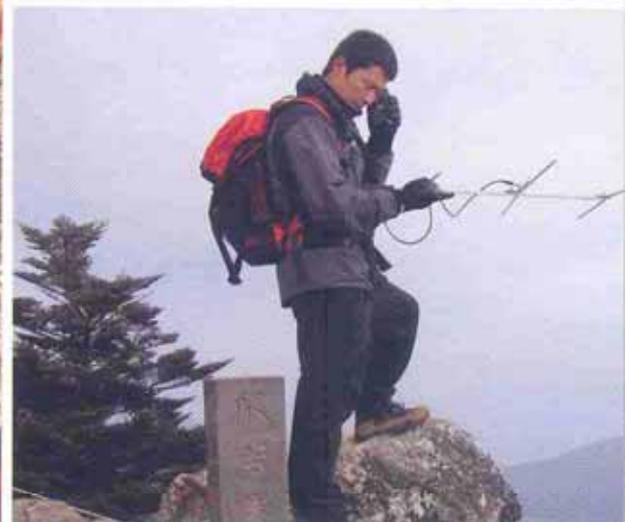
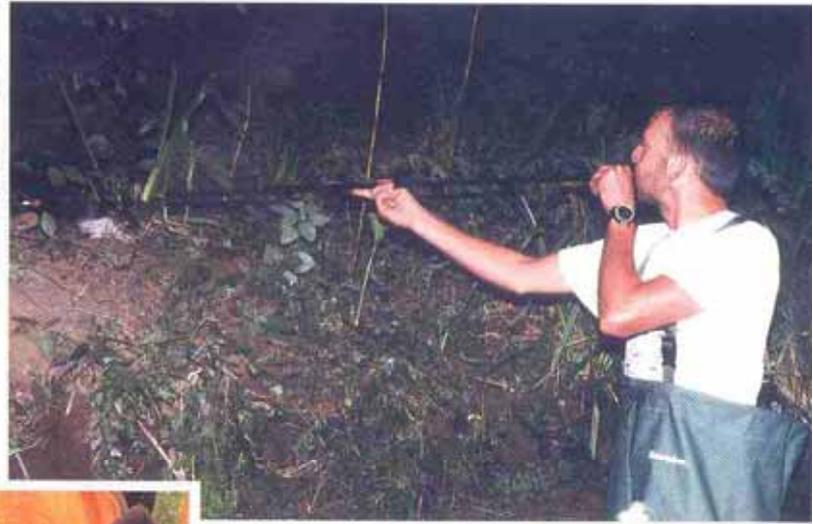


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RE-INTRODUCTION NEWS

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Specialist Group of IUCN's
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RSG MISSION:

To combat the ongoing and massive loss of biodiversity by using re-introduction as a responsible tool for the management and restoration of biodiversity through actively developing and promoting sound inter-disciplinary scientific information, policy, and practice to establish viable wild populations in their natural habitats.

Cover Photos:

- Clockwise from top-right:
- Darting an otter, Spain @ Deli Saavedra
 - Tracking bear in South Korea @ Sang-Hoon Han
 - Gharial in India @ R. J. Rao
 - Releasing muskoxen in Russia @ T. P. Sipko
 - Samurac fish breeding facility in Spain @ Juan Antonio Gomez
 - Released moose in Russia @ T. P. Sipko
- Center of page:
- Gray wolf in Yellowstone National Park, USA @ Doug Smith/NPS

The views expressed in RE-INTRODUCTION NEWS may not necessarily be those of the IUCN/SSC Re-introduction Specialist Group, IUCN-The World Conservation Union, Environment Agency-Abu Dhabi and Denver Zoological Foundation.

Arabian oryx were moved out of the AMR and into the DDCR in a site of a natural ghaff (*Prosopis cineraria*) forest. Animals started wandering around the site but tended to return back to the release site. In the long-term these animals inhabited the Ghaf forest as it provided generous amount of shade through the day and good forage in the near-by vegetation. Calving was observed to occur after the translocation in both groups indicating good adaptability and potential establishment of the population.

