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BIRDS OF A FEATHER

edited by

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SOME OSTEOGRAPHIC CONTEMPLATIONS ON MAORI AND KAKAPO IN EARLY WELLINGTON

Elliot W. Dawson

"The finding of bird bones in middens does not necessarily mean that the birds were caught even within some miles of the site and any attempt at studying the ecology or distribution of various species of birds by examining the contents of middens is therefore unreliable. It could be remembered that the Maori often carried large supplies of potted or preserved birds over great distances ..."
W. Carkeek, 1966. "The Kapiti Coast", p.107.

Introduction

The review given by Williams in 1956 of past and present distribution of the Kakapo (Strigops habroptilus Gray), defined for the first time the limits of occurrence of this large ground-parrot as a living bird or as a fossil. The present contribution adds another locality to the distribution map given in that account, suggests that this indicates the survival of the Kakapo to a late date in the Wellington district in which it has been recorded only as subfossil bones in various cave deposits, suggests also first-hand knowledge of the Kakapo by certain Maoris up to 1846, affirms the importance of the correct interpretation of archaeological sites in which midden debris may overlies earlier natural deposits and notes, in addition, the biogeographical implications of former distributions of species now restricted to specialized habitats.

Historical

Some years ago, I identified in the Department of Palaeontology, British Museum (Natural History), some 10,000 bones of subfossil and extinct birds from New Zealand and the Chatham Islands, formerly part of the late Lord Rothschild's collection at Tring (Dawson, 1958). Most of these bones were acquired by Dr. Henry O. Forbes when he returned to England in 1893 after relinquishing his post as curator of the Canterbury Museum (Rothschild, 1907). No examination of this collection had been made since the Museum obtained it, much of the material being just as Forbes had left it, a great jumble of bones, many of which were labelled in Forbes' hand in only brief and tantalising detail interpretable only by those familiar with Forbes' biography. In passing, it may be mentioned that Forbes' prior career as a renowned traveller, ethnologist and naturalist in the Indonesian and New Guinea regions, and, particularly, the detail of the circumstances of his departure from the Canterbury Museum are the subject of current research by myself and by my associate Dr. R. F. Ellen (cf. Ellen 1978).

In a preliminary account of his collections, Forbes (1892) listed the sources of his material, amongst which were bones of birds collected "in the notorious Rauparaha's Kitchen-middens, by Mr. A. Hamilton". No specific indication was given of the kinds of birds occurring at this site nor of the geographic locality. Augustus Hamilton (1854-1913), Director of the Dominion Museum for 10 years (1903 to 1913), is famed for his Maori Art amongst many other achievements.

An obituary in the Wellington newspaper The Evening Post of 13 October 1913, page 8, said of him:

"He was an insatiate student, a persistent collector and classifier. Up and down the two islands he has marched in his quest of facts about this country's ancient and modern fauna and flora, and in this great hunting ground no game was too big or too little for his capacious bag. The range of his search was from moa bones to moths, from ferns to coins, from postage stamps to Maori war canoes. Many of the trophies of this fervent chase will be in the National Museum by and by—material with a message about Nature's wondrous ways, and matter in which the workings of the Maori mind are embodied."

Augustus Hamilton was Registrar of Otago University for 13 years and had previously been a teacher in schools in Wellington and Hawkes Bay. During this period in which these bones were collected, namely 1888, he was teaching at Petane School, Hawkes Bay, and had come into contact with Forbes when the moa bone deposits in Te Aute swamp were discovered, also in 1888, and had sent collections to him at the Canterbury Museum which were eventually taken by Forbes to England finding their way eventually to the British Museum (Natural History) in which I was able to re-discover them.

Discussing Hamilton's prowess as a collector of Maori material, Skinner (1914:vi) said of him: "The foundations of his Maori collection were laid in the early years of his residence in New Zealand ... To this period belong his first field expeditions among the ancient village sites of the East Coast and about Porirua."

The Rothschild collection in London contains several hundred bones labelled (in cumulative detail) as being from Te Rauparaha's pa at Paremata, near Wellington, collected on 18 May 1888 by A. Hamilton. A number of species of birds are represented, from the so-called extinct swan (Cygnus sumnerensis (Forbes)), the extinct coot (Nesophalaris chathamensis (Forbes)—syn. Palaeolimnas, see Brodkorb and Dawson, 1962, and Olson, 1975), recorded by Dawson (1962) from this collection as the first North Island record, and the extinct raven (Palaeo-corax moriorum Forbes) to the domestic fowl (Gallus sp.) and the goose (Anser sp.) as well as ducks, hawks, pigeons, wekas, kakas, kiwis, owls, Kokako, Huia, shags, gulls, petrels and penguins.

