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# ON THE BEACH: MONITORING THE COASTAL MIDDENS OF QUEEN ELIZABETH PARK, PÆKAKARIKI

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Middens along the Queen Elizabeth Park coastline are highly visible, particularly after storms when the accumulated sand at the foot of the fore-dune, and often part of the fore-dune itself, is washed away and a freshly cut section is formed. This paper documents some of the damage to, and destruction of, coastal shell middens at Queen Elizabeth Park brought about by recent shoreline retreat. It is based largely on a series of archaeological surveys in the summer of 2000–2001, in January 2003, and in May 2005. The advent of handheld GPS and the removal of selective availability has considerably simplified the task of recording the location of sites and thus better identifying patterns in their locations over time.

The Kapiti coastline has suffered periods of active erosion at various times over the last 100 years (Lumsden 2003: 1). Queen Elizabeth Park, a recreational reserve managed by the Greater Wellington Regional Council, occupies a 3.5 km length of this coast and has sustained net erosion during the last two decades (Lumsden 2003: 3). The construction of a seawall along the Raumati coastline north of the park after extensive damage was caused by storms in September 1976 has almost certainly contributed to the erosion of this adjacent section of the coast (Lumsden 2003: 36). By the late 1990s, when efforts were made to record the archaeological sites being exposed, there had already been significant shoreline retreat.

There are currently (October 2005) 39 recorded sites in the park (Table 1). The presence of shell middens in the sand country from Paekakariki to Waikanae is historically well attested (Best 1918: 216–217; Beckett 1957; Carkeek 1966: 102–107). Best (1918) and Carkeek (1966) both identify tuatua (*Paphies subtriangulata*) as the main constituent of middens. Some few

Table 1. Recorded sites, Queen Elizabeth Park

Site No.	East	North	Description	Recorder, year, notes
R26/249	2676500	6027200	Midden	AJW/AMW 1989; SF 1998
<i>R26/321</i>	2676040	6027020	Midden	AJW/AMW 1989; AJW 2003, 2005. Split from R26/252
<i>R26/252</i>	2675960	6026790	Middens	AJW/AMW 1989; AJW 2001, 2003, 2005. Not seen 2005
<i>R26/320</i>	2675820	6026350	Midden	AJW/AMW 1989; AJW 2003, 2005. Split from R26/252
<i>R26/313</i>	2675800	6026300	Burial	SF 2002. In vicinity of R26/320
R26/93	2675800	6026200	Middens/ovens (pa)	JD 1963; AJW/AMW 1989; SF 1998
R26/250	2676900	6026200	Midden	AJW/AMW 1989. Also midden at 766263 (SF 1998)
R26/324	2675840	6026010	Midden	MO 2003
R26/251	2676700	6026000	Midden	AJW/AMW 1989
R26/31	2675600	6025900	Midden	SD/RD 1959; AJW/AMW 1989. Not seen since 1963
R26/99	2675700	6025800	Midden	AC 1978
<i>R26/308</i>	2675610	6025740	Burial	SF 2001
<i>R26/292</i>	2675610	6025730	Midden	AJW 2000, 2003. Not seen 2003
<i>R26/30</i>	2675600	6025700	Midden	SD/RD 1959; AJW 2000. Not seen since 1959
<i>R26/293</i>	2675530	6025600	Midden	AJW 2000, 2003. Not seen 2003
<i>R26/294</i>	2675480	6025590	Midden	AJW 2000, 2003. Not seen 2003
<i>R26/317</i>	2675490	6025460	Midden	AJW 2003. Not seen 2005
<i>R26/295</i>	2675440	6025320	Midden	AJW 2000, 2003, 2005
<i>R26/296</i>	2675410	6025260	Midden	AJW 2000, 2003, 2005
<i>R26/297</i>	2675400	6025220	Midden	AJW 2000, 2003, 2005
<i>R26/298</i>	2675390	6025190	Midden	AJW 2000, 2003, 2005
<i>R26/318</i>	2675360	6025130	Midden	AJW 2003, 2005. Not seen prior to 2003
R26/346	2676150	6025010	Urupa	SF 1994
<i>R26/299</i>	2675310	6025010	Midden	AJW 2000, 2003. Not seen 2003
<i>R26/300</i>	2675300	6024990	Midden	AJW 2000, 2003. Not seen 2003
R26/348	2677350	6024860	Urupa	SF 1999
R26/287	2676240	6024680	Pits	SF 1998; MO 2003
<i>R26/301</i>	2675140	6024640	Midden	AJW 2000, 2003, 2005. Not seen 2005
<i>R26/319</i>	2675150	6024620	Midden	AJW 2003, 2005. Not seen prior to 2003
R26/286	2675700	6024600	Midden/ovens	SF 1998; MO 2003
<i>R26/302</i>	2675120	6024560	Midden	AJW 2000, 2003, 2005. Not seen 2005

