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EXCAVATIONS AT THE BULLER RIVER SITE (K29/8), JANUARY 2004

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Background

The Buller River site (K29/8) is located on the south (true left) bank of the Buller, or Kawatiri, River directly across from Westport and approximately one kilometre from the present shoreline (Figures 1 and 2). This area was cleared of timber and first ploughed in the 1920s, uncovering the site and revealing many artefacts, some of which made their way into private collections (Orchiston 1974: Appendix 2). Site K29/8 first came to the attention of archaeologists after it was visited by Owen Wilkes in 1965 and entered into the New Zealand Archaeological Association Site Recording Scheme. When Wilkes visited the site it was considered to be well protected with the main occupation layer lying below the plough line, although oven stones and pipi (*Paphies australis*) shell were visible over part of the surface. Wilkes described the site as "midden/ovens" and noted that the artefacts collected by the farmer were typical of Duff's moa hunter assemblage (Site Record Form, K29/8). In 1969 Wayne Orchiston carried out a small scale excavation on the site as part of his doctoral research from the University of Sydney. Orchiston noted that considerable coastal progradation had occurred in the last 100 years, particularly since the construction of the Westport Harbour mole, and that it is likely that K29/8 lay directly adjacent to the coast and Buller estuary when occupied (Orchiston 1974: Appendix 2). The results of his excavation were never published but his (1974) thesis contains a summary account of the work and his field notes are held at the Canterbury Museum. Orchiston's excavation confirmed the Archaic status of the site and radiocarbon dates obtained from shell and charcoal indicated occupation within the 14th century AD. From the ovens, midden and post holes exposed during his fieldwork Orchiston concluded that future areal excavations would reveal "the community pattern of the single settlement associated with this cooking" (1974: Appendix 2). In a 1982 review of New Zealand regional archaeology Anderson

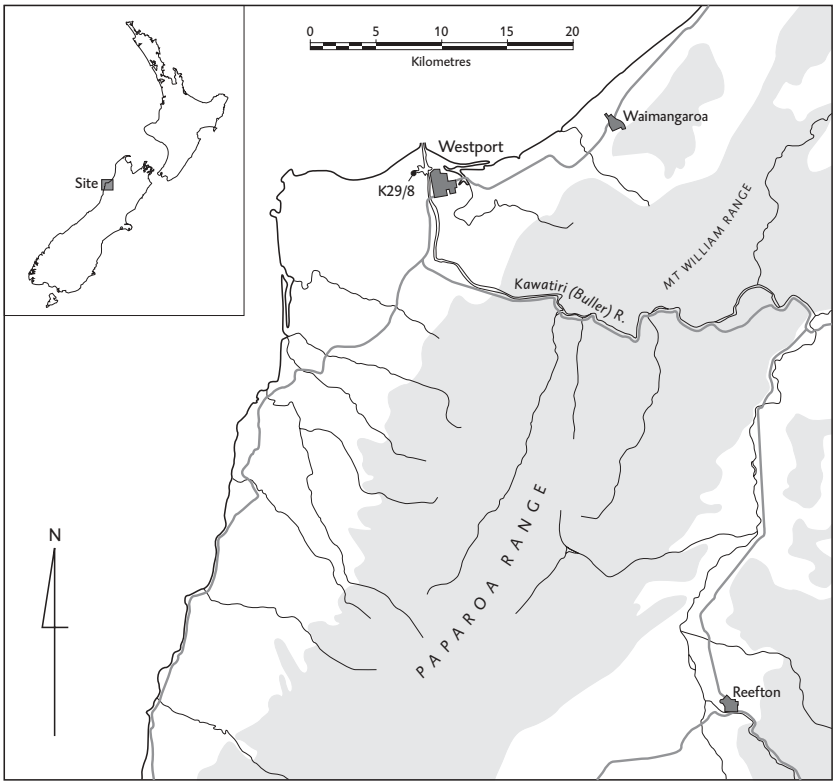

Figure 1. West Coast of the South Island showing location of the Buller River site (K29/8).

described the West Coast as an "archaeological terra incognita" (Anderson 1982: 103) and noted that the Buller River site was one of only four sites containing any information about the earliest phase of settlement in that part of the country.