Discussion of Probable Sites

The site of "Rauparaha's Kitchen-middens" explored by Hamilton seems most likely to have been either near the "Porirua" pa (Angas, 1874b:247) close to the site of Thom's whaling station and to the remains of the Paremata fort on what is now called the Ngati Toa Domain, or possibly the "Taupo" pa on the

present site of Plimmerton (see map in Cowan, 1922:110, and by Best et al., 1916). Illustrations of these pa have been given by Angas (1847a,b) and by Brees (1848). The Taupo pa was built by the Ngati Toa under Te Rangihaeata, nephew of Te Rauparaha, in 1843 and 1844 following the Wairau affray in April 1843 (Wakefield, 1845) and was occupied at least until the arrest of Te Rauparaha on 23 July 1846 (cf. Ward, 1912). It is likely, however, that both this area of Plimmerton beach and the Paremata flat (i.e. the Ngati Toa Domain) have been Maori occupation sites for a great many years, certainly long before the establishment of the whaling station (cf. Brees, 1848: figs 14, 29, 52) and that the midden debris may represent an accumulation of far greater antiquity than 1843. Angas (1847b, I: 247) visited this place and the impression is given that the Porirua pa then occupied by Te Rauparaha had been existing for some time, whereas the Taupo pa in which Te Rangihaeata lived was "a new and very substantial stockade." (Angas, 1847a: plate 48).

Best (1918:215) stated: "This seems to have been one of the oldest of native-village sites in the Porirua district, to judge from the fact that bones of the moa have been there found, also from the amount of village debris formerly visible. This settlement was situated on the eastern side of the railway-line, a little way north of the bridge." Other details of Maori occupation and archaeological notes were also given by Best (1914) in his series of articles entitled "Porirua: and they who settled it."

Christie, in an unpublished address delivered to the Historical Society of Victoria College [now Victoria University of Wellington] about 1914, remarked: "... the Paremata district has experienced many changes of occupant and the Paremata people have changed many times also." The flat west of what is now called Mana (formerly "Dolly Varden") has been shown clearly to be an early occupation site, and Adkin (1950:11-12) has discussed its age and probable history. Duff (1956:276) considered "Paremata, in Porirua Harbour [as among] the few North Island sites that can be satisfactorily demonstrated as of Moa-hunter occupation." This conclusion was based on Christie's unpublished manuscript quoted above (the date of which Duff erroneously gave as "1943", the time of his own personal communication with the author; internal evidence indicates a date rather later than 1914). However, Duff remarked that Christie's description of the mixing of material from various strata after wind action "clearly subjects the primary association of the Moa and human remains to the doubts raised by Archey." Adkin (1950:12, footnote) has extended Hamilton's (1896:181) reference to "an old pa at Paremata" to one "situated on the eastern side of Paremata Flat," but there is no evidence of the exact location from Hamilton's account although this, in fact, may be the site of which he collected the bones under discussion. Yaldwyn (1959) listed identifications of moa remains from this area. Because of the linking of Te Rauparaha, chief of the Ngati Toa, with the site visited by Hamilton, it might appear more probable that his "Paremata" pa was at Taupo Point, Plimmerton, with middens extending over the present Plimmerton beach, the area marked "C" in Adkin's (1921:152) figure 3, (cf. also his plate XXXV which shows the northern aspect of the pa site on Taupo Point). Beckett (1955) examined the midden of the Taupo pa during 1910-1914 and found moa egg shell, Tuatara jaw bones, and "very old moa bone fragments" as well as bird bones.

The Kakapo Bones

Among the bones from Hamilton's Paremata site are nine tibiotarsi and eight tarsometatarsi of the Kakapo (Strigops habroptilus). These were identified from amongst a mixed collection of limb bones of various birds, as mentioned above, and they were labelled in ink or pencil on the bones themselves: "Parematta, New Zealand," "Parematta Pa," or, in Forbes' writing, "Hamilton's pa." The measurements of the bones are shown in Table 7.1.

