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INTERIM REPORT ON STAGES IV AND V OF THE MARUKA
INVESTIGATIONS, KAWERAU, BAY OF PLENTY

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Five stages of archaeological investigation have been completed at Kawerau in the Bay of Plenty (Figs 1 and 2). Interim reports on Stages I, II and III have been published (Phillips, 1981a; Lawlor, 1981 and Furey, 1981, respectively). The final report for Stages I, III and IV have been completed (Phillips, 1981b; Furey, 1983 and Lawlor, 1983b) and the final reports for Stages II and V and the complete investigation are in preparation. This interim report summarises Stage IV and V excavations undertaken by the Department of Anthropology, University of Auckland, for the Historic Places Trust.

Stage IV

Stage IV investigations were undertaken in the period 4-16 July 1981 with a team of seven archaeologists and one botanist (Fig. 3). The aim of the investigation was three-fold: firstly, to locate areas most likely used for prehistoric gardening; second, to expose areas of old peat swamp in order to obtain samples of peat for plant, pollen and sediment analysis; and thirdly, to undertake a botanical survey of the Kawerau and interior Rangitaiki Plains area. These investigations were to place the excavation of site N77/606 (Stage III) within its wider physical and cultural setting (Fig. 4).

A traxcavator took two days to open approximately 592 m² of trench to a depth of 1.5-2 m. Ten long exploratory trenches were excavated in order to examine valley areas for evidence of gardening and peat swamp.

Instability of ash deposits and the massive size of sections were the two main problems during the excavation. Deep sections and unstable pumice and sand ashes resulted in frequent cave-ins. These disturbances hampered recording and resulted in much time and effort being spent upon re-establishing reference points, levels and clean sections.

The length of the trenches necessitated the use of a small scale (1:50) for recording. This masked very thin layers such as the third basal member of the Kaharoa Ash and

