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AN ARCHAEOLOGICALLY DEFINED 'HAMLET'
(N89-90/222) IN INLAND TOLAGA BAY

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This is a preliminary report on excavations carried out on a group of pits and terraces on a ridge in inland Tolaga Bay in July 1981. The immediate objective was to record the structures and any below-surface evidence. Little excavation has been carried out on the East Coast, and an application for an authority to destroy a site (N89-90/222) under the Historic Places Act 1980 presented an occasion to test the nature of a recurring site type. Some general considerations of the landscape and settlement of Tolaga Bay are discussed.

Protohistoric records of the life and landscape of Tolaga Bay and nearby Anaura Bay to the north (Cook's "Tegadoo") are good since these are two of the few relatively sheltered natural anchorages and landing points on the East Coast. This protohistoric documentation should assist interpretation of the archaeological record and adds further interest to work in Tolaga Bay. As a 'control' on archaeological research, the Endeavour journals of Cook (1955), Banks (1962), Monkhouse and Parkinson (1773), along with Parkinson and Spoering's (Lysaght, 1979) drawings are important. On the other hand, there may be significant contrasts between what is detected in the archaeological record, and what may be derived from the 18th century records.

Physiography and soils

The Uawa River flats are the surface of geologically recent sediments, partly filling a valley that formed during low Pleistocene sea levels. The foothills surrounding the flats are the remnants of the ridges of this valley. Most of the river flats would have been swampy before being drained in modern times.

The underlying rocks are Tertiary sandstones, forming steep-land soils of relatively high clay content and prone to slipping (N.Z. Soil Bureau, 1968 I). There is a risk of water deficit in these central yellow-brown earths in later summer (ibid:41). These soils have medium total nitrogen levels and phosphate retention (ibid II:57 and 101). Taken with the temperature regime for this district, the soils could be used by Maori horticultural practice for kumara and yam, although the relatively high clay content is unusual.

