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Bucekia differens</i>	Chalcidid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Camponotus fellah</i>	Persian ants	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Campylomma unicolor</i>	Plant bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Capnodis excisa alfierii</i>	Jewel beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Caryedon nongoniermai</i>	Bean beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cataglyphis lividus</i>	Desert ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No

Insecta	<i>Cataglyphis minima</i>	Desert ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cataglyphis nodus</i>	Desert ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Celonites jousseaumei</i>	pollen wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cerceris albicincta</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cerceris cf. albicincta</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cerceris cf. tricolorata</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cerceris rufocincta</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ceylalicthus karachensis</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cheirodes brevicollis</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cheirodes pilosus</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Chiasmus conspurcatus</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Chlorion hirtum</i>	Sphecid wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Chloropelix canariensis</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Chondrostega subfasciata</i>	Eggar	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Chroantha ornatula</i>	Shield bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Chrysomya albicep</i>	Blow fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cicadulella pallida</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Clipadoretus habibi</i>	Scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Coccinella undecimpunctata menetriesi</i>	Lady beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Coenosia attenuata</i>	Hunter fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Coenosia humilis</i>	The tiger fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Craspedostethus flavescens</i>	Click beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Crematogaster aegyptiaca</i>	Acrobat ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Croscherichia richteri</i>	Blister beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Cryptophagus acutangulus</i>	Acute-angled fungus beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cryptotrogus gallagheri</i>	Gallagher fungus beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Cryptotrogus kruppi</i>	Krupp fungus beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Cueta lineosa</i>	Antlion	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cyphostethe ferruginea</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cyphostethe wittmeri</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Cyrtolabulus gracilis</i>	Potter wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Cyrtosia pusilla</i>	Micro Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Daphnis nerii</i>	Oleander hawk-moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Delia platyura</i>	Bean seed fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Delta dimidiatipenne</i>	Potter wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Dentilla ehrenbergi</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Deraeocoris pallens atramentarius</i>	Plant bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Desmatoneura brevipennis</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Dicraeus botriochloae</i>	Grass fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Dicronychus brancuccii</i>	Click beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Diploplectron palearcticum</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Dolicholepta micrura</i>	Sidr thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Drasteria kabyllaria</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Drasophila melanogaster</i>	Fruit fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Dryudella bifasciata</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Earias insulana</i>	Spiny bollworm	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Enicospilus splendidus</i>	Ichneumonid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Enneadesmus forficula</i>	Branch and twig borer	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eoferreola distincta</i>	Spider wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eremazus marmottani</i>	Small dung beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eremazus unistriatus</i>	Small dung beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eremiasphecium schmiedeknechti</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eremiothrips aldryhimi</i>	Desert flower thrips	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No

