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ARCHAEOLOGICAL EXCAVATION OF T10/993 AT MATARANGI

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Introduction

This report describes the excavation of a small midden site, T10/993, representative of a number of like sites in the sand dunes at Matarangi on the east coast of the Coromandel Peninsula (Fig. 1). Few sites of this type have been investigated archaeologically yet they are the remains of a very important part of the Maori economic cycle. The sites could be termed shellfish processing sites.

The excavation was a condition imposed by Historic Places Trust on the granting of an authority to modify sites T10/993 and 994 (HPT Authority No. 1997/42), prior to destruction of the sites (Furey 1998).

Matarangi Beach Estates commissioned the author to undertake an archaeological site survey of a grassed area at Matarangi Beach which was to be Stage 14 of the urban housing development. The area was in excess of 13 hectares (Fig. 2). Two sites were found, T10/993 and 994, and recommendations made for monitoring of the dunes as the topsoil was removed (Furey 1997a).

History of Archaeological Work

Prior to site surveys by the author in 1997, only one site (T10/262, dated 1974) had been recorded on Matarangi sandspit but this was a broad reference for several different locations of archaeological evidence, mainly at the western end of the sandspit. This took the form of exposures of midden on the harbour foreshore, the ocean beach and on old dunes behind the foredune. One midden at the extreme western end of the sandspit contained basalt flakes and likely was similar to the distinctive sites termed Archaic which are or were present on most east coast Coromandel beaches as far south as Waihi Beach. This particular site

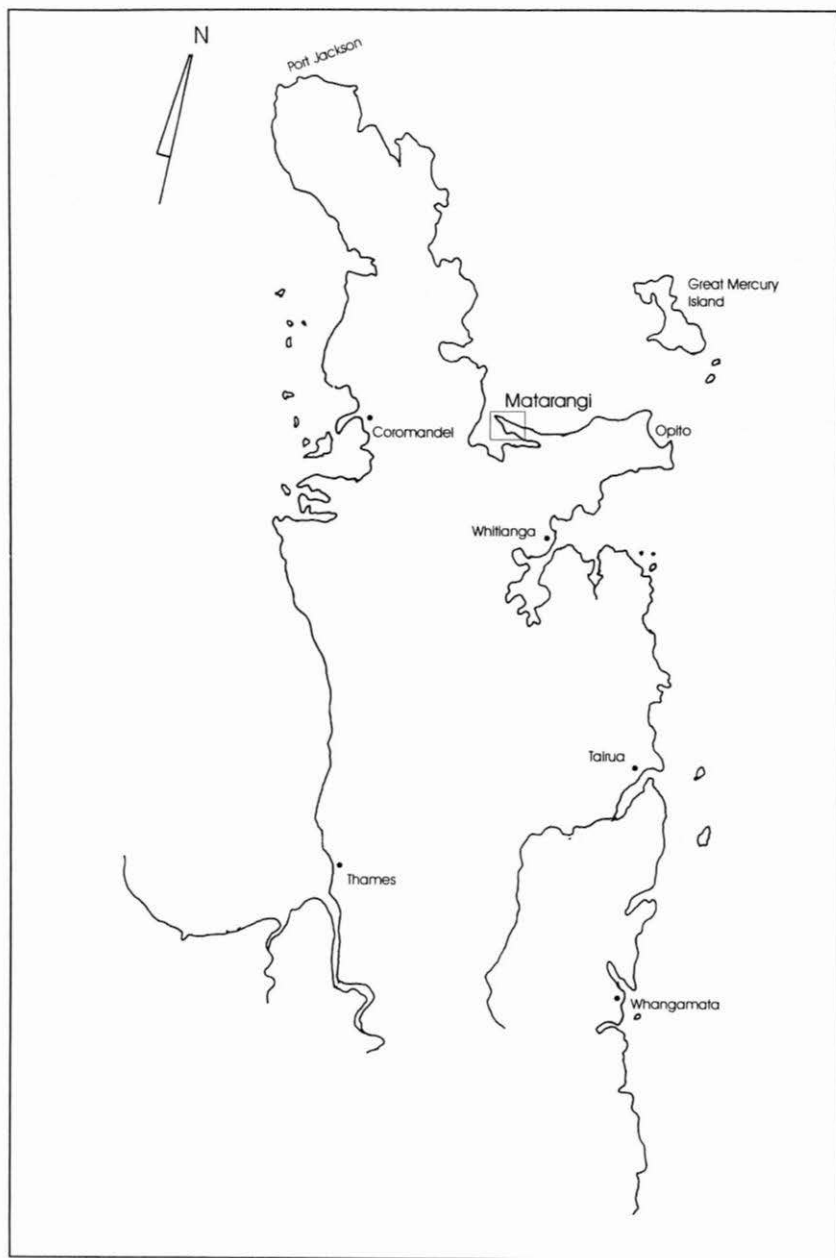


Figure 1. Coromandel Peninsula showing location of Matarangi.

