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Periodicity, Duration, and Function of Occupation at Tauroa Point, Northland, New Zealand

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ABSTRACT

Three coastal sites at Tauroa Point, Northland, New Zealand were explored using varied archaeological techniques. At least seven, and possibly more, distinct occupations were identified, the earliest dating to about the fourteenth century AD. The analysis presented here centres on defining the periodicity, duration, and nature of pre-European Maori activities on this coast over time. Geomorphic evidence, radiocarbon dates, feature characteristics, fauna and artefact assemblages, and wood charcoal data are used in this endeavour. Indications are that the earliest occupation was the most extended, followed by repeated ephemeral visits between AD 1400 and 1650, and intensified but short-term coastal occupations after AD 1650. These occupations all took place within a geomorphically active environment, yet were variably affected by erosion and aggradation; in at least one locality the build-up of dune sands intensified *after* site abandonment.

Keywords: NORTHLAND, TAUROA POINT, MAORI PREHISTORY, ARCHAIC, CHRONOLOGY, FUNCTIONAL VARIABILITY.

INTRODUCTION

Survey along the coastal fringes of Tauroa Peninsula, southwest of Ahipara Bay, has revealed a number of archaeological sites and points to considerable use of this area by pre-European Maori (New Zealand Archaeological Association Site Record forms; Fig. 1). The coastal sites of Tauroa are in many respects typical of those found throughout the North Island but particularly on the exposed western coasts. Often small and reflective of short-term, possibly seasonal use, they are largely related to marine extraction activities in the past, such as shellfish gathering, fishing, and occasional exploitation of sea mammals. While these coastal sites are often structurally simple, comparatively speaking, they nevertheless are important to our understanding of pre-European Maori land use patterns and spatio-temporal variation in past settlement-subsistence systems. This paper reports on the investigation and preliminary analysis of three such coastal sites (Site N05/302, N05/315 and N05/316) where multiple occupations are represented. The focus is on defining the periodicity, duration, and character of activities represented by these occupations and ultimately on determining changes over time in the use of this coast.

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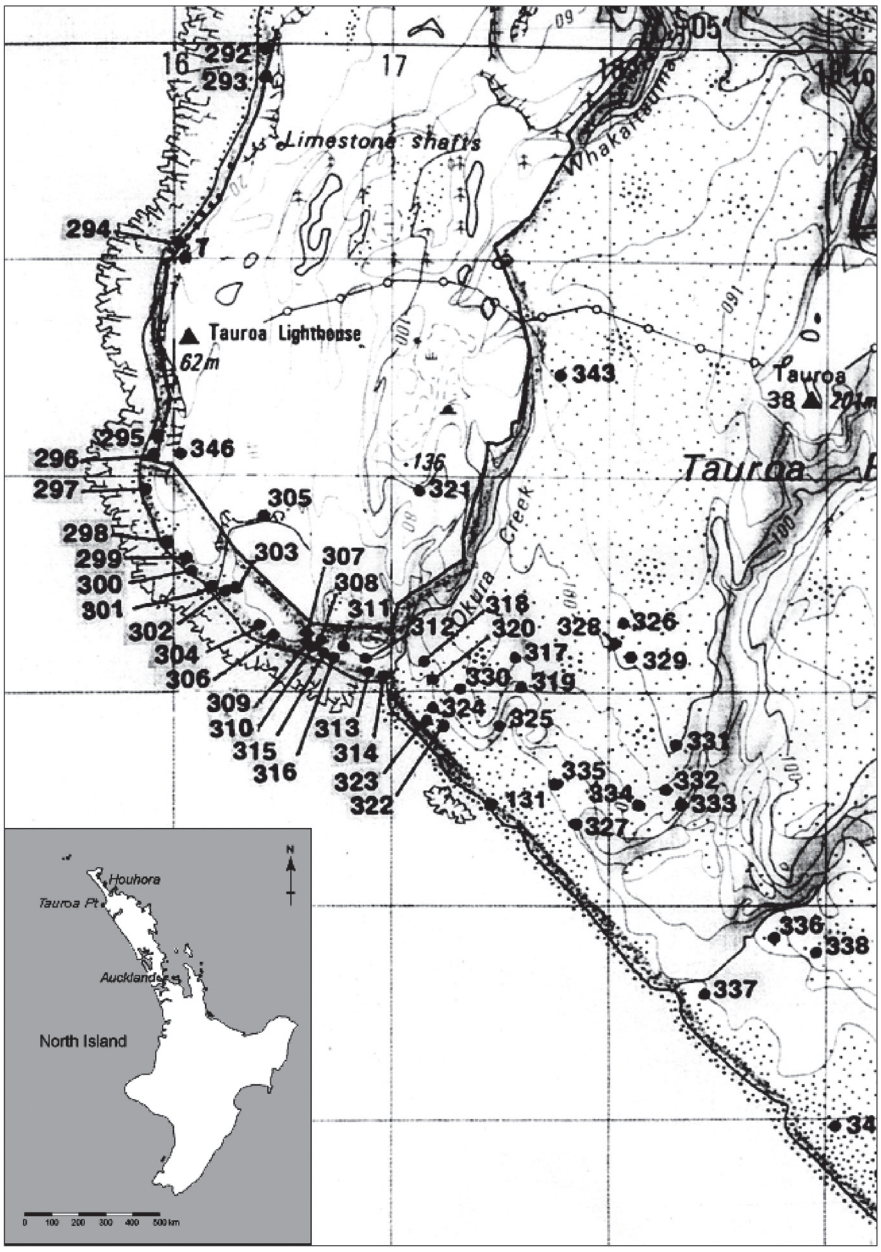

Figure 1: Map of previously identified archaeological sites in the vicinity of Tauroa Point (provided to the author by the Department of Conservation).

The field work reported here was undertaken in 2003 in conjunction with the University of Auckland archaeological field school. The project area falls within the traditional territory of Te Rarawa and is under the cultural care of Roma Marae, while the land is formally administered by the Department of Conservation (DOC) for the Crown. Prior

to the 2003 field school study, a formal Memorandum of Understanding was established with Roma Marae and consent was also obtained from Korou Kore Marae, Tauroa Point Community Group, and Wainui Marae, all of Te Rarawa.

Site erosion and the related loss of cultural information was a primary motivation for conducting the field school in this locality. The sites on this coastal stretch have long been exposed to the persistent erosional forces of wind and waves, and more recently the impacts of quad bikes and four-wheel drive vehicles. At a larger scale, Coster (1983, 1989) has demonstrated the significant impact of large-scale geomorphic processes on archaeological sites along the western coast of the Far North, while Hicks (1975; see also Coster 1983: 176) suggests Polynesian colonists played a role in initiating dune mobilisation through firing and vegetation clearance. An understanding of the local geomorphic context in which the Tauroa archaeological sites formed and their post-depositional histories was considered a critical prelude to interpretations of past cultural activities.

The Tauroa sites were also of interest from a chronological perspective. Pre-European Maori use of this coast is known mainly from surface surveys. Although excavations have been carried out at two localities (N05/301 and N05/302) and relatively early radiocarbon determinations obtained, this work is known only from two brief unpublished reports (Johnson ms; Maingay ms). Radiocarbon determinations secured by these earlier researchers suggested first use of the area during the initial period of Maori settlement, assuming the 'short chronology' is valid (see discussion in Higham and Jones 2004). Our investigation of additional occupation components was aimed at refining the local sequence and discerning settlement periodicity and duration.

A third goal of the 2003 field study was to evaluate the possibility of functional variation across the occupations represented at the three localities. Sometimes coastal middens are treated as a uniform and relatively unimportant class of archaeological sites, being that they are both widespread and numerous. However, they potentially play a crucial role in our understanding of the larger settlement-subsistence system, particularly on the North Island where moa were less important in early Maori economies and foraging patterns potentially more variable. The assessment of functional variation outlined here is based in large part on field observations, as detailed study of the faunal and artefact assemblages is still underway.

A fourth interest lay in linkages between the Tauroa coastal occupations and the larger social-settlement system. Some initial insights are provided by the raw materials represented in the stone tool assemblages, which appear to derive largely, if not solely, from the earliest occupation layer at Site N05/302.

BACKGROUND TO THE TAUROA POINT STUDY

REGIONAL CONTEXT

Evidence from varied sources indicates that during the Holocene much of Northland was forested (Hicks 1975; Millener 1981; Wright *et al*. 1995), with mixed kauri communities expanding in the late Holocene (Newnham 1999). Human arrival may be indicated as early as 1100 BP, with significant declines in tree pollen, increased charcoal and a rise in *Pteridium esculentum* spores indicated in the pollen record from Lake Tauanui, Bay of Islands District (Elliot *et al*. 1998). Similar trends are seen at Lake Taumatawhana (Elliot *et al*. 1995), beginning between 900 and 675 BP, while a number of other palynological studies indicate widespread anthropogenic disturbances by *c*. 700 BP (Newnham 1999).

More direct evidence of Maori settlement in this region comes from several large-scale archaeological surveys (e.g., Coster 1989; Davidson 1975; Leahy and Walsh in Davidson 1982) and Millener's (1981) extensive palaeontological survey of moa-bearing sites, both natural and cultural. These studies indicate that Maori use and settlement of this region was both long-standing and wide-spread, with archaic-style artefacts and moa-bearing occupations being recorded in many parts of Northland. One of the earliest sites investigated in this region is found at Twilight Beach on the west coast of the Aupouri Peninsula, where a temporary occupation dates to *c.* AD 1250–1300 (Taylor 1984). The more substantial east coast settlement of Houhora dates to a slightly later period in the fourteenth century (Anderson and Wallace 1993; Petchey 2000). Furey (2002) suggests that Houhora represents a permanent village on the basis of the range of activities indicated, including the centralisation of food procurement, evidence for artefact manufacture, tattooing, and entertainment, and an abundance of dogs. Indications are that Houhora was situated within a pristine, resource-rich location, where both seals and moa were available in abundance. The range of stone resources found there, which include Tahanga basalt, Mayor Island obsidian, and Nelson metasomatised argillite, as well as Northland obsidians and cherts, is remarkable. Along with surface collections from other Northland localities, they point to exchange relations between the early Northland populations and those of other regions to the south; less directly they also suggest a significant degree of mobility.

Davidson's 1982 review further highlights the diversity of site types found across Northland, and a settlement focus in coastal localities, around harbours and river valleys, and in fertile inland localities. As with the early period, most of what is known about the period after AD 1500 comes from surveys. A notable exception is the major research effort of Sutton and colleagues at Pouerua (Sutton 1993, 1994; Sutton *et al*. 2003), where open, defended, and agricultural sites covering a 9 km^2 area have been studied in detail. Several hundred years of increasingly intensive occupation is indicated, with much building and remodelling on the volcanic cones. Although Sutton *et al*. (2003) suggest that the large central cone was not permanently settled until the post-contact period, the evidence suggests considerable use from AD 1400 onwards for storage, food preparation, defence and display.

In addition to the Pouerua project, there has been a long-standing interest in Northland agricultural systems. Quite varied forms of both wet and dry gardening technologies have been documented through several large-scale surveys (e.g., Barber 1984, 1989, 2001; Johnson 1986). These landscape approaches are now being augmented by microfossil studies, which have allowed for the identification of specific crops (Horrocks *et al*. 2000, 2004). Overall, these studies highlight the importance of gardening in Northland, climatically one of the most favourable environments for traditional Polynesian crops. Of particular relevance to Tauroa are the extensive wetland ditch complexes of nearby Kaitaia and Awanui, which appear to have been used for both horticulture and harvesting of eels (Barber 1989).

TAUROA POINT ENVIRONMENT AND PREVIOUS STUDIES

Tauroa Peninsula is located at the southern end of Ninety Mile Beach, while Tauroa Point (or Reef Point), an extensive rocky inter-tidal platform, is the tip of this peninsula. The area is home to crayfish (New Zealand red rock lobsters or *Jasus edwardsii*), pāua (abalone, *Haliotis* spp.), mussels (Mytilidae), and several economically important fish

such as snapper (*Pagrus auratus*) and wrasses (Labridae). On the northern end of the point, the land rises steeply from a narrow coastal flat that fronts the inter-tidal platform to a series of high, moderately stable dunes. To the south, the coastal flat widens and the dunes become increasingly barren. The southern extreme of the peninsula is characterised by an extensive and highly mobile dune system (Hicks 1975). Despite an arid appearance, there is a great deal of surface water in the Tauroa Point area. At many points along the coast, fresh water seeps from cliff faces and from under the dunes. Occasionally, narrow coastal marshes parallel the shoreline, areas where wet taro (*Colocasia esculenta*) may have been grown in the past. Several small but permanent creeks occur on the peninsula as well, the largest being Okura Creek and Waitaha Stream. In the southern dunefield, there are also a few small lakes.

Near the investigated archaeological sites, the vegetation today is sparse and consists mainly of herbaceous species with the occasional shrub. Inland from the coast, cattle pastures give way to secondary growth, dominated by kānuka (*Kunzea ericoides)* formations. In the southern dune area, massive kauri (*Agathis australis*) stumps indicate that a mature native forest once grew here. At least some portion of this forest remained at European contact, as the area was logged in the 1800s.

