Global Re-introduction Perspectives: 2016

Case-studies from around the globe

Edited by Pritpal S. Soorae

IUCN/SSC Re-introduction Specialist Group (RSG)

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Cover photo: Clockwise starting from top-left:
i. Bolson's tortoise, USA @ Turner Endangered Species Fund
ii. Wetapunga, New Zealand @ Richard Gibson
iii. Morelos minnow, Mexico @ Topiltzin Contreras-MacBeath
iv. *Silene cambessedesii*, Spain @ Emilio Laguna
v. Tasmanian Devil, Maria Island, Tasmania @Simon DeSalis
vi. Agile frog, Jersey @ States of Jersey Department of the Environment

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A trial re-introduction of the western quoll into the Flinders Ranges National Park, South Australia

Katherine Moseby[1], Cheryl Hill[2], Trish Mooney[3], David Peacock[4], Keith Morris[5] & Rob Brandle[3]

[1] - Ecological Horizons, P.O. Box 207 Kimba, Australia 5641
Katherine.moseby@adelaide.edu.au
[2] - Foundation for Australia's Most Endangered Species Ltd, PO Box 482, Mitcham, Australia 5062
[3] - Department for Environment, Water and Natural Resources, P.O. Box 1047, Adelaide, Australia 5001 Robert.brandle@sa.gov.au
[4] - Biosecurity SA, P.O. Box 1671 Adelaide, Australia 5001
[5] - Western Australian Department of Parks and Wildlife, Western Australia

Introduction

The western quoll (*Dasyurus geoffroii*) is a carnivorous marsupial that formerly occupied nearly 70% of the Australian mainland (Morris *et al.*, 2003). The species has declined significantly since European settlement and is now only found in south-west Western Australia, having become extinct from all other states. Reasons for decline include habitat clearance, disease and predation by introduced red foxes (*Vulpes vulpes*) and feral cats (*Felis catus*). It is internationally listed as Near Threatened (IUCN Red List, 2009) and nationally listed as Vulnerable under the Australian *Environment Protection and Biodiversity Conservation Act* 1999. Males attain an average weight of 1.3 kg and females 0.9 kg. Western quolls are a distinctive animal, with up to 60 white body spots covering their brown fur and a black brush on the tail. They are seasonal breeders with females entering oestrus in late April/May and births occurring between May and September.

Western quoll

The re-introduction site is the Flinders Ranges National Park in South Australia, a 91,840 ha arid zone conservation reserve jointly managed by the South Australian Government and Adnyamathanha traditional owners. The Flinders Ranges National Park is characterized by rugged hills and scree

slopes with *Eucalyptus* lined creeklines, open grasslands and shrublands, and *Callitris* pine woodlands.

Goals

- Goal 1: To establish a self-sustaining population of western quolls within the central Flinders Ranges that requires minimal long-term management intervention.

Success Indicators

- Indicator 1: Survival of at least 50% of each of the release populations during the first 3 months after release. This will indicate that food availability is high enough and predation levels are low enough for the majority of individuals to survive - *Achieved*.
- Indicator 2: About 20% - 30% of females with young (F1) surviving to pouch exit in their second year. This will indicate that food and shelter resources are adequate for successful breeding - *Achieved*.
- Indicator 3: A population increase of at least 10% as measured by trapping and the minimum number of individuals known to be alive (MKTBA), with F2 generation individuals recruited into the population within 3 years. Baseline population size will be measured at 3 months post-release - *Achieved*.
- Indicator 4: No long-term decline in extent of occurrence. A baseline extent of occurrence should be estimated at 5 years after release, measured through camera traps, trapping and/or presence of sign (scats, sightings, occupied den sites). This baseline should be maintained (hopefully increased) and monitored every 3 - 5 years after release.
- Indicator 5: Population persistence during drought. Droughts are common in the arid zone, characterized by food shortage and low reproductive rates. If the population of western quolls is able to survive drought periods and bounce back to pre-drought levels afterwards then this is a strong indication that the re-introduction has been successful.

Project Summary

Feasibility: The western quoll re-introduction is a partnership project between the South Australian Department for Environment, Water and Natural Resources (DEWNR), the Foundation for Australia's Most Endangered species (FAME) and the Western Australian Department of Parks and Wildlife (DPaW). This unique partnership has combined private fundraising with conservation on public lands and has drawn on the strengths of each partner organization. A re-introduction project team is comprised of members from each organization. The Flinders Ranges National Park is jointly managed by DEWNR and the Adnyamathanha people and an important step was gaining support from the co-management committee. Once this support was obtained the major focus was on raising enough private funds to implement the project.

