

with frogs

A recent population crash of Archey's frogs in the central Coromandel is causing concern. SHAUN BARNETT reports.

Ben Bell, from the School of Biological Sciences at Victoria University, has a special interest in native frogs, having studied them for over 25 years. During December 1996 he was carrying out some routine surveying for Archey's frogs *Leiopelma archeyi* at a site on the Coromandel Ranges near Tapu, and made the alarming discovery that he could hardly find any. Subsequent searching did reveal a few, mainly larger females, but in nowhere near the numbers which had been recorded during most previous years.

Two years later, in November 1998, a similar population crash became apparent at the other nearby site Ben Bell was monitoring, at Tokatea behind Coromandel town, 30 kilometres north. After analyzing the figures, results showed an approximately 90 percent reduction in numbers of Archey's frog at the two study sites in the central Coromandel. Fortunately, no such decline seemed to be occurring for Hochstetter's frogs *Leiopelma hochstetteri* in nearby streams at both sites.

Frog populations are cyclical by nature, and like any species, fluctuate up and down according to complex interactions between population dynamics (such as breeding success) and environmental factors (such as climate, predation, and habitat change). But such a rapid population crash was of real concern, and Ben

Frogs require damp locations, and are susceptible to climate change which may affect their habitat. This is Hochstetter frog habitat, Kaimai-Mamuku Forest Park.

Bell says it constitutes 'the first systematically documented decline of a frog species in New Zealand'.

Late in 1998, an emergency meeting of the Frog Recovery Group, which includes Department of Conservation staff and 'outside' academics, met to discuss the apparent decline in the frog population. DoC decided to step up its annual monitoring of other frog populations to three-monthly checks. These checks indicated substantial populations still of Archey's frog at Whareorino (in the Western King Country), and Moehau (at the tip of the Coromandel range). The decline in the central Coromandel remains a concern, however, and with the recovery group's support, DoC has given Dr Bell a \$25,000 study grant over the next three years to investigate 'the factors influencing the status and decline of Archey's frog in the Coromandel Ranges'.

As a rule, amphibians are good environmental indicators of ecosystem health. Because they absorb air and moisture through their skin, amphibians are vulnerable to pollutants and chemicals. They are also highly sensitive to ultra-violet radiation. As amphibians require damp locations, they are easily affected by climate changes that may affect their habitat.

Bruce Waldman, a senior lecturer at the University of Canterbury, says it is generally accepted in the scientific community that amphibians world wide are in major decline. In Australia alone some 15 species of frog have disappeared from the eastern parts of the country since the

Maud Island

Four frog species at risk

There are four surviving species of frogs native to New Zealand. They have, like most native animals, suffered a decline since humans arrived in the country.

Archey's frogs are found in damp, mountainous locations on the central and northern parts of the Coromandel Range and at Whareorino.

Hochstetter's frogs live on the fringes of small streams and water-courses, and have the widest distribution of any native frog. There are localized populations in the Coromandel, Kaimai-Mamuku, Northland, Western King Country, Pureora and East Cape.

The remaining two species have very limited distributions, all on islands in the Marlborough Sounds. The recently described *Leiopelma pakeka* is found only on Maud Island and Motuara Island (where some were recently transferred), and Hamilton's frog *L. hamiltoni*, which is extremely rare and found only on Stephens Island. (See *Forest & Bird*, August 1997.)

Sub-fossil remains indicate there were once three more native frog species, now extinct, and at least some of the four surviving species were once more widespread. In recent times, most of the extant species seemed to have remained in relatively healthy populations in areas where their habitat is protected. That was until Dr Bell's results raised the alarm.



Hamilton's frog