Tauroa holds an important place in local Maori history. According to traditions, Tauroa was settled by the chief Tumoana and his followers, who arrived in the Tinana canoe. Following his arrival, the chief claimed the land between Ahipara and Hokianga, and as far inland as the mountains of Mangamuka and Maungataniwha. Although Tumoana eventually returned to his homeland in Hawaiki (some say the Cook Islands), his daughter (Kahutianui) and son (Tamahotu) stayed behind at Tauroa. Their descendants were known as Ngati Haupare, who later became the iwi (tribe) of Te Rarawa (www.terarawa.co.nz). The area figures in later oral traditions as well, as for example Maxwell's (1895) account of a pivotal battle between Ngati Kuri and Te Aupouri.

In 1989, DOC (Department of Conservation) staff surveyed the archaeological sites of Tauroa Point in conjunction with the Ahipara Gumfields Stewardship Management Plan. During this survey, a number of archaeological sites were identified along the coast (Fig. 1), most of which appear to have been occupied in the course of gathering seafood, particularly shellfish. In the NZAA Site Record Forms, in large part prepared by Leigh Johnson, abundant marine fauna, hearth features, and sometimes evidence of stone working are described. Three of these previously recorded sites were selected for the field school study: Sites N05/302, N05/315, and N05/316.

Site N05/302 had been previously excavated by DOC staff[2] in 1992 and a relatively early radiocarbon determination obtained. Although the excavations have not been fully reported nor the recovered materials analysed, a one-page typed summary is available (Maingay ms). Recently, the field notes and collections have been made available to the author but the analyses are still in progress and will be reported elsewhere. The comments that follow are in large part based on Maingay's summary, augmented by the field notes and preliminary laboratory observations.

[2] The Historic Places Trust permit for this work was issued to James Robinson and Adrienne Slocombe. However, Leigh Johnson and Joan Maingay assisted in oversight of the field work. Maingay's excavation summary, 1992 field records, and 1992 collections have been made available to the author by DOC, Whangarei Office. Details of the radiocarbon determinations were provided by the Waikato Radiocarbon Laboratory.

The excavation involved opening an area about 6 by 6.5 m (39 m^2) in a centrally located knoll or hummock (the area identified as Hummock B in Fig. 3) where two cultural layers, separated by a sterile sand layer, were exposed. Radiocarbon determinations placed the lower cultural layer between the fourteenth and fifteenth centuries AD (WK-2502, Table 8), while the upper cultural layer was determined to be post-seventeenth century in age (WK-2501, WK-2924, Table 8). The upper layer contained numerous inter-cutting ovens and fire scoops, often associated with shell and fish bone. The lower layer contained similar features, along with dog, seal, bird, and whale remains, bone fishhooks, fishhook manufacturing debris, and stone tools such as drill points, sandstone files, and small flakes. Maingay also noted that the base of the excavation contained a lens of consolidated ash, deposits of fish bone, and rows of small postholes, as a whole suggestive of fish drying on racks. Further, "a number of more substantial postholes and deep fire pits indicated that temporary huts were constructed at the site." In the field notes, the excavators suggest that the artefacts were largely associated with the lower cultural layer.

Also of note is a second early site (N05/301), which lies across the creek from Site 302, on a relatively flat coastal terrace (about 60 by 30 m) that abuts a moderately stable, grass-covered dune. The site was investigated by Leigh Johnson in 1991. According to his four-page summary, made available to the author by DOC, this involved collecting materials from a 112 m^2 deflated area. He also excavated a 25 m by 50 cm trench into an intact or un-deflated portion of the site, identifying a single occupation layer, about 10 cm thick, in the process. The majority of the artefacts recovered by Johnson were stone objects, including both tools (e.g., drill points) and waste flakes from tool manufacture. He suggested that most of the raw materials could be sourced to local or regional (Northland) areas. An early age for the occupation was initially suggested by a bone "reel" bead and a Duff Type 4A adze rough-out, while a subsequent radiocarbon determination placed the occupation in the fourteenth century AD (WK-2191, calibrated two sigma age range AD 1321–1453). Few faunal materials were reported. Johnson thought the site most probably represented a seasonal fishing camp and he pointed to a possible relationship with Site 302 across the creek. During our 2003 study, two highly weathered sets of human remains were observed in the Site 301 area. At the request of Roma and Korou Kore Marae leaders, these were recorded by Dr Judith Littleton of the University of Auckland and then collected for reburial by the local iwi.

2003 FIELD METHODS

The 2003 field school study used a variety of site detection and recording techniques in an effort to minimise damage to the archaeological record, while securing as much information as possible about these rapidly disappearing sites. The techniques included a trial of remote sensing techniques to identify the extent of subsurface cultural deposits, systematic survey and collection of surface artefacts, exposure and detailed recording of natural profiles, three-dimensional digital mapping of archaeological features and the local topography, and test excavations (further details are provided in Allen *et al*. 2005).

Systematic excavations were carried out with trowels and three-dimensional control (i.e., X-Y-Z coordinates) was maintained. Details of each excavation unit were kept on standardised excavation forms. Excavations followed the natural stratigraphy whenever possible, with the strata being identified by Roman numerals, from top (most recent) to bottom (oldest). The one exception is Unit 2 (see below) at Site 302, which was essentially a trimming of the down-slope face of the knoll in an effort to expose and further sample

the cultural layers previously identified in 1992. Thick strata were subdivided into arbitrary levels (identified by Arabic numerals). The sediments were screened through 6.4 and 3.2 mm sieves, large rocks removed, and the contents bagged in total for sorting in the lab. Large bone fragments, however, were typically removed from the screens in the field, labelled with their provenance and screen size information, and bagged separately in an effort to protect them from breakage during transport. Each feature was given a unique number, measured, and described on standardised forms. The feature numbers are not continuous for a variety of reasons (e.g., not all numbers were assigned, some numbers were discarded, etc.).

Shovel pits, in contrast, were excavated with shovels and the sediments were examined but not screened. Typically these units were 50 cm^2 in area. Following excavation, the subsurface stratigraphy (if any) in these exploratory units was observed and noted. Shovel pits were undertaken to verify the presence or absence of subsurface cultural remains in areas lacking surface indications.

In the discussion which follows, cultural strata (i.e., distinct sedimentary units identified by dark organic staining and containing unambiguous cultural remains) are the primary analytic units. Although they are referred to as 'occupations', it is not known how much time they represent. They may be the result of a single episode of cultural activity or alternatively, they may be palimpsests of multiple pene-contemporaneous coastal visits which are indistinguishable on the basis of *in situ* sedimentary characteristics (e.g., differences in colour, texture, etc.). The analyses below focus on variation in the kinds and abundances of features, artefacts and fauna in these distinct strata or occupations.

2003 FIELD STUDY AT SITE N05/302

Site 302 (Fig. 2) lies on the mid-to-lower western slopes of a high dune, immediately southeast of a small perennial creek. The cultural remains are discontinuously spread across the dune slope, and several relatively discrete areas are identifiable. In light of this, the dune face was divided into four sectors (Areas A–D) based on artefact, fauna, and feature densities (Fig. 3). The most significant area of intact cultural remains is a knoll, about 10 by 14 m in area, centrally located within Area B, referred to as Hummock B (Fig. 3). As described above, DOC archaeologists excavated in a portion of this knoll in 1992 and identified two cultural layers. Smaller remnants of intact cultural sediments were also identified in Areas A and C. Of particular note in Area C is a second smaller knoll or hummock of cultural sediments (see Fig. 3) with several eroding hearths and a nearby scatter of artefacts. Central to Area A is a relatively flat terrace-like area where cultural sediments, including shell, charcoal, and fire-altered rock (i.e., rock that has been fire-fractured and/or heat-oxidised as indicated by red discoloration), are exposed and actively eroding. In short, as few as two periods of cultural deposition may be represented at Site 302 but it seems more likely that the spatially distinct areas of cultural material (falling within Areas A–D) represent different coastal visits.

SURFACE INVESTIGATIONS

In 2003, the Site 302 cultural remains and topography were initially surveyed with a laser theodolite, resulting in a three-dimensional map (contours at 0.5 m intervals). Following this, deflated areas around and between Hummock B and Hummock C were systematically

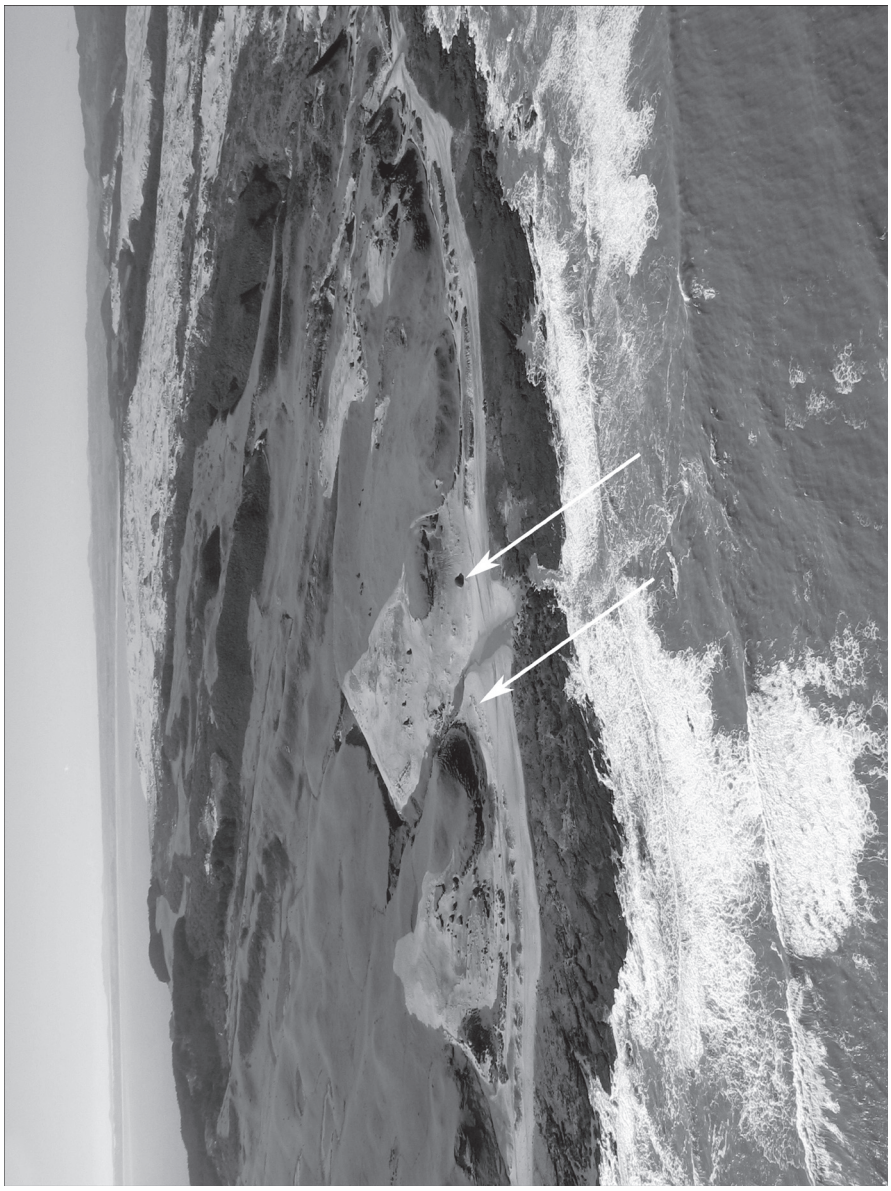

Figure 2: Inter-tidal rock platform, bisected by stream (centre), with Site N05/302 on the right and Site N05/301 on the left (photo courtesy of Randolph Wichman).

