GLOBAL RE-INTRODUCTION PERSPECTIVES

Re-introduction case-studies from around the globe

Edited by

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Cover photo: Clockwise starting from top-left:

- Formosan salmon stream, Taiwan
- Students in Madagascar with tree seedlings
- Virgin Islands boa

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Re-introduction of Arabian oryx into the Negev Desert, Israel

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Introduction

The Arabian oryx (***Oryx leucoryx***) is an ungulate inhabiting hyper-arid environments living in open and sandy plateaus. The species can travel long distances (40 - 90 km) and is adjusted to extreme dry conditions existing without drinking water for long periods of time. The Arabian oryx is a browser/grazer preferring grainy grasses and other annuals. In the dry season the oryx feeds on shrubs and trees, especially pods and leaves of Acacia trees. The social structure of the Arabian oryx is mixed groups of both sexes and all ages. The geographical range of the species included the Arabian peninsula, Jordan, Syria, Sinai and Israel. Intensive hunting has driven the Arabian oryx to extinction in the wild in 1972. It is currently listed as endangered. The re-introduction of the Arabian oryx in Israel is based on a permanent breeding core (Hai-Bar Yotvata) founded from four pairs received from the Phoenix Zoo, Arizona, USA. Three different areas in the Negev desert were selected for re-introduction: one site in the Saharo-Arabian biogeographic zone in the Negev plateau, one site in the Sudanese biogeographic zone in the Arava valley, and one site in the transition area between these two zones.

Goals

- Goal 1: Establish a viable self sustaining population of Arabian oryx in the Negev desert, thus contributing to the conservation of the species.
- Goal 2: Return a large ruminating ungulate to the ecosystem in order to restore possible functions which were lost, such as plant genetic flow by endozoochory.

Success Indicators

- Indicator 1: Over 100 individuals in the wild.
- Indicator 2: A positive growth rate.

Project Summary

A feasibility study was carried out in 1989. The feasibility study pointed out that habitat conditions in Israel that resembles those found in regions of the Arabian

Arabian oryx in the Negev Desert
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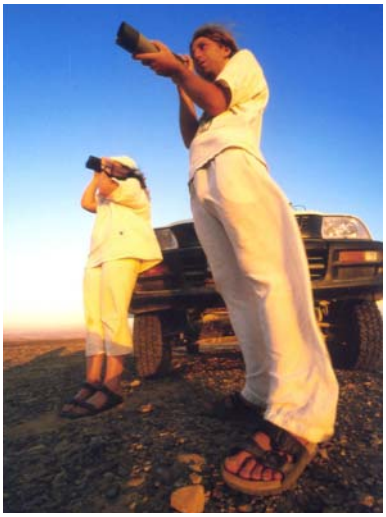

Post-release monitoring of released Arabian oryx

peninsula where oryx were documented to exist in the southern Negev around the Paran riverbed and in the Arava valley. The greatest concern was the narrowness of the Negev in these areas ~20 - 50 km in terms of proximity to international borders. The implementation was based on long range approach using a multiple release strategy focusing on thee different release sites and withdrawing animals from the permanent breeding core at Hai-Bar Yotvata using a sustained yield approach. Sites of release were chosen based on whether they were within a Nature Reserve and the availability of water for the animals while in the habituation enclosure. The three sites selected were the upper Arava valley by the Shachak spring (Sudanese biogeographic zone), the Paran dry riverbed in the center of the Negev (Saharo-Arabian biogeographic zone), and Ketzev riverbed in an area of the transition zone between the Sudanese and Saharo-Arabian biogeographic zones. Based on a demographic model for the captive herd, ~15 females can be withdrawn once every three years from the breeding core without degrading it.

Releases began in 1997 with two releases near the Shachak spring (1997 and 1998) totaling 31 animals (20 females and 11 males), three releases in Paran riverbed (2000,2001,2002) with a total of 21 females and 19 males, and three releases in the Ketzev riverbed (2003, 2005, and 2007) with a total of 22 females and 18 males. All females and most males were radio collared. Animals were darted and radio collared at the breeding core and transferred by truck or in individuals carrying crates to a habituation enclosure at the release site. Habituation enclosures were 1 - 2 ha in size with a 2 m high mesh fence. In the initial releases animal remained in the enclosure for six months, but in later releases this was reduced to 2 - 3 months. Releases were carried out by removing sections of the fence and allowing the animals to exit at their own accord.

Monitoring was carried out on a weekly basis, mostly relying on graduate students. Studies focused on dynamics, space use patterns, the impact of multiple releases, and nutrition. Findings indicate that while the population released in the northern Arava has exhibited a strong positive growth rate, the other two populations have a negative growth rate mostly due to low reproductive success. A nutritional study using fecal analysis relying on near infra red spectroscopy showed significant difference in the nutrition between the three areas, but that all three population were consuming a sufficient amount of protein. We hypothesize that some specific element in the diet (such as lack of tannins that help control parasites) may be responsible for the poor performance of the

Paran and Ketzev population. Socially, the repeated releases at the same location have on the one hand helped animals from later releases to establish and learn the landscape, on the other temporarily destabilized the groups. The herds exhibited fission-fusion dynamics, with smaller groups in winter and larger groups in summer, when food is concentrated in few large riverbeds and acacia stands.

Major difficulties faced

- Low reproduction in two of the three areas.
- Mortality due to small white parachutes used for military flares which the oryx seem to be attracted to and get entangled in.

Major lessons learned

Although large desert ungulates are expected to be bulk feeders and thus less selective in the food choice, it appears that there may be certain elements that are important to them and are found in specific habitats that do not exist outside certain biogeographic zones. This may have played a role the historic range limitation of the species.

Success of project

Highly Successful	Successful	**Partially Successful**	Failure
		√	

Reasons for success/failure:

- Good performance in only one of the three released populations.