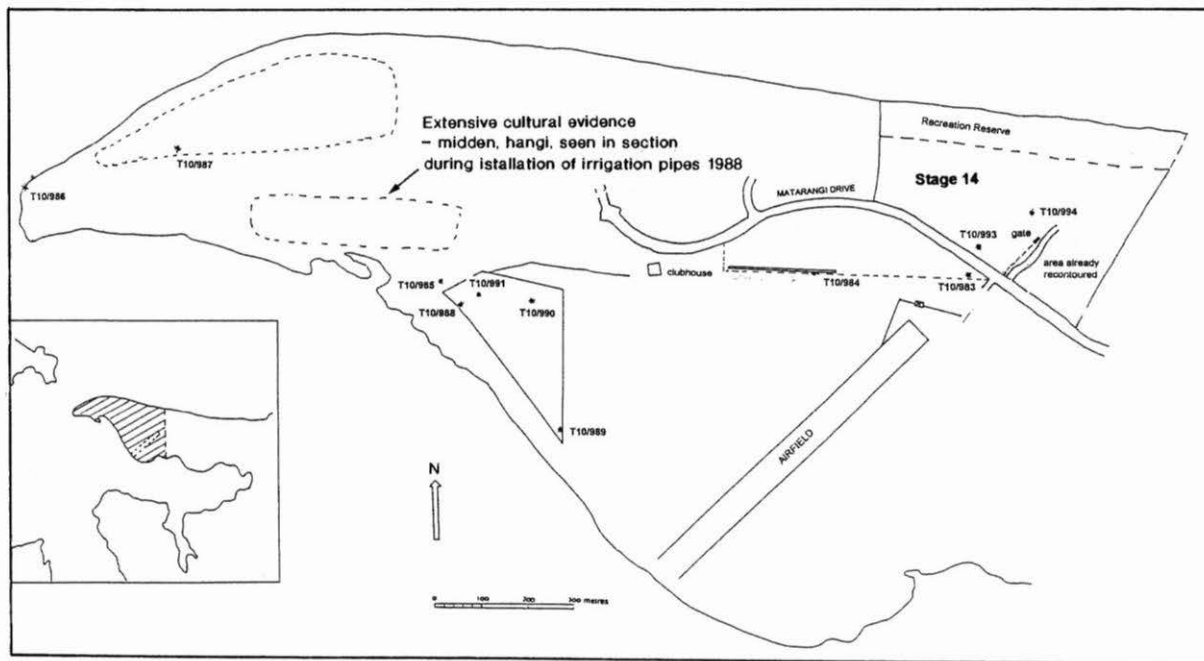


Figure 2. Western end of Matarangi sandspit showing location of Stage 14 and other recorded archaeological sites.

has been severely damaged by erosion over the past 25 years and little of the site remains.

Inspection of proposed further development areas at Matarangi has been carried out. The dune immediately to the south (on the other side of Matarangi Drive) and on the golf course at the western end of the spit revealed nine sites (T10/983-991). All were small shell middens exposed through grass cover (Furey 1997b).

Land History

The Matarangi sandspit is known as the Omaro Block (ML 6457) which had the title investigated in the Native Land Court in 1893, and was alienated from Maori ownership in 1897. Claimants appearing before the Court were Peneamine Tanui of Ngati Hei, and Hamiora Mangakahia of Ngati Pare, both representing others. Peneamine Tanui reported "We have kaingas on this land" (Hauraki Minute Book 35:101-102, 113).

Maori owners in the late 19th century collected kauri gum from the block of approximately 422 hectares. At that time the vegetation was described by the surveyor as "mainly manuka" (ML6457). Its more recent history is not known in detail but it was farmed for some time in the 20th century and development as a housing area began about 1975.

The Landscape

Matarangi sandspit, 4 km long, forms a barrier at the eastern entrance to Whangapoua Harbour. The spit is made up of a series of parallel dunes particularly evident on the northern side and western end, while the area close to the harbour edge between the golf course and the airfield is low lying and poorly drained. This area was probably salt marsh in the past.

It is likely the sandspit ceased active formation about 6000 years ago at about the time the sea level reached its present height (Jim Dahm, Environment Waikato, pers. comm.). Because the barrier would have been formed from the seaward side, dunes increase progressively in age with distance from the ocean beach.

At some time in the past forest grew on the spit, evidenced by large buried trunks excavated during construction work of an adjacent subdivision stage, and the presence of fine white podzolised sands indicative that the area once supported kauri. The forest was most likely a mixed kauri-podocarp-broad leaf

type also present within the wider Whangapoua Harbour catchment and the Coromandel Peninsula generally before widespread logging in the late 19th and early 20th centuries. This evidence of former kauri vegetation is supported by testimony given in the Maori Land Court that kauri gum was collected from the spit.

Soils on the dunes, formed on sand, are typically light in texture. A grey black sandy topsoil, 100-150mm deep, is consistently present within the area and overlies well-weathered reddish brown or grey-brown sand. Organic matter leaches through the profile and does not build up on the sands. The underlying sand varies from yellow-brown semi-compacted sand to a creamy grey-brown sand. Charcoal fragments are to be found deep within the natural profile, likely to be the result of worm or root action. Other staining and mottling can also be attributed to vegetation.

The block known as Stage 14 had four parallel transverse dune ridges. The northern pair of ridges were separated from the southern pair by a broad swale, approximately 40 m wide, which had the appearance of a natural drainage feature. Rushes growing in the base was strongly indicative of the retention of water. Each of the dune ridges was broad and shallow with low angled sides. The dunes are approximately 6 m above sea level at their highest but only 2 m higher than the base of the swale (Fig. 3).

Site Survey

During the site survey of the block in March 1997 the vegetation cover was low pasture grass. Test pits of one spade width and approximately 200-300 mm deep were dug at 10 m intervals along the dunes. These transects were along the top of the dunes but also on level areas on the sides of the dunes. Only two sites T10/993 and 994 were found during the survey.

T10/993 was recorded during the site survey as a midden/feature exposed in section on the north face of the dune. Cattle digging into the sand on the side of the dune had exposed the shell. By probing the crest of the dune it was determined that the shell extended across the dune crest to the west of the visible shell. The visible shell section had distinct layers, with a scoop feature exposed. There was approximately one metre vertical distance between the dune crest and bottom of the swale (see Fig. 4 for a profile of the dune surface). T10/994 was small, with sub-surface shell covering an area of less than 1.5m², a contrast to the estimated 20-25 m² of shell on T10/993.

