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MORPHOLOGY,
ECOLOGY AND DEVELOPMENT
OF LEOPELMATID FROGS (*LEIOPELMA* SPP.),
IN WHAREORINO FOREST,
NEW ZEALAND.

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ABSTRACT

Leiopelma archeyi, *L. hochstetteri* and a previously unrecognised leiopelmatid frog, Type A, occurred sympatrically in a small area of Whareorino forest when this was intensively surveyed between June 1996 and July 1997. *L. archeyi* was found predominantly along ridges. Large specimens were mostly under rocks whereas small ones were in grasses. This association was shown to be significant using canonical variate analysis. All *L. hochstetteri* were under rocks, logs or grasses and were associated with streams. Type A frogs were in small rock piles on ridges. Type A frogs were shown to be distinct from both *L. archeyi* and *L. hochstetteri* by canonical variate analysis. They could also be distinguished by morphological features. Overall they resemble *L. hochstetteri* but have less webbing between the toes, a distinct paratoid gland and a stouter body. These differences, together with their sympatry with *L. archeyi* and *L. hochstetteri*, indicate that the Type A frog is possibly a new species. It appears to be closest to the extinct *L. markhami*.

Two clutches of *L. archeyi* eggs were reared artificially at 11°C and 15°C. Ten hatched but one died 10 days later. The tails took 48-75 days to be absorbed. Parentage and temperature significantly affected the rate of tail reduction.

The gut contents of 8 frogs indicated that they eat a wider range of invertebrates than previously recorded. Their diet includes, in order of frequency of occurrence, Acari, insect larvae, Collembola, Amphipoda, Coleoptera, Araneae and Diptera. Unusual items were two diplopods, one ant and one gastropod. Large frogs with teeth ate a larger proportion of sclerotized prey. Small frogs lacked teeth and ate mostly small soft bodied invertebrates. However, they also took a wider range of prey. Potential prey was sampled using pitfall traps. Examples of all of the prey were caught but too few frog guts were analysed to indicate any relationship between pitfall trap catches and frog diet.

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