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Rangelands restoration: reintroduction of native mammals to Matuwa (Lorna Glen)

Animal Science

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Project Team	granted
Program Leader	granted
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Context

Operation Rangelands Restoration commenced in 2000 with the acquisition of Lorna Glen (Matuwa) and Earaheedy (Kurrara Kurrara) pastoral leases by the Western Australian Government. This 600,000 ha area lying across the Gascoyne and Murchison bioregions is now the site for an ecologically integrated project to restore ecosystem function and biodiversity in the rangelands. This is being undertaken in collaboration with the traditional owners. In 2014 Native Title (exclusive possession) was granted to Tarlka Matuwa Piarku Aboriginal Corporation (TMPAC) over Matuwa and Kurrara Kurrara.

The area around Matuwa once supported a diverse mammal fauna that was representative of the rangelands and deserts to the north and east. These areas have suffered the largest mammal declines in Western Australia. This project seeks to reintroduce 11 arid zone mammal species following the successful suppression of feral cats and foxes, and contribute significantly to the long-term conservation of several threatened species. Mammal reconstruction in this area will also contribute significantly to the restoration of rangeland ecosystems through activities such as digging the soil and grazing/browsing of vegetation, and assist in the return of fire regimes that are more beneficial to the maintenance of biodiversity in the arid zone.

The first of the mammal reintroductions commenced in August 2007 with the release of bilby (*Macrotis lagotis*) and brushtail possums (*Trichosurus vulpecula*). Between 2010-2012, mala (*Lagorchestes hirsutus*), Shark Bay mice (*Pseudomys fieldi*), boodies (*Bettongia lesueur*) and golden bandicoots (*Isoodon auratus*) were translocated into an 1,100 ha introduced predator free fenced enclosure. The intention is to use these as a source for translocations to areas of Matuwa outside the enclosure where cats are being effectively suppressed, and ultimately the establishment of free-ranging self sustaining populations.

Aims

- Develop effective feral cat control techniques in a rangeland environment.
- Reintroduce 11 native mammal species to Matuwa by 2023, and contribute to an improved conservation status for these species.
- Re-establish ecosystem processes and improve the condition of a rangeland conservation reserve.
- Develop and refine protocols for fauna translocation and monitoring.
- Determine the role of digging and burrowing fauna in rangeland restoration.

Progress

- The persistence of bilbies across the Bullimore Sand Plain land system has been confirmed via 120 camera traps and occupancy analysis.
- The persistence of brushtail possums was confirmed from nine camera traps and multiple detections of scratch marks and scats on *Eucalyptus* trees.
- Golden bandicoot tracks continue to be detected in the Bullimore Sand Plain land system, albiet at low densities.
- The camera trap system and 100 km linear track counts continue to be used to monitor the cost-effectiveness of feral cat baiting and trapping.
- Boodies, golden bandicoots and mala are persisting in the enclosure.
- Two vocational training units in 'Apply animal trapping' and 'Survey pests' were completed by selected Martu Rangers.

Management implications

- Fauna reconstruction increases the probability of species persistence through the establishment of multiple populations, and it re-establishes ecosystem processes lost during localised extinctions.
- Flexibility in timing is a key consideration in the planning of reintroductions, which should also take into account the effects of environmental conditions (droughts) and annual cycles of reproduction/behaviour in potential predators/competitors on reintroduction success.
- Detailed monitoring to identify causes of mortality and the subsequent identification of predators and their removal in a timely fashion are critical to the success of reintroduction programs. Monitoring has demonstrated that additional cat control techniques to landscape scale baiting are required to successfully re-establish threatened vertebrate fauna in the rangelands.
- Sourcing founder animals from multiple locations has proven valuable in increasing genetic diversity in reintroduced species.
- Increased involvement of traditional owner rangers with fauna monitoring has assisted collaborative management arrangements.

Future directions

- Develop more vocational training units for Martu Rangers and collaborative fauna monitoring activities.
- Ongoing monitoring of reintroduced species and introduced predators.
- Complete analysis of last 10 years of monitoring data.