



Global Re-introduction Perspectives: 2010

Additional case-studies from around the globe
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IUCN/SSC Re-introduction Specialist Group (RSG)





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

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Citation: Soorae, P. S. (ed.) (2010) GLOBAL RE-INTRODUCTION PERSPECTIVES: Additional case-studies from around the globe. IUCN/SSC Re-introduction Specialist Group, Abu Dhabi, UAE, xii + 352 pp.

ISBN: 978-2-8317-1320-5

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Welfare release of Babcock's leopard tortoise, KwaZulu-Natal, South Africa

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Introduction

The options available for tortoises in rehabilitation centres are a life-time in captivity, euthanasia or release. However, in South Africa, there are not enough suitable tortoise sanctuaries, and rehabilitation centres are reluctant to euthanize tortoises because this is contrary to their aims. As a result, tortoises are released into the wild without reference to a documented release protocol and with no consistent post-release monitoring. We released Babcock's leopard tortoise (*Stigmochelys pardalis babcocki*), not internationally red-listed, as this tortoise is

the most frequently admitted to a large rehabilitation centre in the KwaZulu-Natal province (KZN).



Leopard tortoise with transmitter

Since only the subspecies *S. p. babcocki* can be released in KZN, various morphological indicators were used to separate it from *S. p. pardalis*, and from putative hybrids of the two subspecies. Even though many authors do not recognize the two subspecies (e.g. Boycott & Bourquin, 2000), there is genetic evidence to suggest that there is a difference (e.g. Le *et al.*, 2006). Release areas had to be on private land in KZN, as releases are not permitted in state protected areas. We published results of our release study in Chelonian Conservation and Biology (Wimberger *et al.*, 2009), which has been reprinted here with permission.

Goals

- Goal 1: To test the efficacy of a tortoise release protocol developed using the IUCN Re-introduction Guidelines by a

provincial conservation authority, Ezemvelo KwaZulu-Natal Wildlife (EKZNW), to increase the probability that the release of rehabilitated tortoises would be successful while minimizing risks to biodiversity.

- Goal 2: To provide the first documented post-release monitoring of rehabilitated South African tortoises.
- Goal 3: To determine whether rehabilitated *S. p. babcocki* could be successfully released into the wild (Wimberger *et al.*, 2009).



Overview of tortoise habitat

Success Indicators

- Indicator 1: Survival of released tortoises.
- Indicator 2: Site fidelity.
- Indicator 3: Causes of death, whether natural or as a result of other factors (e.g. not adjusting to release) (Wimberger *et al.*, 2009).

Project Summary

We chose two sites for release, the 913 ha Leopard Mountain Game Reserve (GR) and the 2,196 ha Usuthu Gorge Community Conservation Area (CCA), in north-eastern KZN. Both locations contained suitable habitats for leopard tortoises, and at least some of the leopard tortoise's preferred food plants, refuge sites and water. Both reserves had *S. p. babcocki*, and the reserves were within the historical range of the species. The number of tortoises in the reserves was unknown but likely to be below carrying capacity. This was due to a recent severe drought in the region of Leopard Mountain GR, and surrounding areas having recently been converted from cattle farms to a consolidated wildlife conservation area, while the Usuthu Gorge CCA was in the process of becoming established as a community conservation area. Previously, high tortoise mortalities were likely on the release areas and surrounding land because of the use of tortoises for food, and from being burnt during uncontrolled fires or during fires designed to promote livestock production as opposed to wildlife conservation (Boycott & Bourquin, 2000).

As tortoises are killed by vehicles while crossing roads (Boycott & Bourquin, 2000), it was important that neither release areas had tarred roads (which promote greater traffic flow and higher traffic speeds), and only Leopard Mountain GR had a district road passing through it, which was used mainly by reserve

vehicles and vehicles of tourist clients entering or exiting the reserve. The release program was understood, accepted and supported by the neighbouring landowners and local communities.

