

# PROGRESS 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 15<sup>TH</sup> 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** Who benefits from resource supplementation in urban landscapes?

**1.2 ADMINISTERING ORGANISATION** The University of Melbourne

**1.3 PROJECT LEADER AND PARTICIPANTS** Dr Caragh Threlfall, Dr Brad Law, Prof Kris French, Sabrina Velasco (student), Prof Peter Banks

## 2. PROJECT DESCRIPTION & OBJECTIVES

**2.1 100- Word Project Summary** Supplementing roosting habitat for bats via the addition of bat boxes is a popular technique used in restoration and development offsets. However, there is growing concern that boxes may provide a competitive advantage for common species, to the detriment of others. Currently, it is unknown to what extent competition is occurring between bat species over roosting resources, and the role of bat boxes in facilitating increases in the common species. This project will review bat box programs in Sydney and assess species competition experimentally. Results of these investigations suggest that whilst hundreds of boxes have been installed, very little monitoring occurs once installed. We recorded no negative impacts to the foraging bat community from the common Goulds wattled bat, however they are the dominant species recorded utilising boxes when monitoring has occurred. We conclude that further experiments are needed at bat boxes to identify whether competition occurs at roost sites.

### 2.2 Summary of original objectives (150 words max)

My project aims to:

1. Assess the occurrence of interspecific competition in urban bat communities;
2. Understand the role of bat boxes in facilitating competition; and
3. Develop practical guidelines for urban land managers to reduce negative impacts on bat communities.

## 3. PROJECT OVER DURATION OF FOUNDATION GRANT

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

*This could include changes to the research Project resulting from funding from the Foundation being at a lower level than requested. By indicating changes to the budget, aims and research plan in the Report, you are requesting approval from the Foundation for a revision of the Project. A 'satisfactory' assessment of the Report and the Project by the Paddy Pallin Grants Committee*

*means that the revision has been approved.*

No

**3.2 What were your research plans and objectives for the period covered by this report? (150 words max)** *(The answer to this question should be consistent with the original Application or the preceding Progress Report).*

The research plan for Sept 18-19 was to:

- 1) Lodge a second ethics application via The University of Sydney to complete planned Experiments 2 and 3, using call playback at bat boxes;
- 2) Develop communications to disseminate the results of the study (a fact sheet on urban bats including guidelines for bat boxes, a seminar to land managers, and scientific papers);

**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)**

The research has progressed as planned, including the following activities:

- 1) The second series of experiments were carried out in March-April 2019, after a second ethics application was approved. This included trialling ultrasonic call playback from bat boxes, to simulate an occupied box. The experimental procedure requires further refinement as very few bats responded to the call back treatment. Factors that need further exploration include:
  - Changing the timing of the playback e.g. altering what part of the night playback occurs. We trialled the playback at sunset, and in the hours after sunset, when most bats are active. However, the lack of a response by bats to the playback may have arisen as this is the time of night they are searching for food, rather than roosts (or boxes);
  - Changing the length of the playback. We trialled the use of several different file lengths, but this resulted in little change in the response of bats to the playback.
  - Changing the structure and type of playback. We arranged the playback to have set periods of silence between bat calls, however it is unknown if more or less silence would better replicate a 'real' bat calling from an occupied bat box. We also used a combination of commuting calls and social calls, and further experiments are needed to refine which call type may be best for use in call playback experiments.
- 2) Progress has been made on developing two papers from this work and one fact sheet. An outline of each has been approved and is currently being compiled. We hope to complete these by early 2020. The fact sheet on the importance of tree hollows, results from bat box studies, and alternatives to boxes will be placed on the Australasian Bat Society's website, alongside other fact sheets about bats. This will substantially increase the dissemination of results to land managers.

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

Results of planned experiments 2 and 3 were not as expected. We expected a greater response of bats to the playback and believe a lack of response was due to the experimental design. Hence, future experiments will focus on developing the playback procedure such that it better mimics an occupied bat box via playing bat calls at an appropriate time of the night, and for an appropriate length of time.

**3.5 What are your research plans and objectives, including publication plans, for the coming year? (150 words max)** *(Please note that in your next Report you should report progress against these plans and objectives)*

Over the coming year we plan to complete the planned publications and fact sheet, and disseminate findings via a talk or small meetings with land holders/managers or conservation agencies.

## **4. ACADEMIC OUTPUTS**

**4.1 Publications and other academic outputs directly related to this project.** *(Please list all publications and those manuscripts accepted for publication, for the period covered by this report)*

All outputs are currently in preparation. Anticipated completion date is early 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?** *Include examples of formal training (PhD /Masters) as well as other training.*

Invited talks given by Sabrina Velasco, Honours student, who undertook or assisted on all experiments:

Velasco, S (2019) Whispers in the night: how microbats respond to the calls of a dominant species. Blue Mountains Bat Night, March

Velasco, S (2019) What do sharks, snakes and bats have in common? Country Women's Association Kangaroo Valley, June

Velasco, S (2019) What do sharks, snakes and bats have in common? Greater Sydney Landcare Services Prize Day, August

**If yes, give details** *(For instance, standard citation data on articles published in ISI journals, citations to books, re-publication, translations, reviews, invited keynote addresses, other invitations, newspaper/media/expert commentary).*

**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.** *For example, introduction or modification of standards/protocols within an industry sector, preparation of proposals for funding from other agencies as a result of outcomes from this project.*

## **5. ATTACHMENTS & OTHER MATERIAL**

*Please provide, as separate files, any figures, graphs, images and other material that cannot be included in this form. Please also provide updated material (text and images) that can be used to revise your project summary on the Foundation's web site. Please provide text in Microsoft Word format and images in JPEG format with a minimum size of 600 x 400 pixels. If this is the final project report, the web page summary must be updated to reflect the outcomes of the project. Is any material being forwarded as additional attachments ?*