Since the 1960s the site has remained relatively undisturbed although grazing has continued there. In 2003 the New Zealand Historic Places Trust was made aware of plans by the current landowner to flip the land to improve the pasture. Flipping is one of a number of distinctly West Coast agricultural innovations with important archaeological implications. It is a procedure undertaken to improve soil productivity and drainage that involves inverting the ground to a depth of up to five metres using hydraulic excavators. Another local technique is known as humping and hollowing, in which wide, shallow drains

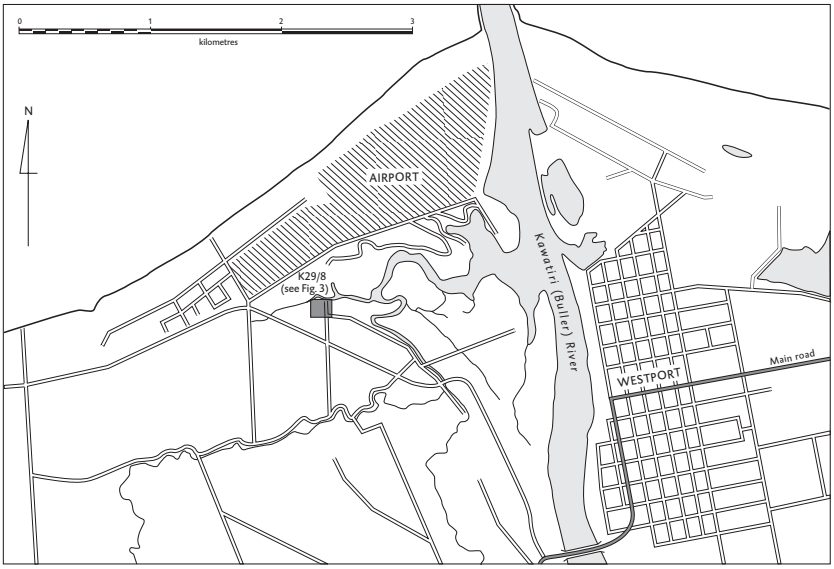

Figure 2. Westport showing location of the Buller River site (K29/8).

are excavated and are then redeveloped as pasture. Both methods have been used in pastureland adjacent to the Buller River site.

In response to notification of the proposed site modifications an investigation of the site was carried out by Walter and Jacomb in September 2003 (HPT authority 2004/1). This involved the excavation of a 1 x 1 m unit and a 70 m transect of 30 x 30 cm test pits in the western part of the site. These revealed a patchy and discontinuous archaeological horizon containing a few flakes of nephrite (pounamu) and quartzite. Jacomb and Walter (2004a: 6–7) concluded that although distributed over a large area, the site may have been composed of several discrete components. Thus it was suggested that the proposed development might in fact have a less critical impact then originally feared. However they also suggested that the range of artefacts previously recovered in the area were of sufficient significance to warrant further investigation. Additionally, it was considered desirable to establish the nature of remaining archaeological deposits on the eastern part of the site to determine options for long term site management there.

The excavations reported on here were carried out in February 2004 under the direction of Richard Walter (University of Otago) and Chris Jacomb (New Zealand Historic Places Trust) (Jacomb and Walter 2004b) in conjunction

with the 2004 Anthropology Department archaeological fieldschool (Paper ANTH 405). The excavation had management and teaching objectives but was designed and structured in such a way as to contribute to a larger programme of research into West Coast prehistory. A West Coast archaeology programme has been established under the direction of Walter and Jacomb with the aims of investigating prehistoric settlement patterns, economic adaptation and socio-cultural change on the West Coast of the South Island. A key part of the research is an investigation into the nature of early adaptation to temperate rainforest zones with relatively low productivity ecosystems and marginal horticultural conditions. The focus will be on comparative regional issues and on patterns of cultural change. The limited data already available shows evidence of rapid change in settlement patterns, subsistence practices and exchange systems. The West Coast research programme is a collaboration between the University of Otago and the Historic Places Trust with special partnerships with the Department of Conservation, Ngati Waewae and Ngati Apa. Several MA projects are currently in progress under the umbrella of this programme, and this year excavations have been carried out both at Buller River and at the roughly contemporary Heaphy River Mouth (L26/1) site. This report describes the excavations at Buller River in February 2004, outlines the results to date and canvasses options for future research.

The Site

The site occupies approximately 1.2 ha and is defined by a series of exposures in drains and cuttings on land now divided into three paddocks on two properties lying between Cape Road and the Buller River estuary (Figure 3). From the estuary the land rises gently to approximately 2 m above high water at around 20 m from the estuary margin. The ground here comprises a dense matrix of compacted silty soil and river cobbles 50–150 mm in diameter. This material forms a low ridge up to 100 m wide that runs parallel to the estuary margin and is probably the bank of an old river flood-channel. The archaeological site is situated on higher ground, between an old estuary shoreline and an extensive boggy area that has been humped and hollowed (Figure 4). In areas containing occupational deposits the silty soil has a much lower density of river cobbles. A drain approximately 1 m deep has been created along a fence line that divides the site in two from north to south and a shallower drain feeds into this from the west. Jacomb and Walter (2004b: 2) note that many of the artefacts recovered from the site by the landowner at that time were found during the excavation of the larger drain. At present the land on which the site lies is in two titles separated by the north-south fence line mentioned above. Part of the land within the eastern title also falls within a road reserve.