Tibiotarsus: Strigops habroptilus, Paremata

L	P	D	M
116.5	20.7	14.6	6.4
123.0	20.5	15.0	6.2
113.0	18.3	13.7	6.0
115.4	20.0	14.7	6.6
127.0	19.2	16.0	6.0
114.0	20.0	14.5	6.5
-	-	13.8	6.5
118.0	20.4	15.6	6.5
129.0	23.6	16.0	7.5

Tarsometatarsus: Strigops habroptilus, Paremata

52.8	16.2	19.2	6.8
51.3	18.2	19.6	6.5
45.7	14.5	15.6	6.0
-	-	19.0	7.0
47.5	14.7	16.4	5.8
50.5	15.1	17.3	6.6
48.3	14.7	16.4	5.9
-	-	18.3	6.9

Key: L = total length; P = breadth of posterior end; D = breadth of distal end; M = breadth of middle of shaft (as in Larson, 1930)

The bones seem to show a variation in size amongst themselves comparable with that found in collections of subfossil and archaeological Kakapo bones now available in New Zealand museums (particularly many added since Williams' (1960:226) record of the "rather fragmentary subfossil material...lodged in New Zealand museums...."). Skeletal remains of recent living birds are still not common in museum collections but, despite attempts at establishing subspecies based on skins (see Williams, 1960:219), no discrete populations or subspecific grouping can be seen readily amongst the bones examined. It might be thought unwise (although tempting in view of the large quantity of bones, especially crania and humeri, now available), to make detailed statistical analyses of bones from individual sites and expect to be able to equate them with those from other sites which may differ chronologically to a degree of significance that cannot be demonstrated except by unavailable precision dating techniques. However, a statistical examination was made of the following series of tibiotarsi from various localities as listed with tabulated measurements below:

1. the Paremata bones (British Museum (Nat.Hist.)); 2. part of a large series of bones from Ruakokopatuna Cave 1, near Martinborough (in which initial investigations yielded at least 74 crania, see Yaldwyn, (1956:3), collected by E. W. Dawson and J. C. Yaldwyn in 1952 (National Museum of N.Z.); 3. representatives of at least 26 Kakapos from the spelæological site Harwood Hole, Canaan, near Takaka, collected by O. R. Wilkes, 1960 (Canterbury Museum); 4. a series of isolated bones from North and South Island localities, including bones of a single recently dead bird collected by T. Hitchings in Fiordland, January 1955 (Canterbury Museum). The results are shown in Table 7.2.

Table 7.2 Tibiotarsus: Strigops habroptilus

		L	P	D	M
Paremata	\bar{X}	119.4	20.3	14.8	6.4
	N =	(8)	(8)	(9)	(9)
Martinborough	\bar{X}	125.1	19.6	16.3	6.8
	N =	(15)	(15)	(15)	(15)
Harwood Hole	\bar{X}	115.0	17.4	14.1	5.8
	N =	(16)	(14)	(14)	(25)
<u>South I. locs:</u>					
AV 5957		133.0	20.8	15.5	6.7
AV 11144		120.8	19.9	15.4	6.9
AV 11145		108.3	16.8	13.2	5.9
AV 11392		111.7	16.3	12.9	5.7
AV 12647		121.0	-	13.2	6.9
AV 15042		118.6	20.2	14.6	6.4
AV 15706		138.5	18.9	14.6	6.1
<u>North I. locs:</u>					
AV 17353		106.3	17.3	12.8	6.4
AV 17354		106.9	18.8	13.7	6.7
<u>Recent:</u>					
AV 13782		127.0	20.1	15.4	6.3

Key: AV 5957, Pyramid Valley, 1939/40; AV 11144-5, Marfell Beach, Marlborough, 1952; AV 11392, Karamea cave, 1952; AV 12647, Mt. Somers, 1923; AV 15042, Pyramid Valley, 1957, AV 15706, Marfell Beach, 1958; AV 17353-4, Briar's cave, Te Kuiti, 1961; AV 13782, Fiordland, 1955.

The Paremata bones appear to fall within the size ranges revealed by this comparative material. Morphologically, they are indistinguishable from any skeletal material available for examination. However, statistically, some differences are evident between the populations represented by the samples measured as outlined in Table 7.3.