Table 1 continued.

Site No.	East	North	Description	Recorder, year, notes
R26/94	2675100	6024390	Pa	JD 1963; MO 2004. No known extant evidence
R26/332	2675200	6024380	Midden	MO 2003
<i>R26/304</i>	2674990	6024300	Midden	AJW 2000, 2003. Not seen 2003
<i>R26/303</i>	2674990	6024290	Midden	AJW 2000, 2003, 2005
<i>R26/344</i>	2674940	6024100	Human remains	SF 2000. No evidence remains
R26/315	2675250	6023920	Midden	AJW 2000
R26/347	2675780	6023870	Pit/midden	SF 1998
R26/345	2675280	6023830	Urupa	SF 1992, AJW 2000

Note that eastings and northings are sometimes recorded to nearest 100 m and sometimes to nearest 10 m. Initials are AJW = Author; AMW = Ann Williams, JD = John Daniels, MO = Mary O'Keeffe; RD = R. Dixon, SD = Susan Davis, SF = Susan Forbes. Sites numbers shown in *italic* are coastal sites.

middens, however, have a preponderance of ringed dosinia (*Dosinia anus*); probably a result of their localised ready availability in numbers after storms. Beckett (1957: 357) studied middens exposed behind the foredunes at Raumati in the period 1914–1924 and, based on their contents, concluded that they represented seasonal fishing and food gathering camps. Many middens along the dune behind the beach at Raumati South are now under houses or landscaped lawns and gardens while others have been destroyed without record (Jonathan Welch pers. comm. 2005). The Raumati and Paekakariki sections of the coast are now largely residential areas and only pockets of intact midden deposits are likely.

There is a strong tendency for shell middens to be found near the source of the shellfish, and for the shell not to be carried far inland. A study north of Auckland (Campbell 2003: 115) found that most sites (whether midden, pits/terraces/midden, pits/terraces, or pa) occur within a kilometre of the coast and that more than 80% of middens (n = 513) were concentrated within 200 m of the coast. A GIS study of midden deposits (n = 349) for the Wellington–Wairarapa region also found that most middens (more than 88%) occurred within a kilometre ( $\pm 100$  m) of the coast and that more than 48% occurred within about the first 200 m. For the purposes of the Wellington–Wairarapa study, a midden was any site with a midden component, including pa with pits and midden. Midden in dunes at the coast tend to be more easily seen than most but archaeological visibility is likely to be only a minor variable contributing to the recorded pattern. While there may be regional and local variation, the basic pattern is for the frequency of midden to be greatest near the coast. Erosion, or other changes to the coastal environment, thus threatens a disproportionate loss of such sites.

## Previous work

The first middens in Queen Elizabeth Park recorded in the New Zealand Archaeological Site Recording Scheme were R26/30 (N157/1) and R26/31 (N157/2). They were both recorded by S. Davis and R. Dixon on 25 April 1959.

R26/30 was exposed in the face of an eroding sand dune at the back of the beach. It was described as being in poor condition and eroding fast. The exact location of this site is uncertain, but what evidence there is on the Site Record Form points to it being somewhere near R26/192, recorded by the author on 26 November 2000. A burial (R26/308) has also been recorded in this same area by Susan Forbes in 2001.