Insecta	<i>Eremiothrips brunneus</i>	Thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eremiothrips imitator</i>	Thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eremiothrips unicolor</i>	Thrips	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Eremocossus vaulogeri</i>	Miller moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eristalinus aeneus</i>	Common lagoon fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Erodium sauditus</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Erytus hormozensis</i>	Small dung beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Eryxia grandis</i>	Leaf beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ethmia lepidella</i>	Depressariid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ethmia quadrinotella</i>	Depressariid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eucremastus flavus</i>	Ichneumonid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Euodynerus rufinus rufinus</i>	Potter wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Euodynerus salzi</i>	Potter wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Eupeodes corollae</i>	Hover fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Euryope subserricornis</i>	Leaf beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Evagetes palmatus</i>	Spider wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Frankliniella occidentalis</i>	Western flower thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Gastrosericus moricei</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Gepus invisus</i>	Antlion	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Glareis arabica (Paulian, 1980)</i>	Enigmatic scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Glareis nestor</i>	Enigmatic scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Glareis vanharteni</i>	Enigmatic scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Gnamptonyx innexa</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Gonaporus israelicus</i>	Spider wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Goniurellia persignata</i>	Fruit fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Goniurellia tridens</i>	Fruit fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Gynecaptera cf. arabica</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	Yes	No	No
Insecta	<i>Halictus lucidipennis</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Haplothrips caespitis</i>	Grass thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Haplothrips clarisetis</i>	Brighte thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Haplothrips leptadeniae</i>	Thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Haplothrips talpa</i>	Thrips	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Hecalus eximius</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Heliopsis nubigera</i>	Eastern bordered straw	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Hemipenthes pauper</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Heterotropus aegyptiacus</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Heterotropus maculiventris</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Heterotropus xanthothorax</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Hippodamia variegata</i>	Adonis ladybird or variegated ladybug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Holcocerus zarudnyi</i>	Miller moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Hybosorus illigeri</i>	Scavenger scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Hyles livornica</i>	Striped hawk-moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Hymenalia denticulata</i>	Comb-clawed beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Icteranthis discoidale</i>	Leafcutting bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Imatismus arabicus</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Iranoleon arabicus</i>	Antlion	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Isturgia disputaria</i>	Maltese bloom	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Iswara elongatus</i>	Thynnid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Iswara physostomus</i>	Thynnid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Karumia inaequalis</i>	Soft bodied plant beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Komarowia cancolor</i>	Thynnid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Komarowia convexifrons</i>	Thynnid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Komarowia setosa</i>	Thynnid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes

Insecta	<i>Labarrus translucidus</i>	Small dung beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Lasiambia brevibucca</i>	Grass fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Lasioglossum diluculum</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Lepisiota frauenfeldi</i>	Frauenfeld ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Leucania loreyi</i>	False army worm	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Leucapis glyphinivora</i>	Silver fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Liris atratus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Liris maidli</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Lispe pectinipes</i>	Housefly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Lydomorphus angusticollis suturellus</i>	Blister beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Macroocula atuberculata</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Macroocula khorimensis</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Macroocula ohli</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Macroocula savignyi</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Macroocula sinaica</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Macroocula yemenita</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Macroocula zuffiensis</i>	Bradynobaenid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Macropsis