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Position paper

What constitutes a wild population of Arabian Oryx?

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This position paper was circulated to representatives of all range states with the aim of establishing a unified position on the wilderness status of Arabian Oryx in the region. We would like to thank all members of the Coordination Committee for the Conservation of the Arabian Oryx (CCCAO) that have reviewed this paper and provided their input. In particular, we would like to thank Dr. Mansoor Al Jahdhami, Declan O'Donovan and Khaldoun Al Omari for their comments on this position paper.

Executive Summary

The Arabian Oryx went extinct from the wild in 1972 mainly due to overhunting. A rescue expedition, called Operation Oryx, was conducted in 1962 through a program by the Phoenix Zoo and the Fauna and Flora Preservation Society of London (now Fauna and Flora International), with financial help from the World Wide Fund for Nature. The aim was to capture enough live Oryx to establish a breeding nucleus with a long-term goal to establish the species into the wild. The first Oryx reintroduction was carried out in 1982 in Oman, followed by other release initiatives in Saudi Arabia, Jordan and UAE. In 2011, the threat status of Arabian Oryx was lowered by the IUCN Red List from Endangered to Vulnerable as released populations numbered 1000 in the reserves of the range states. However, this recent assessment has brought attention to the wilderness status of Arabian Oryx in the fenced reserves where most of the individuals included in the 2011 assessment were found. Can and should fenced reserves be considered as 'wild' habitats? Can the IUCN wilderness criteria still be applied to released populations today? How would range states and regional experts define wilderness in the modern-day regional context? Recent discussions amongst regional experts and field conservationists have highlighted that this issue along with the level of management intervention to support released animals in enclosed reserves continues to be a matter of strong debate. The key question is whether achieving 'wilderness' is the ultimate goal for Oryx collections across the region, or whether this goal should instead be to achieve the highest possible level of animal welfare or herd quality, with these two aspects sometimes conflicting with each other when wilderness is defined by the level of management intervention at release sites. This position paper attempts to investigate the drivers, pressures and responses to Arabian Oryx conservation in the region, and address the issue of defining wilderness for Arabian Oryx, highlighting the position of local Oryx organizations in the range states in relation to this definition.

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1 Background

The Arabian Oryx went extinct from most of its range in the Arabian Peninsula in 1972 mainly due to overhunting (Henderson, 1974). Prior to its extinction, a rescue expedition called 'Operation Oryx' was initiated by the Fauna Preservation Society of London supported by the World Wildlife Fund to capture remaining individuals from the Arabian Peninsula for establishing a breeding herd with a long-term goal to return them to the wild (Grimwood, 1967). Operation Oryx succeeded in collecting nine individuals, of which three were captured near the Oman- Yemen border. All nine Oryx individuals, referred to as the World Herd, were sent to Phoenix Zoo in Arizona, USA for captive breeding. The first Arabian Oryx group, originating from the World Herd, was released in the central desert of Oman in 1982. The success of the Oman initiative encouraged other range states to reintroduce Oryx in their natural habitats including Saudi Arabia, United Arab Emirates and Jordan. Thanks to the regional and international commitment to save this iconic species from extinction, Oryx numbers in the Arabian Peninsula were up to 9706 individuals as of December 2013, of which 4,950 animals were accommodated in protected areas (Table 1). The remaining individuals were housed in zoological and private facilities.

The Oryx conservation story is an example of how conservation breeding can successfully contribute to bringing back a species from the brink of extinction. In 2011, the Oryx conservation success was internationally acknowledged through the lowering of the threat category of this culturally-valued species from Endangered to Vulnerable on the IUCN Red List. However, this new listing has brought about a debate amongst international conservationists and local Oryx organizations concerning the wilderness status of Arabian Oryx in the fenced reserves in the Arabian Peninsula. The key criteria for including individuals in the IUCN Red List Assessment is for these individuals to comply with the Red List's definition of 'wild' individuals which states that there should be no confinement or intervention in the form of feeding or watering. According to the IUCN Red List, assessed individuals have to occur in wild conditions without artificial surroundings (e.g. fences) and the population should additionally be independent of management support particularly regarding provision of shade, food and water. Applying these stringent wilderness criteria means that the Oryx population numbering 100 in *Uruq Bani Ma'arid* of Saudi Arabia would be the only one that can be included into the IUCN Red List assessment. Although released populations in Oman (Al Wusta Wildlife Reserve), Saudi Arabia (Mahazat as- Sayed), UAE (Arabian Oryx Protected Area) and Jordan (Wadi Rum Reserve) were counted in the 2011 Red List assessment, these fenced populations might not be considered 'wild enough' to be taken into account in future assessments because they undergo various management interventions.

