



# Global Re-introduction Perspectives: 2011

More case studies from around the globe  
Edited by Pritpal S. Soorae



IUCN/SSC Re-introduction Specialist Group (RSG)





The designation of geographical entities in this book, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN or any of the funding organizations concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The views expressed in this publication do not necessarily reflect those of IUCN.

**Published by:** IUCN/SSC Re-introduction Specialist Group & Environment Agency-ABU DHABI

**Copyright:** © 2011 International Union for the Conservation of Nature and Natural Resources

**Citation:** Soorae, P. S. (ed.) (2011). *Global Re-introduction Perspectives: 2011. More case studies from around the globe*. Gland, Switzerland: IUCN/SSC Re-introduction Specialist Group and Abu Dhabi, UAE: Environment Agency-Abu Dhabi. xiv + 250 pp.

**ISBN:** 978-2-8317-1432-5

**Cover photo:** Clockwise starting from top-left:  
i. Mountain yellow-legged frog © *Adam Backlin*  
ii. American alligator © *Ruth Elsey*  
iii. Dwarf eelgrass © *Laura Govers, RU Nijmegen*  
iv. Mangrove finch © *Michael Dvorak BirdLife Austria*  
v. Berg-Breede whitefish © *N. Dean Impson*  
vi. Zanzibar red colobus monkey © *Tom Butynski & Yvonne de Jong*

**Cover design & layout by:** Pritpal S. Soorae, IUCN/SSC Re-introduction Specialist Group

**Produced by:** IUCN/SSC Re-introduction Specialist Group & Environment Agency-ABU DHABI

**Download at:** [www.iucnsscscrg.org](http://www.iucnsscscrg.org)

## Twenty years of conservation and monitoring of re-introduced mountain gazelle in the Ibex Reserve, Saudi Arabia

Torsten Wronski<sup>1,2</sup>, Mohamed A. Sandouka<sup>1,2</sup> & Thomas M. Butynski<sup>1,2</sup>

<sup>1</sup> - King Khalid Wildlife Research Centre, Saudi Wildlife Authority, Thumamah, PO Box 61681, Riyadh 11575, Kingdom of Saudi Arabia

<sup>2</sup> - Zoological Society of London, Conservation Programs, Regents Park, London NW1 4RY, UK [t.wronski@gmx.de](mailto:t.wronski@gmx.de), [mohd-sand@hotmail.com](mailto:mohd-sand@hotmail.com) & [tbutynski@aol.com](mailto:tbutynski@aol.com)

### Introduction

Historically, the mountain gazelle (*Gazella gazella*) occurred across most of the Arabian Peninsula into northern Syria and Turkey. Early explorers and scientists reported that the mountain gazelle is closely associated with *Acacia* spp. trees. The current range includes southern Turkey, Jordan, Israel, Iran (Farur Island), Oman, United Arab Emirates, Yemen and Saudi Arabia. The IUCN Red List currently ranks this species as 'Vulnerable' (A2ad). Mountain gazelle numbers have decreased dramatically throughout their range, particularly in Saudi Arabia. The only protected areas in Saudi Arabia with natural populations of mountain gazelle are Al Khunfah, Harrat al Harrah, and Farasan Islands. A few scattered populations occur outside of protected areas in the western Asir Mountains, Hejaz Mountains, and possibly on the Tihama coastal plain. There are only two reports of mountain gazelle occurring historically in the central mountains of Saudi Arabia. Both reports are for mountain gazelle in the Jebel Tuwaiq, which is where the Ibex Reserve is situated. In an effort to re-establish the locally extinct population in the Tuwaiq Mountains (Ibex Reserve), the Saudi Wildlife Authority (SWA) initiated a mountain gazelle re-introduction program in 1990 (Dunham *et al.*, 1993). The released gazelles came from the King Khalid Wildlife Research Centre (KKWRC), Saudi Arabia.

### Goals

- Goal 1: Re-establish a mountain gazelle population in the Tuwaiq Mountains, central Saudi Arabia.
- Goal 2: Improve captive breeding at KKWRC so as to produce individuals capable of surviving in the wild.



Mountain gazelle, 20 years after first release into Wadi Ghabah, Ibex Reserve. © T. Wronski

- **Goal 3:** Establish a post-release monitoring program that would provide the information necessary (e.g. habitat choice, food preferences, dispersal distances, mortality rates) for identifying other suitable sites for re-introduction in Saudi Arabia.
- **Goal 4:** Establish an indirect, non-invasive, method, based on the use and distribution of fecal pellet latrines, to estimate population size and distribution at other sites.