octonotata</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Macroscytus brunneus</i>	Burrowing bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Megachile cf. microxantha</i>	Leafcutting bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Megachile cf. walkeri</i>	Leafcutting bee	DD	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Megachile cinnamomea</i>	Leafcutting bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Mesostena puncticollis</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Metasphenisca transilis</i>	Fruit fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Microaurydemus semivittatus</i>	Leaf beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Microlarinus minimus</i>	Weevil	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Microtelus nejdanus</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Mimesa aegyptiaca</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Mimesa sublaevis</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Miscophus papyrus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Monomorium abellei</i>	Abeille ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Monomorium n.sp. (new species under descri</i>	Ant	NE	no data available	Not studied	These species are protected in the reserve	Yes	No	No
Insecta	<i>Monomorium niloticum</i>	River Nile ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Mormogystia reibeli</i>	Miller moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Musca domestica</i>	Housefly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Mycetocharina arabica</i>	Comb-clawed beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Mycetocharina braaschi</i>	Comb-clawed beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Mylabris elegans</i>	Blister beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Necrobia rufipes</i>	Red-legged ham beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Nemestrinus aegyptiacus</i>	Tangle-veined fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Neocleonus sannio</i>	Weevil	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Neolimnus egyptiacus</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Neomyia nudissima</i>	Housefly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Nezara viridula</i>	Green bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Nitidula eremita</i>	Sap beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Nomioides cf. abudhabiensis</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Nomioides klausii</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Nomioides turanicus</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Nomophila noctuella</i>	Rush veneer	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Olibrosoma testaceus</i>	Shining flower beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Onychopterocheilus stiziformis</i>	Potter wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Orbeola hirsutulum</i>	Skin beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Orius albidipennis</i>	Minute pirate bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No

Insecta	<i>Orius laevigatus</i>	Minute pirate bug	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Orosius albicinctus</i>	White-banded leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Orosius cellulosus</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Orosius viraktamathi</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Orubesa plicifrons semenowi</i>	Scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Oryctes elegans</i>	Fruit stalk borer	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Oxybelus lamellatus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Oxycara saudarabica</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Palorus laetus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Pandesma robusta</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Paraplatype popovi</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Parnopes denticulatus</i>	Golden wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Petrorossia albula</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Phasgonophora rubens</i>	Chalcidid wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Philanthus genalis</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Philanthus variegatus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Phlepsopsius arabicus</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Phradonoma tricolor</i>	Skin beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Phragmacossia territa</i>	Miller moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Phyllotreta cruciferae</i>	Crucifer flea beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Physetopoda arabica</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Physetopoda vanharteni</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Physiphora alceae</i>	Picture-winged fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Piestognathoides bahrainicus</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Pimelia arabica</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Plutella xylostella</i>	Diamondback moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Podalgus cuniculus arabicus</i>	Rhinoceros beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Pontia daplidico</i>	Bath white Butterfly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Prionothea coronata</i>	Urchin beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Prionyx