Table 7.3 Tibiotarsus: Strigops habroptilus

		N	OR	\bar{X}	S	V	CD
Martinborough	L	15	112.0-134.3	125.14 ± 1.75	6.79 ± 1.24	5.42 ± 0.99	9.25 16.87
	P	15	16.2- 22.1	19.68 ± 0.48	1.88 ± 0.34	9.58 ± 1.74	
	D	15	14.9 - 17.8	16.37 ± 0.26	1.01 ± 0.18	6.19 ± 1.13	
	M	15	5.9. 7.9	6.83 ± 0.03	0.58 ± 0.03	0.38 ± 1.52	
Paremata	L	8	113.0-129.0	119.48 ± 2.44	6.90 ± 1.72	5.77 ± 1.44	7.62
	P	8	18.3- 23.6	20.33 ± 0.54	1.53 ± 0.38	7.53 ± 1.88	
	D	9	13.7- 16.0	14.87 ± 0.26	0.79 ± 0.18	5.31 ± 1.25	
	M	9	6.0- 7.5	6.47 ± 0.11	0.35 ± 0.08	5.40 ± 1.27	
Harwood	L	16	106.2-129.3	115.01 ± 1.82	7.28 ± 1.28	6.32 ± 1.12	
	P	14	16.2- 21.4	17.47 ± 0.36	1.38 ± 0.26	7.89 ± 1.49	
	D	14	12.9- 16.7	14.16 ± 0.31	1.19 ± 0.22	8.40 ± 1.58	
	M	25	5.5- 6.7	5.81 ± 0.09	0.47 ± 0.06	8.08 ± 1.14	

Key: N = number of specimens; OR = observed range; \bar{X} = mean; S = standard deviation; V = coefficient of variation; CD = coefficient of divergence.

The coefficients of variability for the three samples have these ranges: L, 5.4—6.3; P, 7.5—9.5; D, 5.3—8.4; M, 5.4—8.0. The Paremata sample is 91.2% as variable as the one from Harwood Hole and 6.45% more variable than that from Martinborough which is 93.9% and 85.75% as variable as those from Paremata and Harwood Hole respectively. Overall, therefore, these figures indicate relatively uniform samples with good average values of variability. The relative difficulty of consistently measuring the dimensions P, D and M may be reflected in the rather higher variabilities shown. The coefficient of variability, incidentally, is a useful guide for the selection of characters that are relatively little variable within a taxonomic group and hence are of good taxonomic value. In this instance, the dimension 'L', on its own, may be as reliable a distinguishing character as any limb bone dimension.

The coefficients of divergence show that the Paremata bones differ less (c. 8%) in the character of total length from both the Martinborough and Harwood samples than the latter do from each other (c. 17%). Statistical *t* tests for the significance of the difference of means applied to each pair of samples show that between the Paremata and both Martinborough and Harwood means $P > 0.05$; hence no real difference can be established. However, between the Martinborough and Harwood means, $P < 0.01$, a difference considered significant at this level. Accordingly, the two subfossil cave populations (North Island and South Island) differ from each other significantly whereas the Paremata sample, perhaps from an unknown provenance, has statistical features in common with both.

The bones from Paremata give no clue by their gross appearance and colour as to whether they are subfossil or archaeological in origin since they have been cleaned and varnished. Although they are generally well-preserved and of hard texture, they may have been, prior to treatment, no different in appearance from the subfossil bones of small birds from the pumice sands (Taupo outwash, see Adkin, 1950:24) at Walkers Hill gully situated to the south of the site of the Taupo pa (Dawson, 1952:260) and now largely built upon.

The bones form part of the collection of the Department of Palaeontology in the British Museum (Natural History), London. They bear the registration numbers A 5574—5579, A 11829—11831 (tibiotarsi) and A 11832—11839 (tarsometatarsi).

Significance of the Bones

From Williams' maps and comments, and from other museum specimens seen, it appears that the Kakapo was known as a living bird in the North Island, pre-1901, only from the central area (Williams, 1956, 1960). There are no published records, apart from the subfossil bones of the Martinborough caves, of its occurrence in the Wellington district.

For 17 bones to be collected on one visit to such a site, the birds must have moderately abundant as experience has shown in other places (Dawson, 1949), and this find may represent an extension of the range of the Kakapo to the south of the central area within recent times (i.e. up to about 1843). The evidence collected by Buller (1888:181-3) is that, by this time, the Kakapo was restricted in the North Island to the region near Lake Taupo, the Kaimanawa

ranges and the upper reaches of the Wanganui River. Angas (1847b, I:244), despite the inaccuracy of his views on the rarity of preserved skins of the bird, said of it: "Another bird, indigenous to New Zealand, and now nearly, if not totally extinct, is the Kakapo." It seems unlikely, therefore, that there were any Kakapos at Paremata, even as traded preserved birds, at the time of Angas' visit.

