





# ARABIAN BUSTARD CONSERVATION IN YEMEN: PUBLIC AWARENESS PERSPECTIVE

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Keywords: Arabian bustard, *Ardeotis arabs*, International Fund for Houbara Conservation, Yemen, Public awareness

## Introduction

The Arabian bustard, *Ardeotis arabs*, is an endangered bird species in Yemen where it is confined to scattered pockets in Tehama, in the West of the country, where traditional cereal fields represent an ideal habitat for the species (Figure 1). Poaching, illegal egg collection and large-scale commercial farming are key threats contributing to the marked decline of the Arabian bustard. Since 2002 the National Avian Research Centre (NARC), a research center of the International Fund for Houbara Conservation (IFHC), has been conducting field expeditions to Tehama plains to study the species ecology (Judas et al. 2006). One conclusion of these field studies was that local people are unaware of the unsustainable practices which significantly affect the long-term survival of the species. In response, a conservation education campaign was developed with a straightforward goal to address the problems facing the Arabian bustard, locally called *Louwa*. Security officers and school students were identified to be the primary target group for the campaign. This article describes the campaign and outlines future directions of public awareness campaigns dealing with Arabian bustard in Yemen.

## Illegal trade issues

Although Yemen is a member party of the Convention on International Trade in Endangered Species (CITES), several instances of illegal trade in wild birds have been recorded (e.g. Stanton 2010). During the last decade the Arabian bustard population has been heavily poached. The most common capture method uses locally designed traps placed in cereal fields where the bustards are commonly found. Once caught, the birds are transported and sold outside the country for private collections and falcon-training purposes. The increasing levels of poverty in rural areas of Tehama and the high market value of the Arabian bustard are all catalysts for the trade.

In an attempt to curtail this trade, the education and involvement of security officers was considered to be an urgent anti-poaching measure. NARC, in collaboration with the Environment Protection Authority (EPA) of Yemen, organised an environmental workshop in February 2009 which was attended by security officers throughout Tehama. The goal of the workshop was to introduce the Arabian bustard conservation programme to security officers and other senior government officials in Tehama. Several presentations were given covering a wide range of conservation issues. The workshop concluded by stressing the importance of implementing necessary measures against ongoing poaching of the Arabian bustard population in Yemen.



Figure 1. A displaying male of Arabian bustard in Tehama, Yemen (IFHC)



Figure 2. Students attending a presentation about Arabian bustard (IFHC)

## School campaign

Tehama has a good network of public schools with a large number of children from farming backgrounds. These were targeted by the Arabian bustard public awareness campaign. Many schools were poorly equipped, often without electricity or large enough class rooms. These logistical obstacles were overcome with a portable generator and a sub-selection of students from each class chosen to attend. The presentation covered issues relating to the Arabian bustard conservation. Many students were familiar with the species having encountered it on their farms; however, most were unaware of its declining status. Questions related to the Arabian bustard were posed at completion of the presentation and students answering correctly were rewarded with Arabian bustard T-shirts, hats, and pencils. The campaign visited 9 schools and was attended by 532 students. This represents 13% of the students in the public schools of this important Arabian bustard habitat.

## Future directions

- Strengthen the relationship with security departments in Tehama and provide them with periodic updates about the status of the Arabian bustard as indicated by annual population surveys.
- Educate local farmers on the importance of the Arabian bustard conservation program. This is most likely to be effective if the conservation/ education program is based on marketing the Arabian bustard amongst villagers as a flagship species for bird conservation in Tehama.
- Secure sufficient financial resources to implement future public awareness campaigns.
- Periodically evaluate the impact of the public awareness campaign on perception and behaviour of target groups and adapt the activities of the campaign accordingly.

*Acknowledgements and references are available on the more detailed web version of this article.*





# INSECT DIVERSITY IN THE NEARBY AND OFFSHORE ISLANDS OF ABU DHABI EMIRATE

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Key words: insect diversity, nearby islands, offshore islands, baseline survey, collection methods

## INTRODUCTION

Invertebrate assemblages of very few island habitats in Abu Dhabi have been documented (Gillett and Gillett, 2002). This survey aimed to provide a taxonomic inventory of terrestrial invertebrates and their habitat associations on a specific coastline site, Al Bahia and Al Bahrani, Bul Syayeeef, Ras Garab and Sadiyat islands surrounding Abu Dhabi. The invertebrate survey was carried out during February to November 2008. In addition, three offshore islands – Zirku, Arzanah, and Sir Bani Yas were also studied for invertebrate diversity in 2001 and 2005 and the results have been included in this article.

