BEFORE THE INDEPENDENT HEARING PANEL

IN THE MATTER OF the Resource Management Act 1991

AND the proposed Timaru District Plan

Evidence of Simon Waugh
on behalf of the Director-General of Conservation *Tumuaki Ahurei*
Hearing D: Natural Environment, Hazards and Open Space Zone
Submitter No. 166 Further Submitter No. 166
Dated: 29th October 2024

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Introduction

1. My full name is Simon James Kynaston Waugh.

2. I have been asked by the Director-General of Conservation Tumuaki Ahurei ('the D-G') to provide expert evidence on the proposed Timaru District Plan.

3. This evidence relates to Hearing D (Natural Environment, Hazards and Open Space Zones) and is relevant to the protection of habitat for long-tailed bats.

Qualifications and experience

4. I am employed by the Department of Conservation (DOC) as a Biodiversity Ranger in the Geraldine office. I have worked for DOC since December 2021.

5. I have experience in monitoring long-tailed bats, including catching, handling, radio tracking, and roost tree finding.

6. My qualifications are a Bachelor of Environmental Science, Auckland University of Technology, 2014.

Code of Conduct

7. Although this is a Council hearing, I have read the code of conduct for expert witnesses as contained in the Environment Court's Practice Note 2023 (the Code). I have complied with the Code when preparing my written statement of evidence.

8. The data, information, facts and assumptions I have considered in forming my opinions are set out in my evidence to follow. The reasons for the opinions expressed are also set out in the evidence to follow.

9. Unless I state otherwise, this evidence is within my sphere of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

10. For the avoidance of doubt, in providing this evidence as an expert witness in accordance with the Environment Court Code of Conduct, I acknowledge that I have

an overriding duty to impartially assist the Panel on matters within my area of expertise. The views expressed are my own expert views, and I do not speak on the D-G's behalf.

Scope

11. I have been asked to provide evidence in relation to the notified proposed Timaru District Plan, the D-G's submission, and the D-G's further submission. This evidence provides detailed information about the long-tailed bat / pekapeka in the District, in order to assist the Panel in their deliberations.

12. My evidence specifically addresses:
    - Long-tailed bat threat classification
    - Long-tailed bat distribution in the Timaru District
    - Impacts on long-tailed bats from tree clearance in bat habitat areas
    - Impacts on long-tailed bats from artificial light
    - DOC's involvement in management of long-tailed bats in the Timaru District
    - Best practice for mitigating impacts on bats when felling trees in bat habitat areas

Material Considered

13. In preparing my evidence I have read and relied upon the following documents:

    (a) Proposed Timaru District Plan

    (b) The section 32 Evaluation Reports

    (c) The D-G's submission dated 15 December 2022

    (d) The section 42A Report dated 9 October 2024

Long-tailed bat threat classification

14. Long-tailed bats (*Chalinolobus tuberculatus*) are endemic to New Zealand, which means they are only found here. Under the Department of Conservation's threat classification system long-tailed bats are ranked as "Threatened-Nationally Critical."

This is the most severe threat ranking before extinction. Long-tailed bats are classified as such because they are experiencing “very high, ongoing, or predicted decline of more than 70%.” [1]

Long-tailed bat distribution in the Timaru District

15. Long-tailed bats are distributed across seven known colonies in South Canterbury. These are in Kakahu Bush, Talbot Forest in Geraldine, Maori Gully, Tengawai River near Pleasant Point, Opihi River near Hanging Rock, Raincliff Forest, and Peel Forest.

Figure 1. Current and historic long-tailed bat roost tree locations in the Timaru District.

Figure 2. Bat distribution in the Timaru District as detected by Automatic Bat Monitors (ABM's) detecting bat echolocation sounds. Blue dots indicate a positive result, black circles indicate search effort with no bats detected, green dots indicate possible bat result. Note that the distribution of positive results matches well with the Canterbury Maps bat habitat overlay.

