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Man and the Biosphere Programme

# Al Reem Biosphere Reserve Educational and awareness Booklet







# **Al Reem Biosphere Reserve**

## **Natural Reserves Department**

## **Educational and awareness Booklet**



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**Educational and awareness Booklet** 

Compiled by

Ministry of Municipality and Environment State of Qatar Mr. Nawaf J. Al Naemi Dr. Sayed Jamal Bukhari

#### **UNESCO - Doha Office**

Dr. Anna Paolini Ms. Donia Abdelwahed Tarek Abulhawa

بنئ ألله الرجمز الرجينيم

﴿ وَتَرَى الْأَرْضَ هَامِدَةً فَإِذَا أَنْزَلْنَا عَلَيْهَا الْمَاءَ اهْتَزَّتْ وَرَبَتْ وَأَثْبَتَتْ مِنْ كُلِّ زَوْج بَهِيج ﴾

سورة الحج الآية ٥

## "IN THE NAME OF ALLAH, THE MOST GRACIOUS

AND THE MOST MERCIFUL"

And you see the earth lifeless, but as soon as We send down rain upon it, it begins to stir «to life» and swell, producing every type of pleasant plant

Al Hajj, Verse 5

# A word from Minister of Municipality and Environment

The protection of the environment and ensuring ecosystem integrity is one of the main pillars of National Development in the State of Qatar. The State's strategies and plans, notably its Constitution and Qatar National Vision 2030 stipulates that the protection and safety of the environment is a fundamental right of the Qatari citizen, a moral responsibility towards future generations and a clear declaration of the commitment of the State of Qatar to global trends aimed at achieving sustainable development.

Al Reem Reserve is considered one of the most important protected areas in Qatar. Since its establishment in 2005, it has been developed as a model national reserve to achieve the highest levels of conservation of the natural heritage including ecosystems, flora and fauna diversity as well as aesthetic and cultural values.

The nomination of Al Reem Reserve in 2007, as the first biosphere reserve in the State of Qatar, is an innovative approach to strike a balance between the protection of natural and cultural heritage priorities and the sustainable development of local communities living in and around these reserves will be achieved. Thus, transforming protected areas into hubs for best practices in terms of environmental sustainability and socio-economic development as well as attracting responsible investment and achieving the higher goal of improving the quality of life of society at all levels.

We are pleased to present this educational brochure for Al Reem Biosphere Reserve to raise awareness about the Man and Biosphere Program and the importance of protecting natural heritage and biodiversity.

#### Abdullah Bin Abdullaziz Bin Turki Alsebeye

Minister of Municipality And Environment

## A word from UNESCO

Biodiversity is vital not only for people through provision of ecosystem services and goods but also to ensure the continuity of life on Earth and maintaining equilibrium within ecosystems. However, the 2019 Global Assessment Report on Biodiversity and Ecosystem Services, produced by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), warns us «Nature is declining globally at rates unprecedented in human history - and the rate of species extinctions is accelerating, with grave impacts on people around the world».

One of the major causes of the rapid decline in biodiversity is human activity and the unsustainable use of natural resources in response to the need to provide more food, more water and more energy to an expanding population on the expanse of nature and other living species.

The UNESCO Man and Biosphere Programme, introduced in 1970, has been concerned with the interface between socio-economic development and the biosphere. The Biosphere reserves aims to provide innovative solutions that reconciles people with their surrounding environment thus becoming site-specific models demonstrating how people can live and strive in harmony with nature. Today, There are 701 Biosphere reserves in 124 countries, including 21 transboundary biosphere reserves.

The "Sustainable Development to Preserve the Environment" constitutes one of the main four pillars of the Qatar National vision 2030. Through the establishment of its first Biosphere Reserve, Al Reem listed in 2007, Qatar has reaffirmed its commitment to protect its natural heritage and biodiversity while engaging with local communities.

It is therefore our great pleasure to address this message in support of this promotional brochure on 'The Al Reem Biosphere Reserve in Qatar', produced in collaboration with the Ministry of Municipality and Environment.

Many thanks are due to His Excellency the Minister Mr. Abdulla bin Abdulaziz bin Turki Al Subai and his Assistant Undersecretary for Environmental Affairs, Mr. Hassan jumah Al Muhannadi as well as Mr. Saleh Hassan Al Kuwari, Mr Nawaf Al Nuaimi, from the Natural Reserves Department and Dr. Sayed Jamal Bukhari from the Information Systems Department at the Ministry for their cooperation and dedication in the management of the Al Reem Biosphere Reserve and other protected areas in Qatar.

#### Anna Paolini

Director, UNESCO Secretary, Doha office Representative in the countries of the Gulf and Yemen

#### Miguel Clüsener-Godt

Director Division of Ecological and Earth Sciences, UNESCO Secretary Man and the Biosphere (MAB) Programme Qatar is located on the western coast of the Arabian Gulf and has a surface area of around 11,664 Km2. Qatar is strategically located at the heart of the sovereign states embracing the Arabian Gulf. Qatar is home to around 2.7 Million population, 80% of which reside in and around its capital Doha.



## **CULTURAL HERITAGE OF QATAR**

Early history suggests that the peninsula was inhabited by nomadic tribes gathering around small fishing and pearling villages. These coastal residents went on to become the region's most accomplished pearl divers! Water resources near the villages combined with opportunities for fishing, pearl diving, and maritime trade supported more significant and permanent settlements. The place, which is today known as Al Zubarah, became the hub of activities and was one of the most important trade ports in the whole Arabian Gulf. The communities shifted seasonally, following availability of water and grazing pastures.