## METHODS

Locations of the invertebrate survey are shown in the (Figure 1). In the current study invertebrates were collected using different collection methods as described by Van Harten, (2007). These included aerial netting, beating method, malaise trapping, water trapping and aspirator method. A rapid baseline survey carried out using these collection methods during the day time with one or two visits to each site.

## RESULTS & DISCUSSION

Approximately 77 invertebrate species representing 12 orders of insects were collected and identified from this survey. Of the 8 islands surveyed, Bul Sayeeef was noted to have the highest insect diversity among all sites, whilst Al Bahrani was the lowest in regard to invertebrate diversity in terms of number of the family, genera, and species recorded, probably as a result of a lack of vegetation. The results suggest that insect diversity on the surrounding islands of Abu Dhabi is moderate with 12 of the 23 listed insect orders of UAE fauna recorded).

However, the orders currently listed the predominance of Hymenoptera and Diptera. This is a similar finding to those of mainland habitats of the UAE. Many insects and other invertebrates notably absent from the islands are those usually associated with specific mainland habitats. There were no endemic species found on the island. However, those that were identified showed that they were less abundant with an uneven distribution. According to Niemelä, et al. (1988) there is no clear relationship between the dispersal ability of a species and their island-mainland occurrence. This

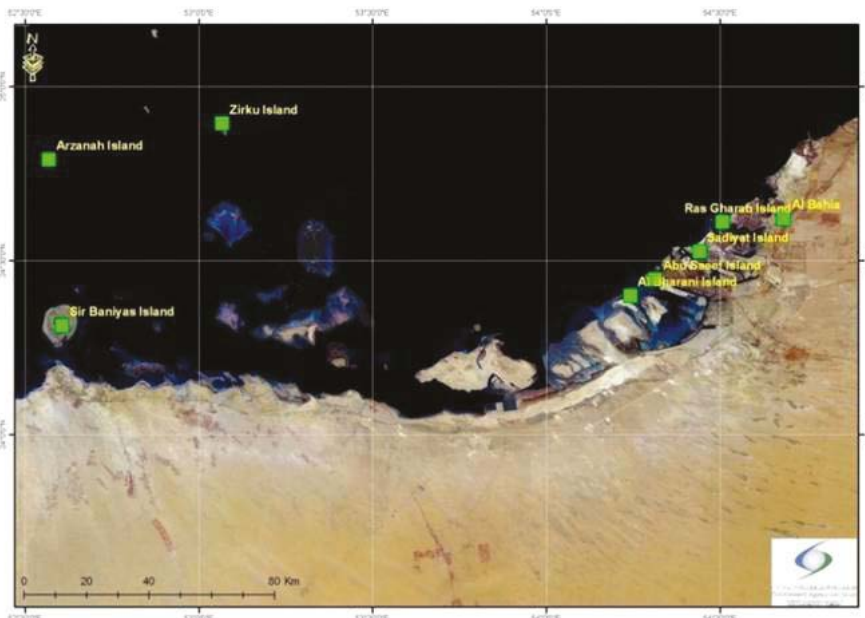


Fig 1. Map showing the location of surveyed islands during the study (EA, Abu Dhabi)



Fig 2. *Pachycodyla sennarrens* (Samsun ant)- (from Sir Baniyas Island) (Anitha Saji)

could be the most probable explanation for uneven distribution of Tenebrionid beetle species observed in the current study among these islands. It is suggested that both habitat effects and island isolation determine the abundance and distribution pattern of the species. It is also believed that this is a baseline study and that the insect diversity on Abu Dhabi Islands would be far more diversified than the current observation's suggest.

Surveys for terrestrial insects and most other invertebrates should be carried out at the time of the year when the group is most active and at a time which will provide more accurate baseline information. Further studies/surveys at different times of the year, with altered collection techniques for specific habitats would certainly add many more insect and other arthropod species records to the present list.



Fig 3. Dragonfly species recorded from Sadiyat Island (EA, Abu Dhabi)

## Acknowledgments

We thank the Environment Agency-Abu Dhabi for their support and encouragement.