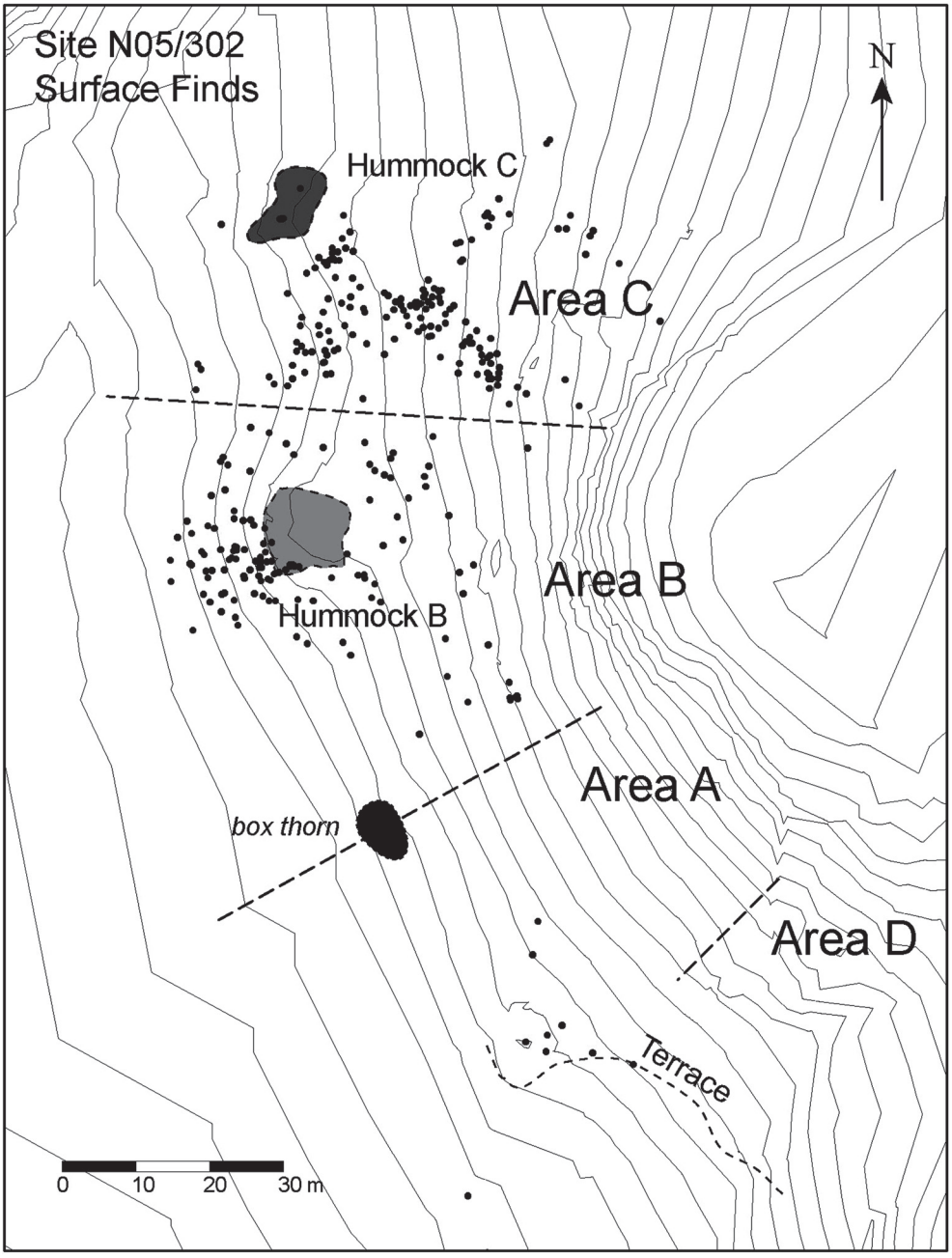

Figure 3: Site 302: map of surface artefacts located during systematic collection.

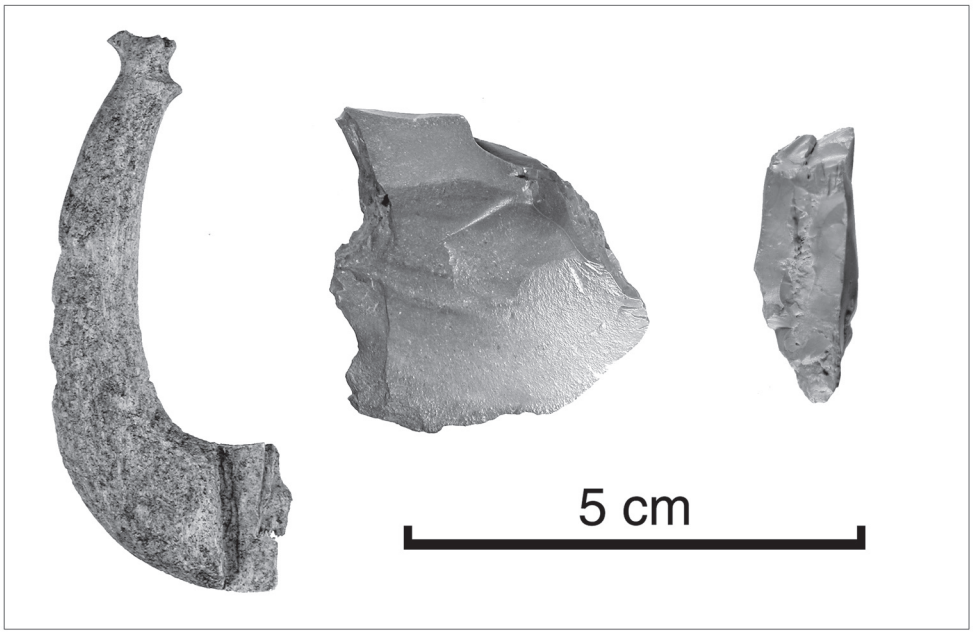

Figure 4: Artefacts recovered from Site 302: bone fishhook head and shank (1992), chert flake with multiple areas of use-wear (2003), drill point (1992).

TABLE 1
SUMMARY OF SITE 302 SURFACE COLLECTIONS MADE IN 2003

Raw Material	**Artefact Type**	**Site**				**Total**
		302 vicinity	**302A**	**302B**	**302C**	
Chert	core	1				1
	flake		2	52	10	64
	drill point			1		1
	nodule		3	5	7	15
	chert subtotal					*81*
Tuff	flake		2	57	131	190
	retouched flake			1		1
	drill point			2		2
	nodule			2	3	5
	tuff subtotal					*198*
Obsidian	flake	2	2	12	2	18
Other stone		6	2	27	10	45
Bone	fishhook tab			1		1
	worked bone	1				1
Total		**10**	**11**	**160**	**163**	**344**

surveyed (i.e., the area traversed by students walking parallel transect lines at uniform intervals) for artefacts and significant faunal remains (Fig. 3). Each identified item was mapped in three dimensional space with the laser theodolite, and then collected for further analysis. Although clearly not in primary context, there were distinct clusters of related materials (e.g., flakes that appeared to be from a common core), suggesting that lateral migration here has been moderate, rather than severe. The majority of the surface artefacts were simple flakes, although two stone drill points and a single bone fishhook tab were also recovered (Fig. 4, Table 1).

A number of materials were found around Hummock B, particularly on the down-slope side. More ambiguous was the source of the artefacts found in Area C. The materials here were concentrated to the southeast of Hummock C, with very few items being found down-slope of this feature (see Fig. 3). The single test unit in Area C identified only one cultural layer, which dated to the seventeenth century (WK-13537, Table 8). Thus, the source of the Area C surface artefacts is unclear. If we assume that they are contemporary with the excavated Hummock B archaic-age materials, they suggest that the early occupation layer, now only found in Hummock B, was once much more extensive.

In addition to the artefacts described above, bones from two moa were found on the surface. The specimens were identified by Dr Brian Gill of the Auckland Museum. A single femur, probably *Euryapterx curtis,* was collected down-slope of Hummock B in association with a large number of lithic artefacts. Considerably more skeletal elements of a larger species, including a second femur, were recovered in a low-lying deflated area on the Area C–Area B boundary. Gill suggested this second specimen was most likely *E. geranoides*. Neither the single femur nor the larger set of bones display any unambiguous indications of human modification, leaving their cultural associations uncertain.

In the course of mapping, a number of small, well-defined mounds associated with shell, charcoal, rocks and occasionally other cultural materials, were observed. Specifically, these mounds are pedestals of once more extensive cultural sediments, held together by their clastics (shells and rocks) and charcoal-enriched sediments. Initially, it appeared that these were in the main purposefully constructed features (e.g., hearths and ovens). However, excavation (see below) demonstrated that this was not uniformly the case.

TABLE 2
SURFACE FEATURES RECORDED AT SITE 302 IN 2003
(excavated examples are in italics)

Feature No.	**Location**	**Max Diameter (cm)**	**Fire-altered rock**	**Charcoal**	**Shell**	**Comments**
86	*Area C*	*100*	*common*	*common*	*few*	*Unit 7*
100	*Area B*	*60*	*common*	*abundant*	*few*	*Unit 8; includes metal bolt; lag deposit*
101	Area B	60	few	abundant	none	
102	Area B	125	abundant	abundant	none	bird and mammal bone
103	Area B	100	few	abundant	few	
104	Area B	65	common	abundant	common	fish bone

TABLE 2 continued

Feature No	Location	Max Diameter (cm)	Fire-altered rock	Charcoal	Shell	Comments
105	Area B	75	common	rare	common	bounded by cobbles
106	Area B	90	few	rare	common	very dense, possibly worked cobble
107	Area C	70	few	abundant	few	
108	Area C	80	common	common	few	
109	Area C	50	few	rare	abundant	
110	*Area C*	*65*	*few*	*dense*		*Unit 6; 3 boulders; burnt shell common*
111	*Area C*	*40*	*few*	*common*		*Unit 9; burnt shell common*
112	Area C	55	few	abundant	common	
113	Area C	65	few	abundant	few	
114	Area C	50	few	common	abundant	chert pebble
115	Area C	65	common	abundant	few	
116	Area C	60	few	common	abundant	
117	Area C	70	few	rare	abundant	partially defined by cobbles
118	Area C	50	few	common	abundant	Turbo and pāua notable
119	Area C	60	abundant	common	few	
120	Area C	60	abundant	rare	few	
121	Area C	80	abundant	common	abundant	
122	Area C	80	abundant	abundant	abundant	
123	*Area B*	*40*	*few*	*abundant*	*few*	*Unit 4; few rounded pebbles*
124	Area C	65	few	common	abundant	
125	Area A	40	common	rare	abundant	
126	Area A	60	common	common	common	
127	Area A	60	common	rare	abundant	few cobbles noted
128	Area A	30	common	abundant	abundant	burnt shell abundant
129	Area A	80	abundant	abundant	abundant	burnt shell present
130	Area C	60	few	common	abundant	
131	Area A	50	abundant	abundant	none	
132	Area A	60	abundant	abundant	few	

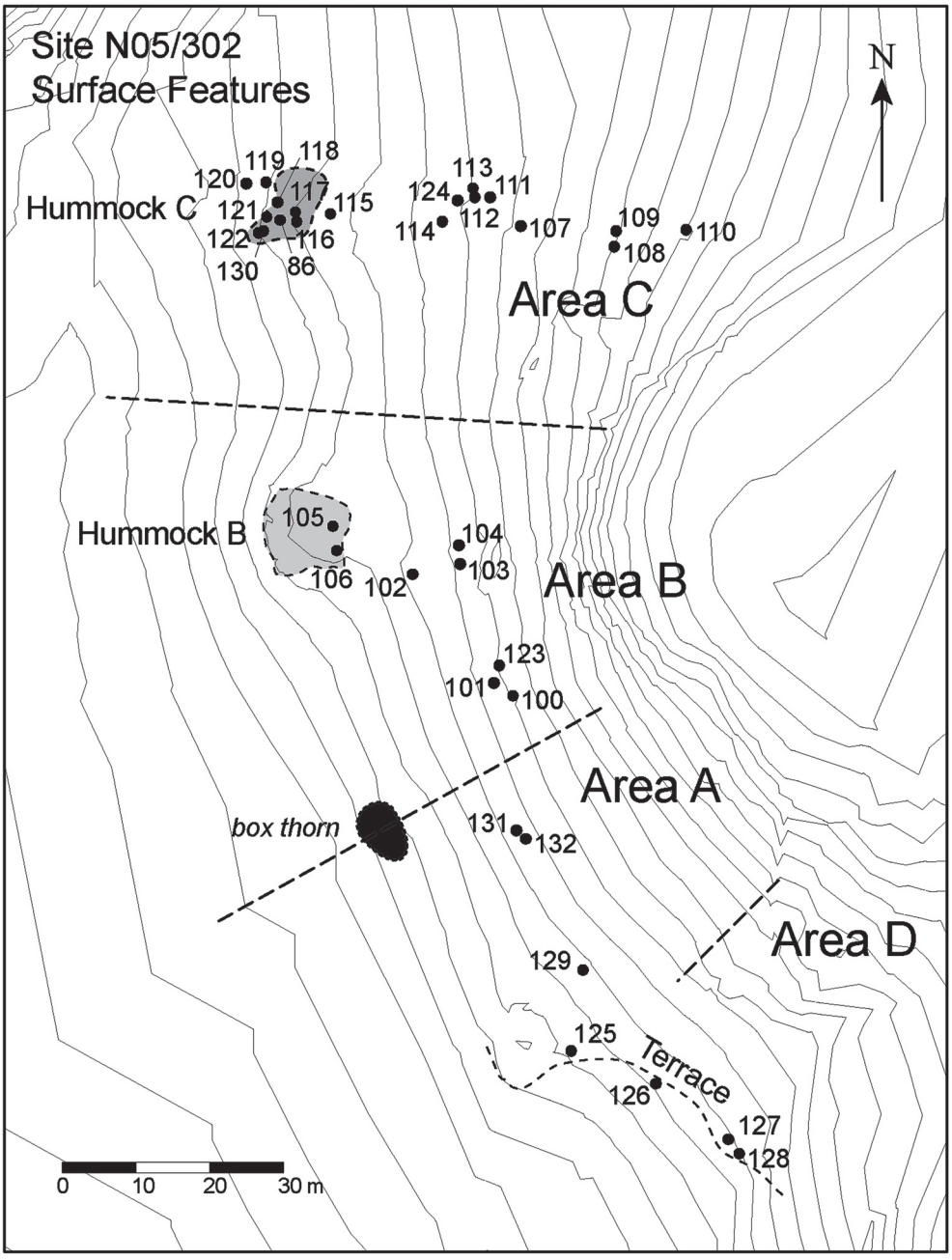

Figure 5: Site 302: map showing the distribution of surface features.

