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

Animal Science

Project Core Team

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Project Team	granted
Program Leader	granted
Directorate	granted

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Context

Operation Rangelands Restoration commenced in 2000 with the acquisition of Lorna Glen (Matuwa) and Earaheedy (Kurrara Kurrara) ex-pastoral leases by the Western Australian Government. This 600,000 hectare area is now the site for an ecologically integrated project to restore ecosystem function and biodiversity in the rangelands. We are working in collaboration with the traditional owners, Tarlka Matuwa Piarku Aboriginal Corporation (TMPAC), who were granted Native Title (exclusive possession) over Matuwa and Kurrara Kurrara in 2014. Matuwa, and deserts to the north and east, once supported many mammal species. 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. Mammal reconstruction will also contribute to the restoration of rangeland ecosystems through re-establishment of ecosystem services such as digging, grazing/browsing of vegetation and seed dispersal.

The first 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 hectare introduced predator-free fenced enclosure. The enclosure is intended to provide species with an opportunity to acclimatise to the desert environment, with the ultimate goal being to release animals outside the enclosure, and establish free-ranging self sustaining populations of these species.

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 a rangeland ecosystem.

Progress

- A manuscript discussing the need for an integrated pest management approach to feral cats was published in *Science of the Total Environment*.
- Manuscripts discussing interactions between wild dogs and feral cats on Matuwa were published in *Movement Ecology* and *Wildlife Research*.
- The persistence of bilbies and brushtail possums at Matuwa has been confirmed via camera-traps, and a manuscript is in preparation.
- Low numbers of golden bandicoot tracks continue to be detected in the Bullimore Sand Plain.
- Boodies, golden bandicoots and mala are persisting in the enclosure, with boodie numbers fluctuating dramatically in response to environmental conditions.

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

- Ongoing monitoring of reintroduced species and introduced predators.
- Complete analysis of last 10 years of monitoring data.
- Complete publications on the ecology of boodies and golden bandicoots.
- Validate the accuracy of the 100km linear track transect by comparing data collected in 2020 to actual estimates of feral cat density.