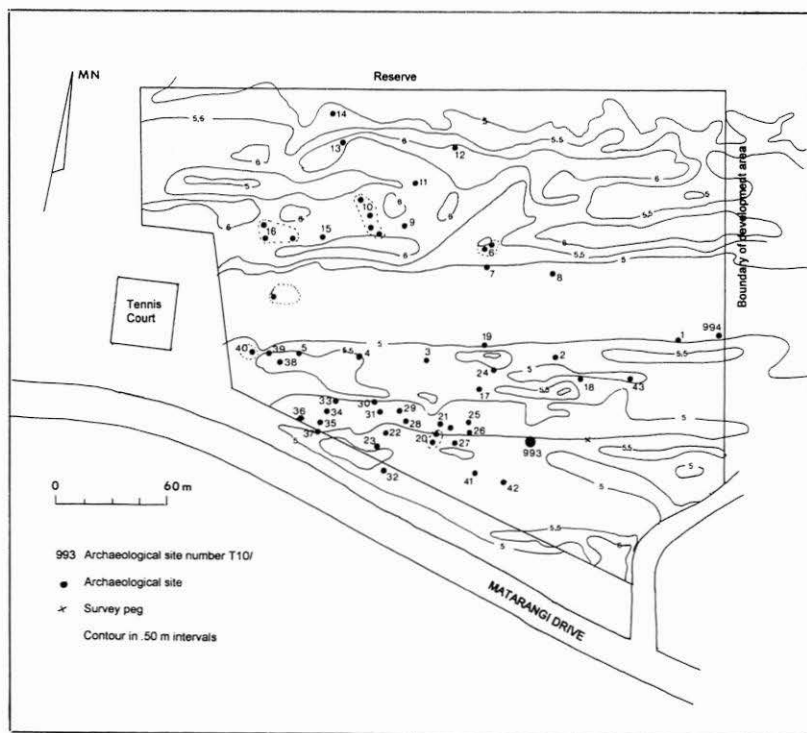


Figure 3. Sites uncovered in Stage 14 monitoring of topsoil removal.

It was recommended that Matarangi Beach Estates apply to Historic Places Trust for an authority to modify the two sites. Preservation was not recommended for several reasons: firstly, there was the need to examine the sub-surface composition of these sites to allow more informed decisions to be made about sites likely to be encountered in the course of future development work, and secondly, the difficulty of isolating sites of small areal extent where the cultural deposits occur immediately under the turf zone in a highly unstable sand matrix. The sites would have to be actively managed on a continuing basis and the reserved land used in a non-recreational way to ensure the vegetation cover was not disturbed. This situation was not viable in a compact residential subdivision.

A standard HPT condition of monitoring earthworks in the block was imposed in association with the granting of the authority to modify T10/993 and 994.

Monitoring of Earthworks

Three days (1-3 May 1997) were spent monitoring topsoil removal by a scraper. Use of this type of machinery provided optimum conditions for monitoring as only a shallow depth of turf and topsoil was removed to expose underlying cultural material. Sites T10/993 and 994 were fenced off for later excavation.

The entire Stage 14 block was to be stripped of topsoil, the land recontoured and topsoil replaced and roading, services and utilities installed. The majority of the block was stripped of topsoil during the period I was on-site, although optimum areas on the tops and sides of the dunes were stripped first. In addition, after two days a strategy was used on the southernmost dune of stripping the length of the dune, alternating with an unturfed strip of similar width. This method was necessary to provide the best exposure of archaeological material in the time available. During the return visit to carry out excavations at T10/993, any other material subsequently uncovered was plotted onto the map.

During the monitoring period representatives of Ngati Hei, and Ngati Huarere, were present on-site. As the scraper moved across the dunes removing the turf and about 100-150 mm of topsoil, exposures of shell and other features of interest were marked and brief descriptions prepared on the size of the deposit, shellfish species present including a note of the dominant species, and the presence or absence of fishbone and fire-cracked rocks was also noted. Each deposit was surveyed onto a map using plane table and alidade.

Initially the strategy was to sample each shell midden uncovered for later faunal analysis, to investigate the depth and extent of the deposit looking for any differentiation in the stratigraphy, and to trowel or spade a wide area around the deposit to look for structural features such as postholes or pits. In view of the quantity of material exposed by the scraper the proposal was, within a short period of time, modified to more realistic levels. Forty-two separate features were mapped and described, of which all but three were shell middens. Sixteen of those were sampled for midden analysis and possible dating. The remaining features mapped included concentrations of fire-cracked rocks, isolated large stones, and a circular scoop with charcoal but no shell.

Each midden was given a unique identifying number but NZAA site numbers were not allocated. Those samples submitted for radiocarbon dating have been prefixed with T10/993, as the nearest site number issued, and are readily distinguished from samples recovered on T10/993 proper which have the E,N grid co-ordinate recording the position within the site.

The Excavation

Excavation of T10/993 was warranted on the basis that until more detailed investigations were carried out on one or two of these small dune sites, informed decisions could not be made about the future protection or management of similar sites within the wider Matarangi area. Recovery of information was to focus on Maori use of the coastal zone, the issue of duration of occupation, chronology, and how the sites fitted into the wider settlement pattern of the Whangapoua Harbour area. Details of the excavation and descriptions of sites found during monitoring are in Furey (1998).

A 28 m² area was pegged out immediately to the south of the exposed midden face. A map grid co-ordinate system was adopted for recording all features, with 0E,0N outside the excavation area to the south-west to allow sufficient room for expansion (Fig. 4).

The 7 x 4 m area was turfed, exposing the grey black sandy topsoil and crushed shell in the northern half of the square. There was little shell on the eastern side of the excavated area and none in the south half of the turfed area. After turfing no further excavation took place in the south-west quadrant.

The south-eastern quadrant had topsoil over an orange-brown weathered dune sand. Brown organic stains were half-sectioned but proved to be quite shallow and amorphous when excavated. These were interpreted as root disturbance, confirmed in one elongated 'feature' by the presence of shell in a brown organic matrix, extended further by a streak of charcoal (see Fig. 5d). Test pits dug through the orange-brown sand confirmed this was the natural undisturbed stratigraphy.

