

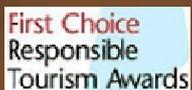
PROJECT REPORT

Expedition dates: 20 – 27 January 2013

Report published: June 2013

**Ways of the desert:
conserving Arabian oryx, Gordon's
wildcat and other species of the Dubai
Desert Conservation Reserve,
United Arab Emirates.**

Cover image (c) Wouter Kingma



**BEST
VOLUNTEERING
ORGANISATION
UK**



**BEST FOR
GREEN-MINDED
TRAVELLERS
UK**



**TOP
RESPONSIBLE
HOLIDAY
UK**



**BEST NEW TRIP
USA**



**BEST IN
SUSTAINABLE
TRAVEL
USA**



**ENVIRONMENT
AWARD
Germany**



**TOP HOLIDAY
FOR NATURE
Germany**



EXPEDITION REPORT

Ways of the desert: conserving Arabian oryx, Gordon's wildcat and other species of the Dubai Desert Conservation Reserve, United Arab Emirates.

Expedition dates:
20 – 27 January 2013

Report published:
June 2013

Authors:
Stephen Bell
Dubai Desert Conservation Reserve

Matthias Hammer & Adam Stickler (editors)
Biosphere Expeditions

Abstract

Biosphere Expeditions has been working in and with the Dubai Desert Conservation Reserve (DDCR) since 2012 with the aim of studying the biology and helping with the management of resident species. Species studied included the Arabian oryx (*Oryx leucoryx*), classified by IUCN as vulnerable, and other antelope species (sand and mountain gazelle, *Gazella leptoceros* and *Gazella gazella*), Gordon's wildcat (*Felis silvestris gordonii*), as well as some major bird and reptile species. Forty-two grids 2 x 2 km in size were surveyed within the 225 km² area of the DDCR (sandy desert dominated by low to medium size sand dunes and a number of gravel plains, all between altitudes of 260 m and 180 m). Sample methods included encounter surveys, camera and live trapping and body scoring (for oryx). It was found that mountain gazelle (87 encounters), sand gazelle (26 encounters), Arabian red fox (24 camera trap pictures) and Arabian oryx were common throughout most of the study area. Gordon's wildcat was not documented by camera or live traps, but only by tracks, which can be misidentified. Because of this result, the DDCR now plans to enhance the population through the re-introduction of genetically pure, captive bred, Gordon's wildcat. The body condition scoring for oryx revealed malnutrition and supplementary feeding was increased. Oryx distribution has largely shifted to the north of the reserve as a result of a sustained drought, but a few hardy and now largely independent herds persist in the south. Sand gazelle populations have shifted northwards within the reserve as a result of expanding populations needing to establish new, if less favourable territories. Nine lappet-faced vultures, rare in the United Arab Emirates, were recorded, showing that the DDCR is likely to be the best habitat for this species in the UAE. It is hoped that nesting will occur in the future.

المخلص العربي

قامت مجموعة رحلات المحيط الحيوى (بيوسفير أيكسبيديشن) وبالتعاون مع إدارة محمية دبي الصحراوية منذ عام 2012م فى إقامة العديد من المشاريع البحثية لدراسة المها العربي والذى يعتبر من الحيوانات عربية والتي تم تصنيفها بواسطة الاتحاد الرئيسية المميزة للبيئة الصحراوية فى منطقة الجزيرة ال تضم قائمة الحيوانات. الدولى لصون الطبيعة ككائن معرض للعديد من المخاطر وكذلك دراسة القط جوردون البرى المها العربي، الغزال الإدمى، غزال الريم، قط جوردون البرى، بالإضافة إلى بعض البرية التي تمت دراستها إجمالاً اع الرئيسية من الطيور والزواحف والمسجلة بالمنطقة. أسخدمت النتائج لوضع استراتيجيات وخطط الأور عمل مستقبلية لحماية المها العربي والقط جوردون البرى فى دولة الإمارات العربية المتحدة دبي الصحراوية والبالغ كم داخل الحدود الإجمالية لمحمية (2x2) تم حصر ودراسة عدد 42 موقع مساحة كل موقع منها (2) ،مجلت مطسوته إلى 260م فوق سطح البحر وهناك أيضاً بيئة السهول الحصوية بالمحمية، تتراوح الإرتفاعات داخل محمية دبي الصحراوية من إرتفاع 180م فوق سطح البحر فى أقصى الشمال. أشتملت طرق الدراسة على الجنوب وتندرج تدريجياً إلى أن تصل إلى إرتفاع حصر وتسجيل الحيوانات البرية عند مشاهدتها، طريقة مصائد الكاميرا وكذلك تسجيل الحالة الجسدية للمها العربي

أها أن الغزال الإدمى تمت مشاهدته وتسجيله 87 مرة، والغزال يعد نهاية البحث العملى تم التوصل لنتيجة مفاد الريم تمت مشاهدته وتسجيله 26 مرة، و الثعلب الأحمر العربي تمت مشاهدته من خلال مصائد الكاميرا 24 مرة ، لم يتم بالإضافة إلى المها العربي هم الأنواع الأكثر وفرة داخل المحمية مقارنة بالأنواع النادرة التواجد الأخر تسجيل قط جوردون البرى لا من خلال برنامج مصائد الكاميرا أو من خلال الفخاخ ولكن تم تسجيل تواجده فقط من خلال آثار طبقات أقدمه على الرمال، وبناءً على ذلك فإن محمية دبي الصحراوية بصدد التخطيط لتحسين أعداد القط جوردون البرى من خلال إعادة إطلاق وبالنسبة للمها العربي ومن خلال دراسة الحالة الجسدية للأفراد المتواجدة فى الحصر وجدت نقيّة جينياً والتي تم إكثارها فى الأسر لسلا لا ان أن النسبة العظمى من الحيوانات لديها حالة سوء تغذية وتبعاً لذلك فإنه قد تم زيادة كميات العلف المقدم للمها العربي، وتلاحظ أيضاً ان قطع كثيرة من قطعان المها العربي قد أنتقلت إلى شمال محمية دبي الصحراوية هرباً من الجفاف ومع ذلك تم تسجيل بعض القطعان الكبيرة والتي مازالت مستقرة بالمنطقة الجنوبية للمحمية. وفيما يخص غزال الريم تلاحظ تغيير فى مناطق تواجده وأمتد وذلك لتزايد أعداده والأحتياج لتكوين مجتمعات جديدة. من خلال الدراسة تم حتى المنطقة الشمالية من المحمية تسجيل عدد تسع أفراد من النسور والتي تعتبر من الطيور النادرة بدولة الإمارات العربية المتحدة والتي الطيور بينت أن محمية دبي الصحراوية تعتبر من المناطق القليلة بالدولة التى بها بيئات مناسبة لتلك النادرة ومن المأمول ان يؤدي ذلك لتكاثر تلك النسور داخل المحمية فى السنين القادمة

Contents

المُلخَص العَرَبِي / Abstract	2
Contents	3
1. Expedition review	4
1.1. Background	4
1.2. Research area	4
1.3. Dates	5
1.4. Local conditions & support	6
1.5. Scientists	6
1.6. Expedition leader	7
1.7. Expedition team	7
1.8. Partners	7
1.9. Expedition budget	8
1.10. Acknowledgements	9
1.11. Further information & enquiries	9
2. Desert species surveys	10
2.1. Introduction and background	10
2.2. Methods	12
2.3. Results	17
2.4. Discussion and conclusions	24
2.5. References	26
Appendix 1: Oryx body condition scoring	27
Appendix 2: Camera trap pictures of Gordon's wildcat	29
Appendix 3: Camera trap pictures of other species (examples)	31
Appendix 4: Expedition diary & reports	33

Please note: Each expedition report is written as a stand-alone document that can be read without having to refer back to previous reports. As such, much of this section, which remains valid and relevant, is a repetition from previous reports, copied here to provide the reader with an uninterrupted flow of argument and rationale.

1. Expedition review

M. Hammer & A. Stickler (editors)
Biosphere Expeditions

1.1. Background

Biosphere Expeditions runs wildlife conservation research expeditions to all corners of the Earth. Our projects are not tours, photographic safaris or excursions, but genuine research expeditions placing ordinary people with no research experience alongside scientists who are at the forefront of conservation work. Our expeditions are open to all and there are no special skills (scientific or otherwise) required to join. Our expedition team members are people from all walks of life, of all ages, looking for an adventure with a conscience and a sense of purpose. More information about Biosphere Expeditions and its research expeditions can be found at www.biosphere-expeditions.org.

This expedition report deals with an expedition to the United Arab Emirates that ran from 20 to 27 January 2013 with the aim of assisting scientists of the Dubai Desert Conservation Reserve (DDCR) to gather scientific data on Arabian Oryx, Gordon's wildcat and Macqueen's bustard in order to gain a better understanding of their ecology so that informed management decisions can be made. All three species are on the IUCN Red list and the expedition's work will help to ensure the survival of the species in the wild. In gaining a better understanding of the Arabian oryx (*Oryx leucoryx*), Gordon's wildcat (*Felis silvestris gordonii*), through observations on their movements, habitat and food preferences and through their interaction with other species, this project is able to ascertain what the major threats are to their continued survival. Based on this, project scientists can then develop appropriate management plans that will provide a safe environment for the study species to thrive in.

