NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION NEWSLETTER

THE EXCAVATION AND ANALYSIS OF A MAORI COOKING SITE ON PONUI ISLAND

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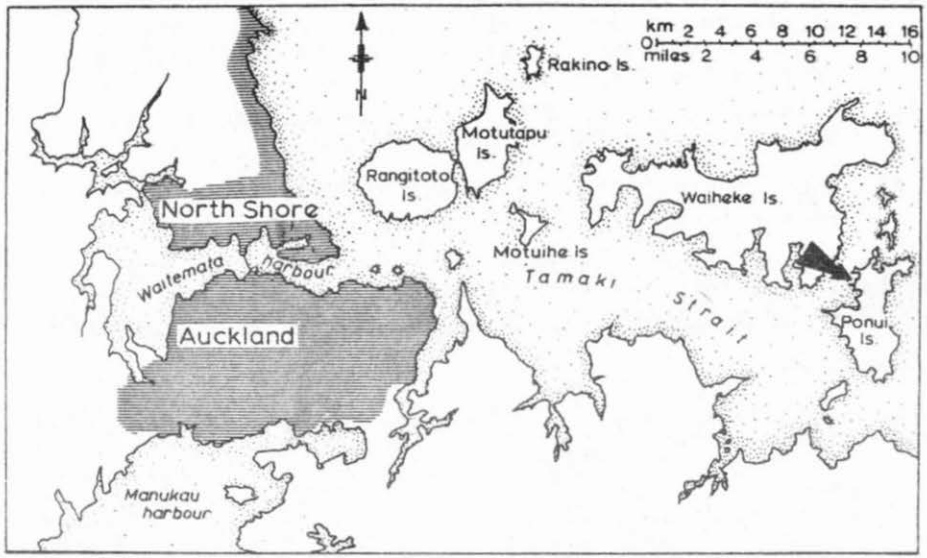
With the rise of scientific archaeology in New Zealand during the past fifteen years, the picture of Maori life recreated by ethnographers has been augmented by evidence dug from the ground. Some elements of the traditional picture have been supported by archaeology. Others have been challenged. For example, excavations at pa sites, as well as re-examination of early European descriptions of pa, has encouraged reconsideration of the role of the Maori fortress in prehistoric times.

Most of the recent archaeological research has been concerned with the hill-forts which are only one kind of archaeological site in New Zealand, even if they are undoubtedly the most impressive. To compare the traditional view of Maori life against the facts of archaeology, it is necessary to study the other kinds of sites as well: such as pit complexes, hillside terraces and shell middens. Moreover, all types of sites must be carefully examined if archaeology is to attempt to achieve what it alone can do: to give depth to Maori prehistory, to determine what life was like in New Zealand not only at the time of European contact, but farther back in the past.

Now archaeology provides two different kinds of information. It recovers for study the evidence which has survived, and, just as important, it establishes the limitations that evidence sets on what the archaeologist will be able to find out about the past. That is, archaeology can verify what history tells us, it can fill out our knowledge where history is silent, it can give temporal depth to our understanding of the past, and it can tell us how much we shall be able to learn from the evidence left behind.