Thirty-four such features were measured, mapped, and photographed (Table 2, Fig. 5). The abundance of fire-altered rock, shell, and charcoal was described using a relative scale of 'few', 'common', and 'abundant'. Some of these features were associated with large amounts of shell but few fire-altered rocks, while in others, fire-altered rocks were

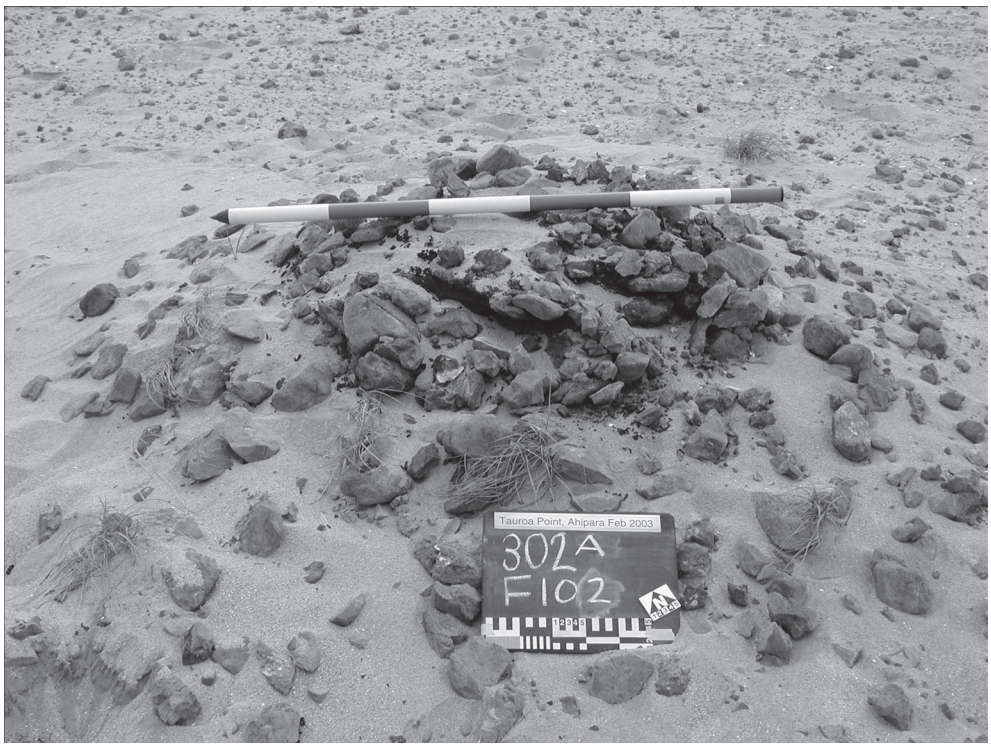

Figure 6: A particularly large and well-defined example of a partially deflated fire feature, where the surrounding fine sand matrix has eroded away in contrast to the feature contents (charcoal, fire-altered rocks, and small amounts of dog and bird bone), which have largely remained in place (Feature 102; 50 cm scale).

abundant and shell poorly represented. The remnant features are concentrated in Area C (*N*=18) and may be functionally related to the intact deposit contained within Hummock C. Interestingly, while a few surface artefacts were recorded in the midst of these features, most were some distance away (compare Figs 3 and 5). A number of features are also exposed along the edge of the Area A terrace *(N*=5) and a single very large mound lies immediately upslope of Hummock B (Fig. 6).

EXCAVATIONS

In 2003 we were particularly interested in establishing the chronological relationships between the two previously investigated Hummock B cultural occupations and those observed in Areas A and C. Our excavations were focused in Area A, in part because the cultural deposit was in imminent danger of being lost to erosion but also because logistically it was a relatively easy area for excavation training (Figs 7 and 8). A 10 m^2 grid was established over the densest concentration of exposed remains and ten units opened (nine 1 m^2 units and a tenth 1 x 0.50 m unit). The layout was a compromise between covering an extensive portion of the terrace and gaining useful areal information.

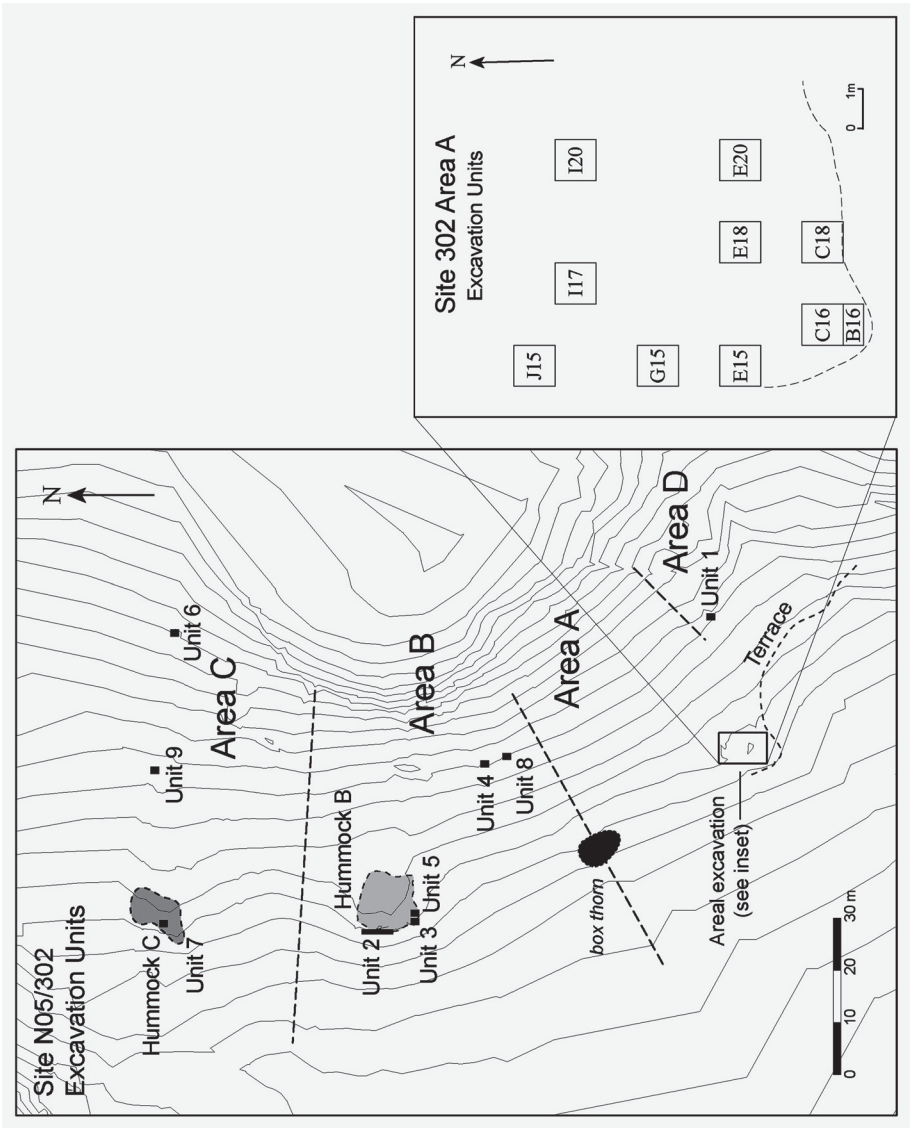

Figure 7: Site 302: location of 2003 systematic excavation units and details of Area A unit layout.

Figure 8: Site 302: excavation in progress in Area A; the eroding cultural layer, indicated by dark sand and shell, can be seen in the foreground.

The excavations confirmed that Area A has a single, relatively shallow cultural layer (about 10 to 20 cm deep), which is underlain by sterile dune sands. Ten shovel pits (not shown here) were opened along the periphery of the eroding deposit face to confirm this finding. Although no artefacts were recovered in excavation, fauna were abundant. Among the more common shellfish were mussels, cat's eye/ataata (*Turbo smaragdus),* and white rock shell/hopetea (*Dicathais orbita*). Fish were also moderately well represented, with snapper and wrasse prominent in the recovered bone. A radiocarbon sample indicated that this deposit dates to AD 1630–1960 (WK-13533, Table 8[3]).

Eleven features were encountered within the Area A excavation grid (Table 3). Fire features were defined as those with clearly defined shapes in plan view (usually circular) and/or profile (usually basin-shaped), with associated charcoal and sometimes ash. As a working field definition, features that exceeded 80 cm in diameter were identified as earth *ovens*, while those with diameters of less than 80 cm were classified as *hearths*, as discussed in more detail below. Well-defined features encountered in excavation that were not associated with charcoal, were longer than wide, and had diameters of 30 cm or less, were classified as *post-moulds*, contrasting with *pits*, which were non-fire features with diameters in excess of 30 cm. Features identified as *concentrations* were shallow and irregularly shaped but distinguished from the surrounding matrix by high densities of shell, charcoal, etc. Four kinds of concentrations were differentiated on the basis of their content: charcoal, fire-altered rock alone, charcoal with fire-altered rock, or shell.

[3] This and subsequent radiocarbon dates are given in calendrical age ranges at two sigma. Details are provided in Table 8.

TABLE 3
FEATURES ENCOUNTERED IN EXCAVATION AT SITE 302 IN 2003

No.	Type	Unit	Layer	Shape (profile)	Length (profile)	Max. Depth (profile)	Shape (plan)	Length (plan)	Width (plan)	Max. Depth (excavation)	Portion excavated
Area A											
60	oven	E15	I	basin	n.a.	n.a.	oval	85+	30	13	½
61	oven	C18	I	basin	n.a.	n.a.	circular	60+	50+	21	¼
62	oven	C18	I	basin	n.a.	n.a.	circular	95+	35	20	½
63	pit w/ shell and charcoal	E20	I	undet.	n.a.	n.a.	undet.	55	35	13	¼
67	oven	C16	I	basin	n.a.	n.a.	circular	70	45	35	¼
68	hearth	I20	I	basin	n.a.	n.a.	circular	40	31	15	½
69	hearth	I17	I	basin	n.a.	n.a.	circular	60	55	11	whole
70	hearth	I17	I	basin	n.a.	n.a.	circular	45	45	10	whole
71	hearth	I17	I	basin	n.a.	n.a.	circular	20	17	9	¼
72	post-mould?	I17	I	cone	n.a.	n.a.	square	11	8	6	¾
73	post-mould?	E15	I	cone	n.a.	n.a.	oval	16	10	18	whole
Area B											
74	oven	2	IV	basin	260	110	circular	260	220	110	see text
88	initial use of Feature 74	2	IV								
89	2nd use of Feature 74	2	IV								
90	3rd use of Feature 74	2	IV								
91	4th use of Feature 74	2	IV								
92	final use of Feature 74	2	IV								
80	root mould	n.a.	V	cone	25	15	n.a.	n.a.	n.a.	n.a.	
81	charcoal concentration	n.a.	II	lens	100	10	n.a.	n.a.	n.a.	n.a.	
83	charcoal concentration	n.a.	II	lens	110	15	n.a.	n.a.	n.a.	n.a.	
84	oven	3	II	basin	n.a.	n.a.	oval	110+	75	25	whole

TABLE 3 Continued

No.	Type	Unit	Layer	Shape	Length	Max. Depth	Shape	Length	Width	Max. Depth	Portion
123	charcoal and FCR concentration	4	I	basin	n.a.	n.a.	circular	40	40	12	½
Area C											
85	hearth	7	I	basin	n.a.	n.a.	circular	65	53	20	½
86	hearth	7	I	basin	n.a.	n.a.	circular	80+	25	25	whole
110	hearth	6	I	basin	n.a.	n.a.	circular	60	30	15	½
111	charcoal concentration	9	I	lens	n.a.	n.a.	circular	50	40	10	whole
Area D											
75	shell and charcoal concentration	1	I	lens	n.a.	n.a.	oval	42	35	10	½

Limited excavations were also carried out on the Area B hummock where the DOC team had previously worked. The down-slope, eroding face was cleaned back to locate the limits of the previous excavation, expose the hummock's internal stratigraphy (Table 4), and provide a clean face for securing additional samples. A very large earth oven associated with the lower cultural layer was exposed in profile in Unit 2 (Fig. 9), a feature partially excavated in 1992. The 2003 work demonstrated that multiple use-episodes are represented in this feature. While there was no immediately apparent indication of what was cooked here, seal, whale, and dog remains were recovered in the general vicinity in 1992. A charcoal sample from the bottom of the oven feature returned a radiocarbon determination of AD 1220–1390 (WK-13534, Table 8), slightly earlier than the previous age estimate for this lower layer. A sample from the upper cultural layer (WK-13535) provided an age estimate of AD 1640–1960, consistent with previous analyses (see Table 8). In 2003, two additional 1 m^2 controlled excavation units (Units 3 and 5) were opened on the southern end of the hummock. A second smaller oven (Feature 84), apparently associated with the upper late prehistoric cultural layer, was identified. Large amounts of fire-altered rock were recorded, along with smaller amounts of shell, bone, obsidian, and a red ochre nodule (Table 5). The lower cultural layer was not represented at this end of the hummock. In general, our further work suggests that very little of the early cultural layer excavated in 1992 still remains.

