Control of introduced mammalian predators
reverses the decline of a threatened New Zealand parrot

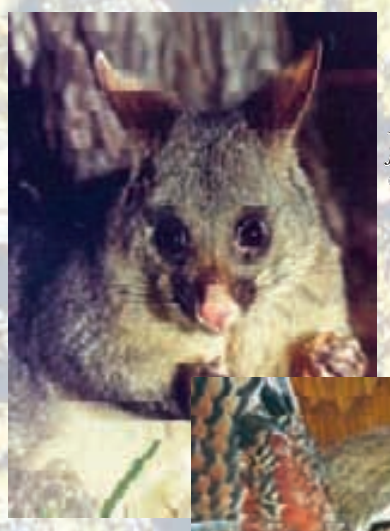
Ron Moorhouse & Terry Greene
Science & Research Unit
Department of Conservation
PO Box 10-420
Wellington
New Zealand.

Until the arrival of humans c.1000 years ago, the islands of New Zealand (270,000 km^2) had no terrestrial mammals except three species of insectivorous bats.

Having evolved in isolation from mammalian predators for millions of years, the indigenous biota of New Zealand has been decimated by the introduction of a variety of predatory mammals, including rats (*Rattus* spp.), Australian brush-tail possums (*Trichosurus vulpecula*), cats (*Felix catus*) and three members of the weasel (Mustelidae) family.

Consequently, many native bird species are now either extinct or restricted to a few predator-free offshore islands.

We tested the effectiveness of large-scale (825–13,000 ha) predator control operations as a management technique for the kaka (*Nestor meridionalis*), a large (525 g) native parrot that is vulnerable to predation by stoats (*Mustela erminea*) and rats and suffer competition for food and nest sites from possums.



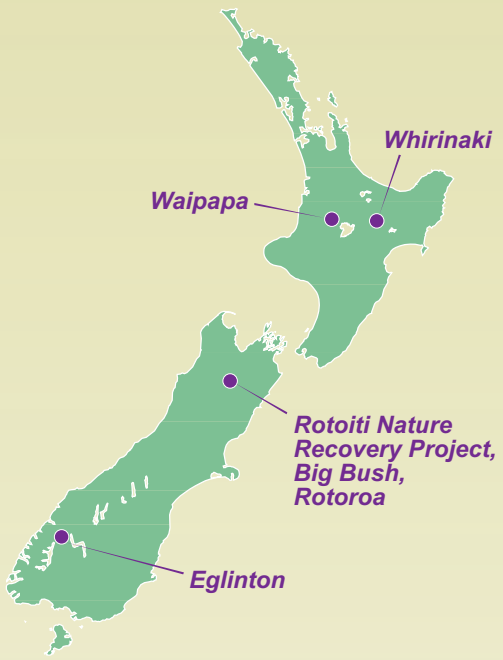
Possums prey on nesting female kaka as well as eggs and nestlings

Predation of nesting female kaka by stoats is a serious threat to mainland populations

Kaka remain abundant on offshore islands that lack stoats and possums

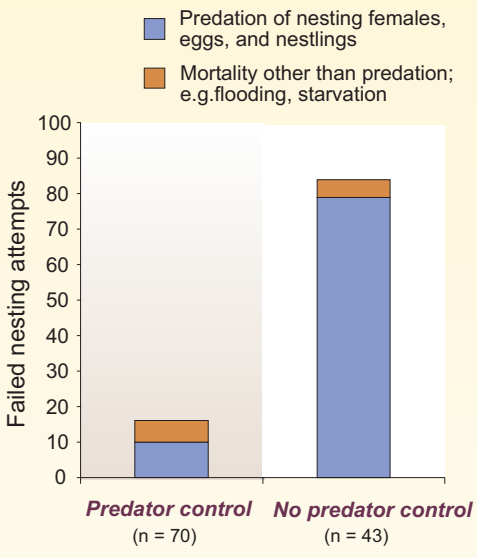
Methods

- Stoats, rats and possums were controlled at several locations using poison bait-stations and/or traps.
- We captured and radio-tagged wild kaka at these sites, and at sites without predator control, so that we could compare the breeding success of kaka with and without predator control.
- We also radio-tagged nestlings to allow estimation of post-fledging survival and recruitment.



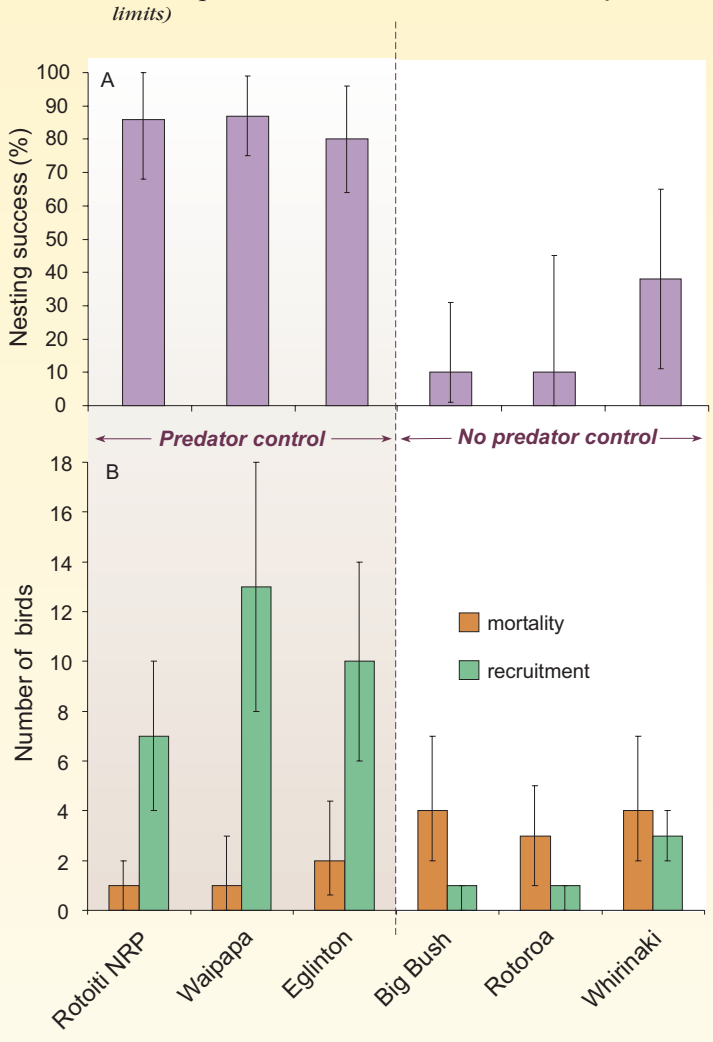
Results

- Nesting success was significantly higher at sites where predators were controlled than at sites where they were not.
- Predation was the predominant cause of nest failure at sites without predator control.
- Estimated female recruitment exceeded mortality at sites with predator control but not at those without it.



Comparison of causes of nesting failure in kaka at sites with and without predator control

A) *Comparison of kaka nesting success at sites with and without predator control. (Error bars are 95% confidence limits)*



B) *Comparison of female mortality and recruitment in kaka at sites with and without predator control. Confidence limits are 77% (= 0.05 probability of overlap between mortality and recruitment).*

Fenn traps set in tunnels to kill stoats

Conclusions

Predator control using grids of poison bait-stations and/or trapping has the potential to reverse the decline of kaka populations on the main islands of New Zealand.

Further work will determine the minimum area over which predator control must be carried out, in order to support the long-term survival of a kaka population.

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