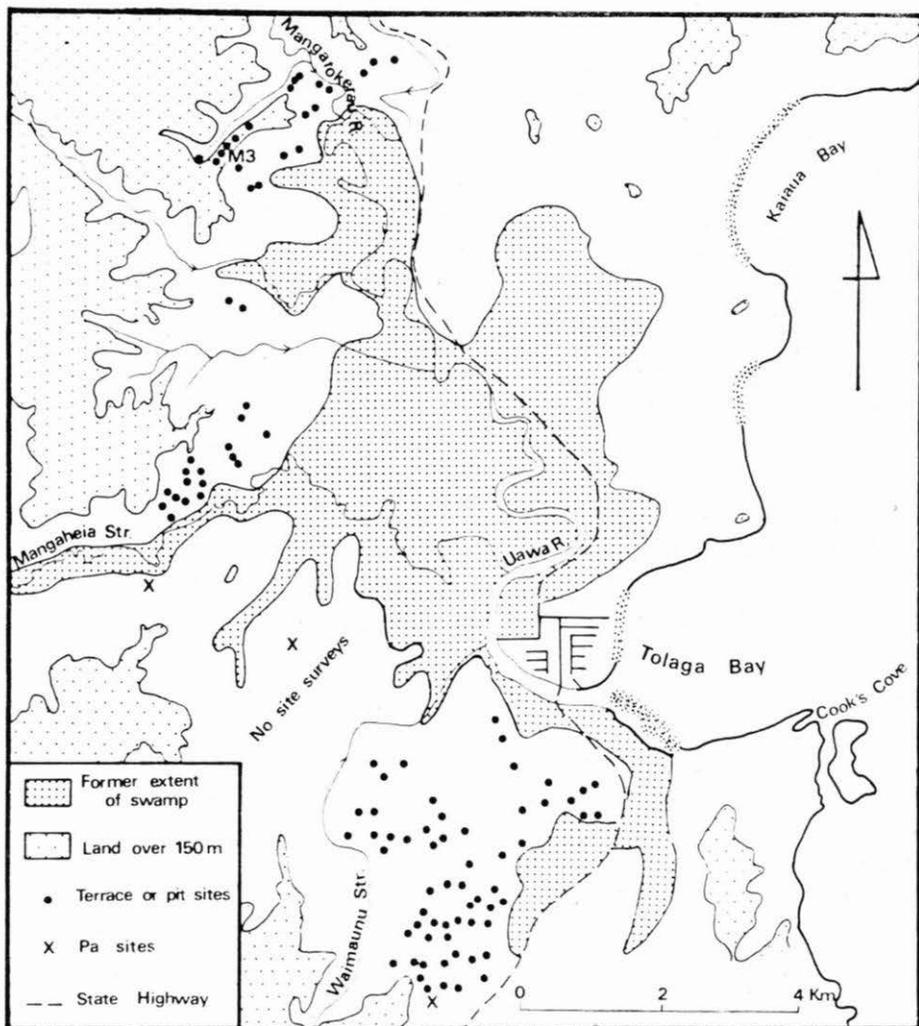


FIGURE 1. Tolaga Bay, showing the known distribution of inland archaeological sites. M3 marks N89-90/222. Coastal sites are not shown.

Vegetation

Eighteenth century records indicate extensive forests on the East Coast north of Tolaga Bay (Monkhouse, in Cook, 1955:582). An assessment of the original vegetation is contained in Table 1. With specific reference to Tolaga Bay, Banks (1962 II:3) writes of an "immense quantity of woodland" while Cook notes, "higher hills, the tops and ridges for the most part barren, at least little grows on them but fern. But the Vallies and sides of many of the Hills were luxuriously clothed with Woods and Verdure and little plantations of the natives lying dispersed up and down the country."

(Cook, 1955:186)

These rather general observations are consistent with the vegetation pattern noted in Table 1, except that some allowance must be made for human modification. The main modifications would be clearing of land for cultivation, and burning of cleared land and vegetation that will take a fire, such as that on dry ridges. Polynesian practice would appear to have favoured burning as a primary means of land clearance, in what Leach (1976) has called "burn and slash" horticulture. Once suitable land is cleared and cultivated or lying fallow, there would be little need to clear further forested land.

Settlement pattern (see Fig. 1)

Site recording in Tolaga Bay is partly the result of visits to forestry blocks by the writer and informal exercises by D. Weston of Gisborne. The only intensive site recording is of inland areas south of the Uawa River in the south-west corner of the Bay (Connor, 1980). The belt of lower foothills around Tolaga Bay inland of the Uawa River must have been extensively used in prehistoric times, to judge from the density of surviving pit and terrace sites. A few defended sites occur immediately to the south of the Mangaheia Stream, which was probably an important route to the interior (it was used by Te Kooti in the early 1870s). One pa was found in the area studied by Connor.

Settlement seems to have favoured lower foothills and ridges surrounding the swampy flats of the Uawa River and its tributaries. Three major concentrations of sites may be identified; better studies of other areas may produce an equal density. The first area between the Waimaunu Stream and the State Highway has a high concentration of pits and terraces clustered on ridges which rise to about 150 m above sea level (Connor, 1980). The second major concentration of pits occurs to the north of the point where the Mangaheia Stream leaves the foothills. Here, series of pits

Physiography	Vegetation	
swampy flats low altitude flats and lower hill slopes	kahikatea	pukatea
	matai	rimu
	tawa	rata
	hinau	totara
	titoki	karaka
	puriri	kowhai
steep, dry hillsides	titoki	karaka
	puriri	kowhai
	ngaio	kohe
	matipou	hinahina
	houhou	
"poor" soils	rewarewa	manuka
	bracken	
high altitude	beech	kawakawa
coastal hills	matai	rimu
	karaka	kohekohe
common everywhere:	puriri	
	rangiora, tutu, cabbage and nikau	

TABLE 1. Vegetation of different physiographic types on the East Coast (derived from Henderson and Ongley, 1920:2-3).

and some terraces occur in a large basin, from knolls lying on the river flats, up ridges to about 120 m above sea level. The site excavated in this study is part of a third concentration of sites on low and high ridges near the point where the Mangatokerau Stream enters the Uawa River flats.