Population Parameters

The population has been monitored since 2002 and the population size was estimated using direct total count drives. The current population comprises 241 Arabian oryx which represents 200% growth over six years since the first release. This means that the population has been experiencing an estimated annual increase of 26.8% between 2002 to 2005 assuming linear growth. Recruitment and mortality was also assessed by counting newly born calves on weekly basis including mortalities. There was a considerable decrease in annual recruitment during 2005 when it dropped below 10% and annual mortality was under 5% in most cases during 2002–2005, except for 2004 when it reached 7.4%. Currently the population is maintaining normal structure and sex ratios and average sex ratios for males, females and juveniles obtained from total counts during 2005 are 40.07%, 46.66% and 13.27% respectively. Survival rates reported were satisfactory and mean adult survival rate of 94.80% is recorded through the period 2002–2005, with a maximum of 98.21% during 2005 and the lowest was 89.52% during 2004. Calves' survival rate during their first year was higher scoring a mean of 97.22% and the lowest calves' survival rate was also recorded during 2004 at 94.29%. The future trend of the population is expected to continue increasing but it is still uncertain whether it will maintain the current rate or decrease. It is noticed that the recruitment percentage is decreasing with an increasing population size, suggesting that there is some density induced effect. It is premature to make such a conclusion but it is possible that a growing numbers of younger males are in strong competition with older established males who control available females and thus depriving the young males from the chance to reproduce. This should be taken into consideration when planning future translocations.

The re-introduced Arabian oryx population in the DDCR seems to be very valuable as a source of knowledge towards the overall survival of the species and the DDCR population seems to follow different dynamics compared to those of MAS and UBM in Saudi Arabia. The population of UBM suffered a decline that started in 2000 and continued to prevail until 2004 when the population decreased from about 220 and down to less than 150. This decline is attributed to higher mortality rates as response to environmental stress due to unfavorable conditions (Chassot *et al.*, 2005). Also, in MAS a simulation study conducted by Treydte *et al.* (2001) showed that the optimum strategy for species survival should involve culling individuals to maintain them at or below 70% carrying capacity of the reserve. The DDCR population is similar to those in MAS and UBM but still increasing and with a potential to keep growing. This suggests that there are differences in the prevailing

conditions in the different sites that control the population dynamics. Although the DDCR is much smaller in surface area compared to UBM and MAS, it provides more resources to accommodate the Arabian oryx population. A vegetation rehabilitation program is running side by side with the oryx re-introduction and more than 6,000 indigenous trees were planted in various parts of the reserves during 1999 which now provides a necessary food resource and shade that is crucial to the oryx well being and survival.

Thus DDCR re-introduction is unique, compared to other re-introduction projects carried out previously, in two aspects. First, the initially introduced herds are relatively larger in number compared to those initially introduced in MAS (17 in 1989), UBM (17 in 1997) or in Yalooni in Oman. Secondly, the parallel habitat rehabilitation going jointly with the re-introduction gives a wider safety margin for the species survival and increases the carrying capacity of the reserve 4 to 5 folds.

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Poaching of re-introduced Arabian oryx in Oman: will accession to CITES help?

The success of the re-introduction of Arabian oryx (*Oryx leucoryx*) in Oman has been a remarkable event in conservation biology (Stanley Price, 1989). By 1996, some 400 oryx were freely roaming the Arabian Oryx Sanctuary, a UNESCO World Heritage Site, in the central desert of Oman. Unfortunately, oryx poaching for live trade outside the country caused a catastrophic decline in the re-introduced oryx population (Spalton *et al.*, 1999). By November 2005, the oryx population in the wild was estimated at 94 individuals (95% confidence interval=78-119), of which just four were females. This sex biased offtake is explained by the high demand for breeding females for privately-owned collections. Fortunately, in August 1998, 39 oryx, mostly females were translocated from the wild to breed in captivity at Jaaluni, which is the field station of the oryx project. By the end of

Mammals

November 2005, the captive oryx numbered 134, of which 66% were females.

