# Archaeology of the Wellington Conservancy: Kapiti-Horowhenua

## A prehistoric and palaeoenvironmental study

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# Abstract

The Kapiti-Horowhenua region is the southern part of the dune belt that borders the southwest coast of the North Island. The dune belt is a dynamic environment and dune-building phases are the key to its natural and cultural character. Archaeological sites are dated by their stratigraphic relationship with dune-building phases and by oral tradition.

Two cultural periods, an early and a late, are recognised. Early period sites are older than or contemporary with the advance of Old Waitarere Dunes (ca. 400-500 calendar years BP). The inferred early settlement pattern is of centralised sites with houses and exhibiting a range of economic activities including food gathering and processing, cooking, and artifact manufacture. Sites are generally located closer to the sea than in later times. Stone resources are imported from outside the region, including the South Island. The environment is well-forested sand dunes with interdune lakes and lagoons. Food is plentiful and obtained from the forest, sea shore, lakes and lagoons. Satellite sites include coastal food gathering sites.

Late period sites are identified from oral accounts and date to just before and after European contact. Many, described as pa, are located along waterways and the inner boundary of the dune belt. The pa sites contrast with the earlier sites by the sparse occurrence on the pa of shell midden, fish and bird bone, and imported stone. The settlement pattern is dispersed. Environmental change, in particular forest clearance and dune advance, is suggested as a possible reason for the shift inland of the focus of settlement.

Future research is proposed with the intention of clarifying aspects of the natural and cultural history of the dune belt and their interrelationship. Of particular importance is the mapping, dating, and relationship to sites of the Old Waitarere Dune-building Phase. Old Waitarere dunes advanced during the time of human occupation and may bury early sites.

# 1. Introduction

This report describes the pre-European Maori archaeology of the Kapiti-Horowhenua region of the Wellington Conservancy. Although many of the known archaeological sites in Kapiti-Horowhenua are not on land administered by the Department of Conservation, they are on land in which the Department has a statutory interest, such as the coastal region, or a general advocacy interest, such as protection of wetland habitats. The range of site types on land managed by the Wellington Conservancy is unknown, but it is unlikely to represent the entire range of site types across the landscape.

The Kapiti-Horowhenua region is the southern part of the dune belt that borders the southwest coast of the North Island (Department of Conservation 1994). It extends from the Manawatu River in the north to Paekakariki in the

south, a distance of some 65 km, and has a maximum width of 10 km (Figure 1). To the west is the Tasman Sea, to the east are the Tararua Ranges which rise to more than 1500 m. The region corresponds broadly with the southern part of the Foxton Ecological District (Ravine 1992).

The dune sands overlie alluvial gravel and pre-Holocene sandstone along their inland edge (Adkin 1948; Stevens 1988), and are broken along their length by substantial deposits of river alluvium (Adkin 1948). They are the single most important factor influencing land form; the age and distribution of vegetation, wetlands and soils; and where the Maori lived in pre-European times. Understanding them is a prerequisite for understanding both the natural and cultural history of the region.

The main sources of information about archaeological sites, their distribution and content, are published accounts based on fieldwork carried out more than 40 years ago, particularly by Adkin (1948) and Beckett (1957). A second important source of information is the author's own notes and observations collected over the last 30 years, and these are referenced in the text as *unpublished notes*. Sites have been systematically recorded in the New Zealand Archaeological Association site recording scheme only near Waikanae and in parts of the Horowhenua (Figure 1) (Smart 1962, Butts *et al.* 1979).

Emphasis is given to the environmental context of archaeological sites for two reasons: the first is because the prehistoric environment is an essential part of archaeological information. People in pursuit of their everyday day lives exploited and changed their environment to meet their needs for food, clothing and shelter and their culture was, in turn, conditioned by it. The flow of information in this approach is two way: archaeological remains provide an historical perspective for the landscape as it appears today; and understanding the natural and cultural processes which have shaped the landscape is important for the interpretation of human and natural history.