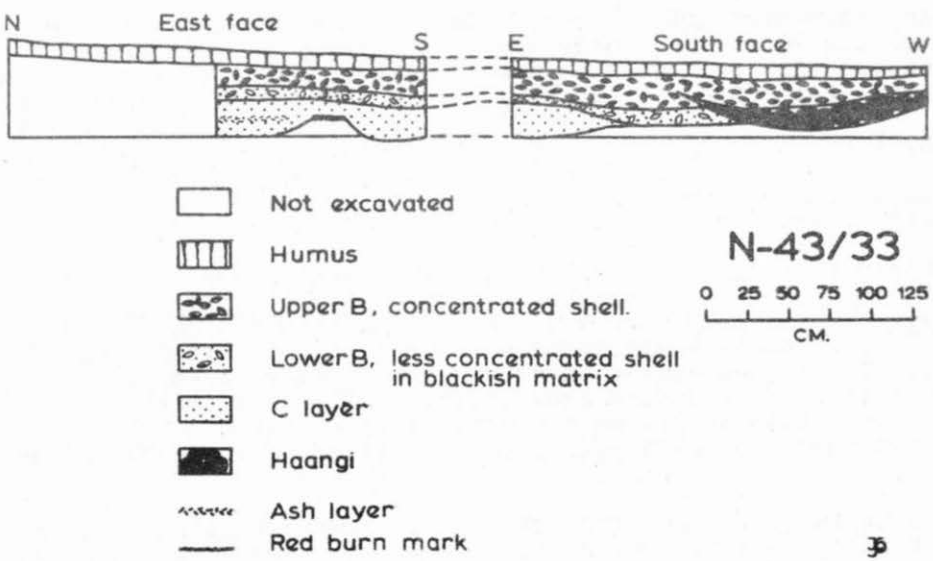
Beach middens are among the most common archaeological sites in New Zealand. Most people are inclined to say the middens are either the former locations of old Maori fishing camps or village cooking places. The archaeologist, however, is in the position to ask two questions. What kinds of information about the past do these sites contain? How much can we learn from them?

In order to determine archaeologically the nature of settlement and range of evidence left in beach middens, an area excavation was conducted on Ponui Island at Galatea Bay by the Department of Anthropology and the Archaeological Society at the University of Auckland in the middle of April 1965. Because the reasons for an excavation are in a very real sense the justification for destroying a prehistoric site, and no excavation can expect to achieve much if the objectives are not clearly established, the purpose of the Galatea Bay excavation should be elaborated:



Locality Map, Ponui Island Site.

TEST SQUARE D1.



Site Plan.

(a) to recover an archaeological picture of one midden by excavation over a wide enough area to determine the range of evidence available and the relationships between the various elements;

(b) to analyze the evidence as fully as possible to gain the most information possible; and

(c) then, to evaluate the potential importance of midden information in detailing Maori prehistory.

This report is only a summary of the major findings of the excavation. A detailed paper has been written and will be published in Transactions Of The Royal Society Of New Zealand.

The Excavation:

The Galatea Bay site (N-43/33) lies on the northwest side of Ponui Island in the Hauraki Gulf twenty miles east of Auckland (fig. 1 /the map of Ponui from J.M.D.'s site reports paper, with arrow pointing to Galatea added/). The site was carefully selected because of its small size, excellent preservation, and because it was physiographically very well delimited by the small erosion valley behind the bay (fig. 2 /site map/ and Plate 1 /photo of the site/). A creek bed lies at the centre of the valley where fresh water probably was obtained in the past. Both the short beach in front of the site and the bay itself suggested the sources of the fish and shell fish in the midden.

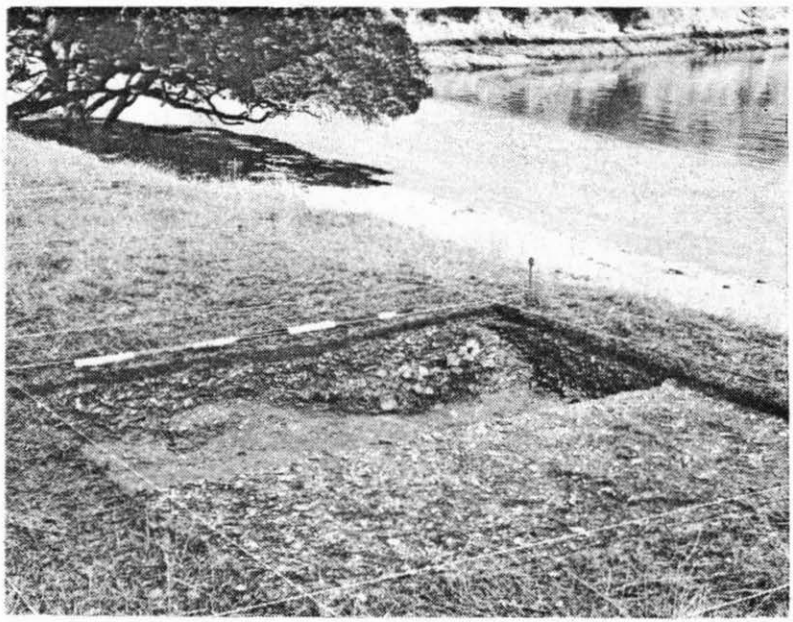
An excavation grid 18 metres long by 6 metres wide was set out over the site. Here only the stratigraphy in the initial test-square (Sq. D-1) will be described because it well reflected in general terms the stratigraphy over the entire area excavated (fig. 3 /the section from D-1/). Five stratigraphic zones were distinguished:

Layer A (5-10 cms. thick): a dark brown humic sandy turf. No other constituents.

Upper Layer B (10-22.5 cms. thick): concentrated shell in a black sandy matrix. The shell, mostly pipi (Amphidesma australe) was largely unbroken. Other constituents were bone (mostly fish bone), small lumps of charcoal, and burned cooking stones. The midden contained no visible smaller sub-divisions or lenses, although during excavation, small concentrations of shell with little matrix were sometimes encountered which suggested dumps of shell within the relatively homogeneous midden deposit.

Lower Layer B (3-20 cms. thick): less concentrated shell in a black sandy matrix. The shell in this zone was more broken and less concentrated than in Upper Layer B. The other constituents were the same.

Ponui Island Site.



Detail of Excavation, Ponui Island Site.

Layer C (8-20 cms. thick): a layer of yellow sand in the east half of the test square could be differentiated from the underlying Layer D by the presence of shell, mostly broken, small lumps of charcoal, pebbles and fragmented cooking stones. At the bottom of the layer two basin-shaped pits were found which were 10-12 cms. deep. For descriptive purposes, these pits have been called "ash pits" to distinguish them from the hangi (cooking pits) in Layer B.

Layer D: natural yellow beach sand at the base of the excavation.

Of the information added to this stratigraphic sequence by the area excavation, the most important concerns the interpretation of the two sub-divisions of Layer B and the significance of Layer C. Twenty-two cooking pits containing hangi stones in varying concentrations were found in Layer B.

The stones were of local origin and most were fragments of the soft greywacke bedrock which could have been obtained from the nearby cliffs. Stratigraphic analysis of the cooking pits shows that all but five lay under the concentrated shell midden of Upper Layer B. The five remaining hangi were found within the concentrated shell midden. This general stratigraphic distribution, combined with specific details from four of the hangi, suggests that Lower Layer B was a deposit formed during the use of the cooking pits, while Upper Layer B was predominantly a rubbish deposit. In other words, here was evidence which implies that, contrary to some popular conceptions, middens and cooking places were distinct areas in the Maori settlement pattern, at least at the time of the Layer B occupation in Maori prehistory.

Nine "ash pits" and one shallow "fire basin" (which contained ash and charcoal and had a basal fire-red zone in the sand below the basin) were found at the bottom of Layer C.

Moreover, Layer C proved to consist of two separate but contiguous deposits: one was the sandy layer first found in the test-square, and the other was a spread of charcoal containing two clusters of cooking stones which were not in pits. Below the charcoal spread were signs of fire-reddening, and the spread itself was stratigraphically separated from the overlying Layer B by a lens of sand.

Interpretation of the "ash pits" must be speculative, but it does seem likely they may have been an uncommon type of hangi which has been described in the ethnographic literature (Best 1924:419). Because the pits were associated with a contiguous charcoal area with two clusters of cooking stones, it is possible they may have been umu konao, cooking pits in which stones heated elsewhere in hearths were placed to cook the food contained with them.

