

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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ATTENTION: Chiefs of Staff, News Directors



Frogs croak – but not because of climate change say scientists

The world's frogs are in population decline because a fungal disease is causing extinctions, according to a paper published in the prestigious US publication, Proceedings of the National Academy of Sciences (PNAS).

University of Tasmania scientist, Professor Hamish McCallum, is a co-author of the paper, along with academics from the University of South Florida and Penn State University.

Scientists have known that the cause of many frog extinctions was the fungal disease chytridiomycosis but some suggested that global warming has increased disease impacts.

Others have suggested that the disease has spread following recent introductions. The disease has recently been reported in Tasmanian frogs but has hit hardest in Australia's wet tropics and in Central and South America.

The PNAS paper, *Evaluating the links between climate, disease spread and amphibian declines*, comes down firmly on the side of disease spread and against global warming.

Prof. McCallum's role in the work was to contribute to the statistical analysis and the overall scientific arguments.

"We used sophisticated statistical techniques to evaluate these two competing hypotheses," he said.

"One suggests that the disease was relatively recently introduced and the pattern of extinctions is consistent with the spread of an invasive disease.

"The second hypothesis is that global warming has caused increased cloud cover, leading to warmer night time and cooler daytime temperatures, which mean that this particular fungus is able to grow more rapidly."

The scientists found that although increases in temperature correlated with increases in these extinctions, so did anything else that had increased over the past 2-3 decades.

But when they looked at the specific climate variables that might affect the growth of the pathogen, they found no evidence that the observed climatic changes were in the direction likely to be associated with increased growth of the fungus.

“In contrast, the results show the extinctions are consistent with the spread of an invasive disease away from a few - probably two - invasion centres,” Prof. McCallum said.

“However, this does not necessarily mean that the disease was introduced to the area shortly before the extinctions occurred. More work, particularly using genetic techniques, is needed.”

The PNAS paper also concludes more work is needed to find out why this fungal disease has recently become such a problem for frog populations worldwide and what can be done to solve the problem.

FROG FACTS

- Amphibians are the most threatened group of vertebrates. More than 32% of amphibians are threatened and more than 43% are experiencing population decline.
- It has been suggested that amphibians are the "canaries in the coalmine" warning of the consequences of human impacts on the natural ecosystem.
- In the Americas, chytridiomycosis is thought to have caused the extinction of 67 species of frogs in the single genus *Atelopus*.
- In Australia, frog declines in the tropics first occurred in the 1980s. Chytridiomycosis is thought to have caused the extinction of four Australian frog species and to have caused declines in many others.
- The disease is a listed “Key Threatening Processes” under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- The disease was first reported from Tasmania in 2004 and has recently been reported from the Southwest Wilderness World Heritage Area.

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