Diet of stoats at Okarito Kiwi Sanctuary

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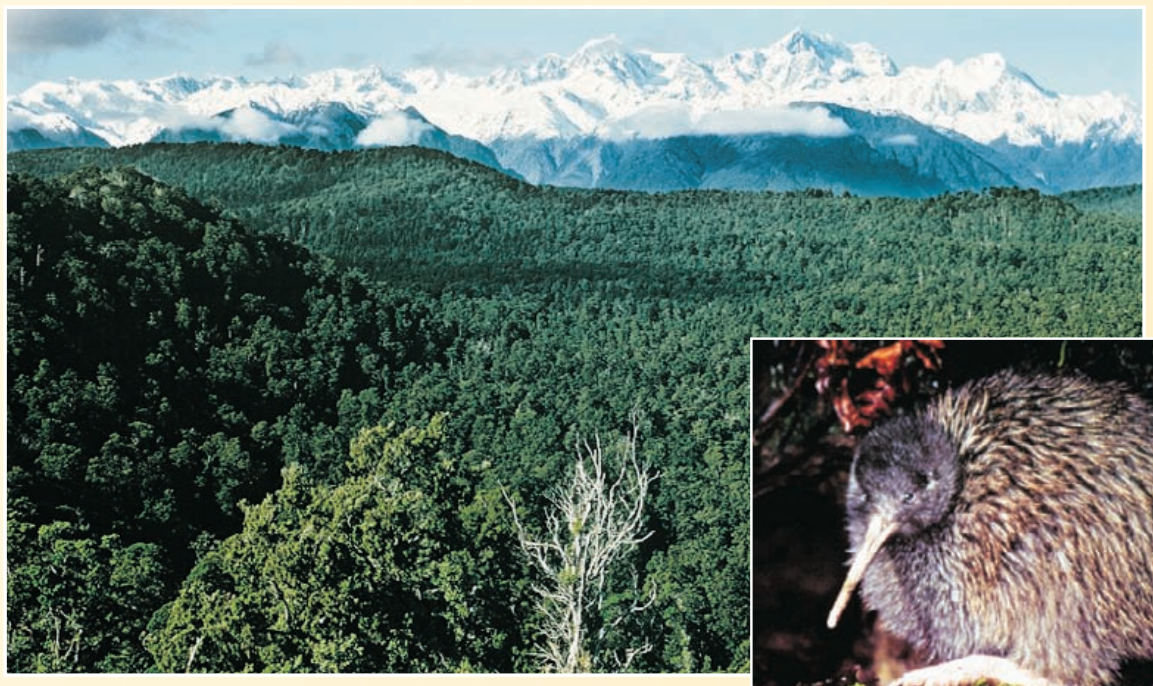
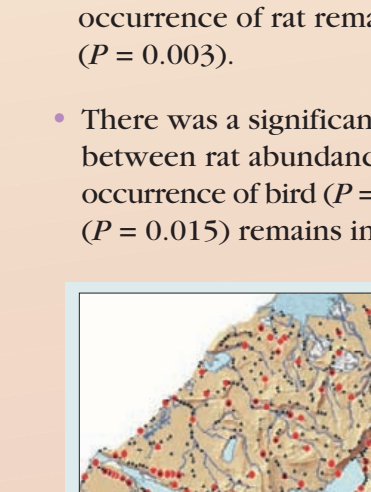


South Okarito Forest.

*Okarito Brown Kiwi (*Apteryx mantelli *'Rowi').*



Kiwi (*Apteryx* spp.), endemic to New Zealand, are the smallest of the ratites, an ancient group of flightless birds. There are six taxa and all have declined significantly since human settlement. Predation of young kiwi, chiefly by the introduced stoat (*Mustela erminea*), is currently the most important factor contributing to their decline. Okarito Brown Kiwi (*Apteryx mantelli* 'Rowi') are the rarest kiwi, with an estimated 250 surviving in 10,000 ha in South Okarito Forest, South Westland.

To reduce the impact of stoats in South Okarito Forest, the Department of Conservation set up an extensive network of about 3000 Fenn traps in April 2001. In 2002 and 2003, heavy seeding by podocarp trees resulted in a rat (*Rattus rattus*) plague, which caused an explosion in the stoat population. This provided a large trapped sample with which to investigate stoat diet at Okarito.

Predation by stoats is the most significant factor in kiwi decline.

