

The quoll's last stand

March 21 2013, by Marea Martlew



The Northern Quoll is kicking the cane toad off the dinner menu. Credit: Jonathan Webb

(Phys.org) —Undeniably charismatic, the Northern Quoll's big black eyes and impossibly long whiskers belie the face of a feisty, nocturnal predator that has – as conservation biologist Dr Jonathan Webb discovered – very sharp teeth.

"I received a nasty bite from a Northern Quoll ... ironically it was a female and they're normally much calmer and less aggressive than the males," says Dr Webb, of the School of the Environment at UTS.

What the quoll couldn't know was that she had just bitten the hand of the

very person whose research could save her and the entire critically endangered species.

Like many of Australia's small marsupial mammals, the Northern Quoll is under serious threat of extinction from [habitat destruction](#), feral cats and changing [fire management](#).

However, it is the newest pest on the block, the lethally poisonous cane toad, which jumped across Kakadu National Park boundaries in 2001, that has decimated quoll numbers.

"Quolls have no physiological resistance to toad toxin and die after [trying to eat] large [toads](#). In many parts of the Top End quolls have disappeared completely since the arrival of cane toads," says Dr Webb.

However, he and colleagues from the University of Sydney have shown that quolls reared in captivity can be trained to avoid eating the toads – training known as taste aversion therapy.

In a 2010 project, researchers cut up dead toads, skinned the legs and discarded the poisonous parts of the toad. A small, non-lethal amount of toad was mixed with a nausea-inducing chemical and then stuffed into the leg skin creating what can only be described as a cane toad sausage. The sausage was fed to the quolls leaving them feeling mildly sick. Presented with a second helping of sausage the next day, many of the normally rapacious [carnivores](#) rejected the bait. Some of the trained quolls also refused to attack live cane toads.

The subsequent release of "toad-smart" quolls into the wild (in a study also involving the Territory Wildlife Park and Kakadu National Park) will hopefully show that the quolls can teach their offspring to exclude cane toads from the dinner menu, and therefore help ensure the quoll's long-term survival.

Monitoring by PhD student Teigen Cremona shows that some of the females have survived in the wild for more than two years, while genetic paternity analysis by Murdoch University's Dr Peter Spencer has identified descendants of the original "toad-smart" quolls, says Dr Webb.

This Kakadu project, supported by the Australian Research Council, the Mazda Foundation and National Geographic, so caught the imagination of renowned British naturalist and conservationist Sir David Attenborough that he included the Northern Quoll among 10 animals he has chosen to "save", in his latest wildlife documentary Attenborough's Ark (see accompanying story 'Attenborough's top 10 animals').

Dr Webb is doing further research with the Australian Wildlife Conservancy (AWC) at its Mornington Sanctuary in the Kimberley region of north-western Australia.

The sanctuary is free of cane toads, and quoll numbers there are strong. But the toads are estimated to be living as close as 50 kilometres away, according to AWC senior wildlife ecologist Dr Katherine Tuft.

"We're gearing up for their arrival, which we think will be either this wet season or the one after," says Dr Tuft.

"We've been paying close attention to Jonathan's Northern Territory research and we felt this was a good opportunity to test a wild quoll population that has been trained to avoid [cane toads](#) ahead of the predicted toad invasion."

This new program will give Dr Webb and his collaborators a chance to study a relatively large quoll population before and after it comes in contact with the toads.

It's also a chance to protect a quoll population under threat in one of its

last strongholds.

"Training quolls to avoid eating toads is not a 100 per cent solution but it offers some hope that we can keep this small, beautiful marsupial carnivore in the landscape," says Dr Webb. "If we can keep the mums in the system long enough so they can reproduce and even pass on their knowledge to their daughters we may be able to prevent more local extinctions."

Dr Jonathan Webb's research at the Territory Wildlife Park will be featured in an ABC series, Kakadu, to be screened later this year.

Provided by University of Technology, Sydney

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