The second reason is to provide the information needed for dating. Radiocarbon dates of archaeological sites from throughout the Conservancy (Appendix 1) indicate first human settlement about 450 years* before the arrival of Captain Cook in 1769AD, a date that is close to the date for initial settlement of New Zealand (McFadgen, Knox and Cole 1994). The shortness of this period severely limits the effectiveness of radiocarbon dates in defining the order of archaeological events. Radiocarbon dates are therefore supplemented by geological events to which the sites can be stratigraphically related.

Many of the archaeological sites are in useful stratigraphic association with windblown sands, and stream gravels, sands and silts which may be up to 6500 years old. These deposits contain the record of widespread natural events that are useful both for dating and for determining the environmental context of sites.

To date archaeological sites using stratigraphy, it is important to understand the nature and origin of the deposits which contain them. This approach, of understanding 'off-site' stratigraphy, contrasts with normal archaeological investigations that attempt to understand 'on-site' stratigraphy, i.e., the record

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* All ages and time intervals are given in calendar years unless otherwise indicated. Radiocarbon ages are indicated by 'radiocarbon years BP'. For explanation see Appendix 1.

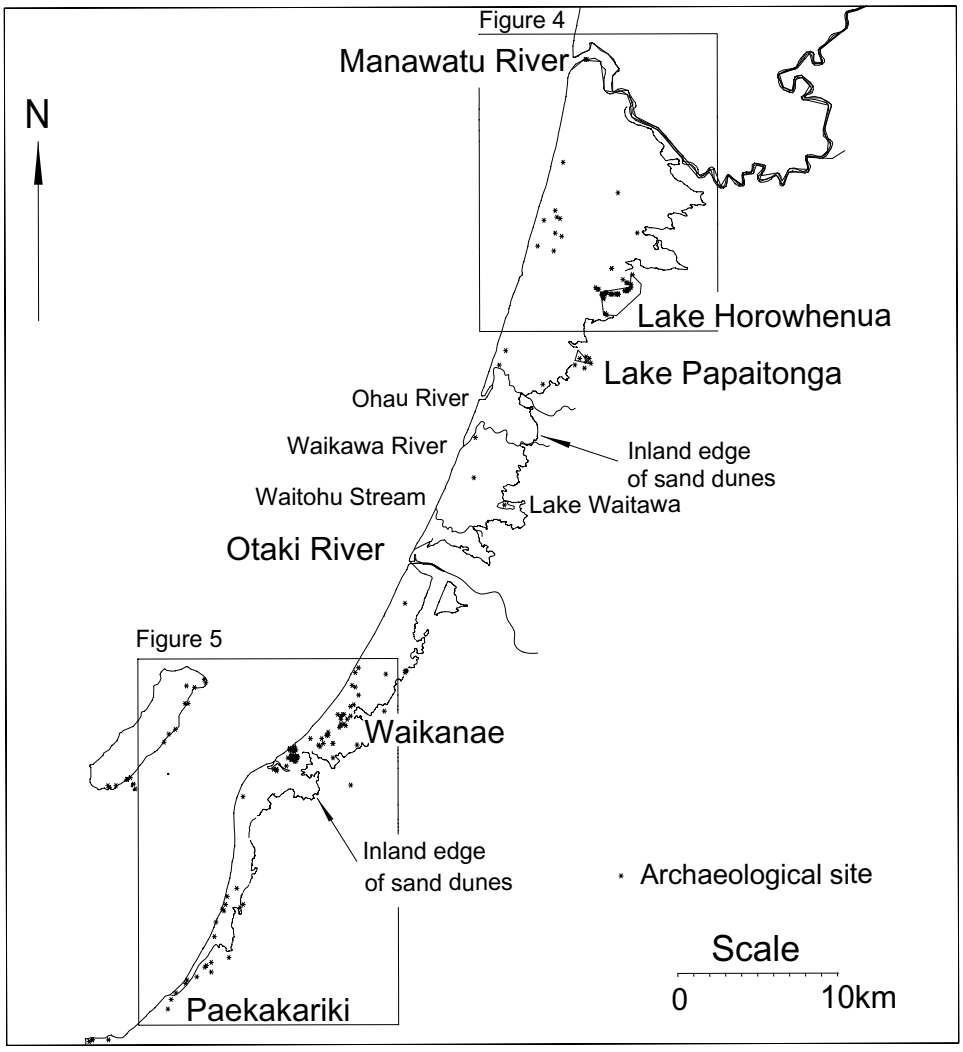


FIGURE 1. THE KAPITI-HOROWHENUA REGION SHOWING THE DUNE BELT AND ARCHAEOLOGICAL SITES RECORDED IN THE NZ ARCHAEOLOGICAL ASSOCIATION SITE RECORDING SCHEME. INLAND EDGE OF SAND DUNES APPROXIMATE ONLY AND BASED ON LAND RESOURCE INVENTORY DATA.

