

GLOBAL RE-INTRODUCTION PERSPECTIVES

Re-introduction case-studies from around the globe



**Edited by
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Published by: IUCN/SSC Re-introduction Specialist Group

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Citation: Soorae, P. S. (ed.) (2008) GLOBAL RE-INTRODUCTION PERSPECTIVES: re-introduction case-studies from around the globe. IUCN/SSC Re-introduction Specialist Group, Abu Dhabi, UAE. viii + 284 pp.

ISBN: 978-2-8317-1113-3

Cover photo: Clockwise starting from top-left:

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

Produced by: IUCN/SSC Re-introduction Specialist Group

Printed by: Abu Dhabi Printing & Publishing Co., Abu Dhabi, UAE

Downloadable from: <http://www.iucnsscrg.org> (downloads section)

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Ten years on: a re-introduction of southern ground hornbill on Mabula Private Game Reserve in the Limpopo Province of South Africa

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Introduction

The southern ground hornbill (*Bucorvus leadbeateri*) is the largest co-operatively breeding species in the world and is currently listed as vulnerable in the Eskom Red Data book of South Africa. The species has disappeared from much of its former range (up to 50%) with an associated population decline of at least 10% recorded in South Africa, which is mostly due to burgeoning human populations and associated habitat destruction (Kemp, 2000). A re-introduction project was initiated on Mabula Private Game Reserve (MPGR) in the Limpopo Province of South Africa, within the species historical range in 1999, with three birds hand-reared at Pretoria Zoo. This release set in motion the development of a conservation project and an experiment in re-introduction with ground hornbills in various parts of South Africa, with MPGR the centre of the release effort.

Goals

- Goal 1: The establishment of a group on MPGR that is self sustaining and ultimately breeding.
- Goal 2: The utilization of the Mabula group as a means to prepare hand-reared juveniles for future release efforts primarily into suitable habitat outside of the protected areas, and eventually other parts of South Africa.



Ground hornbill with puff-adder snake

© Nicholas Theron - Ground Hornbill Project

Success Indicators

- Indicator 1: The establishment of a territory and a nesting site.
- Indicator 2: Ability of individuals in the group to maintain their own energy requirements, and integrate into the social structure of the group.
- Indicator 3: Breeding of alpha pair.

Project Summary

Southern ground hornbills are long

lived, occur at low densities and have a slow reproductive rate (Kemp, 2000). Juveniles are also dependent on adults for at least a year and may be fed by adults when at least two years old (Kemp, 1995). These traits render the species vulnerable to threats as well as having implications for any release effort. The mabula group can be seen as a free roaming and independent release but the group, more specifically the alpha male, provides an opportunity to play a second important role in a greater release effort. It was learnt with the release of the rehabilitated alpha male that he would adopt, teach and protect unrelated juveniles released into the group. This level of acceptance does vary and juvenile females do not integrate into the group as easily as juvenile males, although they are usually tolerated for at least a year. This apparently unselfish behavior was again observed when a second wild, rehabilitated male was donated to the project. This male was originally ousted and established a territory on a reserve adjoining MPGR, but returned when the original male was not on the property, taking over the leadership of the group. The original male subsequently returned and ousted the second male. During this time there was no adult female and the competition seemed to be for the group and not a female or prime territory. Juveniles that are hand-reared by the project can therefore be introduced into the mabula group, ultimately preparing them for future release efforts.

Feasibility: The species inhabits a broad range of grassland, woodland and savanna habitat (Kemp, 2005). MPGR occurs in an area of bushveld, which is a savannah habitat unique to South Africa. There are also historical records of groups from the surrounding areas of Nylsvlei and Northam (Kemp, 2000). An evaluation of the habitat on MPGR by Dr. A. Kemp deemed it suitable for a re-introduction attempt. Due to a lack of large trees with cavities for nesting an artificial nest log was provided. MPGR is approximately 10,000ha in extent and is a reserve whose primary focus is eco-tourism. Initially MPGR was the only reserve in the area where a re-introduction was feasible but this has changed and allowed the re-introduction project to focus on the surrounding areas as well. The surrounding reserves up until approximately five years ago were mainly cattle farms. Due to changes in the environment the area is now largely unsuitable for cattle farming, this in conjunction with escalations in the land price, has meant many cattle farmers have either sold or converted to game ranching. With the result that eco-tourism and hunting ranches are prevalent in the area. These reserves are more receptive to re-introduction initiatives with ground hornbills interestingly being a sought after species because they are a large, charismatic bird of high eco-tourism value.

