

their transmitters or left the area. Some newly fledged juveniles could be easily recaptured by hand after they were seen flying, suggesting that although they were capable of flying, they took several days to rely on flight as their primary mechanism of escape from predators. These results indicate that mortality initially remains high post-fledging and that fledging rate alone is not an accurate measure of productivity in this species.

Ten years studying grey-faced petrel (*Pterodroma macroptera gouldi*) at Mauao/Motuotau

HUGH J. CLIFFORD

11 Mayfair Avenue, Chartwell, Hamilton, New Zealand
hughjclifford@clear.net.nz

Two breeding colonies of grey-faced petrels (*Pterodroma macroptera gouldi*) in Bay of Plenty were studied during 10 breeding seasons, 1991/92-2000/01. One colony was on the mainland at Mauao (Mt Maunganui) and the other was on Motuotau Island c.1 km from the mainland. More than 5,700 birds were banded and estimates of population size were made. Burrow occupancy and breeding success were measured during 4 breeding seasons. For 2 years at Mauao losses of chicks from September to December were >70%, but in the succeeding 2 years when predator control was in operation losses were <20%. Data were collected on inter-colony movements and on the age at which young birds returned to the colonies after fledging from them.

On petrels, fallout from catastrophic eruptions, and ice ages — an unparalleled record from Te Waka in inland Hawke's Bay

TREVOR H. WORTHY

Palaeofaunal Surveys, 38 Lowes Place, Masterton, New Zealand
tvmoa@wise.net.nz

RICHARD N. HOLDAWAY

Palaeocol Research, P.O. Box 16569, Christchurch, New Zealand

The fossil site at 900 m asl called Te Waka #1 was discovered in 1957 by W. H. Hartree on the limestone-capped Te Waka Range that rises to 1021 m near Te Pohue on the Napier-Taupo road. His excavations there and elsewhere (1957-1960) provided much data on the past avifaunas of inland Hawke's Bay. Excavations by us in

1999 and 2000 have resulted in the most diverse fauna from a cave site in the North Island (2111 identified bones representing 39+ species birds, 5 lizards, 3 bats). The site is unique in having preserved a continuous and diverse vertebrate fauna from before the last glacial maximum to the present. A series of identified tephros from the Taupo Volcanic zone, about 70 km to the northwest, provide excellent stratigraphic control. Seven radiocarbon dates on bones and eggshell, and a uranium series date on a speleothem, provide additional time control. A distinct glacial fauna was deposited between the 22.6 kyr Kawakawa tephra and about 14,000 yrs B.P. after which the wetter and warmer conditions of the Holocene changed the deposition regime in the site and a forest fauna was deposited. Open country taxa were then absent until the very youngest deposits associated with Polynesian land clearance. Bones accumulated mainly as the result of predator activity. The mottled petrel *Pterodroma inexpectata* and the Cook's petrel *P. cookii* are the most common species in the site particularly in the earlier levels.

Prion problems alleviated. An update on research toward the conservation of the endangered Chatham petrel (*Pterodroma axillaris*)

KERRY - JAYNE WILSON

WENDY SULLIVAN
BENOIT GANGLOF

Ecology and Entomology Group, P.O. Box 84, Lincoln University, Canterbury, New Zealand
wilsok@lincoln.ac.nz

The endangered Chatham petrel *Pterodroma axillaris* now breeds on a single island where up to 70% of breeding failures are caused by interference from the locally abundant, broad-billed prion *Pachyptila vittata*. We have developed a burrow entrance flap that has significantly reduced interference by prions. Neither species likes to enter through the neoprene flap but the petrel with a chick inside will enter while it deters prions with no prior attachment to that burrow. Now that known Chatham petrel burrows are protected there a 2nd Chatham petrel population can be established. We identified habitat preferences of both Chatham petrels and broad-billed prions. We are also studying the feeding frequency, meal size, and chick development in an analogue species Pycroft's petrel *Pterodroma pycrofti*. In this paper we discuss the success of the burrow flap, and the application of our habitat and chick growth studies in enabling the establishment of new petrel populations.