niveatus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Prochridium cf. sericatum</i>	Golden wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Prosopigastra globiceps</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Psammotettix alienus</i>	Leafhopper	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Pseudapis nilotica</i>	Sweat bee	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Pseudophotopsis maura</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Quartinia gusenleitneri</i>	Pollen wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Quartinia tuareg</i>	Pollen wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Rhabdophera acrosticta</i>	Erebid moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Rhyncomya callopis</i>	Blow fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Rhyncomya desertica</i>	Blow fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Rhyncomya nigripes</i>	Blow fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Rhyncomya sinaiensis</i>	Blow fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Ruppellia semiflava</i>	Stiletto fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Saprinus confalonieri</i>	Hister beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Scarabaeus bannuensis</i>	Dung beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Sclerum sulcatum sulcatum</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Scolia miniata</i>	Coliid Wasps	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Solierella dispar</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Solierella longicornis</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Sphaerotrochalus somalicola</i>	Scarab beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Sphyracephala beccarii</i>	Stalk-eyed fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Spodoptera exigua</i>	Beet armyworm	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Spogostylum candidum</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No

Insecta	<i>Spogostylum niphas</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Stalagmosoma cynanki</i>	Flower chafer	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Stichopogon deserti</i>	Robber fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tachyagetes arabicus</i>	Spider wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Tachys gilvus</i>	Ground beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tachysphex erythropus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tachysphex geniculatus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tachysphex nitidissimus</i>	Digger wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Telostegus masrensis</i>	Spider wasp	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Tentyrina palmeri palmeri</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Thorictus arabicus</i>	Skin beetle	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Insecta	<i>Thriptera kraatzi</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Thyreus elegans</i>	Cuckoo bee	DD	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Timia berlandi</i>	Picture-winged fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tomosvaryella demeyeri</i>	Big-headed fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Trachyderma philistina</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tribolium castaneum</i>	Red flour beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Tricholabiodes ?chloroticus</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Tricholabiodes aegyptiaca</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Tricholabiodes aldryhimi</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Tricholabiodes brothersi</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Tricholabiodes cf. israeliticus</i>	Velvet ant	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Trichosphaena arabica</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Trixoscelis vanharteni</i>	Heleomyzid fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Trupanea stellata</i>	Fruit fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Utethesia pulchella</i>	Crimson-speckled moth	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Vespa orientalis</i>	Oriental hornet	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Wittmeridecus mediozonatus</i>	Checkered beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Wohlfahrtia indigens</i>	Spotted flesh fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Wohlfahrtia nuba</i>	Spotted flesh fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Wohlfahrtia villeneuvi</i>	Spotted flesh fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Xantheremia philistina</i>	Metallic wood-boring beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Insecta	<i>Xenopsylla cheopis</i>	Oriental rat flea	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Xeramoeba semirufa</i>	Bee fly	NE	no data available	Not studied	These species are protected in the reserve	No	No	No
Insecta	<i>Zophosis migneauxi</i>	Darkling beetle	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Arachnids	<i>Apistobuthus pterygocercus</i>	Shield-tailed scorpion	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Arachnids	<i>Compsobuthus arabicus</i>	Arabian yellow scorpion	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Arachnids	<i>Vachoniolus globimanus</i>	Vachon scorpion	NE	no data available	Not studied	These species are protected in the reserve	No	No	Yes