A translocation proposal was prepared (Moseby & Peacock, 2013) which included an assessment of the release site for suitability. A visit from two DPaW staff members experienced in western quolls was conducted and habitat assessments (particularly den site abundance) were implemented. A critical factor enabling the

Overview of release site

re-introduction to proceed was the extensive fox (1080 baiting four times per year) and feral goat (ground and aerial shooting) control already conducted in the park by DEWNR through their Bounceback program (de Preu, 2006). Foxes were considered to be the primary threat to a quoll re-introduction. Remote cameras were set throughout the release area to determine the level of feral predators present and results suggested foxes were all but absent and cat abundance was similar to sites in Western Australia where quolls were extant. Based on these factors the release was approved by DEWNR.

Implementation: A contractor with extensive re-introduction experience (Ecological Horizons) was hired to coordinate and implement the program. Quolls were captured by DPaW over a 3 week period in Western Australia and housed at the Native Animal Rescue center in individual pens. When sufficient quolls were captured they were flown to the Flinders Ranges National Park, a distance of several thousand kilometres. A total of 41 quolls were released in April/May 2014 and 37 in May 2015. A “welcome to country” ceremony was held on the release night with important donors, DEWNR staff and Adnyamathanha attending. This event was important as it helped strengthen the project partnership. A number of different release methods were trialed including soft release pens, releasing males before females to reduce male dispersal and release into different habitats. The trial re-introduction was conducted as an adaptive management project in order to understand the reasons for success or failure.

Post-release monitoring: All western quolls were radio-collared before release with VHF/mortality sensor collars and radio-tracked for up to 6 months after release. A light aircraft with wing mounted antennas was used to track animals from the air due to the rugged terrain. Once located from the air, personnel walked in on radio-collared animals to record information on den sites and habitat choice. All animals were captured in cage traps after 2 months to check their condition and collars. Any animals found dead were sent off for autopsy and DNA swabs taken from their collars to ascertain cause of death. A comprehensive

trapping program was conducted twice a year throughout the release areas to capture new individuals. Feral predators and quolls were also monitored using detection rates on 24 remote cameras set throughout the release areas.

Major difficulties faced

- Getting support and approval for the re-introduction, and sourcing the required funds. The proposal was initially conceived in 2007 and raised for discussion at the 2008 WWF Quoll Workshop. FAME agreed in 2012 to source required funds, and all project approvals were signed by early 2014.
- Effective and affordable landscape scale control of feral cats. The major threat to success has been predation by feral cats. Approximately 33% of released quolls were lost to cats within the first 6 months after release. Cat control is difficult to conduct on a broad scale and very labor intensive. Although fox control is regularly conducted, cat control was not part of the existing Bounceback predator control program so additional control needed to be subsidized through the project budget.
- Raising sufficient funds to ensure adequate post release monitoring and pre/post-release feral cat control. The project has been funded almost entirely by private donations through FAME. This meant that funding was not always available as planned, causing some activities to be delayed or revised.
- Logistic and regulatory hurdles that need to be negotiated when attempting to control problem predators on public lands that are also a major tourism location.

Major lessons learned

- Quolls are very adaptable animals and will find food and den sites in a new region outside our knowledge base. In an effectively fox-free habitat, controlling feral cats becomes the primary management requirement.
- Aspirations and expectations of all partners should be clearly acknowledged at the start of the project and reviewed regularly. This should include both management and on ground staff involved in the project.
- Contingency funds need to be set aside to cover unforeseen circumstances (e.g. additional feral cat control).
- Re-introductions require significant funds and commitment. Fortunately, the quoll re-introduction project combined private and

Western quoll project team

public organizations and all involved were extremely committed to project outcomes.
- Procedures and operation plans required to obtain high level approvals for extraordinary activities on public lands need to be sought prior to re-introduction. These include the use of firearms by private contractors to control feral pests.

Success of project

Highly Successful	Successful	**Partially Successful**	Failure
		√	

Reason(s) for success/failure:
- Passionate, committed and skilled people willing and able to overcome the many obstacles encountered in researching, progressing, funding, planning and then undertaking a successful re-introduction project.
- The species being re-introduced has a broad dietary and habitat niche, and is somewhat arboreal to assist predator avoidance.
- Having been previously successfully (and unsuccessfully) translocated over ~20 years there is already a substantial accrued knowledge base from which to borrow.
- Cats remains the most likely threat to long-term establishment but initial results suggest that quolls can avoid cat predation in some instances. Additional cat control has assisted with early population establishment but may need to be continued to ensure long term success

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INTERNATIONAL UNION
FOR CONSERVATION OF NATURE

WORLD HEADQUARTERS
Rue Mauverney 28
1196 Gland, Switzerland
Tel +41 22 999 0000
Fax +41 22 999 0002
www.iucn.org