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MANGAWHAI SANDSPIT EXCAVATION 1978

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Introduction

In May 1978 an excavation and some survey work were carried out on an exposed section of beach frontage, four kilometres south of Mangawhai Heads, Rodney, Northland (Fig.1). The excavated midden (R08/30-2) was first recorded in 1975 (Fig. 2). It was one of a handful of middens left in about 22 km of beach front with visible stratigraphy. It was over a metre in depth, and was in danger of being blown out. This report describes the excavation of the site, the results of midden analysis, particularly shellfish, carried out in 1978 and draws some conclusions with respect to the geomorphology. A subsequent analysis of the fishbone in 2001 by Hawkins (this issue) was also completed.

Method

The excavations were conducted on a salvage basis and only small portions of one site R08/30-2 were sampled. This site was on a partially sand capped midden, sparsely vegetated by pingao (*Desmoschoenus spiralis*). It had exposed west facing sections set atop a high outcrop of unstable sand (like a mesa). The eroding section was cleaned in three places and then excavated using three 1.0m x 0.25m excavation units. Each layer or lens had a sample taken which was either 2mm screened dry or, if too moist, wet in the surf. These samples were in part sorted and analysed to determine the species and proportions of constituents (Table 1). Other deflated sites were in part located and or simply examined. Dating specimens were collected from the main excavation and submitted to the D.S.I.R. (Appendix 1).

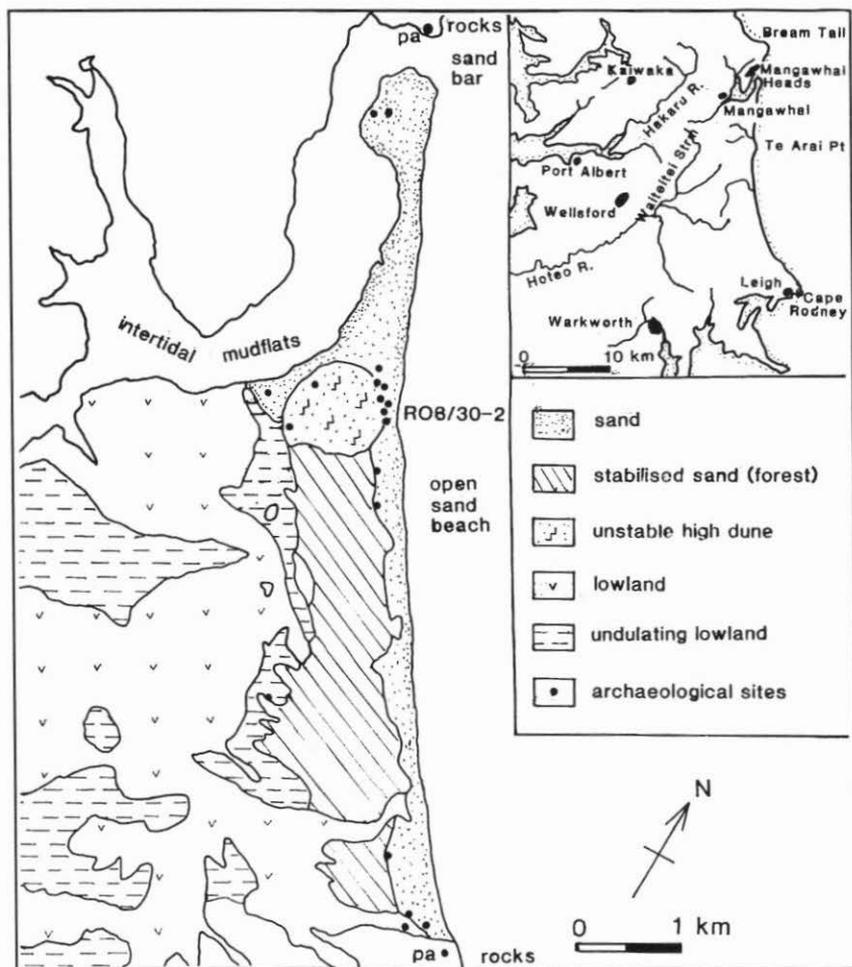


Figure 1. Location map of Mangawhai Heads - Te Arai Pt.

