Report on fossil vertebrates found on a visit to Greville Harbour Farm, D'Urville Island, 2006

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Between the 28th April and 1 May 2006 the authors visited Greville Harbour Farm as guests of the Nelson Conservancy of the Department of Conservation. We had been asked to survey Holocene dune deposits of fossil bones, make recommendations to DOC about management and significance of these deposits and produce a list of species that had once been present in the Greville Harbour area.

Methods. On Friday (28th) afternoon and during most of Saturday (29th) the authors, Peter Gaze and Kerry Brown (both DOC Nelson) searched the dunes in a systematic manner, identifying sites of active erosion and looking for hotspots of bone deposition. We identified a significant deposit at the northern part of the spit that we concentrated on during Sunday (30th). All bones were collected from the surface and placed in plastic bags labelled as to the area, collector and date. Bones were identified by AT using reference collections at Te Papa.

Results. All sites collected from by us were apparently natural deposits. About three sites seen near the middle of the spit were identified as middens, due to the presence of charcoal, shellfish, fish bones and cooking stones. These latter areas were not collected from or disturbed. No bird bones were seen in these middens.

We found the following species:

Little bush moa *Anomalopteryx didinus*
Brown kiwi *Apteryx australis*
Fairy prion *Pachyptila turtur*
Scarlett's/fluttering/Hutton's shearwater *Puffinus scarletti/gavia/huttoni*
Diving petrel *Pelecanoides* spp.
Little blue penguin *Eudyptula minor*
Yellow-eyed penguin *Megadyptes antipodes*
Pied shag *Phalacrocorax varius*
Spotted shag *Stictocarbo punctatus*
Scaup *Aythya novaeseelandiae*
Brown teal *Anas chlorotis*
Grey/mallard duck *Anas superciliosa/platyrhychos*
NZ quail *Coturnix novaezelandiae*
Weka *Gallirallus australis*
Red-billed gull *Larus novaehollandiae*
NZ pigeon *Hemiphaga novaeseelandiae*

Kakapo *Strigops habroptilus*
Kaka *Nestor meridionalis*
Kakariki *Cyanoramphus* spp.
New Zealand owlet-nightjar *Aegotheles novaezealandiae*
Bush/rock wren *Xenicus* spp.
Pipit *Anthus novaeseelandiae*
Song thrush *Turdus philomelos*
Mohua *Mohoua ochrocephala*
Brown creeper *Mohoua novaeseelandiae*
New Zealand robin *Petroica australis*
Bellbird *Anthornis melanura*
Tui *Prosthemadera novaeseelandiae*
Kokako *Callaeas cinerea*
Saddleback *Philesturnus carunculatus*
South Island piopio *Turnagra capensis*
New Zealand raven *Corvus antipodum*
Greater short-tailed bat *Mystacina robusta*
Lesser short-tailed bat *Mystacina tuberculata*
Kiore *Rattus exulans*
Norway rat *Rattus norvegicus*
Tuatara *Sphenodon*
Lizard
Seal
Also numerous fish bones

There was considerable evidence for the presence of a past sea lion colony on the dunes. Several sites had copious numbers of small stones (presumed gastroliths) and recognisable coprolites (apparently from seals/sea lions) containing fish remains. A small number of fragmentary seal bones (presumably sea lion), including juvenile remains, were found. We suspect that most fish remains found outside the human midden areas were from sea lion faeces or regurgitations. Rare moa eggshell found proved that moa had bred in this area.

Importance of the site. These deposits are of nationwide significance. It is unusual today to find natural deposits of fossil bones still actively eroding from dunes. While a number of such deposits have been recorded from throughout the country, many have now been completely destroyed by erosion, others have been built on and others have had marram grass planted on them for dune stabilisation. The Greville Harbour deposits are especially interesting, as they are the only natural deposits in public ownership (as far as we are aware) currently known on D'Urville Island - they provide a valuable snapshot of the fauna present prior to human arrival.

Discussions about fauna The sites at the northern end of the beach are unusual for the small size of the vertebrate remains recovered. Few New Zealand dune deposits have had bat or small passerine bones recorded from them. The deposits as a whole contain evidence of a healthy forest community. Given the proximity of the lake, the small

number of water bird remains surprised us - perhaps the currently large water body is a recent phenomena. There is evidence of a significant colony of Hooker's (New Zealand) sea lions (*Phocarctos hookeri*) at this site. Our results add significantly to the number of species known to have been present on D'Urville. We are only aware of two bird species recorded from deposits on D'Urville Island that were not found during our survey: *Dinornis* sp (the giant moa) and *Megalapteryx* (the upland moa) (Te Papa specimens). We have not reassessed these specimens. Therefore a total of 34 bird species have now been recovered from fossil sites on D'Urville Island.

The presence of extinct forest species, tuatara and sea lions suggest that the deposits are primarily from prior to human arrival. We suspect that they represent gradual deposition since the end of the last (Otiran) glaciation 10,000 years ago.

What may happen now With the withdrawal of stock from the farm, lupin, grass and marram will start to invade the dunes, stabilising them even more, thus the window of opportunity for further bone collection is limited. We found that the southern vegetation-free parts of the dunes have already been heavily eroded and have less potential for further useful bone discoveries. By far the most productive area was the northern end of the dunes about 200 m inland.

We recommend that:

1) Paths onto the beach be directed to avoid actively eroding areas. This will prevent bones being broken by footsteps and opportunistic collection by fossickers.
2) These sites are regularly collected from by experienced DOC staff and that collected bones be labelled with details of exact site, date and collector. Exposed bones, if not collected, will quickly be destroyed by the elements.
3) Collections should be deposited in either Te Papa or the Canterbury Museum.
4) Cultural sites should be mapped to help inform local Māori of the significance of the area and instigate appropriate management. However, it is important for archaeologists to appreciate that not all bones in these dunes have a cultural origin.