The finding of oil in 1940s in Dukhan rapidly began to transform Qatar into a developing country. Later, exploration of Natural Gas has led Qatar to become one of the fastest growing economies with one of the highest per capita incomes in the world and the world's third-largest natural-gas reserves. Amidst all the growth and development, even today Qatar attaches great importance to its culture and traditions from farming, rearing livestock, tending camels and horses, artisanal fishing, to small-scale trade and commerce.

## NATURAL HERITAGE OF QATAR

Nature has bestowed Qatar with some of the most beautiful landscapes in the form of sand dunes of Mesaieed, seascapes of Khor l Adid, naturally carved landforms of Brouq and the beautiful beaches of east cast. Qatar biodiversity includes more than 1,900 species of marine life, terrestrial plants and animals. These include the iconic Arabian Oryx, the Sand Gazelle, the renowned Houbara Bustard, sea turtles and dugongs.

Traditionally, people of the Arabian region have protected marine and terrestrial habitats and prohibited hunting during specific months of the year. They also developed types of protected areas even before and during the early time of Islam, which were known as Mahmiyas or Himas. These protected areas were well established and managed, and is perceived as the early predecessor to today's concept of sustainable development.

The idea of Himas existed even before the Islamic times. However, only the powerful and the privileged seem to enjoy access to these areas. Prophet Muhammed (PBUH) abolished the pre-Islamic practice and made it accessible and used for public welfare. The concept was based on the organization, maintenance, regulation and sustainable utilization of natural pastures and rangelands in line with local practices.

The same tradition has been carried forward by the State of Qatar where 11 Protected Areas has been established. Al Sheehaniya was the first official protected area established in 1979 with an objective of developing the first wildlife reintroduction center to help revive the populations of the Arabian Oryx, the Sand Gazelle (Al Reem) and other animals extinct from the Qatari wild. The 11 protected areas in Qatar cover around 2,742 km2 is accounting for 23% of Qatar's total land area, elevating the State of Qatar to one of the highest percentages of protected area per country on the planet! These areas are not only perceived as means for the protection of important land and seascapes, ecosystems, and species but also to support the development of sustainable tourism linked to community development and cultural heritage conservation.



## MAN AND BIOSPHERE PROGRAM

The Man and Biosphere program (MAB) was launched by UNESCO in 1971 as a scientific initiative addressing the relationship between people and their surrounding environment. It integrates environmental, social, and economic sciences and linking them to education, thus contributing to the improvement of quality of life and promoting benefit sharing among people. The program is designed to bridge the gap between people and their biosphere by promoting the sustainable utilization of natural resources and introducing best practices to halt environmental degradation and biodiversity loss. This objective is achieved through establishing the UNESCO World Network for Biosphere Reserves across the globe.

Biosphere Reserves include land and sea ecosystems in which local solutions are adopted to balance the needs for development with the necessities of conservation. Biosphere Reserves are based on the notion that science is the foundation of sustainability.

To date, there are 701 biosphere reserves established in 124 states across the world, including 21 transboundary reserves, 79 in Africa, 157 in Asia, 302 in Europe and North America, 130 in Latin America and the Caribbean, and 33 biosphere reserves in the Arab States distributed in 12 countries.



The 201920- map of the UNESCO World Network for Biosphere Reserves across the globe

Biosphere Reserves aim to achieve three functions: conservation, development, and logistic support. The conservation function fulfills the reserve's contribution to protecting natural land and seascapes, ecosystems, and therefore biodiversity. The development function fulfills the objective of sustainability by key stakeholders, including local communities living in and around the Biosphere Reserve. The logistic support function serves scientific research efforts for both conservation and development, and links them to awareness raising and education. In fulfilling the three functions, each biosphere reserve is divided into three management zones, the core (protection), the buffer (scientific research & education), and the transition zone (human development and activities).

## AL REEM BIOSPHERE RESERVE

Al Reem was first established as a protected area by an Emiri Decree in 1994. In view of its diverse flora and fauna as well as its cultural and traditional diversity, a proposal to enlist Al Reem in the Biosphere Reserves Network was initiated by the Government of Qatar in 2002. In year 2007, the nomination file was prepared for Al Reem, and as a result, the protected area was approved as a Biosphere Reserve under UNESCO MAB Program.



Map of Al Reem Biosphere Reserve

Al Reem Reserve covers an area of 1,154 km<sup>2</sup>, which represents almost 10% of the entire peninsula. It hosts Qatar's only World Heritage Property, Al Zubarah, which is the most important archeological site in the country.

Al Reem highlights extremely diverse biological wealth, and encompasses some of the most interesting landscapes of the Qatar peninsula. The limestone cliffs and mesas and the marine landscapes immediately offshore are unparalleled in the country, and are a stark contrast to the varied desert landscapes elsewhere in the Reserve. The marine ecosystems in the Reserve support large populations of endangered Dugongs and Green Turtles. The shoreline varies from rock cliffs to shallow sand banks to extensive sabkhas plains, or desert intertidal mudflats. Inland regions are among the most agriculturally productive in the country, with significant water retention and high soil quality, and fodder for grazing animals is produced nearly entirely in this corner of the peninsula. The desert gravel plain ecosystems interspersed with shallow valleys of seasonal streams (wadis) are representative of arid climate habitats found in the region.

The overall objective for Al Reem Biosphere Reserve is "to protect and conserve key ecosystems along with their associated cultural values and Qatar's natural heritage through a participative approach which will strengthen national sense of ownership, create a foundation for sustainable resources management, support education and learning, and preserve for generations the right to enjoy their natural and cultural heritage."

By 2030, Al Reem Reserve will become a national model for the effective management of Biosphere Reserves, which will be developed and shared across the region.