Excavation

The three excavation units revealed four general layers. These were not necessarily homogeneous between the units as each consisted of many lenses. These were the result of midden deposition, the distribution of wind blown sterile sand and possibly redistributed cultural material as the site was used. The four general layers were :-

- Layer One: Clean light grey sand with clean shell lenses.
- Layer Two: Dark grey to almost black sand (blackened by charcoal) interleaved with grey sterile sand and shell lenses.
- Layer Three: Dark grey sand with charcoal flecks and less shell than Layer two.
- Layer Four: Clean white sand pocketed with lenses containing fishbone, charcoal and shell (cockle(*Austrovenus stutchburyi*) in particular).

Below layer four there was clean white sand. This sand appeared to be soft, and probably was a wind blown dune sand, as described by Enright and Anderson (1988: 363)

The central section that was analysed reveals its buildup (Fig.4). It was more clearly defined than the other two sections perhaps as a result of either being near the central part of the midden, and not at its extremities, or because it was less intruded from above. The north section had stones introduced in what appeared to be a small haangi.

Discussion

Midden constituents of the central section were analysed according to layers or lenses excavated and minimum numbers were calculated and converted into percentages for shell (Table 1). The analysis reveals differences between the top two general layers and the bottom two general layers with only one exception. The exception was the lens called Layer 2a where both species were approximately the same. In Layers 1 and 2 tuatua (*Paphies subtriangulatum*) were predominant whereas in Layers 3 and 4 cockle (*Austrovenus stutchburyi*) is more prevalent. This was in contrast to Enright and Anderson's bulk samples in which they said cockle dominated the fauna of both middens (1988: 364).

The geomorphological evidence is best seen in a reconstructive model of dunefield development (Enright and Anderson 1988: 365). This proposes that the coastal area was covered in forest until it was burned down some 800-900 years ago, possibly by humans. Later Kaharoa ash fell and accumulated on some of the dune sand, about 670 years B.P. Above this ash there are later deposits of dune blown sand and midden which contain fish and shellfish (Enright and Anderson, 1988: 365). The midden evidence is consistent with classic Maori coastal sites. They suggest a high dune did develop between the site and the estuary and continued to develop after 400 years B.P. They also

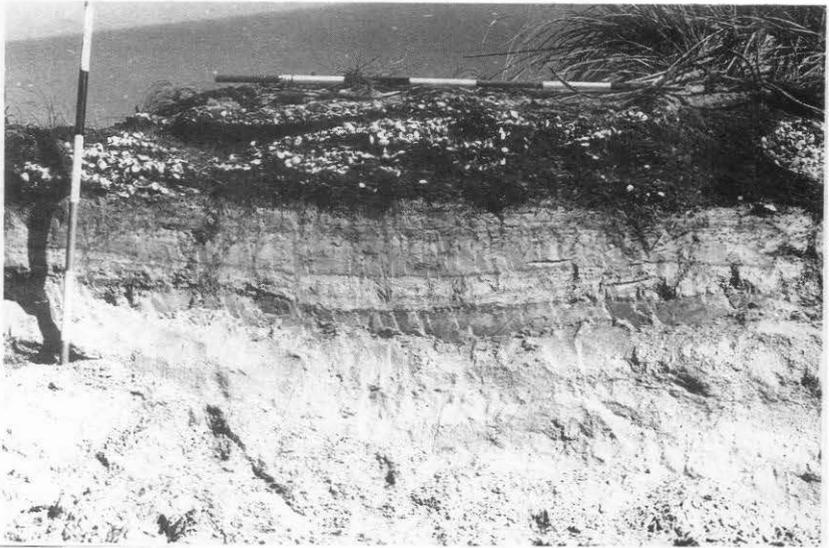


Figure 2. Site R08/30-4. Midden above the Kaharoa Ash 1978.

