Kiore: their impact on two small seabird species in the Hen and Chickens Islands

Ray Pierce
Dept. of Conservation
Box 842, Whangarei
New Zealand
Email *rpierce@doc.govt.nz*

Conservation issue

The endemic Pycroft's petrel (*Pterodroma pycrofti*) and little shearwater (*Puffinus assimilis haurakiensis*) now occur as relict populations on a small number of islands in northern New Zealand. Their breeding success is usually low, almost certainly because of predation.

Tuatara Photo: L.Doel

Kiore or pacific rat

Two predator species occur on the islands:

- **Kiore or Pacific rat** (*Rattus exulans*), a small (c.100 g) rodent introduced to New Zealand many hundreds of years ago.
- **Tuatara** (*Sphenodon punctatus*), a medium-sized (c.500 g) endemic reptile.

The systematic removal of kiore from the Hen and Chickens Islands provided an excellent opportunity to measure the relative impacts of kiore and tuatara on Pycroft's petrels and little shearwaters.

Chickens Islands seen from Taranga (Hen Island)

Little shearwater Photo: L.Doel

Research objectives

To identify the cause of low productivity of Pycroft's petrels and little shearwaters and, specifically, to determine whether:

1. **Kiore impact on the breeding success of Pycroft's petrels and little shearwaters.**
2. **Tuatara impact on the breeding success of these seabirds.**
3. **The two seabird species are in competition with each other.**

Experimental design

On Coppermine Island, kiore were controlled to very low levels in spring/summer 1992/93, but had recovered across the island over the next four years. They were finally removed in July 1997. On Lady Alice Island kiore were removed in October 1994.

Up to 50 study burrows were checked on each island early and late in the breeding season to determine breeding success. Contemporaneous samples on the two islands enabled food supply to be eliminated as a compounding variable.

Key findings

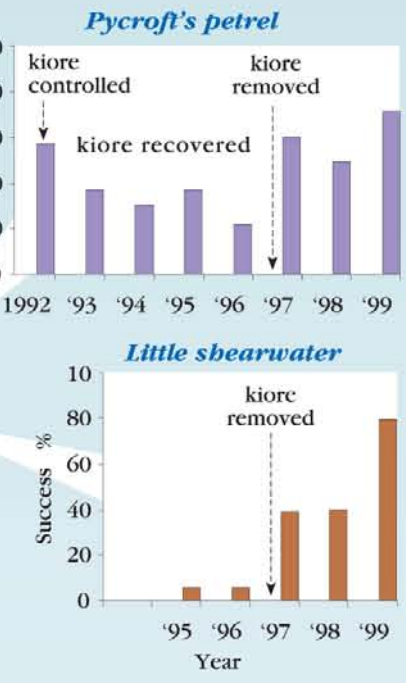
1 Kiore impacts

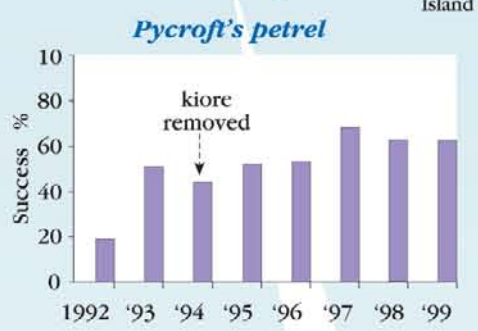
Little shearwater: productivity was low, (average 16%), in the presence of kiore, but increased significantly (average 61%) on both islands once the rats were removed. The extremely low breeding success on Coppermine Island in 1995 and 1996 contrasted with high success on Lady Alice Island in the same years.

Pycroft's petrel: productivity averaged 33% in the presence of kiore and 57% in the absence of kiore. In most years productivity was significantly higher on the kiore-free or kiore-controlled island than on the island

High rainfall, especially in 1998, caused the failure of some nesting attempts of both species

Pycroft's petrel





2 Tuatara impacts

Nesting success was little different between burrows used or not used by tuatara.

Tuatara co-habiting a petrel burrow

Tuatara	no. of nests	no. of nests succeed	percentage succeed
recorded	19	11	**58%**
not recorded	66	31	**47%**

Post-kiore Pycrofts petrel nests

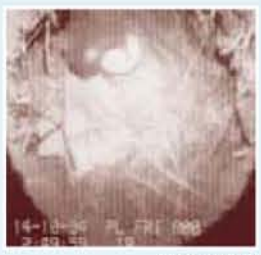
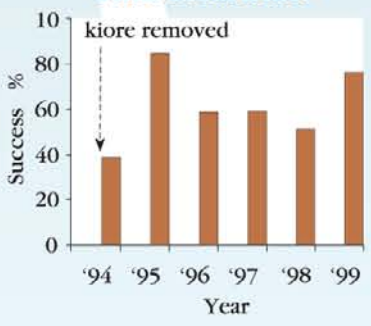


Photo: A.Booth

Dorsal video view of kiore eating an egg in a shear-water nest



3 Competition

Late-fledging little shearwater chicks can interfere with Pycroft's petrels causing them to abandon nesting. Observations suggest that increased productivity of little shearwaters following kiore removal has caused a small proportion of Pycroft's petrels to abandon nesting in some years. Numbers of breeders of both species, however, are increasing on the Chickens Islands.

Little shearwater chick Photo: A.Booth

Department of Conservation
Te Papa Atawhai

Science Poster no 18 (3rd edition Jan 2001), editing by Lynette Clelland and Wanda Vivequin, production by Chris Edkins