Arachnids	<i>Leiurus arabicus</i>	Arabiian Leiurus scorpion	NE	no data available	Not studied	These species are protected in the reserve	No	Yes	No
Plants	<i>Blepharis edulis</i> (Forssk.) Pers.	Eye-lash Plant		no data available	Not studied		No	No	No
Plants	<i>Aerva aff. lanata</i> (L.) Juss.	Mountain Knotgrass		no data available	Not studied		No		
Plants	<i>Aerva javanica</i> (Burm.fil.) Juss.	Desert Cotton		no data available	Not studied		No	No	
Plants	<i>Anabasis setifera</i> Moq.			no data available	Not studied		No		
Plants	<i>Cornulaca arabica</i> Botsch.			no data available	Not studied	Sand dunes	No		Yes
Plants	<i>Halogeton alopecuroides</i> (Delile) Moq.			no data available	Not studied		No		
Plants	<i>Halothamnus bottsae</i> Jaub. & Spach			no data available	Not studied		No		Yes
Plants	<i>Haloxylon persicum</i> Bunge			no data available	Not studied	Shiqqat Ghudayy	No	No	No
Plants	<i>Haloxylon salicornicum</i> (Moq.) Bunge ex Boiss.			no data available	Not studied		No	No	
Plants	<i>Salsola</i> sp.			no data available	Not studied		No	No	
Plants	<i>Calotropis procera</i> (Aiton) Aiton fil.	Sodom's Apple		no data available	Not studied		No	No	
Plants	<i>Glossonema varians</i> (Stocks) Liede & Khanum			no data available	Not studied		No	No	
Plants	<i>Leptadenia pyrotechnica</i> (Forssk.) Decne.	Broom Bush		no data available	Not studied		No	No	

Plants	<i>Pergularia tomentosa</i> L.		no data available	Not studied		No	No	
Plants	<i>Rhazya stricta</i> Decne.		no data available	Not studied		No	No	
Plants	<i>Gastrocotyle hispida</i> (Forssk.) Bunge		no data available	Not studied		No	No	
Plants	<i>Arnebia hispidissima</i> (Sieber ex Lehm.) DC.	Arabian Primrose	no data available	Not studied		No	No	
Plants	<i>Echium</i> sp.		no data available	Not studied		No	No	
Plants	<i>Heliotropium ramosissimum</i> (Lehm.) Sieber ex DC.		no data available	Not studied		No	No	
Plants	<i>Heliotropium digynum</i> (Forssk.) Asch. ex C.Chr.		no data available	Not studied		No	No	
Plants	<i>Euploca rariflora</i> (Stocks) Diane & Hilger		no data available	Not studied		No	No	
Plants	<i>Moltkiopsis ciliata</i> (Forssk.) I.M.Johnst.		no data available	Not studied		No	No	
Plants	<i>Trichodesma africanum</i> (L.) R.Br.		no data available	Not studied		No	No	
Plants	<i>Eremobium aegyptiacum</i> (Spreng.) Asch.		no data available	Not studied		No	No	
Plants	<i>Farsetia burtonae</i> Oliv.		no data available	Not studied		No	No	
Plants	<i>Farsetia</i> sp. aff. <i>dhofarica</i> Jonsell & A.G.Mill.		no data available	Not studied		No	No	
Plants	<i>Farsetia longisiliqua</i> Decne.		no data available	Not studied		No	No	
Plants	<i>Farsetia stylosa</i> R.Br.		no data available	Not studied		No	No	
Plants	<i>Morettia parviflora</i> Boiss.		no data available	Not studied		No	No	Yes
Plants	<i>Commiphora myrrha</i> (Nees) Engl.		no data available	Not studied	incised wadis in the limestone plateau	No	No	Yes
Plants	<i>Capparis spinosa</i> L.; Common Caper	Common Caper	no data available	Not studied		No	No	
Plants	<i>Dipterygium glaucum</i> Decne.		no data available	Not studied		No	No	
Plants	<i>Maerua crassifolia</i> Forssk.		no data available	Not studied	limestone plateau	No	No	
Plants	<i>Polycarpaea repens</i> (Forssk.) Asch. & Schweinf.		no data available	Not studied		No	No	
Plants	<i>Sclerocephalus</i> sp.		no data available	Not studied		No	No	
Plants	<i>Cleome amblyocarpa</i> Barratte & Murb.		no data available	Not studied		No	No	
Plants	<i>Dipterygium glaucum</i> Decne.		no data available	Not studied		No	No	
Plants	<i>Atractylis carduus</i> (Forssk.) C.Chr.	White Thistle	no data available	Not studied		No	No	
Plants	<i>Centaurea pseudosinaica</i> Czerep.		no data available	Not studied		No	No	
Plants	<i>Iphiaea scabra</i> DC.		no data available	Not studied		No	No	Yes
Plants	<i>Launaea mucronata</i> (Forssk.) Muschl.		no data available	Not studied		No	No	
Plants	<i>Pulicaria glutinosa</i> (Boiss.) Jaub. & Spach		no data available	Not studied		No	No	
Plants	<i>Pulicaria jaubertii</i> E.Gamal-Eldin		no data available	Not studied		No	No	Yes
Plants	<i>Pulicaria schimperii</i> DC.		no data available	Not studied		No	No	Yes
Plants	<i>Pulicaria undulata</i> (L.) C.A.Mey.		no data available	Not studied		No	No	
Plants	<i>Rhanterium epapposum</i> Oliv.		no data available	Not studied		No	No	
Plants	<i>Ramaliella tortuosissima</i> (Boiss.) Zaika, Sukhor. & N.Kilian		no data available	Not studied		No	No	
Plants	<i>Convolvulus asyrensis</i> Kotschy		no data available	Not studied		No	Yes	Yes
Plants	<i>Convolvulus glomeratus</i> Hochst. ex Choisy		no data available	Not studied		No	No	
Plants	<i>Convolvulus cephalopodus</i> Boiss.		no data available	Not studied		No		
Plants	<i>Citrullus colocynthis</i> (L.) Schrader	Bitter Melon	no data available	Not studied		No		
Plants	<i>Cynomorium coccineum</i> L.	Maltese Mushroom	no data available	Not studied		No		
Plants	<i>Cyperus macrorrhizus</i> Nees.		no data available	Not studied	Sand dunes	No	No	
Plants	<i>Cyperus rotundus</i> L.	Purple Nut Sedge	no data available	Not studied		No		
Plants	<i>Ephedra foliata</i> Boiss. ex C.A.Mey.	Shrubby Horsetail	no data available	Not studied		No	No	
Plants	<i>Chrozophora oblongifolia</i>		no data available	Not studied		No		
Plants	<i>Chrozophora tinctoria</i> (L.) A.Juss.	Dyer's Litmus	no data available	Not studied		No	No	
Plants	<i>Monsonia nivea</i> (Decne.) Decne. ex Webb		no data available	Not studied		No	No	
Plants	<i>Gisekia pharnaceoides</i> L.		no data available	Not studied		No	No	
