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Understanding Movement and Habitat Selection of the Lesser Short-tailed Bat to Infer Potential Encounters with Anticoagulant Bait

A thesis presented in partial fulfilment of the requirements for the Degree
of

Master of Science in Zoology

at Massey University, Manawatū, New Zealand

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2019

Abstract

The lesser short-tailed bat (*Mystacina tuberculata*) and the long-tailed bat (*Chalinolobus tuberculatus*) are New Zealand's only extant endemic land-dwelling mammals. Both species are listed as nationally endangered by the IUCN, with numbers declining due to widespread habitat destruction and other human interferences. Short-tailed bats have been an unintentional victim of toxins used for pest control in New Zealand, being particularly susceptible to poisoning due to their diverse diet and ground-feeding habits. To manage toxin use to minimize bat exposure it is necessary to understand their movements and area usage behaviours.

Movements and habitat use of the short-tailed bat were studied on the area of farmland between Pikiariki and Waipapa Ecological Area, Pureora Forest Park, New Zealand. Bats using the area between the two large forests were studied using acoustic monitoring and radio telemetry techniques to determine which routes they use, how they utilise the farmland and forest fragments along the way, and how they interact with obstacles such as open farmland and roads. Evidence of foraging was more often observed near forest fragments than open areas. While levels of habitat preference varied among individuals, forest was consistently selected over open areas throughout their commutes over farmland. 50% of the radio tracked bats were commuting directly between Pikiariki and Waipapa, while a further 25% were deemed to forage or rest throughout the trip.

These results confirm that short-tailed bats utilise marginal habitats on private land, suggesting a need for the implementation of safe pest control in areas near known colonies on both public and conservation land. Stronger toxins are often used on private land so the risks to short-tailed bats could be higher. The results also provide information on how short-tailed bats make use of a fragmented environment, and whether we need to create forest bridges across open farmland to assist the nightly commute of bats.

This research was carried out under the permission of the Department of Conservation (permit number 57676-FAU) and the Massey University Animal Ethics Committee (protocol number 17/35). This was also conducted under the permission of local Iwi Te Maru o Rereahu.



Lesser short-tailed bat, Pureora Forest Park

Acknowledgements

First and foremost, I need to thank my supervisors, Doug and Tertia, without whom this project would not have been possible. Doug, thank you for supporting my ideas, taking me on and answering my questions when no one else wanted to supervise a bat student. Thankyou Tertia for infecting me with your enthusiasm for the bat world and jumping at the opportunity of helping a masters student find their footing even though you were already so busy. I greatly appreciate the support I received from the both of you, on and off the field.

Thank you to Forest and Bird for awarding me a research grant, making this project feasible (costs wise). Another big thankyou needs to go out to the Auckland Council Biodiversity team for sponsoring this project by providing me with transmitters necessary to carry out the study. I would like to thank the many people who helped me overcome my (somewhat fiery) setback, specifically Forest and Bird, DOC, Kessels Ecology, and Chris Wedding for graciously lending me bat monitors after my original set were melted.

To the staff and friends at DOC Pureora, thank you for letting me stay in your houses, eat your food, and become part of the family for a few short months. I'll never forget the long summer evenings (pre-sunset of course) spent singing, laughing, and playing music, so thank you for making me feel welcome.

My biggest thankyou goes out to all my volunteers, without you I could not have collected any data full stop. Thankyou Niko for flying all the way from Germany, your enthusiasm showed from the start when you spent 6 hours helping me relocate monitors straight after stepping off 30-hour flight. Josh, thank you for stepping in at only a moment's notice and giving it your all. Eva, your time was short and sweet, but I thank you for your bravery in the lightning storms! Thankyou Steph for your enthusiasm and eagerness to both learn and teach. Claire, thanks for your positive attitude with a lack of sleep and your hilarious radio discussions. Bryn, your presence was a delight and chickens will forever remind me of you. Tyrone, you are awesome for giving up your Christmas break to help me out, I still owe you a dance for it! Thank you, Kyle, for your humour, ability to learn quickly, and your long availability. One huge thank you to you Rach for giving me so much of your time. You not only helped me by collecting wonderful data, but also by looking after all my other volunteers and

for that I am grateful. Finally, Gillian, thank you for helping me right from day one. Your enthusiasm and knowledge of bats has helped me more than you know. Thank you for your willingness to help me on and off the field, all the way from pre-proposal to bat tracking, and finally proof reading. Your help has been invaluable.

Thank you to everyone who has given me advice; Kat, Georgia, Gillian, Kerry, Kate, and Rob. Without you all I would have been stuck.

Finally, a huge thank you to my friends and family who have helped me along the way. Thankyou Nick for visiting me in the weekends and bringing your support. Sorry you spent so much on fuel. Thankyou Mike for visiting, and Jenny for listening to all my issues, and thank you to all my friends in Palmy for encouraging me to keep writing (or more than often “take a break”).

This thesis would not have come together without the help of everyone mentioned and for that I am grateful.

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