1.2. Research area

The Dubai Desert Conservation Reserve (DDCR) is an area of 225 km² that comprises 4.7% of Dubai's land area. Conservation in this area started in 1999 when the Al Maha Desert Resort was opened within a protected area of 27 km² (Al Maha Reserve). One of the first conservation actions of the reserve was a wildlife reintroduction programme for Arabian oryx and the two indigenous gazelle species (sand as well as Arabian gazelle), as well as programmes for the protection of other key components of the ecosystem, in particular the vegetation (close to 6,000 indigenous trees were planted in 1999 to create a natural seed bank which has now led to germination of indigenous plants). In 2001 the resort management began a major environmental audit of the surrounding area. Following this audit a proposal was submitted to the Dubai government on the formation of a formal national park. The proposal was accepted and sanctioned almost immediately and work began on protecting the area to be known as the Dubai Desert Conservation Reserve.



Figure 1.2a. Flag and location of United Arab Emirates and study site.

An overview of Biosphere Expeditions' research sites, assembly points, base camp and office locations is at [Google Maps](#).

Today the DDCR is a representative of the Dubai inland desert ecosystem and is characterised by a sandy desert environment consisting of sand dunes interspersed with gravel plains. There is one rocky outcrop in the north of the reserve, which provides nesting sites for the desert eagle owl and two groves of rare Ghaf trees (*Prosopis cineraria*). The Al Maha Reserve (27km²) was the core area for the reintroduction of the Arabian Oryx, Arabian gazelle and sand gazelle. Currently the DDCR contains approximately 450 Arabian Oryx from the 100 that were originally re-introduced in 1999. Both the Arabian Oryx and the gazelle species have expanded into the DDCR naturally as the amount of human activity has decreased and been controlled. Arabian and sand gazelle can now be seen throughout the DDCR.

1.3. Dates

The expedition ran from 20 – 27 January 2013 and was composed of a team of international research assistants, guides, support personnel and an expedition leader (see below for team details).

1.4. Local conditions & support

Expedition base

The expedition field base was composed of a Bedu style tent camp (of a Bedu mess tent and modern one and two person dome tents for sleeping in). Each person had their own dome tent to sleep in (larger tents for couples) and there were campsite-style showers and toilets. An expedition cook was with the team and cooked in the field. Vegetarians and other special diets were catered for. Fresh organic produce was kindly provided by [Ripe](#).

Weather

The UAE has a subtropical, arid climate with sunny blue skies most of the year. Over the eight days of the expedition the weather was clear with blue skies. The mean low and high temperatures during the expedition were 12° and 25.9° C. Most mornings there was fog cover, which lifted by 09:30.

Field communications

There was an (emergency) telephone close to base and mobile phones will largely worked in and around camp and around the study site. In the field, two-way radios and mobile phones were used for communication between research teams.

The expedition leader also posted an expedition diary on Biosphere Expeditions' social media sites such as [Facebook](#), [Google+](#) and the [Wordpress blog](#).

Transport and vehicles

Team members made their own way to the Dubai assembly point in time. From there onwards and back to the assembly point all transport and vehicles were provided by Biosphere Expeditions and the DDCR for the expedition team, for expedition support and emergency evacuations.

Medical

The expedition leader was a trained first aider, and the expedition carried a comprehensive medical kit. A network of first-rate private and government hospitals in Dubai provided further medical support. Safety and emergency procedures were in place. There were no medical incidences during the expedition and none of the medical support network or safety procedures were called upon.

1.5. Scientists

Greg Simkins, who is South African by birth, is the Conservation Manager for the Dubai Desert Conservation Reserve (DDCR) and has worked in the field of conservation and protected areas management since 2001. Greg began his career as a field guide in 1999. In 2001 he became a Reserve Officer in the DDCR and was heavily involved in the planning and implementation of eco-tourism activities within the protected area, which was created in 2003. In 2003 Greg took on his current role and was appointed Conservation Manager for the DDCR. He is now responsible for the overall management of the Reserve and has been at the forefront of its development from conception in 2003 to its current international recognition. He also plays a major role in conducting key conservation research studies throughout the DDCR. Prior to coming to the Middle East, Greg studied at the University of Natal, Pietermaritzburg in Kwazulu-Natal, where he also did graduate work while, including resource assessment and allocation for a farm, soil surveys and research at an ostrich export farm in the Eastern Cape.

The expedition's field scientist is Stephen Bell. Born in South Africa, he graduated in Biology in 1996, with a bachelor's degree from the University of Witwatersrand, South Africa. Stephen spent most of his career guiding throughout South Africa and Zambia in private game lodges. He was also a trails guide in the greater Kruger National Park where he conducted 5 day walking safaris. Stephen fell in love with the fauna and flora of the Arabian desert whilst he spent six years guiding in the area at the Al Maha Desert Resort & Spa. Stephen joined the DDCR as a Conservation Officer in 2009 and works closely with on-going conservation projects on the reserve. Stephen has a passion for birding and is always keeping an ear out for the odd bird call. Stephen has always had a keen interest in wildlife from a young age he was always found playing with all sorts of creepy crawlies. During his off time Stephen can be found with mates diving around the world.

Peter Roosenschoon fell in love with nature in his early years while camping and hiking. After first working in the corporate world, in 1997 he decided to change his perspective towards wildlife and became more involved with voluntary work related to wildlife. In 2003 he became a professional field guide working in Southern Africa until in 2007 he started working as a guide at the Al Maha Desert Reserve and Spa. After working as a guide in the reserve for three years, he joined the Dubai Desert Conservation Reserve as a conservation officer. His roles and interests in this position are tour operator relationships, arthropods and Gordon's wildcat.

1.6. Expedition leader

Malika Fettak is half Algerian, but was born and educated in Germany. She majored in Marketing & Communication at the University of Frankfurt, which led her to jobs in PR & Communications. She has travelled widely, especially in Africa and Northern Europe. Her love of nature and the outdoors, and taking part in a few Biosphere expeditions, persuaded her that a change of career was in order and here she is since 2008, leading expeditions and making herself useful around the office. Malika is a keen sportswoman - triathlon, skiing, volleyball, etc. and enjoys the outdoors.

1.7. Expedition team

The expedition team was recruited by Biosphere Expeditions and consisted of a mixture of all ages, nationalities and backgrounds. They were (with countries of residence):

Alexandra Howard (UK, placement), Bernhard Jäger (Austria), Hildegard Jäger (Austria), Liz Maciag (UK, placement), Sokolov Ratiu (Russia), Ben Rees (UK), Irmtraut Schumann (UK), Uta Weiss (Germany). Also present for part of the expedition was photographer Wouter Kingma, who kindly made his photographs available.

1.8. Partners

The main partner on this expedition is the Dubai Conservation Board, a government-appointed organisation concerned with the conservation and protection of the Dubai inland desert. Other partners include the National Avian Research Centre. Corporate support was gratefully received from Ripe and Swarovski Optik, who supplied fresh, local organic produce and optical instruments respectively.



1.9. Expedition Budget

Each team member paid towards expedition costs a contribution of £980 per seven-day slot. The contribution covered accommodation and meals, supervision and induction, all maps and special non-personal equipment, all transport from and to the team assembly point. It did not cover excess luggage charges, travel insurance, personal expenses such as telephone bills, souvenirs, etc., as well as visa and other travel expenses to and from the assembly point (e.g. international flights). Details on how these contributions were spent are given below.

Income	£
Expedition contributions	5,240
 Expenditure	
Staff includes local & international salaries, travel and expenses	1,456
Research includes equipment and other research expenses	85
Transport includes fuel, taxis and other local transport	1,481
Base includes food and camping fees	1,288
Administration includes local sundries and fees	108
Team recruitment Emirates as estimated % of PR costs for Biosphere Expeditions	6,400
 Income – Expenditure	 - 5,578
 Total percentage spent directly on project	 206%*

*This means that in 2013, the expedition ran at a loss and was supported over and above the income from the expedition contributions and grants by Biosphere Expeditions.

1.10. Acknowledgements

This study was conducted by Biosphere Expeditions, which runs wildlife conservation expeditions all over the globe. Without our expedition team members (listed above) who provided an expedition contribution and gave up their spare time to work as research assistants, none of this research would have been possible. The support team and staff (also mentioned above) were central to making it all work on the ground. Biosphere Expeditions would also like to thank Ripe, Swarovski Optik, Snowgum and the Friends of Biosphere Expeditions for their sponsorship and/or in-kind support.

1.11. Further information & enquiries

More background information on Biosphere Expeditions in general and on this expedition in particular including pictures, diary excerpts and a copy of this report can be found on the Biosphere Expeditions website www.biosphere-expeditions.org.

Copies of this and other expedition reports can be accessed via at www.biosphere-expeditions.org/reports. Enquires should be addressed to Biosphere Expeditions via www.biosphere-expeditions.org/offices.

Please note: Each expedition report is written as a stand-alone document that can be read without having to refer back to previous reports. As such, much of this section, which remains valid and relevant, is a repetition from previous reports, copied here to provide the reader with an uninterrupted flow of argument and rationale.

2. Desert species surveys

2.1. Introduction and background

The United Arab Emirates, and Dubai in particular, is well known for its rapid development over the past 40 years as well as for the mega-construction projects such as the Palm Islands and the Burj Khalifa (the world's tallest building). Less well known is the diversity and beauty of the natural environment, from the dugongs and corals in the Arabian Sea, the flamingos in the khors (inlets) of the coastline, the rugged Hajar mountain range, to the serene splendour of the sandy dune inland desert. Also little known is that the largest piece of land given to any single project in Dubai was for the establishment of the Dubai Desert Conservation Reserve (DDCR), at 225 km², it is 4.7% of Dubai's total land area.