Excavations were also carried out on five of the previously described surface features (indicated by italics in Table 2) in an effort to understand their origin, cultural associations, and function(s) (Units 4, 6–9 on Fig. 7). In four out of five cases the mounds were shown to be intentionally constructed (details provided in Allen *et al*. 2005). Excavation demonstrated that the fifth 'feature' (Feature100) was not an *in situ* cultural construction but a natural lag deposit. Although the excavated examples suggest that most of the unexcavated surface features are purposefully constructed fire features, accumulations of shellfish processing debris and small remnants of once more extensive cultural deposits may also be represented. Radiocarbon samples from two of the five tested features, both in Area C, yielded late prehistoric to modern age determinations with a range of AD 1660–1960 (WK-13537, WK-13536, Table 8).

TABLE 4
STRATIGRAPHIC SEQUENCE OF HUMMOCK B, SITE 302
(cultural layers in italics)

I	Sterile, light brown (10YR 6/3, dry) fine sand
II	*Cultural occupation layer of fine dark grey (10YR 4/1, dry) to black sand (10YR 2/1, dry) with abundant charcoal and shell, and some bone and fire-altered rock*
III	Largely sterile fine sand, dark greyish brown (10YR 4/2) dry with small amounts of charcoal, shell, and bone
IV	*Cultural occupation layer of fine sand, very dark grey (10YR 3/1) dry with abundant charcoal and shell, bone, and fire-altered rock*
V	Sterile, light brown (10YR 6/3, dry) fine sand

Figure 9: Site 302: large oven (Feature 74) with multiple use-episodes, exposed during trimming of hummock in Area B (Unit 2); note the heavily oxidised sand at the feature base.

TABLE 5
SUMMARY OF ARTEFACTS EXCAVATED AT SITE 302 IN 2003

Raw Material	Artefact Type	Unit		Total
		TP3: Layer I	TP5: Layer I	
Obsidian	flake	2	1	3
Red ochre	nodule	1		1

A single test pit (Unit 1) was also opened in Area D, where small amounts of shell and charcoal were observed on the ground surface. Cultural items were encountered in excavation but it was unclear from the limited area exposed whether these represent primary or re-deposited cultural materials. Time prevented further investigation but further probing might provide more definitive results.

2003 FIELD STUDY AT SITES N05/315 AND N05/316

In 2003, excavations were also carried out in areas adjacent to an un-named creek where cultural deposits were exposed on both the west (Site 315) and east (Site 316) flanks (Figs 10 and 11). Unlike Site 302, neither of these areas had been previously investigated. Shellfish, and to a lesser extent fish bone, were common components of the cultural layers exposed here, while other faunal remains and artefacts were altogether lacking. Work at these sites included profile cleaning, description and sampling, geophysical survey, and limited systematic excavation.

SITE N05/315

On the west side of the creek, cultural materials were exposed in a natural east–west trending cut across the face of the dune (Site N05/315). The exposed profile, the result of wave action, extended for about 24 m parallel to the coast and varied in height from about 0.5 to 1.5 m. A trench was dug along the length of this natural face to expose lower strata and the face cleaned, photographed, and drawn (Table 6, Figs 11–13). Additionally, two test units were opened along this profile to investigate the cultural layers in more detail.

Figure 10: Site 316 (left), creek, and crew setting up the site baseline seaward of the N05/315 profile (indicated by arrows).

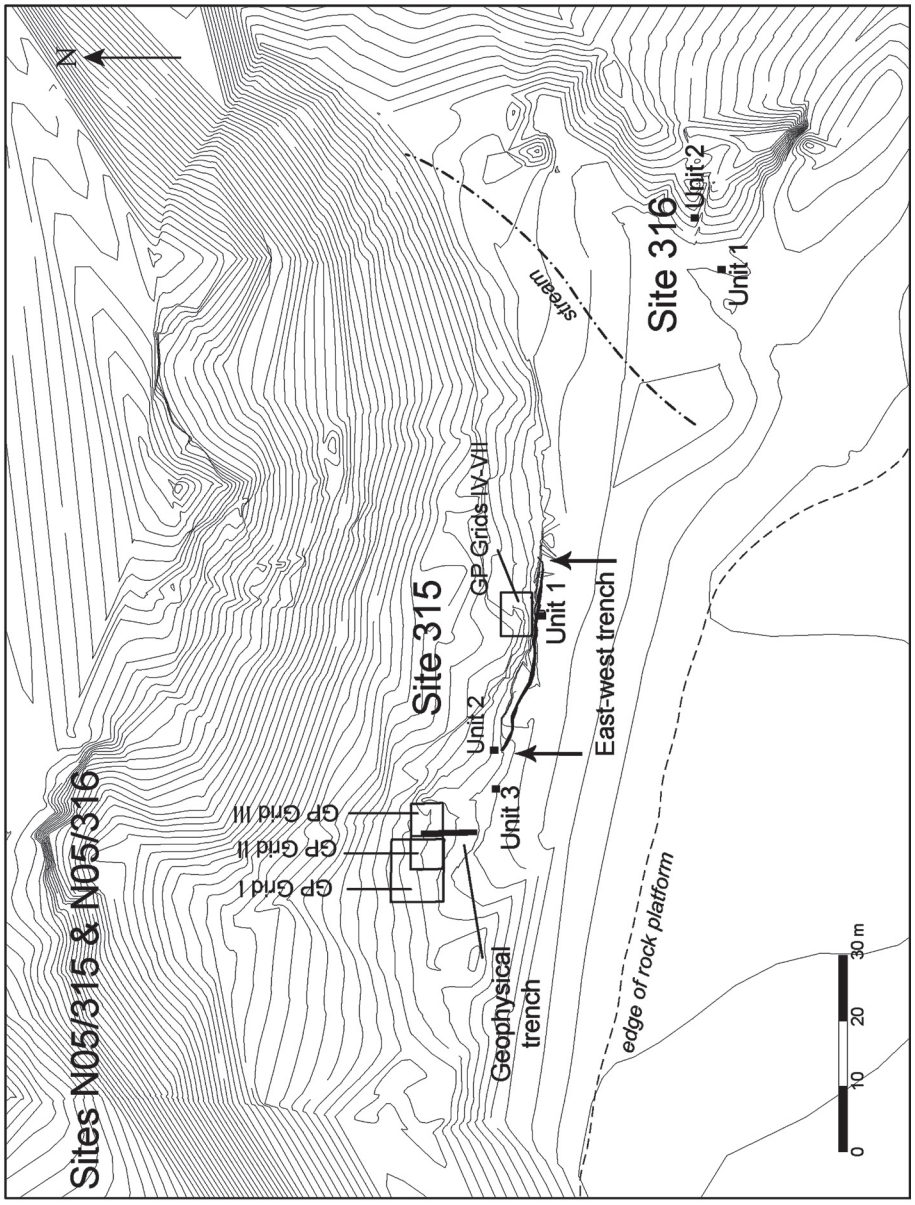

Figure 11: Site map of N05/315 and N05/316.

TABLE 6
SITE 315 STRATIGRAPHIC SEQUENCE
(cultural layers in italics)

Layer	Brief description
I	Sterile, fine light yellowish brown (2.5YR 6/3, dry), wind-blown sand
II	*Cultural occupation layer of very dark grey (7.5YR, dry) fine sand with abundant shell and charcoal and in situ features*
III	Sterile, light yellowish brown (10YR6/3, dry) fine sand with upward fining sequence
IV	*Buried A-horizon, dark greyish (10YR4/2, dry) fine sand, with some associated cultural activity, as indicated by small to moderate amounts of charcoal, fish bone, and shell*
V	Sterile pale brown (10YR6/3, dry), fine sand
VI	*Buried A-horizon, brown (10YR5/3, dry) fine sand, with some associated cultural activity as indicated by small to moderate amounts of charcoal, fish bone, shell, and in situ features*
VIIa	Sterile, light brown (10YR 6/3, dry) fine sand
VIIb	Sterile, light brown (10YR6/3, dry) alternating fine and coarse white sands with charcoal stain at upper boundary
VIIc	Sterile, light brown (10YR6/3, dry) primarily fine sand but also some coarse black (10YR 2/1, dry) terrigenous sand
VIId	Sterile primarily light brown (10YR6/3, dry) fine sand with irregular yellowish-red to strong brown staining
VIII	Sterile, gravely, light brown (10YR6/3, dry) sand with basalt cobbles and yellowish-red to strong brown post-depositional staining
IX	Sterile, light brown (10YR6/3, dry) fine sand with lenses of coarser sand and non-marine gravel; yellowish-red to strong brown staining; some charcoal mottles (non-cultural)
X	Sterile light brown (10YR 6/3, dry) predominantly fine sand
XI	Sterile, light brown (10YR 6/3, dry) coarse sand with lensing of terrigenous gravel and fine sand

Three cultural and nine natural layers were identified in this cross-section, which provides a record not only of cultural use of the local area but also of changing sedimentary conditions. The uppermost cultural layer (Layer II) was the thickest and suggestive of the most intensive cultural activity. This dark grey, organic-stained stratum extended the length of the exposed face and contained a number of cultural features (*N*=14) including earth ovens, fire hearths, pits, and distinctive concentrations (Table 7, Figs 12 and 13).

Figure 12: Site 315: mid-section of east–west profile showing an oven feature, which originated in Layer II.

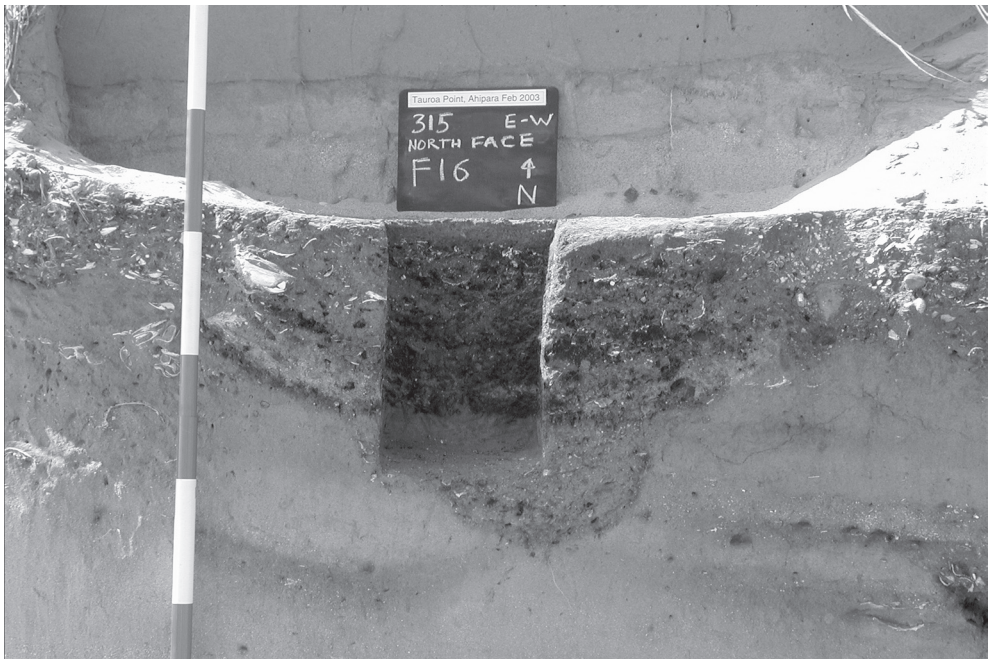

Figure 13: Site 315: close-up of pit feature in Layer II, which was bulk-sampled.

