

# Climate change impacts tuatara population

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A new study involving researchers from Victoria University of Wellington shows climate change could ultimately result in the extinction of a population of tuatara.

Dr Nicky Nelson, Dr Kristine Grayson and Susan Keall from Victoria's School of Biological Sciences, in collaboration with the Department of Conservation and University of Western Australia, provide a case study of a natural [population](#) of [tuatara](#) on North Brother Island in the Cook Strait of New Zealand.

The research, published this week in the international scientific journal *PLOS ONE*, shows that as a result of warming temperatures, there is an accelerating decline in the proportion of adult female tuatara in the population.

"Our research reveals that as the male-bias in the population increases, female tuatara body condition, fertility rates and survival decline," says Dr Nelson.

Projected temperature increases for New Zealand are expected to further tip the hatchling sex ratio towards males—owing to the pattern of temperature-dependent sex determination in tuatara where males hatch at warmer temperatures.

Dr Nelson says understanding the mechanisms underlying population declines is critical for preventing the extinction of endangered populations.

"If we understand the causes of decline for species, we can consider our options for management, particularly under the various scenarios for climate warming."

Population viability models predict that without management, intervention or an evolutionary response the North Brother Island population will ultimately be made up entirely of males and become extinct.

The study demonstrates that the sex ratio in tuatara populations can be an underappreciated threat to long-term viability, particularly in populations that appear numerically stable.

**More information:** This study was published in the international scientific journal *PLOS ONE* and can be read in its entirety here: [dx.plos.org/10.1371/journal.pone.0094214](https://doi.org/10.1371/journal.pone.0094214).

Provided by Victoria University of Wellington

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