Indeed, the term "wilderness" has several definitions in conservation literature. One aspect of this paradox arises from whether a man is considered a visitor or a part of wild areas (e.g. Eidsvik, 1989; Henberg, 1994). For instance, reintroduction with its biological, political and socioeconomic measures is a human not a nature-made action which raises a philosophical

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argument about the wilderness status of its outcomes (e.g. offspring, habitat). The IUCN Protected Area category of "Wilderness Area" does not in fact specifically state that protected areas under this category cannot be fenced. In contrast, the criteria under this category do allow for human intervention at minimum-level such as allowing local people to practice their traditional lifestyle. However, the criteria restrict public access to wild areas (Dudley, 2008).

This position paper investigates the issue of 'defining wilderness' for Arabian Oryx and highlights the positions of local Oryx organizations in the range states in relation to this definition. It attempts also to encourage conservationists to revisit the definition of wilderness related to Arabian Oryx management in protected areas as well as manifest the challenges for local institutions to meet pure criteria of wild populations set by the IUCN Red List.

2 Drivers of Arabian Oryx conservation

The Arabian Oryx has acquired prominent fame and value amongst the inhabitants of the Arabian Peninsula, due to its distinct physical features, unique ecological and behavioral characteristics and its cultural and historic importance. Many Arab poets have been mesmerized by the beauty and the breadth of the Arabian Oryx eyes, its bright colour, as well as its agility and grace. They began to sing and describe their beloved ones through these aesthetic characteristics. Despite this appreciation of its beauty, the species was driven to extinction through overhunting, and the widespread availability of guns and cars capable of driving through the desert in the 1970s. Due to its cultural and symbolic value, the Arabian Oryx remained a regional icon and cultural symbol, used in the branding and identity of many governmental as well as private institutions in the range states. Its disappearance from the wild raised the alarm on how vulnerable desert wildlife could be in the modern age. It eventually became a flagship species for conservation, and gained even more prominence thanks to the global efforts initiated by the Late Sheikh Zayed to bring back the species from the brink of extinction. The Oryx is still highly prized for its beauty and desired by private collectors and zoological institutions across the region, which continues to drive illegal poaching and trophy hunting. This, coupled with habitat loss and degradation, means that concerted conservation efforts on a regional and global scale are still of the utmost importance.

3 Pressures on Arabian Oryx in the region

The species has been experiencing several anthropogenic threats, which continue to place pressure on captive and released populations across the region. This includes poaching, illegal trade, trophy hunting, and lack of suitable habitat for release due to ongoing development, desertification and land degradation. Several challenges also face *in situ* protection efforts, including difficulties in law enforcement, insufficient manpower for patrolling remote reserves and release sites, spread of diseases amongst captive populations, inbreeding and reduction in genetic diversity, and lack of secure funding resources for conservation initiatives.

4 State of Arabian Oryx populations in the region

In 2013, the General Secretariat for the Conservation of the Arabian Oryx (GSCAO) recorded 9706 Arabian Oryx individuals which were housed by different institutions across the Arabian Peninsula (Lignereux & Al Kharusi, 2015). Most (78%) of the recorded individuals were captive populations managed for several purposes including breeding, display, education, conservation, and research. Although this number is high and populations are increasing across the region, their health and genetic status remaining largely unknown in most sites, as populations and captive collections are managed differently. Table 1 highlights the different populations and their respective management interventions across the rangestates.

Table 1. Arabian Oryx releases in the Arabian Peninsula.

Country	Reserve (size)	Fenced	Management intervention	Population size	Challenges
Oman	Al Wusta Wildlife (2,800 km ²)	Yes	No	45	Poaching, conflict with social development, off-road drive, oil operations
Saudi Arabia	Mahazat as-Sayed (2,200 km ²)	Yes	Only during drought events	c.500	Poor rainfall, fence restricts animal movement during drought, overcrowding
Saudi Arabia	Uruq Bani Ma'arid (12,600 km ²)	No	No	c.100	Some mortality due to drought, difficulty in monitoring unfenced remote open access area
UAE	Dubai Desert Conservation Reserve (225 km ²)	Yes	Yes	c.350	Overcrowding, habitat degradation
UAE	Arabian Oryx Protected Area (5,984 km ²)	Yes	Yes	835	Poor rainfall, habitat degradation, oil & gas activities
UAE	Al Marmoum Reserve, Dubai (390 km ²)	No	Feed and water	3,500	Lack of monitoring, lack of manpower for surveying population
Jordan	Wadi Rum Reserve (720 km ²)	Only 50 km of the reserve size is fenced	Yes	55	Predation, conflict with locals and ecotourism, inaccessibility to water sources
Total	24,919 km²			5,385	

