

# 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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## Introduction of chimpanzees onto Rubondo Island National Park, Tanzania

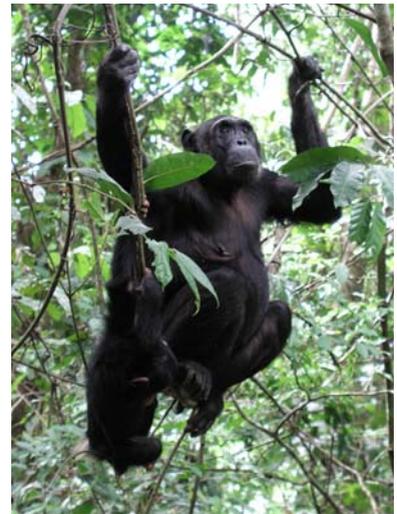
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### Introduction

The chimpanzee (*Pan troglodytes*), consists of four sub-species, all listed as endangered in the 2007 IUCN Red List of Threatened Species. The Rubondo Island chimpanzees are unique because the species has never inhabited this island prior to introduction and the individuals introduced spent most or all of their lives prior to release in captivity in European Zoos. Rubondo is 240 km<sup>2</sup> in size and is located in the southwestern corner of Lake Victoria, Tanzania (2°18' S, 31°50' E). It was gazetted as a National Park in 1977. The island is 1134 m above sea level.

Approximately 70% of the habitat consists of mixed evergreen and semi-deciduous forest characterized by high densities of lianas. The mean total annual rainfall is 1,200 mm and the annual mean high temperature ranges from 19 - 26°C. The only indigenous primate species is the vervet monkey. Other mammals introduced on to the island between 1964 and 1974 and still surviving today are the giraffe, sunni antelope, elephant and the black & white colobus. There are no large predators on the island. Human presence is minimal (park employees, researchers, tourists, support staff) and habitation is limited to a few areas on the lakeshore.



Chimpanzee (*Pan troglodytes schweinfurthii*) © M. A. Huffman

## Goals

- Goal 1: To assess how the chimpanzees adapted ecologically to the environment.
- Goal 2: To assess how the chimpanzees integrated themselves socially on the island.
- Goal 3: To assess the relationship between chimpanzees and other species on the island; predator-prey, competition for food resources.
- Goal 4: To determine reproductive status and gender distribution of the population 40 years post release through genetic analysis.
- Goal 5: To determine the number of individuals in the population and their sub-species based on microsatellite and mitochondrial DNA analysis.
- Goal 6: To make paternity charts to define familial relationships at the genetic level, and search for hybridization between sub-species.
- Goal 7: To determine genetic robustness and population viability over the long-term, based on the available genetic pool.
- Goal 8: To establish a non-invasive long-term health monitoring program.

## Success Indicators

- Indicator 1: Chimpanzees have survived without long-term provisioning and are behaving similarly to their wild born counterparts elsewhere in the species' natural habitat (diet selection, nest making, tool use, hunting, etc.).
- Indicator 2: Chimpanzees are reproducing and living in stable social groups.
- Indicator 3: Chimpanzees are successful competitors for mutually favored food resources with other frugivorous species on the island (vervets, colobus, birds, elephants, bats).
- Indicator 4: Females are reproducing and successfully rearing young and reproductively active males are sufficient in numbers.
- Indicator 5: Adequate male : female ratios for population growth, and numbers of males generating offspring.
- Indicator 6: A sufficient number of breeding males exist in the population; if sub-species hybridization has occurred and progeny is reproductively viable.
- Indicator 7: Sufficient genetic variability exists in the population for long term population viability.
- Indicator 8: Baseline health status is documented to monitor changes in chimpanzee disease status over time.

## Project Summary

Four introductions of chimpanzees onto the island were made from 1966 to 1969 by the Frankfurt Zoological Society (FZS). Of the 17 individuals released, there were nine females and eight males, wild born in several West African countries including Sierra Leone and Guinea. The ratio of males to females in each release was 4:7, 1:0, 1:0 and 2:2, respectively. These individuals had spent between 3.5 months and 9 years in captivity in European Zoos. At the time of release they were aged between four to 12 years (juvenile to sub-adult). In captivity they had lived in varying conditions, ranging from social to solitary housing under good to poor housing conditions. There were no attempts made to integrate all of these individuals into a single social group before release. In fact only a few of the

released chimpanzees were familiar with each other prior to release. Some had not seen another chimpanzee for some time and/or performed abnormal behavior or attacked human caregivers prior to their release. Others were circus chimpanzees that were quite accustomed to humans. The health conditions and physical preparation of the chimpanzees before the release varied greatly with some receiving anti-malaria treatment and probably also de-worming. After release, four German forester