Within the northern one third of the excavation there was more intensive evidence of occupation. A crushed shell midden layer was present under the turf. The shell was burnt, very fragmented, and charcoal and small fire-cracked rocks were also present throughout the layer which was no more than 50 mm deep. Three firescoop depressions were uncovered on the western side of the excavation - two were filled with the crushed midden and had small cobble

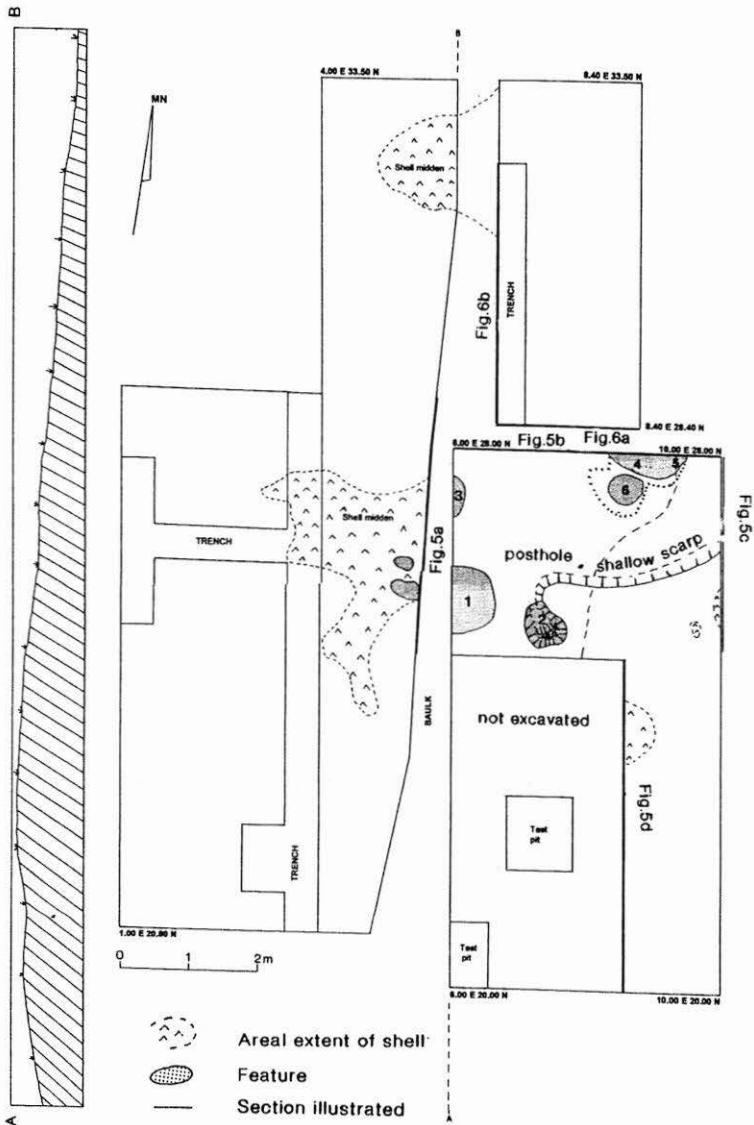


Figure 4. Plan of area excavated, T10/993.

sized fire-cracked rocks within the scoops. Both were less than 260 mm deep. The third scoop, feature 3, was only partially excavated as it extended into the western baulk but measured 560 mm on one axis and was 150 mm deep. Unlike the other two scoops it was filled with whole tuatua shells.

Further to the east within the same part of the excavation (grid 8-10E, 27-28N) were two other firescoops. Feature 4, extending into the northern baulk, (Fig. 5b) was filled with fragmented burnt shell and charcoal interpreted as cooking debris and rakeout related to the same crushed midden present in features 1 and 2. Two very small chips of chert were on the surface of the scoop which was cut through a shell layer containing whole shells mixed in a grey-brown sandy matrix. This firescoop is likely to be contemporary with two of the other firescoops identified as features 1 and 2. On the eastern side of feature 4, a later feature, number 5 was cut from a higher level, immediately below the turf and was filled with whole pipi shells.

Feature 6 was a pronounced scoop 240-300 mm deep. The scoop was used on at least two occasions. The lower part was filled with midden consisting of pipi, cockle and charcoal. A cluster of oven stones sealed in the midden at about 170 mm from the base of the scoop depression. Above the stones the midden composition differed, was fragmented in appearance, and was the same as that which filled scoop 4. It is assumed that the midden is rakeout from the scoops. Another small indistinct scoop, visible in section was called feature 7 and was resting on the natural sand and sealed in by the mottled dark grey sand.

The crushed shell interpreted as rakeout from the firescoops was separated from the lower irregular lenses of more intact shell by fingers of grey-brown sand. A shallow scarp, approximately 100 mm high, which formed the eastern side of scoop 2 was also the southern boundary for this midden layer. The scarp extended through the eastern baulk but the midden did not extend this far to the east. One posthole dug into natural and adjacent to the scarp was filled with shell. The general impression was that the sand was quite disturbed, with intermittent lenses of shell and sand, possibly caused by people walking on the sand surface, displacing shells and causing mixing. The upper crushed shell lens was more concentrated and not affected to the same extent.

Although the firescoops were all within the same area and to the north of the scarp feature, the natural surface was not level and could not be interpreted as a constructed terrace. There were undulations such as might be encountered on

an unmodified dune surface. The highest point of the excavation was on the eastern baulk at about 10E, 28N and the dune sloped away to the north-west.

