



NEW ZEALAND
ARCHAEOLOGICAL
ASSOCIATION

NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION MONOGRAPH 11:
Atholl Anderson (ed.), *Birds of a Feather: Osteological and*
Archaeological Papers from the South Pacific in Honour of R.J. Scarlett



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BIRDS OF A FEATHER

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New Zealand Archaeological Association
Monograph II

BAR International Series 62
1979

AVIFAUNAL COMPOSITION OF SKELETAL MATERIAL
COLLECTED FROM SKUA MIDDENS AND BEACHES AT SOME
AUSTRALASIAN SUB-ANTARCTIC ISLANDS

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Introduction

Skeletal material of birds that have died recently from natural causes can help in evaluating the status of the species frequenting an area. It can also indicate the food of predators, give a measure of relative abundance and habitat preference, and reveal the presence of species not otherwise recorded.

With the assistance of members of the 1972/73 Auckland Islands, 1973/74 Macquarie Island and 1975/76 Campbell Island Expeditions I collected skeletal material of birds at Enderby Island, Disappointment Island and Sugar Loaf Rocks in the Auckland Islands; Hasselborough Bay, Macquarie Island and at Campbell Island and nearby Dent Island. The material has been deposited in the collection of the National Museum of New Zealand, Wellington, and the Australian National Wildlife Collection, the Division of Wildlife Research, CSIRO, Canberra. Logistic support for reaching the islands was provided by the Wildlife Service and the Department of Lands and Survey of New Zealand, and by the Antarctic Division of Australia. The islands and their birds are described in Bailey and Sorenson (1962—Campbell Island); Law and Burstall (1956—Macquarie Island); and Yaldwyn (1975—Auckland Islands). Further papers on the birds of the islands are in preparation. The nomenclature is based on Condon (1975) and Kinsky (1970). Methods for processing the material were as described in Mestjens et al. (1975) and Scarlett (1972).

Results

Most of the material (see Table 3.1), was of birds that had been eaten by skuas although it was not possible to determine how many of these had actually been killed by skuas. Colour-banding of skuas has indicated that some of them have a daily foraging range of at least 8 km. Some of the material was exposed by erosion after burial in sand dunes and all the material had been exposed to sun and rain. If it had been left in situ it would have disintegrated within about a year and may therefore be mostly regarded as less than a year old.

Penguins

The distribution of penguin material reflects the nesting distribution of the species represented. No material was found of species which are presently rare in the islands, e.g. the Erect-crested Penguin (Eudyptes sclateri). Most of the King Penguin bones were found, sub-fossil, in an eroding sand dune at the Macquarie Island Base Camp. Material of at least seven Rockhopper Penguins was found at Enderby Island where the species did not breed and was not seen ashore at the time of the 1972/73 Expedition

Albatrosses

Considering the presence of huge nesting colonies of several species of albatrosses and mollymauks in the islands, very little material of them was found. The Royal Albatross material was found mainly beside their nest sites on Campbell Island and sub-fossil in the sand-dunes of Enderby Island. Beside skua nests on Campbell Island were found bones of very small albatross or mollymauk chicks which were indeterminable to genus and species.

Petrels

Except for species of which only traces were found the distribution of the material reflects the breeding distributions of species presently represented on each island. It was not possible to determine to species all the Giant Petrel material. Probably most of the material collected at Macquarie Island is of Macronectes giganteus, and that collected at the other islands of M. halli. Large numbers of White-headed Petrel, Sooty Shearwater and Common Diving Petrel were found to have been killed by skuas. No trace was found of the South Georgian Diving Petrel (Pelecanoides georgicus), which may have formerly bred on Enderby and Macquarie Islands, in sand-dunes.

The material of the Short-tailed Shearwater which was found at Macquarie Island may be of non-breeding birds foraging in the Southern Ocean during the austral summer (see Shuntov 1974). No trace of this species was found at Campbell and Auckland Islands, which are situated further north, but are presumably outside the foraging range of the birds breeding around Tasmania and south-eastern Australia.