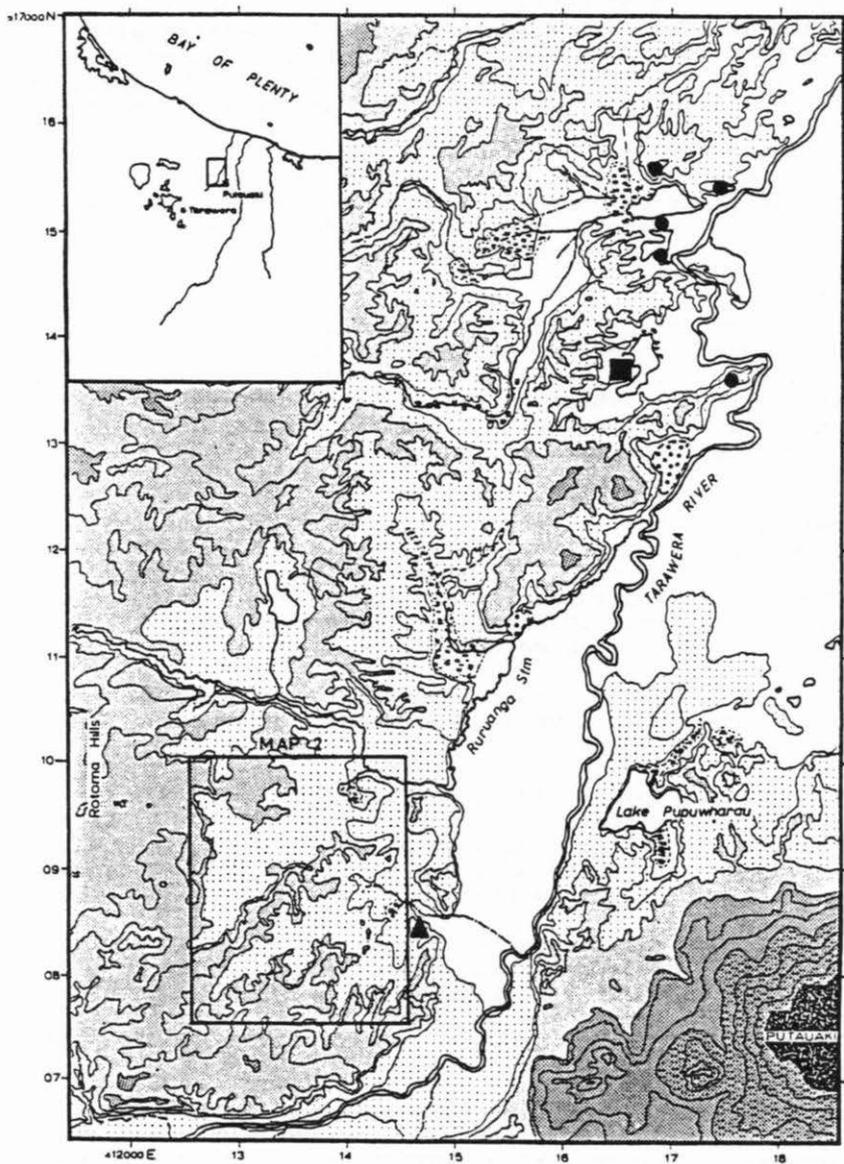


FIGURE 1. Location map.



- ▲ Maruka's Pa
- Waitahanui Pa
- Pa



the alluvial banding within the charcoal stained sand underlying the Tarawera Ash (Layers VII and IV respectively). This problem was remedied by the large scale recording of either unique or general stratigraphic features as specific points along the trenches. Detailed photographic records assisted with this scale drawing.

Stratigraphy. The stratigraphy within three trenches (1, 2 and 9) was recorded completely. A sectioned drain feature at the head of Trench 7 was also recorded in detail. A photographic record, supplemented by field notes, was made of other trenches.

The stratigraphy within the trenches was very similar to that found in previous excavations (see Lawlor, 1981 and Furey, 1981). The layers can be divided into four groups: volcanic air-fall ashes; buried soils and vegetation disturbances; alluvial deposits and disturbances; and, culturally disturbed deposits (garden soils).

The air-fall ashes (Layers II, VII, IX to XII) represent relatively short eruptive periods spanning the last 10,000 years. They originated from the Okataina Volcanic Centre. These eruptions have usually been followed by periods of inactivity when, presumably, vegetation became established and soil developed. With each successive eruption ashes and soils became buried.

The boundaries (contacts) between the ash formations within the excavations were predominantly smooth and regular following the contours of the old surfaces.

The buried soils between the ashes were not easily identified in the field. The buried soil overlying the Waiohau Ash was identifiable because of its 'greasy' texture. The Whakatane Ash buried soil was noted as a dark brown stain along the upper contact surface.

The latter was predominantly associated with regular concentrations of organic-rich reddish-brown sandy loam protruding into the overlying Kaharoa Ash. These protrusions disrupted the natural bedding of the ash and were identified as the remains of trees growing on the surface of the Whakatane Ash.

The buried soil overlying the Kaharoa Ash was for the most part absent. It is presumed to have been disturbed by gardening activity. When present it was characterised as a dark brown pumiceous sand with some concentrations of brown silt. The most easily identified buried soil was the

