

# Archey's Frog

*Leiopelma archeyi*

Pepeke

## Victim of the frog-killer fungus



Archey's frog, Coromandel, Mike Thorsen

### Quickfacts

One of the world's most primitive frogs

Found in only two areas of the Waikato

Decimated by an invasive fungus

## The spread of the frog-killer fungus

The frog-killer fungus *Batrachochytrium dendrobatidis* (sometimes named the chytrid fungus) has spread throughout the world in a very short time, and has resulted in the extinction of a number of frog species. For a time it was feared that the frog-killer fungus would cause the extinction of New Zealand's endemic frogs after it was detected in New Zealand's endemic Archey's frog *Leiopelma archeyi* in the 1990's. It was also detected in some populations of exotic frogs in New Zealand. Archey's frog was badly affected, and numbers declined catastrophically – 88% of Archey's frogs in the Coromandel died between 1996 and 2001. Strangely, despite the frog-killer fungus being found at Whareorino in 2006, the frog population there has not shown evidence of a decline. Luckily, frog numbers in the Coromandel seem to have stabilised recently and it is estimated that 5,000 to 20,000 Archey's frogs remain. Frogs that are infected with the frog-killer fungus can be treated successfully by administering chloramphenicol, but this is not practicable for wild frogs. In the laboratory it has also been shown that naturally-infected *Leiopelma* frogs can recover from infection by this fungus. Rats are also known to prey on Archey's frogs, and the frogs benefit greatly from



controlling rats in the areas they inhabit.

Historically, Archey's frogs were only known from the Coromandel Ranges, but in 1991 a second population was discovered in the Whareorino Forest in the Herangi Ranges in the western Waikato. These frogs were discovered quite by accident – a team cutting a track in the forest heard an occasional strange squeak and eventually tracked the squeaks to Archey's frogs that were being knocked out of punga ferns and pepperwood shrubs. It lives in the higher parts of these ranges above 400 m elevation where frequent mists and clouds provide ample moisture. During the day the frogs hide under logs, rocks or into the leaf litter to escape drying out. At night it emerges and sits and waits for passing invertebrates to eat. New Zealand's *Leiopelma* frogs are unusual in many ways and are considered one of the most primitive of the world's frogs. One unusual feature is that the eggs are not laid in water, but in a moist site in similar places to their hiding sites and the male frog looks after the tadpoles and carries them on his back for several weeks until they are ready to become independent. It also has no eardrums, and has tail-wagging muscles – despite not having a tail. The tail-wagging muscles are technically tongue-tyingly termed the caudalipuboischiotibialis muscles.

Being nocturnal, small, and superbly camouflaged, Archey's frogs are very difficult to count, which make monitoring changes in their population difficult. To overcome this, a clever device, the photo stage ([link](#)), has been developed – a box with an array of mirrors which shows the back, front and both sides of a frog at once. A photograph is taken and the frog can then be identified by examining its unique colour patterning. Image recognition software is now making this task quicker and easier.

Archey's frog is listed at number one on the list of the top 100 EDGE amphibian species. EDGE stands for Evolutionary Distinct and Globally Endangered, and identifies the most unique of the earth's biodiversity that is closest to extinction. Three species of *Leiopelma* frog became extinct in New Zealand soon after people arrived.

## What next for Archey's frog?

Seventy Archey's frogs were moved from Whareorino to a fenced site in Pureora Forest in 2006. The translocated frogs are known to have bred, but it is still too early to determine if this project has been a success. In the future it is hoped to establish a population of Archey's frogs on a predator-free island or site by 2018.

A small captive population is managed in the specially-designed Carter Holt Harvey Native Frog Research Centre at Auckland Zoo where successful breeding was recently achieved. The enclosures in the Centre have pipes of cold water flowing underground to keep the ground cool, a controlled climate that is warm and dry in summer and cold and

wet in winter, and eggs that are abandoned are reared for on damp tissue paper placed on the back of a frog model.

## More information

Website: NZ frogs online. [Link](#)

Website: EDGE. [Link](#)

Website: Amphibian Survival Alliance. [Link](#)

News article: Zoo celebrates big leap forward for frogs. Auckland Zoo, 29 February 2016. [Link](#)

Strategic document: Native frog (*Leiopelma* spp.) recovery plan, 2013-2018. By Phillip J. Bishop, Lisa A. Daglish, Amanda J.M. Haigh, Leigh J. Marshall, Mandy D. Tocher and Kate L.

McKenzie. Threatened Species Recovery Plan No. 63. Department of Conservation. 2013.

[PDF](#)

Scientific paper: The threatened Leiopelmatid frogs of New Zealand: natural history integrates with Conservation. By Ben D. Bell. Herpetological Conservation and Biology, Vol. 5, pages 515-528, 2010.

Scientific paper: The recent decline of a New Zealand endemic: how and why did populations of Archey's frog *Leiopelma archeyi* crash over 1996-2001. By Ben D. Bell, Scott Carver, Nicola J. Mitchell, Shirley Pledger. Biological Conservation, Vol. 120, pages 189-199, 2004.

Article: The truth about tadpoles and frogs. By Warren Judd. New Zealand Geographic. Issue 038, April-June 1998.



## Photos



Image of Archey's frog using mirror stage to allow  
identification of individuals using body markings.  
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