Almost all initiatives implemented in Al Reem are funded by the Government of Qatar, with about 5% of the budget coming from public/ private partnerships. The area is strongly protected by law, and well accepted by local communities.

The Protected Area has remained relatively unchanged since its designation due to the political stability and economic growth of Qatar, in addition to the remoteness and harsh climate of the Reserve. Human presence has had a limited impact on the Reserve's resources because of increased local migration out of the area and decrease in the local community's interest to live, invest, and expand on economic activities in the Reserve.

# Al Reem Reserve have three interrelated zones that aim to fulfil three complementary and mutually reinforcing functions :

- The core areas comprise of a strictly protected ecosystem that contributes to the conservation of landscapes, ecosystems and species.
- The buffer areas surrounds or adjoins the core areas and is used for activities compatible with sound ecological practices that can reinforce scientific research, monitoring, training and education.
- The transition area is the part of the reserve where the greatest activity is allowed, fostering economic and human development that is socioculturally and ecologically sustainable.



**Different zones of Al Reem Reserve** 

## THE LANDSCAPE

The Reserve is characterized by undulating gravel plains (hazm) interspersed with wadis, thickly vegetated depressions (rawdahs), saline swampy mudflats (sabkhas), and sandy beach plains (kuthban) mostly found along the coast. Notable features include elevated limestone formations, or Brouq, along the west coast. The Reserve has no rivers, and other than occasional rainfall and subsequent runoff of surface water through the wadis, the primary source of fresh water is groundwater.

## Seven habitat types, or ecosystems, have been identified in Al Reem Biosphere Reserve:

1 - Gravel Hamad (Hazm) is composed of stones and gravel, and covers most of the Reserve. Vegetation here is sparse, except for halophytes (salttolerant plants) and scattered trees of Acacia tortilis and Ziziphus. Lycium shawii, one of the most tolerant plants of this environment, can be found accompanied by smaller plants seeking refuge under its thorns from grazing animals. This area is suitable for desert animal species such as Desert Monitor, Spiny-tailed Lizard, Hedgehogs, and Houbara Bustard, which prefer this terrain for nesting and breeding.



2 - Watersheds and shallow surface channels (Wadis) are characterized by sediments and soil rich in organic matter and nutrients generally brought in by surface runoff. Rich in vegetation, wadis are home to a significant proportion of animals and insects, and serve as nesting sites for desert birds, as well as perching sites for predator species in search of prey. Wadi margins also serve as good habitats for rodents to burrow and hide in. Most plants growing in this area are short-lived annuals, although outside of the rainy season, Lycium shawii is prevalent.



**3 - Sandy depressions (Mestah)** receive little rain, and the poor soil quality supports sparse vegetation dominated by Cymbopogon commutatus and Lycium shawii. These areas are subjected to deterioration due to their accessibility to livestock. Therefore annual plant species that may grow in this area do not usually have the chance to reach the seed producing stage before they are eaten.



4 - Thickly vegetated depressions (Rawdahs) are areas filled with windblown sand, accumulating water during the rainy season and where the land is submerged for days. Minerals and silt brought from runoff create reasonably fertile soil, and subsequently, this area flourishes and is characterized by the highest plant cover and species richness in Al Reem, creating seasonal lush green areas contrasting the stark desert. Falconers have traditionally preferred this land because their Game species can be found here.

Each Rawdah area, within the Reserve, have their distinguishing features. For instance, Al-Hamm Rawdah hosts a patch of rare Prosopis cineraria trees. In Abu Uwainah Rawdah, Ziziphus and Acacia tortilis stands are dotted with perennial plant communities. Al-Qatana Rawdah has a unique composition of Ziziphus and Acacia ehrenbergiana, scattered with bushes of Lycium shawii interspersed with vines of Ephedra and Convolvulus.

Rawdahs are an iconic feature of the landscape and culture of Qatar. Throughout the ages, Qataris have settled around the Rawdahs, and their lifestyle and traditions developed through their interaction with the surrounding environment. Historically, the local people have imposed strict protection and management rules over the Rawdahs, in recognition of their critical importance for their lives in terms of grazing livestock, collecting fuelwood, hunting games, and of course, drinking water. Rawdahs became part of the social and tribal identity of Qataris. In fact, many of the Rawdahs in Al Reem are named after the tribes residing around them (the tribes do not live inside the Rawdahs for protection purpose). Today, dependence on Rawdahs as a source of living has declined, but Qataris attachment to these areas remains strong. It generally remains protected by their users and represents a major recreational destination in winter and spring, where stories and traditions of how Rawdahs contributed to the history of Qatar and the survival of its people are transferred from one generation to the next.



**5** - Sabkhas are highly saline, usually extending along the coast, but also found inland. No plants can be found in this area, but along the edges, halophytic plants such as Cistanche tubulosa and Halocnemum strobilaceum, and Limonium axillare grow sparsely, with Tetraena qatarensis on the edges.



6 - Sandy beaches are characterized by coarse sands and crushed oyster shells. Plants found here include Tetraena qatarensis mixed with Aeluropus lagopoides.



**7 - Mesas and hillocks (Brouq)** are mostly located in the southwest part of the Reserve, and are the most identifiable and striking landform in the Reserve; with small flat-topped limestone mesas and great pillars just between crumbling cliffs. Plant life is sparse here, but some perennial plants such as Tetraena qatarensis and Pancium turgidum can be found. The type of soil here allows for high use by land animals to find food and make shelters. Many tracks, dens, and scats of animals can be found here, including dens of the largest carnivore of the area, Red Fox.



The landscape defines distinctive ecosystems that provide such services as habitat creation for wildlife, natural rangelands, fertile land for agriculture, conducive environment for social recreation and cultural activities, game hunting and human settlement.