Bones of prions were much more abundant in skua regurgitation pellets at Enderby than at the other islands. Broad-billed, and Medium-billed Prions, and the somewhat similar Blue Petrel, have not been previously reported in the Auckland Islands. The Mottled Petrel and the Little Shearwater have been reported breeding in the Auckland Islands but were not seen during the 1972/73 Expedition.

No material was found of the Cape Pigeon (Daption capense), which was found breeding in the Auckland Islands for the first time during the 1972/73 Expedition. It was suspected of breeding at Campbell Island during the 1975/76 Expedition. It was commonly seen following ships and fish schools around the islands.

Shags

The shag material mainly consisted of loose bones on beaches and in nesting colonies. The species were Leucocarbo colensoi at Enderby Island, L. campbelli at Campbell Island, and L. albiventer at Macquarie Island. Material was not found of the Black Cormorant, (Phalacrocorax carbo) which occurs in the islands as a vagrant, nor of the Little Pied Cormorant (P. melanoleucus), of which there was a small breeding population on Campbell Island.

Ducks

Considering the small populations surviving of the Auckland Island Teal (Anas a. aucklandica) and the Campbell Island Teal (Anas a. nesiotis), a rather large number of fresh remains were found to have been eaten by skuas. The material of the teal has been used in the preparation of a revision of the Australasian Teal that is being drafted by Russ, Robertson and van Tets. Previously known material of the Campbell Island Teal consisted of only two museum skins.

Grey Duck, Mallard and their hybrids occur in small numbers on most of the ponds and inlets of the islands, but only a couple of bones of them were found.

Rails

No material was found of the Auckland Island Rail (Rallus muelleri) which may still be extant on Adams Island and elsewhere in the Auckland Islands, but was not found during the 1972/73 Expedition.

Only four bones of at least two birds were found of the Weka, (Gallirallus australis), at Macquarie Island where it was frequently seen and heard during the 1973/74 Expedition.

Waders

The only wader material found was of the Island Snipe at Enderby Island. This species was seen again on Enderby Island during the 1972/73 Expedition after not having been sighted there since 1891 (Taylor in Yaldwyn 1975:239).

Waders are uncommon in the islands and only at Enderby Island were they regularly seen. Most numerous were Turnstones (Arenaria interpres) in small flocks of up to forty birds along the shores, and Banded Dotterels (Charadrius bicinctus), dispersed in pairs on the upland heaths.

Skuas, Gulls and Terns

Relatively little material was found of gulls and terns. No material was found of the two gull species at Campbell Island where they occur in the inlets and along the shores. It was not possible to identify the tern material to species. The Antarctic Tern (Sterna vittata) breeds in the islands and was the species most often seen. The Arctic Tern (S. paradisaea) is a rare visitor to the islands, and the White-fronted Tern (Sterna striata) breeds in the Auckland Islands and is a rare visitor further south. All three species are similar in size.

Land-birds

Of ten species of land-birds seen at Enderby Island during the 1972/73 Expedition, material of only three species was found in skua regurgitation pellets. In particular it was surprising that no material was found of the Red-crowned Parakeet (Cyanoramphus novaezelandiae) which was common on Enderby Island.

DISCUSSION

As a survey method the collection of skeletal material of birds has a different bias in the qualitative representation of the species composition of an area from that which is obtained by visual or aural censuses, or by capture or collection of living birds.

In this study the collection of skeletal material failed to record the presence of several species of waders and landbirds. In some localities it missed the presence of gulls and ducks. It did, however, record the presence of three species of petrels at the Auckland Islands which had not been recorded there before, and two species which were not otherwise found during the 1972/73 Expedition. The differences may be due mainly to the propensity of the species to be preyed on by skuas, to wash up dead on beaches and to be found dead in open, exposed situations.

The results of this study may provide some help in the evaluation of the representativeness of the avifaunal composition of material found in prehistoric deposits.

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Table 3.1 Skeletal material of birds found at Auckland, Campbell and Macquarie Islands. X = material of one or two birds, XX = material of three to nine birds, and XXX = material of ten or more birds.