The second site, R26/31, was exposed over a distance of 12 m (40 ft) on the south bank of the Whareroa Stream. It was buried below 4 m (13 ft) of sand. A small excavation was conducted at R26/31 on 24 March 1963 by Mrs V. Harvey-Roberts and Miss R. Adams. The midden was mostly composed of tuatua (*Paphies subtriangulatum*) but with triangle shells (*Spisula aequilateralis*), ringed dosinia (*Dosinia anus*), common mussel (*Mytilus canaliculus*), knobbed whelk (*Austrofusus glans*), mud snail (*Amphibola crenata*), and Arabic volute (*Alcithoe arabica*) (identifications and scientific names are as recorded by the excavators). A few bones of unidentified bird and fish were also found. The material all showed signs of having been burnt. There have been substantial human and natural changes in this area. An inspection of the area by the author and Ann Williams on 30 August 1989 failed to locate any trace of this midden and later visits to the area have also revealed nothing. Its current condition is thus unknown.

Whareroa pa and settlement (R26/93 [N157/70]) was occupied in the 19th and early 20th centuries and had shifted from the north side to the south side of the stream by the 1850s (Carkeek 1966: 158). Midden was recorded on the north side of the stream in 1963 by John Daniels and another midden was seen eroding from a sand hill in the same vicinity in 1989. Nine further areas of middens and oven material, all recorded as part of R26/93, have subsequently been noted in the area (Forbes 1998). R26/99 (N157/79), on the south side of the stream in this general vicinity, was recorded by Aidan Challis in 1978 when it was exposed in a trench. It has not been seen since but is presumably still largely intact. A midden was recorded when it was exposed in a trench in the same general area in 2003 by Mary O'Keeffe.

A number of middens (R26/249–252, 286, 287, 314) have been recorded some distance inland within Queen Elizabeth Park by either the author or Susan Forbes. These middens are not particularly visible, the land being predominantly in pasture, and are not part of this study.

## The surveys

Not all shell deposits exposed along this coast are middens and some care was taken to positively identify middens as middens. This was done primarily on content such as presence of charcoal, burnt shell, and fire-cracked rocks as well as by examination of the shells themselves. Natural shell tended to occur in low densities in relatively recent re-worked sand deposits. As visibility is determined largely by natural erosion, what is there to be seen depends to some extent on exactly when the observation is made.

### *North of Whareroa Stream*

The area north of Whareroa Stream was first surveyed in 1989 but the relatively imprecise information on location from the survey precludes detailed consideration of the results. The recording, undertaken on 30 August 1989 by the author and Ann Williams, recorded seven eroding deposits exposed in coastal sections. Each deposit was photographed but in the absence of a large scale map or aerial photograph on which to record their locations, all were recorded under one number (R26/252). The site was defined as lying between 758162 and 760271, representing nearly a kilometre of the coast. Subsequently, in 1998, Susan Forbes recorded seventeen deposits and marked their locations on an aerial photograph.

Forbes's data was not available when a further survey was undertaken by the author on 1 January 2001. Six deposits were recorded, as against 7 in 1989. The location of each was recorded with a Garmin GPS 38 to the nearest 10 m (but with a standard error of 15 m). A third survey was undertaken by the author on 25 January 2003 and the deposits found were photographed and their locations recorded with a Garmin 12 XL.

Three clusters of middens were identified from the 2001 and 2003 data and R26/252 was, accordingly, split into three records (R26/252, 320, 321). On 29 May 2005, a further visit identified middens at five locations but all fell in close proximity to the deposits which had been recorded as parts of R26/320 and R26/321. Human remains recorded by Forbes in 2001 as R26/313 also came from the vicinity of R26/320. Figure 1 shows the recorded locations of middens in 2001, 2003, and 2005. The middens recorded by Susan Forbes include those within the cluster of the re-defined R26/252, but also included a string of deposits to the south.