There will be some bias in the survey record, particularly of forest areas. Under high grass, or in fern and scrub, terraces will be relatively under-represented. This is probably the case in the surveys used here, since terraces are of some importance in assessing the unit of social organisation in a 'dispersed' settlement pattern. The Mangatokerau and Waimaunu Stream groupings are consistent with the peaceable hamlet-style of living described by Cook. However, the concentrated settlement and defences of the Mangaheia Stream vicinity suggest that this point may have had some strategic value. The description of this area awaits further work and another occasion.

Excavation at N89-90/222

The Mangatokerau Block, which is being developed for forestry, lies on the foothills to the north of the Uawa River flats. Groups of pits and some terraces, ranging from single pits to the numbers evident on the excavated site, occur on the crest of most of the

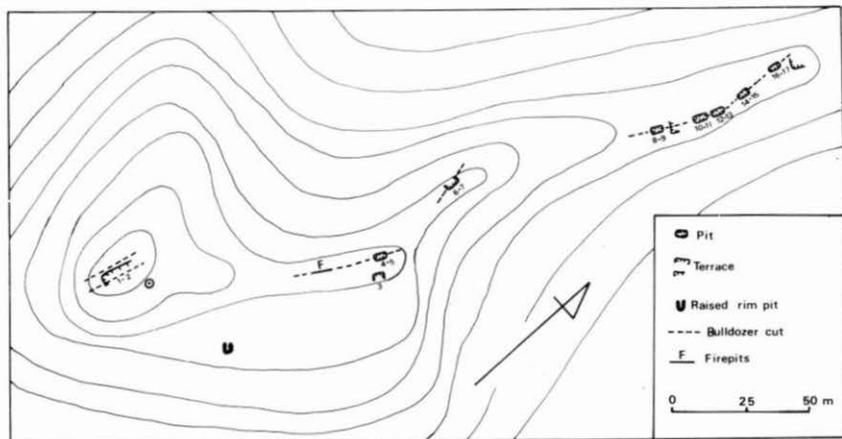


FIGURE 2. N89-90/222. Contours at 5 m intervals. Mapping by plane table and alidade.

principal and subsidiary ridges in the block. The excavated site (Fig. 2) consists of terraces and pits along a ridge with an outlook over the plains to the south and east. A large slump terrace 20 m below the south side of the ridge was probably occupied or gardened, at least in parts, since a raised rim pit occurs on one corner of it. Flat areas on this terrace would have been suitable for occupation but there is no surface evidence apart from the pit.

No machinery other than bulldozers was available to do the work. This is recognised to be one of the less satisfactory machines for controlled stripping of sites. However, it was felt that vertical cuts through individual features with follow-up spadework to reveal selected parts in plan would be reasonably rewarding.

Initially, the layout and topography of the site was mapped with plane table and alidade, and cuts decided on. During machine work, each pass of the bulldozer was checked as it was made for features showing up in horizontal or vertical surfaces. Terraces 1-2 and 6-7 were carefully watched for postholes. Following machinework, the sections were cleaned up by spade and trowel, and recorded. Further excavations were carried out by hand on parts of terrace 1-2, the firepits, pit 4-5, terrace 6-7, and pit 10-11, to retrieve further evidence of structures.