of pits, postholes, and midden layers, etc. found on sites. An additional benefit of understanding off-site stratigraphy is that it extends our knowledge about the natural environment in which pre-European Maori lived, and from where they obtained their food and raw materials.

Natural processes (such as sea level changes, storms, and lightning strikes), and cultural processes (such as fires and hunting), affect the natural environment. Their understanding is often necessary for the interpretation of archaeology. In particular, the history and effects of natural processes prior to human settlement may help to distinguish between events caused by natural processes and cultural processes after human settlement.

The report concludes with a discussion of possible lines of research which focus broadly on the environmental processes and archaeological history of the Kapiti-Horowhenua sub-region. The most pressing need is for a thorough understanding of the processes of environmental change which have operated over the last 6500 years.

# 2. Dune sequence

The dune sands are derived principally from material brought to the coast by rivers and moved along the coast by wave action. Much of the sand from the rivers has been blown inland by the prevailing northwesterly winds on to the beach and foredune. As the sand accumulated, the shoreline generally grew seawards, and the foredune increased in width and height. The oldest sands, the Foxton dunes, began accumulating about 6500 years BP (Muckersie and Shepherd 1995) and they form the innermost belt of dunes between Paekakariki and the Manawatu River (Fleming 1961; Cowie 1963; McFadgen 1985; Stevens 1988; Wright 1988). The subsequent history of dune formation differs slightly between the northern and southern parts of the sub-region.

In the northern part of the region successive foredunes probably grew until they became unstable and advanced inland, blown by the wind over the surface of earlier stable dunes. There are three phases of dune-building younger than the Foxton dunes named, in order of decreasing age, Motuiti, Older Waitarere, and Younger Waitarere (Figure 2). The profile development of ground soils on each dune-building phase is remarkably uniform (Cowie 1963). Each phase is identified by its degree of soil profile development, with dunes of older phases having more developed soils than dunes of younger phases. The soils illustrate the episodic nature of dune advances and are one of the most studied chronosequences of dune soils in New Zealand (e.g., Cowie 1968; Syers *et al*. 1970; Goh *et al*. 1976).

The oldest dunes are generally the furthest inland. Motuiti dunes have a high content of sea-rafted Taupo Pumice lapilli, which indicates that the sand comprising them was probably accumulating at the time of the Taupo Pumice eruption (Healy *et al*. 1964; Froggatt and Lowe 1990) ca. 1720 years BP (Sparks *et al*, 1995). They were advancing over Foxton dunes about 900 years BP and they bury archaeological remains along their inland edge. Older Waitarere dunes were advancing inland over Motuiti dunes about 400 years BP (McFadgen 1985). Younger Waitarere Dunes overlie European-introduced artefacts and plants and are younger than about 150 years BP (Cowie 1963; McFadgen 1985).

In the southern part of the region the dunes lie seawards of an old cliff cut by the sea at the end of the post-glacial sea level rise (Adkin 1951, Te Punga 1962), probably about 6500 years BP (Gibb 1978b).

Near Waikanae (Figure 3), the foredune at the time of the Taupo Pumice eruption, the 'Taupo Dune', is still reasonably intact and a prominent feature of the landscape just seawards of Foxton dunes (Stevens 1988). Motuiti and Waitarere dunes between the Taupo Dune and the sea are not separately distinguished. Sand, tentatively identified as Old Waitarere, overlies the Taupo Dune and shell middens just north of the Waikanae River and has shell middens on its upper surface. Further south, between Paekakariki and Raumati, the Old Waitarere dunes are rich in sea-rafted Taupo Pumice lapilli. They have been eroded back by the sea and for the whole length of the exposed section, which is several hundred metres long, they overlie Foxton soils and old shell middens. The richness of the pumice is probably a good indication that the Old Waitarere dunes derive from erosion of the old Taupo Dune.