### *Whareroa Stream to Wainui Stream*

Susan Forbes recorded middens along the coast in 1998 but her data was not available till recently. My first survey of this section of beach was undertaken in 29 October 2000. The survey was repeated soon after (26

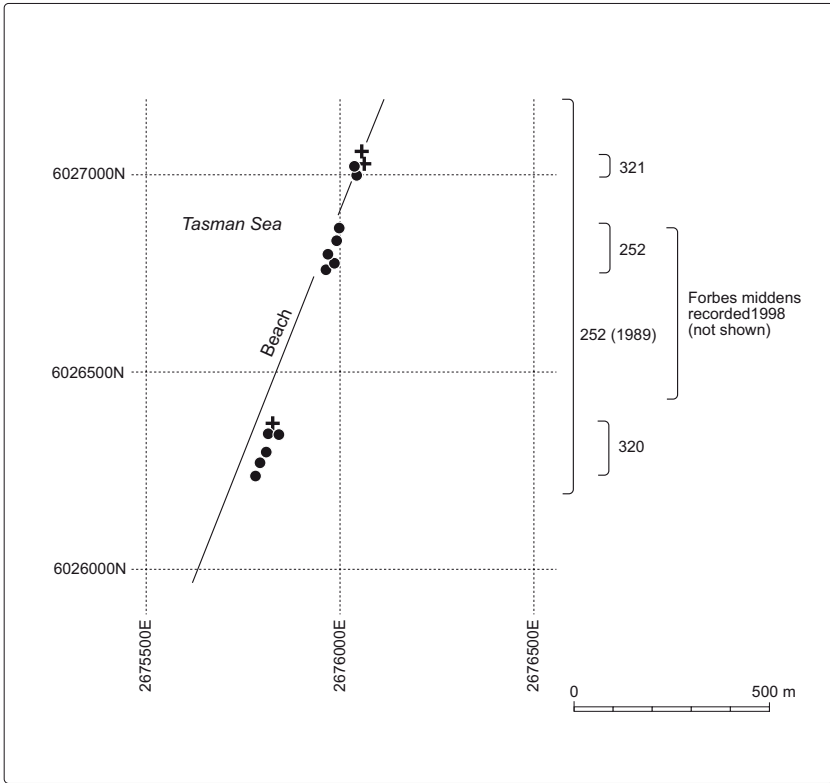


Figure 1. Recorded sites at the coast north of Whareoa Stream. Plan showing recorded location of deposits 1989–2005. Dot is single observation a cross is more than one observation.

November 2000) when a Garmin GPS 38 became available to record co-ordinates. The location of sites was also marked on a large-scale aerial photograph. Thirteen deposits were recorded. This compares with 26 recorded by Forbes in 1998 in the area between R26/292 and R26/296 (and a little beyond). In addition, she recorded a burial (R26/308) in 2001 in close proximity to the midden recorded as R26/292.

Two years later a further survey was undertaken, on 19 January 2003, and twelve deposits were found and photographed. Their locations were recorded with a Garmin 12 XL. On 29 May 2005 a further visit identified middens at five locations but all fell in close proximity to the sites which had been recorded as R26/320 and R26/321. Figure 2 shows the locations of all sites as