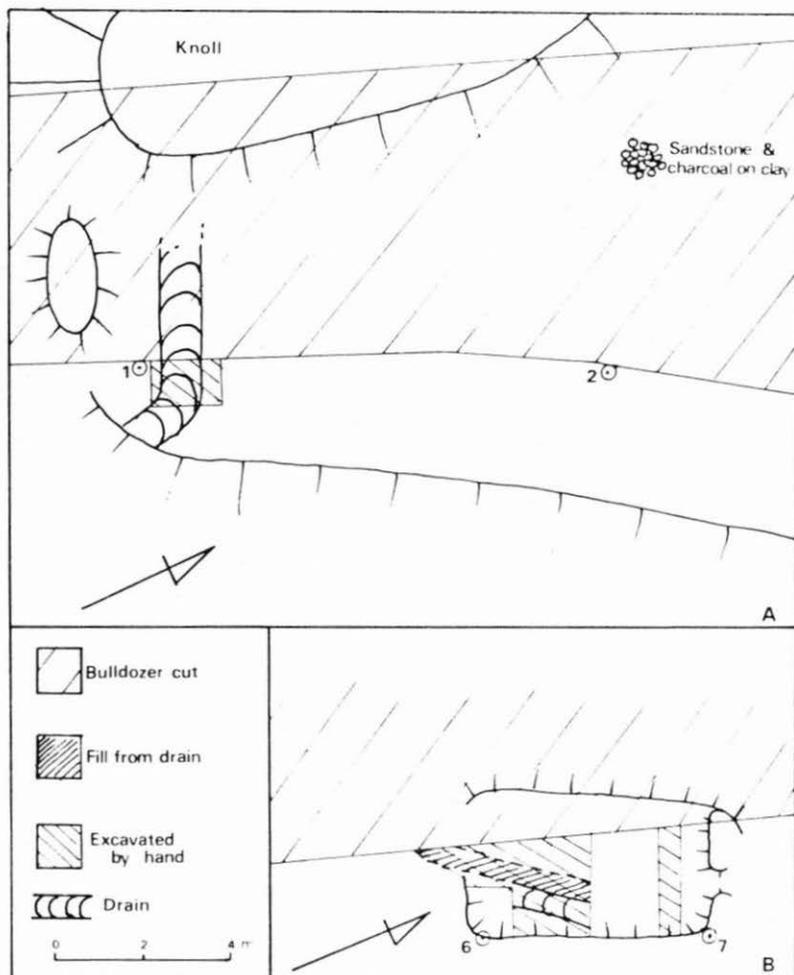


FIGURE 3. Plans of excavated area and features of Terrace 1-2 (A), and Terrace 6-7 (B).

Stratigraphy. The central steeppland yellow-brown earths typically consist of a brown topsoil, with a shallow yellowish-brown subsoil on weathering rock (N.Z. Soil Bureau, 1968 I:59). Stratigraphy of the cultural features had three common elements:

1. a brown to black clay loam topsoil,
2. a firm variably mottled brown to grey clay fill with numerous fragments of sandstone (some red or orange suggesting that they had been burnt),
3. a substrate of a yellow to brown clay mixed with more or less yellow to brown sandstone blocks.

The second was the predominant form of fill in the bottom of all the pits.

The plan and stratigraphy of selected features may now be discussed. Feature numbering is derived from reference pegs (Fig. 2).

Terrace 1-2 (Figs 3a and 4a). This was the largest of the terraces on the site. It had been formed by excavation into a knoll leaving banks to the north-west and south-west. A drain followed the base of the south-west bank and out over the edge of the terrace. A lens of charcoal and some stones lay towards the rear of the terrace. The dark brown loam topsoil lay on a natural yellow-brown clay with a distinct level interface. The terrace was probably the site of a shelter or house, although no postholes were detected.

Terrace 6-7 (Figs 3b and 4b). This was stratigraphically the most complex feature on the site and its interpretation is difficult. A drain had been cut across the south-east corner, and continued south beyond the terrace. Fill from the drain lay in a heap immediately beside it. The drain did not extend to the north part of the terrace. Lenses 4 and 5 are interpreted as fill from clearance of the terrace. Lens 3 was probably cultural soil washed into a small basin formed by slumping of the water-saturated light grey sandy clay (7) beneath. The drain appeared to exit in the vicinity of Lens 3.

If this interpretation is correct, the usable terrace forward of the drain was rather small, perhaps 1.5 x 5 m, and its function is obscure. A possible explanation is that the terrace was for a house or shelter and that the front of it has slumped.

