AVIAN REMAINS FROM NORTH OTAGO ARCHAEOLOGICAL SITES

By MICHAEL M. TROTTER

The principal purpose of this note is to list bird species, including the first archaeological record of *Cnemiornis calcitrans,* found in Moa-hunter sites in North Otago. The sites are Ototara, Tai Rua, and Waimataitai,* and they have been excavated by the present writer, or by volunteers under his direction, between 1954 and 1963. They were occupied between the 14th and 16th centuries by Maoris whose economy was to some extent based on the hunting and utilization of moas and other now extinct birds, and whose material culture forms a phase intermediate to "typical" Archaic Moa-hunter and Classic Maori in Otago. Artifacts of "greenstone" are rare or not present, adzes being made of greywacke or argillite, while numerous varieties of moa-bone fish-hooks, both with and without barbs, are a distinctive feature. Other bird bone was used for many artifacts, with use of mammal bone (whale and dog) less common, and human bone rare. All the bird species listed have been used for food, and their bones were found in middens on the sites referred to. The list is compiled in order of frequency of occurrence of individual bones, and numbers range from over fifty to single bones of some of the species at the bottom of the list. Because of the fragmentary nature of many specimens it has not always been possible to make specific identification, hence the genus only is given in some cases.

The site at Tai Rua (Trotter 1959: 12-13) had the most moa bones in proportion to other birds, and a broken moa egg was found in an area with a large number of body remains — vertebrae, pelves, ribs, and probable crop stones — and it was possibly an unlaid egg from a slaughtered bird. As on other sites the femora, tibiae, and tarso-metatarsi were usually broken, to extract the marrow, or facilitate shaping into artifacts, or both. Many bones had been gnawed by rats and dogs, and the latter were doubtless the cause of at least some of the breakage referred to above. Some necks and heads of *Euryapteryx* had the bones and tracheal rings in position of articulation, suggesting that this part of the body was discarded as being useless either for food or for manufacture of artifacts. On the other hand a cranium of the Giant Rail *Aptornis* (which is of similar size to that of some species of moa) from Waimataitai (Trotter 1955: 259-303) had been broken as if to remove the brain for food; in this case the left quadrate and the atlas vertebra were still in position. Apart from an unconfirmed reference by Haast in 1875, the finding of the Aptornis bones at Waimataitai in 1954 provided the first definite evidence of its contemporaneous existence with man, and this has now been supported by a number of finds on other sites in both Islands. Similarly there has not been, as far as can be ascertained by the writer, any previous record of the remains of the Flightless Goose *Cnemiornis calcitrans* being

* These sites are registered with the New Zealand Archaeological Association as numbers S.136/2, S.136/1, and S.146/2 respectively. I am indebted to Mr. R. J. Scarlett of the Canterbury Museum for identifying the bird bones excavated.

found associated with human occupation. While its occurrence at Ototara might suggest isolated late survival in North Otago, it seems probable that like *Aptornis* it will be found elsewhere as more work is done on midden remains. None of the other species is unexpected, though at Waimataitai the predominant moa is *Emeus crassus,* while the common Moa-hunters' moa, *Euryapteryx,* is represented by only one bone. At Ototara *Euryapteryx* was the only moa, and at Tai Rua there were three times as many bones of this species as of *Pachyornis.*

It is apparent from the list that the site at Ototara contained many more species than either of the other two (25 compared with 15 and 14), and in fact the total concentration of individual bones was greater, birds having formed a larger proportion of the occupants' diet. The reason for this is undoubtedly due at least in part to the location of the site, which is close to a fresh water creek one and a half miles from the coast. Both Tai Rua and Waimataitai were larger than Ototara but were situated close to lagoons in coastal sand-dunes where there would be a lesser range of land birds available (though oddly enough some sea-birds were found only at Ototara). There would also be a better supply of other foods such as fish and shell-fish on the coast, though these too were well represented at Ototara. A surprising fact is that of the 37 bird species only eleven are found on more than one site, and only six occur on all three.

A find of special archaeological importance from Tai Rua was a number of fragments of baked clay which had been moulded over a rounded surface. Although at least one object of baked clay has been found on another site (Murdock, 1963: 72), the general absence of pottery in New Zealand rules out the likelihood of the North Otago pieces being part of a crude bowl. An interesting possibility is that they may have been connected with the preservation of birds — damp clay being wrapped around the carcase prior to cooking to provide a receptacle for th preservatizing fat (cf Buck 1950: 99-100). This would explain the moulded curved surfaces and the baked nature of the fragments.†

As has been pointed out by Williams (1962: 17), finding remains of a species in a midden does not necessarily mean that it is native to that particular locality, as preserved carcases could have been traded over wide areas. This is a factor which must always be taken into account when studying archaeological remains.