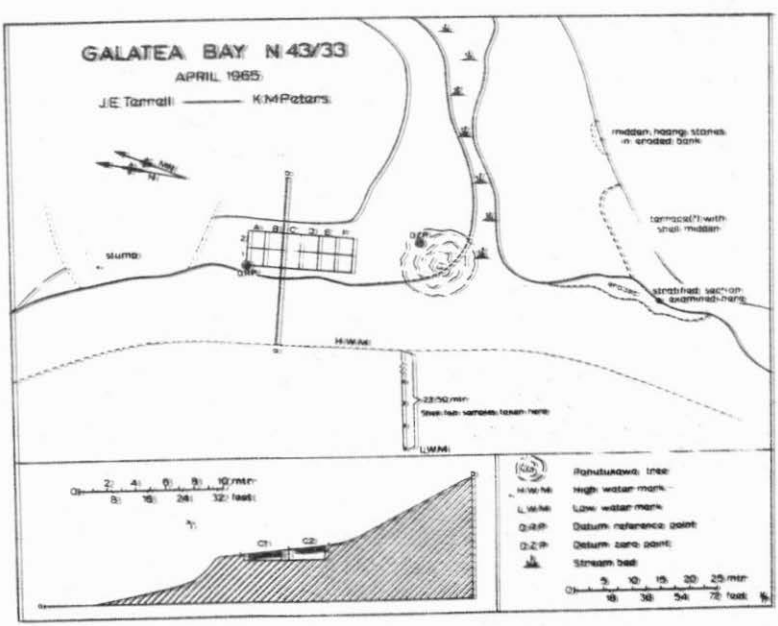
Eighty-eight post-holes were found in the excavation. They were 3-15cms. in diameter and were made by small stakes driven a short way into the sand.

They could not be traced in the midden layers. The only time they were distinct was when they appeared in the under-lying sand. While they form no recognizable patterns, they probably represent former cooking sheds made of light poles.

Interpretation:

The results of the excavation suggest a far more involved history of the site than casual observation, unaided by excavation, might suppose. During the first known use of the site (Layer C) fires were lit on the sand of the raised beach front in one restricted area. Behind this hearth area, small pits were dug into the sand which may have been hangi of an uncommon form called umu konao. No obvious midden dump was found near the cooking area. If a dump formerly existed, it seems not to have survived. Because of the difficulty in tracing post-holes, it is not known whether any structures existed during this occupation.

The date of this first use of the site is unknown. No radiocarbon estimations have been made, and the only artefact found in the layer is undiagnostic. Subsequently, however, the old hearth area became covered with sand and the pits filled in. Eventually, the site was reoccupied.



Layer B marks a major occupation of the small valley. During the first phase (Lower Layer B), at least most of the site was used as a cooking area. Cooking sheds were probably constructed around the hangi. An associated midden dump may have existed in front of the site which has been eroded away by the sea. At a later date (Upper Layer B) the cooking area must have shifted, and the old location was turned into a dump. During this later phase when the concentrated shell midden was deposited, a few cooking pits were constructed in the old area, but even these were eventually covered with midden.

Artefacts:

Very few artefacts were found. One quadrangular mid-section fragment of an adze, one polished flake off an adze, one pumice block and one shell fish-hook were recovered from Layer B. Only one artefact, a remarkable double-ended adze of crude workmanship, was found in Layer C.

Only the fish-hook point is at all diagnostic. It is a small double-pointed arch of shell approximately 2.0 cms. long from point to point. It is made from a piece of the outer lip of the smaller species of Struthiolaria, S. vermis. Typologically it is considered to be a late form. Although smaller, it is very similar to two intact specimens found by Fairfield near the Manukau Heads (Fairfield 1933).

Experimental Analysis of the Midden.