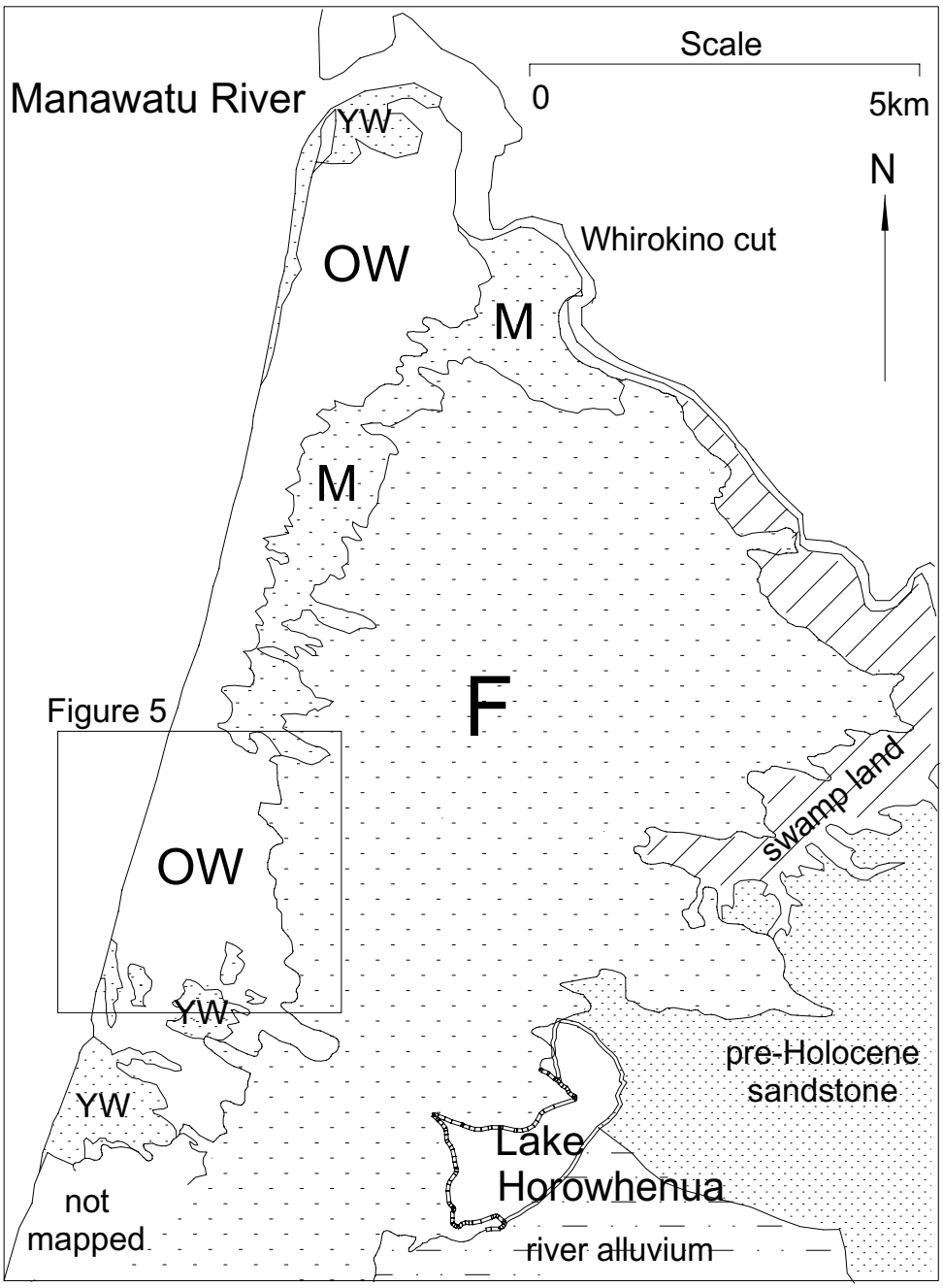


FIGURE 2. SKETCH MAP SHOWING DUNE BUILDING PHASES IN THE HOROWHENUA. F = FOXTON, M = MOTUITI, OW = OLD WAITARERE, YW = YOUNG WAITARERE. MAP BASED ON LAND RESOURCES INVENTORY, COWIE AND FITZGERALD (1966), ADKIN (1948).