A trench 500 mm wide was dug from 6E 28N down the slope of the dune to determine whether occupation debris from the firescoop area was present down the slope as the firescoop in section suggested. Crushed shell which filled firescoops 1 and 2 overlay earlier shell occurring as separate dumps in section and of amorphous shape in plan view. Beneath the recent topsoil was a loamy, darker coloured sand interpreted as containing more organic matter. This was especially apparent towards the lower end of the trench, where slope wash and movement of organic material contributed to a greater build-up. There was an indistinct merging between the more recent topsoil and the loam which was also noted in test holes dug over the dunes. The recent sandy topsoil is probably windblown sand incorporating organic matter accumulated under pasture grass. Beneath the topsoil was a grey mottled sand with lighter patches interpreted as a disturbed, windblown layer within which were also lenses of tuatua shells. The underlying natural sand was creamy white in colour with an uneven corrugated surface filled with tuatua and grey sand. In the area to the west, the traxcavator subsequently uncovered a large midden undoubtedly the same deposit, which was excavated areally (a sample was dated, WK6377). The uneven sand surface had depressions and shallow ridges and troughs, and the shells did not follow the contours exactly. It was concluded that shells were possibly thrown over and around low shrub type vegetation such as prostrate manuka or mulenbeckia, and shells filtered through onto the ground surface to form irregular humps and hollows.

A traxcavator was used to remove topsoil from a large area to the west of the excavations - a fast and efficient way to uncover any other features associated with the site. Approximately 200 sq. m was opened up this way. The western edge of the main midden was found and there were 3 other firescoops identified and perhaps the western side of feature 3 was found in section. No other features were exposed and subsequent careful trowelling of the surface confirmed this. Several trenches 500 m wide were dug to ascertain that the deposit was in-situ natural sand.

The sections illustrated demonstrate the disturbed nature of the stratigraphy (Figs 5 and 6). The most likely explanation is root disturbance moving shells through the soft sand matrix - evident in the same section further to the south where a small confined lens of midden and charcoal meandered through the sand. Other explanations such as cultural movement of sand and shells were

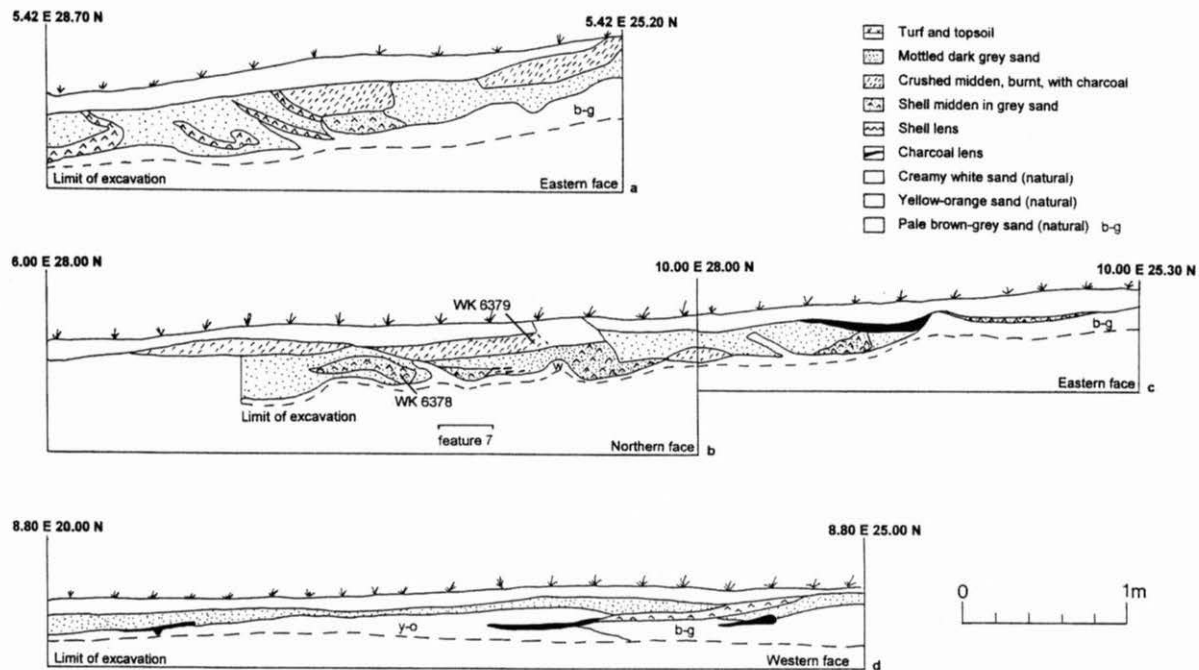


Figure 5. Sections, T10/993. See Figure 4 for locations.

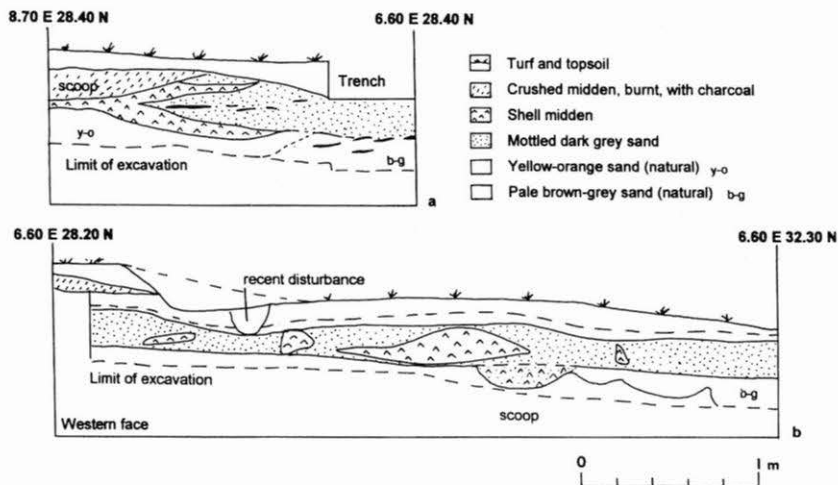


Figure 6. Sections, T10/993.

considered but eliminated as there were intact firescoop features at the same level and no indication of large scale alteration to the dune which would account for the volume of sand and shell.

