Science for Saving Species

Research findings factsheet

Project 4.1.2



Selecting faunal species for reintroduction to Mulligans Flat Woodland Sanctuary, ACT

In brief

Threatened species recovery programs are increasingly turning to reintroductions to reverse biodiversity loss. Through this project, the Australian National University (ANU) has worked closely with the ACT Government and the Woodlands and Wetlands Trust (WWT) to provide scientific support to animal reintroduction programs at Mulligans Flat Woodland Sanctuary (MFWS).

To date, a number of species have been reintroduced to MFWS. Reintroduction of the eastern bettong (Bettongia gaimardi), eastern quoll (Dasyurus viverrinus) and bush stone-curlew (Burhinus grallarius) are well advanced, while trial reintroductions of species like the new Holland mouse (Pseudomys novaehollandiae) have also commenced. Building on this work, we worked with stakeholders to develop a species selection and prioritisation process for the next priority list of species to be reintroduced, which has informed the draft Mulligans Flat Woodland Sanctuary Strategy 2020-2045 which outlines overall aim to build a healthy and sustainable woodlands food web.

Along with project partners and stakeholders, we re-evaluated and refined our earlier species selection process, and applied the updated process a second time. Through this process we identified another five faunal species for possible reintroduction to the Sanctuary. These are the spotted-tailed quoll (Dasyurus maculatus), Rosenberg's monitor (Varanus rosenbergi), brush-tailed phascogale (Phascogale tapoatafa), koala (Phascolarctos cinereus) and Australian bustard (Ardeotis australis). These species were added to the list of priority species from our original prioritization process including the eastern chestnut mouse (Pseudomys gracilicaudatus), southern brown bandicoot (Isoodon obesulus) and yellow footed antechinus (Antechinus *flavipes*). In conjunction with project partners, we are in the process of assessing the feasibility of these reintroductions and developing translocation proposals for several of these species.

These animal reintroductions form part of a long-term woodland restoration project. Information gained from these trial reintroductions will be used to inform future full reintroductions into former habitat, and to identify tactics that maximise reintroduction success within a translocation tactics framework that we have developed.

Background

Mulligans Flat and Goorooyarroo Nature Reserves cover approximately 2000 ha, and contain 1424 ha of critically endangered box-gum grassy woodland. The reserves are managed by the ACT Government in partnership with the Woodlands and Wetlands Trust (WWT). In 2009, an 11.5 km fox-proof fence was built around Mulligans Flat Nature Reserve, and foxes, cats, dogs, hares, and rabbits were eradicated. In 2018, a 12 km predator-proof fence was built in the neighbouring Goorooyarroo Nature Reserves, resulting in a total combined fenced area of 1286 ha free from foxes, cats, rabbits and hares. The two areas are separated by a fence which assists with population management. The combined fenced area is called the 'Mulligans Flat Woodland Sanctuary' (MFWS or Sanctuary).

The long-term vision for the Sanctuary is to establish a fullyfunctioning box-gum grassy woodland ecosystem, including locally extinct species. An overarching aim of the Sanctuary is to be an 'outdoor laboratory' that allows us to refine methods for rebuilding highly disrupted ecological communities. To achieve this, the Sanctuary undertakes collaborative science to find ways to restore lost biodiversity, and to engage







Background (continued)

the community in a future vision for biodiversity in Australia. The scientific projects aim to provide empirical data that can inform development of applied protocols for ecosystem restoration, including the improvement of reintroduction success of locally extinct native species.

Due to numerous factors, such as the limited space and resources within the Sanctuary, not all species that once naturally occurred in the area will be suitable for reintroduction. The order in which species are introduced is also important, for example there might need to be a sustainable population of prey before a given predator could be reintroduced. As such, a robust process is needed to identify which animals to reintroduce to MFWS and when. To date, five animals have been included in trial reintroductions to MFWS, with scientific monitoring and evaluation embedded as part of the translocation process.

Research aims

The aim of this project was to provide scientific support and guidance to reintroduction programs at MFWS. This included identifying priority faunal species for reintroduction and the development of translocation proposals for shortlisted species.



What we did

In 2015, ANU, ACT Government and WWT began a collaboration to develop the 'MFWS Fauna Reintroduction Sub-Strategy' to: better reflect the evolving interests of key stakeholders and the operational environment of MFWS; improve functionality; and establish a process that better facilitated the identification and prioritisation of candidate species, and improve the sequencing of reintroductions.

As part of this review process, a workshop was held in January 2016 with key stakeholders and experts. The output from this workshop was then compiled, and the process commenced to assess and prioritise species. The Mulligans Flat Woodland Sanctuary Reintroduction Workshop incorporated the input from nine organisations. Additionally, community and stakeholder interests in potential species reintroductions was assessed.

The selection and prioritisation process were divided into two

phases, (1) evaluating initial eligibility and, (2) evaluating secondary eligibility and prioritisation. The first phase assessed the native origin of the species, absence from MFWS, ecological suitability and the availability of suitable and viable source population(s). The second phase scored the eligibility and prioritisation of each species for each of the following five categories:

- 1. Presence of ecologically similar animals in the faunal community at MFWS,
- 2. The species complementarity to management and ecological restoration objectives,
- Potential for community engagement, education and non-research-based funding,
- 4. Potential for research and research-based fundraising, and
- 5. Probability of success, and cost-benefit efficiency.