**Researchers on Rubondo © Simon Yohana**

volunteers, who lived on Rubondo between 1966 and 1974 recorded chimpanzee sightings. There was no post-release support apart from a small amount of initial provisioning, which was stopped after only two months, because chimpanzees were observed to feed for themselves on banana sprouts, leaves, wild fruit and seeds. Chimpanzees initially slept in tree forks, but started to make nests after the first year. The first two Rubondo-born chimpanzees were seen in 1968. From 1978 until 1984 Dr. Marcus Borner and his wife Monica of FZS monitored the condition of the Rubondo chimpanzees post release. They found that despite the unfavorable conditions and lack of planning for the release, chimpanzees managed to survive and adapt to this entirely novel environment. They estimated the population at that time to be around 20 individuals. In the early years after the release, some of the introduced chimpanzees were reported to molest people and invade houses and one or two chimpanzee males had to be shot because they attacked people. However subsequent generations of chimpanzees born on Rubondo were reportedly very shy and did not exhibit any of the aggressive behaviors seen in some of the chimpanzees from the founder population. In 1994 a Swiss student, Guido Muller, from Zurich University conducted a preliminary systematic survey of Rubondo chimpanzees. In 1996 the FZS and Tanzanian National Parks (TANAPA) started to habituate the chimpanzees primarily for the purpose of ecotourism. This was discontinued due to slow progress. In 2000, Huffman and co-authors initiated a systematic long-term research project to monitor the chimpanzees once more and to collect ecological, behavioral and health data.

As of 2008, the population is now estimated at around 35+ individuals and they are in a stage of semi-habituation. When located, some groups can be followed for as much as an hour at a time. Chimpanzees have become totally reliant upon the island's natural vegetation for their subsistence. An important factor for sustaining the introduced chimpanzees is the accessibility to abundant and high-quality foods year round, including liana fruits with aseasonal fruiting patterns. The population and individual home range of these chimpanzees are larger than estimated for any other forest dwelling chimpanzee study site. Seasonal range

# Mammals

size increases in relation to increases in the amount of preferred or overall tree fruit availability. These ranging patterns may reflect a strategy of high foraging selectivity, in which chimpanzees seek out preferred tree fruit distributed at low densities in clumped or uniform distributions across the island. The parasite spectrum of chimpanzees is comparable to other chimpanzee sites, but prevalence rates are different. In addition three nematode species new for chimpanzees were found. This is the first study of its kind to document the long-term outcome of chimpanzee introduction into the wild.

## Major difficulties faced

- Chimpanzees attacked people or broke into houses in the early phase of post-release, resulting in insufficient human monitoring of chimpanzees due to safety concerns.
- Access for research to remote areas where chimpanzees live on the island is poor.
- Chimpanzees are difficult to locate as they range over a wide area.
- The level of habituation is low, making it difficult to collect adequate data on health and behavior of known individuals and to determine social structure.

## Major lessons learned

- Chimpanzees were able to survive post-release with minimal human intervention because the island is predator free, potential high-quality food resources are abundant and available year-round, and con-specific competition for these resources is low.
- Greater effort should be taken prior to introduction to select and socialize group members into a larger group before release.
- Plans for further release of females onto the island is needed to avoid excessive inbreeding, because there is no wild population in the area.
- More intensive and consistent effort is needed to habituate the chimpanzees to further investigate their social adaptation to the release site.
- Planning should take into account male:female ratio and genetic analysis should be performed to ensure sufficient genetic variability exists in released chimpanzees to establish a robust population.
- Biobank genetic material from males and females should be released.
- It is important to collect baseline physiological and health data and biobank samples prior to release and habituation efforts.

## Success of project

Highly Successful	Successful	Partially Successful	Failure
	√		

### Reasons for success/failure:

- Chimpanzees are now totally independent of human assistance.
- Reproduction, infant rearing and population growth is evident.
- The environment is highly suitable for sustaining this species.
- Provisioning was minimal and contact with humans was minimal.

**For further information:** Moscovice, L. R. *et al.*, 2007, American Journal of Primatology 69(5) & Petrzelkova, K. J. *et al.*, (2006) International Journal of Primatology 27(3)