Arabian oryx is one of four oryx species, all of which are adapted to arid and semi-arid environments, locally known by its Arabic name of Al Maha, the Arabian oryx was first described in 1777. Endemic to the Arabian Peninsula, the Arabian oryx's historical range was across Oman, Saudi Arabia, Jordan, United Arab Emirates, Yemen, Kuwait and Iraq, but the advent of firearms saw their rapid decline due to hunting all across Arabia. Since 1986 Arabian oryx is classified as "Endangered" on the IUCN Red List, but was already "very rare and believed to be rapidly decreasing in numbers" in 1965. The Arabian oryx is the largest of the antelopes in the region and it is very well adapted to the extremely arid environment. It is culturally significant in Arabia, revered for its beauty, common in poetry and as a woman's name, Maha. Re-introduced into the DDCR in 1999, the population has steadily grown from the original 100 individuals to over 400 today.

For the next phase of the oryx project, local scientists need a greater understanding of how oryx fit into the DDCR's natural environment, which habitats and plants they prefer, what the social structure of the herd is and how it is affected by their environment. This can only be achieved through monitoring and keen observation for extended periods. Biosphere Expeditions provides the manpower to complete this task that will help the DDR achieve its ultimate goal of a sustainable herd of Arabian oryx within the reserve.

The Gordon's wildcat is the same size as a domestic cat. The background colour of its coat ranges from reddish to sandy yellow to tawny brown to grey, and is typically marked with faint tabby stripes and spots. Their preferred habitat is the vegetated dunes, gravel plains and mountains, in which they hunt a mainly carnivorous diet at night. It is thinly distributed throughout the Nubian, Saharan and Arabian deserts, where it is generally restricted to mountains and dry watercourses. The biggest threat to the survival of the Gordon's wildcat as a species is the interbreeding with feral or domestic cats, which could lead to its extinction as a distinct species. Very little is known about the Gordon's wildcat population within the DDCR; the last population estimate was done in 2004. The expedition has enabled DDCR scientists to update information on population size and distribution as well as conduct a DNA study of the species; information that is important for informed management decisions to be made and threats to be averted.

The Macqueen's bustard is a large bird in the bustard family. It is 60 cm long with a 140 cm wingspan. It is brown above and white below, with a black stripe down the sides of its neck. In flight, the long wings show large areas of black and brown on the flight feathers. Sexes are similar, but the female is smaller and greyer above. It breeds in deserts and other very arid sandy areas in southwestern Asia. Like other bustards, the Macqueen's bustard has a flamboyant mating display raising the white feathers of the head and throat and withdrawing the head. It is classified as Vulnerable on the IUCN Red List due to a steady decline in its population. The principal threat is from overhunting by Middle East falconers, largely but not exclusively on the species' wintering grounds. Habitat loss and degradation compound this problem. Due to the serious decline of this species in the wild the UAE has, through the National Avian Research Centre (NARC), implemented large scale captive breeding to facilitate a release programme in both the UAE and in the species' breeding grounds. Bustards released elsewhere in the UAE made their way to the DDCR as an area of suitable habitat, so it was on this compelling evidence that the DDCR was selected for further releases. To date 199 Macqueen's bustards have been released into the DDCR, 26 of which carry PTT satellite tracking devices.

Expedition members assisted DDCR scientists in three important surveys during the expedition: Gordon's wildcat live capture survey and camera trapping, as well as Arabian oryx monitoring, in addition to these surveys the expedition members were asked to record any species observation or encounters while in the field. During the expedition, team members were split into three groups in order to conduct the various surveys, in the north, central and southern zones of the DDCR.



Figure 2.1a. Survey team in the study site. Picture courtesy of [Wouter Kingma](#).

2.2. Methods

For the purpose of this expedition, the DDCR area was split into three zones (North Zone, Central Zone and South Zone). Each zone comprised fourteen 2 x 2 km quadrants. Expedition team members were split into three groups with each assigned a zone for the duration of the expedition. Each day every group was tasked to survey three grids to survey for species presence and score oryx body condition.

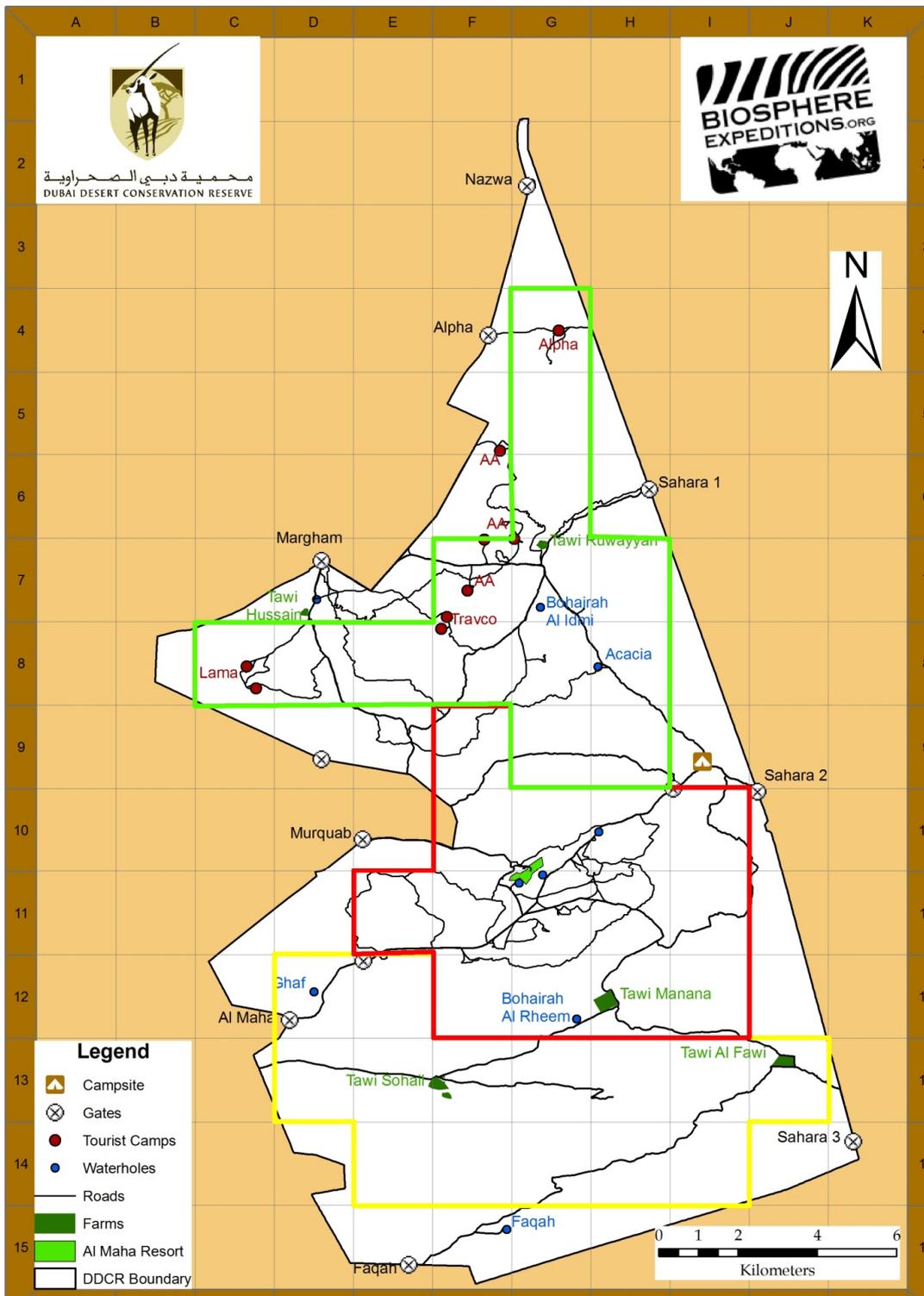


Figure 2.2a. The DDCR and its survey zones (North = green, Central = red, South = yellow).

2.2.1. Oryx body condition scoring and behaviour evaluation

El Alqamy's (2010) scheme for body condition scoring was adopted as an approach to provide measurable, quantitative and informative indicator of the fitness of the Arabian oryx herd in the DDCR. The scheme is based on Gilbert & Woodfine (2003) and uses the dairy cattle body condition scoring developed by the University of California's (Davis) veterinary medicine extension. The system is based on visual assessment of the back posture of the animal and defines the body condition score according to presence or absence of some features such as musculature, fat deposition, spinal vertebrae and caudal vertebrae. The system has a scale of six integer scoring grades, where the animals are evaluated using the visual appearance of the spine, musculature and fat deposition (see appendix 1).



Figure 2.2.1a. Oryx body scoring using a Swarovski Optik spotting scope. Picture courtesy of [Wouter Kingma](#).

Oryx behaviour was recorded after each survey group had completed the body condition scoring. Surveyors observed and recorded what individuals were doing until herd activity had ceased for more than 30 minutes (e.g. if a herd rested in the shade for more than 30 minutes without displaying other behaviours, the surveyors would move on to find the next herd). Data recorded in pre-prepared datasheets included time, quadrant, distance from observer to animal, observer position, behaviour tick boxes for moving, grazing, chasing, resting, fighting and mating, as well as any additional comments

2.2.2. Species encounters

Each day the three groups were given three quadrants within their zones to survey, meaning that a total of (36 km²) was surveyed by three groups each day. In total the expedition surveyed 180 km².