Pit 4-5 (Figs 5b and 6a). The bulldozer cut was at a slight angle to the long axis of this pit. The north-east quadrant was spaded out. By the north end wall there was a shallow depression about 50 x 25 cm in plan which may have been a drain. Three postholes were detected: the northernmost 13 cm diameter and 18 cm deep, the central, 12 x 30 cm and slightly off vertical, the southern, 13 x 30 cm below surface of natural clay. The pit is Type 1 in Fox's (1974) typology.

Pit 10-11 (Figs 5a and 6c). Like the other four pits of this part of the site, this pit had been dug down to the level of some large blocks of sandstone. There were no signs of postholes in a metre-wide strip dug across the centreline.

Treefern charcoal was found at the base of the pit in a section cut by the bulldozer, and after spadework, at the base of the east wall (Fig. 6c). The structure of the charcoal was well preserved and suggested that the treefern logs had lain parallel to the main axis of the pit. The logs were therefore probably a floor or lining for this pit, rather than part of the super-structure.

Other pits. These were not opened up by spade, and apart from some evidence of slumping of the end wall (pit 8-9) were fairly typical of the series. No structural evidence apart from the vertical profile of the pit was seen in these sections.

Firepit (Fig. 6b). An oval depression about 2 x 1 m, some 20 m south-west of pit 4-5 was opened in vertical section by the bulldozer. Lenses of black loam (2 and 2B in Fig. 6b) with lumps of charcoal were followed out by spade; there was a higher proportion of charcoal at the base. One lens contained fragments of sandstone and was probably an oven.

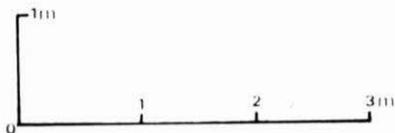
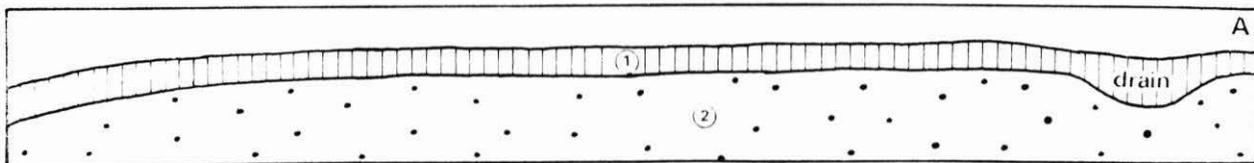
Portable material culture. Obsidian might have been expected but was not found. Two chert flakes were retrieved from terrace 1-2, and one from pit 4-5.

Summary and discussion of archaeological evidence

The site consisted of a number of pits and some terraces and a firepit. Some information has been gained about the structure of the pits, although more could have been gained by further opening up in plan. No evidence of postholes or standing structures (as opposed to drains) was obtained on the terraces. This may have been the results of the methods used, but this is believed unlikely. No function other than some form of shelter is suggested for these terraces.

The chert flakes are of some interest. They would derive from an East Coast source, where suitable deposits are not well known but are probably localised. They indicate that the site was probably prehistoric, and the clear evidence for a good-sized population in this area in the 18th century suggests that the date for the site would be late. The relatively little-weathered state of the pits and terraces also suggests a late date. This remains to be confirmed by the receipt of carbon-14 dates, samples for which have been taken from the firepit and pit 10-11.

Terrace 1-2



Terrace 6-7

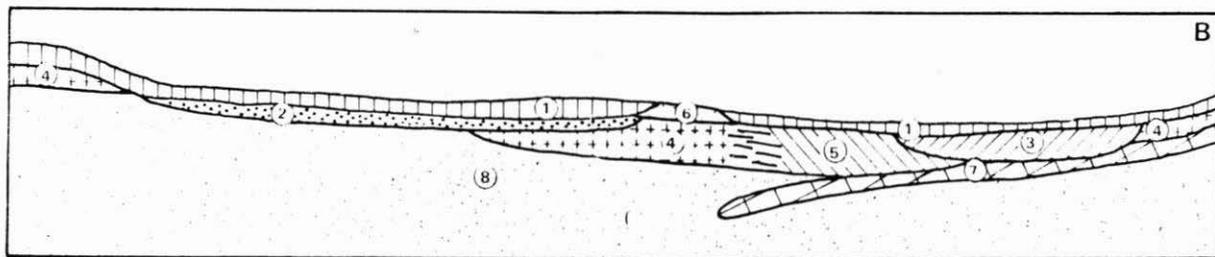


FIGURE 4. Sections on bulldozed scarp of Terraces 1-2 and 6-7.