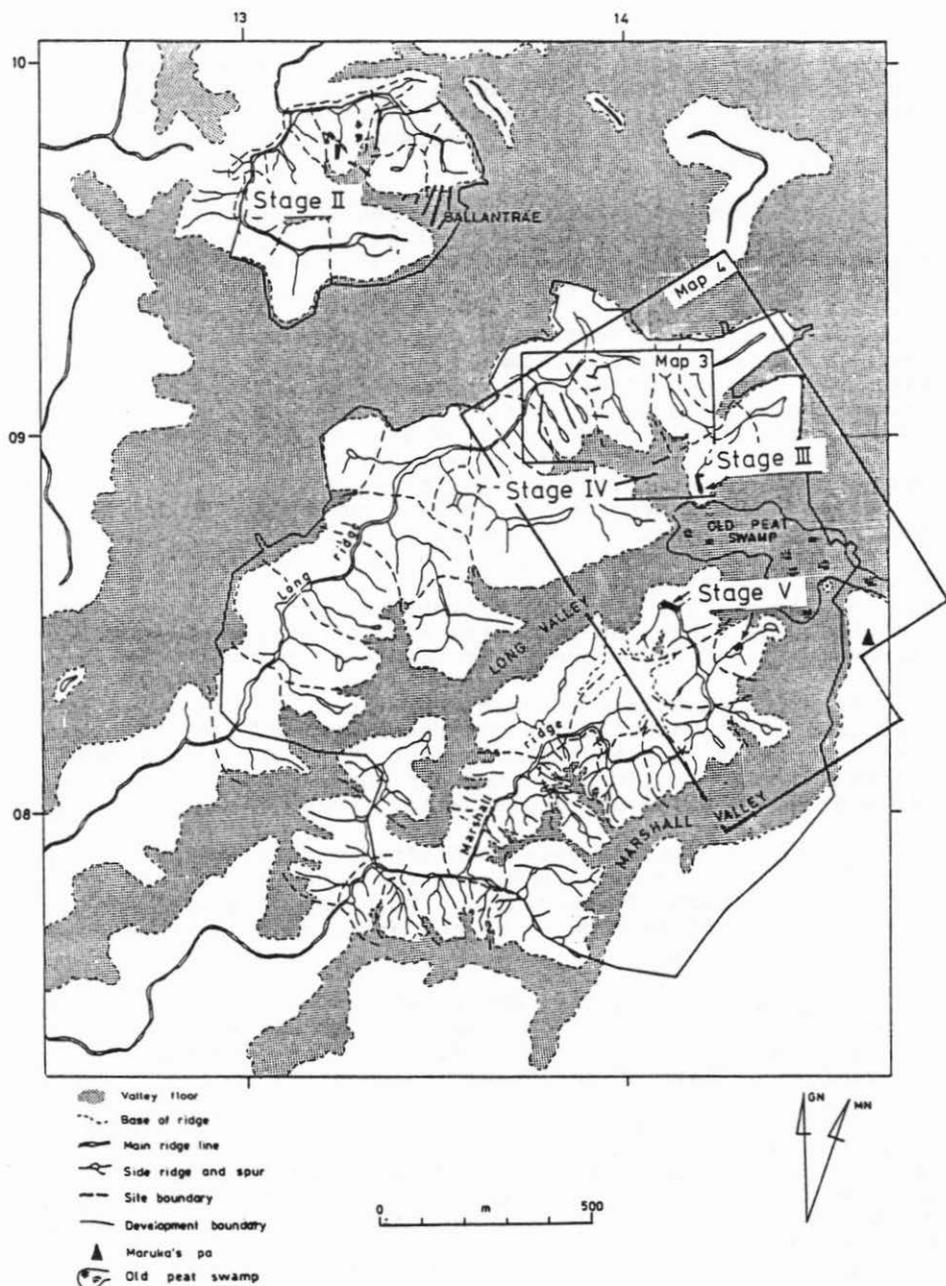


FIGURE 2. Maruka investigation area showing location of Stages I to V.

charcoal stained sand (Layer III) underlying the Tarawera Ash. Some of the charcoal fragments within this buried soil have been identified as the stems of bracken fern, manuka twigs and tutu seeds. Natural erosion channels were identified within Layer III.

Silt, sand and pumice alluvial deposits were located in the valley bottoms. The mineralogical composition and texture of the layers suggests that they were mostly derived from re-deposited Kaharoa Ash.