Observers were tasked to record large and visible mammal and other species such as larger reptiles and the most common and easily identifiable birds, with special emphasis on vultures and the Macqueen's bustard.

Within this remit, the following species details were recorded

- Species name
- Position of observer when the species was first seen
- Distance from observer to the species
- Bearing from observer position to the species
- Time of day when the species was observed
- Ecology, number of animals, sexes, etc.
- Additional comments



Figure 2.2.2a. Recording species using a Swarovski Optik spotting scope. Picture courtesy of [Wouter Kingma](#).

Twelve Tomahawk live traps were used during the expedition for the purpose of capturing Gordon's wildcats and feral cats. Each group were given four live traps to place within their allocated zones and freely within four pre-allocated quadrants. Traps were baited with tinned sardines and the bait was replaced where necessary. Chilly sardines were found to work best. The bait was placed right at the back of the trap (using an extendable reacher/grabber) so the target species is forced to step onto the pressure plate. The pressure plate was covered with sand to give the trap a more natural feel and ensure that the target species was more at ease when entering the trap.

Training in cat identification techniques was given and each morning survey team checked their allocated traps for signs of disturbance, tracks, bait status, etc. Any evidence of a Gordon's wildcat or a feral cat was recorded onto pre-prepared datasheets.



Figure 2.2.3a. Training on setting up a live trap and recording data. Picture courtesy of [Wouter Kingma](#).

2.2.4. Camera trapping

As many species in the desert environment are both nocturnal and elusive, it is difficult to gather reliable information on their populations. A camera trap triggers when an animal passes in front of an infrared and/or motion detector. This has the advantage of detecting, with equal efficiency both nocturnal and diurnal activities with minimal environmental disturbance. The camera trap survey aims at recording the presence (or absence) of elusive and nocturnal species, in particular the smaller carnivores, within the DDCR.



Figure 2.2.4a. Setting up a (Bushnell) camera trap. Picture courtesy of [Wouter Kingma](#).

Eleven camera traps (5 [Cuddeback](#), 4 [Reconyx](#) RC60, 2 [Bushnell](#) Trophy Cams) were deployed throughout the study site at randomly selected points within pre-determined quadrats for each group: three in the North Zone, four in the Central Zone and four in the South Zone. The traps were baited on the first day with quail guts and left out in the field for five nights. All camera traps were collected on the last day of the expedition

Data from each site were recorded at deployment. Memory cards were collected and all photos downloaded at the conclusion of the expedition. Photos were then classified, species identified and the data recorded into a spreadsheet.

2.3. Results

2.3.1. Oryx body condition scoring

Analysis of all body condition scores collected during the expedition yielded an average score of 2.3 (see table 2.3.1a). This number is low and represents general malnutrition in the DDCR's oryx population. The ideal value in January is between 3 and 4, as this is the time of year when most adult females are pregnant and are looking to give birth around February.

Table 2.3.1a. Summary of body score data.

Herd #	Position			Herd Structure						Average Condition Score
	X	Y	Quad-rant	Males	Females	Juveniles	Calves	Unsure	Total	
1	55.67822	24.87141	H8	2	1	0	0	4	7	2.5
2	55.69139	24.86057	H9	3	1	1	0	4	9	3
3	55.61525	24.79322	D12	0	3	1	0	0	4	2.75
4	55.66478	24.89772	G6	1	0	0	0	0	1	4
5	55.65964	24.94329	G4	0	2	0	0	0	2	3
6	55.65863	24.90886	G6	0	1	0	0	0	1	2
7	55.67521	24.90727	G6	3	2	0	0	3	8	3
8	55.67711	24.92852	G4	1	0	0	0	0	1	3
9	55.64391	24.89517	F7	0	1	0	0	0	1	1
10	55.66389	24.89149	G7	1	0	0	0	1	2	2
11	55.68658	24.89703	H7	1	0	0	0	0	1	2
12	55.69993	24.8082	I11	1	3	1	0	0	5	1.75
13	55.67944	24.79543	H11	12	12	1	0	0	25	2.16
14	55.63477	24.86749	E8	1	4	0	0	0	5	2
15	55.6382	24.86745	E8	5	0	0	0	1	6	2.5
16	55.64412	24.87887	F8	1	0	0	0	0	1	1
17	55.64718	24.87139	F8	5	3	0	0	0	8	3
18	55.72083	24.77905	J13	2	1	0	0	0	3	1.67
19	55.61718	24.86337	D8	1	2	0	0	0	3	1.3
20	55.61361	24.87607	D8	1	2	0	0	0	3	2.3
21	55.61679	24.87093	D8	2	0	0	0	0	2	2.5

During the expedition no calves were seen and this very likely to be a result of the poor nutrition of the female oryx population. It will be of interest to see how many oryx calves will be born in 2013 considering the low condition score of the female oryx.

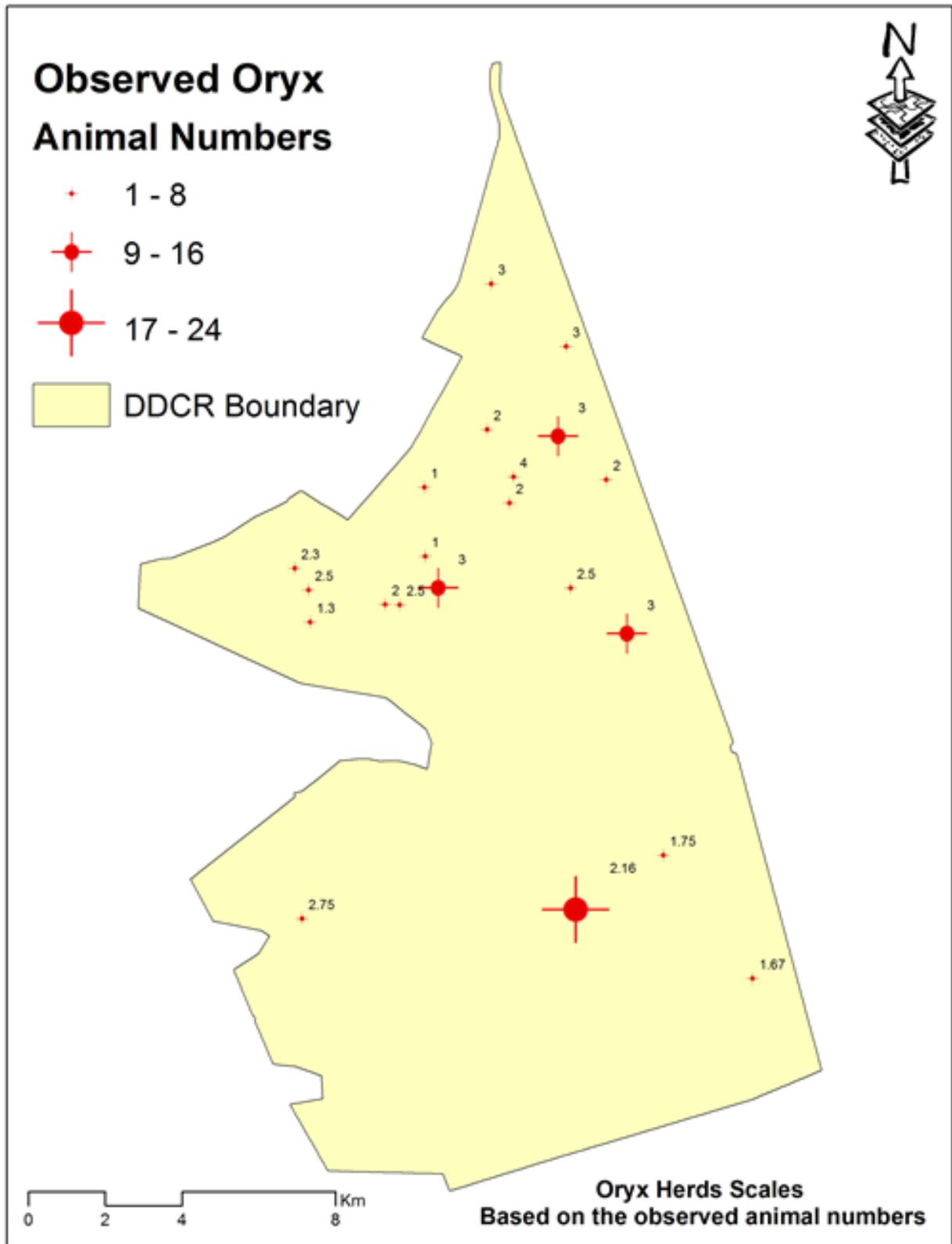


Figure 2.3.1a. Map showing average condition score for each oryx herd observed and scored.

Comparing body condition between the sexes yields the graph below (see Fig. 2.3.1b) with the average value for females at 2.2 and the value for males only slightly higher at 2.5, but juveniles at 3.0 (but only four juveniles were recorded – see Fig. 2.3.1c).