Figure 3. The Buller River site (K29/8) from the air showing current position of estuary and coastline.

2004 Excavations

The research aims of the excavation focussed mainly on the recovery of spatial information which might allow an interpretation of site structure and organisation. In addition we aimed to collect a faunal assemblage, and to supplement the existing material culture collections, which are biased towards large complete items, by the collection of a full and representative range of

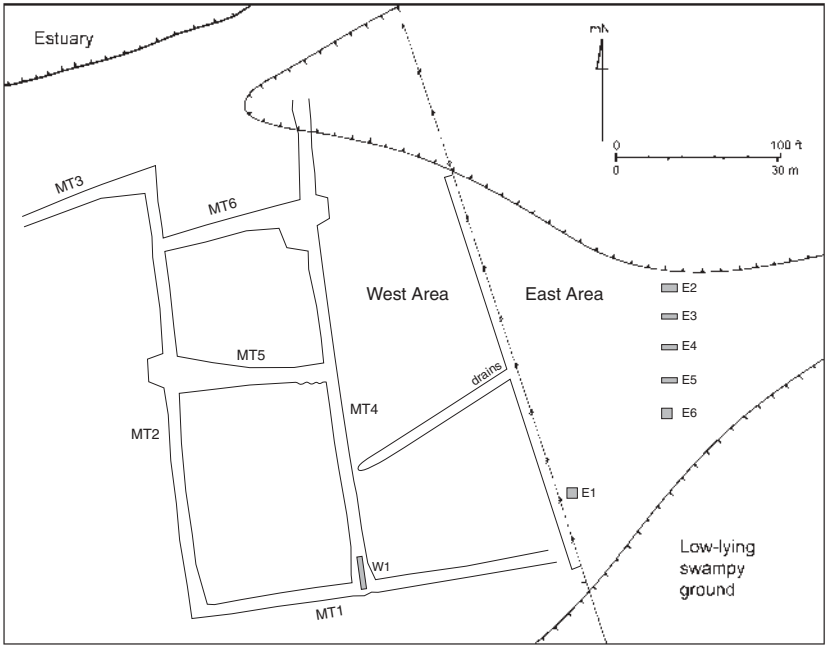

Figure 4. Site plan showing all 2004 excavation units including the machine trenches in the western area.

artefact classes. This would assist too in the reconstruction of resource networks and patterns of stone availability and use.

Excavations were carried out at different scales in different parts of the site. In the western area which was under most immediate threat and thus in greatest need of wide-scale assessment a hydraulic excavator was used to skim turf from a series of trenches. This technique provided the extensive exposure required for assessment of a large area, without inflicting unnecessary damage on intact deposits. The excavation work was closely monitored and the spoil heaps checked for displaced artefacts. Any such finds were bagged in 5 m provenance units which means that they can only be located to within an estimated 2.5 m of their original location. However, follow-up excavation of the exposed deposit with trowels demonstrated that there was no significant truncation of features or artefact patterning from the hydraulic equipment and most of the artefacts remained *in situ*. In the eastern part of the site, which is likely to be maintained in its present state for the foreseeable future, standard hand excavation

and recording techniques were employed by archaeologists and students in training.

Eastern Area

Six excavation units comprising 21.5 square metres were excavated in the eastern area (see Figure 4). Stratigraphy was consistent across all excavation units, with minor variation in detail from unit to unit:

Layer 1: Dark brown, fine grained, compact soil developed from river silts and containing the occasional water rolled pebble (up to 80 mm in diameter). Small quantities of charcoal and some artefacts were present, particularly below 100 mm, where these had probably intruded from Layer 2.

Layer 2: As above, with a higher density of water rolled pebbles and culturally derived charcoals. Apart from containing an A horizon of decaying organic matter Layer 1 grades into Layer 2 without evidence of any major discontinuity. Layer 2 is primarily distinguished by an increased frequency of artefacts, charcoals and fire cracked rock.

Layer 3: Very fine, compact silt varying in colour from light brown/grey to light grey. In places this layer contained what appeared to be iron oxide staining, particularly at the interface with Layer 2.

Excavations in this part of the site were intended to provide detailed spatial information from an area identified as potentially containing evidence of structures and activities. In order to relate results to previous data from the site units E1–E6 were positioned in the vicinity of Orchiston's D3 and D99–D115 units which had been reported to contain structural evidence in the form of post holes and ovens. The cultural layer, Layer 2, was continuous across the eastern area with little evidence of lensing or sub-layering. Several features including a number of post holes appeared near the surface of Layer 2 and extended into Layer 3 where they were well defined against the sterile subsoil. In E1 a large oven was excavated in association with shallow oven scoops and a post hole, making it possible that this cooking area was located in the vicinity of a small structure or shelter (Figure 5). In E2 post holes and a deep well-defined oven scoop are interpreted as components of a small structure (Figures 6 and 7).