Stratigraphy: A. 1) dark brown loam topsoil; 2) yellow-brown clay.
 B. 1) brown loam topsoil; 2) yellow-brown loam fill; 3) black loam with fragments of sandstone at base, charcoal lumps; 4) light brown loam, grades into; 5) black with charcoal lumps; 6) yellow-brown clay fill from drain; 7) wet light-grey sandy clay; 8) yellow-brown clay.

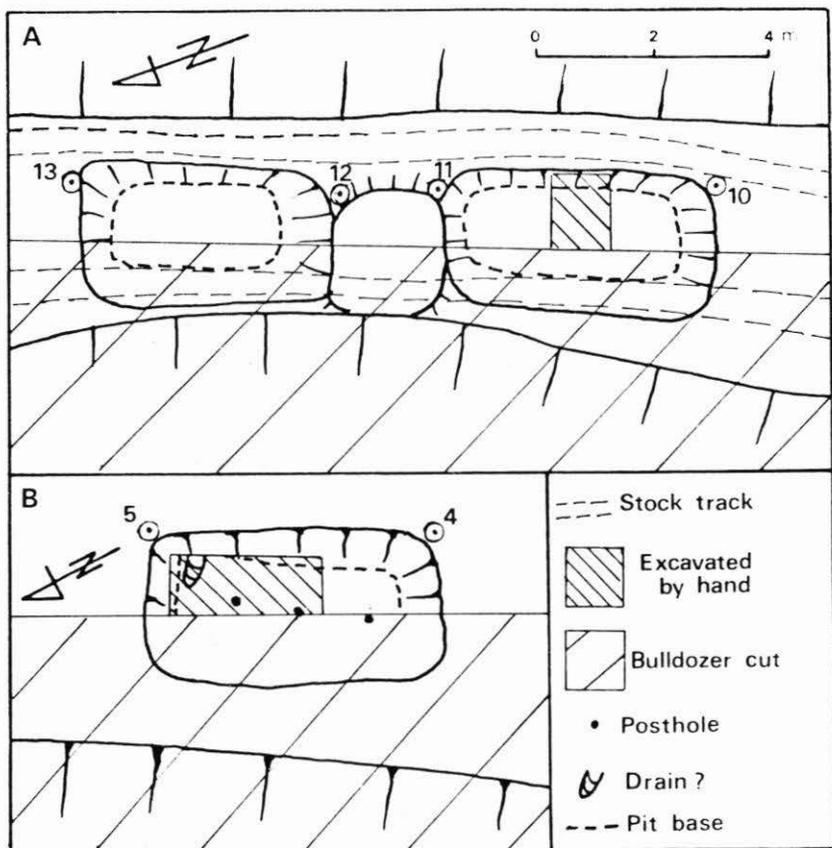


FIGURE 5. Plans of pits: a. 10-11, 12-13; B. 4-5.

It seems likely that the pit superstructures were destroyed by fire, since the fill contains fragments of a reddish sandstone, and there is tree fern charcoal at the base of the pits. Specimens of sandstone from the site placed in a backyard fire which was then smothered, developed a light orange colour not dissimilar to the archaeological fragments. The consistency and lack of erosion evidence in the brown and grey fill suggests that this was originally the roof covering of the pits, which slumped into the cavity on destruction of the supporting structure. The use of tree-fern for a lining in pits is known elsewhere (Fox, 1974).

Two lines of rather tenuous evidence may be followed to produce a figure for the number of people that occupied the site. All features of the site are assumed to be synchronous for the purpose of this analysis. One large terrace and the three smaller ones would have held houses or shelters with an estimated population of one extended and three nuclear families, a total of 20-30 people (10-15 adults, and 10-20 children).