![](_page_22_Picture_1.jpeg)

The description of Al Reem landscape is incomplete without the mention of 'EAST-WEST'!

The natural beauty of the rugged landform is all the more enhanced by a delft human touch given by the masterclass of Richard Sierra. Named 'East-West/West-East' by Richard Serra and located in Brouq in the Zekreet Peninsula, the sculptor comprise of four steel plates, each over 14 meters high, and stretch out over a kilometer. A local cultural expert has stated that the towering strength of the austere plates, standing proud in the harsh desert, mirrors the pride and strength of the Qatari people. Another expert commented that it is not the art that brings beauty to the desert landscape, but rather, that the desert landscape that brings beauty to the art.

## **The People**

#### **Settlements/Town/Villages :**

About 2,923 people live in the Reserve, distributed among 30 population groups of different sizes, 11 of which are active communities. The most important of these communities is the town of Al-Ghuwairiya located on the northeastern corner of the Reserve, near the intersection of Al Shamal road towards the historic site Al Zubara. The second town is Jamiliya, located on the eastern side of the road about halfway between the town of Ghuwairiya and Dukhan to the south. Each of the two towns has an urban plan that illustrates its area and its boundaries with Al Reem Reserve. Both have male and female secondary schools, municipal service offices, as well as commercial markets and representative offices of the most important national institutions. Also on the border of the Reserve are the towns of Rafiq, Umm al-Kahab and Khuzan, which are smaller and less populated, and located on the eastern side of the Reserve on the eastern road to the south. In each of the towns, there are a limited number of local residents and services are limited to electricity, water and telecommunications.

Within the boundaries of the protected area, there are also a number of small towns or villages, some of which are permanently inhabited; others are mostly seasonally occupied, especially in winter, for leisure or for agricultural and pastoral purposes.

The most important of these villages is Al-Nu'man village, which is associated with Rawdah Al-Nu'man. It is located in the northern part of the Reserve to the south of Al-Zubara archaeological site. Others include the village of Labseer, south of Al-Nu'man, in addition to Al-Saalouk village and other small communities in the northern half of the Reserve. In the southern part, the number of communities is much lower, especially the village of Zekreet located at the southern entrance of the peninsula of Brouq, which is of great importance in terms of location and the presence of local residents who still live in the area and have an important historical and social connection to it.

![](_page_24_Figure_1.jpeg)

## **Main Activities**

#### **HUNTING**:

Falconry is an integral part of Qatar's culture and heritage. Al Reem Reserve is no exception to this annual practice, where falconers are allowed to hunt Al Houbara birds as per the decision No (2) of 2008 of the Supreme Council for the Protection of the Environment and Natural Reserves. Hunting by other means and instruments is only permitted to catch Al Lafoo Birds. While hunting for other birds and animals, including deer, is prohibited. Hundreds of falconers visit Al Reem every year, especially during autumn and spring migration seasons.

Fishing is not a major activity in Al Reem Reserve. The western shores of the reserve hosts groups of fishing enthusiasts for fun and recreation purposes.

![](_page_25_Picture_4.jpeg)

#### GRAZING

The cattle grazing activity in the Reserve is mainly represented through mobile or semi-permanent ranches. Mobile ranches are moving barns used by their owners to take care of their livestock within their seasonal movement inside and outside of the Reserve. The semi-permanent ranches however are stable barns accompanied by semi-permanent housing for their owners. The number of travelling ranches in the reserve is estimated to be about 26 and is generally spread in the northern and central regions, with fewer ranches in the drier and more remote southern and western regions of the reserve. The semi-permanent ranches are estimated at 10 within the boundaries of the reserve.

![](_page_26_Picture_2.jpeg)

Livestock owners rely on natural grazing for a short period at the end of the winter and the beginning of the spring (about two months) and then turn to the provision of feed from the local market.

Livestock rearing of sheep, goats, camels, and (to a small extent) cows is the main socio-economic activity in the Biosphere Reserve. Traditional grazing is allowed and carried out according to long-established land use systems of the local population. Camels, however, must remain in enclosures - their free grazing is prohibited in order to allow the recovery of natural vegetation, and permanent sheep and goat husbandry farms are strictly controlled.

#### **FARMING** :

Agricultural activity is a major socio-economic activity in Al Reem Reserve and it is spread especially in the northeastern and central parts of the Reserve.

![](_page_27_Picture_3.jpeg)

The area covered by private farms in the Reserve is estimated at 23.4 km<sup>2</sup>. There are more than 50 private farms within the boundaries of the Reserve. Most of these farms have large land holdings. Some of it are nearly 1,500 hectares, whereas others cover an area of about 10 hectares. Often, each farm include houses of its owners, workers' accommodation and various service facilities.

Farms are usually cultivated with evergreen trees and are mostly nonnative trees that serve as windbreaks, and for protection and privacy purposes. The types of crops and techniques used vary in size and capacity, from palm trees and fruit trees, to crops and vegetables. The farming process in these areas includes all types of livestock. The farms obtain the necessary water for agriculture from groundwater or are connected to the water network.

#### **TOURISM**:

Tourism is mostly limited to spring camping by Qataris, and daily visits by foreigners. There are more than 130 licensed campgrounds in Al Reem Reserve, where large number of families prepare their semipermanent camps, including a family house, a Majlis and other service facilities, covering an area of about half a hectare. The camps are licensed by the Environmental Protection and Wildlife Department of the Office of the Assistant Undersecretary for Environmental Affairs. The camps are generally distributed on the coastal area of the Reserve with a number of them located around Rawdahs.

