From: Helena Bender [redacted]
Sent: Friday, 16 May 2025 3:13 PM
To: WildlifeRoadstrikeInquiry
Subject: Submission by Helena Bender
Attachments: Outlook-hgrwrubb; Bender & Coulson 2021 - Evaluating the ShuRoo.pdf; Coulson & Bender 2022 - Wombat roadkill not reduced.pdf; Coulson & Bender 2019 - Roadkill mitigation is paved with good intentions.pdf; 10 million animals die on our roads each year. Here's what works (and what doesn't) to cut the toll.pdf; 2003-Bender-deterrece-of-kross-from-agric-areas-using-usonic-freq-efficy-of-commercial-device.pdf; 2005-Bender-effectivenss-of-egk-foot-thump-for-deterring-conspecifics.pdf

Parliament of Victoria
Legislative Council
Economy and Infrastructure Committee
Parliament House
Spring Street
East Melbourne

16 May 2024

Submission to the Parliamentary Inquiry into wildlife road strike in Victoria

Impacts of wildlife road strike and preventative measures

I have conducted research over the last 20 years on the deterrence of wildlife from roadways and agricultural areas with the use of sound. I have focused, in particular, on eastern grey kangaroos. This work has been published in the following peer-reviewed journal articles that document the impact of road strike on all parties (wildlife, motorists and vehicles):

- Bender, H. and Coulson, G. (2021) Roo the Day: Evaluating the ShuRoo for Prevention of Macropod-Vehicle Collisions. *Australian Zoologist*, 1-10, 1 citation, 86 reads. https://dx.doi.org/10.7882/az.2021.042 Australian journal, 0.63 IF, 50% co-authored
- Bender, H. (2005) Effectiveness of the eastern grey kangaroo foot thump for deterring conspecifics. *Wildlife Research*. 32: 649-655. Australian journal. 2.28 IF, 6 citations, 230 reads.
- Bender, H. (2003) Deterrence of kangaroos from agricultural areas using ultrasonic frequencies – efficacy of a commercial device. *Wildlife Society Bulletin*, 31(4): 1037-1046, 27 citations, 3,686 reads.

More recently, my research has broadened to include evaluating the effectiveness of commercial devices such as the 'Virtual Fence', which utilises both sound and visual cues to try and deter a range of different species. Peer-reviewed publications arising from this work include:

- Coulson, G. and Bender, H. (2022) Wombat roadkill was not reduced by a virtual fence. Comment on Stannard et al. Can virtual fences reduce wombat road mortalities? Ecol. Eng. 2021, 172, 106414. *Animals*, 12, 10. **https://doi.org/10.3390/ani12101323 International Q1 ranked journal, 2.7 IF**, 50% co-authored, 4 citations, 273 reads.
- Coulson, G. & Bender, H. (2019) Roadkill mitigation is paved with good intentions: a critique of Fox et al (2019). *Australian Mammalogy*, 42(1):122-130. https://doi.org/10.1071/AM19009. Australian journal, 1.0 IF, 50% co-authored, 11 citations, 121 reads.

Together Dr Coulson and I have also written an article for The Conversation and Australian Geographic to reach a wider audience, which summarises what we know works and doesn't for reducing the road toll in Australia. We highlighted how many evaluations showed a poor understanding of animal biology, study design and had inadequate monitoring. Those articles are available here:

- Coulson, G. and Bender, H. (2024) 10 million animals die on our roads each year. Here's what works (and what doesn't) to cut the roadkill toll. Australian Geographic, 13 Dec. https://www.australiangeographic.com.au/topics/wildlife/2024/12/what-works-and-what-doesnt-to-cut-the-roadkill-toll/
- Coulson, G. and Bender, H. (2024) 10 million animals die on our roads each year. Here's what works (and what doesn't) to cut the toll. The Conversation, 21 Mar. https://theconversation.com/10-million-animals-die-on-our-roads-each-year-heres-what-works-and-what-doesnt-to-cut-the-toll-222367