Stone flakes, many with evidence of retouch or use wear, were scattered throughout the excavation units. These were found in a range of materials including obsidian, a silcrete-like material, chert, nephrite, and a variety of distinctive but as yet unidentified materials. As there appeared to be areas of significant clustering a detailed distributional analysis of the stone tools is currently being undertaken. Two particular groupings were identified during excavation. In E3 a cluster of stone flakes and small rough-out adzes marked the location of an argillite adze flaking floor. Nearby in E4 stone minnow-lure shanks

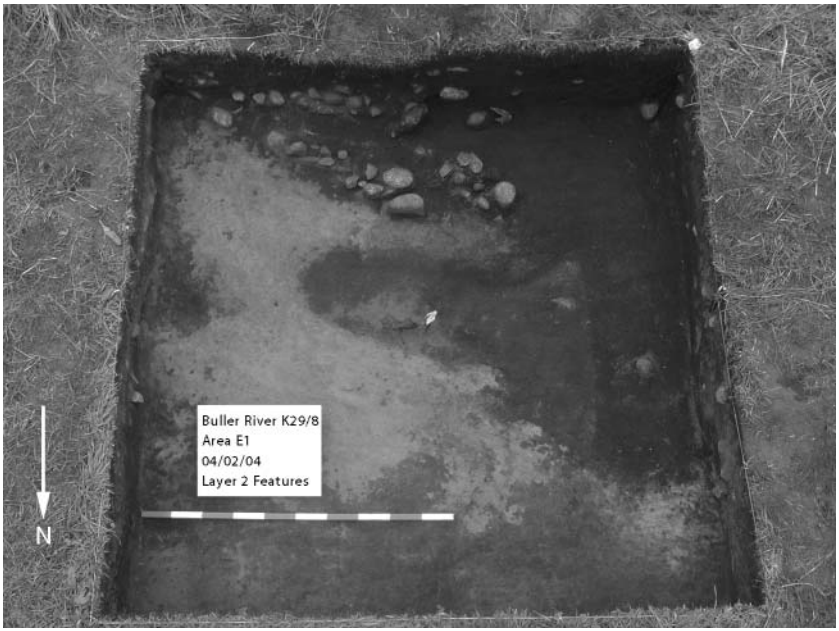

Figure 5. Plan view of E1 at base of Layer 2 facing south. An oven feature is shown in the south of the unit and traces of Orchiston's 1969 D3 excavation square can be seen in the centre of the unit.

were recovered in various stages of manufacture (Figure 8). Both activity areas were associated with postholes and we believe the activities were carried out adjacent to the outside walls of small structures.

The only faunal remains from the eastern area were a few fragments of bone with clearly worked edges. These were tools, not food waste.

Western Area

Six machine trenches (labelled MT1–MT6) were excavated in the western area (see Figures 4 and 9). The locations of these were influenced by prior test pitting at the site and by local information about previous site modifications such as fencing and drainage. Four large areas of dark charcoal stained soil (each around 10 x 10 m) with dense scatters of heat shattered rock were identified in the machine trenches. These were typical of the archaeological remains previously identified by Orchiston in 1969 and by Jacomb and Walter in 2003 that had been interpreted as representing components of a discontinuous cultural

Figure 6. West baulk of E2 showing two post holes in section. The stones shown in section along the west baulk mark the interface between Layers 1 and 2.

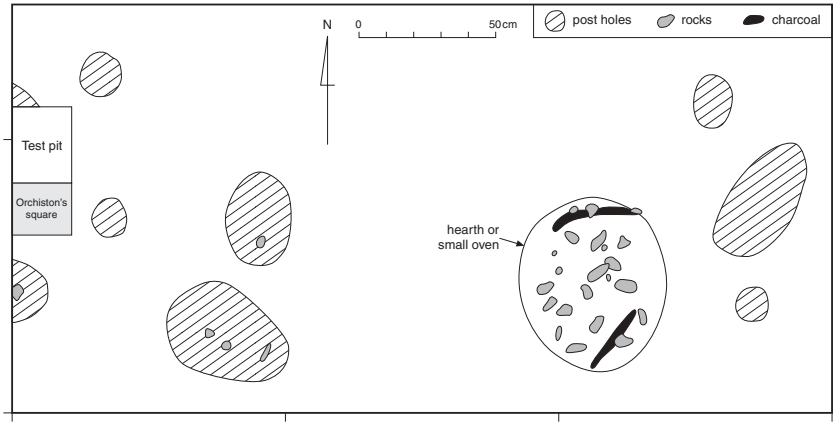

Figure 7. Plan of E2 at surface of Layer 3 showing Layer 2 features including post holes and cooking feature.

