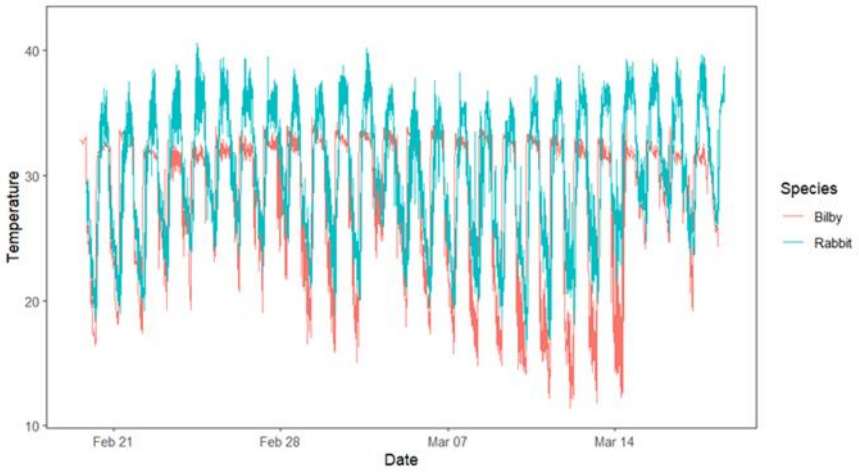
Heatwave impacts on rabbits and bilbies. Summary.

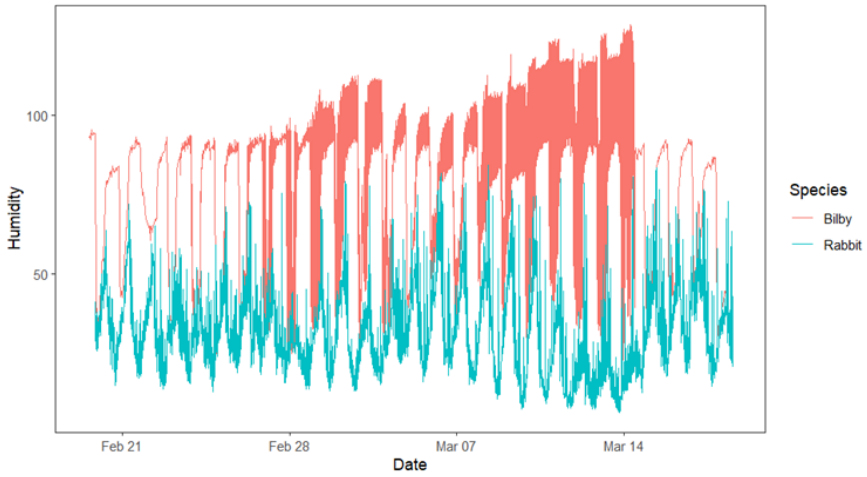
How will rabbits and burrowing native animals fare as summers get hotter due to climate change? That's a question being answered through research initiated by Katherine Moseby (UNSW) at the Arid Recovery wildlife reserve in South Australia's rangelands.

Katherine and PhD student Jack Bilby have been fitting special collars to rabbits and bilbies to monitor their location and activity, and the temperature and humidity of their surroundings. The focus is on their behaviour during heatwaves, using those times as indicators of stress under future climate scenarios. Early results show a clear distinction between the two species.

Wild radio-collared rabbits are consistently exposed to higher temperatures and lower humidity than bilbies. It seems that rabbits are coming to the entrances of burrows, or leaving them altogether, to avoid the humidity of warrens; while bilbies remain deeper underground.



Rabbits typically have a higher metabolic rate, a slightly higher body temperature, and less tolerance of changes in body temperature than bilbies, making them more susceptible to overheating (hyperthermia) and resultant physical stress. Their physiological response to heat is evaporative cooling, through panting and dilating blood vessels in their ears (vasodilation), so they struggle to avoid overheating in hot, humid conditions. Hence their behavioural response of moving to less humid locations, even at the risk of being exposed to higher temperatures (and possibly predators).



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Landscape - Arid Recovery. Image Katherine Moseby.

Not a lot is known about the sub-lethal effects of heatwaves on rabbits in the wild, but reductions in sperm production, body mass and offspring size have been observed in other animals. Severe cases of hyperthermia (heatstroke) can be fatal, and may be triggered by exposure to longer periods of excessive heat (including overnight) as well as higher temperatures.

The first seasons of the project have had mild summers and the apparent behavioural responses have posed new questions, so – armed with an increasing array of monitoring technology and analysis tools – the research team is keen to continue the project for a few more years and to add further elements to it.

Foundation for Rabbit-Free Australia has been pleased to help support the field work in this project and look forward to seeing even more information and understanding come from the extended study. These early results beg questions of whether changes in rabbit behaviour, and their response to heat stress, could lead the way to new options for rabbit control under a warming climate.

Project Summary:
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