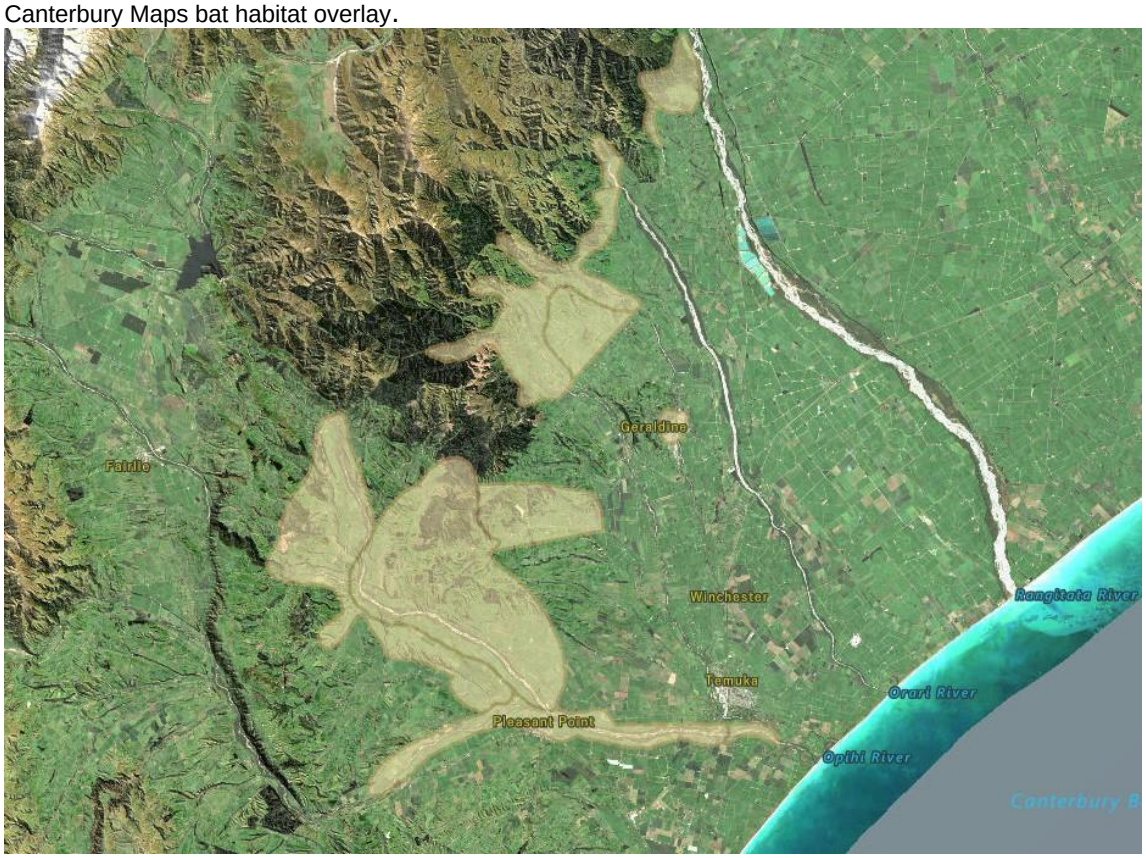


Figure 3. Long-tailed bat habitat overlay as defined on Ecan's Canterbury Maps. DOC's submission supports extending the Bat Habitat Protection Area under the district plan to match these boundaries. Note how the distribution of bat roosts and positive ABM results displayed in the previous two maps correlate closely with these polygons.

Effects of tree clearance in bat habitat areas

16. Long-tailed bats are a long-lived species. The oldest known bat is at least 26 years old. They are a tree roosting species, which use roosts during the day to rest, socialise, and feed and raise their young. Reproductive females, who produce one pup a year, gather together in roost holes during the breeding season (October until March) to have their young.

17. Long-tailed bats need roosts. Most known bat roosts are within trees, both native and exotic, where roosts are usually within cavities, knot holes, and broken branches. In South Canterbury there are also a few known roosts in cavities within limestone bluffs. Long-tailed bats do not select any random tree to roost in; they need cavities that are well formed and insulated, with low light levels and protection from the weather. Suitable cavities in trees take a long time to form (at least 25 years, and up to 80 years for some species of tree) and are not quickly replaced when lost. Bats require roosts in order to remain present in the landscape.

18. The consequences of removing roost trees are, firstly, the immediate risk of death or injury to any bats that may be occupying the tree during felling, and, secondly, the loss of a suitable roosts for bats where roosts are already rare and vital for survival. When roosts are lost, bats are forced to use less suitable, lower quality roosts and are less likely to survive or to successfully raise young (Sedgeley & O'Donnell 2004).

19. In Timaru District:
    - there are 163 currently used tree or limestone roosts that we know of
    - 296 roosts have been recorded since records began in the 1990s
    - 133 known roost trees have been lost in the Timaru District in the last ~30 years. Some losses were caused by wind and natural attrition, but a large proportion have been felled.

20. In summary, maintaining roosting habitat is vital for long-tailed bats (Page & Corney 2024). Limiting felling of roost trees in the Timaru District will aid the survival of the local sub-population.

Effects of artificial light

21. Long-tailed bats may be light averse, and there is evidence to suggest that they actively avoid artificially lit areas. Research into the effect of light on long-tailed bats in Hamilton found that as light levels increased, bat activity decreased[2]. A PhD thesis from 2022 found that when lamps were introduced to forested bat habitat in the North Island, bat activity levels were measurably lower when the lamps were lit than when they were unlit.[3] The same researcher established that reducing the amount of blue wavelength light reduces the effect of lighting on long-tailed bats. At sites that were illuminated by bulbs that had blue wavelength light filtered out, bat activity was similar to sites which were unlit completely[4].

22. International guidelines identify four key ways to reduce the effects of light on bats (see reference section):

- Avoid any lighting on key habitats (eg roosting areas and important foraging areas)
- In supporting habitats, use the least amount of light possible (lowest possible illuminance or intensity) and implement sensitive lighting methods such as downward facing lights and dimmer switches.
- If light is required, then using use light sources with low, no, or filtered UV and blue wavelength light i.e., with 2700K or warmer colour temperature.
- Increase distances of lights from the areas bats use, including roosts and places used for breeding, foraging, and commuting.