TABLE 7
FEATURES OBSERVED IN PROFILE AND/OR EXCAVATION
AT SITES 315 AND 316 IN 2003

No.	Type	Location	Layer	Shape (profile)	Length (profile, cm)	Max Depth (profile, cm)	Shape (plan)	Length (plan, cm)	Width (plan, cm)	Max Depth (excavation, cm)	Portion excavated
Site 315											
1	charcoal concentration	E–W trench, 2–3 m	IX	basin	n.a.	n.a.	oval	12	8	7	whole
2	charcoal concentration	E–W trench, 1–2 m	IX	irregular	n.a.	n.a.	irregular	30	30	3	whole
3	hearth	Unit 2	II	basin	n.a.	n.a.	oval	32	25	11	1/2
4	hearth	Unit 2	II	basin	n.a.	n.a.	oval	20	10	10	1/2
5	hearth	Unit 2	II	n.a.	n.a.	n.a.	n.a.	30	10	n.a.	undet.
6	oven	E–W trench, 10–12 m	II	basin	125	25	n.a.	n.a.	n.a.	n.a.	profile only
7	charcoal concentration	E-W trench, 1–2 m	II	basin	50	7	n.a.	n.a.	n.a.	n.a.	profile only
8	pit with shell	E–W trench, 1–2 m	II	basin	55	25	n.a.	n.a.	n.a.	n.a.	profile only
9	shell concentration	E–W trench, 11–12 m	II	irregular	70	20	n.a.	n.a.	n.a.	n.a.	profile only
10	oven	Unit 3	II	basin	n.a.	n.a.	circular	75	50+	30	1/2
11	pit with shell and charcoal	E–W trench, 9–10 m	II	basin	110	20	n.a.	n.a.	n.a.	n.a.	profile only

TABLE 7 continued

No.	Type	Location	Layer	Shape (profile)	Length (profile, cm)	Max Depth (profile, cm)	Shape (plan)	Length (plan, cm)	Width (plan, cm)	Max Depth (excavation, cm)	Portion excavated
12	pit with soil and some charcoal	E–W trench, 8–9 m	II	basin	80	25	n.a.	n.a.	n.a.	n.a.	profile only
13	probable oven	E–W trench, 11–12 m	VI	basin	150	30	n.a.	n.a.	n.a.	n.a.	profile only
14	hearth	E–W trench, 2–3 m	II	basin	60	25	n.a.	n.a.	n.a.	n.a.	profile only
15	pit	E–W trench 16–15 m	VI	irregular	25	30	n.a.	n.a.	n.a.	n.a.	profile only
16	pit	E–W trench, 12–13 m	II	basin	85	45	n.a.	n.a.	n.a.	n.a.	profile only
17	charcoal concentration	E–W trench, 18–20 m	VI	basin	105	8	n.a.	n.a.	n.a.	n.a.	profile only
18	charcoal concentration	E–W trench, 20–21 m	VI	lenticular	105	10	n.a.	n.a.	n.a.	n.a.	profile only
19	pit with charcoal and shell	E–W trench, 22–23 m	II	basin	50	25	n.a.	n.a.	n.a.	n.a.	profile only
87	hearth	Unit 2	VI	lenticular	20	10	n.a.	n.a.	n.a.	n.a.	profile only
93	oven	E–W trench, 4–5 m	II	basin	170	20	n.a.	n.a.	n.a.	n.a.	profile only
94	post-mould?	Unit 2	IV	undet.	n.a.	n.a.	undet.	30	7	undet.	1/2
95	post-mould?	Unit 2	IV	undet.	n.a.	n.a.	undet.	25	6	22	1/2

TABLE 7 continued

No.	Type	Location	Layer	Shape (profile)	Length (profile, cm)	Max Depth (profile, cm)	Shape (plan)	Length (plan, cm)	Width (plan, cm)	Max Depth (excavation, cm)	Portion excavated
96	post-mould?	Unit 2	IV	undet.	n.a.	n.a.	circular	10	10	26	whole
97	post-mould?	Unit 2	IV	undet.	n.a.	n.a.	oval	15	10	30	whole
Site 316											
50	oven	Unit 1	III	basin	125	40	n.a.	n.a.	n.a.	n.a.	profile only
51	oven	Unit 2	III	basin	n.a.	n.a.	circular	70	43	37	1/4
52	oven	Unit 2	V	basin	n.a.	n.a.	circular	35	24	15	<1/4

The cultural contents of Layer II were primarily shell, but fish bones and scales were also observed. Radiocarbon dating of this layer placed it in the period of about AD 1630–1960 (WK-13532, Table 8).

Cultural Layers IV and VI were considerably thinner and contained fewer features. The horizontal expressions of these two lower layers were also considerably more variable. Both are associated with buried A-horizons, which suggest that the occupations took place during periods of relative geomorphic stability. No unambiguous features were identified in Layer IV (four questionable post-moulds were observed) but five were present in Layer VI, including a probable oven and charcoal and shell concentrations. Two radiocarbon determinations place the Layer IV occupation in the period of about AD 1450–1650 (WK-13531, WK-13530, Table 8). A single sample from Layer VI provides an overlapping age range of AD 1490–1650 (WK-13538, Table 8).

The nine natural layers seen in the east–west profile at Site 315 vary considerably along the length of the profile. In general this variability reflects the active beach environment in which they formed. The lower layers in particular vary in terms of grain size; the presence, type, and abundance of clastics; and thickness. Further, some of the lower layers (e.g., Layers VIII and IX) were discoloured by a yellowish-red to strong brown (presumably iron) staining. The staining migrates in the profile rather than being associated with any particular sedimentary layer; it may relate to fluctuations in the water table. Overall, the Site 315 profile illustrates the transformation of an active beach foreshore to a relatively stable land surface, followed by the localised build-up of dune sands. The two lower cultural layers are associated with periods of relatively stability (i.e., little sand deposition), when A-horizons were forming. They are both overlain by fine, possibly wind blown, sands that represent periods of sediment mobility. The most significant period of sand build-up, however, took place after site abandonment, some time after AD 1650.

SITE N05/316

Cultural layers were also exposed in the high eroding eastern bank of the creek (Site 316). The exposed face was cleaned, photographed and drawn (Fig. 14), and the sediments were described. Two cultural layers were suggested in this natural profile, a definite upper layer (Layer III) and a possible lower layer (Layer V). The remaining strata are all clearly natural. As with Site 315, the lower layers of this profile reflect an active beach environment. The lower two stratigraphic units are notable for the amount of lensing, which suggests an active foreshore environment.

Initially we attempted to sample an earth oven exposed in the eastern end of the eroding dune (Unit 1), but after it had been photographed and drawn, the oven collapsed. Following this a 1 m^2 unit (Unit 2) was opened on the top of dune to sample the cultural deposit. Two cultural layers were confirmed by the excavation, separated from one another by sterile grey sands. Fire features were partially exposed in both cultural layers (Table 7) but no artefacts were recovered.

COMPARATIVE ANALYSES

In this final section I return to the four previously identified areas of interest: the geomorphological context of the sites, the chronology and periodicity of the occupations, the nature and duration of the activities represented, and linkages with other localities

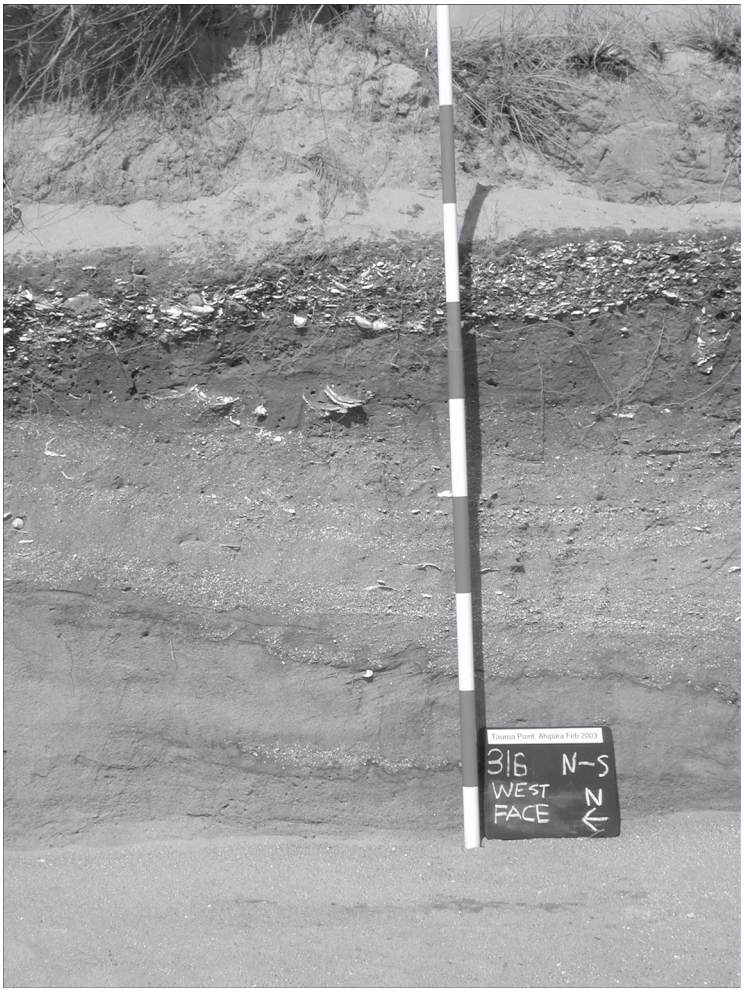

Figure 14: Site 316: exposed profile on the east side of the creek.

in the region. In doing so, I draw on the evidence from both the 1992 DOC excavations and our 2003 field study. As the artefact and faunal studies of both collections are still in progress these discussions are necessarily preliminary but provide a framework for further study and comparison with sites elsewhere.

GEOMORPHIC CONTEXT AND GEOPHYSICAL ANALYSIS

The sites investigated at Tauroa Point have been variably affected by local geomorphic processes. At Site 302, survey, mapping, and the site stratigraphy all point to the primacy of erosional processes, which appear to have been underway for some time. The isolated fire features indicate areas that were probably once the location of significant cultural deposition, but the associated cultural layers have since eroded. Similarly, surface artefacts lying on sterile dune sands point to marked deflation and subsequent displacement of

remnant objects. The Site 302 cultural deposits have been affected by erosional processes in part because of their topographic location, that is, on an angled dune slope. However, erosion may also be a consequence of the site's geographic position relative to the prevailing winds. On-going analyses of the surface assemblages are focusing not only on identification of the cultural activities with which they were associated, but also on the post-depositional histories of these materials. The stratigraphic sequence at Site 315, in contrast, suggests that the cultural layers here formed on a relatively stable coastal terrace, as indicated by the pre-settlement stratigraphic sequence exposed in the east–west profile. After the locality was abandoned, large-scale dune build-up (or perhaps mobilisation and seaward migration) occurred, effectively burying the cultural layers, and to a degree protecting them from deflation. Nevertheless, at some point in time, the coastal terrace was truncated by wave action, resulting in the vertical face we recorded, and the more seaward portion of the site was lost.

Of further interest at Site 315 is the inland extent of the cultural layers. In an effort to determine how far under the dune they continued, we carried out a geophysical survey of two relatively level areas above, and inland of, the east–west trending profile (see Fig. 11). Three techniques were trialled: magnetometry, resistivity and conductivity (see details in Allen *et al*. 2005), using a Geoscan Research RM15 unit mounted on a PAS Multiprobe assay and a FM36 Fluxgate Magnetometer. This work was directed by Hans Bader. The magnetometry survey provided the most useful results. The data were plotted in the field and further evaluated through a combination of coring and a 7.5-m-long trench into the dune.

Of particular interest was a strong magnetic anomaly identified in the Grid I–III area (see Fig. 11). This was found to be associated with a buried, standing 1.5-m-long metal waratah (or standard) fence post (a type said to have been developed in the 1940s), the top of which was lying 50 cm below the surface of the dune. Assuming the base of the post was about 50 cm below the ground surface when in use, this suggests a 1.5 m build-up of dune sands over the last five decades at most. The geophysical investigation, in combination with coring and trenching, identified a second interesting subsurface feature: a water-saturated, organic-enriched (but culturally sterile) sandy sediment at about 120–150 cm below the dune surface. The peaty layer apparently formed as the result of ground water seeping out underneath the dunes.

Geophysical testing in a second area immediately adjacent to the east–west trending profile was also informative. In Figure 15, the white area indicates open space to the sea-side of the profile, while the cultural layer with its charcoal and shell-rich sediments is indicated by black. The feature, which extends inland (to right on figure), is an earth oven (see profile in Fig. 16). Together with other geophysical tests, this survey demonstrated that the upper cultural layer at Site 315 (Layer II) is quite restricted in its inland extent, and continues under the dune (Layer I) for no more than a few metres. This suggests that the coastal terrace on which these layers formed has eroded considerably since abandonment. We presumably observed and tested the inland terminus of the post AD 1650 occupation, which will soon disappear altogether.

The geophysical analyses as a whole provided additional information, which complemented the excavation evidence. Most importantly, the geophysical investigation demonstrated that the cultural layers observed in the eroding Site 315 profile do not extend any distance under the dune. The layers we sampled in the east–west profile are remnants of what were once more extensive cultural strata, now eroded by wave and wind action. The geophysical readings also aided understanding of key environmental parameters that have affected the archaeological sites. The magnetic detection, and subsequent identification

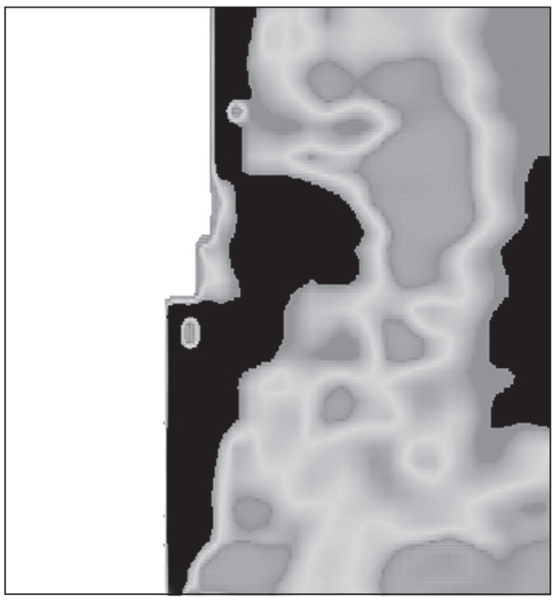

Figure 15: Site 315: magnetometry data from Grids IV–VII depicting an area about 7 m long inland (north) of the east–west trending profile.

through trenching, of a deeply buried metal fence post, for example, gave insights into the rate and direction of dune movement at this locality.