## However, tourism is not yet developed in the Reserve and has limited economic impact for the locals. Nevertheless, there is a high potential for tourism in Al Reem Reserve, and it is envisioned that :

- The southern region will become a destination for schools and local communities to learn about and enjoy natural landscapes and geological features.
- The northern region will become a destination for visitors to explore cultural values and human history linked to ecosystem rehabilitation and wildlife reintroduction programs.

- The eastern region will become a destination for nature-based tourism, including bird watching, nature camping, and hiking.
- The western coastal region will become a destination for campers and picnickers to enjoy the natural landscapes and seascapes.

![](_page_29_Picture_2.jpeg)

## **Traditional and Local Knowledge**

Traditionally, the local community elders are held in high esteem and play a key role in local and National decision-making. However, considering the rapid economic growth of the State of Qatar, traditional knowledge and experiences are swiftly eroding, especially within the younger generations. The Department of Natural Reserves is working closely with local community members and has engaged them as permanent staff in the Biosphere Reserve. In this way, older community members can find a direct economic benefit from utilizing their local knowledge and experiences, while the younger generation can find an incentive to stay in the Reserve and not leave in search of income and "better quality of life" in urban centers and large economic sectors. Traditional and local knowledge is utilized in various management programs of Al Reem, including research and survey, baseline assessments, wildlife monitoring, land-use monitoring, visitors' interpretation, and law enforcement.

Today, the communities residing within the Reserve have managed to preserve many of its cultural and religious traditions while experimenting with modern technology to further their agricultural and pastoral activities.

The Reserve plans to expand on the documentation and promotion of tangible and intangible cultural heritage, including Al Zubarah site, other cultural sites, and local traditions and knowledge related to natural resources use such as local medicine, building, handcrafts, etc.

#### Al Zubara Fort : UNESCO WOrld Heritage Site

In ancient times, the peninsula that is today Qatar was often overlooked by nomadic tribes because of limited freshwater resources and grazing pastures. However, a number of Arab tribes settled in the region, especially in the Zubarah region during the second half of the eighteenth century, where they were attracted by the opportunities and rich dividends associated with pearl gathering and maritime trade.

![](_page_31_Picture_1.jpeg)

The walled coastal town of Al Zubara was one of the most important pearling and trading centers in the Arabian Gulf, and had trading links with the India, Arabia and Central Asia. With the change in political and economic conditions, the importance of the city started to decline the beginning of the nineteenth century until it was completely deserted of the residents by early twentieth century. Its stone buildings collapsed and were covered with a protective layer of desert sand. These archaeological remains can be considered today the birthplace of modern Qatar.

The Al Zubara fort has now been restored by the Department of Antiquities at Qatar Museums Authority, and stands as a proud reminder of the importance of the ancient port. The Site has been inscribed as UNESCO World Heritage Site in 2013.

## **The Biodiversity**

## Al Reem Biosphere Reserve strives to conserve its precious natural heritage. To that effect, some conservation initiatives are as follows :

- Key vegetation hotspots are enclosed to reduce the pressure of grazing, off-road driving, and excessive picnicking. In fact, several of these areas were requested by local communities to be fenced off and protected.
- Camel grazing has presently been prohibited in the Reserve because camels exert a high level of pressure on natural vegetation, and because the area was not traditionally used for camel grazing.
- Permanent grazing and husbandry stations for sheep and goats are not allowed in order to help preserve the ecosystem. Traditional seasonal stations in winter and spring are excluded from this prohibition.
- Based on previously excessive levels of game hunting, controls were put in place prohibiting the use of firearms, or hunting any protected animals or birds.
- Camping is considered a cultural right to visitors of Al Reem Reserve and is well managed and monitored by local authorities.
- Any new development projects are subject to Environmental Impact Assessments (EIAs), and a monitoring program is planned to measure changes in biodiversity over time.
- Several initiatives aim to foster learning and interaction between the environment and local communities, including environmental clubs and the establishment of plant nurseries at schools, field visits to Al Reem and the Wildlife Reintroduction Program, environmental campaigns, and the installation of information panels at the Reserve entrances.

## **Flora of Al Reem Reserve**

In the spring of 2017, about 85 species of plants were recorded in Al Reem Reserve. It includes more than 30 different species, representing about 25% of the registered plant species in the State of Qatar. The number is expected to increase with the planned continuous scientific surveys during different seasons and areas of the reserve. The Reserve embraces seven vegetation types each including a significant number of plant species, characterized by succulents, dwarf shrubs, and small trees. Because of the extremely hot and arid nature of the climate, vegetation cover is usually poor, and most of the time annuals are absent due to drought and highly saline soils. After rainfall, however, ephemeral (short-lived) plant species appear along mesa hills at higher elevations.

#### Key species represented in the Reserve include :

- Key species such as the Acacia and Lycium, in addition to Tetraena qatarensis, Limonium axillare, Aeluropus lagopoides, Ziziphus nummularia, and Acacia ehrenbergiana.
- 2 Culturally important species such as Prosopis cineraria.
- 3 Edible species such as Glossonema varians, Launaea capitata.
- 4 Medicinal species such as Haplophyllum tuberculatum, Teucrium polium, Cymbopogon commutatus.
- 5 Ecological indicator species such as Helianthemum lippii (the host plant for the Arabian desert truffle).
- 6 Palatable species such as Rhanterium epapposum.
- 7 Wild relative species such as Citrullus colocynthis.

## **Top 10 Plants**

#### Arabic Name : Sidr

#### Family : Rhamnaceae

#### Species Name : Ziziphus nummularia

#### Flowering time : March-May

**Distribution :** Grows mainly in Rawdahs and natural depressions and is often found with Acacia tortilis, Acacia ehrenbergiana and Lycium shawii. Sidr is of high environmental and aesthetic value. It gives Rawdahs its distinctive green cover. In addition, its dense branches and leaves reaching the soil forming microenvironments for some animals and plants as well as preventing soil erosion.

