



Global Re-introduction Perspectives: 2010

Additional case-studies from around the globe
Edited by Pritpal S. Soorae



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Trial re-introduction of the woma python in northern South Australia

Greg Johnston¹, John Read² & Terry Morley³

¹ - Conservation Biologist, Royal Zoological Society of South Australia & Senior Lecturer, School of Biological Sciences, Flinders University of South Australia (greg.johnston@flinders.edu.au)

² - Founder and Ecologist, Arid Recovery, Roxby Downs, GPO Box 147, Roxby Downs, South Australia 5725, Australia & School of Earth and Environmental Sciences, University of Adelaide (john.read@adelaide.edu.au)

³ - Assistant Curator of Reptiles, Royal Zoological Society of South Australia, Frome Road, Adelaide, South Australia 5000, Australia (tmorley@zoossa.com.au)

Introduction

The woma (*Aspidites ramsayi*) are large (~2m), brown terrestrial pythons that are endemic to the arid and semi-arid parts of Australia. Womas occur in a wide range of sand dune and sand plane habitats (Tyler *et al.*, 1990; Cogger, 2000). Despite their size, womas are inconspicuous and rarely seen because they are primarily nocturnal, living in mammal burrows during the day. Mammals, reptiles and birds are the main prey of womas. Womas are endangered in eastern Australia and vulnerable in South Australia. Womas are critically endangered in south-western Western Australia (Cogger *et al.*, 1993), where habitat clearance is considered their greatest threat and where they have not been seen since 1980. Introduced cats (*Felis catus*) and foxes (*Vulpes vulpes*), which have driven many Australian mammalian prey species of womas to extinction or into serious decline in southern parts of the Australian arid zone (Johnson, 2006) probably also threaten womas by direct predation, particularly of juveniles.

Goals

- Goal 1: A trial re-introduction of woma pythons using available captive-bred stock, as a preliminary to a full-scale re-introduction ensuring appropriate genetic diversity (Read *et al.*, in press).
- Goal 2: To investigate the ecology, behavior and threatening processes of an inadequately studied locally (and potentially nationally) threatened species.
- Goal 3: To introduce a native predator to assist in population regulation of re-introduced mammals within the fenced portion of the Arid Recovery Reserve.
- Goal 4: To develop protocols for possible future breed-and-release programs of other endangered Boid snakes, in particular the critically endangered south-western Australian population of the woma.
- Goal 5: To increase public awareness of conservation issues.

Success Indicators

- Indicator 1: Clarification of disease-free status of captive-bred womas particularly with regard to ophidian paramyxovirus and inclusion body disease.
- Indicator 2: Recovery and successful feeding of womas post surgical insertion of transmitters.

- **Indicator 3:** Release of captive bred woma pythons into the Arid Recovery Reserve under two experimental conditions of food availability.
- **Indicator 4:** Collection and analysis of movement, habitat use, diet and causes of mortality of radio-tracked woma pythons.
- **Indicator 5:** Survival of released snakes over 12 months with a decline to no less than 60% of their pre-feeding release weight.
- **Indicator 6:** Attention from print, radio and television media, and public attendance at pre-release community meetings and presentations.



Woma python (*Aspidites ramsayi*) © T. Morley

Project Summary

Feasibility: The Arid Recovery Reserve is a 60 km² fenced enclosure in northern South Australia (S 30.4844, E 136.8833) from which all introduced rabbits (*Oryctolagus cuniculus*), cats and foxes have been removed. The reserve lies within the known historical natural range of womas, but no womas have been recorded within the reserve since it was established in 1997, despite weekly monitoring. The recovery of native mammal populations at the Arid Recovery Reserve has occurred due to natural increases following removal of introduced mammals, and the successful re-introduction of four locally-extinct, herbivorous and omnivorous mammal species. In addition to developing a re-introduction protocol to improve the conservation status of womas, introduction of a native predator was an appropriate management initiative to limit burgeoning mammal populations within the Arid Recovery Reserve (Read & Johnston, 2005). Ten womas from a single clutch were bred at Adelaide Zoo from wild-caught parents. We considered regional provenance to be important because womas show considerable geographic variation in morphology. The parents of the released womas were wild caught within 400 km of the release site. Miniature radio-transmitters were surgically implanted into the gut cavity between 3rd and 5th April 2007. All snakes fed and sloughed their skin at least once following transmitter insertion before they were released. Prior to the release, the incidence of endemic parasites and potential pathogens was investigated in reptiles from the Arid Recovery Reserve. All womas identified for release were held in isolation from all other reptiles from May 2004 until they were released in September 2007. During this time they exhibited no symptoms of disease. Particular attention was paid to the possibility of ophidian paramyxovirus or inclusion body disease. All released snakes were negative for DNA tests for paramyxovirus.

Reptiles



Mulga snake predating on a woma © Chris McGoldrick

Implementation: Ten womas were transported from Adelaide Zoo to Roxby Downs on 21st September 2007. One of the 10 transmitters failed prior to release, so this individual was returned to Adelaide Zoo. The remaining nine womas (7:2) were either hard-released (4 males:1 female) directly in to the Arid Recovery Reserve or soft-released (3 males:1 female) into a 0.5 ha pen within the Reserve into which weed-free oats were spread weekly for five weeks before the release to encourage high

rodent densities. Womas in the hard release group were placed at separate locations (at least 150 m apart) on dunes within 2.5 km of the release pen. Each woma was released next to a disused bilby burrow on the morning of 22nd September 2007.

Post-release monitoring: Following release, the womas were radio-tracked daily to determine their location, habitat, health, and details of retreats used. We deliberately located snakes at different times of the day to maximize the temperature and diurnal range of observations, but found that we were not able to locate nocturnal fixes with precision or confidence without potentially damaging the snake refuges. Therefore most radio-tracking was conducted during daylight hours. Following an initial sedentary period, the womas moved shelters every five days, or so. Individual womas travelled up to 230 m. The womas released into the 'soft release' pen moved out of the pen within two weeks. All womas were found within or just outside underground retreats, usually burrow or warrens, during daylight hours. Successful feeding was confirmed for several of the released womas. The most noteworthy outcome of the study was that all released woma pythons were killed within four months, most likely by mulga snakes (*Pseudechis australis*).

Major difficulties faced

- Assessing disease status of captive bred woma pythons, specifically with regard to ophidian paramyxovirus and inclusion body disease. Both diseases were confirmed in captive reptile collections in Australia just prior to instigation of the re-introduction program. No testing facilities in Australia. This testing took over two years.
- Long-term captive husbandry required due to delays in assessing disease status of captive bred woma pythons.
- Unexpected predation by mulga snakes, which were not identified as an important predator during planning stages of the trial re-introduction.

Major lessons learned

- Allow sufficient time for pre-release assessment of disease status in the face of emerging diseases for which diagnostic tools are being developed.
- Womas easily and rapidly scaled the netting fence designed to contain them within the soft-release experiment
- Expect to be surprised, even in areas where you have long experience of the fauna and natural history. Predation by mulga snakes was not predicted to be a major source of mortality prior to the release.



Habitat at the Arid Recovery Reserve site
trial re-introduction © Terry Morley

Success of project

Highly Successful	Successful	Partially Successful	Failure
		√	

Reason(s) for success/failure:

- Trial release achieved, snakes fed and found shelter, although all released snakes were predated within four months.
- New information obtained about the ecology, behavior and threatening processes that will inform future re-introductions of woma pythons.
- Public awareness of conservation issues increased through considerable media attention and public attendance at pre-release community meetings and presentations

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