

Hot water puts crocs at risk

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Estuarine crocodile at Australia's Wenlock River, North Queensland. Credit: Australia Zoo

Australia's saltwater crocodiles appear to be in hot water, with a University of Queensland study linking climate warming to shorter dives, putting the crocs' survival at risk.

Professor Craig Franklin of the UQ School of Biological Sciences said saltwater [crocodiles](#) exposed to long-term elevated water temperature spent less time submerged once water temperature exceeded 31.5 degrees Celsius.

"We thought that crocodiles - like many animals - would adjust to temperature changes so life continues," he said.

"However, we were surprised to find they had little capacity to compensate for water temperature changes and seemed to be hard-wired to operate at certain temperatures.

"We are not sure what this means, but it's likely that if the water is too hot, crocodiles might move to cooler regions, or will seek refuge in deep, cool water pockets to defend their dive times."

Lead author and PhD student, Essie Rodgers, said crocodiles spend up to 11 hours a day submerged. Their diving capacity is important to avoid predators, to forage, for sleep/recovery and for social interactions, which all occur underwater.

"Crocodiles are ectothermic animals - where environmental temperatures strongly influence their body temperatures," she said.

Ms Rodgers said the study exposed crocodiles to three water temperatures reflecting differing [climate change](#) scenarios- current summer, 28°C; moderate [climate warming](#), 31.5°C; and high climate warming, up to 35°C.

"Acute increases in water temperature resulted in significantly shorter crocodile dives," she said.

"Their submergence times halved with every 3.5°C increase in [water](#)

[temperature.](#)"

Ms Rodgers said the upper lethal temperature for crocodiles was in the high 30s to low 40s.

Air temperatures could easily exceed this, making water a critical refuge for crocodiles to cool down in and avoid becoming dehydrated.

Professor Franklin said further research on other crocodile performance traits that could influence the ability to survive future climate change was needed before scientists could fully understand the effects of elevated [water](#) temperatures.

The research, by Dr Franklin, Essie Rodgers and UQ Bachelor of Science (Honours) graduate Jonathan Schwartz, is published in *Conservation Physiology*.

Provided by University of Queensland

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