Another approach is to consider the food available from the storage system. The total capacity and available food would be as follows.

Seven pits, average volume $3 \times 1 \times 1 \text{ m} = 21 \text{ m}^3$ are assumed to be half filled with kumara, with specific gravity of 1 = 10.5 tonnes. Wastage, less 10% = 9 tonnes. Seed, less 20% = 7 tonnes. Thus the total available is 7 tonnes.

Assuming a consumption of 1 kg per day per individual for eight months of the year the total is 250 kg/head.

Therefore the total number of people supported is 30. (Figures for wastage, seed and individual consumption after Leach, 1976: 181,213).

These figures are in fairly good agreement and suggest a figure of around 20-30 people for this settlement.

The archaeological evidence raises broadly theoretical issues that need consideration that cannot be detailed here. For example, the contrast between this settlement pattern and that of the Bay of Plenty has been often noted (e.g. Davidson, 1981:12). Whether further field research will confirm this remains to be seen. There is some evidence for a degree of nucleation in settlement associated with fortifications, and this needs to be identified and carefully considered.

Locational analysis (Jarman, 1972) offers some prospect of identifying matters relevant to nucleation and to the seasonal or daily exploitation of resources. Was the coast an apparently 'short' distance away because of the availability of canoe transport? Where are the inland midden deposits that might prove this? Is there a distinctive settlement pattern that emerges

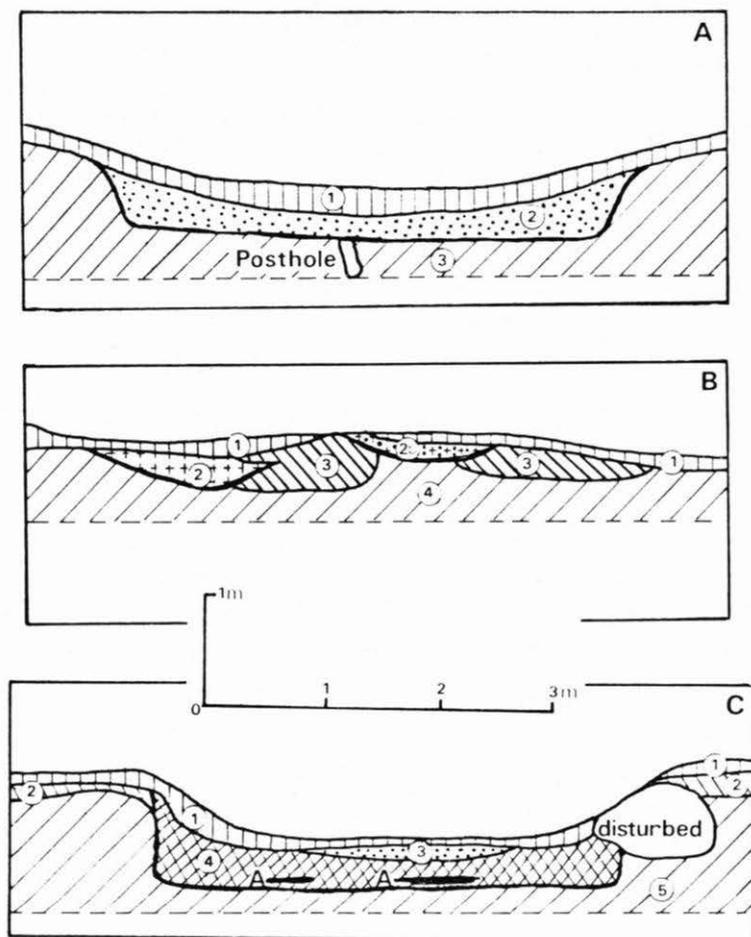


FIGURE 6. Bulldozer cut sections of Pits 4-5 (A) and 10-11 (C), and firepits (B). Stratigraphy: A. 1) brown or black loam; 2) grey clay loam with sandstone inclusions; 3) yellow-brown clay. B. 1) brown loam; 2) black charcoally loam; 3) light brown loam; 4) yellow-brown clay. C. 1) dark brown loam; 2) brown loam; 3) yellow-brown soil wash; 4) brown clay loam, yellow-brown sandstone inclusions; 5) yellow-brown clay with sandstone blocks; A) sections of carbonised tree fern.