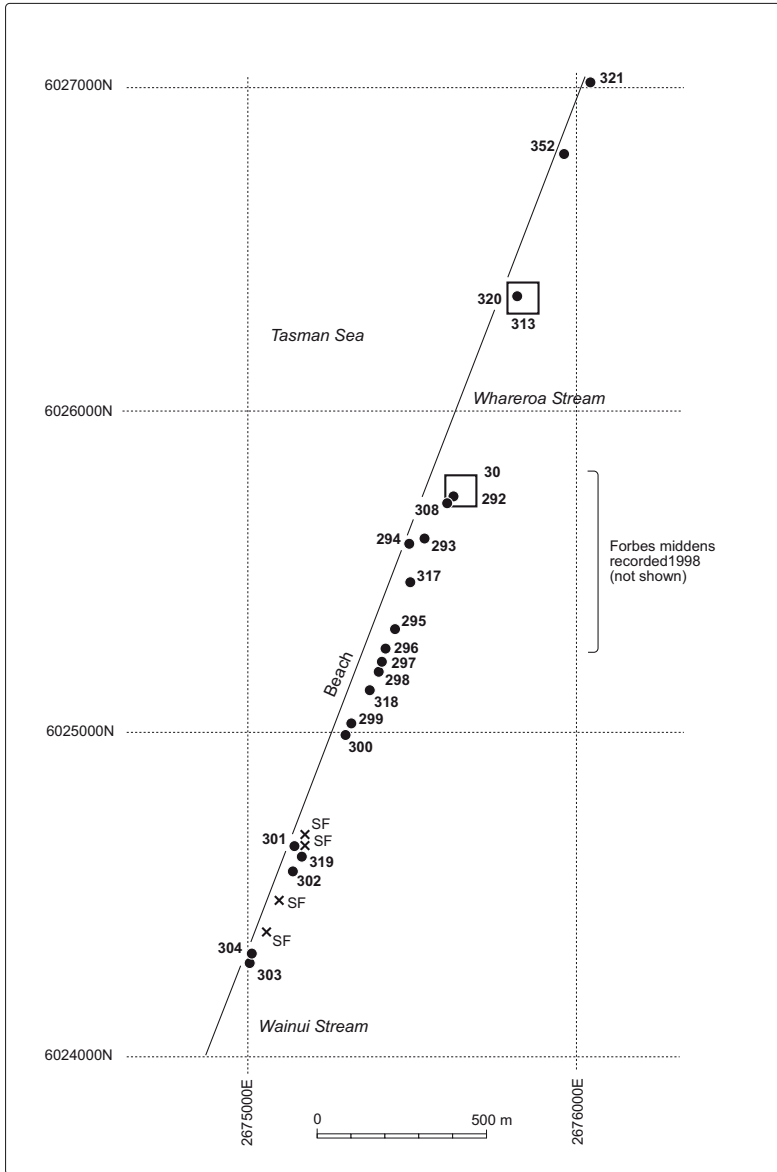


Figure 2. Recorded sites at the coast, Queen Elizabeth Park. Plan showing the recorded distribution of sites.



currently recorded. The GPS readings were taken on the beach below, making the easting potentially up to two to three metres seawards of their actual position before allowing for positional errors.

Three deposits were found in 2003 in locations where none had been seen previously and these were recorded as new sites (R26/317–319). Where deposits were recorded in the same location (allowing for uncertainties in the GPS data), it is assumed that they are either the same deposit or at least a deposit in the same cluster. Nine deposits were found at, or close to, previously recorded sites and the seven records concerned (R26/295, 296, 297, 298, 300, 302, 303) were updated. Five previously recorded sites were not seen (R26/292–294, 299, 301) and were presumed to be either hidden or destroyed.

Midden deposits (or, in one case, oven rake-out) were located at 12 spots during a walk along the beach on 28 May 2005. Visibility was poorer than in previous years as a large ramp of sand had eroded from, or built up against, the face of the dune. Remains seen were generally fairly sparse.

Of the 13 deposits seen in late 2000 only one was exposed at the current ground surface. A similar pattern was evident in 2003. Most deposits are on buried surfaces of Old Waitarere or Foxton dunes. The sand country has a well documented sequence of dune building. These advances provide an environmental context for archaeological sites and also assist with the dating of the remains (McFadgen 1997). The Younger Waitarere sand forms a narrow coastal strip and has a very young raw sand soil which has formed only in about the last 150–200 years. A survey of the current ground surface of the Younger Waitarere is relatively unproductive as most remains have been buried by the advancing sand. The extent to which the area was occupied is only evident in the coastal section.

One useful marker of the progress of recent erosion is provided by a path, formed of compacted weathered greywacke, which originally ran along the top of the dunes some distance back from the beach. This is visible on aerial photos. It was falling into the sea in places in late 2000, and by the summer of 2003 further whole sections were exposed in section or had disappeared.