Figure 8. Minnow-lures from the manufacturing area in E4.

horizon. This view was disproved by the trench excavations which revealed evidence of cultural activity covering almost the entire western area. This cultural horizon lies 150–200 mm below ground level and is stratigraphically contiguous with Layer 2 in the eastern area making both parts of a single site complex. The previous misinterpretation of the site was due to the fact that in the western area the cultural layer varies enormously in colour and texture. Between the larger patches of darkened soil the small test pits had failed to provide clear evidence of soil modification in the form of charcoal particles or midden remains. In fact over most of the western area there are low-density artefact scatters which overlie clusters of structural features such as post holes, drains and cooking features (Jacomb and Walter 2004b).

At the intersection of MT1 and MT4 a 300 mm wide trench (W1) was cut north to south through an area of particularly dark staining. The trench cut through a shallow drain 30 cm wide and 30 cm deep, and through a much larger

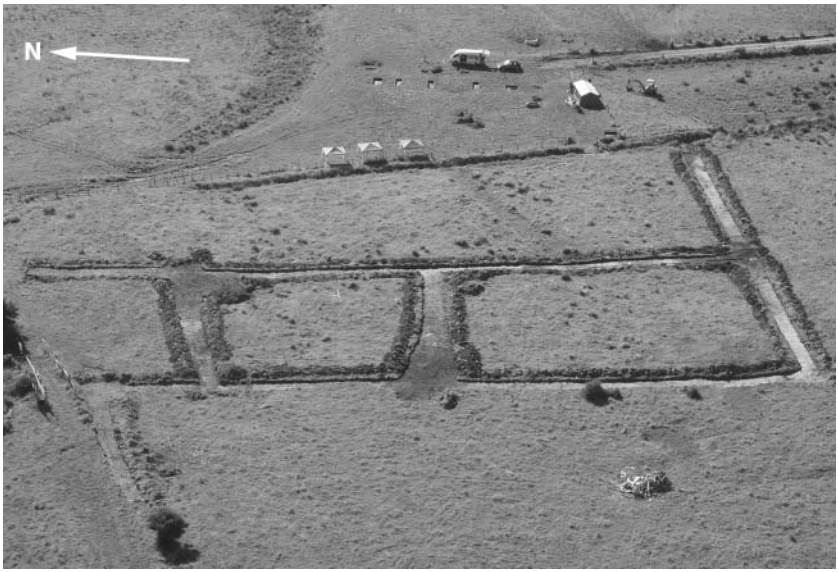

Figure 9. Aerial photo of site taken at a height of approximately 250 m. Note the E2–E6 units aligned in front of white van, E1 in front of tent and mechanical excavator to the right of the tent.

feature that is probably an oven . This feature was 3 m wide and 1.2 m deep and contained fire fractured rock, charcoal and a small number of bones, including a seal ulna and two femurs of *Anomalopteryx didiformis*. W1 also sectioned a shallow midden scatter comprising eroded mussel (*Mytilus edulis*), cockle (*Austrovenus stutchburyi*) and seal bone fragments. These specimens were the only fauna recovered from this occupation layer. A number of other features and artefact clusters were located in MT4 between the intersections with MT1 and MT5. These included several compact surfaces in association with well-defined post hole alignments, and several small fire features. The best defined of these potential house floors was associated with an unusual cluster of artefacts, including three small nephrite adzes, a minnow lure shank and an argillite adze (Figure 10). A stone flaking floor complete with anvil stone was found nearby (Figure 11). The final interpretation of features and overall spatial patterning in the machine trenches awaits complete analysis of the material culture and other field data.