5 Conservation Challenges

Releases of Oryx into open-access unmanaged 'wild' reserves have been relatively recent, with the success of these programs still difficult to determine. These releases have not been without challenges. Some of these challenges include:

- High cost implications - Oryx reintroduction is costly and huge resources are needed to provide released animals with effective protection and monitoring in the reserves (Stanley Price, 1989). All Oryx reintroductions in the region depend on government funding and support. In 2002, the Oryx Project in Oman required 24 rangers who had to frequently cover an area of 34,000 km², making each ranger responsible for protecting 1,417 km² (Al Kharousi, 2003). This is in addition to the fact that Oryx can travel a daily distance of at least 50 km in search of water and good vegetation. Moreover, Open reserves encourage poachers to easily access Oryx individuals. In some incidents, Oryx also used to move outside of the boundaries of the reintroduction site in Oman and hence become an easy target for poachers.
- Difficulties of enforcement - Enforcing wildlife laws to secure released Oryx in the wild is challenging for political and socioeconomic reasons. This requires significant manpower to patrol remote and large areas. One additional challenge is the location of some Oryx reserves at the borders between neighboring states (e.g. Wadi Rum reserve, Arabian Oryx Protected Area in Abu Dhabi, etc.). To maintain effective protection, national and regional coordination needs to be established. This often requires top level communication and political approval which takes time as well as resources to implement on the ground.
- Ongoing poaching threat - The original cause of Oryx extinction, i.e. poaching & overhunting, is still proving to be a factor threatening the species survival in the wild (Al Jahdhami et al. 2011). To curb illegal trade, intensive regional efforts have to be established including strengthening the security of both the reserve and the borders of the range states. The Oryx poaching incidents in Oman for the purpose of trading Oryx outside the country resumed in 1996 and by 1998 had resulted in the loss of at least 300 animals, collapsing the population from 400 in 1996 to 138 animals by 1998 (Spalton, et al. 1999). Without the military intervention and herding back to captivity of the remaining individuals, the Oryx that were reintroduced as part of the project could have entirely disappeared from Oman. However, military intervention is costly and cannot be ensured in all cases, particularly in the long-term, and hence other alternatives such as fencing the reintroduction site might be considered by local conservation organizations as an effective measure to address this anthropogenic threat. One of the key lessons that can be learnt from the Oryx plight in Oman is that regional and local coordination in the form of information sharing and capacity building amongst local Oryx conservation organizations with the involvement and buy-in of the local community is necessary to maintain the long- term success of Oryx reintroductions and releases in the region.

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- Limited availability of reintroduction sites - As the release sites of Arabian Oryx cover huge areas, the land use interests of other stakeholders are affected. Drought, desertification, overgrazing and development are limiting the number and size of viable suitable habitat for the species, and resulting in fragmented and degraded desert habitats where Oryx would not be able to survive without human intervention.

6 Responses: how range states have responded to threats and challenges

Range states have responded to the pressures facing Arabian Oryx populations by establishing more captive conservation programs, raising awareness about ongoing threats, and cooperating nationally and regionally to better manage and protect the species. In recent years, regional collections have gained significant experience in managing the species in captive breeding facilities, and have begun sharing and developing this knowledge base further through platforms such as the GSCAO. With the commitment of range states aided by international collaboration, the number of Arabian Oryx across the region reached 9706 individuals in 2013, housed by different institutions across the Arabian Peninsula (Lignereux & Al Kharusi, 2015).

Recently, efforts to produce national guidelines and recommendations on best practice in Oryx population management in captive or semi-captive environments have been initiated in the UAE (EAD, 2016). These recent discussions amongst regional experts and field conservationists have highlighted that the level of management intervention to support released animals in enclosed reserves continues to be a matter of strong debate. On a regional level, some conservation managers of Oryx programs have considered lowering management support in the form of reducing the level of food and water provided. However, implementing this is challenging and will raise political, social and animal welfare issues.