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# A SURVEY REPORT ON THE TRAPPING AND TRADE OF RAPTORS IN IRAQ

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## INTRODUCTION

Iraq is considered one of the main pathways for migratory raptors passing through to wintering grounds in Arabia and Africa. It also has a remarkable number of resident and breeding birds of prey. Forty-seven species of birds of prey (including owls) were recorded in Iraq (Al-Sheikhly in prep). Every year the local animal markets (Suq singular) in Iraq exhibit thousands of captured wild birds from small passerines to large birds of prey. Four main animal markets in four different Iraqi provinces were surveyed. Suq Al-Gazel in Baghdad, Suq Ba'aquba in Diyala, Suq Al Qa'la in Kirkuk, and Suq Al-Ramadi in Anbar. Thirty-six raptors species (including seven owl species) with a total count of 885 birds of prey were recorded during a two-year period between December 2008 and December 2010. Suq-Al-Gazel and Suq Ba'aquba were visited, when possible on a weekly basis. Suq Al Qa'la and Suq Al-Ramadi were visited, when possible, on a monthly or bi-monthly basis.

## RESULTS & DISCUSSION

Raptors were brought to the *Suq* to be sold for prices ranging from 10 to 300 USD depending on their age and state of health. They were either sold locally, smuggled to neighbouring countries or died in captivity. Raptors are often presented in poor health with injuries usually caused by careless trapping or handling. Detailed information about the trapping and traffic of falcon species such as saker falcons (*Falco cherrug*), lanner falcons (*Falco biarmicus*), and peregrine falcons (*Falco peregrinus*) was collected. Iraq has some laws that restrict hunting, but these are not enforced and there is extensive illegal hunting/trapping of many IUCN Red-listed species. Action is seriously needed to stop such practices, otherwise such activities will continue, and could result in a significant decline of raptors numbers in Iraq.

During Nature Iraq Key Biodiversity Area surveys, large numbers of passage migrant raptors were recorded at one site (east of Tharthaar Lake) consisting of a mixed flock of 437 black kites (*Milvus migrans*) and black-eared kites (*Milvus lineatus*), and a flock of up to 450 lesser kestrels (*Falco naumanni*) were found in another site in the western desert of Iraq (Nature Iraq, 2011).

Falconry hunting parties from different Arabian countries have been visiting Iraq in order to trap falcons particularly saker, lanner, peregrine and barbery falcons (*Falco pelegrinoides*) or to hunt houbara (Macqueen's) bustard (*Chlamydotis macqueenii*), great bustard (*Otis tarda*), and little bustard (*Tetrax tetrax*). It has been locally reported that both these falcon and bustard species are becoming increasingly rare in Iraq because of hunting and trapping (Nature Iraq, 2009).

During the first visit to the *Suq-Al Gazel* in Baghdad in December 2008, four raptor species were present. In 2009 and 2010 more detailed surveys were carried out in order to cover the main raptor species present at the Suqs. During a total of 97 regular visits to all four Suqs, 885 birds of prey belonging to 36 species were recorded. Seven of these species were listed on the International Union of



Fig 1. Juvenile Asian imperial eagle at Suq Al Gazel in Baghdad (Omar Fadhil).

Conservation of Nature (IUCN) Red List for endangered species and were frequently present at the Suqs.

Extensive information was also gained from hunters/trappers, falconry associations, and animal shop owners about the main targeted species and counts of birds of prey that have been trapped and sold during the years of 2009 and 2010. In order to develop future conservation efforts to protect falcon species, one goal of these surveys was to determine which species was the most popular and prized for capture and sale. Through interviews, as well as data gathered from visits to the Iraqi Suqs, saker falcons are the most popular species and dominate the international falcon trade. According to one hunter in 2010, he was involved in the trapping of seventeen saker, nine peregrine, and 11 barbery falcons in Anbar and smuggled them to a neighbouring country via Iraq's western and southern borders. More clarification regarding the falcon trade in Iraq is still needed such as determining the methods used to move species across national borders and the number of species and individuals involved in this cross border trade.