If these bones are undoubted midden debris, this site may represent an accumulation of human-formed strata covering a wide range of time. The presence of fowl bones in Hamilton's collection certainly suggests midden debris of a late date. Gallus has been recorded in similar superficial deposits elsewhere in New Zealand, one of the most historic being at Waingongoro (Lydekker, 1891) where Moa-hunter and later Maori found a congenial habitation and accumulated a wide chronological range of debris. So far as my own examination extends, these are not the bones of the Jungle Fowl which might have reached New Zealand during early Polynesian voyaging. The bones of Nesophalaris, Palaeocorax and Cygnus, on the other hand, suggest an intermingling of material from two or more distinct strata as commonly seen in other wind-swept coastal sites.

However, it may be that these particular birds, whose remains were found at Paremata, were caught in the central area of the North Island and were traded southwards, since it is known that the old-time Maori valued the Kakapo for its meat and its feathers if the opportunity of taking it arose. Best (1942: 211, 216, 312) has outlined the methods of hunting, skinning and preservation of the Kakapo, noting that expeditions were made to the South Island to procure skins. Potted or preserved birds (huahua manu) less their bones were used as barter. He remarked (*ibid*:319): "The bones of the birds, together with the trail, were cooked and enjoyed by the fowlers and their assistants." If this was always so, however, the occurrence of the bones at Paremata, if midden debris, might suggest that certain Maoris in this area had first-hand dealings with the Kakapo as hunters of the birds rather than as receivers of traded huahua manu.

Conclusion

The importance of the correct recognition of stratification in such deposits must be stressed. Stratification in these places is undeniable and should always be appreciated. A distinction between primary and secondary associations formed from these deposits, especially with reference to the intermingling of moa and midden debris, was pointed out by Archey (1941), and, indeed, had already been recognised in the Chatham Islands, much earlier, by Forbes (1893) himself and, later, by Hill (1914) in Hawkes Bay. The possibility of intermingling at Hamilton's site cannot be dismissed. Field experience teaches one, nevertheless, that it is not always easy to know what material may have been derived from a particular layer especially if the original stratification is disturbed or destroyed and a careful in situ study is essential. In this respect, the model and suggestions for coastal dune site interpretation outlined by Coutts (1972) are to be commended for further application. Best's (1918) remarks, already quoted, on the antiquity of Paremata were based largely on a lack of awareness that the moa bones found there were not necessarily in association

with midden debris, and the some conclusions have been reached quite often in other times and in other places. Every practising archaeologist in New Zealand knows about primary and secondary associations, of course, but, like many another well-known pitfall of observation and interpretation, some of us still flounder into it.

Closer examination of the bird remains from midden sites in New Zealand has led to the opinion that some of the birds thought to belong to a pre-human era did, in fact, live until Mōa-hunter times (Duff, 1950, 1956) or that some of these sites, where, for example, bones of the extinct eagle (*Harpagornis*) occur, are indicative of an even earlier date in the Polynesian occupation of New Zealand (Falla, 1942). The Paremata site explored by Hamilton suggests both end points of such a time scale if all the bones are truly midden debris. In addition our current knowledge of the present-day specialized habitats of such birds as the Takahē and the Kakapo may imply differences in tolerance towards their environment in earlier times in contrast to a former widespread distribution of their present-day habitat and climatic association (cf. Dawson 1965). For example, Best (1942:215-6), discussing the habits and distribution of the Kakapo, stated: "In the South Island these birds seem to have frequented the plains in olden times, but in the North Island I have heard of them only as denizens of the forest..."

The Kakapo has occurred at Paremata, therefore, either in association with human activity or with earlier natural deposits which, in themselves, invite questions of faunal history and palaeoecology. In whatever way the bird's occurrence might be explained, Hamilton's find is still a matter of considerable interest. Careful exploration of such Māori occupation sites, indicative of both long history and recent historical events as at Paremata, will reveal many clues which, if properly recorded and carefully interpreted, will be of very great use to the archaeologist, the geologist and the ornithologist alike in providing a novel view of the early history of New Zealand.

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Note added in proof: Davidson (1978) has recorded the Kakapo in bones collected during excavations at Paremata by E. D. Sinclair early in 1963. She regards the "Paremata Pa" as being the "Porirua Pa" herein described as lying close to Thom's whaling station.

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