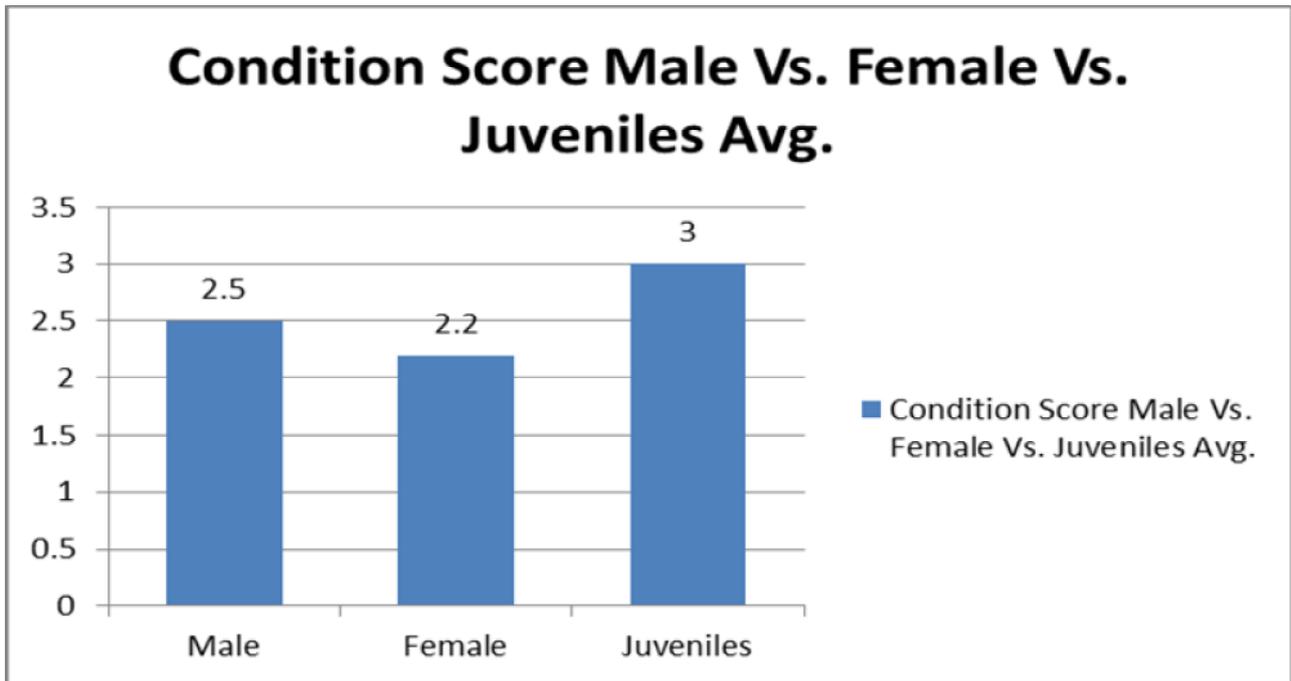


Figure 2.3.1b. Average condition score for male vs. female vs. juvenile oryx.

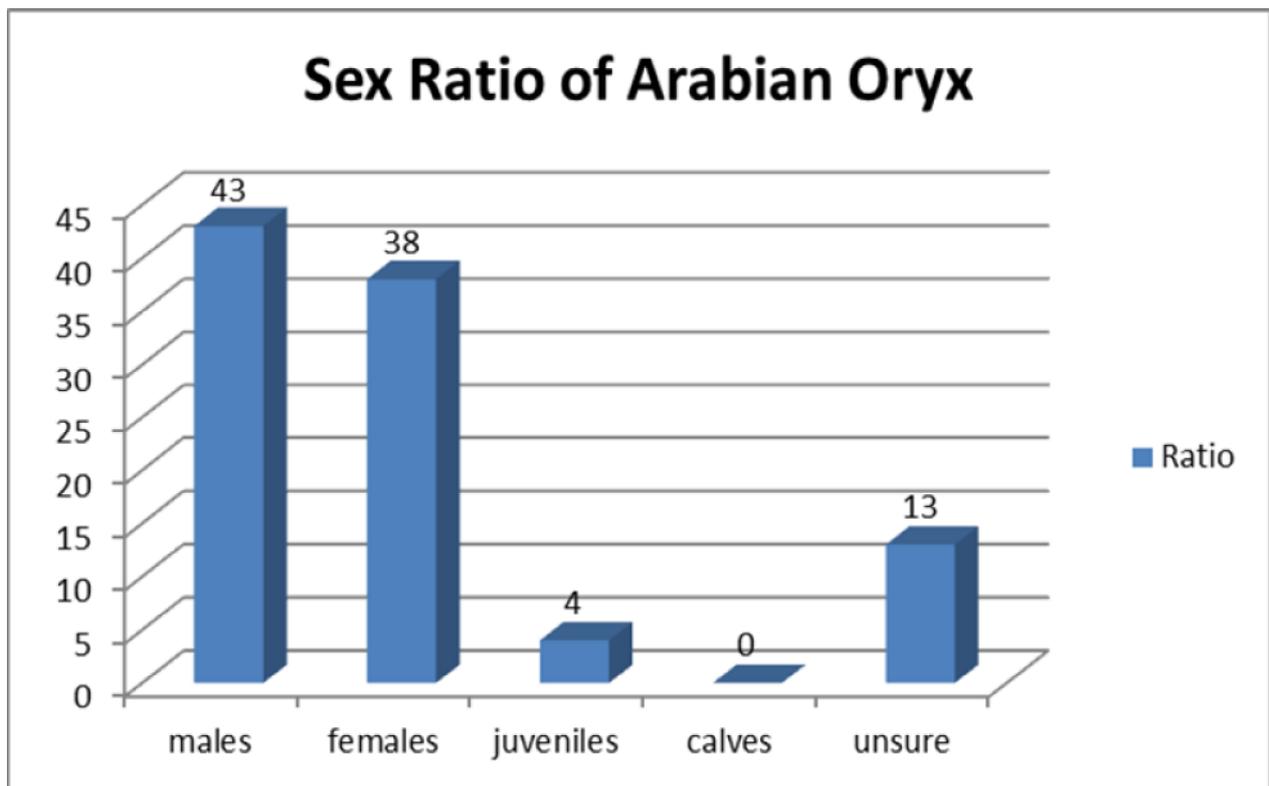


Figure 2.3.1c. Sex ratio of oryx that were body-scored.

In total 98 oryx were assessed (43 male, 38 female, 4 juvenile, 13 of unidentified sex). Another three oryx were counted, but body condition score could not be reliably identified. From the 21 groups that were recorded, 17 were recorded in the North Zone, two in the Central Zone and two in the South Zone.

There are fixed feeding stations and random feed drop points within the DDCR. At feeding stations oryx are almost always present at certain times of the day. Two of these feeding stations are in the North Zone, with one of them in the survey area. In the Central Zone there are three feeding stations all three of which are in the survey area. In the South Zone there is one feeding station, which is in the survey area. Survey teams concentrated on feeding locations in order to find animals and get close to them for scoring. Animals in the northern and central zones are by and large habituated to human presence.

2.3.2. Oryx behaviour

Oryx behavioural surveys revealed peaks of moving and grazing followed by resting in the mornings. No chasing, fighting or mating was observed at this time. Most of the feeding and moving was observed in the mornings (see Fig. 2.3.2a). There was some resting in the morning, but higher peaks of resting were recorded in the afternoons. Oryx can give birth at any time of the year (Jongbloed 2007). However, a peak in the DDC occurs between December and March (personal observation), which means mating takes place around the end of June and in July. This explains the zero score for mating behaviour observed (see Fig. 2.3.2b).

Oryx behaviour was observed in 13 out of the 42 quadrants (31%, North 9 out of 14 quadrants, Central 1/14, and South 3/14).

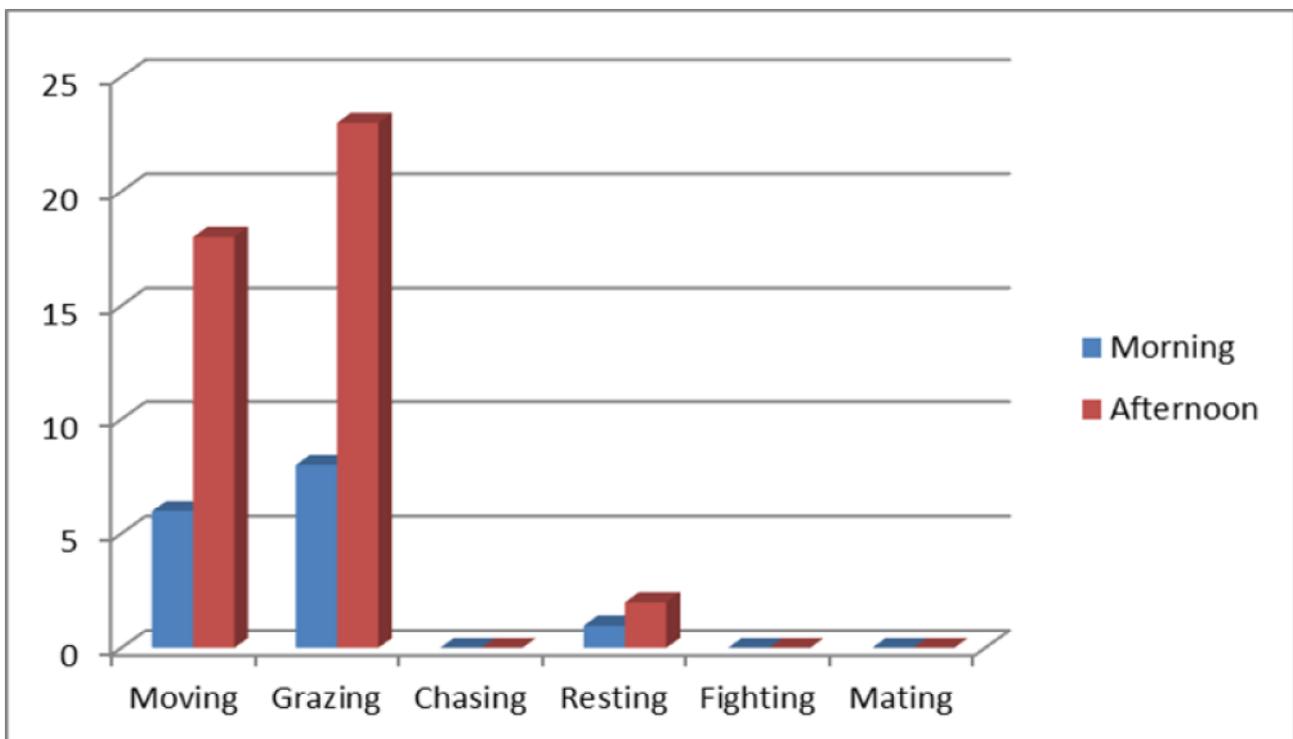


Figure 2.3.2a. Oryx behaviours recorded by the expedition.