Species	Auckland Islands			Campbell Island		Macquarie Island	
	Enderby Island	Disappointment Island	Sugar Loaf Rocks	Campbell Island	Dent Island	Hasselborough Bay	
<u><i>Aptenodytes patagonicus</i></u> King Penguin							XXX
<u><i>Megadyptes antipodes</i></u> Yellow-eyed Penguin		XXX			XX		
<u><i>Pygoscelis papua</i></u> Gentoo Penguin						XX	
<u><i>Eudyptes chrysocome</i></u> Rockhopper Penguin	XX				XXX		XXX
<u><i>E. chrysolophus schlegeli</i></u> Royal Penguin						XXX	
<u><i>Diomedea exulans</i></u> Wandering Albatross	X						
<u><i>D. epomophora</i></u> Royal Albatross	XX				XX		
<u><i>D. cauta</i></u> Shy Mollymauk	XX						

Table 3.1 (Cont.)

Species	Auckland Islands			Campbell Island	Macquarie Island	
	Enderby Island	Disappointment Island	Sugar Loaf Rocks	Campbell Island	Dent Island	Hasselborough Bay
<u><i>Phoebetria palpebrata</i></u> Light-mantled Albatross				X		
<u><i>Macronectes</i> sp.</u> Giant Petrel	XX	XX		X	XX	
<u><i>Fulmarus glacialisoides</i></u> Antarctic Fulmar						X
<u><i>Pterodroma lessoni</i></u> White-headed Petrel	XXX	XXX	XXX	X		X
<u><i>P. inexpectata</i></u> Mottled Petrel	XX					
<u><i>Halobaena caerulea</i></u> Blue Petrel	X					
<u><i>Pachyptila vittata</i></u> Broad-billed Prion	X					
<u><i>P. salvini</i></u> Medium-billed Prion	XX			X		
<u><i>P. desolata</i></u> Antarctic Prion	XXX	X	X	XX		XX

Table 3.1 (cont.)

Species	Auckland Islands			Campbell Island		Macquarie Island	
	Enderby Island	Disappointment Island	Sugar Loaf Rocks	Campbell Island	Dent Island	Hasselborough Bay	
<u><i>Procellaria aequinoctialis</i></u>							
White-chinned Petrel	XX	XX	X		X		
<u><i>Puffinus griseus</i></u>							
Sooty Shearwater	XXX	XXX	X	XX	XXX		X
<u><i>P. tenuirostris</i></u>							
Short-tailed shearwater						XX	
<u><i>P. assimilis</i></u>							
Little Shearwater	XX						
5 <u><i>Garrodia nereis</i></u>							
Grey-backed Storm-Petrel	X						
<u><i>Pelagodroma marina</i></u>							
White-faced Storm-Petrel	X						
<u><i>Fregetta tropica</i></u>							
Black-bellied Storm-Petrel	XXX			X	X		
<u><i>Pelecanoides urinatrix</i></u>							
Common Diving-Petrel	XXX		X	XXX	XXX		
<u><i>Leucocarbo</i> sp.</u>							
Island Shag	XXX			XXX			XXX
<u><i>Anas platyrhynchos</i></u>							
Mallard			X				

Table 3.1 (cont.)

Species	Auckland Islands			Campbell Island		Macquarie Island	
	Enderby Island	Disappointment Island	Sugar Loaf Rocks	Campbell Island	Dent Island	Hasselborough Bay	
<u>A. superciliosa</u> Grey (Black) Duck		X					
<u>A. aucklandica</u> ssp. Island Duck	XX	XX	X		XX		
<u>Gallirallus australis</u> Weka						X	
<u>Coenocorypha aucklandica</u> Island Snipe	XX						
<u>Stercorarius skua lonnbergi</u> Southern Skua	XX	X		X	X	XX	
<u>Larus dominicanus</u> Southern Black-backed Gull	XX					X	
<u>L. scopolinus</u> Red-billed Gull	XX						
<u>Sterna</u> sp. Tern	X		X		X		
<u>Turdus merula</u> Blackbird	XX			X			
<u>Anthornis melanura</u> Bellbird	X						
<u>Sturnus vulgaris</u> Starling	XX						