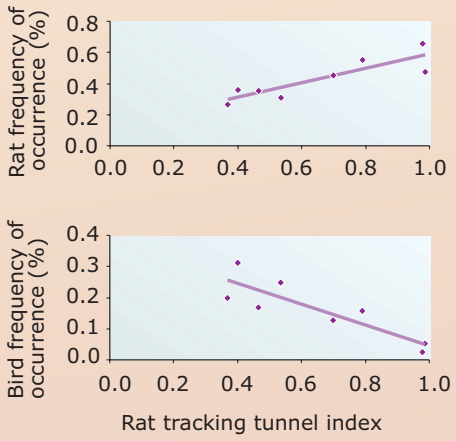
A rat plague caused an explosion in stoat population.

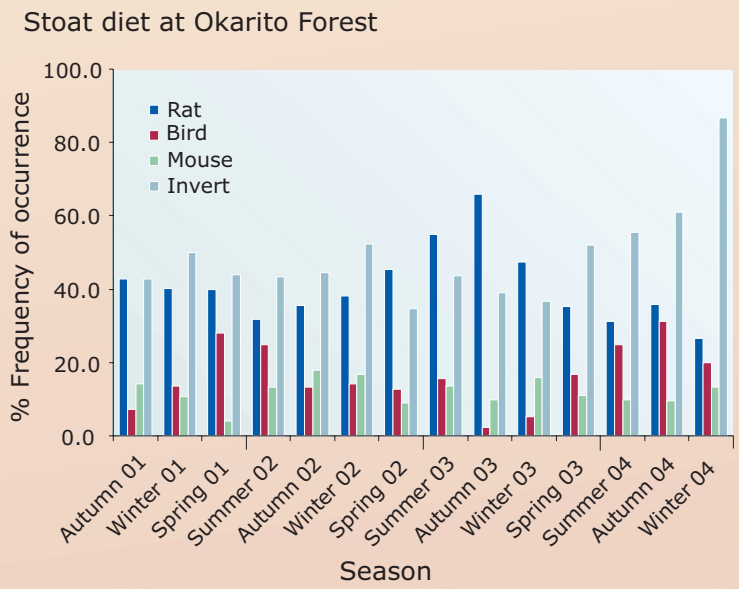
Methods

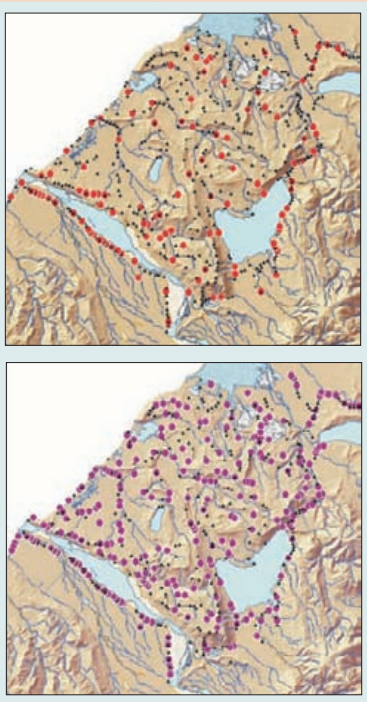
- The diet of 902 stoats trapped between April 2001 and July 2004 was analysed.
- Tracking tunnels were run 4 times a year to measure rat abundance.
- Diet information from the stoats was mapped to allow comparison across the landscape.

Results

- Remains of invertebrates were found in 52% of stoat guts examined, rats in 41%, birds in 18% and mice (*Mus musculus*) in 11%. Minor items were possums (*Trichosurus vulpecula*) in 3%, fish in 2% and lagomorphs in 1%.
- There was a significant positive correlation between rat abundance and the frequency of occurrence of rat remains in stoat diet ($P = 0.003$).
- There was a significant inverse correlation between rat abundance and the frequency of occurrence of bird ($P = 0.004$) and invertebrate ($P = 0.015$) remains in stoat diet.







Map of study area showing where stoats that had been eating birds were caught (red dots) and stoats eating rats were caught (purple dots). Black triangles represent trap locations.

- There was no correlation between rat abundance (tracking tunnels) and numbers of rats caught in Fenn traps ($P = 0.741$).
- There was no obvious spatial clumping of prey groups eaten by stoats within the trapped area.
- Predation pressure on birds was highest in the 2004 summer, when rat numbers were declining but stoat numbers were still high.

Conclusions

- Stoats shift their diet from rats to birds and invertebrates as rat abundance decreases.
- The impact on native species from any diet shifts by stoats depends on stoat density, as well as the proportion of native species eaten by each stoat—but the greatest impact is likely to be when rat populations are declining.

Department of Conservation
Te Papa Atawhai

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