Test pits were dug 4 m to the east of the main excavation to determine whether the central part of the settlement was situated outside the excavated area. Again small patches of shell midden, very shallow and resting on an uneven natural surface, were found but no other evidence to suggest a living surface.

Summary of the Stratigraphy

The stratigraphy was not complicated. Topsoil was present over the excavated area although at the base of the northern slope there was a more organic component, possibly a paleosol, beneath the recent sandy loam. Crushed shell and charcoal was under the topsoil and was likely derived from several firescoops immediately under and within the layer. This midden layer was present on the western side of the excavated area but did not extend to the east of the firescoops, confirming what had already been ascertained from probing during the initial recording of the site. A layer of grey sand separated the above midden from an earlier shell deposit which also had a limited distribution. On the slope a disturbed mixed sand layer was present through which were found small insignificant lenses of shells. The separate shell layers do not necessarily

reflect a site occupied on more than one occasion. In fact, the re-use of the same firescoop in feature 2 almost certainly indicates the middens were laid down over a short period of time and were contemporaneous within the context of occupation of the site.

Small shallow firescoops, and one posthole, were the only features encountered. The lack of lithic material was notable - only two very small chips of red coloured chert were found and it is possible these chipped off a chert cobble which exploded in a firescoop (similar chert cobbles are to be found on beaches in the area). The shell deposits in the excavated area do not differ from others encountered during the monitoring of earthworks on the dune: there too, little or no evidence of food preparation, stone working and structures were noted. The conclusion reached is that the firescoops would have been inadequate to heat, open and prepare the volume of shellfish present. Therefore it is more likely that fires were built on the open ground and shellfish placed on top of them. The scoops were probably for domestic cooking for the food gatherers, providing a wider variety of food than is evident in the bulk middens.

Radiocarbon Dates

Three samples of tuatua shells from the excavation were submitted for dating. The tuatua midden on the lower slope of the dune (4.5-5.5 E, 32.3 N, Wk 6377) was submitted to determine if it fell within the range of the main excavated shell deposits and could therefore possibly be part of the same activity. The stratigraphy did not resolve this question satisfactorily. Samples of tuatua from both the crushed midden (WK6379), and the lower lensed midden (WK 6378) were also selected. The results are presented in Table 1.

Table 1. Radiocarbon dates for T10/993 and selected other sites in Stage 14, Matarangi.

Lab No.	Location	Material	Date	Range Calibrated AD (with confidence limits)
WK 6377	T10/993 4.5-5.5E, 32.3N	Marine shell - tuatua	670 ± 40 BP	1570-1670 AD (68.2%) 1500-1690 AD (95.4%)
WK 6378	T10/993 7.6E, 28.0N	Marine shell - tuatua	680 ± 50 BP	1550-1670 AD (68.2%) 1500-1690 AD (95.4%)
WK 6379	T10/993 8.7-9.4E, 28.0N	Marine shell - tuatua	580 ± 50 BP	1660-1800 AD (68.2%) 1600-1880 AD (95.4%)
WK 6380	Midden #2	Marine shell - tuatua	620 ± 50 BP	1590-1720 AD (68.2%) 1540-1810 (95.4%)
WK 6381	Midden #10d	Marine shell - tuatua	690 ± 40 BP	1555-1655 AD (68.2%) 1510-1680 AD (95.4%)
WK 6382	Midden #4a	Marine shell - tuatua	740 ± 50 BP	1500-1620 AD (68.2%) 1470-1660 AD (95.4%)

Three other middens uncovered in the monitoring process were also selected for dating: 10d, 2 and 4a (see Fig. 3 for location). While the intention was to have a representative distribution from across the development area, the selection was ultimately dependant on the availability of enough tuatua shells, chosen for consistency and to eliminate any possible contamination from old carbon which can influence estuarine derived samples.

The ages of the samples from the excavation are very similar, and although the upper crushed midden from T10/993 produced a younger date, it is statistically within the range indicated for the deposition of the lower midden and the tuatua midden on the slope. The archaeology does not suggest any substantial hiatus in deposition of the layers and the site is interpreted as a single phase site occupied for a short time in the late 16th -17th century.

Charcoal Analysis

Although several of the sites examined during the monitoring process had charcoal, it was either very finely broken up or was apparent as an intense blackening of the sandy loam in conjunction with scattered hangi stones and samples could not be collected.

Sufficient charcoal was recovered from three samples from T10/993; one sample from midden #2 and one from midden #10d. The results are presented below in descending order of frequency within each sample.

Kanuka is the dominant species in all samples and is strongly suggestive of a landscape previously burnt but allowed to regenerate as woody vegetation. The shrub species, which would grow within the manuka/kanuka scrub, reinforce the scenario of secondary regrowth. However, midden #10d, with broadleaf tree species, indicates what was present on the spit prior to burning. While it is possible this tree charcoal may have been derived from beach driftwood, it is unlikely it was carried several hundred metres inland when other more shrubby material was close at hand. Rather the evidence points to either larger trees being in the vicinity of the site at the time of occupation, or perhaps more likely that there was old partially buried wood from former vegetation (still being uncovered during earthworks in the dunes).

Table 2. Charcoal identifications, Stage 14, Matarangi.

Site Number	Location	Species Identified
T10/993	8.7-9.4E, 27.0N Feature 5	Kanuka Hebe Olearia sp. Tutu
T10/993	Upper midden	Kanuka
T10/993	9.0E, 28.0N Feature 4, at 210 mm	Kanuka Hebe sp. Tutu Manuka Akeake Five finger
Midden #2		Kanuka Manuka Akeake
Midden #10d		Kanuka Coprosma sp. Putaputaweta Hebe sp. Mangeao/Taraire Towai Rata/pohutukawa Puriri

Faunal Analysis

Faunal material was limited to shellfish and a few fish bones.