## Success indicators

- **Indicator 1:** A healthy and genetically diverse mountain gazelle breeding population is maintained at KKWRC.
- **Indicator 2:** A healthy and self-sustaining mountain gazelle population is established in the Ibex Reserve.
- **Indicator 3:** The progeny of released mountain gazelles disperse and settle outside the Ibex Reserve.
- **Indicator 4:** A significant reduction of illegal hunting in the Ibex Reserve.
- **Indicator 5:** Acceptance of, and support for, the Ibex Reserve increases in the local community.

## Project Summary

**Feasibility:** The Ibex Reserve (1870 km<sup>2</sup>; 23°30'N, 46°30'E) near Hawtat Bani Tamim in Jebel Tuwaiq, central Saudi Arabia, was established in 1988 by SWA. A primary objective was to protect the last Nubian ibex (*Capra nubiana*) in the Jebel Tuwaiq. The Reserve is comprised of an undulating, stony, limestone plateau (800 - 1,100 m a.s.l.) incised by deep wadis. Plant standing crop biomass is extremely low on the plateau, but higher in the wadis, where *Acacia tortilis* dominates the vegetation. No historic information is available on the taxonomic status, distribution, or numbers of mountain gazelle in Jebel Tuwaiq. A study (Al-Shaya *et al.*, 2007) of the local peoples' knowledge of, and attitude towards, the Ibex Reserve revealed a low level of awareness regarding the plants and animals of the Reserve or the importance of wildlife. Their attitude towards the Reserve is hostile. The main reason given for this is the lack of conservation education and public awareness programs. The local people understand that the Ibex Reserve is a protected area, but realize that law enforcement is weak. They believe that improved law enforcement and draconian penalties are the only way to stop illegal hunting.

**Implementation:** Mountain gazelle for this re-introduction were obtained from captive stock at KKWRC. The Centre was established in 1987 by SWA (under the management of the Zoological Society of London) to develop the private collection of the late King Khalid Ibn Abdul Aziz Al Saud. Several subspecies of mountain gazelles are recognized. The population at KKWRC is a mix of subspecies originating from various sites on the Arabian Peninsula. Prior to their release, all gazelles were vaccinated against rinderpest, rabies, pasteurellosis, brucellosis, haemorrhagic septicaemia, foot and mouth, clostridiosis, and PPR. They were transported one gazelle to a crate (100 cm x 36 cm x 90 cm) during winter or spring in order to avoid heat stress. A dose of long acting Narcoleptic was administered before transportation to keep the gazelles calm. The gazelles



were held at the Ibex Reserve in pre-release pens for 4 weeks to develop site fidelity and to adapt to the natural vegetation as a source of food.

Gazelles were released into four wadis (Wadi Ghabah, Wadi Gafar, Wadi Jidr, and Wadi Nukhailan) and on the plateau of the Ibex Reserve. The entrance to all wadis was fenced in order to limit access by people and their livestock. In total, 11 releases were made from 1990 to 2007.



*Acacia*-dominated mountain gazelle habitat with plateau free of vegetation © M. Klein

During the first release 19 gazelles were put into Wadi Ghabah. This was followed by the release of 10 gazelles in 1991 into Wadi Ghabah, and by the release of 25 gazelles in 1992 into Wadi Gafar. Radio-collars were fitted to 28 gazelles and all were given plastic ear-tags for individual recognition. During 1993 - 1995, 30 gazelles were released into Wadi Jidr but no post-release monitoring was carried out. The last release was in 2007 when 21 gazelles were put into Wadi Nukhailan and seven on the plateau. Radio-collar was fitted to 14 gazelles and all were given plastic collars of different colors. Details on numbers, locations and sex/age composition of mountain gazelle released into Ibex Reserve are provided in Dunham (1997) and Wronski *et al.* (in press).

**Post-release monitoring:** Marked gazelles were intensively monitored in order to determine survival, dispersal patterns, and home ranges. There were about 185 mountain gazelles in the Wadi Mutim System (Wadi Ghabah and Wadi Gafar) in 1995. The mean annual exponential rate of increase was 0.275; effectively doubling the population every 2.5 years (Dunham, 1997). From 1995 to 1998, gazelle numbers dropped dramatically to about 70 individuals (Dunham, 2001). This decline was attributed to the adverse effects of domestic livestock entering the wadis, to poaching, and to poor relations between the local people and the SWA.

