



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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The re-introduction of the yellow-footed rock-wallaby to the northern Flinders Ranges, South Australia

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Introduction

While the yellow-footed rock-wallaby (*Petrogale xanthopus*) is classified at species level by the IUCN (2008) and the Australian Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as 'Near Threatened', there are two disjunct sub-species. The nominate sub-species *P. x. xanthopus* occurs in limited areas of South Australia and New South Wales, where it is listed as 'Vulnerable' and 'Endangered' respectively. Historical data suggests that there has been a decline in yellow-footed rock-wallaby numbers since early European settlement, in large part due to pastoral development and intensive hunting for pelts. Today, the major threats are competition with introduced herbivores, and predation by introduced predators, primarily foxes (*Vulpes vulpes*). Rock wallabies *P. x. xanthopus* disappeared from Aroona Sanctuary, in the northern Flinders Ranges in 1983. The suggestion to trial the re-introduction of captive-bred rock-wallabies to the wild was first raised at the National Rock-Wallaby Symposium of 1994. Genetically managed and successful captive breeding of the species at Adelaide Zoo meant that this was the obvious location from which the re-introduction could be co-ordinated. The first re-introduced captive-bred yellow-footed rock wallabies were released into Aroona Sanctuary in September 1996.

Goals

- Goal 1: Trial the viability of the re-introduction of captive bred yellow-footed rock wallabies.



Yellow-footed rock wallaby © T. P. Morley



Aroona dam © T. P. Morley

- **Goal 2:** To establish a self-sustaining population at the re-introduction site.
- **Goal 3:** To include the local community in a partnership with the project that involves all aspects of the re-introduction.
- **Goal 4:** To establish guidelines for the re-introduction of rock wallabies which can be utilized by other conservation programs.

Success Indicators

- **Indicator 1:** Identify vital considerations for the successful re-introduction of

captive born macropods.

- **Indicator 2:** A self sustaining population in the short, medium and long terms.
- **Indicator 3:** Adoption of a conservation project by local community for sustainability.
- **Indicator 4:** Ensure accurate and eitiological diagnosis of cause of death. This would further define the primary threatening processes acting upon captive-born, re-introduced, YFRW.

Project Summary

Feasibility: The Aroona Sanctuary (declared 1995) is located approximately 560 km north of Adelaide in close proximity to the township of Leigh Creek, in the arid environment of the northern Flinders Ranges. There are several other protected areas in the region including the Flinders Ranges National Park, Gammon Ranges National Park and the Lake Torrens National Park, all with boundaries within a 100 km radius of the Aroona Sanctuary. The property occupies an area of approximately 3,485 ha and is characterized by a diverse range of landscapes from wetlands, saltbush rangelands and rocky outcrops. Aroona Sanctuary provides an important refuge for native flora and fauna and acts as an important cultural, educational and recreational site (Robins *et al.*, 2007).

Ferris & MacDonald (1995) states that the Aroona Sanctuary was chosen as the preferred site for re-introduction of the yellow-footed rock-wallaby for several reasons, including:

- A suitable habitat.
- The area is surrounded by reasonably sound fencing as at the time the area was actively managed by environmental staff from Electricity Trust of South Australia (ETSA).
- ETSA was already conducting some feral animal control.
- The security of the long-term nature of the project through the site's tenure.

- The infrastructure created for the coalmine and Leigh Creek township provides excellent accessibility for such a remote and arid site.
- Yellow-footed rock-wallabies had been recorded in the vicinity but were thought to now be extinct.

Implementation: Feral animal control commenced in July 1995, prior to the initial rock-wallaby release. Vegetation assessments were undertaken using photo-monitoring, grazing exclusion areas and visual monitoring. Release animals were selected based upon genetics, age, body condition, reproductive fertility, dental health, physiological stress response and health. An extensive trapping program, targeting any macropod within a 50 km radius of the release site, was conducted in the year before release to provide a detailed list of parasites and disease endemic to the release area. All proposed release animals were tested to be free from any locally exotic diseases and an attempt was made to insure inherent immunity was encouraged against parasites identified in the wild populations. To reduce the impact of the sudden changes in gut flora required in a hard release, animals were housed in large enclosures supporting mature growths of native vegetation and supplementary foods were kept to a minimum. Six weeks prior to release food types, similar to those at Aroona Sanctuary, were introduced to the enclosures.