Key findings

The workshop and consultation process identified fourteen potential candidate species for reintroduction. A shortlist of high priority species was then created based on their scores against the reintroduction assessment and the strategic role their reintroduction would play. The species shortlisted were:

- koala
- Rosenberg's monitor
- brush-tailed phascogale
- Australian bustard
- spotted-tailed quoll

Detailed feasibility assessments are now being undertaken for these species and a pilot reintroduction of the spotted-tailed quoll is underway. We are in the process of developing translocation proposals for several of the other species. This process includes reviewing the ecology of the species, threats, occurrence, previous conservation actions, and how we expect they may interact with their environment. This process is undertaken with the input of stakeholders and experts with specialist knowledge of the species.

As well as enhancing biodiversity and building a more resilient ecosystem in the Sanctuary, we are aiming to have animals present from all parts of the food web. So far, a tertiary predator (eastern quoll), secondary consumer (bush-stone curlew), and two primary consumers (New Holland mouse and eastern bettong) have been reintroduced to the Sanctuary. The reintroduction of Rosenberg's monitor (carnivore) and spotted-tailed quolls (carnivore and apex predator) was identified as a high priority due to their potential ability to control overabundant exotic pest and native species and drive adaptation of predator-savvy native populations.

The koala was considered as a high-priority species because it fills the unique ecological role of being an arboreal leaf grazer and the presence of would provide opportunities for positive public engagement. The Australian bustard was selected because of the opportunity for the reintroduction to be undertaken in partnership with community groups. The knowledge gained in the successful bush stone-curlew reintroduction could also be applied to the reintroduction of the bustard.



Further Information

Adrian Manning – adrian.manning@anu.edu.au

Implications

The outcomes of the multi-species selection process have fed into the draft Mulligans Flat Woodland Sanctuary Strategy 2020-2045, which sets the direction for the Sanctuary for the next 25 years. Through public engagement for the strategy there were no concerns raised about any potential reintroductions, and some were positively supported. In the next phase, the partners will further determine the sequencing of the remaining animals proposed for reintroduction at Mulligans Flat Woodland Sanctuary.

This project has highlighted how collaborations between conservation organisations, government, community, and research scientists can benefit animal reintroduction programs, and help to realise the aspirations of the local community for their natural ecosystems.

These proposed animal reintroductions will form part of the long-term woodland restoration project. We are hoping to use information gained from these proposed reintroductions to inform future full reintroductions into former habitat and to identify tactics that maximise reintroduction success.



Koala. Image: John Carney, Flickr, CC BY-NC 2.0

Cited material

Abicair, K., A.D. Manning, F. Ford, J. Newport, and S.Banks. 2020. Habitat selection and genetic diversity of a reintroduced 'refugee species'. Animal Conservation 23:330-341.

Batson, W, Gordon, I, Fletcher, D & Manning, A. (2015) Translocation tactics: a framework to support the IUCN Guidelines for wildlife translocations and improve the quality of applied methods', Journal of Applied Ecology, vol. 52, pp. 1598–1607. https://doi.org/10.1371/journal.pone.0234455.g001

Batson W, Fletcher D, Portas T, Crisp H, Ryan S, Wimpenny C, Gordon I, Manning A.D. 2016. Re-introduction of eastern bettong to a critically endangered woodland habitat in the Australian Capital Territory, Australia. Global Re-introduction Perspectives: 2016. Case-studies from around the globe. Publisher: IUCN/SSC Re-introduction Specialist Group & Environment Agency-ABU DHABI Editors: Pritpal S. Soorae

Jolly, C. and Phillips, B.L. (2020) Rapid evolution in predator-free conservation havens and its effects on endangered species recovery. Conservation Biology 35(1): 383-385.

Mulligans Flat Woodland Sanctuary, 2021, Flourishing Nature, Flourishing Culture: Mulligans Flat Woodland Sanctuary Draft Strategy 2020 – 2045 (https://s3.ap-southeast-2.amazonaws.com/hdp.au.prod.app.act-yoursay. files/5216/0705/0824/MF_Strategy_Document_2020_PROOF_9_A27473858.pdf).

Wilson B, Evans, ME, Batson, WG, Banks SC, Gordon, IJ, Fletcher, DB, Wimpenny, C, Newport, Belton, E, Rypalski, A, Portas, T, Manning, AD. 2021. Reintroduction of the eastern quoll to Mulligans Flat Woodland Sanctuary, Australia using trials, tactics and adaptive management. In. Global conservation translocation perspectives: 2021. Case studies from around the globe: IUCN SSC Conservation Translocation Specialist Group, Environment Agency p. 194-199.



Cite this publication as NESP Threatened Species Recovery Hub. 2021. Selecting faunal species for reintroduction to Mulligans Flat Woodland Sanctuary, ACT, Project 4.1.2 Research findings factsheet.