Fish. Although fish was present in some 11/40 sites, in all cases it was in small quantity. Fishbones were recovered from within both layers on T10/993 (but not from the tuatua midden) and also from Middens #2, 4a, 4b, 10d, 17, 20 and 21. Bones were identified by Dr Foss Leach of the Archaeozoology Laboratory at Te Papa Tongarewa Museum of New Zealand.

All identifiable bones were from *Trachurus* sp., or mackerel, which school in shallow water and were caught with nets. Minimum numbers have not been calculated as only a few individual fish are represented. This is an unusual result – a number of separate middens with only one fish species present, and one that has not been otherwise documented as a favoured type of fish. In other sites within the wider Hauraki area, snapper was the dominant fish in middens, and mackerel appears to have been relatively unimportant, present in small quantity in only 7 out of 30 sites (Furey 1997c:25). Nowhere else has it been recorded

that only one species has been caught - rather the faunal remains for each excavated site usually indicate a variety of fish were caught. However, the overall sample of sites investigated is so small that local preferences may be unknown. Specialised fishing practices are referred to in Land Court Records. For instance, it was reported that Ngati Huarere and Ngati Naunau went to Great Barrier Island from the northern Coromandel area to fish for tawatawa or mackerel (Tanumeha Te Moananui in Hauraki Minute Book 2:77). Shark fishing is also known to have been an important collective fishing activity but no middens containing large quantities of shark vertebrae have been found.

One vertebrae, 24 mm in diameter, from an Elasmobranchii (includes sharks and rays) was recovered from midden #3. Recovery of Elasmobranchii vertebrae generally from archaeological sites is rare, and certainly not in sufficient quantity to reconstruct entire fish.

Shellfish. Shell midden samples were collected from 16 sites in addition to samples taken from shell layers during excavation of T10/993. Samples were sieved with a 3 mm sieve and sorted into species. Fishbone and charcoal was separated out for identification.

Species were taken from the sandy shore-estuarine environment, the open coast and also from the rocky shore. The main species, present in all middens were cockle (*Austrovenus stutchburyi*) and tuatua (*Paphies subtriangulata*), with pipi (*Paphies australis*) being the next most common species. *Cominella adpersa* and *Amphibola crenata* were also collected for food, but *Xymene* sp. and *Zeacumantus* sp. from the same muddy environment were probably gathered incidentally along with the food species. From the open coast, scallop was present in a number of sites but the minimum numbers could not be calculated due to the fragmented nature of the shells. Scallops occur off-shore today, and several hundred years ago were probably quite close to shore. Rocky shore species are all relatively small gastropods and the shells in all cases were fragmented, perhaps due to the shells being broken while extracting the meat.

All of the middens sampled during monitoring had cockle as the dominant species, followed by either pipi or tuatua. However the excavated layers from T10/993 showed different results. In the lower midden tuatua was the dominant species but cockle was present in greater numbers in the upper midden. Pipi was a minor species in each layer. The midden on the slope, referred to as the tuatua midden, (4.5-5.5E, 32.3N) was almost exclusively of that species.

The occupants of each site were foraging widely across the shoreline environmental zones. Cockle and tuatua were undoubtedly the shellfish sought for drying and preserving, and some other species would have been collected accidentally at the same time (e.g. *Xymene* sp. and *Zeacumantus* sp.). Rocky shore species collected were individually small and again some were probably uneconomic species.

Matarangi Sites in the Wider Coromandel Context

Archaeological investigations have been carried out in the small catchment to the east of the Oweria Stream valley (Crosby, Sewell and White 1987). A total of 41 sites were recorded in the exotic forest block of 104 hectares. Four of the sites were excavated in detail. Two reasonably substantial houses were uncovered together with shell middens and evidence of stone working and cooking. Radiocarbon dating results from seven sites were similar and all overlap at the 95% confidence level (Furey 1997c:69). It was concluded that people were living, and probably gardening, on the hill slopes of the Wairoa Stream catchment, up to 1 km from the Whangapoua Harbour, in the 15th and 16th centuries.

Site surveys carried out in other parts of Whangapoua Forest, principally in the Otanguru River catchment, and on farmland around the harbour margins indicates a high density of Maori occupation evidence. Fifteen pa have been recorded along with shell middens, terraces and pits.

Further afield, excavations have been carried out at Opito and at other beaches along the eastern coast of the Peninsula. The focus of the archaeological work has however been the sites occupied in the first few hundred years of Maori occupation of New Zealand, and containing extinct birds such as moa. Artefacts recovered from these sites show strong stylistic affinities to East Polynesian tools and ornaments of the same period. While only one or two of these sites might be considered semi-permanent or long term occupations, most represent seasonal settlement to exploit the local resources.

Discussion

Evidence of Maori occupation in sand dunes, identified by the shell midden, is well represented in the NZAA site records. The sites are generally exposed either areally through dune deflation or in section in wave cut scarps on the foreshore. Undisturbed and intact sites of this type are poorly known from the literature on excavated sites.

Maori villages and campsites immediately adjacent to beaches, or on foredunes, rarely feature in ethnographic accounts of Maori life in the late 18th and 19th centuries and none of these places are described in detail.

Archaeological evidence suggests that the first settlers, on the Coromandel at least, sited their villages in the foredunes and carried out a wide range of activities there including cooking, tool manufacture and the dumping of rubbish.