The most marked feature of the trench stratigraphy was the continuous deposit of mixed sand and pumice (Layer VI). This soil was identified as a culturally disturbed deposit (garden soil) because it was:

1. a predominantly mixed layer of ash not accounted for within the known tephro-stratigraphy of the region (see Healy et al, 1964; Pullar and Birrell, 1973);
2. a well mixed deposit of sand and pumice ash with no obvious shower-bedding or alluvial banding;
3. a homogeneous ash mixture with occasional flecks and fragments of charcoal; and
4. a unique layer because it truncated both the Kaharoa and Whakatane Ashes and their respective buried soils indicating widespread disturbances to tephro-stratigraphy.

Previous excavations noted that the thickness of garden soil identified specific garden areas (Lawlor, 1981:185). During Stage IV investigations a pattern of stepped gardens within a single valley was noted but for the most part gardens seemed to occupy whole valley areas.

Six drain features were identified within trench sections. They possibly indicate the location of four drains at the base of hillsides. They may have been designed to control surface water and erosion so as to maximise gardening space.

Old peat swamp. Trial trenches excavated during May 1981 (Stage III) exposed a 30 to 50 cm peat deposit within the valley below terrace site N77/606. This peat deposit was re-examined as part of the Stage IV investigations.

Contractors working on the subdivision development had excavated an extensive series of drains at the junction of the Long and Marshall Valleys. By surveying the drains it was possible to trace the extent of the peat throughout the valley floor and to reconstruct a sequence of events tied to the prehistoric occupation of this area.

1. After the Kaharoa Ash eruption a vegetation cover became re-established within the valley.



FIGURE 3. Stage IV team (from left): Bruce Cramond, Brett Peacock, Michael Taylor, Elizabeth Brown, Louise Furey, Ian Lawlor, Golda Kunin, Robert Pollock and Tania Wilson.



FIGURE 4. N77/606 (centre right) and trenches, looking east toward Kawerau township.

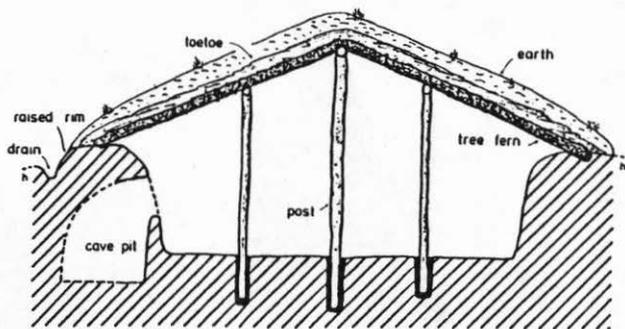
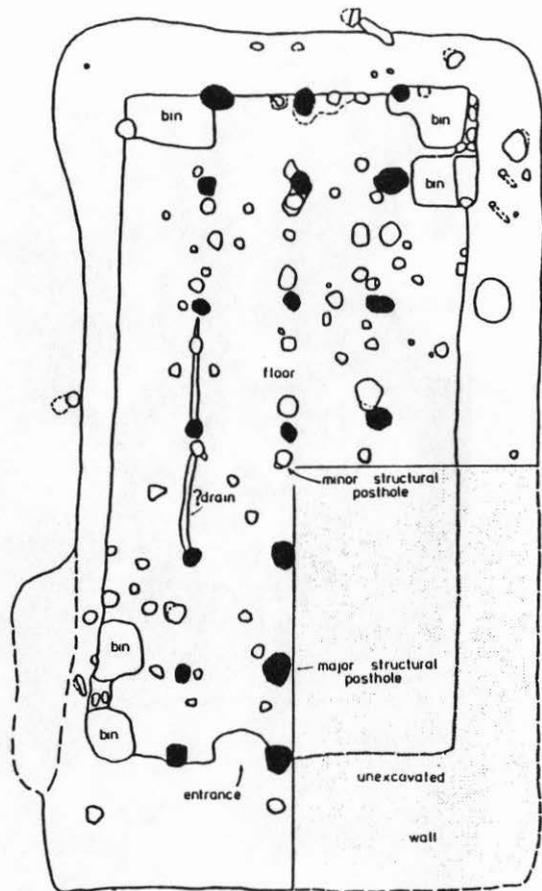


FIGURE 5. Plan of excavated pit, and pit reconstruction.



