

FINAL REPORT ON PROJECT SUPPORTED BY PADDY PALLIN SCIENCE GRANT

Instructions to Project Leaders for Completing This Form

Progress reports are required to be submitted 12 months after the start of the project, and then at 18-24 months as a final report. Grants usually begin on the 30th September in the year in which the grant was awarded. Payment of the second grant installment is contingent upon the receipt of this material. Updates are to be provided during the tenure of the grant, and at the time the final report is submitted. Payment of the final grant installment is contingent upon receipt of the final summary which is to summarize the outcomes of the project during the tenure of the grant.

1. PROJECT IDENTIFICATION

1.1 PROJECT TITLE

Saving the endangered northern bettong with fire

1.2 ADMINISTERING ORGANISATION

University of Queensland

1.3 PROJECT LEADER AND PARTICIPANTS

Christopher Pocknee, Diana Fisher, Jane McDonald, Sarah Legge

2. PROJECT DESCRIPTION & OBJECTIVES

2.1 100- Word Project Summary

I am assessing the impact of different fire regimes on the endangered northern bettong (*Bettongia tropica*), along the Lamb Range in northern Queensland. One way I am doing so is tracking bettongs with GPS collars before, during and after burns (carried out by Queensland Parks and Wildlife Service), along with bettong mark-recapture surveys before and after fire and camera trapping surveys targeting potential predators. My findings will be communicated directly with QPWS and Traditional Owners to help ensure that the area is managed in an optimal way for the persistence of the northern bettong.

2.2 Summary of original objectives (150 words max)

I aimed to deploy up to twenty GPS collars on bettongs to track movements and provide evidence of their response to two fire treatments. Alongside GPS tracking, I aimed to perform mark-recapture surveys, during which measurements and health indicators are collected from each animal. These surveys are repeated before and after fire to observe any changes. I have deployed camera traps, specifically targeting feral cats, to observe any changes to predation risk that may also be associated with fire, as cats may move into recently burned areas for easy hunting. Finally, I am carry out vegetation surveys before fire and then at ~6-month intervals after fire. This will provide information around how long following fire before the habitat is able to provide sufficient cover for nesting

bettongs and whether fire impacts food availability. Analyses will compare pre- vs. post-fire results across different burn treatments (early vs. late).

3. PROJECT OVER DURATION OF FOUNDATION GRANT

3.1 Have there been any changes to the project? If yes give details

Yes, I have had to utilise less GPS collars than originally planned and have them deployed for a shorter time frame than I had hoped. In total, I deployed ten collars before fires this year. The reduction in numbers is due to a manufacturer that I had originally planned to use not being able to make collars light enough to be carried by bettongs with the technology that I required. I was limited to a choice of two collar manufacturers and the collars were much more expensive than originally hoped (~\$2,300AUD per collar). As such, with the budget I had access to, only ten collars were purchased. The shorter duration of deployment is simply due to logistical hurdles – being able to recapture individual bettongs readily enough to continually deploy collars for up to six months was simply not feasible with the battery life available for each deployment. Collars were deployed in the field for approximately two months.

Furthermore, I encountered serious disruptions to my field plans this year (2020) due to the COVID-19 situation. Unfortunately the guidelines, restrictions and uncertainty that was present earlier in the year meant that I was not able to carry out my planned trapping sessions around burns, and therefore missed vital data from both GPS collars and mark-recapture surveys. As a result, I am now working through options to possibly extend the life of this project to cover another burning event in bettong habitat.

3.2 What were your research plans and objectives for the period covered by this report? (150 words max)

In the last 12 months, I had planned to complete my second full field season, which would have provided me with sufficient data to begin in-depth data analysis and writing up of results for thesis chapters and publication. I had planned to 1) deploy camera traps in early 2020 at sites that were planned to burn this year and at nearby control sites where no burning was to take place, followed by retrieval in late 2020; 2) return to my 2019 sites for follow-up vegetation surveys in late 2019 and early 2020, as well as setting up new vegetation survey plots in early 2020 at sites that were to burn this year; 3) carry out mark-recapture surveys and GPS collar deployment before and after the scheduled burns; and 4) begin detailed data analysis and writing up.

3.3 Did the research project proceed as planned? What have you achieved over this period? Outline the research findings to date (200 words max)

No, the project did not proceed as planned. The camera trapping and vegetation surveys were completed as planned, and extra cameras have recently been deployed at a site where storm burning is proposed for this summer. Unfortunately the planned mark-recapture surveys and GPS collaring did not go ahead. At the time that initial trapping surveys were being planned, it was not considered practical to be able to carry out surveys while following COVID-19 guidelines. It was also deemed too high-risk to deploy GPS collars at the time considering the uncertainty around how the situation would unfold from both an animal welfare (collars potentially being left on animals for months longer than

planned if restrictions increased) and logistical (batteries in collars dying, therefore making them extremely difficult to track down and retrieve) point of view.

Initial observations of camera trap pictures indicate a lack of cat detections (although 2020 photos have not been thoroughly checked yet) which is an encouraging sign for the northern bettongs and other small-medium mammals of the Lamb Range. Follow-up vegetation surveys are also showing positive results, with significant recovery of habitat, particularly the important ground cover, within the first 12 months following a burn.

3.4 Have you experienced any difficulties that have affected the progress of the research project? If yes give details (150 words max)

Yes, as described above, I missed an important data collection opportunity this year. I am in the process of working how best to make up for this.

3.5 What are your research plans and objectives, including publication plans, for the coming year? (150 words max)

I plan to 1) retrieve cameras that have been deployed across the summer at potential storm burn sites and continue with my follow-up vegetation surveys in early 2021; 2) analyse cat and bettong detection data from the last few decades across the historical range of the northern bettong, from my own data and that collected by research partners including the Australian Wildlife Conservancy and WWF-Australia, and write a paper investigating any correlations between cat sightings, bettong presence/absence and some potentially important habitat variables and; 3) have a clear plan to obtain the required GPS and mark-recapture data across a burn event within bettong habitat.

4. ACADEMIC OUTPUTS

4.1 Publications and other academic outputs directly related to this project.

NESP Threatened Species Recovery Hub (2018) Project summary – Project 1.3.3 “Fire, predators and the endangered northern bettong”

Conference presentations: Australian Mammal Society (2019), Ecological Society of Australia (2019, accepted for December 2020), Queensland Fire and Biodiversity Consortium (accepted for November 2020), Australian Wildlife Management Society (accepted for December 2020).

4.2 Evidence of scholarly impact and contribution. Is there evidence that this research project is having/has had an impact in the research field or the broader public domain?

This project is making up my PhD, for which I have satisfactorily completed my Confirmation and am approaching my mid-candidature review.

NESP have published information about the project on the Threatened Species Recovery Hub website, and I have had an interview with ABC Radio about the feral cat aspect.

4.3 End-user interaction and other project outcomes If there are examples of the impact of this research Project not covered in item 4.2 above please provide details.

To date, none. At the completion of the project, my findings will directly contribute to the management of northern bettong habitat by working with QPWS and Traditional Owners, as well

as the Australian Wildlife Conservancy who are planning a proposed translocation of northern bettongs to one of their privately-managed properties where bettongs historically occurred.

5. ATTACHMENTS & OTHER MATERIAL