RADIOCARBON DETERMINATIONS

The 2003 field study adds eight new radiocarbon determinations to the prior assemblage of three (Table 8). The results indicate a lengthy cultural history for Tauroa Point, commencing in the late thirteenth to mid-fourteenth century AD and continuing into late prehistory. In a review of current thinking on the timing of Polynesian settlement of New Zealand, Higham and Jones (2004: 232) argue that no materials in secure contexts pre-date AD 1250–1300. Assuming this is the case, the initial Hummock B occupation is among the earliest securely dated Maori occupations in New Zealand. The basal Site 302 date overlaps with that of Site 301 (across the creek) at two standard deviations, but the mid-points of the determinations suggest that Site 302 is slightly earlier.

Interestingly, the Site 302 area appears to have been abandoned after the fourteenth century AD. However, between AD 1450 and 1650, Maori did visit Site 315 to the southeast, where two of the three stratigraphically distinct cultural layers date to this time period. Overall, the stratigraphic sequence at Site 315 indicates multiple visits and increasingly intensive use of this locality. The well-defined upper cultural layer (Layer II), dating after AD 1650, represents the most intensive use of the area (i.e., greatest duration or largest group of people or, less likely, multiple visits in close succession, which can not be stratigraphically distinguished). There are indications that even the comparatively prolonged period of cultural deposition represented by Layer II at Site 315 reflects a

TABLE 8
RADIOCARBON DETERMINATIONS FROM SITES 302 AND 315

Sample No.	Material[1]	Provenience	$\delta^{13}C$ (‰)	CRA (BP)	Calibrated Age Range (2 sigma)[2]
New Samples[1]					
Site 302					
WK-13534	*Leptospermum ericoides*	Site 302B, Layer IV, Feature 88	*-25.9* ± 0.2	746 ± 39	AD 1220–1390
WK-13536	*Leptospermum ericoides*	Site 302C, Unit 9, Layer I, Feature 111	*-25.4* ± 0.2	183 ± 36	AD 1660–1960
WK-13535	Varied: short-lived species	Site 302B, profile sample, Layer II, Feature 83	*-25.5* ± 0.2	218 ± 37	AD 1640–1960
WK-13533	*Leptospermum ericoides, Cassinia* sp.	Site 302A, Unit C18, Layer I, Feature 61	*-25.1* ± 0.2	239 ± 37	AD 1630–1960
WK-13537	*Leptospermum* spp.	Site 302C, Unit 7, Layer I, Feature 86	*-24.8* ± 0.2	178 ± 39	AD 1660–1960
Site 315					
WK-13531	*Cassinia* sp.	Site 315, E–W trench, Layer IV, Feature 13	*-25.6* ± 0.2	383 ± 40	AD 1450–1640
WK-13530	*Leptospermum ericoides*	Site 315, E–W trench, Layer IV, Feature 6	*-25.2* ± 0.2	356 ± 38	AD 1460–1650
WK-13538	*Leptospermum ericoides*	Site 315, Unit 2, Layer VI, Feature 87	*-25.8* ± 0.2	339 ± 33	AD 1490–1650
WK-13532	*Pittosporum, Leptospermum ericoides*	Site 315, E–W trench, Layer II, Feature 7	*-26.2* ± 0.2	233 ± 38	AD 1630–1960
Prior Samples[3]					
WK-2502	*Turbo smaragdus*	Site 302	2.7	950 ± 60	AD 1300–1480
WK-2501	*Turbo smaragdus*	Site 302	3.0	630 ± 60	AD 1520–1840
WK-2924	*Austrovenus stuchburyi*	Site 302	3.0	580 ± 50	AD 1630–modern

[1]Prior to submittal, the 2003 samples were identified to species by wood charcoal expert Dr Rod Wallace and long-lived species removed.
[2]All samples were calibrated using OxCal 3.10 (Bronk Ramsey 2005) and the Southern Hemisphere calibration curve ShCal 04.14c (McCormac *et al*. 2004). For shell samples, the New Zealand ΔR regional mean of -7 ± 11 years from the *Marine Reservoir Correction Database* (Reimer 2005) and the marine calibration curve "Marine 04.14c" (Hughen *et al*. 2004) were used.
[3]Prior results, from samples submitted by other analysts, were provided by the University of Waikato Radiocarbon Dating Laboratory.

relatively short-term event. No artefacts were recovered, suggesting a restricted set of relatively specialised activities. Secondly, in most cases (but not all) the features exposed in the Site 315 profile do not overlap. A considerably smaller area was exposed at Site 316, but the two recorded cultural layers here also appear to represent short-term activities. As at Site 315, no artefacts were recovered and the identified features did not overlap.

After AD 1650, Site 302 was once again re-occupied. Post-1650 age determinations were derived from the Area A occupation layer and from two of the Area C fire features, as well as from the upper layer of Hummock B. It seems reasonable to assume that these three spatially discrete areas, spread across the face of the dune, represent multiple occupations rather than a single large one. As with the upper cultural layer at Site 315, in at least two of the three Site 302 areas (Area A and Area C) there are few artefacts and little indication of overlapping features, suggesting the likelihood that these represent relatively short-lived visits to the coast.

VARIABILITY IN ARTEFACT AND FAUNAL ASSEMBLAGES

The locality of Site 302 offered pre-European Maori a fresh water source (the creek), a variety of marine resources, and relatively easy access for canoes. Similarly, the occupations that comprise Sites 315 and 316 were focused around a creek and located close to the inter-tidal rock platform. At both localities and through time, the emphasis was on extraction of marine resources, with fishing and shellfish gathering being particularly important. Despite these similarities, however, there are some intriguing differences between the artefacts, fauna, and features of the earliest occupation and those of later times. Variation is also apparent within the post-1450 occupations, although it is more subtle. Altogether nine cultural occupations (separated either stratigraphically or spatially) were identified at the three sites: three at Site 315, two at Site 316, two in Site 302 Area B, one in 302 Area A, and at least one in 302 Area C.

As noted above, the surface artefacts at Site 302 appear on current evidence to be largely, if not solely, related to the single early occupation. However, while the Area C surface artefacts are quite similar to those recovered in excavation from the lower layer of Hummock B, their age can not be definitively demonstrated at present. The majority of the 2003 surface-collected stone items are simple flakes. Detailed technological analyses are still in progress, but the presence of both tough stones (e.g., cherts and silicified tuff) and those that produce a sharp but brittle edge (e.g., obsidian) suggests that at least two, if not more, kinds of cutting and/or scraping activities are represented. Additionally, stone drill bits, in combination with bone fishhooks and small amounts of manufacturing debris, indicate fishhooks were being produced on-site. Overall, a range of activities and a settlement of some duration are suggested by the diversity of artefacts (cf. Thomas 1989; Holdaway 2004; Lockerbie 1959). In these respects, their almost exclusive presence within the early occupation is notable and serves as one line of evidence that a quite different kind of occupation is represented at this early point in time.

The fauna of the early occupation is also quite distinct. Along with fish and shellfish, seal, dog, bird, and possible small whale have been observed in our preliminary lab assessments. The moa remains noted above, while interesting, may pre-date the cultural occupation. Impressionistically, shellfish are more important in the post-1450 occupations and mass harvesting and drying may have been taking place at this later time, as suggested by some of the late fire features with large quantities of burnt shell. However, fishing also

continued in some localities, as demonstrated by the abundant fish bone recovered from the post-seventeenth century Area A occupation layer at Site 302.

Overall, the early occupation is differentiated from those of the post-1450 period in several respects. The abundant and functionally diverse artefacts found in the former suggest that a variety of activities took place in conjunction with the initial occupation. The varied fauna also points to a range of faunal extraction activities including shellfishing, fishing, and minimally scavenging (but possibly hunting) of seals and small whales. The presence of domestic dog is also notable. The very large oven we profiled dates to this early period and it seems likely that a second large oven upslope of Hummock B does as well. There are also indications that the earliest occupation was of longer duration relative to those of later times. In particular, Feature 74 with its multiple use-episodes, suggests an extended occupation or site re-use over a relatively limited period of time.

Contrasting with this early, functionally diverse, and relatively intensive occupation are eight post-1450 AD occupations. These layers contain almost no artefacts and no dog. In most cases, overlapping/inter-cutting features are rare. The fauna of these occupations appears to be largely shellfish, although fish remains are also represented to varying degrees. Nevertheless, variability is also apparent in these late occupations. At Sites 315 and 316 shellfish were prominent, while only small amounts of fish bones were observed. Shellfish was also abundant in Area C of Site 302, in both surface and excavated contexts, with cat's eye and pāua being particularly common, but fishbone was rare. In contrast, at Site 302 Area A, cat's eye and white rock shell dominated the shellfish assemblages and fishing was clearly an important activity.

FEATURE ANALYSIS

Similarities and differences in the occupations were also explored through a feature analysis. Those considered here consist primarily of unbounded fire features, small pits, and the occasional post-mould; there was little other evidence of domestic architecture. The present analysis is limited to features encountered in 2003 which, with the exception of Feature 74, date to the post-1450 period. While a number of these were excavated, some were observed and sampled in profile (see Table 9).

At least two types of purposefully constructed fire features were anticipated on the basis of early accounts of Polynesian cooking methods generally, and those of Maori specifically (see reviews in Allen 1992; Best 1923; Gillies 1983; Leach 1982: 153; Carson 2002): hearths and earth ovens. Hearths are defined here as 'open fire features'; often casual in construction, they were typically used for warmth or cooking, including roasting or boiling of small amounts of food, and sometimes for food drying. Earth ovens**,** in contrast, are 'closed fire features'; they require considerably more planning and effort to construct and are used for steaming food including, according to Best (1986), shellfish. Preparation of an earth oven or hāngi traditionally involved laying a fire and heating stones. Following this the food was placed in the oven (often in baskets or on top of old mats). More mats or covers might be added and finally soil was heaped over the top to 'close' the oven (Buck 1982: 376; Leach 1982). Earth ovens were particularly useful for cooking starchy vegetables, cuts of large animals, and/or large amounts of food (e.g., Best 1923; Carson 2002; Leach 1982; Fankhauser 1986; Wandsnider 1997). Some ovens had specialised functions, as for example those used in preparing tī or *Cordyline* roots.

Of interest here is how these two functionally distinct features might be archaeologically identified. An initial expectation was that there might be size differences, with hearths

TABLE 9
WOOD CHARCOAL DIVERSITY AND MOST ABUNDANT TAXA
IN FIRE FEATURES EXCAVATED IN 2003

No.	Type	Location	Layer	Excavated?	Taxa total	Three most abundant taxa (rank ordered)	Contents
Site 315							
6	oven	E–W trench, 10–12 m	II	profile sample	3	kānuka, mānuka, akeake	fire-altered rock
10	oven	Unit 3	II	yes	4	kānuka, mingimingi, māpau	fire altered rock
13	oven	E–W trench, 11–12 m	VI	profile sample	7	tutu, *Olearia*, *Cassinia*	n.a.
93	oven	E–W trench, 4–5 m	II	no	n.a.	not determined	fire-altered rock
3	hearth	Unit 2	II	yes	n.a.	not determined	n.a.
4	hearth	Unit 2	II	yes	6	kānuka, mānuka, *Cassinia*	n.a.
5	hearth	Unit 2	II	yes	n.a.	not determined	n.a.
14	hearth	E–W trench, 2–3 m	II	profile sample	5	kānuka, mānuka, *Coprosma*	fire-altered rock
87	hearth	Unit 2	VI	yes	1	kānuka	n.a.
Site 316							
50	oven	Unit 1	III	collapsed	n.a.	not determined	fire-altered rock
51	oven	Unit 2	III	yes	4	*Cassinia*, kānuka, putaputāwētā	fire-altered rock
52	oven	Unit 2	V	yes	11	*Cassinia*, vine rata, mataī,	fire-altered rock
Site 302							
60	oven	302A Unit E15	I	yes	3	*Casssinia*, kānuka, akeake	fire-altered rock, shell
61	oven	302A Unit C18	I	yes	2	kānuka, mānuka	fire-altered rock
62	oven	302A Unit C18	I	yes	3	kānuka, mānuka, *Cassinia*	fire-altered rock, shell
67	oven	302A Unit C16	I	yes	4	kānuka, akeake, *Coprosma*	fire-altered rock
74	oven	302B profile samples	IV	profile sample	20	kānuka, mataī, akeake	fire-altered rock
84	oven	302B Unit 3	II	yes	n.a.	not determined	fire-altered rock
68	hearth	302A Unit I20	I	yes	n.a.	not determined	shell
69	hearth	302A Unit I17	I	yes	6	kānuka, māpau, others	fire-altered rock, shell
70	hearth	302A Unit I17	I	yes	n.a.	not determined	n.a.
71	hearth	302A Unit I17	I	yes	n.a.	not determined	n.a.
85	hearth	302C Unit 7	I	yes	3	kānuka, pūriri, mataī	n.a.
86	hearth	302C Unit 7	I	yes	2	kānuka, mānuka	fire-altered rock
110	hearth	302C Unit 6	I	yes	3	kānuka, pūriri, mataī	fire-altered rock

typically (but not necessarily) being smaller than earth ovens. A second expectation stems from the temperatures typically associated with the two feature types. Closed fires often produce very high heats, which sometimes create distinctive oxidised rims or bases, as seen in the large oven feature at Site 302B (Fig. 9). Given the different uses associated with each feature type, a third expectation was that different fuels might be associated with different functions. Fuels used in hearths might be non-selective if the aim was to provide warmth or to cook small amounts of food. Those used in fish or shellfish preservation, in contrast, might require smoky species. Hamilton (1908:12), for example, describes pāua being strung on lines of flax and dried in the smoke of fires for future use. Buck (1982:106), in contrast, was of the opinion that Maori always sun-dried their fish. Historic references given in Trotter and McCulloch (1997: 65) are consistent with Buck, although the authors themselves indicate that fish were preserved by both drying and smoking. Ovens, in contrast to hearths, require large amounts of fuel and hot, long-burning species might be preferred, potentially resulting in distinct wood charcoal assemblages.