Dr Coulson and I gave a presentation at a Symposium in May 2024 - Using Technology to Reduce Wildlife-Vehicle Collisions: Identifying Future Directions and Opportunities for Research Trials. The videos of the presentations from the symposium are available at: https://www.transport.nsw.gov.au/about-us/sustainability/news-publications/wildlife-and-vehicle-collisions

The report that came out of this symposium resulted in a comprehensive evaluation of the available technologies to reduce wildlife-vehicle collisions. The theoretical frame I argued should be applied when developing new technologies, signal theory, was adopted as an essential consideration in the resulting report. This theory is guiding the design of the Transport for NSW trials that are running in 2025-27, and has shifted the focus from changing the behaviour of wildlife to altering driver behaviour. The report from the symposium is available at: https://www.transport.nsw.gov.au/system/files/media/documents/2024/Symposium-Using-technology-to-reduce-wildlife-vehicle-collisions-event-summary.pdf

New mitigation measures

Dr Coulson and I are members of the steering committee assisting Transport for NSW to design and implement the trials of the two new mitigation measures under investigation. The new mitigation measures being tested are described in this report: https://www.transport.nsw.gov.au/system/files/media/documents/2025/Using-technology-to-reduce-wildlife-vehicle-collisions-Directions-Report.pdf

Since 2019 Dr Coulson and I have been working with a technology company, Nakatomi, to develop a product, known as RooBadge, funded by Volkswagen, based on the research from my PhD on deterring kangaroos with sound (https://www.academia.edu/99376436/Auditory_stimuli_as_a_method_to_deter_kangaroos_in_agricultural_and_road_environments?uc-g-sw=86567632). The work has progressed through a series of test phases. Most recently, in late 2024, we conducted static playback trials with a front-mounted prototype of RooBadge on a vehicle. We are now analysing the collected data.

Incident reporting and new mitigation approaches

There are multiple datasets that are capturing the impacts of wildlife road strike on wildlife, motorists, and vehicles. Concerned citizens and government agencies are capturing data about wildlife (e.g., Womsat, TurtleSAT, iNaturalist, Bionet). The Office of Road Safety, the Transport Accident Commission, and insurance companies are capturing data about motorists and vehicles. There is little to no connectivity between these different datasets.

Creation of a centralised dataset would make identifying hotspots easier. It could be used to develop an app that provides motorists with location specific warnings of high risk areas. Any measure that reduces driver speed has the potential to reduce wildlife strike, while also reducing the extent of damage to drivers and their vehicles.

I would welcome an opportunity to expand on these points and provide further evidence to the committee. I attach copies of my publications on wildlife road strike for your reference.

Yours sincerely,

Dr Helena Bender

Dr Helena Bender | Senior Lecturer and Teaching Specialist
School of Agriculture, Food and Ecosystem Sciences | Faculty of Science
[redacted]

I work Monday, Wednesday, Friday

Fire, People and Sustainability SCIE10005 - Investigation coordinator, semester 1 and 2

Landscape Ecosystem Project EVSC30007 - Subject coordinator, semester 2

- Bender, H. & Coulson, G. (2024) Thinking critically: developing and testing technology to mitigate wildlife vehicle collisions. EIANZ Using technology to reduce wildlife-vehicle collisions: identify future directions and opportunities for research trials symposium. Sydney, NSW, Australia 21-22 May.
- Coulson, G. & Bender, H. (2024) 10 million animals die on our roads each year. Here's what works (and what doesn't) to cut the toll. The Conversation, 21 March. https://theconversation.com/10-million-animals-die-on-our-roads-each-year-heres-what-works-and-what-doesnt-to-cut-the-toll-222367
- Bender, H. and Rawluk, A. (2023) Adaptive hope: a process for social environmental change. Ecology and Society, 28(2):a14. https://doi.org/10.5751/ES-14099-280214
- Coulson, G. and Bender, H. (2022) Wombat roadkill was not reduced by a virtual fence trial. Comment on Stannard et al. (2021). Animals, 12(10), 1323; https://doi.org/10.3390/ani12101323

I acknowledge the Traditional Owners of the land on which I work, and pay my respects to the Elders, past and present.