## Conclusions

Illegal hunting and trapping of birds of prey continues in Iraq and the absence of adequate laws and particularly full enforcement of existing laws may cause regional declines of these species. Each year hundreds of professional falcon trappers set their traps in different hot spots in Iraq for raptors. Trapper camps can be found near oases in the middle of the western desert, on the shores of large wetlands, or close to mountains and foothills of northern and eastern Iraq; anywhere falcons are likely to be found and captured. The continuance of such practices combined with other man-made threats such as poisoning, habitat destruction, disturbance, etc could reduce the population of resident and migrant raptor species in Iraq unless action is taken. It is encouraging to note that Iraq is currently discussing becoming a signatory nation to the Convention on Migratory Species (CMS) and the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). This will hopefully lead to future conservation steps to protect raptor species in Iraq.

Please see the online version for acknowledgements, references and Tables.



Fig 2 Long -legged buzzards at Suq Al Gazel in Baghdad (Omar Fadhil)

## THE IMPORTANCE OF LIGHTING FOR REPTILES

### Livia Benato

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Lighting is an important aspect in the management of reptiles, but it is often underestimated and is poorly understood. Few studies have looked at the beneficial effects of proper lighting to captive reptiles and more research is needed to produce hard evidence that proper lighting is necessary for reptiles. At the moment, the most detailed and complete source of information of lighting in reptiles is a website: [www.uvguide.co.uk](http://www.uvguide.co.uk). On this website, all aspects of lighting are professionally evaluated.

In the wild, reptiles follow a daily and seasonal pattern that is regulated by the sunlight. Solar light is divided into visible light and ultraviolet (UV) light and reptiles are able to see both. In any indoor reptile enclosure white light using incandescent or halogen lamps and UV lamp should be provided in order to mimic the light wavelength of the sun and recreate a more natural enclosure.

UV-b light, a fraction of the ultraviolet light, is also essential for the reptile in order to produce Vitamin D3 (25-hydroxyvitamin D3) necessary to absorb calcium from the diet and prevent hypocalcaemia and many other related diseases.

Recent studies have demonstrated that plasma concentrations of vitamin D3 are higher in reptiles that are provided with supplemental UV lighting. These studies were conducted on bearded dragons (*Pogona vitticeps*) (Oonincx et al. 2010), corn snakes (*Elaphe guttata*) (Acierno et al. 2008) and red eared sliders (*Trachemys scripta elegans*) (Acierno et al. 2006). One study showed that captive animals kept without UV light supplementation were unable to maintain the same plasma level of vitamin D3 that wild animals have (Oonincx et al. 2010). The other two studies demonstrated that plasma concentration of vitamin D3 was higher in captive reptiles kept with UV light source than in the control group (Acierno et al. 2008; 2010).

Another study showed that marine reptiles also suffer from the lack of UV light. In 2009, Purgley et al. demonstrated that the plasma concentration of vitamin D3 in green sea turtles (*Chelonia mydas*), moved from an outdoor to an indoor facility with no UV light, gradually decreased over a period of six – eight years from 60-70 nmol/L to 5-15 nmol/L.

Vitamin D3 supplementation is necessary to absorb calcium from the gut and it is advisable to add to the diet. However, supplementation is not effective in raising the plasma concentration in reptiles that are not exposed to UV-b light (Oonincx et al. 2010).

Another important consideration is where to place the UV light source within the reptile enclosure in order to potentiate the beneficial effects of it. UV-b radiation diminishes with the distance from the source and it needs to be placed at a distance of 20-30 cm from the reptile. It should also be placed near a heating source because warm skin activates the entire process of vitamin D3 production.



Fig 1. Outside reptile enclosure (Livia Benato)



Fig 2. Measuring the UVB output from a reptile bulb (Livia Benato).

UV-b light is filtered by glass, plastic and small mesh netting. If the animal is separated from the UV-b source such as lamp or sun by these materials, it will not receive enough radiation to produce vitamin D3. To mitigate this problem a Scottish company, QD Plastics Ltd, produces and sells a plastic material that is permeable to ultraviolet light and it could be the optimal solution for safe outdoor enclosures. The limitations of these plastic sheets are that they need constant cleaning and maintenance in order to be effective and that damage to the surface and growth of algae can stop UV light.

Nowadays, many organizations and zoological collections are putting their efforts together to prove the benefits of proper lighting not only in captive reptiles kept in private and public collections but also in wild animals that after a period of rehabilitation need to be released back into the wild.