No systematic surveys were undertaken during 1998 - 2000. In 2001, KKWRC and SWA re-established a standardized monitoring scheme. Due to increasing human pressure (particularly recreation, poaching, and livestock grazing), the number of gazelles declined further to 10 - 40 individuals in 2007 (Wronski *et al.*, in press). Since 2007, the population in the Wadi Mutim System has been relatively stable at 10 - 20 gazelles. In contrast to the situation in Wadi Mutim, no population increase occurred after the releases in Wadi Nukhailan. The number of

collared gazelles declined rapidly from 14 in February 2007 to one in November 2008. Counts in 2011 indicate that the number of gazelles has stabilized at about 30 - 40 animals. In 2010, a group of mountain gazelle was discovered in Wadi al-Fariah, in the southeastern-most part of the Reserve, 27.5 km from the nearest release site. While this demonstrates successful dispersal, it also suggests limited resource availability and a high level of disturbance by people in the release areas (Wronski, 2010). Nonetheless, the presence of gazelles at Wadi al-Fariah, and at other sites outside of the original release areas, gives reason to hope for the long-term persistence of this re-introduced population.

## Major difficulties faced

- No effective control of people or their livestock. The range is over-grazed and over-browsed, leaving insufficient food for gazelles. Poaching is a major problem.
- Population increase above carrying capacity or territorial exclusion of young-adult males led to dispersal outside the protected area making the gazelles prone to harassment and poaching.
- Poor relationships between local people and the SWA means low acceptance of the Ibex Reserve and retaliation in the form of poaching of gazelles.
- The Reserve is on the edge of the historic geographical range of mountain gazelle. As such, the Reserve provides marginal habitat for this species, including low availability of food (Wronski, 2010).

## Major lessons learned

- A positive attitude towards, and acceptance of, the Ibex Reserve by the local people appears to be imperative for the success of this re-introduction.
- The long term success of this re-introduction remains dependent on public support and conservation/environmental awareness in Saudi society, with sustained environmental education programs in schools a vital element.
- Marginal habitat and low food availability, together with substantial competition with Nubian ibex and domestic livestock (camel, donkey, sheep, goat) has led to a low but stable population of mountain gazelle in the Ibex Reserve.
- The social organization of mountain gazelle (i.e., female philopatry, male territoriality, dispersal patterns) must be considered when releasing animals into the Reserve.
- Mountain gazelle are tenacious and able to cope without drinking water. They are capable of maintaining a low population density in the Ibex Reserve under present levels of poaching and predation by Arabian wolf (*Canis lupus*).

**Success of project**

Highly Successful	Successful	Partially Successful	Failure
		√	

**Reason(s) for success/failure**

- Mountain gazelle of good genetic background were available for re-introduction.
- Suitable habitat for the mountain gazelle, albeit marginal, was available at several sites in a large protected area. Long distance dispersal of mountain gazelles from release sites led to establishment of groups at new, widely located, sites.
- Adequate financial support and expertise for the re-introduction, monitoring, research, and some law enforcement was available.

**References**

Al-Shayaa, M. S., El Hag, A. E. & Muneer, S. E. 2007. The role of people's knowledge and attitudes in conservation of wildlife in the natural reservations: A case study of the Ibex Reservation in AL-Riyadh Region, Saudi Arabia. Saudi Journal of Biological Sciences 14(1): 123 - 135.

Dunham, K. M. 1997. Population growth of mountain gazelles *Gazella gazella*, reintroduced to central Arabia. Biological Conservation 81: 205 - 214.

Dunham, K. M. 2000. Dispersal pattern of mountain gazelles *Gazella gazella* released in central Saudi Arabia. Journal of Arid Environments 44: 247 - 258.

Wronski, T. 2010. Population density and home range size of re-introduced mountain gazelles (*Gazella gazella*) in relation to resource availability in the Ibex Reserve, central Saudi Arabia. Journal of Arid Environments 74: 1427 - 1434

Wronski, T., Alageel, K., Plath, M. & Sandouka, M. A. in press. Twenty years of monitoring a re-introduced population of mountain gazelles (*Gazella gazella*) in the Ibex Reserve, Saudi Arabia. Zoology in the Middle East.