At the other end of the time scale, Captain Cook in Mercury Bay in November 1769 reported a group of individuals camped on the beach at Purangi on the south side of the bay. These people, identified as Ngati Whanaunga and Te Uri-o-Pou from the western side of the Firth of Thames, were at Purangi to collect fernroot and shellfish to take back to their main settlement. Joseph Banks noted that the camp was surrounded by heaps of shells, and that there were other large middens, some of which appeared quite old, in the bay. These people, according to Captain Cook, "...sleep in the open air, under trees and in small temporary shades" (Beaglehole 1955:198) which most likely refers to temporary lean-to shelters. The people ate crayfish, fish and birds, which were cooked in the hangi or broiled over a fire (Salmond 1991:196). The number of individuals camped here is unreported but included children as well as adult women and men. It is apparent that this type of settlement could only be interpreted as a seasonal camp having the sole purpose of collecting food and preserving it for eating during the winter months.

Elsdon Best (1977:71) described shellfish preservation where the shells were steamed open, the meat threaded on strings and hung to dry and harden before storage. Steaming prior to eating softened the meat. Preservation of shellfish is not often identified in the archaeological literature but treatment of other protein resources, such as birds and fish, has been documented.

Archaeological evidence of seasonal harvesting and preserving of birds and fish is to be found in several sites in the Hauraki area and gives some time depth to what was observed ethnographically: at the Sunde site on Motutapu Island dated to the 14th or 15th century, kaka, shags and tui were potted after removal of the lower legs and there was an absence of vertebrae of large sized snapper while the bones from the head were present in the middens indicating the bodies were taken elsewhere (Nichol 1988). Similarly on the Coromandel Peninsula, at the 14th – 15th century site of Port Jackson, wing and lower leg bones of numerous kaka were found suggesting preservation of the edible part of the bird (Foster

1983), and at T11/242, Hahei, shearwater bones and fish remains also indicate preservation (Nichol 1986). The 17th century site at Galatea Bay on Ponui Island had clear evidence that fish were caught, processed and removed elsewhere as again the vertebral bones are under-represented for the number of individual fish identified by head bones (Shawcross 1967). However each of these sites also had a wider range of activities being carried out, including tool manufacture and maintenance.

The upper midden at the Tairua site (T11/62) which was also small, shallow and contained shellfish species of cockle and pipi with no artefacts or associated structural remains, is also likely to be a seasonal shellfish preservation deposit. Similar small shell areas were noted in the nearby dunes (Davidson 1964).

There are similarities between the Matarangi middens and those reported from archaeological excavations and monitoring of earthworks in dunes at Papamoa in the eastern Bay of Plenty (Fredericksen, Barber and Best 1995; McGovern-Wilson 1995) and on Matakana Island (Marshall *et. al.* 1994).

At U14/1717, Papamoa, small shell middens were uncovered in a swale approximately 250 m inland during development work. Archaeological evidence consisted of shell heaps with a limited range of species, small quantities of fishbone of mainly mackerel, and sparse lithic material. Radiocarbon dates indicate the shells were deposited in the early to mid 16th century. This site was interpreted as a temporary camp set up exclusively to collect and preserve shellfish for winter consumption (McGovern-Wilson 1995:40-41). However other larger sites suggestive of occupation for a longer time were also found and the presence of gardening soils indicates other activities in the area (Fredericksen, Barber and Best 1995).

On Matakana Island numerous shell middens were found throughout the dunes. Limited sub-surface excavation led the investigators to conclude that the sites were not just shell dumps but had a range of other activities such as artefact maintenance, gardening and food storage indicating sustained and substantial occupation (Marshall *et. al.* 1994:51) but small shell heaps similar to those at Matarangi were also encountered.

The sites at Matarangi were impoverished in terms of other debris usually associated with occupation and there was no waste stone and flake material. The individual sites appear to consist solely of small shell deposits with a few fish bones. Features are confined to small firescoops for cooking food. The absence

of other material and structures suggests the sites were occupied for a short period of time and for a specific purpose. The prime purpose of the sites appears to have been to harvest shellfish, and remove the meat for drying. The best species for this purpose were cockle and tuatua. People engaged in collecting and drying the shellfish had a more varied diet, with fish and rocky shore shellfish, but only in small quantities, suggesting there were not many people involved.

Conclusion

T10/993 is representative of the other sites in the Stage 14 development area at Matarangi, and collectively they represent a poorly known site type but one which was important in the seasonal round of activities which made up the Maori economic cycle. The shell heaps are the result of collecting quantities of shellfish, steamed open and the meat threaded onto strings and dried. Because this activity likely took place over a few days and only very light shelters were built, or even possibly no structures, little other evidence remains. The limited range of activities carried out is demonstrated by the lack of stone flakes.

The vegetation at the time of occupation would have been dominated by relatively low shrubs, a pattern induced by burning although it is assumed that one midden, #10d, was laid down at an earlier time as larger trees are also evident in the charcoals.

The radiocarbon dates are all very similar, and may represent the intensive use of the area over a relatively short period of time. The similarity of species, and in particular the presence of only mackerel bones in the middens, points to a particular (previously unrecognised) behaviour and suggests the sites may be contemporary. However the radiocarbon dating technology does not allow confirmation of this theory.

Each midden represents a small single event. It is likely the shellfish were collected in the spring and summer for consumption later in the year – the middens from Papamoa suggest similar results.

Unfortunately the picture of settlement on the Omaro sandspit is incomplete. The eastern two-thirds of the spit had been developed prior to archaeological involvement in the project. However individuals involved in land development and re-contouring over a 20 year period were adamant that this quantity of shell had not been encountered previously. Further work needs to be done on reconstructing the past environment of the Matarangi area – looking at where

salt marsh and swampy ground occurred before landscape modification, and also where sand banks were present within Whangapoua Harbour which may have allowed easy access to a particular part of the spit from the southern and eastern sides of the Harbour. Long term residents in the Whangapoua area recall being able to cross the harbour on exposed sand banks prior to changes brought about by siltation and mangrove encroachment.

In recent archaeological work in the golf course area to the southwest of the Stage 14 area, and adjacent to the harbour edge, possible gardening soils were encountered on the older dune sands.

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