2. Ash from the surrounding hillsides was eroded, probably resulting from natural processes and gardening activities, and was deposited within the valleys.
3. A fine olive silt was deposited over the alluvium of the valley floor. This silt probably represents a base deposit of a shallow fresh water lake. (The silt is to be examined for diatoms which are indicative of such lake deposits within this region - see McGlone and Pullar, 1976:110).
4. The decomposed sedge peat overlying the olive silt shows that swamp associated plants became established. Large tree trunks (80 cm diameter) and tree roots indicate the presence of a swamp forest.
5. The peat was covered with a 50 cm deposit of Tarawera Air-fall Ash.

No direct evidence for prehistoric Maori activity was found but a number of tree trunks had been burnt and the degree of peat carbonisation indicated that the swamp had been subjected to frequent fires.

Analysis of the plant remains (pollen, seeds and wood) from within the peat is currently being undertaken. This data, when compared with a modern vegetation survey (Brown, 1982), will enable a comprehensive reconstruction of the local prehistoric environment.

Summary. Stage II and III excavations had indicated that the removal of Kaharoa Ash from terrace sites was deliberate. Stage IV excavations indicate that there was also deliberate removal of the Kaharoa Ash from the hillsides into the valleys for gardening. The prehistoric gardeners had taken advantage of natural topographic features and the Kaharoa Air-fall Ash within the valleys to form a series of gardens.

Although no direct evidence of plants was found during the excavation it is reasonable to assume that the gardens, identified within the trenches, were used for the cultivation of kumara. It is likely that the semi-cultivated rhizome of bracken fern was an alternative food source. Firing of regenerating vegetation would have added wood-ash and nutrients to the soil, thereby improving yields. The whole ridge and valley system within the investigation area represents an extensive prehistoric horticultural system.

Stage V

Priority in Stage V excavations of the Maruka programme was given to sites or features that:

1. had not previously been excavated;
2. had not received detailed attention in previous excavations; and

3. had been studied, but still presented problems of interpretation (Lawlor *et al*, 1981:9). Excavations were carried out in the period 17 January-16 February 1982. One large pit site (N77/587-4) and a terrace site (N77/588-6) were excavated (Table 1). A third valley garden site (N77/596) was not investigated as planned because subdivision earthmoving development placed pressure upon completing investigations of the terrace and pit sites.

Pit site N77/587-4. This pit is situated on a large terrace (42 x 6.2-22.2 m) located at the north-eastern end of the Marshall Ridge on a low knoll which projects onto the flat land at the junction of the Long and Marshall Valleys. The knoll rises at an angle of 22 to 32 degrees to a height of 27 m above the valley floor. It is joined to the main ridge system by a low saddle.

Three quarters of the pit was excavated. A large semi-subterranean rectangular pit structure 11.84 x 5.6 m, 2.4 m deep) was exposed (Figs 5 and *cover*).

Five bin features and 73 postholes were uncovered on the floor of the pit. The bin features were most likely constructed to hold tree-fern posts designed to reinforce the pit corners. One may assume that the corners were structurally the weakest points because of the numerous thin ash layers present. Twenty-one postholes were identifiable as major structural features of the original pit, while most of the remaining 52 postholes appeared to represent reconstruction activities. Some may have functioned as additional support posts and other smaller stake holes may be related to internal subdivisions of the larger pit. A further 20 postholes were located upon the pit walls. The entrance to the pit was identified at the eastern end by a sloping step on the pit floor (Fig. 5). The pit had a raised rim and drain feature along its northern side. A shallow drain feature was uncovered on the floor of the pit.