2.3.3. Species encounters

A wide range of species was recorded during the expedition (see Table 2.3.3a).

Table 2.3.3a. Species encountered during the expedition.

Common name	Latin name	Common name	Latin name
Birds		Mammals	
Lappet-faced vulture	<i>Torgos tracheliotus</i>	Mountain gazelle	<i>Gazella gazelle cora</i>
Pallid harrier	<i>Circus macrourus</i>	Sand gazelle	<i>Gazella subgutturosa marica</i>
Black-winged stilt	<i>Himantopus himantopus</i>	Arabian oryx	<i>Oryx leucoryx</i>
Common sandpiper	<i>Actitis hypoleucos</i>	Arabian red fox	<i>Vulpes vulpes</i>
Chestnut-bellied sandgr.	<i>Pterocles exutus</i>		
Laughing dove	<i>Spilopelia senegalensis</i>	Reptiles	
Pharaoh eagle owl	<i>Bubo ascalaphus</i>	Sand fish	<i>Scincus scincus</i>
Green bee-eater	<i>Meropes orientalis</i>	Spiny-tailed lizard	<i>Uromastyx leptieni</i>
Southern grey shrike	<i>Lanius meridionalis</i>	Desert monitor lizard	<i>Varanus salvator</i>
Arabian babbler	<i>Turdoides squamiceps</i>	Arabian toed-headed agama	<i>Phrynocephalus arabicus</i>
Brown-necked raven	<i>Corvus ruficollis</i>	Sand snake	<i>Psammophis schokari</i>
White-eared bulbul	<i>Pycnonotus leucotis</i>		
Crested lark	<i>Galerida cristata</i>		
Macqueen's bustard	<i>Chlamydotis macqueenii</i>		
Long-legged buzzard	<i>Buteo rufinus</i>		

2.3.4. Live trapping

Twelve live traps were set, which yielded zero captures. Although no Gordon's wildcat was captured, its likely presence was recorded by tracks around the Tomahawk traps (see Fig. 2.3.4a.).

Cat tracks were observed at three different trap sites where the cats apparently showed an interest in the bait, but did not actually go into the trap. Fox tracks were seen at five traps. Under the category 'other' (see Fig.2.3.4a.), there were five observations at the different trap locations of Arabian red fox and cat tracks.

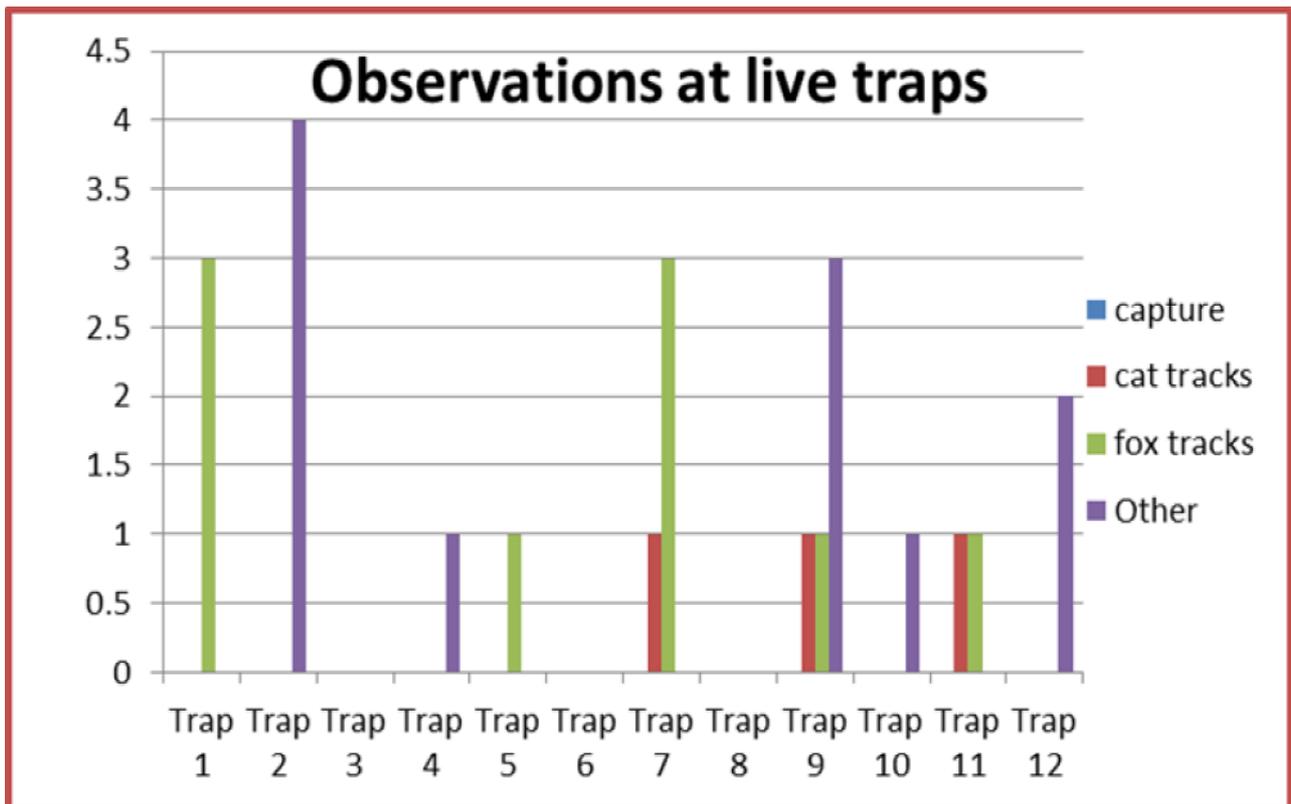


Figure 2.3.4a. Likely presence of Gordon's wildcat at live traps.

2.3.5. Camera trapping

During the five nights of camera trapping 133 pictures were taken. A wide range of species were captured (see Figs. 2.3.5a and b), including two pictures of a single Gordon's wildcat, both taken in the South Zone on camera 7 (see appendix 2). 24 pictures of Arabian red fox were taken and nine of lappet-faced vultures were taken, the latter also on camera 7 in the South Zone (see appendix 3).

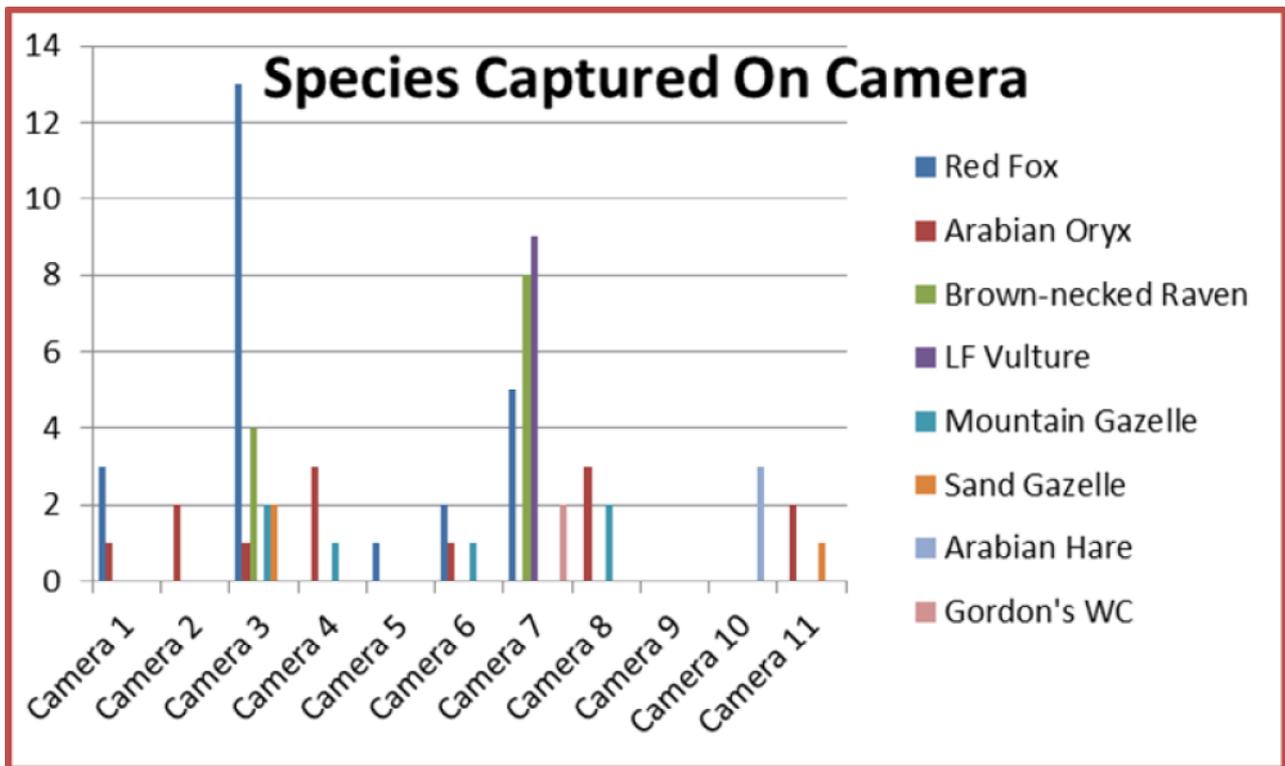


Figure 2.3.5a. Camera trap results.