In a bulldozed section in Old Waitarere dunes (A–B, Figures 3 and 4) just north of Fisherman's Table restaurant at Paekakariki, the Taupo Pumice clearly defines the dune bedding. Judging from the angle of slope of the bedding (ca. 20°), the shoreline at the time of the dune advance was more than 50 m seawards of its present position. The dunes overlie shell middens and have shell middens on them (Site R26/255). Radiocarbon dates of shells from the middens indicate that the age of the middens is about 300 to 400 years BP (Figure 4). Between 1854 and 1978, the sea cut some 60m into the sand dunes at Paekakariki (Gibb 1978a). The southern end of the dune belt would thus appear to have undergone marine erosion, with sand advancing over older stable dunes, for about the last four centuries.

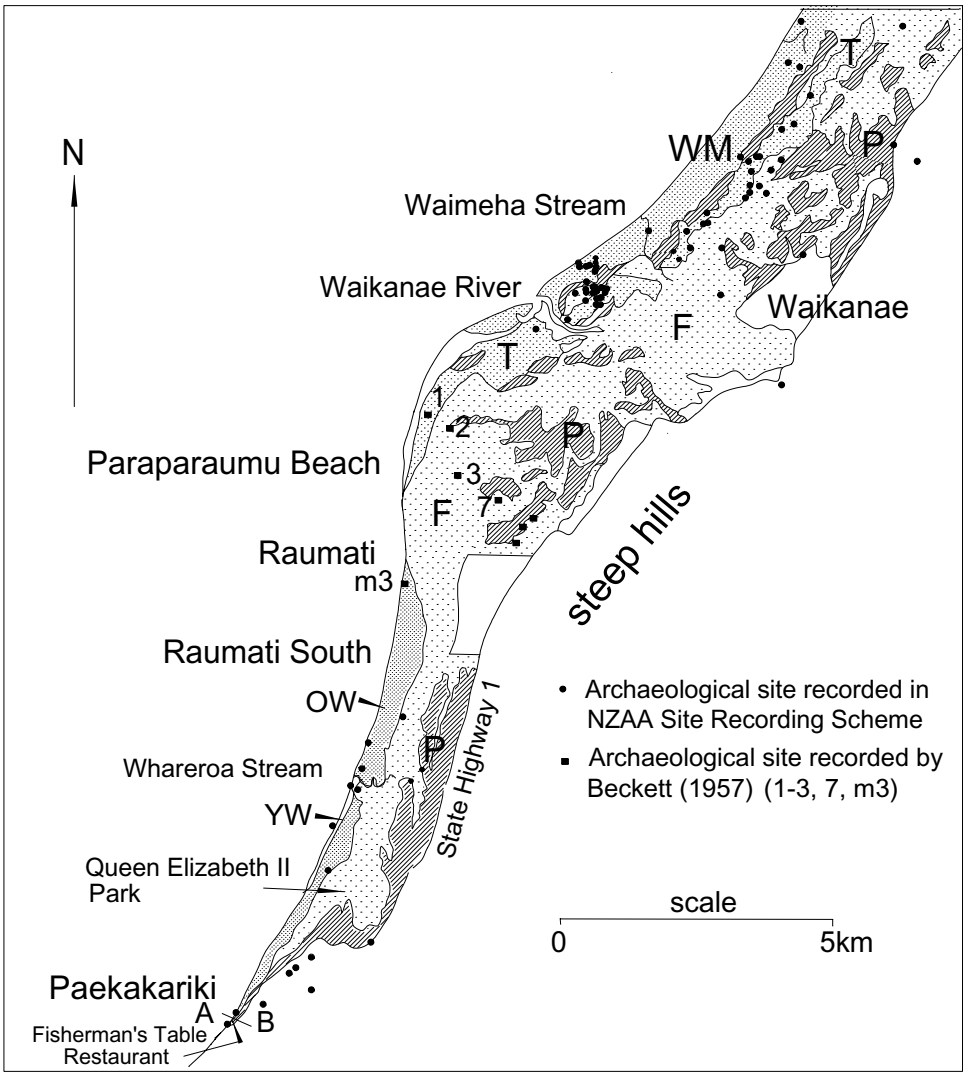


FIGURE 3. SKETCH MAP OF SOUTHERN END OF DUNE BELT SHOWING 5 DEPOSITS OF WINDBLOWN SAND: YW = YOUNGER WAITARERE, OW = OLDER WAITARERE, WM = WAITARERE-MOTUITI (NOT SEPARATELY DISTINGUISHED), T = TAUPO, F = FOXTON. P = PEAT SWAMP. NOTE THAT THE OLD SEA CLIFF FORMED AT THE END OF THE POST-GLACIAL SEA LEVEL RISE FOLLOWS MORE OR LESS THE LINE OF STATE HIGHWAY 1. MAP COMPILED FROM STEVENS (1988), WRIGHT (1988), AND AUTHOR'S NOTES (UNPUBLISHED). A–B = CROSS SECTION SHOWN IN FIGURE 4.