Despite the several security measures that Oman government has made during the last nine years to halt poaching in the Oryx Sanctuary, including the establishment of a special security force, poaching still exists and has made the oryx re-introduction to be a substantially challenging issue between conservationists and poachers. In 2001, several meetings involving all government bodies concerned with biodiversity conservation were held to discuss all relevant biodiversity issues in the country. The outcome of these meetings was the production of the National Biodiversity Strategy and Action Plan, which structures all the environmental actions/options needed to promote conservation efforts in Oman (Ministry of Regional Municipality, Environment and Water Resources, 2001). In one of the strategy conservation options to halt oryx poaching was the accession of Oman to the CITES Convention. This paper provides a descriptive analysis and recommendations of scientific and economic grounds to this option.

***In situ* Protection of Arabian Oryx**

The Arabian Oryx Sanctuary is 24,636 km² and was officially gazetted as a protected area (IUCN Category II) in 1994. Anti-poaching efforts in the sanctuary have been largely carried out by the oryx project rangers. Since 2005, the oryx project operates with eight rangers (two patrols of four men for each duty shift) to secure the oryx population in the wild, which makes each patrol responsible for guarding approximately 12,300 km² of the sanctuary. This limited policing associated with open accessibility of the sanctuary to the public has resulted in an unpleasant ramification for the oryx re-introduction project. Moreover, wildlife laws in Oman especially on the elusive "shooting action" and the necessity for finding "hard evidences" to convict poachers has resulted in a considerable gap between law authorities (e.g. law courts), who never experience wildlife on the ground, and law practitioners (e.g. oryx rangers). Equally, legislations are relatively a constant factor as they do not cover all the variations associated with oryx price in the market including the supply/demand factor.

Oryx and CITES

Since 1975, the Arabian oryx has been listed in CITES Appendix I, where its trade may affect its survival in the wild. In the context of the oryx issue in Oman, financing the CITES regulations mainly through well-policing Oman terrestrial borders with concerned neighboring countries means that the Oman government has to invest huge resources on this as the countries international border stretches for hundreds of kilometers. Hence, from a cost-benefit point view, it would be more feasible for Oman to invest these resources on *in situ* protection to promote the current low detection level of poaching incidents in the Arabian Oryx Sanctuary than on securing borders. Moreover, *in situ* investment can also treat other environmental issues in the sanctuary including off-road driving and overgrazing, which are also primary threats to wild oryx.

On the other hand, the Arabian Oryx Sanctuary is inhabited by local people, who have been largely



Ranger patrol in Arabian Oryx Sanctuary
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depending on its resources including wildlife for a long time, and although the oryx became extinct once in their area, this was caused by hunting parties from outside the country that roamed the central desert of Oman during the 1960s and 1970s in search for oryx and other species for private collections. Being born in the Western world, CITES does not provide locals with enough options to fulfill their growing livelihood needs. The CITES debate on elephant and rhinoceroses conservation in Africa is a clear example of the treaties pitfalls as it has not provided the conservation society with a clear-cut answer on this issue.

Well-regulated Trade of Arabian Oryx in Arabia

Oman's wildlife conservation approach is mainly based on ecological perspectives (i.e. hands-off) and does not yet recognize the economic potential of consumptive use of wildlife (e.g. legal commercial sale) as a source of national income. However, considering the growing economic needs of local people in the Arabian Oryx Sanctuary associated with the uncertainty of future resource availability that is mainly determined by oil production and pricing, wildlife consumptive use can provide the oryx project with considerable income for the security and management measures of the Oryx Sanctuary, as well as show the government the economic importance of protecting oryx in their natural habitats. More importantly, it is anticipated that legal and sustainable trade will decrease the oryx price in illegal markets as it will render buyers to purchase oryx legally rather than being involved in criminal activities through illegal trade. On the other hand, the latest population estimates of Arabian oryx in Arabia are alarming as 73% (more than 2,800 oryx) of the oryx population is held in captivity (Ostrowski & Anajariyah, 2003). Moreover, the conservation purposes of some of the captive oryx herds are questionable. As a result, it is the time to investigate the question "can well-regulated trade of Arabian oryx in the region contribute to their future survival in the wild?" Considering the sensitivity of this proposal, the status of oryx re-introduction can be summarized by "*use it or lose it!*". Unfortunately, a few oryx re-introduction publications investigate the conservation management issues of re-introduction (e.g. Stanley Price, 1989).

