

Progress Report SP 2003-004

Project Rangelands Restoration: developing sustainable management systems for the conservation of biodiversity at the landscape scale in rangelands of the Murchison and Gascoyne bioregions—managing fire and introduced predators

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Project status as of Sept. 27, 2017, 9:23 a.m.

Approved and active

Document endorsements and approvals as of Sept. 27, 2017, 9:23 a.m.

Project Team

granted

Program Leader

granted

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granted

Project Rangelands Restoration: developing sustainable management systems for the conservation of biodiversity at the landscape scale in rangelands of the Murchison and Gascoyne bioregions—managing fire and introduced predators

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Context

Despite the relatively pristine nature of most of the arid interior (desert bioregions) and rangelands (beyond the pastoral zone), there has been an alarming and recent loss of mammal fauna, with about 90% of medium-size mammals and 33% of all mammals either becoming extinct or suffering massive range contractions. There is also evidence of degradation of some floristic communities due to altered fires regimes. The extent and nature of change in other components of the biodiversity, including extant mammals, birds, reptiles and invertebrates is unknown. The most likely causes of the decline and degradation in biodiversity are introduced predators, especially the fox (*Vulpes vulpes*) and the feral cat (*Felis catus*), and altered fire regimes since the departure from traditional Aboriginal burning practices over much of the region. Taking an adaptive experimental management approach in partnership with Goldfields Region, this project aims to reconstruct some assemblages of the original native mammal fauna on Lorna Glen, a pastoral lease acquired by the Department. This will be achieved by an integrated approach to controlling introduced predators and herbivores, ecologically appropriate fire management, and fauna translocations.

Aims

- Develop efficient, effective and safe introduced predator (fox and feral cat) control technologies for the interior rangelands and the arid region.
- Reconstruct the original suite of native mammal fauna through translocation once sustainable feral cat control can be demonstrated.
- Implement a patch-burn strategy to create a fine-grained, fire-induced habitat mosaic to protect biodiversity and other values.
- Describe and predict pyric (post-fire) plant succession and describe the life histories of key plant species.
- Monitor the long-term trends in species assemblages and abundance of small mammals and reptiles in an area where introduced predators are not controlled compared with an area where they are controlled.
- Model the relationship between seasons (rainfall) and the frequency and size of wildfires.

Progress

- Cat, fox and wild dog aerial baiting carried out on Lorna Glen in July 2014 as part of the Western Shield program was partially effective with the feral cat population reduced by ~30% from an activity index high of 22.4. Radio tracking however, suggested a cat reduction of 60%. Deterioration of track count survey lines due to heavy rain prior to the survey may have contributed to this discrepancy.
- This year for the first time, a survey was also carried out on Earraheedy, which has never been baited. The cat density was about 50% higher than on Lorna Glen.
- The field work component of a PhD project to investigate interactions between wild dogs/dingoes and wild cats is complete and data analysis and write-up are underway. The study is testing the hypothesis that there is an inverse relationship between dog and cat density. The management implication is that retaining dingoes could result in a reduction in cats.
- A report on 10 years of monitoring vertebrate fauna has been completed and shows that some taxa have increased in abundance, possibly in response to management actions. This work is being prepared for publication.
- Mulgara (*Dasycercus cristicauda*) population has declined on Lorna Glen, but is still significantly higher than before baiting commenced in 2003 and is about double the population on Earraheedy.

- The fire management plan continued to be implemented, including further installation of fuel-reduced buffers around some fire management cells and some core ignition using aircraft. A wildfire started by lightning in late September 2014, and which had the potential to threaten the predator exclusion compound containing threatened fauna, was stopped by the buffer burning.

Management implications

- This project is providing insurance populations of threatened arid zone mammals.
- Information will inform guidelines for the proactive management of fire in the arid zone rangelands to reduce the severity (scale and intensity) of wildfires and to provide habitat choice through mosaic burning.
- Guidelines for controlling introduced predators in the arid zone rangelands will reduce this threat to native fauna. Reintroduction and protection of mammals of the arid zone rangelands, other extant fauna, vegetation and other elements of the biota will provide reconstruction of animal and plant assemblages in an arid zone ecosystem.
- A framework and protocol for assessing and reporting trends in ecosystem condition in arid zone rangelands will provide a basis for ecosystem condition monitoring.

Future directions

- Assess and report on the effectiveness of wild cat and dog baiting to be undertaken in July 2015. Trail cameras will be evaluated for their utility for assessing predator density before and after baiting.
- Prepare a paper for publication reporting on 10 years of biodiversity monitoring on Lorna Glen.
- Carry out a biological survey of Earraheedy.
- Survey wild dogs, cats and mulgara on Earraheedy where there has been no introduced predator control, and compare results with Lorna Glen.
- Continue to implement the fire management plan including buffer burning and aerial patch burning. Carry out patch-burning in the predator-proof compound.