Excavation of the pit fill indicated that segments of the raised rim had collapsed onto the floor. A mixed ash soil comprised most of the fill.

A single cave pit was uncovered in the side of the large pit. (A cave pit can be defined as an artificial hole cut into a vertical face of rock or compact sediment. The floor plan of cave pits vary from rectangular and oval to D-shaped. The roof is nearly always dome-like or 'beehive-shaped' or some other variation on this basic form; see Best, 1974: 92-98).



FIGURE 6. House with pumice hearth at N77/588-6.

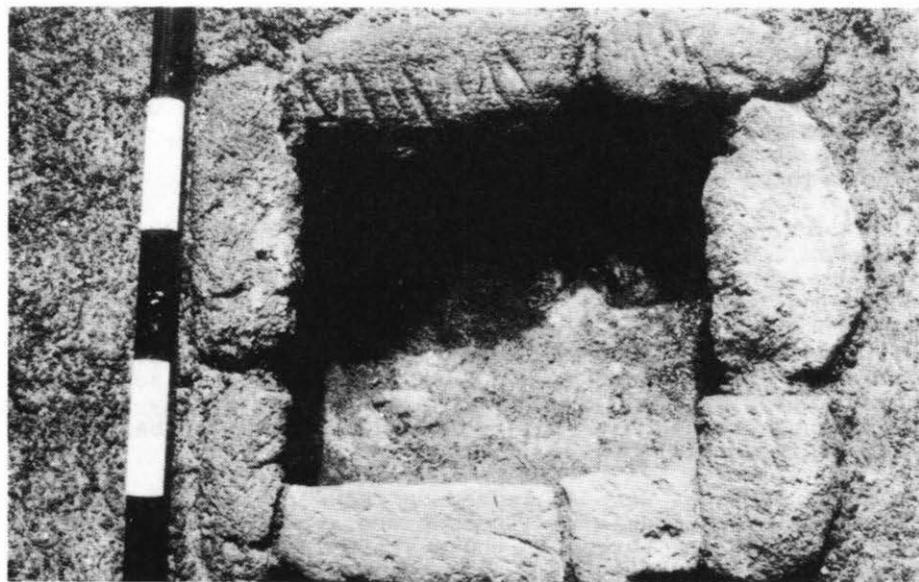


FIGURE 7. Pumice 'brick' hearth (scale 10 cm intervals).

The prehistoric excavation of the large pit had exposed a near vertical face of old relatively compact Rotoma Ash. Stratigraphic evidence from the pit fill indicated that the cave pit had been constructed after the large rectangular pit had ceased to function as a storage structure.

The cave pit was first located during excavations by its entrance hole (60 cm wide and 80 cm high). Once half the fill had been excavated the cave pit was estimated to measure 1.8 x 1.2 m. The floor-plan was D-shaped with the straight edge located beneath the entrance. The roof was slightly domed although this appearance may have resulted from roof-fall. The entrance was raised 50 cm above the floor of the large rectangular pit. From the entrance there was a 90 cm drop to the floor of the cave pit. Best (1974:95-6) suggested that the position of the entrance on such pits was a design feature to conserve warmth. No doubt the entrance position also made it difficult for rats to enter the pit (see Lawlor, 1983a, for a discussion of Maruka Investigation kumara pits).

A hangi was exposed on the surface outside the large rectangular pit. Finds from the pit excavation include 24 obsidian flakes, a large rectangular piece of pumice, fragments of carbonised wood and tree-fern, and decomposed post remains.

Terrace site N77/588-6. Since excavation this site has been destroyed by subdivision development. The site was located at the extreme north-eastern end of Marshall Ridge where Marshall and Long Valleys meet (Fig. 2). The ridge and two main spurs rose 25 to 30 m above the valley floor. The hill-sides sloped at an angle of 30 to 35 degrees.