Regional Collaboration

Since 1999, Oman has addressed its oryx plight to other conservation organizations in the in the Gulf region. The establishment of the Coordination Committee for Conservation of Arabian oryx, secretariat based in UAE, in 2000 was one of the results of this regional collaboration. Moreover, the government of Oman has been starting to establish collaborative committees with its neighboring countries in the region to discuss all relevant aspects of mutual concern. If oryx conservationists can introduce the oryx poaching and trade issues in these committees, then the oryx poaching can be further investigated by top politicians for action.

Conclusion

The plight of oryx in Oman has been accelerated by two key factors including *in situ* protection measures and the growing needs of local people to have high standard of living. Both these factors are at the heart of conservation challenges at both national and global levels. Unfortunately, local needs are out of the concern of CITES Appendix I, where total protection of endangered species is prioritized. Increasing rangers force, as well as promoting law enforcement is a key measure to enhance *in situ* oryx conservation. Currently, the Oman government is establishing a special wildlife anti-poaching unit at the Arabian Oryx Sanctuary and the unit soldiers were selected from different local communities of central Oman. It is planned that the anti-poaching strategy of this unit to be based on both ground and air surveillance. The feasibility of initiating legal controlled trade of Arabian oryx in the region is a management option that needs to be reviewed in a scientific and socio-economic context. Regional collaboration should also be viewed as a key requirement to openly discuss, as well as address oryx trade issues to political decision-makers.

Views expressed in this article are of the author's and may not necessary be those of the Office of the Adviser for Conservation of the Environment or the Arabian Oryx Project.

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Re-introduction of muskoxen in Northern Russia

A considerable part of the territory of Russia faces the Polar Ocean and these large territories have a severe climate with long periods of low temperatures. The task of re-introducing muskoxen (*Ovibos moschatus*), which are well adapted to this habitat, seemed challenging for biologists in Russia. According to Vereshagin & Barishnikov (1985), this species has inhabited the Taimyr Peninsula only relatively recently, where remains of muskoxen of 2–4,000 years old have been discovered. Re-introduction of muskoxen will help in the restoration of the biological diversity of the Northern ecosystems. Also re-introducing a mega-herbivore will boost the utilization of vegetation of this region and hopefully restore the vegetation communities to their previous state. Also, the re-introduced muskoxen shall become a dependable food resource for the residents of Northern Russia as research shows the ecosystem is capable of sustaining over 2 million muskoxen. The Polar Ocean shoreline was chosen as a re-introduction site for the muskoxen and according to the re-introduction plan, a chain of herds, located within 600-700 km from each other is planned to be established. A young male muskoxen bull is capable of migrating 800 km (Yakushkin, 1998) and genetic exchange between these herds will be possible in forming a larger area occupied by the muskoxen.

Initial re-introductions of muskoxen took place in 1974 and 1975 when 10 and 20 animals were translocated from Banks Island (Canada) and Nunivak Island (Alaska, USA) respectively, to the Eastern part of Taimyr Peninsula. The population fanned out successfully, spreading to the north, east and south (Putorana Plato) of the Peninsula and there were 2,500 individuals in 2002 (Sipko *et al.*, 2003). In 2005 the numbers increased to 4,000. By 1975, 20 muskoxen from Nunivak Island (Alaska, USA) were delivered to the Wrangel Island where the population increased slowly, as a significant amount of the animals did not survive the initial period of acclimatization. By 2003, the number of individuals on the Island rose to 750 individuals (Gruzdev *et al.*, 2003) and have presently stabilized to about 800-850 individuals.

Approach

Further individuals for re-introduction were received from



Muskoxen (*Ovibos moschatus*)
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