

HONOURS PROJECT

Project Title: Could bilbies facilitate the cane toad invasion?

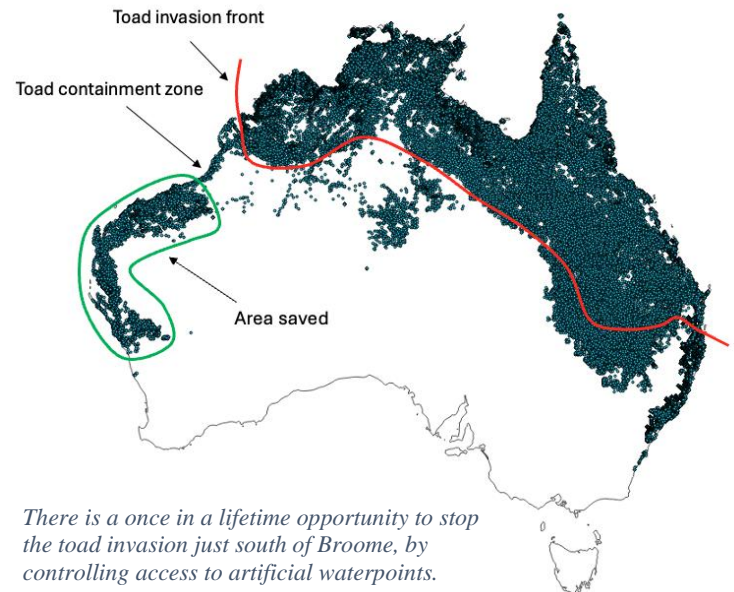


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Project

Background

Cane toads have spread to occupy more than 1.6 million square kilometres of Australia. They have a massive impact on native predator species, who are fatally poisoned when toads arrive in an area. Toads have recently colonised the Kimberley and they continue to spread. We have a once in a lifetime opportunity to stop the toad invasion just south of Broome. We can affect this by managing pastoral infrastructure such that it is not available to toads, creating a waterless barrier against which the toad invasion should stop. Do this, and we potentially keep toads out of 27 million hectares of Western Australia.



While the basic idea is well researched, we are now moving into implementation phase, and we need to explore all possibilities. One possibility is that toads may be able to survive down goanna and bilby burrows and so continue to spread. This project examines the possibility that toads might be able to find and use burrows to survive over the dry season in northern Australia.

Aims

This project will examine the use of burrows by toads and assess the rate at which toads find burrows and their capacity to survive in burrows.

Objectives

1. Examine toad survival in burrows over the dry season

2. Quantify the degree to which burrows are occupied by toads in toad-invaded areas.

Significance

This project will work with government partners and Indigenous landowners towards understanding the capacity for toads to survive down burrows. Results will immediately inform the design of the Toad Containment Zone and contribute to keeping cane toads out of the Pilbara and areas further south in Western Australia.

Candidate growth and outputs

The candidate will gain field experience in tropical Australia. They will develop networks with Indigenous and government partners. The candidate will also gain valuable experience with sampling design, data analysis, and reporting.

Funding

The Population Biology and Genomics group will cover all operating costs (materials, travel expenses) associated with the project.

References

Cohen, M P, and R A Alford. Factors Affecting Diurnal Shelter Use by the Cane Toad, *Bufo Marinus*. *Herpetologica* 52, no. 2 (1996): 172–81.

Gregg, Emily A., Reid Tingley, and Benjamin L. Phillips. The On-Ground Feasibility of a Waterless Barrier to Stop the Spread of Invasive Cane Toads in Western Australia. *Conservation Science and Practice* 0, no. 0 (2019): e74.

Letnic, M, J K Webb, T S Jessop, Daniel Florance, and Tim Dempster. Artificial Water Points Facilitate the Spread of an Invasive Vertebrate in Arid Australia. *Journal of Applied Ecology* 51 (2014): 795–803.

Seebacher, F, and R A Alford. Shelter Microhabitats Determine Body Temperature and Dehydration Rates of a Terrestrial Amphibian (*Bufo Marinus*). *Journal of Herpetology* 36, no. 1 (2002): 69–75.

Southwell, D, R Tingley, M Bode, E Nicholson, and B Phillips. Cost and Feasibility of a Barrier

to Halt the Spread of Invasive Cane Toads in Arid Australia: Incorporating Expert Knowledge into Model-Based Decision-Making. *Journal of Applied Ecology* 54, no. 1 (2017): 216–24.

Tingley, R, B L Phillips, M Letnic, G P Brown, R Shine, and S J E Baird. Identifying Optimal Barriers to Halt the Invasion of Cane Toads *Rhinella Marina* in Arid Australia. *Journal of Applied Ecology* 50 (2013): 129–37.

Tingley, R, and R Shine. Desiccation Risk Drives the Spatial Ecology of an Invasive Anuran (*Rhinella Marina*) in the Australian Semi-Desert. *PloS One* 6, no. 10 (2011): e25979.