

# GLOBAL RE-INTRODUCTION PERSPECTIVES

*Re-introduction case-studies from around the globe*



**Edited by  
Pritpal S. Soorae**



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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)

**Contact**

**Details:** Pritpal S. Soorae, Editor & RSG Program Officer  
E-mail: [psoorae@ead.ae](mailto:psoorae@ead.ae)

## Re-introduction and population re-enforcement of Asian houbara bustard in Asia

Mark Lawrence<sup>1</sup>, Jacky Judas<sup>2</sup> & Olivier Combreau<sup>3</sup>

<sup>1</sup> - Conservation Scientist, <sup>2</sup> - Ecologist, <sup>3</sup> - Director  
National Avian Research Center, Environment Agency – Abu Dhabi, P.O. Box  
45553, Abu Dhabi, United Arab Emirates ([mlawrence@ead.ae](mailto:mlawrence@ead.ae))

### Introduction

The National Avian Research Center (NARC) is a department of The Environment Agency - Abu Dhabi (EAD), in the Abu Dhabi Emirate of the United Arab Emirates. The object of its study is the Asian houbara bustard (*Chlamydotis macqueenii*, hereafter houbara) and the reason for its existence is Arabian falconry, for which the houbara is primary quarry species. NARC aims to promote houbara conservation and reconcile the tradition of Arabian falconry with sustainable use of houbara throughout their range, which for the Asian houbara stretches from Yemen to Mongolia. A broad international scope of operations is necessitated by the migratory nature of both the houbara, which are chiefly winter visitors to the Arabian Peninsula breeding in the Central Asian steppes, and the falconers, who travel widely in search of quarry. Since 1979 the houbara has been listed in Appendix I of the CITES convention. In 2004 its IUCN Red List status was elevated from 'Low risk/near threatened' to 'Vulnerable'. NARC studies indicate that houbara numbers are declining and that excessive hunting and poaching is the primary cause. The Asian migratory meta-population is declining at an average of 5 - 8% per year since consistent counting started in 1998. Isolated remnant resident populations in the Arabian Peninsula are so depleted as to be facing extinction.

### Goals

- Goal 1: Help to ensure the cultural preservation of Arabian falconry by contributing to the continued survival of viable wild populations of the houbara.
- Goal 2: Establish a reproducing and self-sustaining wild population of houbara in the Abu Dhabi emirate.
- Goal 3: Re-enforce migrant as well as resident houbara populations throughout their range



Release of Houbara by H.E. Mohammed Al Bowardi, Managing Director EAD

in Asia, with special attention to highly endangered populations in the Arabian Peninsula and Pakistan.

- **Goal 4:** Contribute to the establishment of a sustainable hunting management system for the re-introduced and re-enforced populations.

### Success Indicators

- **Indicator 1:** A captive-breeding production of 2,000 Asian houbara per year at NARC in Abu Dhabi, chiefly of resident bloodlines from the Arabian Peninsula and the south of the houbara distribution range in Asia. For release to the wild according to region of origin.
- **Indicator 2:** Through collaboration with the Emirates Center for Wildlife Propagation (ECWP) in Morocco, production of 10,000 Asian houbara per year at ECWP, chiefly of migrant bloodlines. For release to the wild according to region of origin.
- **Indicator 3:** Houbara population trends measured by means of long-term and large-scale surveys in concerned countries.
- **Indicator 4:** Growth of re-introduced populations of 5% per annum.



**First successful breeding in the wild recorded in Abu Dhabi - 2007**

### Project Summary

**Feasibility Stage:** The prominent position of falconry hunting in Emirati culture means that the houbara, as quarry, can act as a flagship species to stimulate conservation actions. NARC has proposed the implementation of a series of conservation measures aimed at preserving the integrity of remaining wild houbara populations in their ecological, migratory, physiological, and genetic diversity. The strategy targets a substantial and global reduction in the hunting and poaching pressure on wild birds through management of breeding and hunting grounds, management of the wild houbara populations and production of houbara in captivity for establishment or re-establishment of self-sustained populations, to release birds for hunting, and to provide birds for falcon training purposes. Due to hunting pressure over many decades, the distribution of resident breeding houbara in Arabia had contracted markedly, and the original extent of distribution is not clear. Anecdotal evidence indicates that in the past houbara have bred in Abu Dhabi, although it was probably not a major breeding area. The establishment of a managed (for hunting) houbara population in a falconers' home state may ease hunting pressure on wild houbara elsewhere in the range and facilitate efforts to control or manage that hunting.