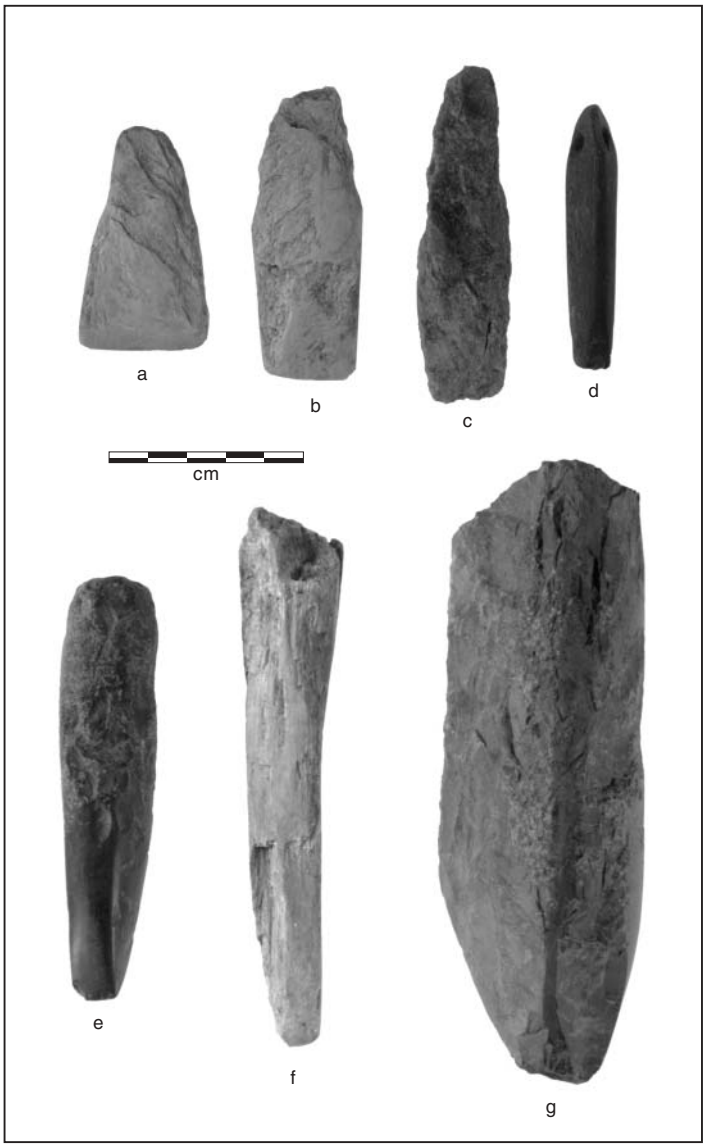

Figure 10. Artefacts recovered from the excavation: a–c) nephrite adzes, d) stone minnow-lure shank, e) argillite adze, f) nephrite chisel, g) argillite adze, blade fragment.

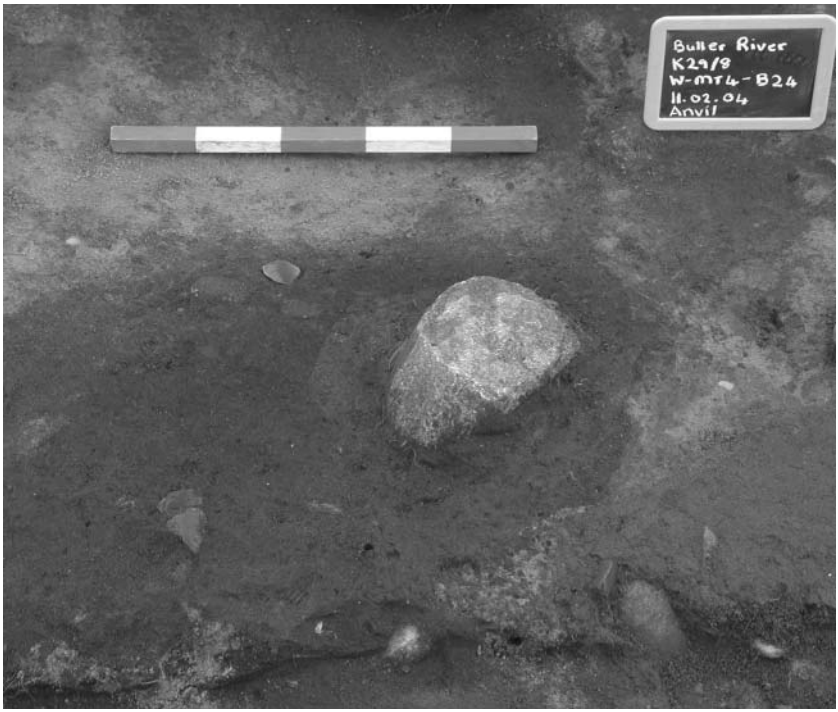

Figure 11. Flaking floor from MT4 showing anvil stone in darker area of compact soil.

Results

While the deposits in the eastern area were much as expected based upon Orchiston's work, archaeological material in the western area turned out to be considerably more extensive and complex than previously thought. Most of New Zealand's large Archaic sites have now been heavily modified or destroyed and the Buller River site must now rank as one of the largest and best preserved such sites remaining. Furthermore, and unlike so many other early coastal sites, it is in no immediate danger from natural processes. While long term management and site protection options are the subject of ongoing discussions between the relevant parties, it is clear that flipping the western area would not be a good idea.

