
Australian Wildlife Society Wildlife Ecology Research Scholarship

This \$5,000 scholarship is awarded each year to University of Technology Sydney postgraduate research students who are undertaking a research project that is of direct relevance to the conservation of Australian native wildlife (flora or fauna).

The scholarship is provided to support operational costs associated with the successful candidate's research project, such as travel associated with the research project, fieldwork expenses, and specialist software and small items of equipment.

The winner for 2016 is Naomi Walters, who is conducting a scientific research project in Australian wildlife ecology

Safeguarding northern quolls from cane toads

Naomi Walters

During the last few decades as cane toads have spread across Northern Australia, northern quolls (*Dasyurus hallucatus*) have been significantly impacted. As the invasion continues to spread, the introduced pest poses an imminent threat to the endangered northern quoll living in the Kimberley, Western Australia. While there is no silver bullet to halt the spread of, or to eradicate, the toxic toads, research has been working towards ways to prevent quoll extinctions by training quolls to avoid eating cane toads before the toad's invasion spreads any further:

My PhD project in the Kimberley, Western Australia, aims to prevent the extinction of northern quoll populations at Mornington Wildlife Sanctuary (owned by the Australian Wildlife Conservancy) and the neighbouring crown land. The mechanisms and techniques required to apply conditioned taste aversion at a landscape level to northern quolls has never been examined. The research conducted during my PhD is integral to filling in the gaps in knowledge required to enable broad-scale deployment. This project will yield direct conservation benefits to an iconic endangered marsupial predator. The major costs of this project are field-related expenses that are unavoidable given the remote location of my sites. Therefore this research would not be made possible without



Northern quoll (*Dasyurus hallucatus*) and Naomi Walters.

the generous contribution made by the Australian Wildlife Society Research Scholarship.

Thus far we have learned that wild quolls can be taught to not eat cane toads by deploying 'toad aversion baits' ahead of the toad invasion front. Quolls that consumed such baits would become ill, and would subsequently associate the smell and

taste of cane toads with illness, and would then ignore live cane toads thus reducing toad-induced mortality rates. This process is called 'conditioned taste aversion'.

Provided that some female quolls survive in a toad-infested landscape, then their offspring may learn to avoid toads as prey via social learning (i.e. by foraging with their mothers).



Northern quoll (*Dasyurus hallucatus*) captured on camera trap at Australian Wildlife Conservancy's Artesian Range property.

Preliminary results in the field suggest that wild quolls readily consume toad baits, and in the lab, quolls that consumed toad baits subsequently ignored live toads as prey. Thus, the technique could conceivably train a large number of quolls to avoid cane toads without them requiring a stage in captivity. This research is integral to filling in the gaps in knowledge required for land managers to enable such broad-scale deployment. If the project is successful, the toad aversion baits could be used to protect northern quolls from the threat of cane toads over large geographic areas as far-reaching as from Queensland through to Western Australia.

About me:

Conducting a scientific research project in Australian Wildlife Ecology has always been a goal of mine. I am deeply passionate about conserving Australia's unique endemic species and always wanted to do research that can make a difference. Thus, I am excited

to be doing a PhD that aims to prevent the extinction of northern quolls in the Kimberley.

Demonstrating that the deployment of taste aversion baits can help to prevent local extinctions of northern quolls is a major logistical challenge. However, the payoffs are enormous, as the technique, if successful, could be used for landscape-scale conservation of this endangered species. I am very excited to play a leading role in developing and field-testing a novel technique that has the potential to prevent future declines of northern quolls. Additionally, the potential to support a team that has a clear mandate to prevent further extinctions and remains united in their commitment to the conservation of Australia's unique environment is especially appealing to me.

Studying marsupials in a remote area of the world which most people have not visited is a particularly rewarding aspect of my research. As

the Kimberley is so vast and largely understudied I am confident that I can make an important contribution to on-ground management practices that will help to conserve the northern quoll for future generations. Even in this project's infancy, the novelty of this technique and the iconic nature of the northern quoll has engaged the local community of the Kimberley and has received much interest from the broader Australian audience.

This project has great potential to excite and educate the public about the importance of science and wildlife conservation.

The assistance provided by the Australian Wildlife Society's Wildlife Ecology Research Scholarship has provided a significant contribution to my project, and has allowed me to continue to carry out my research in such a remote area of Australia. For that I am extremely grateful!