from the relationships of ridge-top transport on foot, and water transport through the swampy river flats? The model put forward by Irwin (1973), which refers essentially to coastal villages with an important emphasis on root crops cultivated in satellite hamlets, may usefully be applied in Tolaga Bay. Recognisable differences exist, for example the river transport used in Tolaga Bay, and the probability that the Maori storage system can give an idea of the 'size' of the settlement unit. Elaboration of these themes depends on more fieldwork.

Conclusions

The excavated site (N89&90/222) is a group of storage pits, living and cooking areas which may be assumed to be contemporaneous within the limits of accuracy possible in archaeological studies. Earth-roofed pits and relatively lightly built houses on terraces were the main forms of structure on the site. It is a large example of ridge settlement typical of inland Tolaga Bay. Occupation in all seasons seems likely, with excursions to the coast and to the hinterland. A late date for occupation, say in the 17th or 18th centuries is preferred, but remains to be confirmed. The settlement probably lay in an area of swamp and hill forest, modified by fire along the ridges and some hill slopes. Much of this cleared area would have been in the fallow cycle of extensive ridge top "burn and slash" horticulture.

Although this exercise was a rescue excavation, it has been conducted with an interest in the nature of inland settlement in Tolaga Bay. The protohistoric evidence is a tantalisingly easy source of interpretation for evidence of the sort recovered. Various observations on the Endeavour in 1769 have been summarised by Davidson (1981:12) as that of a dispersed settlement pattern, with hamlets containing up to several families or about 20 people in an extended family; i.e., settlements not dissimilar to those here defined by archaeology.

Acknowledgements

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References

- Banks, J. 1962 The Endeavour Journal of Joseph Banks 1768-1771. J.C. Beaglehole (ed.). Sydney, Trustees of the Public Library of New South Wales.

- Connor, J. 1980 Site Survey Report: Inland Tolaga Bay, East Coast, North Island. N.Z.H.P.T. unpublished report.
- Cook, J. 1955 The Journal of Captain James Cook, Vol. 1: The Voyage of the Endeavour 1768-1771. J.C. Beaglehole (ed.). Cambridge University Press.
- Davidson, J.M. 1981 The Polynesian foundation. Pp. 3-27 in Oliver (ed.), The Oxford History of New Zealand. Wellington, Oxford University Press.
- Fox, A. 1974 Prehistoric Maori storage pits: problems in interpretation. Jnl Polyn. Soc., 83:141-154.
- Henderson, J. & M. Ongley 1920 The Geology of the Gisborne and Whatatu Subdivisions, Raukumara Division. New Zealand Department of Lands Geological Survey Branch Bulletin (N.Z.) 21. Wellington, Government Printer.
- Irwin, G. 1973 Man-land relationships in Melanesia; an investigation of prehistoric settlements in the Islands of the Bougainville Strait. A.P.A.O., 8:226-252.
- Jarman, M.R. 1972 A territorial model for archaeology: a behavioural and geographical approach. Pp. 705-733 in D.L. Clarke (ed.), Models in Archaeology. Methuen, London.
- Leach, H.M. 1976 Horticulture in Prehistoric New Zealand. Unpublished Ph.D. thesis, University of Otago.
- Lysaght, A.M. 1979 Bank's artists and his Endeavour collections. Pp. 9-80 in T.C. Mitchell (ed.), Captain Cook and the South Pacific. London, British Museum Publications.
- N.Z. Soil Bureau 1968 Soils of New Zealand. N.Z. Soil Bureau Bulletin 26.
- Parkinson, S. 1773 A Journal of a Voyage to the South Seas in His Majesty's Ship, the Endeavour. London, Stanfield Parkinson.