Terrace 6 within Site 588 was a transverse ridge-top terrace. The main eastern area of the terrace was 30.5 m long by 6 to 15.5 m wide and contained a pit depression measuring 7.2 m long by 7 m wide and up to 50 cm deep. The western area of the terrace was protected by the knoll of the hill and contained two sheltered zones. The first, 70 cm below the knoll, measured 8.3 x 4.4 m. The second zone measured approximately 5.5 x 4 m wide and sloped gently up to the first sheltered zone. The knoll was estimated to be 1 m above this second zone.

The terraces were sheltered on the south and west sides by raised earth 'banks'. These protected areas were interpreted during the survey as house sites (see Phillips, 1981b: 25-26).

The aim of excavations at Site 588-6 was to thoroughly investigate the sheltered zones and other areas of the terrace. This site-type had not previously been investigated.

Excavations uncovered 300 m² and exposed: the posthole remains of two houses (Figs 6 and 7) within the sheltered zones (one with a centrally located hearth of pumice 'bricks'); ten rectangular semi-subterranean pits; seven bins or store holes; at least one possible shelter identified by regular lines of postholes; numerous hangi and scattered cooking stones; 270 obsidian flakes; 4 adzes; filestones; and, a discrete tuatua shell dump.

The orientation of the 17 pits and the stratigraphic evidence indicated there had been at least three re-building periods upon the terrace. The sequence of pit features shows that the first pits were constructed along a ridge between two knolls, probably to take advantage of the easy access to the consolidated Rotoma Ash (Lawlor, 1981). At a later date the knolls at either end of the ridge were remodelled and a series of new pits built. A third remodelling occurred at a later date.

The stratigraphy at terrace 588-6 was very similar to that found within the pit site 587-4. Remodelling of hill-tops had exposed a regular series of volcanic air-fall ash deposits across the terrace. On the outside of the terrace the youngest ash (Tarawera Layer II) was found, while the oldest ash (Rotoma Layer XI) was exposed at the centre. The pit features were dug into the older consolidated deposits.

Both sites were covered with either charcoal stained sand (Layer III) or mottled sand (Layer IV). These layers were covered with Tarawera Ash and turf and topsoil (Layer II and I respectively). All evidence of occupation indicated that the sites were occupied after the Kaharoa Air-fall Ash eruption. Activity upon the sites probably dates to the 15th and 16th centuries.

Summary. Stage V excavations reinforce previous conclusions that the investigation area was used extensively for kumara cultivation and storage. The recent additions to archaeological data (houses, midden, an extremely large pit and a cave pit) broaden our understanding of the prehistoric occupation of the back swamp lowlands in the Kawerau and Onepu areas of the Bay of Plenty.

Acknowledgements

The following people took part in Stage IV excavations: Elizabeth Brown (botanist), Barbara Carr, Bruce Crammond, Louise Furey, Golda Kunin, Brett Peacock, Robert Pollock, Michael Taylor and Tania Wilson.



FIGURE 8. Stage V team (from left): Heather Albert, Des Kahotea, Golda Kunin, Keren Lilburn, Gordon Jackman, Bruce Cramond, Wendy Gibbs, Barry Baquie, Jill Jones, Ian Lawlor and Elke Kurschus.

Stage V excavations: Heather Albert, Harry Allen, Barry Baquie, Jenny Blyth, Bruce Crammond, Wendy Gibbs, Jill Jones, Gordon Jackman, Des Kahotea, Golda Kunin, Elke Kurschus, Keren Lilburn and Paul Moffatt (Fig. 9). A group of students from Rangitahi College under the guidance of Wiki Robinson and Jim Moffatt assisted with excavations over one weekend. They included Chris Cameron, Nick Doney, Kenny Ford, K. Manderson, Eric Steiner and Jo-Anne Vari. Doug, Mook and Avi Sutton, Wynne Spring-Rice, Ian Barber, Keren Lilburn and Paul Moffatt helped to complete excavations of the large pit site N77/587-4. To all these diggers I would like to express my thanks.

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