**Uses :** The fruit can be eaten or made into pickles, a confectionery, or a refreshing drink. It is also excellent fodder for livestock and is used as firewood and medicinally for cough, stomach, scabies and joints pain.

**Threats :** mainly human: throwing stones at trees, hanging of various types of utensils and non-biodegradable plastic bags on branches. In addition to soil erosion and destruction of seedlings due to the density of visitors, hunting and vehicles' movement. Other threats also include overgrazing.

![](_page_34_Picture_8.jpeg)

Sidr (Ziziphus nummularia)

#### Arabic Name : Al Samr

Family : Fabaceae

**Species Name : Acacia tortilis** 

Common Name : Umbrella thorn Acacia

Flowering time : May-June

**Distribution :** Grows on slightly higher edges in shallow sandy depressions and low pockets in rocky areas as well as runoff areas.

The Samar habitat extends from the African coasts to the Middle East. A wiry bush or small tree with pairs of leaflets, thorns, and highly aromatic small white flowers. Seeds are pods, which are flat and like a coil spring. Very tolerant to harsh desert climate. It provides a shelter for plants and animals from the burning sun. Its roots provide nitrogen fixation, which improves the soil around it.

**Uses :** Timber is used for wood. Pods and leaves are a rich source of protein for livestock. Gum from the tree is edible and can be used as Gum Arabic.

**Threats :** The overgrazing, especially camels reaching to the new growth at the top of the trees leading to its exhaustion. Acacia trees is also host to parasitic plants that grow and feed on it. The seeds as well could be subject to attack from different types of insects, which reduces the germination rate. In addition to rodents that feeds on what remains of them.

![](_page_35_Picture_9.jpeg)

Samr (Acacia tortilis)

#### Arabic Name: Al 'Ousaj

Family: Solanaceae Species Name: Lycium shawii Common Name : Arabian boxthorn

Flowering time : December-April

**Distribution :** A common thorny shrub with many branches and alternating spines. Produces small pink or purple flowers and pea-sized edible red berries. Often found near Acacia tortilis and Prosopis cineraria.

It is considered to be one of the most important plants in the Reserve's ecosystems, as it grows in harsh environment, and due to its sharp thorns, creates a secure environment for smaller plants which are favoured by grazing animals. It is also a habitat for birds and rodents, and its roots are microhabitats for algae and soil fungi.

**Uses :** Berries are relished by local and migrating birds. The stems, leaves, and berries are used in traditional medicine as a laxative. Young growth are eaten by livestock. In the past, Bedouin would not cut its wood for fuel, as they thought it was inhabited by jinn.

**Threats :** Harvest of wood for fuel, vehicle movements and the overall impact of change of infrastructure and urbanization.

![](_page_36_Picture_7.jpeg)

Al Ousaj (Lycium shawii)

## Arabic Name : Al Ghaf

**Family : Fabaceae** 

**Species Name : Prosopis cineraria** 

Flowering time : May-August

**Distribution :** There are about 50 trees located in the Rawdah area, and it is one of most important plants to local people.

Flowering tree with tiny leaflets and thorns. The flowers are small and yellow and seeds are pods.

Uses : Flowers and bark are used medicinally to treat miscarriage, infections, parasites, leprosy, and piles treatment.

Threats : Degradation of the environment and low production of seeds.

![](_page_37_Picture_8.jpeg)

Al Ghaf (Prosopis cineraria)

#### Arabic Name: Al Senna

#### **Family : Fabaceae**

**Species Name : Senna italica** 

Common Name : Italian senna or Senegal senna

Flowering time : During rainy season

Distribution : Perennial herb that is native to the Middle East.

**Uses:** Flowers are usually yellow or orange, and the leaves, pods, and seeds are used in traditional medicine.

**Threats :** Intensive harvesting for medicinal use as well as overgrazing, especially during flowering periods.

![](_page_38_Picture_8.jpeg)

Al Senna (Senna italica)

## Arabic Name: Al Herm Al Qatari

## Family : Zygophyllaceae

## Species Name : Tetraena qatarensis, Zygophyllum qatarense

Common Name : Bean Caper

Flowering time : March-April

**Distribution :** Combining drought and salinity resistance, this succulent plant is found throughout most of the country. Its juicy leaves change colour (from light green to dark purple) according to season or soil conditions, and quality of the environment. Under extremely dry and salty conditions, the leaves dry up and fall off, and the plant can survive like this for several years.

Uses : Not edible. Avoided by livestock.

![](_page_39_Picture_7.jpeg)

Al Herm Al Qatari (Tetraena qatarensis)

#### Arabic Name : Ja'adah

#### Family : Lamiaceae

**Species Name : Teucrium polium** 

Common Name : Felty germander

Flowering time : April-May

**Distribution :** Small shrub with small flowers that range from pink to white mainly growing in sand pockets in rocky areas. It is widely spread in the desert. It is present throughout the year, but grows and branches in spring and early summer.

Uses : Leaves are used in cooking and extensively as medicine for fever, cholera, diabetes, insect bites, and many other uses.

Threats : Human pressure and overgrazing.

![](_page_40_Picture_8.jpeg)

Ja'adah (Teucrium polium)

## Arabic Name : Qataf

#### Family : Plumbaginaceae

**Species Name : Limonium axillare** 

Common Name : Sea Lavender

Flowering time : March-April

**Distribution :** A shrub with beautiful small purple flowers that is still aesthetically pleasing even after the flowers drop off - due to the persistence of the bright bracts. For this reason, it is sometimes called "Eternal flower". Located in sandy areas, it has high tolerance of salinity by concentrating salt in special glands.