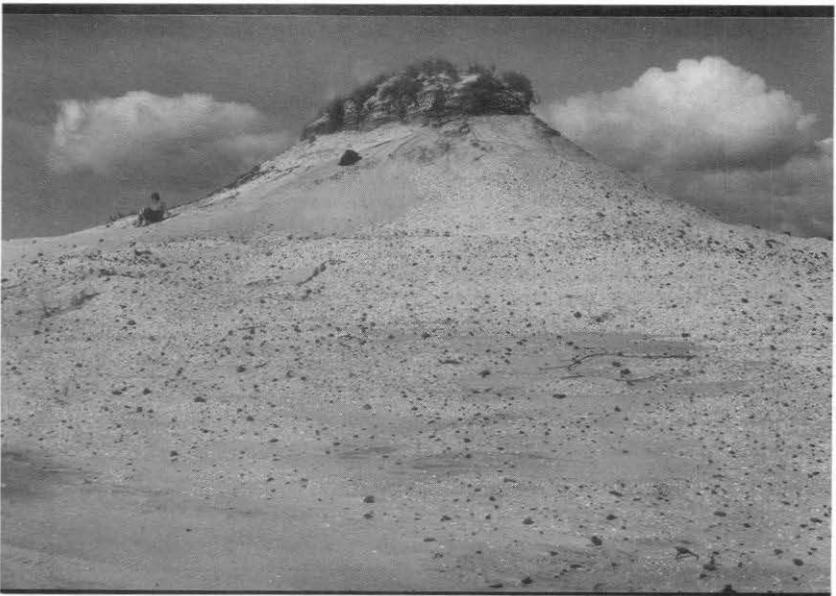


Figure 3. Site R08/30-2 as it looks in 2001.

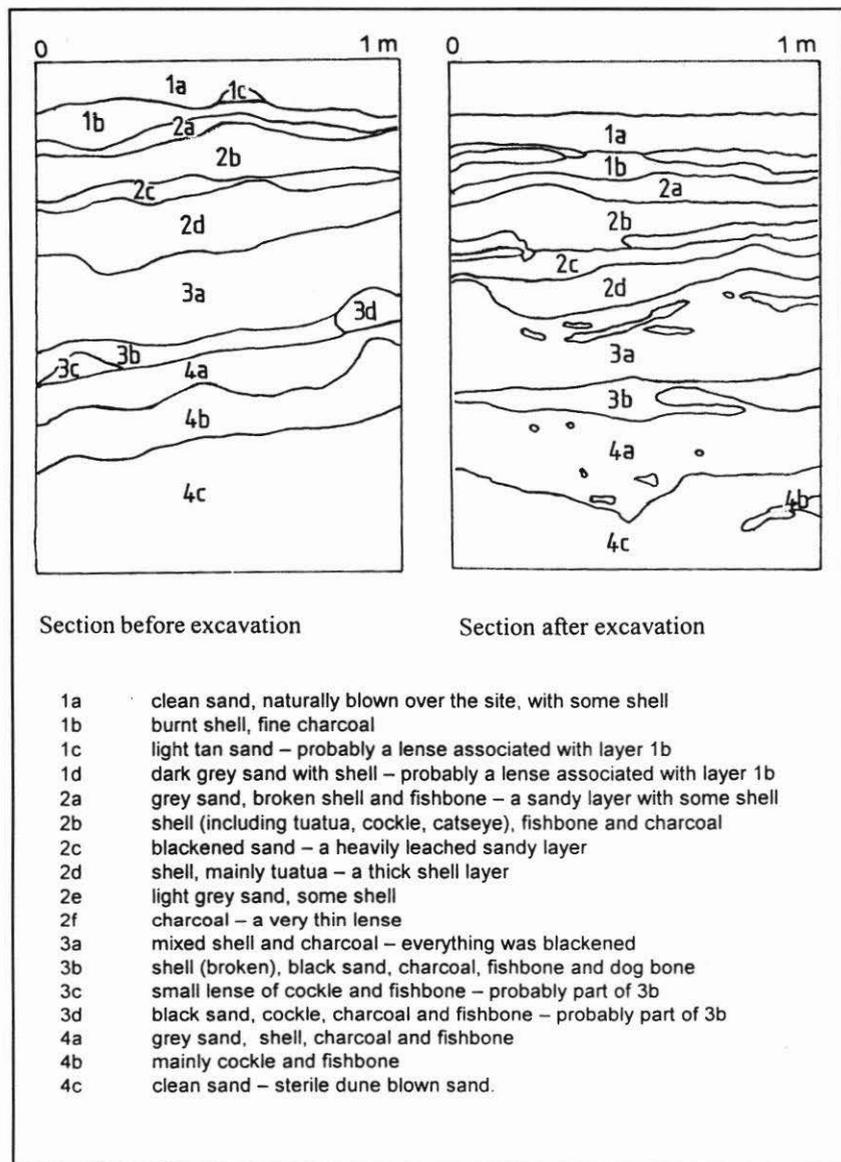


Figure 4. Mangawhai Sandspit central section.

suggest that between 400 years B.P. and the present, nearly the whole of the foredune system was lost (1988: 366).