SPECIES REPRESENTED

In order of frequency of occurrence

MOA **Euryapteryx gravis** (Owen)	O T W
GREY DUCK **Anus superciliosa superciliosa** Gmelin	O T
TEAL **Anas sp.**	O
SPOTTED SHAG **Phalacrocorax (Stictocarbo) p. punctatus** (Sparrman)	O T W
DUCK **(smaller than Anas superciliosa)**	O T W
HARRIER **Circus approximans gouldi** Bonaparte	O
MOA **(Emeus crassus** (Owen)	W
MOLLYMAWK **Thalassarche cauta subsp.**	O T W
SHOVELLER **Spatula rhynchotis**	O
BLACK SHAG **Phalacrocorax carbo novaehollandiae** Stephens	O T W
PIGEON **Hemiphaga novaeseelandiae** (Gmelin)	O T
STEWART IS. SHAG **Phalacrocorax carunculatus chalconotus** (Gray)	T
GIANT RAIL **Aptornis otidiformis** (Owen)	W
PARADISE DUCK **Tadorna variegata** (Gmelin)	O T W
MOA **Pachyornis elephantopus** (Owen)	T W

† [Is there a parallel here with the traditional gipsy method of baking a Hedgehog, after first wrapping it in a ball of clay? — Ed.]

PARAKEET **Cyanoramphus novaezelandiae** (Sparrman)	O W
YELLOW-EYED PENGUIN **Megadyptes antipodes** (Hombron & Jacquinot)	O
LAUGHING OWL **Sceloglaux albifacies** (Gray)	O W
QUAIL **Coturnix novaezealandiae** Quoy & Gaimard	O
LITTLE PENGUIN **Eudyptula sp.**	T
FLIGHTLESS GOOSE **Cnemiornis calcitrans** Owen	O
MOA **Megalapteryx didinus** (Owen)	W
EXTINCT SWAN **Chenopis sumnerensis** Forbes	O
TAKAHE **Notornis mantelli hochstetteri** Meyer	O
PUKEKO **Pophyrio melanotus** Temminck	O
MOREPORK **Ninox novaeseelandiae** Gmelin	O
FALCON **Falco novaeseelandiae** Gmelin	O
EXTINCT COOT **Palaeolimnas chathamensis** (Forbes)	T
PRIONS **Pachyptila sp.**	O
BLACK-BILLED GULL **Larus bulleri** Hutton	O
WHITE-FRONTED TERN **Sterna striata** (Gmelin)	O
DIVING PETREL **Pelecanoides urinatrix**	O
ALBATROSS **Diomedea sp.**	T
GULL **Larus dominicanus** Lichtenstein	W
EXTINCT HAWK **Circus eylesi** Scarlett	T
EXTINCT CROW **Palaeocorax moriorum** (Forbes)	T
SHEARWATER **Puffinus sp.**	W

Sites: O — Ototara; T — Tai Rua; W — Waimataitai.

R. J. SCARLETT det.

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SHORT NOTE

TEREK SANDPIPER, GREENSHANKS AND MARSH SANDPIPER NEAR GISBORNE

On 8/3/64 a Terek Sandpiper *(T. terek)* was found at Muriwai Lagoon, near Gisborne. Nearby ten Wrybills *(A. frontalis)* were scattered about the mud, feeding. Observation was perfect at fairly close range. Not only is this the southernmost record of a Terek Sandpiper in New Zealand, all other records so far being from Kaipara, Manukau or the Firth of Thames; but also at 178°E, 39°S, Muriwai Lagoon is the most southeasterly point which this palaearctic species is known to have reached in its vast range.

It was not far from the lagoon, in a partly tidal swamp now converted to farm land of a sort, that Stidolph recorded the Greenshank *(Tringa nebularia)* after a lapse of 78 years (*Notornis* V, 123). So it was gratifying to record two of this species present on 15/11/64.

On 13/12/64 my attention was drawn to a wader with long slim yellowish legs, and a long slender blackish bill, with plumage similar to a Greenshank, but generally lighter in appearance, and smaller and of slighter build. A closer scrutiny revealed a brownish base to the lower mandible, a dark patch about the carpal flexure, white rump, and a whitish tail, thinly barred with black. The bird's identity as a Marsh Sandpiper *(T. stagnatilis)* was established beyond any doubt when it was made to fly, and its call was a fairly loud " tew " repeated three or four times. Whilst the legs appeared at first sight a clear yellow, in other lights there was a distinct greenish tinge.

— A. BLACKBURN