Finally, other feature contents might also vary with function, although the possibility that feature fill may be unrelated to feature use needs to be considered (Allen 1992: 191–201). Cooking stones, for example, were an important component of earth oven cooking. Care had to be taken in selecting rocks that would not explode and/or shatter during the cooking process. An experimental study by Gillies (1983) further suggests that small cobbles are the most effective in absorbing and retaining heat. Hearths in contrast might lack stones; charred bone and shell would suggest open firing conditions and could inform on palaeo-temperatures (McCutcheon 1992). Using the foregoing as a model of expectations, feature size, wood charcoal assemblages, and other contents were analysed for patterning that might reflect function.

Feature length (in profile) or diameter (in plan) at the upper boundary was used as a measure of size; estimates were made for incompletely excavated examples based on the portion of the feature present. The results were plotted by 20 cm size classes. At Sites 315 and 316, a bimodal distribution is indicated with no features in the 80 to 120 cm size range (Fig. 16). At Site 302, a bi-modal distribution is again suggested, with a set of small features that range between 20 and 65 cm and a second set of larger features that exceed 80 cm in diameter (Fig. 17). The early oven exposed in profile in Hummock B (Fig. 9) stands out as an unusually large feature. These findings suggest that two functional types may be represented in the assemblage of Tauroa features, consistent with the expectations outlined above.

Following this, Rod Wallace identified charcoal samples from 14 fire features, 5 small and 10 large, defined as above. Twenty-two taxa were recovered from the study area as a whole, with kānuka (*Kunzea ericoides)* the most common species, followed by *Cassinia leptophylla;* both occur in the general region today. The analysis showed that kānuka was the most common species in both the large and small features. *Cassinia* was somewhat more common in large features, but the relationship was not statistically significant. The most diverse assemblages came from the five use-episodes found in the very large, early oven (Feature 74) at Site 302, where the number of taxa in individual sub-features varied from 5 to15. Overall, the patterns of wood charcoal diversity did not follow the expectations outlined above; fuel type does not co-vary with feature size and other potential indicators of function (e.g., cooking stones).

Variation in feature contents was also evaluated, although only a preliminary assessment is possible at this time, as the faunal remains of the excavated features have not yet been studied in detail. In general, large concentrations of shell were not commonly observed in association with those fire features that were excavated or observed in profile (contrasting

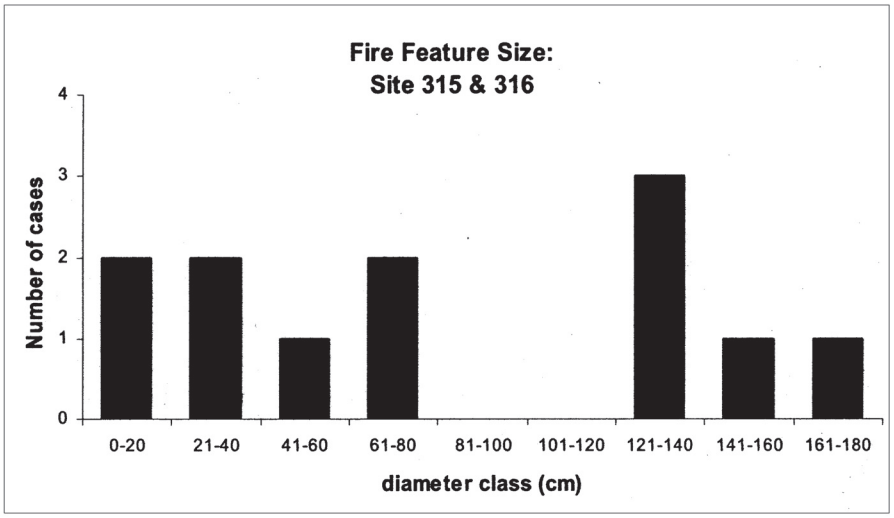

Figure 16: Size distribution of Site 315 and 316 fire features.

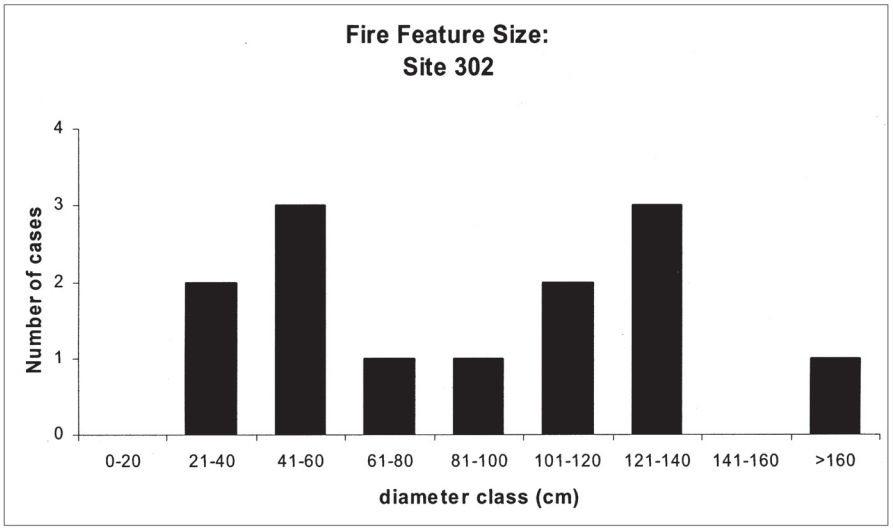

Figure 17: Size distribution of Site 302 fire features.

with the surface features recorded in Table 2). Further, in the limited number of cases where shells were common components, they occurred within both large and small features (see Table 9). On the other hand, fire-altered rocks, interpreted as cooking stones, were routinely associated with large fire features, with one exception (Feature 13). In contrast, they were only found in one-third of the smaller fire features.

Overall, the feature analysis was successful in identifying two distinct size classes of features. The analysis of feature contents was of more variable success. Larger features routinely contained stones, consistent with an oven-like function. However, some small features also contained numerous stones and several interpretations are possible: 1) Closed fire features (e.g., ovens) may occur in a range of sizes, in which case the bimodal size distributions indicated in Figures 16 and 17 relate to something other than mode of cooking; 2) cooking stones may also be useful in small open hearths, and thus be a poor indicator of the two kinds of cooking (closed versus open); 3) some of the smaller fire features may be oven rake-out. Finally, little selectivity in fuel is indicated in this analysis, with locally available and common taxa typically being the best represented.

EXTERNAL RELATIONS

A significant difficulty with coastal midden sites like those of Tauroa lies in relating them to other settlement components. As a first approximation, raw material sourcing offers one means of modelling linkages between the Tauroa coastal occupations and other settlement areas, albeit at a fairly gross scale.

Analysis of the 2003 surface collections was undertaken to determine the range of raw materials and their source areas by field school student Rebecca Phillipps (Phillipps 2003). The 344 lithic artefacts were initially sorted into groups based on in-hand features. Samples of these groups were further analysed in thin-section. Altogether, eleven rock types are represented, with silicified tuff, chert, and obsidian being the most common. Phillipps found that characteristics of the silicified tuff were consistent with an origin in the Houhora Complex, a source area 40 km away. The source of the cherts was more ambiguous, but most of it was at least attributable to Northland generally. However, two distinctive samples pointed to two specific sources, one in the Herekino Gorge region and the other in the Houhora Complex.

Some of the obsidian came from Northland, but the majority was imported from Mayor Island, 375 km to the southeast. This finding is consistent with evidence from other early sites throughout the country, where Mayor Island obsidian typically represents more than 50% of any given assemblage (Sheppard 2004; Green 1964). However, what is notable in this particular case is the proximity of three local sources (Weta, Waiare/Pungaere and Huruiki; after Jones 2002) in the Northland region, none of which are well represented at Tauroa.

Among the more significant findings were multiple connections with Houhora, represented by both the cherts and silicified tuff (Phillipps 2003). Given that Mayor Island obsidian is also well represented at Houhora (Furey 2002), specimens found at Tauroa could have been obtained through Houhora. However, Mayor Island obsidian is wide-spread in the Far North, having been recorded also in several early Aupouri Peninsula sites (e.g., Coster 1983). As a whole, the sourcing results suggest moderately strong northeast directionality to interaction patterns on the part of the early Tauroa Point Maori. Weaker connections with more southern areas of the western coast are indicated by the Herekino chert. Interestingly, historical records from 450 years later also point to strong social relations

between Tauroa and both areas as far south as Hokianga and north towards Houhora (R. Wichman pers. comm. 2005). The lithics excavated in 1992 are now being analysed for source. This information, along with the technological analysis of the two assemblages now in progress, should lead to further insights.

TAUROA POINT IN REGIONAL CONTEXT

The early occupation at Site 302 is contemporaneous with the region's earliest archaeological sites. It provides further evidence that Maori populations were well-dispersed across the Northland region at this time, utilising a range of coastal environments. As with the early site at Twilight Beach (Taylor 1984) to the north, fishing was important at Tauroa, some exploitation of seal and whale (scavenging?) took place, and domestic dogs were present. Similarly, the two sites share evidence for on-site fishhook manufacture and produced varied flake stone tools rendered in chert and/or obsidian. Taylor (1984: 224) interprets Twilight Beach as "a single short summer season" and suggests that during the remainder of the year Maori populations were settled elsewhere. Tauroa experiences similar seasonal conditions, with the winter months being considerably cooler and windier — probably rather unpleasant living conditions. However, at this juncture no particular season of use is indicated at Tauroa and the duration of the early occupation is uncertain. Nevertheless, a case can be made that the earliest cultural layer represents an occupation of longer duration, and functionally more varied, than those of later times.

These findings are consistent with Coster's (1989) previous assessment of the western Aupouri region, in which he suggests that between 500 and 300 years ago, Maori populations began to move inland, settling the "unstable, but forested and relatively fertile, Holocene dune belt." Some areas saw considerable horticultural development at this time, as for example the extensive ditch systems in the Motutangi wetlands about 5 km south of Houhora (Barber 1984). Similarly, settlement in the Pouerua region was well underway by the fifteenth century (Sutton *et al*. 2003; Sutton 1993), and defensive features became more common over time, suggesting both increasing population sizes and the need to protect key agricultural resources from competitors. Coastal settlements, in contrast, were apparently quite limited (at least in Aupouri), with Coster reporting only 1 coastal site out of 14 occupied during this interval. An interesting proposition of Goff and McFadgen (2003) is that one or more large earthquakes and related tsunamis in the fifteenth century led to the abandonment of a number of sites in the Cook Strait region, and possibly other coastal areas as well.

Site 315 at Tauroa, however, indicates that some areas of coastal Northland continued to be used for shellfish gathering and fishing between AD 1400 and 1650, albeit non-intensively, a pattern that is further supported by evidence from Kokohuia to the south (Leach *et al*. 1997). The two Site 315 layers dating to this time period (Layer IV and VI) reflect quite limited cultural deposition, but the possibility that evidence of more substantial cultural activities has eroded cannot be altogether discounted. Specifically, if the shoreline has been eroding for some time, and Maori activities here followed the retreating shoreline, then what we observed of Layers IV and VI in the east–west profile may not be representative of the intensity of cultural activities at these earlier points in time. Moreover, some of the many other midden sites recorded on this coast could date to this time period.

After AD 1650, the inland Aupouri dunes were abandoned, perhaps because of increasing dune instability. Coster (1989) observes that the number of coastal sites increases at this time, as does use of the more stable volcanic soils; for example, areas around Houhora

and the North Cape Block. Leahy and Walsh (in Davidson 1982:16) report four main settlement areas between Ahipara and Hokianga centred around "harbours and river valleys and some coastal areas", although these are undated. The later Tauroa occupations at Site 302 are consistent with these findings, with significant occupations at both Site 315 and 302 and, in the case of Site 302, use of multiple areas of the dune. In general, the evidence points to short-term occupations, which were fairly specialised in nature and focused on the extraction of marine resources, especially shellfish but also fish.

Overall, Tauroa Point has been an enduring area of Maori occupation and resource use, but one where settlement duration has waxed and waned, across both time and space. The most striking feature of the three sites investigated here is the significant difference in characteristics between the earliest occupation of the thirteenth to fourteenth century and those that followed. Further, if the short chronology of New Zealand is assumed (which may not be appropriate), then the initial functionally diverse settlements on this coast were quite short-lived (150 years or less) and gave way to more specialised and ephemeral coastal use after AD 1450, a pattern that was to endure for more than 350 years.

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