The cockle radiocarbon samples Enright and Anderson took from two middens in the area (1988: 362), gave dates of 403 ± 29 years B.P. and 418 ± 34 years B.P. These radiocarbon ages were reported with respect to the N.Z. shell standard, and based on the Libby half-life 5568y (Enright and Anderson 1988: 360). These correlate with the samples taken in 1978 and reinforce the excavation dates (Appendix 1). Also it is possible that the midden dates from the excavation fit in with the chronological interpretation of the area. The earliest level has 93 percent cockle and is dated to 440 ± 44 years B.P. The later level dated has 84 percent tuatua and is dated to 340 ± 35 years B.P. (Appendix 1). Thus it is possible to conclude that between these two dates there is a change in the use of shellfish from estuarine to the open ocean beach. This occurred at a time when the sand dunes were undergoing changes. This may mean that the site was used before and after, and/or during, dunefield movements that took place.

Other faunal analysis reveals that the exploitation of fish was predominant in the early levels. Thirty individual fish were identified from Layers 3 and 4 whereas only eight were identified from Layers 1 and 2, see the minimum numbers in Hawkins (2001: this issue, Table 1). The main fish species identified was jack mackerel (*Trachurus declivis*), usually caught offshore. Along with other offshore species it makes up 76.5% of fish caught. In the early levels there are a number of inshore fish (e.g. snapper (*Pagrus auratus*), 33%) but these could also have been caught in deeper waters offshore. In the later levels there is a reduction in the number of fish being caught (Hawkins 2001: this issue, Table 2) and no bones were recovered from Layer 1a. The lack of fish remains from Layer 1 in general may be because of preservation conditions at the top of the site but it could be said that limited fishing took place during this time and tuatua were preferred. In general throughout the whole midden as fish numbers decline tuatua is increasingly relied on.

The early levels also contained a dog mandible in Layer 3b (*Canis familiaris*), which was more morphologically similar to the Maori kuri than to later introductions (Hawkins pers. comm.). Rat bone (*Rattus exulans*) was found in Layers 1b, 2d and 4b.

A general summary of this data might be that the earlier levels with cockle and fishbone reveal greater exploitation of the estuary and use of fish resources,

whereas later the open ocean beach shellfish were predominantly used and less fishing took place. This may have been simply by choice but because of the nature of the area with its unstable dunes and a nearby mobile estuary mouth it can also be suggested that the either the distance to the beach frontage had changed. Therefore the site was either closer to the ocean because of a reduction in the foredunes or sand had been blown further inland towards the estuary forming a high dune, making the estuary further to travel to. It is also possible that both may have occurred. A further consideration could be that the estuarine resources were affected by the dune movements and ocean beach resources were sought to replace them.

Other operations undertaken were a beach survey (the results being shown in Fig.1), investigations of site R08/30 - 4 by section drawings and visual examinations of sites R08/30 - 6 and R08/30 - 7, both being predominantly pipi (*Paphies australis*) middens. A photograph of site R08/30 - 4 is included to show the buildup above the Kaharoa ash (Fig. 2).

Survey observations made about middens in the northern dune area, between the estuary and the ocean beach, showed that those of a higher elevation tended to represent single species, such as pipi, whereas those from lower levels represented many species of shellfish. This is in contrast to the part of the dune system where the excavation took place because the excavated midden, with many shellfish species was on the back part of the once higher foredunes and the middens at a lower elevation set on the Kaharoa ash appeared to be in the main dominated by cockle and other estuary shellfish, see also Enright and Anderson (1988: 364).