From the animal welfare perspective, is it humane to leave animals in hyper arid conditions for the purpose of achieving 'true wilderness'? Conservation managers in local organizations fully realize the significance of establishing independent populations in the desert for conservation purposes, however, they also fully realize that providing food and water for fenced populations is an indispensable management action to cope with climate change, desertification and habitat degradation (Lignereux & AlKharusi, 2015; Price, 2012). However, this management action is equally challenging and has huge financial implications. As a long-term solution, some reserves have established plans to rehabilitate their vegetation cover through plantations which can increase the carrying capacity of the release site. The key question is: Do conservation managers want to achieve the highest possible level of animal welfare or the highest possible level of wilderness? These two goals sometimes conflict with each other given the current status of desert habitats in the region.

Ultimately, there is a clear need for strategic planning of captive breeding programs in the region, starting with the classification of each collection's goals and objectives in order to

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delineate each population's management needs. With healthy, resilient, genetically diverse, and relatively independent herds, each collection would then be allowed to reach its highest potential for contributing to the conservation of the species at a regional scale. This would need to go hand in hand with securing viable wild habitat of sufficient size and vegetation cover, in which the Arabian Oryx can be truly reintroduced and allowed to roam freely as a long-term, viable and 'wild' population.

7 Way forward and Outlook

Given the challenges that face conservationists with regards to the Arabian Oryx, it is crucial to strengthen regional collaboration amongst Oryx institutions in the range states. One lesson that can be learnt from the Oryx plight, particularly on the issue of poaching and illegal trade across borders, is that one country, no matter its resources, cannot independently conserve this symbolic species. Since its establishment in 2000, the GSCAO, as a regional intergovernmental body funded by the Environment Agency-Abu Dhabi (EAD), has been working to support all efforts to protect and conserve the Arabian Oryx, to agree regional criteria and standards, and to coordinate efforts between range states.

As far as defining and maintaining the wilderness status of released Arabian Oryx in protected areas, the range state's positions and outlook for realizing 'wilderness' and for effective conservation of the species are:

1. The 'wilderness' of release sites should first take into consideration the potential for allowing the highest possible natural behaviour, independence and population health amongst Oryx populations, rather than simply being defined as 'fenced', 'semi-fenced' or 'open-access'. Fencing is a necessary option that can limit both the number of people and livestock accessing the protected areas, protecting both the species and the habitat on which they rely.
2. Range states are dedicated where possible to meet the IUCN Red List wilderness criteria and will work together to achieve viable sustainable and free-ranging populations of Arabian Oryx in natural habitats across their historic range and in harmony with local communities (Arabian Oryx Regional Conservation: Strategy and Action Plan) (Environment Agency- Abu Dhabi, 2010).
3. Considering that the original threat that led to the extinction of Arabian Oryx in the late 70s was overhunting, Range states are committed to addressing this issue. One management option to address the threat of overhunting could be organized controlled and regulated hunting at a small scale (IUCN SSC, 2012). This would satisfy the traditional and cultural drivers of hunting, while at the same creating a source of revenue for conservation programs for the species.
4. Management intervention in both captive and released populations are necessary and should be adapted based on the site conditions and needs of the herd, with the priority

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given for achieving healthy, independent and well monitored populations. Animals should be released in areas that are deemed sufficient to provide them with the minimum requirements for survival and allow them to be equipped with an acceptable degree of management support in the form of shelter, food and water to increase the reserve's carrying capacity and the population's long-term survival. A rescue plan should be put in place against prolonged drought. The plan should detail intervention mechanisms that provides animals with minimum requirement of feed and water. Not to intervene during drought is not ethically accepted from an animal welfare perspective. Equally, release programs should go hand in hand with a commitment for long-term population monitoring to evaluate survival and success.

5. Range states recommend that the IUCN Red List consider the necessity for management intervention in today's regional context and desert habitat state. The populations of Al Wusta Wildlife Reserve (Oman), Mahazat as-Sayed Reserve (Saudi Arabia), Dubai Desert Conservation Reserve (UAE), Arabian Oryx protected Area (UAE) as well as Wadi Rum Protected Area (Jordan) are considered by the range states as 'wild enough' to be included into future Red List assessment for the species.
6. Oryx conservation programmes in the range states fully realize the consequences of confining animals and will work together regionally and in collaboration with other global programs to minimize any negative impact resulting from this confinement.
7. Range states will work whenever possible on protecting and securing viable habitat for Arabian Oryx, through efforts to combat desertification, climate change and overgrazing, and through setting aside sufficient desert habitat for rehabilitation and protection.
8. Range states will work on raising management standards in their collections to ensure healthy, genetically diverse and resilient Oryx herds that can successfully contribute to conservation & release programs (e.g. utilizing population management mechanisms such as ZIMS, monitoring their populations, conducting genetic testing, and controlling breeding).

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