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# REHABILITATING THE MIGHTY JORDAN RIVER THROUGH ENVIRONMENTAL PEACEMAKING

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The Jordan River is a historical, cultural, and religious site with great ecological significance for the four regions that share its banks and tributaries. Revered in the holy books of Judaism, Christianity, and Islam, the Jordan River has been a sacred place for the world's three monotheistic religions. Situated in the Jordan River Valley, the Jordan River is part of one of the most important bird migration flyways on the planet. An estimated five hundred million birds migrate annually through this region between the northern and southern hemispheres.

A historic flow of 1.3 billion cubic meters (bcm) coupled with the river's great biodiversity generated the river's nickname as "the mighty Jordan." Yet, if one looks at the river today, only 2% of the original volume remains, and the water that "flows" is nothing but a polluted trickle. Many people are not aware the Jordan is drying up due to the fact that most of the river is a closed military zone and off limits to the public. Yet, one organization in the Middle East is raising awareness about the dire state of the Jordan River, and is bringing it back to life.

EcoPeace/Friends of the Earth Middle East (FoEME) is an environmental peacemaking organization that promotes transboundary collaboration among Palestinian, Jordanian, and Israeli environmentalists. A unique organization, FoEME tackles common ecological issues by creating a space for dialogue and action for communities in all three regions vis-à-vis cooperative efforts. One such program dedicated to protecting the region's shared environmental heritage is the Jordan River Rehabilitation Project, which focuses on restoring the Lower Jordan River.

FoEME's Jordan River Rehabilitation Project recently published an extensive environmental flows report in 2010 explicating how to rehabilitate the river, as well as a complementary economic analysis of policy opportunities to return fresh water to the river. The reports recognize the essential need for ecological stability for the Jordan, such as the return of annual floods, reduction of pollution and sewage, and the restoration of natural flora and fauna.

The Lower Jordan River (LJR) once flowed from the Sea of Galilee to the Dead Sea, creating a lush wetland, rich in biodiversity. Overdevelopment and intensive agriculture led to divergence of over 98% of the water to the surrounding regions. Not only did this have a dire effect on the annual water flow, but also drastically affected the ecological makeup of the river. Rampant pollution and sewage dumping further led to a dramatic 50% reduction in biodiversity.

One of FoEME's recommendations includes an experimental flood of the LJR to flush sediment and pollutants, which would reconnect the channel and floodplain while removing invasive plant and animal species. The restoration of freshwater would create biological cues for native migration and breeding. FoEME calls for the return of a healthy ecosystem, which benefits nature and society alike.

FoEME is a best practice model for environmental peacemaking in the Middle East region, demonstrating how collaboration among Jordanians, Palestinians, and Israelis leads to both peaceful interaction and ecological rehabilitation.

*For more information about FoEME please visit our website at [www.foeme.org](http://www.foeme.org).*

*For recent highlights of our activities, read our monthly environmental peacemaking newsletter (available at: <http://www.foeme.org/peace.php>) or follow us at Facebook, Twitter and blog.*



Fig 1. View of Jordan River from Adam-Damyia Bridge (FoEME)

## ABU DHABI IS GEARING UP FOR THE LARGEST GATHERING OF FALCONERS THE WORLD HAS EVER SEEN.



Fig 1. Falconer on horse (Linda Wright)

The International Festival of Falconry will come to the Jahili Fort, Al Ain, in December 2011 to celebrate this ancient sport. The week-long festival will be a free event, hosted by the Emirates Falconers' Club, which will showcase falconry's contribution to education, science, art and heritage.

The Festival will open with a three-day conference that will see vets, conservationists and regional experts gather to discuss the most topical issues that they face. Conference organiser Dr Andrew Dixon believes it will be a forum for lively debate and where some of the most respected and senior falconers, such as Dr Tom Cade (founder of the Peregrine Fund), can engage with the next generation of falconers.

The importance of education and passing on skills and knowledge is vital for the survival of falconry. As such, the Festival will host local schools and children at the Education Day. For children, the Education Day is a brilliant opportunity to come into close contact with birds of prey, ask questions, and learn about wider issues such as the conservation of prey species such as the Houbara bustard.

The 16th and 17th December will see the Festival open its doors to the public who will be hosted by the international falconers in their assorted tepees, yurts, hunting lodges and Bedouin tents. There will also be a full arena programme of historical re-enactments and flying displays with horses, camels and salukis.

Festival Director, Nick Fox believes that the Emirates have never seen such an event. "Emirati, expatriate and international visitors will all find something to enjoy. People are invited to experience the rich and varied cultures of falconry in the Americas, Asia, Africa, Europe and of course the Middle East, which makes this an event not to be missed. This is going to be the world's largest gathering of falconers and we hope you'll be there too".