We plan further fieldwork on the site and the analysis of artefacts and other field data from the 2004 excavations is currently taking place in the Otago

Archaeology Laboratories. At this point we can offer some preliminary comments and observations.

Features and spatial patterning

The spatial data from Buller River can be summarised as follows:

1 The site is well preserved and contains a good record of the spatial patterning of activities within a habitation zone

2 A number of small structures can be identified in both the eastern and western areas on the basis of post hole alignments and associated features. These fall into two general classes:
   - a Structures associated with food preparation, dense scatters of fire cracked rock and large inter-cutting cooking features
   - b Structures, possibly dwellings, associated with activity areas (at least one is associated with stone working) and single shallow oven scoops or hearths.

3 Communal activity areas may be represented by the large burning zones which seem to overlie ovens used for cooking seal and moa.

4 While dwellings are separated from one another by open areas of up to 50 m the space between them is littered with artefacts and isolated features suggesting that the entire site was part of a contiguous living surface (although this is by no means certain, see conclusion section below).

5 At least three types of manufacturing areas have been identified as adze working floors, flaking floors, and minnow-lure production areas.

The Buller River site contains an important record of spatial patterning within an early occupation site. This is important because, while archaeologists have a reasonable knowledge of the material culture, economic practices and, to a lesser extent, settlement patterns of the earliest inhabitants of this country, there is a paucity of data on structures and intra-site spatial organisation. This situation contrasts strongly with East Polynesia where a number of early sites have provided quite detailed data on dwellings and the use of space within small hamlets and villages. Relevant sites include the fourteenth century village of Anaiʻo in the Cook Islands (Walter 1998) and the slightly earlier, but larger site of Faʻahia/Vaitoʻotia in the Society Islands (Sinoto 1979). Both these sites were occupied at roughly the same time as the Buller River site and lie within the homeland zone from which New Zealand was settled. Further analysis of the Buller River data and comparisons with these and other tropical Polynesian sites should be revealing.

Material culture

Prior to the 2004 excavations several collections of typically Archaic artefacts including adzes and minnow lures had been obtained from the site (Orchiston 1971). Some of these had been retained privately, but were made available to the directors for inspection during the course of the 2004 fieldwork. These collections are important but they are biased towards the larger and more visually appealing artefact forms. One of the benefits of the 2004 excavations was the opportunity to offset this bias with the collection of a full range of artefact classes.

The flake tools from the site are manufactured from a wide range of rock types demonstrating that by the early-fourteenth century the inhabitants of the West Coast had access to most of the highest quality mineral sources available anywhere in the country. In hand specimen we identify chert similar to that commonly found in North Island sites and sourced to the upper North Island, obsidians attributed to Mayor Island and another as yet unidentified source, "Heaphyite" (a fine grained stone similar to silcrete from central Otago and Canterbury sources), chert comparable to nodular limestone flint from the Kaikoura coast, argillites from specific Nelson localities including the Ohana source on D'Urville Island, hydrogrossular garnet from either Nelson, South Westland or Southland, several varieties of nephrite, quartz crystal and a range of yet to be identified East Coast lithics. Heaphyite was first described from the Heaphy River Mouth site (L26/1) by Wilkes and Scarlett (1967: 198) and it was also recovered there in quantity by the authors in an excavation in April this year (Jacomb *et al*. 2004). We are currently trying to source this important West Coast stone type.

A good range of nephrite tools was recovered including adzes and chisels. Waste pieces of nephrite presented a range of colours, although finished tools seem to have been restricted to a light milky green stone. Much of this material was worked using a flaking technology typical of early stone fabrication techniques. It is likely that hydrogrossular garnet was used to flake the nephrite and one piece had clearly been used as a hammer-stone (see Beck and Mason 2002: 160).

Midden analysis

The one area where excavations were not as productive as had been hoped was the collection of midden samples. Only one small patch of shell and a handful of mammal and moa bone were directly associated with the site. Given the extent of areal exposure, the range of activities represented and the fact that midden is usually well distributed across Archaic occupation surfaces this lack of midden

is unlikely to be related to sampling. Instead it is probable that acidic soil conditions (Orchiston 1974: Appendix 2) and high rainfall have severely depleted midden coverage to a small number of patches such as that recorded in MT1 in the 2004 excavation. Westport farmers have reported pH levels in coastal soils as low as 3.5. Any pH lower than 6 is likely to significantly reduce midden content over more than 700 years. Nevertheless, some comments about subsistence practices can be made based on current information:

1 Hunting is indicated by the presence of moa and seal (*Arctocephalus forsteri*) bone.

2 The production of minnow lures suggests the catching of kahawai (*Arripis trutta*), which are abundant at the river mouth and well up the estuary today. Barracouta are another possible target for these hook types, but the offshore zone where barracouta (*Thyrsites atun*) are usually caught is not as easy to access on this coast as it is on the east or north coasts of the South Island. Flounder (*Bothus* sp.) and eels (*Anguilla* sp.) are also present in large quantities in the estuary, but even in the most favourable conditions these do not seem to preserve well in the archaeological record. It is likely that river and estuary based fishing supplied more reliable returns than coastal fishing, which would have been limited by variable weather conditions. Members of the local runanga also raised the possibility that the inhabitants of the site were targeting inanga (whitebait). Some of the largest catches in the Buller district today are taken very close to the site.