Conclusions

This is the last of a handful of known stratified sites left in about 22km of open ocean beach. Since the excavation many of the sites have been further deflated or covered over and with changes in the estuary mouth about 1980, 1-2 km south of its former position shown on Fig. 1, some sites may have been washed away. (The location of the estuary mouth was subsequently reversed by human intervention).

The results revealed that the area was occupied between 300 and 500 years ago (Appendix 1) and on more than one occasion. Midden analysis (Table 1) suggests that different resource areas were relied on at different times, with cockle and a higher proportion of fish exploited from the earliest levels and tuatua later. This suggests a change in the use of marine resources at the site.

In the initial layers there is a reliance on the estuary, with offshore fishing and a lesser use of inshore species, whereas in the later layers there is a greater dependence on the ocean beach. This correlates with the inland movement of sand dunes over time and may suggest that the sites relative position to the coast has changed. It is therefore likely that this stratified midden, over a metre in depth, with its occupations was built up during a phase of substantial dunefield movement, hence a possible explanation for the change in the use of marine resource zones.

The area was probably important in the past in many respects. It stands at the gateway of a route to and from the Kaipara Harbour via rivers such as the Hakaru and Hoteo. It is a sound economic resource zone in its own right, with resource zones of estuary, open sandy beach, reef, productive soils, some fresh water rivers and possibly lakes behind the sand dunes. Further afield there are offshore islands, The Hen and Chickens to the north and Little and Great Barriers to the south. One would expect the area to have had a long or intensive history.

Acknowledgements

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Table 1. Midden constituents by excavated layer from the central section. Percentages calculated from MNI (minimum number of individuals).

Layer	Shellfish							
	Cockle		Tuatua		Pipi		Other	
	MNI	%	MNI	%	MNI	%	MNI	%
1a	7	15.5	37	82.2	N/a		1	2.3
1b	104	22	374	78	N/a		N/a	
1c	22	32	46	68	N/a		N/a	
Total- L1	133	22.5	457	77.3	N/a		1	0.2
2a	36	54	31	46	N/a			
2b	18	7.5	211	88.2	N/a		10	0.3
2c	3	4	93	96	N/a		N/a	
2d	5	1.8	269	95.7	2	0.7	5	1.8
Total- L2	62	9.1	604	88.5	2	0.2	15	2.2
3a	64	72.7	19	21.6	3	3.4	2	2.3
3b	59	55.7	34	32.1	10	9.8	3	2.4
Total- L3	123	63.4	53	27.3	13	6.7	5	2.6
4a	37	77.1	2	4.2	6	12.5	3	6.2
4b	136	89.5	10	6.6	2	1.3	4	2.6
Total- L4	173	86.5	12	6	8	4	7	3.5

Other shellfish-represented in the analysis were *Paphies australis*, *Struthiolaria papulosa*, *Dosinia* sp., *Amphibola crenata*, *Lunella smaragda*, *Pecten novaezelandiae*, *Cominella* sp., *Saccostrea cucullata* and other gastropods. For the fish remains see Hawkins 2001 (this issue). Note: Layers 2e, 2f, 3c and 3d were very small lenses and were not sampled.

Appendix 1

Dating

Two shell samples were taken from the south section of the excavation.

Sample 1 was from Layer 4b and was cockle (*Austrovenus stutchburyi*), and Sample 2 was from Layer 1a, and was tuatua (*Paphies subtriangulatum*).

The result sheets from D.S.I.R. showed that these samples were in correct stratigraphic order and gave the following results.

Sample 1. ^{14}C age w.r.t. N.Z. Shell Std. 452 \pm 44 yrs B.P.

Sample 2. ^{14}C age w.r.t. N.Z. Shell Std. 349 \pm 35 yrs B.P.

Results presented here were calculated with respect to new $T^{1/2}$ (5730 \pm 40 yrs) and applying, where applicable, a secular correction as distributed at the 8th International Conference on Radiocarbon Dating, October 1972, Lower Hutt, New Zealand by H.N. Michael and E.K. Ralph.

It can be concluded then that this site was being used 300 to 500 years ago and this correlates with the surface find of a 2B adze adjacent to the site.

These dates when corrected to match the 5568y $T^{1/2}$ of the other dates read as following: -

1. 440 \pm 44 years B.P. and
2. 340 \pm 35 years B.P.