In addition to analyzing the stratigraphy, features, and artefacts, an extensive study of the midden was made. This analysis was conducted for a number of reasons:

(a) to determine the composition of each layer, the variation between samples taken from fourteen areas of the site, and the differences between the layers;

(b) to interpret the findings in cultural and natural terms;

(c) to study the methods used; and

(d) to evaluate some of the uses of midden analysis in New Zealand.

In this brief paper only a summary can be given of the most important findings.

An experimental attitude was adopted in studying the methods of midden analysis. Previous writers in New Zealand had recommended several techniques. An attempt was made to objectify the results of three of these procedures in order to make it possible to evaluate their importance. It was discovered that

deliberate drying of midden samples prior to analysis is unnecessary. Only the less-than 1/16th inch fraction of the midden samples (i.e.: the material which passed through a 1/16th inch sieve) lost any significant differential amount of moisture in drying. This fraction was composed of sand and other small particles which, as one might naturally expect, would hold much of the moisture contained in the samples.

Moreover, the size of the sample seems to make little difference in the accuracy of the results, although because some midden constituents were lacking in test samples of only 500 gms. which were found in larger samples, 500 gms. may be too small for highly precise studies. Lastly, a comparative study of the effect of sieving on midden analysis showed that proportions based on examination of only the fraction left in the ½ inch sieve represented a reasonable estimate of the total midden proportions in the field sample, at least when the ½ inch fraction was the major one present. Additional analysis of the ¼ inch fraction did not greatly alter the results obtained from the study of the ½ inch fraction alone. For most purposes the relatively easy analysis of only the ½ inch fraction would probably be sufficient. The important point is to have a useful and explicit purpose for doing the midden analysis in the first place.

By determining the lengths of all measurable pipi shells it was possible to reconstruct the structure of the shell fish populations in Layer B and Layer C. Only pipi shells existed in sufficient numbers to make such a reconstruction possible. The frequency curve for each layer formed a Normal Distribution.

This observation, combined with supplementary evidence, led to the conclusion that the shell fish from the beach were simply gathered or dug in mass without selection either for size or species.

Although some New Zealand authors have suggested the contrary, comparative study of the reconstructed shell fish populations with the population structure of the living shell fish in Galatea Bay has shown the necessity for such an approach. The ratio of pipi to cockles in Layer B so closely approximated the natural ratio found in the bay that it is unwise to interpret this ratio in the midden as representing an ancient cultural preference for pipi shell fish (which constituted the largest single constituent in the midden). Although not as clearly the case, even the more equal ratio found in Layer C may also be a natural one. This conclusion makes it difficult to accept any seriation or ordering of shell middens based on this ratio (e.g. Green 1963), unless the natural explanation for the ratios has been ruled out by careful research on the living shell fish populations in the particular locality under study.

Moreover, by comparing the frequency distribution of the size of the shell fish in each layer with known populations from Galatea Bay and other areas of North Island, it has been possible

to suggest that the occupation marked by Layer C probably took place within a single year, while the occupation of the valley indicated by Layer B must have occurred over a period of several years, although that occupation may not necessarily have been continuous.

Inferred General Statements.

There are several statements about the Galatea Bay site which, by inference, may apply to this kind of site in New Zealand in general. They are:

(a) Cooking areas during the time of the Layer C and Layer B occupations in the Maori past were separate from refuse midden areas. Excavation of a midden, therefore, may miss the associated cooking site.

(b) The range of activities attested in the excavation for this kind of site is quite restricted and specialized. Only evidence for fishing, shell fish collecting and cooking was found. Manufacture of durable artefacts such as adzes and fish hooks did not take place on the site. Except for the polished adze chip, the two adzes found had both been used for an entirely different function than the one they had originally been intended for: they were used finally as cooking stones.

(c) The restricted range in the archaeological evidence indicates the site represents only one aspect of occupation at the bay. There must have been at least associated areas where sleeping houses stood, because, unless the small stake holes found should be interpreted as indicating houses instead of cooking sheds, which seems improbable, there were no traces of houses. The inference is that these existed outside the area excavated. This seems to be the case whether they were rough shelters erected by travellers who used the site only temporarily, or more substantial living houses used at least seasonally.