**Uses :** It is used medicinally to treat diarrhea and it roots are used for tanning.

Threats : Human pressure and overgrazing.

![](_page_41_Picture_8.jpeg)

Qataf (Limonium axillare)

#### Arabic Name : Akresh

#### **Family : Poaceae**

**Species Name : Aeluropus lagopoides** 

Common Name : Rabbit-foot Aeluropus

Flowering time : March-May

**Distribution :** It can be found on the edges of salt flats or Sabkhas. It forms communities on flat depressions on inland or nearshore land. Halophytic plant with greyish-green pungent and leathery leaves. It has glands that can secrete excess salt.

**Uses :** It is favoured fodder for livestock, as it does not accumulate salt in the same way as other plants growing in saline areas. It also forms natural barrier against soil erosion.

Threats : Overgrazing and vehicles movements.

![](_page_42_Picture_8.jpeg)

Akresh (Aeluropus lagopoides)

#### Arabic Name : Msaika

#### **Family : Rutaceae**

Species Name : Haplophyllum tuberculatum

Common Name : Mosquito plant

Flowering time : March-April

**Distribution :** Sandy environment.

**Uses :** Used medicinally to treat scorpion stings, fever, allergies, stomach cramps, and many other uses. It can also be rubbed on livestock to prevent insect bites. It has a distinctive unpleasant odour, making it unattractive to livestock.

Threats : Degradation of the natural environment and human activity.

![](_page_43_Picture_8.jpeg)

Msaika (Haplophyllum tuberculatum)

### FAUNA

The Reserve is home to reintroduced populations of the Sand Gazelle (Gazelle subgutturosa) and the Oryx (Oryx leucoryx); both threatened with extinction in the Arabian region. The Spiny-tailed Lizard Uromastyx a. microlepis, Hooded Malpolon snake (non-venomous, false cobra) Malpolon moilensis, Ethiopian Hedgehog Paraechinus aethiopicus, Arabian Red Fox Vulpes vulpes arabica, and a number of rodents are among the terrestrial fauna. A dozens of species of birds are observed as well, including Flamingos, the Hoopoe Lark Alaemon alaudipes and Southern Grey Shrike Lanius meridionalis as residents, along with a high diversity of migratory birds.

Among the numerous birds occupying or utilizing the landscapes within the Biosphere Reserve are the Western Reef Herons (Egretta gularis), the White-Cheeked Tern (Sterna repressa), the Bridled Tern (Sterna anaethetus), Saunder's Little Tern (Sterna saundersi), the Lesser-Crested Tern (Sterna bengalensis), the Caspian Tern (Sterna caspia), Greater Flamingos (Phoenicopterus ruber), Osprey (Pandion haliaetus), the Sooty Falcon (Falco concolor), and the endangered Houbara. The Reserve is also home to significant numbers of the endangered Socotra Cormorant (Phalacrocorax nigrogularis).

In addition, the waters bordering the Reserve are home to the Critically Endangered hawksbill turtle Eretmochelys imbricata, the Critically Endangered Dugong (Dugong dugon), the Endangered green turtle (Chelonia mydas), and the Vulnerable Loggerhead turtle (Caretta caretta).

![](_page_44_Picture_4.jpeg)

## **IMPORTANT ANIMALS**

#### Arabic Name : Maha

Family : Bovidae

**Species Name : Oryx leucoryx** 

Common Name : Arabian Oryx

Habitat : Gravel desert and hard sand. Native to the Arabian Peninsula.

**General Info :** A medium-sized antelope with distinctive shoulder bump, long and straight horns, and a tufted tail. Its coat is an almost luminous white, with brown underside and legs, and black stripes at the neck and face. It was extinct in the wild by the early 1970's due to hunting, but was protected by zoos and breeding programs (like Al Reem), and reintroduced into the wild in 1980.

Oryx rest during the heat of the day, and can detect rainfall and move towards it.

![](_page_45_Picture_8.jpeg)

Maha (Oryx leucoryx)

### Arabic Name : Ghazal Al Reem

#### Family : Bovidae

#### **Species Name : Gazella subgutturosa**

Common Name : Sand Gazelle

Habitat : Sand and gravel plains.

**General Info :** Gazelles vary in colour from nearly white to brown, have large black eyes, and boast long elegantly curved horns.

Runs at high speed, without the leaping and bounding found in other Gazelle species.

![](_page_46_Picture_7.jpeg)

Al Ghazal Al Reem (Gazella subgutturosa)

## Arabic Name: Arnab Barri

**Family : Leporidae** 

**Species Name : Lepus capensis** 

Common Name : Cape Hare

Habitat : Desert and semi-desert areas.

**General Info :** A typical hare, with well-developed legs for leaping and large ears and eyes to look out for threats and predators. Nocturnal, active at night.

![](_page_47_Picture_6.jpeg)

Arnab Barri (Lepus capensis)

## **Reptiles**

#### Arabic Name : Dhab

Family : Agamidae

#### **Species Name : Uromastyx a. microlepis**

Common Name : Spiny-tailed Lizard

Habitat : Gravel plains and dry, rocky areas, including the Brouq.

General Info: One of the well-known reptiles in the Arab countries. Eaten for its meat and health benefits. It has the ability for quick hiding and running. During extreme heat hours, the lizard retreats to its burrow to cool off.

Average Length: 76cm

![](_page_48_Picture_8.jpeg)

Dhab (Uromastyx a. microlepis)

## Arabic Name : Al Hafath

#### Family : Colubridae

#### Species Name : Malpolon moilensis, Rhagerhis moilensis

Common Name : False cobra, Hooded malpolon

**General Info :** It has a brownish colour dotted with brown spots, which helps it blend into its desert environment. Although it is not poisonous, it mimics the Cobra snake by extending its neck in the air and blowing on the attacker. It feeds on rodents and lizards.