**Implementation Stage:** Fieldwork studies and collection of wild eggs, for establishment of captive-breeding blood lines, have been undertaken through agreements with government agencies of Kazakhstan, Iran and Yemen. These agreements include clauses for the future release of offspring from the collected birds, in the country of origin. Fieldwork studies alone have been undertaken in China, Mongolia and Oman. Projects focusing on release of captive-bred birds have started in Abu Dhabi and, more recently the Baluchistan region of Pakistan. The remnant resident populations of houbara elsewhere in the Arabian Peninsula would provide the most suitable source for a houbara release in Abu Dhabi. However, the low numbers and low density of houbara remaining, together with their geographically and politically challenging locations, means these populations cannot be a practical source of birds. Therefore, the birds used have genetic origin in the resident non-migratory population of Baluchistan, in south-western Pakistan, with founder stock having been collected from there by the National Wildlife Research Centre in Taif, Saudi Arabia, in 1987 - 1988. Since the founder stock was collected from Balochistan the resident population appears to have declined severely, with more recent searches finding very little or no evidence of breeding activity. So, it is also intended to channel some of the captive-breeding production for re-introduction in Baluchistan (see table 1).

**Table 1. Production of houbara at NARC is shown in the table below, which includes birds of all genetic origins held in the collection. Birds released in Abu Dhabi and Pakistan are of the Baluchistan bloodline**

Year	Chicks hatched in NARC captive breeding	Houbara released in Abu Dhabi (from previous year's chick production)	Houbara released in Balochistan (from previous year's chick production)
2001	22	-	-
2002	49	-	-
2003	121	-	-
2004	223	5	-
2005	463	15	-
2006	642	59	-
2007	805	86	18

Experimentation is ongoing to assess any benefit of “soft release”, where the birds are maintained in cages at the release site for some weeks before release to settle them on the area, compared to “hard release” where birds are transported to the release site and set free at once.

**Post-release monitoring:** To date all birds released have been harnessed with either a satellite transmitter (26 birds) or a radio transmitter (157 birds).

Mortality rate post release as follows (for all releases combined):

<b>To 1 month post release:</b>	<b>26.8%</b>
<b>To 3 months post release:</b>	<b>33.3%</b>
<b>To 6 months post release:</b>	<b>38.8%</b>
<b>To 1 year post release:</b>	<b>48.1%</b>

Predation accounts for at least 70% of mortality and 76% of this predation is attributable to red foxes (*Vulpes vulpes*). The mortality rate listed above is for confirmed mortality. In addition to this there is a floating number of “missing” birds, which can include live birds that have moved and not yet been relocated, birds that have died in a place where their transmitter signal has not yet been found, and birds that are alive or dead with a transmitter that is no longer working. At one year post release, missing birds account for 16.3% of the total. The first successful wild breeding occurred in spring 2007, by females released in 2005 (being, at two years of age, the oldest surviving females). Of five potentially breeding females known to be alive from 2005, three produced clutches, all of which were fertile, indicating successful mating. Two clutches hatched in the wild (giving 4 chicks) and one clutch was abandoned but the eggs were retrieved and subsequently hatched in captivity (2 chicks) to be included in the 2008 release.

### Major difficulties faced

- Inter-annual variations of environmental conditions make it difficult to analyze and clearly understand the factors affecting post-release survival. Adjustments of release process are more dependent on empiric choices rather than results of scientific experiments.
- It is an on-going process to steer the response to predation pressure on released birds away from a historical, generalized persecution of predators and towards a limited, targeted control taking concern of wider conservation objectives.
- For the future, updated hunting legislation pertinent to handling the existence of large numbers of free-ranging houbara in UAE remains undefined, but should be in process soon.

### Major lessons learned

- Post-release survival is increased by releasing houbara when food availability is at its best, soon after rainfall events.
- Post-release survival decreases with age at release: houbara released in their first year have a higher survival rate than older ones.
- Predator control does not seem to be effective on post-release survival to one year. Intuitively there should be some benefit to



Typical houbara bustard habitat in the UAE

# Birds

controlling predators in the release area; to reduce the targeting of disorientated and naïve newly released birds and discourage individual foxes from specializing in houbara. In practice the main effect seems to just spread predation events over time but without improving the overall long-term survival (i.e. birds live longer, but still get predated in the end). Our predator control strategy needs refinement, and we should think in terms of containing predation within manageable limits, rather than eliminating it.

## Success of project

Highly Successful	Successful	Partially Successful	Failure
		√	

### Reasons for success/failure:

- The project is still in relatively early days and it is not yet clear how successful it will be, or what form such success will take.
- In Abu Dhabi, released birds may demonstrate a preference for semi-natural habitat (e.g. areas enhanced by irrigation) rather than natural habitat, which may increase their survival but could be considered as only partial success in re-introduction terms.