To maximize genetic diversity of founder animals and encourage cohesion between the individuals immediately after release, joeys were removed from females one month prior to release (and hand-reared to remain in captivity). Diapause joeys, sired previously by genetically unrelated males, would subsequently be born around the time of release and emerge from pouch 5-7 months later. In addition, the pouch young manipulation stimulated all females to undergo an oestrus period at the time of release. Combined with housing the group as a functioning colony in captivity, the reproductive state would encourage cohesion in the group at release. This would reduce the likelihood of immediate and risky dispersal from the release site prior to individuals setting up home ranges. Added benefits of the reproductive manipulation is that there was minimal energy demand on the mature females at release with nil or minimal lactational demands and no risk of joey rejection. All rock-wallabies were transported to the release site by car. Fresh fecal pellets collected from the pre-release enclosures were spread on the rocky outcrops of the site prior to release. The rock-wallabies were vet-checked on site, and released in the late afternoon. Exposure of the release, and post-release monitoring to the local community has been extensive, and resulted in positive and encouraging support. This was greatly assisted by the involvement of the Leigh Creek Area School.

Post-release monitoring: Ten wallabies were released in September 1996, with a further two in 1997. Using three hand-held radio-tracking receivers, the wallabies were tracked remotely, using triangulation from fixed points over the release gully. This method was chosen to avoid human interference but allow constant monitoring for rapid retrieval. They were first tracked four hours post-release, and then every six hours thereafter for the first six weeks. Tracking teams were rotated every five days, with one day cross-over for continuity.



Release gully © T. P. Morley

Triangulation allowed for the movement patterns to be plotted. After six weeks, a single radio-tracking receiver was used twice daily, purely to determine whether an animal was still alive and/or in the area. Any animals returning a mortality signal were tracked down and presented for a thorough pathology investigation. In 1998, with the financial assistance of Leigh Creek School, three tracking stations were erected, allowing animals fitted with radio collars to be monitored,

and the success of the population to be established. Software provided by Flinders University allowed this monitoring to occur 24 hours per day. Mark-recapture monitoring by PhD student Steve Lapidge (quarterly, 1998-2001) concentrated on research into diet and reproduction. From 2001-2008, bi-annual monitoring of the population, through trapping and radio-tracking, continued through a partnership involving Zoos South Australia, Conservation Volunteers of Australia (CVA) and Flinders University, supported by invaluable assistance from Flinders Power and the Leigh Creek community. Today, the biannual population monitoring is undertaken by Zoos SA, with data being included in state-wide yellow-footed population monitoring by Ecoknowledge.

Major difficulties faced

- Aroona Sanctuary encompasses Aroona Dam, a permanent water supply that attracts introduced herbivores and carnivores, along with above-normal macropod numbers. The artificially high presence of these animals places greater stress on the habitat in which the rock-wallabies live. Yellow-footed rock-wallabies do not require large, permanent water sources, and so Aroona Dam could arguably be hindering the population.
- On-going communication and education has been required to ensure continual support from the local community, particularly from some of the pastoralists.
- The temporary nature of the mine and its support of Aroona - hopefully the status of "Sanctuary" will add some security for the site.
- Unable to sustain momentum and run further projects in this location. Scope for introduction of genetically unrelated animals or other species has not yet been realized. Consequently, the project is running at a low input, maintenance level and local support is fading with a changing community.

Major lessons learned

- Captive-bred rock-wallabies are suitable for release.

- Dispersal and starvation shortly after release can be minimized with pre-release conditioning and reproductive manipulation.
- A comprehensive veterinary component to the program is vital.
- Community involvement allows growth and sustainability of a project.
- “Dead animals” are not a “failed project” if a high standard of post-release monitoring reveals the cause of death and thus progress.
- A small team working with simple, logical, science-based objectives can go a long way, with minimal funding and in a short time.

Success of project

Highly Successful	Successful	Partially Successful	Failure
√			

Reason(s) for success/failure:

- Captive-bred rock-wallabies were released successfully. Since the initial release, multiple generations of rock-wallabies have been born and survived on the site for over 13 years, with more than 70 different animals recorded.
- The local community has played a large role in the success of this project. After 14 years there is still some local involvement through feral animal control, the pre-baiting of traps for population monitoring, land management and general conservation consciousness.
- Methodologies and experiences acquired through this release have been used for later rock-wallaby releases, namely the re-introduction of the Victorian brush-tailed rock-wallaby (*P. penicillata penicillata*).
- Successful collaboration of many partners from government, private, industry and community.
- Prompted specific and detailed genetic investigation of the yellow-footed rock wallaby.

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