*For more information in 10 languages, visit [www.falconryfestival.com](http://www.falconryfestival.com) or find us on Facebook*

## WHAT'S NEW IN THE LITERATURE

**An attack by ratel *mellivora capensis* on pre-release asian Houbara bustards *chlamydotis macqueenii* in central saudi arabia**

*IN: Small Carnivore Conservation*, Vol. 44: 35–37, June 2011.

M. Zafar-ul ISLAM, P. M. BASHEER, Waliur RAHMAN and Ahmed BOUG

Keywords: Honey Badger, MacQueen's Bustard, Mahazat as-Sayd Protected Area, Ratel–human conflict, Reintroduction.

**ABSTRACT**

On 8 December 2009 a Ratel *Mellivora capensis* broke into a purportedly predator-proof pre-release cage for Asian Houbara Bustards *Chlamydotis macqueenii* in Mahazat as-Sayd Protected Area, Saudi Arabia, and caused the death of 29 of the 75 housed Houbaras. The Ratel ate six of them; 23 more died through panic-stricken collision with the walls. This is the first documented instance of Ratel, one of six predators in the area, attacking the reintroduction Houbaras, but on three occasions Ratels have attacked captured foxes *Vulpes*. Loss of juveniles by predation in the first few weeks after release is the single largest cause of Houbara mortality in the project and radio-tracking studies of Ratel are planned.

**POPULATION STRUCTURE OF FARASAN GAZELLE**

*IN: Mammalia*. Volume 75, Issue 2, Pages 157–161, ISSN (Online) 1864-1547, ISSN (Print) 0025-1461, DOI: 10.1515/MAMM.2011.010, May 2011

Peter L. Cunningham and Torsten Wronski

Keywords: Farasan Islands, *Gazella gazella farasani*, group size and composition, Saudi Arabia, sex ratio

**ABSTRACT**

Some aspects of population structure (group size, group composition, sex ratio, female/juvenile ratio) of the Farasan gazelle *Gazella gazella farasani* were studied on the Farasan Islands, Saudi Arabia. The overall mean group size has remained consistent since 1988, indicating a stable population. *G. g. farasani* are mainly observed as single animals with females usually being solitary or in female groups. The largest group of gazelles comprised eight individuals in a mixed herd. The male/female sex ratio of adult animals during summer is skewed towards females with an extremely low juvenile/female ratio. A higher male mortality due to dispersal and related issues with anthropomorphic reasons is suspected. Results are discussed in the light of published and unpublished data from previous studies on the Farasan Islands and other Mountain gazelle (*Gazella gazella*) populations from the Arabian mainland and the Levant.



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**TWENTY YEARS OF MONITORING OF THE VULNERABLE FARASAN GAZELLE *Gazella gazella farasani* ON THE FARASAN ISLANDS, SAUDI ARABIA: AN OVERVIEW**

Peter L. Cunningham and Torsten Wronski

*N: Oryx*, 45(1), 50–55

doi:10.1017/S0030605310001298

Keywords: Farasan gazelle, *Gazella gazella farasani*, monitoring, Saudi Arabia, status

**ABSTRACT**

The mountain gazelle *Gazella gazella* in Saudi Arabia is categorized as Vulnerable on the IUCN Red List. On the mainland the species' survival depends on a few remnant populations in the western Mountains and coastal plains and on two reintroduced populations. The largest natural population of *G. gazella* in Saudi Arabia is the Farasan gazelle subspecies *G. g. farasani*, which inhabits the Farasan Islands in the Red Sea. We review and collate the available literature on this subspecies, mainly unpublished reports presenting wildlife census data, and supplement this with the most recent, 2009, count. The number of free-ranging gazelles has remained approximately constant since the first counts in 1988, with an overall density of 0.64 km<sup>-2</sup> and an estimated population of 1,039 on Farasan Kebir in 2009. The populations on two other islands, As Saqid and Zifaf, have not fared as well, possibly because of uncontrolled hunting pressure, competition with domestic stock or poor habitat conditions overall. The population on Qummah Island is extinct. Threats to this subspecies include uncontrolled hunting and uncoordinated development. Continued protection of this apparently stable population of mountain gazelle in Saudi Arabia is imperative to ensure the survival of the species.



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