23. These lighting measures would be appropriate to apply or encourage within the Long-tailed Bat Habitat Protection Area.

DOC's involvement in management of long-tailed bats in the Timaru District

24. I am one of the rangers in DOC's Geraldine District who undertake long term population surveys, using automatic bat monitors, at five of the seven colonies in South Canterbury. We also use mark-recapture methods and telemetry (radio tracking) to find new roost trees, and we use thermal cameras to observe roost emergence during maternal roosting over the summer, to get a minimum population count.

Figure 4. A long-tailed bat caught by DOC ranger Rob Carson-Iles in the Timaru District.

Figure 5. A long-tailed bat, with radio tracker and wing band added, is released to make its way back to a roost. Caught on private property near Geraldine, this bat is part of the Talbot Forest colony.

Figure 6. A confirmed bat roost tree, denoted with a sign. Note the predator excluding band.

Best practice for mitigating effects on bats when felling trees in bat habitat areas

25. The Department of Conservation has produced a document describing best practice when tree felling in bat habitat areas. The latest version can be found on the Department of Conservation website: *Protocols for minimising the risk of felling occupied bat roosts*.

Outstanding Issues from the Director-General's perspective

26. I note that in the s42a report it was recommended that the wording of matter of discretion 1 be amended to the following:

> *Whether, upon specialist assessment by a suitably qualified and experienced expert, or demonstrated through use of an Automatic Bat Monitor, the tree/s proposed to be removed is habitat for long-tailed bats…*

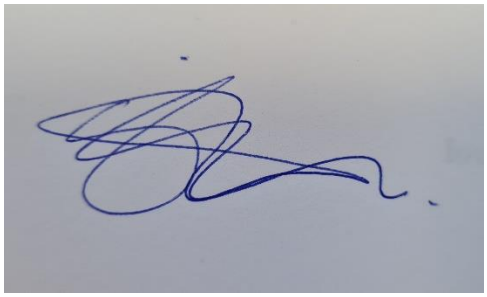
27. There are a few points I'd like to make regarding this proposed wording. First, only a suitably qualified expert will be able to conduct an effective ABM survey. Automatic bat monitors are moderately complicated to use, and specialist software is needed to extract the data they produce. Specialist knowledge is also required to process and interpret the data correctly.

28. The second point is that an ABM survey is useful for determining whether bats are present immediately prior to felling a tree, but it does not rule out a tree from being a bat roosting tree. Long-tailed bats change roosts frequently; in an ideal environment, where there are numerous roosts available, they change tree virtually every night but reuse roosts once they know about them. Once a roost tree, always a roost tree. Because bats move roosts regularly, they are not always present at a site. They are not always detectable at known roosts, but they are likely to return to known roosts at a later date.

29. There are two somewhat-distinct objectives when assessing trees for felling in a bat habitat area: One is to determine that there are no bats present inside a given tree, so as to ensure that bats are not injured or killed by felling. This is the bare minimum level of mitigation required to comply with the Wildlife Act. The other objective is to identify bat roosting trees in order to preserve them. An ABM survey on its own is only able to achieve the former.

Conclusion

30. Long-tailed bat roost trees are rare. They are particularly rare in a landscape that is largely denuded of trees. Each known roost within the Timaru District is likely to be of high value for the survival of the local bat population, and the area surrounding roosts and foraging areas need to be maintained to sustain the bat population in the district.



Simon Waugh

DATED 29th October 2024

Appendix

1 nztcs41entire.pdf (doc.govt.nz)

2 Wildland Consultants 2018a: Baseline acoustic monitoring of long-tailed bats for the Southern Links roading project, Hamilton: 2017 and 2018. *Wildland Consultants Ltd Contract Report No. 4192d*. Prepared for Aecom, New Zealand. 37 pp.

3 Schamhart T, Tempero G, Browne C, Borkin K, Ling N, Pattemore D. 2022. Artificial light at night: does it affect long-tailed bat activity? [abstract]. In: NZ Ecological Society; 28 November – 2 December 2022, Dunedin, New Zealand.

4 Schamhart T, Tempero G, Browne C, Borkin K, Ling N, Pattemore D. 2022. Does white and blue wavelength filtered light influence the activity of rural long-tailed bats? [abstract]. In: NZ Ecological Society; 28 November – 2 December 2022, Dunedin, New Zealand.

Sedgeley JA, O'Donnell CFJ 2004. Roost use by long-tailed bats in South Canterbury: examining predictions of roost site selection in a highly fragmented landscape. New Zealand Journal of Ecology 28:1-18

Page_Corney J 2024. Investigating habitat structure and prey availability as predictors of Long-tailed bat activity in fragmented landscapes. A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Science in Biological Sciences, University of Auckland.

International lighting guidelines for bats

(a) https://www.dcceew.gov.au - light pollution harms bats and their prey

(b) https://thelp.org.uk/publication/guidance-note-8-and-artificial-lighting

(c) https://www.eurobats.org. Eurobats publication series 8