Plants	<i>Aristida adscensionis</i> L.	Annual Bristle Grass	no data available	Not studied		No	No	
Plants	<i>Cenchrus ciliaris</i> L.	Buffel Grass	no data available	Not studied		No	No	
Plants	<i>Centropodia forskalii</i> (Vahl) Cope		no data available	Not studied		No	No	
Plants	<i>Centropodia fragilis</i> (Guinet & Sauvage) Cope		no data available	Not studied		No	No	
Plants	<i>Chrysopogon plumulosus</i> Hochst.		no data available	Not studied		No	No	
Plants	<i>Dichanthium foveolatum</i> (Delile) Roberty		no data available	Not studied		No	No	
Plants	<i>Enneapogon desvauxii</i> P.Beauv.	Feather Pappus Grass	no data available	Not studied		No	No	

Plants	<i>Lasiurus scindicus</i> Henrard		no data available	Not studied		No	No	
Plants	<i>Panicum turgidum</i> Forssk.	Desert Grass	no data available	Not studied		No	No	
Plants	<i>Cenchrus divinus</i> (J.F.Gmel.) Verloove, Govaerts & Buttler		no data available	Not studied		No	No	
Plants	<i>Stipagrostis drarii</i> (Täckh.) De Winter		no data available	Not studied		No	No	Yes
Plants	<i>Stipagrostis foexiana</i> (Maire & Wilczek) De Winter		no data available	Not studied		No	No	0
Plants	<i>Stipagrostis obtusa</i> (Delile) Nees		no data available	Not studied		No	No	
Plants	<i>Stipagrostis</i> sp.		no data available	Not studied		No	No	
Plants	<i>Tragus racemosus</i> (L.) All.	Stalked Bur Grass	no data available	Not studied		No	No	
Plants	<i>Dipcadi erythraeum</i> Webb & Berthel.	Brown Lily	no data available	Not studied		No	No	
Plants	<i>Leucas inflata</i> Benth.		no data available	Not studied		No	No	
Plants	<i>Salvia spinosa</i> L.		no data available	Not studied		No	No	
Plants	<i>Astragalus arpilobus</i> subsp. hauarensis (Boiss.) Podlech		no data available	Not studied		No	No	
Plants	<i>Astragalus spinosus</i> (Forssk.) Muschl.		no data available	Not studied		No	No	
Plants	<i>Astragalus tribuloides</i> Delile.		no data available	Not studied		No	No	
Plants	<i>Astragalus vogelii</i> (Webb) Bornm.		no data available	Not studied		No	No	
Plants	<i>Crotalaria aegyptiaca</i> Benth.		no data available	Not studied		No	No	
Plants	<i>Crotalaria</i> sp. aff. leptocarpa Balf.f.		no data available	Not studied		No	No	
Plants	<i>Crotalaria</i> sp.		no data available	Not studied		No	No	
Plants	<i>Indigofera spinosa</i> Forssk.		no data available	Not studied		No	No	Yes
Plants	<i>Indigofera</i> sp.		no data available	Not studied		No	No	
Plants	<i>Rhynchosia pulverulenta</i> Stocks.		no data available	Not studied		No	No	
Plants	<i>Rhynchosia schimperi</i> Hochst. ex Boiss.		no data available	Not studied		No	No	
Plants	<i>Senegalia hamulosa</i> (Benth.) Boatwr.		no data available	Not studied		No	No	Yes
Plants	<i>Senna holosericea</i> (Fresen.) Greuter		no data available	Not studied		No	No	No
Plants	<i>Senna italica</i> Mill.	Italian Senna	no data available	Not studied		No	No	No
Plants	<i>Tephrosia uniflora</i>		no data available	Not studied		No	No	No
Plants	<i>Vachellia ehrenpergiana</i>		no data available	Not studied	incised wadis in the limestone plateau	No	No	No
Plants	<i>Vachellia oerfota</i> (Forssk.) Kyal. & Boatwr.		no data available	Not studied	limestone plateau	No	No	No
Plants	<i>Vachellia tortilis</i> (Forssk.) Galasso & Banfi	Umbrella Thorn Acacia	no data available	Not studied	incised wadis and limestone plateau	No	No	No
Plants	<i>Cocculus pendulus</i> (J.R.Forst. & G.Forst.) Diels		no data available	Not studied		No	No	No
Plants	<i>Corbichonia decumbens</i> (Forssk.) Exell		no data available	Not studied		No	No	no
Plants	<i>Limeum arabicum</i> Friedrich		no data available	Not studied	Sand dunes	No	No	Yes
Plants	<i>Moringa peregrina</i> (Forssk.) Fiori	Ban Tree	no data available	Not studied	incised wadis in the limestone plateau	No	No	Yes
Plants	<i>Neurada procumbens</i> L.		no data available	Not studied		No	No	No
Plants	<i>Boerhavia elegans</i> Choisy		no data available	Not studied		No	No	No
Plants	<i>Heliotropium digynum</i> (Forssk.) Asch. ex C.Chr.		no data available	Not studied		No	No	No
Plants	<i>Cistanche phelypaea</i> (L.) Cout.	Desert Hyacinth	no data available	Not studied		No	No	No
Plants	<i>Polygala erioptera</i> DC.		no data available	Not studied		No	No	No
Plants	<i>Polygala irregularis</i> Boiss.		no data available	Not studied		No	No	No
Plants	<i>Calligonum crinitum</i> Boiss. subsp. arabicum (Soskov)		no data available	Not studied	linear sand dunes	No	No	Yes
Plants	<i>Ochradenus baccatus</i> Delile		no data available	Not studied		No	No	No
Plants	<i>Reseda muricata</i> C.Presl		no data available	Not studied		No	No	No
Plants	<i>Ziziphus spina-christi</i> (L.) Desf. var. <i>divaricata</i>	Lote Tree		100%	Shiqqat as-Sudayr	Yes	Yes	Yes
Plants	<i>Kohautia caespitosa</i> Schnizl.		no data available	Not studied		No	No	No
Plants	<i>Haplophyllum tuberculatum</i> (Forssk.) A.Juss.		no data available	Not studied		No	No	No
Plants	<i>Lycium shawii</i> Roem. & Schult.; Boxthorn	Boxthorn	no data available	Not studied	incised wadis in the limestone plateau	No	No	No
Plants	<i>Fagonia indica</i> Burm.fil.		no data available	Not studied		No	No	No
Plants	<i>Fagonia schweinfurthii</i> (Hadidi) Hadidi		no data available	Not studied		No	No	No
Plants	<i>Seetzenia lanata</i> (Willd.) Bull.		no data available	Not studied		No	No	No
Plants	<i>Tetraena simplex</i> (L.) Beier & Thulin		no data available	Not studied		No	No	No
Plants	<i>Tribulus macropterus</i> Boiss. var. <i>arabicus</i> (Hosni) Hemaïd & Jacob Thomas		no data available	Not studied	Sand dunes	No	No	Yes
Plants	<i>Tribulus pentandrus</i> Forssk.		no data available	Not studied		No	No	No