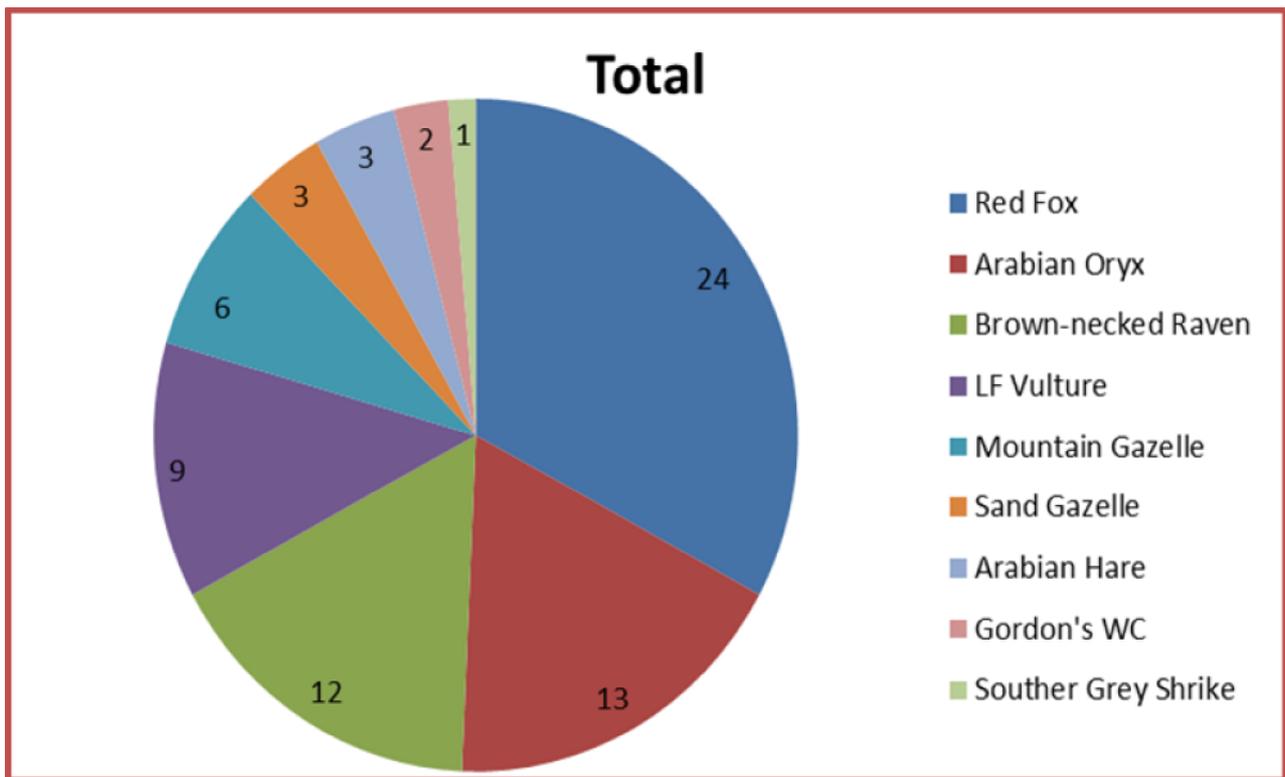


Figure 2.3.5b. Species recorded from camera traps.

2.4. Discussion and conclusions

Arabian oryx

The ideal body score value for this time of year (January) should be between 3 (fit and healthy) and 4 (fattened population). The condition scoring of the expedition yielded an average value of 2.3, which represents malnutrition. This gives cause for concern as this will have a direct effect on the forthcoming birth rate for the year. As a direct result of these findings, supplementary feeding was increased. One aim for the expedition in 2014 will be to see if body score values have increased year-on-year.

The average value for females was 2.2 and the value for males was only slightly higher at 2.5. Values for males are likely to be higher because, firstly, males dominate the feeding stations and secondly, the rigours of pregnancy negatively affect female body scores. Over time the value in male and female populations should increase as more feed is provided. As such, body scoring by Biosphere Expeditions makes a vital contribution to oryx herd management in the DDCR.

72% of the North Zone quadrants had oryx; the Central Zone had 14% and the South Zone had 14%. This result reflects the DDCR's environmental and weather condition over the last four years during which the reserve received very little rain. The North Zone contains disused farms with shade and water and this attracts the oryx into this zone in times of hardship. The low result for the Central Zone may also be connected to the distance from base camp. The group assigned to survey this zone rarely reached the feeding stations.

The long-term goal for the DDCR's Arabian oryx herd is to establish a viable, sustainable and self-sufficient population. In order to move towards this stated aim, over the past eight years, reserve managers have taken a conscious decision not to increase the amount of supplemental feed provided. This decision has borne fruit in that a number of self-sufficient herds have become established within the South Zone of the DDCR. These herds now live by and large independent of the feeding stations. However, the oryx population has increased and this, coupled with the sustained drought over the past four years, is likely to have brought the overall oryx population to a critical point. The poor body scoring results found by this expedition is good evidence of the current critical state.

In the short term, managers have increased the amount of supplementation to maintain the health of the herd and to prevent overgrazing of the DDCR vegetation. However, in the long term, managers are working in conjunction with Sharjah University on establishing a sustainable carrying capacity for the DDCR. Part of this will include GPS collaring oryx to ascertain home range, habitat preference as well as habitat utilisation.

Species encounters and camera trapping

Mountain gazelle were seen throughout the reserve. This species also dominated records taken during the species encounter survey (87 individuals recorded). The majority of the mountain gazelle were seen in the Central Zone. Nine out of the 14 quadrants (64%) in this zone contained mountain gazelles. The habitat in this area is mainly gravel plain: a favoured habitat for the species and, therefore, a result to be expected.

Sand gazelle were also observed in all three zones, with the South and Central Zones yielding most observations. 26 sand gazelle observations were recorded in total. 90% of them were in the South and Central Zones. Over the past few years we have noticed a shift in zone preference into the Central and North Zones. This shift is corroborated by the data collected by Biosphere Expeditions. The likely reason behind this is that the population is growing. Sand gazelles are territorial and new individual groups are now forced into other areas of the reserve to establish their own territories. When the reserve first started, there was only had a small group of sand gazelles. Over the years their numbers have increased and so has their distribution. Future investigations should seek to establish whether there would be a decline in one of the gazelle species, due to competition. Therefore, the population dynamics of the reserve's two gazelle species will continue to be monitored, including an aerial survey to provide accurate, high resolution information on gazelle populations sizes and distributions within the DDCR.

The recording of nine lappet-faced vultures by the expedition is an encouraging result. The lappet-faced Vulture is primarily an African, Old World vulture belonging to the bird order Accipitriformes, which also includes eagles, kites, buzzards and hawks. It is the only member of the genus *Torgos*. It prefers to live in dry savannah, thornbush, arid plains, deserts with scattered trees in wadis, open mountain slopes. It is usually found in undisturbed open country with a scattering of trees and apparently prefers areas with minimal grass cover. While foraging, they can wander into denser habitats and even into human habituated areas, especially if drawn to road kills. They may be found in elevation from sea-level to 4,500 m (14,800 ft) (Ferguson-Lees & Christie 2001). These birds are fairly rare in the United Arab Emirates, but there are sightings in the DDCR and it is the best place in the UAE to find these birds. Reserve managers are now monitoring them closely and are hoping that the vultures will start to nest in the reserve.

24 pictures of Arabian red foxes were taken. This was expected, as the expedition baited the camera traps, which will invariably attract the foxes.

Live trapping

There were no live captures of Gordon's wildcats or feral cats during the expedition. However, Gordon's wildcat presence was recorded by tracks. It is impossible to ascertain from this (and the comparison of one capture in 2012) whether Gordon's wildcats are in decline. More trapping needs to be done to assess this. What we do know is that feral cats are one of the main factors for the reduction of the genetically distinct Gordon's wildcat. Feral cats breed with the wildcat population which in turn has a dramatic result on the wild population of wildcats in the reserve. Current trapping on the reserve to counteract this problem is ongoing and the benefits of this work will only show in the future. During the 2014 expedition more live traps should be placed to increase capture effort and therefore the likelihood of capture. There are plans for a possible re-introduction of Gordon's wildcat into the DDCR in the future. This will also give us a better insight into these secretive cats, as they can then be collared for monitoring.