(d) With the single exception of one fish-hook, the small artefactual assemblage seems so undiagnostic as to be unsuitable for use in relating this site to any other site in terms of them.

Evaluation.

Because of the excavation at Galatea Bay it is possible to offer an evaluation of the potential importance of this kind of site in the detailing of New Zealand prehistory. It can be seen that beyond interpreting the site as a specialized cooking and later dumping area, little more can be said without additional evidence about what other kinds of occupation areas may be associated with it. As the information stands, the site conforms well to what one might expect a cooking area to be like, either in

terms of the pa-kainga concept of the Maori settlement pattern (Firth 1959: 91-93), or the pa-hamlet pattern (Groube 1964: 82-107). What the excavation has been able to accomplish is an archaeological description of one cooking site and an indication of the range of evidence which such a site can offer. Ideally, what now must be done is to relate this area to any associated occupation areas, and specifically, to some complex of house structures suggesting either a small hamlet or a true kainga.

From an examination of the locality, the presence of a true kainga complex of numerous houses and a marae seems unlikely. More probable is the possibility that farther up the small valley, for example, traces of former huts may exist indicating that the cooking area was part of a small hamlet. There were no surface indications of such huts, but one would not really expect there to be any. On the other hand, because there are pits, a possible terrace and perhaps even a pa (there is an indication a ditch may have existed on the highly eroded peninsular outcrop just south of the site: see Plate 1 - rightcentre) in the immediate locality, the possibility can not be ignored that the midden may have been associated with these features and not a cluster of huts in the valley.

The major difficulty in establishing which, if any, of these possibilities was the actual case has been brought out by the excavation. Little evidence was obtained upon which one could draw the necessary connection between the midden area and a cluster of huts, or other features, in another part of the locality.

Short of a direct stratigraphic link or close spatial propinquity, no artefacts were found which could be used to equate the midden occupations with occupations elsewhere on the basis of close assemblage identity. Dating by radiocarbon would be of little help, because even identical Carbon 14 range dates will not assure that separate sites were used at the same time by the same people.

Thus, the conclusion is that it will be difficult, if not impossible, to relate the excavated site to other sites in the locality. Yet, middens are among the most identified sites in New Zealand. If middens and other specialized activity areas can not be related empirically to each other except by direct stratigraphic correlation, it will be extremely difficult to determine the characteristics of settlement in different parts of New Zealand at different times. With reference to middens, the problem lies not only in finding associated occupation areas such as hut clusters, but also in providing the reality of the very association.

The lack of common diagnostic assemblages to help draw temporal and cultural connections between different sites constitutes a serious limitation on archaeology in New Zealand (Terrell 1965). Because this limitation makes it so difficult to correlate occupation sequences at separate sites even in the same small locality, it may be that only by extensive excavation at a large number of similar sites will it be possible to demonstrate a connection between the various settlement elements at any one site by identifying a common pattern reoccurring at all of them.

Acknowledgements.

The author wishes to thank the following individuals for their assistance in the preparation of this report: Dr P. Bergquist. Department of Zoology, University of Auckland; Mr G. Chamberlin, Ponui Island; Miss E. Crosby; Mr V. Fisher, Auckland War Museum; Dr R. Green, Department of Anthropology, University of Auckland; Mr L.M. Groube, Department of Anthropology, University of Otago; Mr A. Michael, Department of Zoology, University of Auckland; Mr K. Peters, Department of Anthropology, University of Auckland; Dr A. Powell, Auckland War Museum; Mr F.W. Shawcross, Department of Anthropology, University of Auckland; Mrs K. Shawcross; Mr L. Wright, Department of Geography, University of Auckland; and also the members of the Auckland University Archaeological Society who excavated on Ponui Island.

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