Average Length : 0.80m-1.40m

![](_page_49_Picture_6.jpeg)

Al Hafath (Malpolon moilensis)

## **Birds**

## Arabic Name : Na'ama

#### **Family : Struthionidae**

#### Species Name : Struthio camelus camelus

Common Name : North African Ostrich, Red-necked Ostrich

**Habitat :** It originates from Africa and is called ostrich with the brown neck or ostrich of North Africa.

**General Info :** The largest living bird at a height of 2.74m and up to 154kg. The neck is pinkish-red, and the plumage of males is black and white, while that of females is grey.

![](_page_50_Picture_7.jpeg)

Na'ama (Struthio camelus camelus)

## Arabic Name : 'Eqab Al Malaki

## Family : Accipitridae

**Species Name : Aquila heliaca** 

Common Name : Eastern Imperial Eagle

Habitat : A migrating bird passes through the Arab region during autumn and spring.

**General Info :** A large bird with a wingspan of 1.82.16-m. Feeds mainly on hares and rodents, in addition to a variety of other birds and mammals.

![](_page_51_Picture_6.jpeg)

Eqab Al Malaki (Aquila heliacal)

## Arabic Name : Al Qubbara Al Hudhudia

#### Family : Alaudidae

**Species Name : Alaemon alaudipes** 

Common Name : Greater Hoopoe-lark

Habitat : Living in desert and semi-desert areas.

**General Info :** A large lark with long legs and distinctive down-curved bill. They run or walk in spurts, probing and digging the ground. The nest is a prominent cup made of small sticks placed on a low bush or on the ground. They feed on insects, small lizards, and seeds. During the heat of the day, they may shelter in the burrows of Spiny-tailed Lizard.

![](_page_52_Picture_6.jpeg)

Al Qubbara Al Hudhudia (Alaemon alaudipes)

## Arabic Name : Al Sard Al Ramadi

## Family : Laniidae

**Species Name : Lanius excubitor** 

Common Name : Great Grey Shrike

Habitat : Lives on trees in desert and semi-arid regions.

**General Info :** This songbird is well known for using exposed treetops or poles to watch the surrounding area for prey. It is also quite peculiar, in that it impales food on thorns to hold it for eating, or storing for later. Food consists of large insects, small mammals or reptiles, and other birds. They are also known to watch for approaching hawks, and warn other songbirds of their presence, or even mimic other songbirds to trick them into coming closer.

![](_page_53_Picture_6.jpeg)

Al Sard Al Ramadi (Lanius excubitor)

## Arabic Name : Ghorab Al Bahr Al Socotri

#### Family : Phalacrocoracidae

#### **Species Name : Phalacrocorax nigrogularis**

Common Name : Socotra Cormorant

Habitat : A migratory bird threatened by extinction due to the degradation of its natural habitat in islands and coastal areas.

**General Info :** It dives for its food, and some reports suggest that it can stay submerged for up to three minutes. They like company, and roosting flocks could reach 250,000 birds in the past. Although nowadays, the entire known population is estimated at around 330,000 to 500,000 birds.

![](_page_54_Picture_6.jpeg)

Ghorab Al Bahr Al Socotri (Phalacrocorax nigrogularis)

#### Arabic Name : Al Hubara

#### Family : Otididae

#### Species Name : Chlamydotis undulata

Common Name : Houbara Bustard

**Habitat :** Desert and semi-arid areas in sandy and gravel areas. It was widespread in the Arabian Peninsula and one of its most famous birds. Many programs in the Arabian Gulf are reintroducing the bird into the wild.

**General Info**: A vulnerable species due to hunting pressure and habitat loss and degradation. It feeds mostly on seeds and insects. Like other bustards, the Houbara attracts mates using a flamboyant display, strutting and raising the white feathers of the head and neck, then running at speed, perhaps while issuing calls that have been termed "subsonic booms". It lays its eggs directly on the ground, which means they are very susceptible to ground predators.

![](_page_55_Picture_6.jpeg)

Al Hubara (Chlamydotis undulata)

## **INFORMATION FOR VISITORS**

#### **General Rules**

- Removal or disturbance of plants, animals, or natural features is prohibited. Leave the Reserve's beauty for others to enjoy too.
- Camping is only allowed in licensed campgrounds.
- Good picnic sites are found, not made! Please do not alter the landscape.
- Let nature's sounds prevail. Avoid loud voices and noises. Please be considerate of others.
- Help to prevent pollution by depositing garbage and litter in the containers provided, or taking it with you when you leave. Pack it in, Pack it out.
- Do not drive over vegetation/grasslands and through Rawdahs and Wadis.
- Firearms are strictly prohibited.
- Do not carve, chop, cut, or damage any trees or shrubs.
- Please be considerate of local culture and customs.
- The landforms like brouq are very fragile. Do not drive over or damage these landforms.

## Contact Information Natural Reserves Department, Ministry of Municipality and Environment. P. O. Box 18859 , State of Qatar. Tel: 4426 1326

## **Reaching Al Reem BIOSPHERE RESERVE**

Al Reem Biosphere Reserve can be reached easily by road from any city in Doha, following Dukhan Road, Al Shamal- Al Zubarah Road or the Otouriya road. It is easy to access or enter the Biosphere Reserve through Zekreet, Khawzan, Lijmiliya, Al Ghuwairiya or Zubarah.

![](_page_57_Figure_2.jpeg)

www.mme.gov.qa