The contents of the middens are largely as noted by earlier investigators, and mostly consist of tuatua, with or without fire-cracked stone and charcoal, and with little evidence of fish or other bones. No artefacts were seen during the recording. The contents of the middens suggest that they are likely to represent seasonal camps, as suggested by Beckett. The deposits do cluster, indicating a tendency for people to favour particular places for reasons that are not now always evident.

## Discussion

The recording to date by various parties has significantly increased the number of recorded sites known along this 3.5 km stretch of coast. The recording is important because it is documenting the distribution of archaeological evidence along the last area of undeveloped coastline in the sand country south of the Waikanae River. The study provides a basis for reconstructing the likely pattern of occupation in the area already lost under housing.

One of the difficulties of recording using a 1:50,000 topographical map has been positively identifying a deposit as the same as that seen a year or more before, or even recorded by someone else at a location in the near vicinity years before. GPS readings have helped by defining the location more precisely, but even this does not entirely remove the problem. The practice adopted has been not to follow any set rule but to take a pragmatic view. Where clusters have been identified, the original records (e.g., R26/252) have been split up to reflect that fact. Where a deposit was recorded in approximately the same location as one reported earlier, it is assumed that it is either the same deposit or, at least, a deposit in the same cluster. A new record is added if a reasonable identification with an existing record cannot be made.

What is recorded as a site? In some ways it is probably better to think of the records as representing observations rather than sites. The records reflect, first and foremost, an attempt to make sense of archaeological observations, and sites will change with time and new information. As observations, the records can be combined in different ways for different purposes. The records only indirectly reflect any prehistoric reality.

Over the period since 1998 the dunes, and the midden deposits they contain, have continued to erode. Susan Forbes's figures are substantially higher than those recorded just a couple of years later. Assuming the middens were originally deposited on the landward side of the foredunes it is probable that a large amount of archaeological evidence has now disappeared as a result of the continuing retreat of the shoreline.

Some of the difference in the results of the different surveys is undoubtedly due to continuing erosion. It is possible that different methods also contributed, as my recording was largely confined to recording what could be seen from the beach. There is probably also a more subjective element impacting on the results. People operate with different thresholds in terms of what they will record. What one records the other may ignore as it falls below a vaguely defined minimum number of shells and density of remains. Very closely spaced deposits are more likely to be lumped together, while more dispersed remains are recorded individually.

Rescue work prior to development has, in recent years, resulted in a small body of information on middens in neighbouring areas. There is a detailed unpublished report on the analysis of the midden from R26/291 at Raumati (Leach et al. 2000). R26/291 has three dates (Wk 8463, 8464, 8465), with a likely mid 15th to mid 17th century antiquity (2 sigma intervals). R26/290 has a single date again with a mid 15th to mid 17th century age range (Wk 8331). To the south of the park at Paekakariki there are dates on midden deposits at R26/255 dated to the early 16th or late 17th century (Wk 1756, Wk 1757) (McFadgen 1997: 11, 17). Data from this last site indicates that the coastline was more than 50 m seawards of its current position some 300–400 years ago. McFadgen (1997) suggests that coastal accretion and erosion have been the norm for centuries.

## **Conclusion**

The Kapiti coastline has suffered a prolonged period of active erosion in recent decades. Coastal erosion threatens a significant loss of archaeological sites as throughout prehistory people have tended to congregate at the coast and shell middens, the most common remains, tend to be found in largest numbers near the source of the shellfish. Recent erosion has uncovered, and is progressively destroying, archaeological sites but recording has significantly increased the number of sites known along the Queen Elizabeth Park coastline.

In areas threatened by coastal erosion a programme of regular recording and sampling is the minimum requirement if basic information is to be salvaged. This is particularly important where, as at Queen Elizabeth Park, the area concerned is the last undeveloped stretch of coast available for study. Hand-held GPS units are now widely used and offer a way of convenient way of establishing the location of middens and, allowing for changes in what is observed over time, identifying any patterns in the data.

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