Tortoises were selected for release if they had greater than 100 mm carapace length, had been at a rehabilitation center for longer than two months, and were deemed medically fit for release by a herpetologist. Besides one tortoise (confiscated from the traditional medicine trade), most of the *S. p. babcocki* were escaped pets, as they would not naturally be found in the suburbs of the city of Durban or in that region, and most had distorted carapaces (e.g. pyramiding of scutes). In January 2005, 22 *S. p. babcocki* (5 males and 5 females with radiotransmitters attached) were hard released into the Leopard Mountain GR. In December 2006 and February 2007, 7 (2 males and 5 females with radiotransmitters attached) *S. p. babcocki* were hard released into the Usuthu Gorge CCA. Post-release interventions included returning those tortoises that we detected as having moved from the fenced reserves to ensure that we could relocate the tortoises through the study and to prevent the tortoises from being exposed to greater threats than might occur on the patrolled areas during the study. We realized that some of the tortoises might disperse again later, but we hoped that by returning them they might settle down in the release areas (as this has been done in some tortoise relocation studies, e.g. Tuberville *et al.*, 2005), or else that by the end of the study the tortoises would be more familiar with the habitat of the region. Furthermore, if any of the released *S. p. babcocki* showed signs of disease, it was taken to a veterinarian to be treated.

The 10 radio-telemetered tortoises released at Leopard Mountain GR were located monthly for the first 10 months after release, and sporadically (maximum five times) up to 25 months after release. A radio-telemetered wild tortoise was located monthly (after affixing the radio-telemeter), until the telemeter was found detached on the ground. Due to malfunctioning of some of the radio-telemetry equipment, not all radio-telemetered tortoises were found at each monitoring session. Non-telemetered tortoises were located opportunistically. Tortoises released at Usuthu Gorge CCA were located monthly for up to 13 months, when the study ended. A 3-tier Yagi aerial and a wide-range receiver were used to locate the radio-telemetered tortoises. Once found, their locations were obtained using a Global Positioning System. By the end of the study, one of the tortoises was returned to captivity because of disease, four were killed intentionally or accidentally by humans, three others died due to a combination of disease, starvation and/or dehydration, and the fate of six were unknown. Due to known failure of two radio-telemeters, it was the likely cause of the disappearance of the other tortoises. Two tortoises were known to survive 13 months after release at Usutu Gorge CCA and one tortoise was known to survive 25 months after release at Leopard Mountain Game Reserve (Wimberger *et al.*, 2009).

Major difficulties faced

- Lack of comprehensive disease checking protocol for implementation before release to ensure all life-threatening and transmittable diseases were detected and cured before release.

- Large numbers of leopard tortoises, which have large spatial requirements, in rehabilitation, with no space for them at these centers.
- Diseases easily spread amongst tortoises in captive situations. Was captivity the origin of the diseases whose symptoms were displayed by some of the released tortoises?
- Identification and fate of putative hybrids. Sterilization of males is easier than in females, so does that mean we only release sterilized males and euthanize the females?



Radio-tracking released tortoises

- Knowledge of the origin and history of the tortoises. A large number could be ex-pets. Post-release survival could depend on the time kept in captivity as a pet (absence of survival behavior in the wild (e.g. brumation in winter)) and perhaps on what they were fed as a pet.
- Education of the public in order to persuade them not to keep leopard tortoises illegally as pets, especially if the tortoises are found in the wild. The education programs implemented previously have not stopped the illegal keeping of tortoises in captivity.
- Human threats to released tortoises, namely poaching and collisions with vehicles.
- Dispersal from release sites, and leaving the secure areas.

Major lessons learned

- A high survival of released rehabilitated tortoises cannot be assumed.
- Thorough disease checking by a veterinarian is vital before any rehabilitated tortoises are released.
- Where possible and practical, placing rehabilitated *S. p. babcocki* in an enclosure for a period before release may help to increase site fidelity (Tuberville *et al.*, 2005), may allow susceptibility to the diseases present at the release site to be manifest and for latent diseases from captivity to reveal themselves (Dodd & Siegel, 1991), and may allow the tortoises to adapt to eating the indigenous vegetation in the area.
- Reserve fencing should be properly secured to prevent tortoises from pushing through.
- Rehabilitated *S. p. babcocki* should not be released in precipitous landscapes as rehabilitated tortoises may not be as fit as wild tortoises due to their time in captivity.
- If possible, release areas should not have public roads traversing them.

Reptiles

- As suggested by others, future post-release monitoring could be carried out by the local residents (e.g. game rangers), which may decrease the interest in harvesting tortoises (Wimberger *et al.*, 2009).

Success of project

Highly Successful	Successful	Partially Successful	Failure
		√	

Reason(s) for success/failure:

- 47% of the *S. p. babcocki* released in this study died,
- At least five (29%) of the released tortoises were known to have survived 13 months post-release and were in good health.
- Improvements in the rehabilitation process, particularly with respect to disease checking and cure, and in the release protocol (e.g. the use of penning at the release sites if possible and practical, and in involving local people in the monitoring) should increase the success rate of future releases of rehabilitated *S. p. babcocki*.

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