Other remains, which suggest that the erosion and dune advance may be part of an even longer trend, are south of Paekakariki, just south of Pukerua Bay (Figure 1). The author recalls, from a visit some years ago, a mantle of sand at the top of the cliffs more than 100 metres above the sea. The sand was soft and unconsolidated, and appeared to be Holocene in age. To get the sand to its present position on the cliff tops would suggest a foreshore, south of Paekakariki and around the Pukerua headland, much sandier than the rocky shore and uplifted boulder beach that exist today.

Sand accumulation between Raumati South and Paekakariki since the Old Waitarere dune advance is minor. Younger Waitarere sand forms only a narrow coastal strip (Figure 3).

The dune-building phases of the Manawatu and Horowhenua sand country match dune accumulation and stream and river aggradation in other parts of

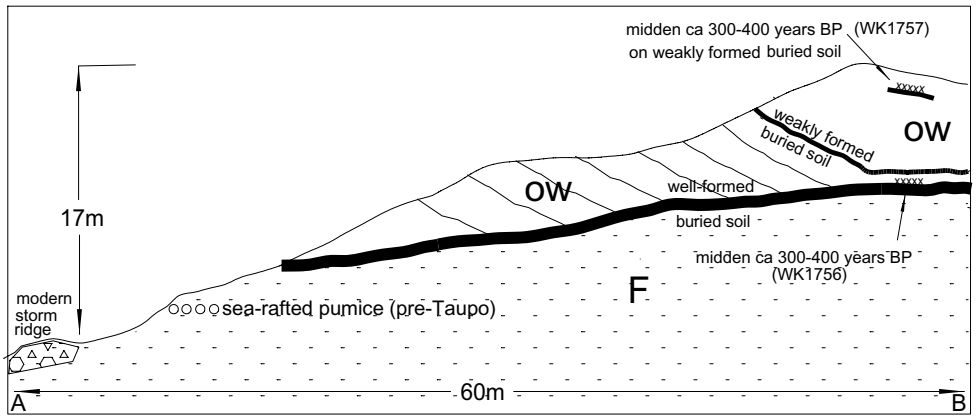


FIGURE 4. GENERALISED SECTION THROUGH SAND DUNES JUST NORTH OF FISHERMAN'S TABLE RESTAURANT AT PAEKAKARIKI. DUNE BUILDING PHASES AS IN FIGURE 2: F = FOXTON, OW = OLD WAITARERE. AGES OF MIDDENS (SITE R26/255) BASED ON CALIBRATED RADIOCARBON DATES OF SHELLS (WK1756, WK1757, APPENDIX 1). NOTETHE WELL-DEFINED DUNE BEDDING PARALLEL TO THE WEAKLY-FORMEDBURIED SOIL IN THE OLD WAITARERE DUNES.

New Zealand (McFadgen 1985), informally referred to here as depositional episodes. Taupo and Motuiti dunes correlate with the Tamatean depositional episode (1800 to 450 years BP), Older Waitarere dunes with the Ohuan depositional episode (450 to 150 years BP), and Younger Waitarere dunes with the Hoatan episode (150 years BP to the present day).

