

Quantifying the Benefits of Rat Eradication to Lizard Populations on Kapiti Island

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Abstract

In New Zealand the introduction of mammalian predators and human modification of habitat has led to the reduction and extinction of many native species. Therefore an essential part conservation management is the assessment and reduction of exotic predator effects. Many lizard species in New Zealand are threatened, and the eradications of exotic predators from islands has aided in the recovery of many species. Where comparisons can be made on islands before and after rat eradication this can provide a unique opportunity to quantify the benefit of these actions. In 1994–1996 research was carried out on Kapiti Island by Gorman (1996) prior to the eradication of kiore (*Rattus exulans*) and Norway rats (*Rattus norvegicus*). This involved sampling six defined habitats using five methods in order to establish density data for lizard species present, as well as recording data on vegetation and weather. In the summer of 2014–2015 I repeated this research using pitfall traps, spotlighting and daytime searching to sample five habitats along pitfall trap lines and transects established by Gorman (1996). This provided data on density, size distribution, behaviour, habitat use and vegetation to compare to the 1994–1996 data.

Five species were found; common skinks (*Oligosoma polychroma*), brown skinks (*Oligosoma zelandicum*), copper skinks (*Oligosoma aeneum*), ornate skinks (*Oligosoma ornatum*) and common geckos (*Woodworthia maculatus*) in four of the five habitats sampled. Common skinks, brown skinks, copper skinks and common geckos all increased in density based on encounter rates since the rat eradication, and were found in new locations. However, some changes were explained by measured changes in the vegetation. Ornate skinks still appear rare which may be due to the presence of avian predators like weka (*Gallirallus australis*) preventing recovery of the species. There has been little change in the size distribution of grassland skinks species, and populations still lack large (> 6 cm snout-to-vent length) individuals. This may be due to avian predators removing large

individuals from the population or the change in vegetation making habitats more suitable for smaller skinks. There has also been no apparent shift toward terrestrial behaviour in common geckos. This may be caused by an arboreal food source or arboreal behaviour providing protection from nocturnal predators. My research shows that there have been clear benefits to some of the lizard species present on Kapiti, but some changes have not occurred as predicted. This provides direction for further research, including effects of avian predators, and information to improve decisions about potential translocations to Kapiti.

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