3 The small amount of midden recovered demonstrates the collecting of shellfish from the local area, and mussel from rocky shores at least 10 km distant.

4 It is likely that forest and scrub-land bird species and waterfowl would have been found in the vicinity but so far there is no record of their being hunted. Orchiston (1974: Appendix 2) reported several bone fragments from birds other than moa.

Radiocarbon Dates

A single sample of cockle shell was submitted to the Waikato Radiocarbon Dating Lab for analysis. The sample was from the W1 excavation unit and was associated with the large oven containing moa bone. The sample (Wk 14505) gave a radiocarbon age of 1105 ± 30 BP, which was calibrated in Calib Ver 4.4, using the Southern Hemisphere marine calibration curve (McCormac *et al.* 2002) and a delta R value set to -25 ± 15, to AD 1219–1316 at 95% confidence interval. The result indicates an occupation of the site in the late 13th to early 14th century AD which is consistent with the dates obtained by Orchiston (1974: Appendix 2). A single date from a site of this size and complexity is less than ideal but the

paucity of organic materials is a problem. The dating issue will be pursued in the future.

Conclusion

The Buller River site can make an important and unique contribution to our understanding of the earliest phase of New Zealand prehistory. The 2004 excavation has demonstrated that the site is bigger and better preserved than was previously thought, and preservation conditions are such that fine grained spatial studies are possible. At present a number of research issues are being dealt with in laboratory analyses, including typological and distributional studies of artefact classes, stone sourcing, residue analysis, soils analysis, reconstruction of intra-site organisation and DNA extraction from bone and soils.

The outstanding question that will guide future research efforts is determining the size of the resident population and length of occupation. At present, we are leaning towards the view that the site was occupied for a very short period, perhaps no more than a year or two. However, this is an open question and bears very closely on the larger research issues that will be addressed in ongoing fieldwork at Buller River, Heaphy and elsewhere during the West Coast research programme.

Acknowledgements

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References

Anderson, A., 1982. West Coast, South Island. In N. Prickett (ed.) *The First Thousand Years*, 103–111. Dunmore Press, Palmerston North.

Beck, R.J. and M. Mason, 2002. *Mana Pounamu; New Zealand Jade*. Reed, Auckland.

Jacomb, C. and R. Walter, 2004a. Test pits at the Buller Mouth site (K29/8). Unpublished report to the New Zealand Historic Places Trust.

Jacomb, C. and R. Walter, 2004b. Excavations at the Buller Site. Jan 28th–Feb 11th 2004 (K29/8 – NZHPT Authority 2004/172). Unpublished report to the New Zealand Historic Places Trust.

Jacomb, C., Muth, S. and R. Walter, 2004. Excavations at the Heaphy River Mouth Site (L26/1), April 2004. Unpublished report to the New Zealand Historic Places Trust.

McCormac, F.G., P.J. Reimer, A.G. Hogg, T.F.G. Higham, M.G.L. Baillie, J. Palmer and M. Stuiver, 2002. Calibration of the Radiocarbon Time Scale for the Southern Hemisphere: AD 1850–950. *Radiocarbon*, 44(3): 641–651.

New Zealand Archaeological Association Site Record Form K29/8, Westport.

Orchiston, D.W., 1971. Buller River Artifacts in the Australian Museum, Sydney. *New Zealand Archaeological Association Newsletter*, 14(4): 179–192.

Orchiston, D.W., 1974. Studies in South Island, New Zealand, prehistory and protohistory. Unpublished PhD thesis, University of Sydney.

Sinoto, Y.H., 1979. Excavations on Huahine, French Polynesia. *Pacific Studies*, 3: 1–40.

Walter, R. 1998. *Anai'o: The Archaeology of a Fourteenth Century Polynesian Community in the Cook Islands*. New Zealand Archaeological Association Monograph, 22. New Zealand Archaeological Association, Auckland.

Wilkes, O.R. and R.J. Scarlett, 1967. Excavation of a Moa-Hunter Site at the Mouth of the Heaphy River. *Records of the Canterbury Museum*, 8(3): 177–208.