

Widespread culling of crocodiles is not an effective way to stop attacks on humans, study shows

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The study by Charles Darwin shows widespread culling of crocodiles is not an effective way to stop attacks on humans. Credit: Cameron Baker

Education and community awareness, removal of problem animals and

exclusion areas are significantly more effective in reducing saltwater crocodile attacks in the Northern Territory than a widespread culling program to reduce crocodile numbers, according to a new study [published](#) in the journal *People and Nature*.

The study outlined why culling the reptiles to reduce density was not a cost-effective, or efficient solution, in reducing crocodile attacks.

The research led by Charles Darwin University (CDU) assessed how well crocodile and human density correlates with the frequency of saltwater crocodile attacks on humans in the Northern Territory over the past 50 years.

Data analysis showed that between 1979 and 2022, there were 76 crocodile attacks in the Northern Territory, of which 30% were fatal.

The rates of attacks stabilized from 2009 despite crocodile density and human population continuing to rise, with a 10% decrease in the frequency of attacks over the following decade.

Lead author Dr. Cameron Baker, who is a Postdoctoral Research Fellow at CDU's Research Institute for the Environment and Livelihoods, said the decrease in attacks corresponds to NT residents and tourists changing their behavior around waterways as crocodile numbers increased, and government education strategies and programs to removing problem crocodiles.

Dr. Baker said the result of these actions proved awareness and problem crocodile removal was more effective at reducing attacks than any widespread culling program could achieve, which has been discussed intermittently in the Northern Territory.

"Our models predicted that the NT crocodile population would have to

be reduced by as much as 90% to reduce the crocodile attack frequency by one attack per year," Dr. Baker said.

"If widespread culling to reduce density was the prime strategy to reduce crocodile attacks, then the population would need to be driven to very low levels to see any significant reduction. This is because the risk of attacks on humans only decreases once large crocodiles are completely extirpated from an area."

Dr. Baker said culling to such an extent would push the species back into the critically endangered category and was also not cost-effective. Based on the current NT crocodile management budget, culling crocodiles humanely would cost \$975 per crocodile.

"Assuming these operational costs remained constant throughout the culling period, it would cost \$87,750,000 to cull 90% of the NT crocodile population humanely, achieving a 48% reduction in crocodile attack frequency," he said.

"In comparison, between 2013 and 2016, the Northern Territory Government spent AUD\$250,000 on the 'Be Crocwise' educational campaign.

"Since the campaign's implementation in 2009, there has been a 10% decrease in the frequency of crocodile attacks."

Dr. Baker said the data indicated attacks were driven by a combination of human complacency and human activities in and around the water.

"Between 2011 and 2021, humans were 363 times more likely to be severely injured or killed in a [motor vehicle accident](#) than by a crocodile in the NT," he said.

"Most victims of crocodile attacks, 90%, were local to the NT.

"This highlights the importance of modifying human behavior to reduce the risks of attacks by large predators such as crocodiles."

Professor Hamish Campbell, who led the study, said it was critical we maintain an evidence-based approach to crocodile management.

"Crocodiles are a danger to humans in North Australia, and this risk needs to be managed. The funds available for crocodile management are limited, and we need to spend these in the most effective manner to reduce crocodile attacks upon humans, and the evidence shows that widespread culling is not a cost-effective nor efficient means of doing this," Professor Campbell said.

"Alternative management methods currently used by the Northern Territory government seem to be working and effective."

Dr. Vinay Udyawer from the Australian Institute of Marine Science, who assisted with the research, said the results could be applied to other predator mitigation strategies.

"The results of this study can be expanded beyond just the management of crocodiles in the Northern Territory," Dr. Udyawer said.

"It highlights the general ineffectiveness of culling as a primary mitigation tool and the importance of alternative strategies like public education campaigns for managing the risks posed by other large marine predators such as sharks."

More information: Cameron J. Baker et al, The influence of crocodile density on the prevalence of human attacks, *People and Nature* (2024).

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Provided by Charles Darwin University

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