Each episode has two phases: an unstable phase when sediments were accumulating, and a stable phase when soils were forming. In many places later deposits bury earlier deposits and soils. The stratigraphic boundaries between the episodes are the tops of the buried soils. A soil not buried by a later deposit is a ground soil, and the ground soil for each episode has a characteristic degree of soil profile development. The buried and ground soils represent old surfaces on which people lived, and the depositional episodes therefore provide a useful stratigraphic framework for correlating and dating the archaeological remains found on them.

The Tamatean depositional episode began well before the arrival of humans in New Zealand and its dunes were unstable at the time of human settlement. Yet, despite the presence of humans in coastal areas and their burning of coastal vegetation, Tamatean dunes became stable and developed a forest cover after human settlement. On Chatham Island, the sequence of depositional episodes matches the mainland sequence (McFadgen 1994), even though human settlement was one depositional episode later than on the mainland. In New Zealand as a whole, human activity appears to be unimportant as a cause of the depositional episodes and there is no reason to think that the Horowhenua and Kapiti dunes are any different. As in other parts of the country, the episodes appear to be principally a response to natural processes which have acted on the coastal landscape for millennia, and which still operate.

Whilst the cause of the episodes may be unrelated to human activity, the sand dune topography in the Horowhenua/Kapiti region has influenced people in their choice of places where they have lived and worked. Lakes and lagoons trapped by sand were attractive sources of food (Adkin 1948), and presumably of raw materials for tools and clothing. Some of the lakes and lagoons were

routeways for canoe travel (Beckett 1957), and island pa provided security against neighbours (Adkin 1948). The downside was that dune advances buried sites and caused the flooding of others by raising the ground-water table, and marine erosion of parts of the coast completely removed the land, and the resources and sites it contained.

# 3. Vegetation

At the time of Maori settlement the dune belt would have been forested. Only some river beds and unstable dunes along the foreshore are likely to have been unforested. To the first people in the area, the dune belt would have presented a mosaic of plant communities, each with a slightly different potential to provide raw materials and food. Plant communities, which depend broadly on dune age and topography (Carnahan 1957, Esler 1969), would have been older and more developed on the older dunes. Between the wet sand plains and the drier dune crests, there would have been a range of habitats, each with its own characteristic plant community.

By the time of European settlement the forest covering the dunes was largely cleared. Some patches remained on the dunes, and there were clearings in the forest which covered the pre-Holocene sandstone and alluvial gravels inland of the dunes, but otherwise the forest edge roughly coincided with the inland edge of the sand dunes (Adkin 1948).

Some idea of what the pre-human forest was like can be gleaned from identified fossil trees, from forest remnants seen by early Europeans, and from seeds and land snail shells from archaeological sites. Fossil trees growing on the buried Foxton sand exposed in the Whirokino cut (Figure 2) are identified as totara and manuka (Adkin 1948). Patches of bush growing on Foxton and younger dunes when Europeans settled the Horowhenua included tawa, matai, hinau, miro, totara, pukatea, and kahikatea (Adkin 1948). Generally, swamp forest was in the wetter interdune hollows (Gabites 1993). At Paekakariki, the inferred vegetation around a midden on Foxton sand buried by Old Waitarere sand is based on landsnails and freshwater molluscs from the midden (Lower midden, Site R26/255, Figure 4; Appendix 2) and is similar to that of the Waikanae Nikau Reserve today (F.M. Climo *pers. comm.*): coastal forest of kohekohe, tawa, nikau, and a dense understory of supplejack, young nikau, mahoe, and kawakawa (Wassilieff and Timmins 1984).

Forest clearance would have begun with the arrival of the first people 500 to 650 years BP, but it appears that their influence was not very great until after the Old Waitarere dunes became stable. Although the first people arrived before the end of the Motuiti dune advance, forest remnants at Pakipaki Bush and Nga Totara in the Horowhenua (Adkin 1948) show that forest subsequently became established on both the Motuiti and Old Waitarere dunes. Similarly, in the Manawatu, podocarp-dominated forest became established on Motuiti dunes about 2 km north of the Manawatu River (McFadgen 1985). Conditions needed to establish forest on newly stabilised dunes would be a nearby source of seed,

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