

Resurvey of Archey's frogs, Mt Moehau, 24 December 1998

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1. Introduction

Following concerns about a possible catastrophic decline in populations of Archey's frogs *Leiopelma archeyi* in central Coromandel (Ben Bell, Victoria University of Wellington) a meeting was convened at the Department of Conservation, Hamilton, on 4 December 1998. At this meeting it was decided to revisit sites that had been previously surveyed.

I had previously surveyed Archey's frogs on Mt Moehau in July 1998 (Thorsen 1998) as part of a contract to develop a survey method for leiopelmatid frogs in the Waikato. I returned to one of the sites on 24 December 1998 (time did not allow a revisit of the Ongohi site near the summit) with the main purpose of determining whether a decline of the magnitude found by Ben Bell had occurred in this population.

This visit also allowed further information to be collected on the randomised transects monitoring methodology.

2. Methods

The same methods were used as for the previous visit. 50 m long transects were taken in random directions from random altitudes between 500 and 600 m on the eastern summit track. All possible frog retreats were searched within 1 m either side of the transect tape (giving an area of 100 m²). The only exception was that two people were used to search transects. One person was inexperienced at frog location and received on-the-spot training.

3. Results

Ten transects were completed.

Transect #	# Archey's frogs	# Hochstetter's frogs
1	2	-
2	0	-
3	4	-
4	1	-
5	0	-
6	3	-
7	0	-
8	0	-
9	3	-
10	10	3

Over ten transects, 23 Archey's frogs and 3 Hochstetter's frogs *L. hochstetteri* were found. Altogether 852 vegetation, 41 rock, and 136 log retreat sites were searched and 440 minutes were spent searching for frogs.

Size of frogs varied from 14 to 32 mm snout-vent length, with a good spread between.

A cluster of three half-developed eggs was found.

There were no differences between the two observers in number of retreat sites searched or number of frogs found.

4. Discussion

Comparison with data from July 1998:

	July 1998	December 1998
# Transects	13	10
# Archey's	25	23
# Hochstetter's	0	3
Av. time/transect	18.8 min	44 min
# retreats/transect	55.4	102.9
Archey's/transect	1.92	2.3
Std Dev	2.02	3.09
Archey's/100 log/rock retreats	15.2	10.2
Archey's/100 veg. retreats	2.8	0.5
Archey's/100 min search	10.2	5.2

A t-test applied to the two samples (December 98 and July 98) gives a p-value of 0.73 at 95% confidence. Therefore there was no difference between the mean numbers of frogs found the two visits.

There is no evidence of a decline of the extent noted by Ben Bell for central Coromandel. Number of frogs per 100 m² was similar to, but the size range of frogs was different from, those noted by Bell, where very few frogs were found but all were in the larger size categories (approximately 30 mm snout-vent length). The presence of eggs also indicates the population is still functional at the moment.

As suggested by the effort-based indices (per 100 retreats or 100 minutes), the lower number of frogs in December is puzzling. I interpret this as a movement of the frogs to wetter sites coupled with an increase in the number of retreats in transects because of the randomised nature of transect selection. The forest seemed identical (no vegetation recovery) between visits, but was much drier. Though two people were used to search most transects there was no difference in the ability to find frogs or in area searched. These results could also be interpreted as evidence for a decline of a lower magnitude than reported by Bell. Further work is necessary to clarify this.

Following the results of Bell from the central Coromandel, Rick Thorpes' absence of frogs from near Thames, my inability to find *Leiopelma archeyi* in the Waitekauri in July 1998, and the possible decline at Mt Moehau, I would suggest that the decline discovered by Bell is real (rather than a behavioural change) and widespread. If so, there are currently no definitely known healthy populations of *L. archeyi* in the Coromandel apart from that at Mt Moehau.

The randomised transect survey design seems satisfactory. It is not season dependent and can be undertaken by inexperienced people with minimal training. However, ten transects is a minimal sample size and chance could be the reason why so many more retreat sites per transect were present in December.

Vegetation sites searched in July 1998 had recovered fully by December 1998. Rock or log sites were not rechecked as these were not marked in July 1998 and would be very difficult to relocate due to their randomised location.

OTHER NOTES

An *Anagotus* weevil was collected from a *Gahnia* clump and forwarded to Willie Kuschel, Landcare Research, Mt Albert, Auckland, who described it as a previously unknown species.

An adult of an undescribed species of ground weta was seen, but avoided capture. This information was forwarded to Peter Johns of Canterbury University. This is only the second record of an adult of this species.

5. Recommendations

1. A full survey of sites along the Coromandel ranges from Mt Te Aroha (Paeroa) to Mt Moehau should be instigated immediately. This should determine whether frogs are present, and, if so, baseline data on population size should be gathered using the randomised transect method with at least 30 transects in each area.
2. The recommendations, especially relating to possible causes of decline, discussed in the 4 December meeting in Hamilton, should be actioned immediately.
3. All efforts should be made to secure the populations of *Leiopelma archeyi* present in the Whareorino forest and any other geographically isolated population.

6. References

Thorsen, M. (1998). Determination of a standardised methodology for long-term monitoring of mainland *Leiopelma* species. Unpublished report to the Department of Conservation, Hamilton.