Trapping will continue to play an important part in conservation efforts of the Gordon's wildcat. It allows researchers to gather samples for DNA analysis from any cats caught to assess the threat of hybridisation in the species. The results of the last two Biosphere Expeditions surveys have shown that the population is small and may not be viable over the long term. As a direct result of this, reserve managers will in 2013 implement a pilot project to enhance the population through a re-introduction of genetically pure, captive bred, Gordon's wildcat into the DDCR. This too shows the importance of volunteer-led efforts in reserve management and the DDCR would like to thank Biosphere Expeditions and all expedition participants for their enthusiasm and assistance.

2.5. References

El Alqamy, H. (2010) Body condition score evaluation for Arabian oryx. 11th conservation workshop for the fauna of Arabia. Biodiversity Management Sector, Environment Agency – Abu Dhabi.

<http://www.biodiversityconference.com/pdf/1923dcadae56e9a99be5875b5e5387aa.pdf>

Ferguson-Lees & Christie (2001) Raptors of the World. Houghton Mifflin Hartcourt, London.

Jongbloed, M. (2007) Return to the wild of the Arabian Oryx. Al Shindagah 76. From <http://www.alshindagah.com/shindagah76/En/Return.htm>

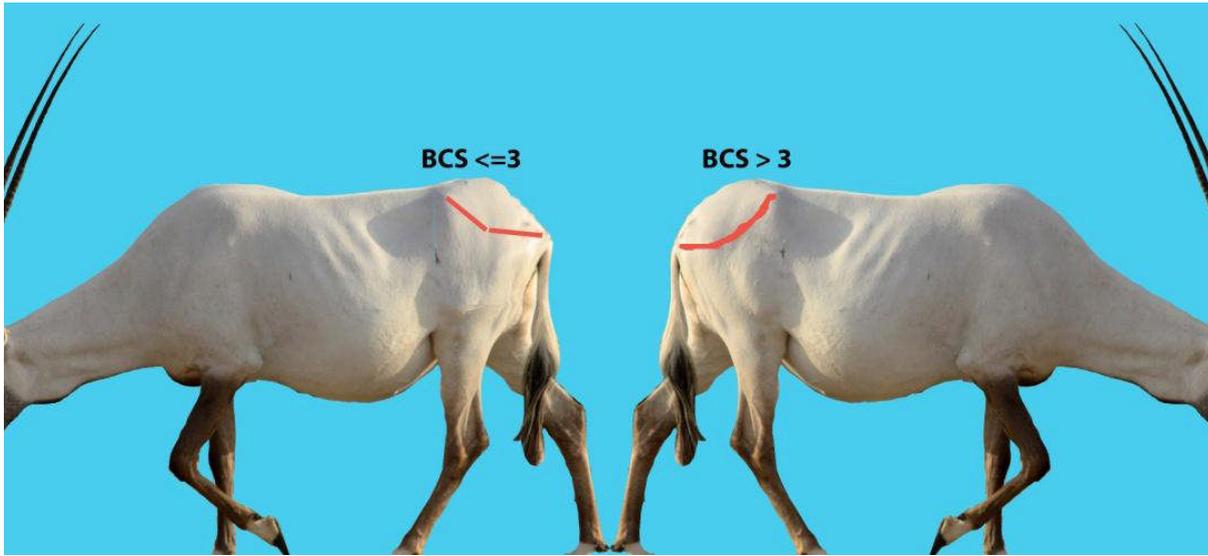
Appendix 1: Oryx body condition scoring

Method

A key using those parts and features is formulated to be used along with photographs to assign values of body condition scores.

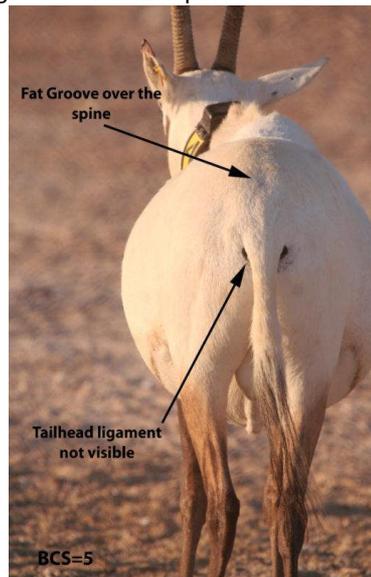
1- Assess thurl line (line between hooks, thurl, pins)

- Thurl line is circular forming a crescent.....BCS>3.....(2)
- Thurl line is V-shapedBCS<=3.....(3)



2- Assess thurl line (line between hooks, thurl, pins)

- Spine is fully covered in fat but tail head ligament is visibleBCS=4
- Spine is covered with fat forming a groove over the spine & tail head ligament is not visible.....BCS=5



3- Assess the hooks

- If the hooks are circular in outline.....BCS=3
- Hooks are angular in outline(4)



View from behind.

1 If hooks rounded
BCS = 3.0.

2 If hooks angular
goto step 4

4- Assess the fat cover over the pins

- If the fat cover is poor and only upper pins are visible or slightly visible.....BCS=2
- Fat cover over pins is poor and 2 pairs of pins are visible.....(5)

5- Assess the fat cover over the pins

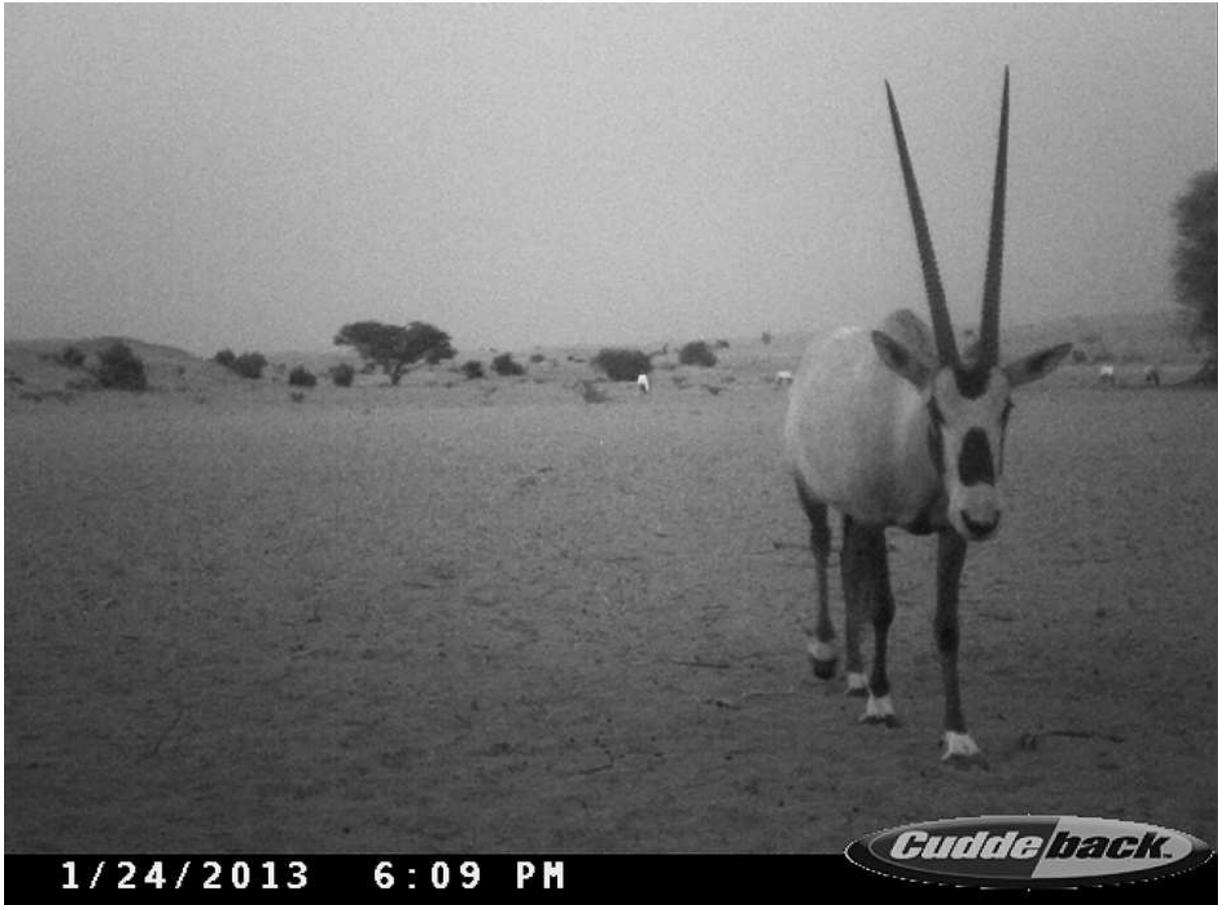
- Spine showing, 2 pairs of pins visible and shallow groove around tail head ligament but caudal vertebrae not visible.....BCS=1
- Spine strongly visible, 2 pairs of pins prominently visible, deep grooves a round tail head ligament, and caudal vertebrae are visible.....BCS=0

Appendix 2: Camera trap pictures of Gordon's wildcat





Appendix 3: Camera trap pictures of other species (examples)



Arabian oryx



Arabian oryx



Arabian red fox



Arabian hare

Appendix 4: Expedition diary & reports



A multimedia expedition diary is available on <http://biosphereexpeditions.wordpress.com/category/expedition-blogs/arabia-2013/>



All expedition reports, including this and previous expedition reports, are available on www.biosphere-expeditions.org/reports.