Implementation: Initially a human shepherd was employed to be with the birds almost 24 hours a day until the rehabilitated wild male was donated to the project. This bird transformed the release and took over the role of leading the group, negating the need for human contact after fledging. Core members of the group are a wild, rehabilitated alpha male; a seven year old, hand reared alpha female and a two year old hand reared male. Other juveniles are hand reared and re-introduced into the group to learn important foraging skills, predator avoidance and the intricate social structure before being considered for further release efforts in South Africa. Due to the fact that more than one juvenile is introduced



Artificial nest at release site

© Dee de Waal - Ground Hornbill Project

into the group and up to three juveniles can be present in a group at a time the group is supplementary fed. The adults in the group are unable or unwilling to maintain more than one juvenile and the alpha male will focus on feeding one individual although he does expend energy searching for, calling and keeping together all members of the group. Supplementary feeding is undertaken during times when prey is scarce and juveniles are unable to meet their own energy requirements.

Post-release monitoring: All the birds released on MPGR are fitted with backpack transmitters (Holohil and Sirtrack) and are monitored on a daily basis. A program has also been put in place where the foraging behavior of members of the group is carefully observed and recorded. In this way foraging behavior and the acquirement of foraging skills can be measured as a means to interpret interactions within the group and the group's environment, which will help to make decisions with regards to the supplementary feeding regime as well as future release efforts.

Major Difficulties Faced

- The low reproductive rate of the species. The average age of breeding for females and males is estimated at 11 and 13 years, while the age at first breeding is estimated at six and eight years respectively (Morrison *et al.*, 2005). All these factors have implications for the release effort with regards to funding, time and infrastructure.
- Lack of suitable habitat and large territory sizes of groups. Suitable habitat refers to areas that are large enough to support SGH, have large trees for roosting and nesting (artificial nests can be provided) and a low human density. The species has a territory of approximately 100 km² (Kemp, 1980).
- Hand-reared birds are easily habituated. On a reserve such as MPGR where there are many guests on a daily basis the birds do come into contact with humans and this can create problems.

Major lessons learned

- An alpha or adult wild bird will adopt, teach, protect and lead juveniles in a group. This may be an essential component to making any release work especially because released stock mostly consists of hand-reared juveniles.
- Release sites should ideally have a very low density of humans and large natural areas are needed.
- Chicks for hand-rearing are wild second hatched chicks, that always die in the

nest of dehydration, or from the captive breeding program initiated in 2003.

Success of Project:

Highly Successful	Successful	Partially Successful	Failure
		√	

Reasons for success/failure:

- Breeding has not taken place. The alpha male and female have been observed copulating and during the breeding season the female sits in the nest while the male delivers nesting material and food. Interestingly though the female will sometimes leave the territory after the first rains and has moved up to 40 km from MPGR.
- The success of the release is difficult to gauge due to the slow production rate of the species and the time taken for birds to reach adulthood and sexual maturity.
- In addition to re-introduction the Mabula Project has initiated a Population count to prove the decline in South Africa and thus a possible change of Red Data status, which is available on our GIS Map as a link into our website (www.mabulagroundhornbillconservationproject.org.za).
- A captive breeding program has been set up and the first chicks hatched in 2003.
- A program of collection of genetic samples is in progress world wide for micro-satellite testing to discover if there is a sub-species within the nine African countries where southern ground hornbill reside.
- A Global Single Species Studbook has been set up with CIRCC to encompass captive birds worldwide and those released back into the wild.

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