THE ARCHAEOLOGY OF ART: EXCAVATIONS AT MAIDENWELL AND GATTON SHELTERS, SOUTHEAST QUEENSLAND.

M.J. MORWOOD

Archaeology & Palaeoanthropology
University of New England

INTRODUCTION

This paper presents the results of excavations at Maidenwell and Gatton Shelters, two rock art sites in S.E. Queensland (Figure 1). The work was undertaken as part of a research project concerned with a major theme in Australian prehistory - the development of social and economic complexity in Aboriginal society (e.g. Lourandos 1983, 1985; Morwood 1984). As foci for a range of symbolic activities, Maidenwell and Gatton Shelters have the potential to yield evidence for changes in the nature and intensity of social interaction, particularly in the context of evidence for economic, technological and demographic change (cf. Conkey 1978, 1980; Gamble 1982, 1983).

S.E. Queensland has a two main advantages for a multi-attribute approach. Firstly, there have been significant post-Pleistocene changes in resource levels and structure and these have economic, demographic and technological implications. By 6000 BP, marine transgression led to the formation of Moreton Bay (Flood 1980). This probably increased regional resource levels and carrying capacity, particularly after 4000-3000 BP when the sea level fell 1m and biologically rich estuarine and mudflat-mangrove areas developed (Kelly and Baker 1984; Hekel et al 1979:7; Peter Flood, University of New England, pers. comm., 1986). Increases in carrying capacity would have provided scope for population increase while the new, bimodal distribution of resource "gluts" could have promoted the development of social strategies, such as demographic flexibility, which increased the carrying capacity of regional resources (Figure 2).

Secondly, there is good enough information about Aboriginal social organisation, patterns of resource use and symbolic behaviour in S.E. Queensland. Ideally, the land-owning group was patrilineal and the pattern of residence was patrilocal, but rights to resources were also acquired through mothers, totemic links and residence. In practice, this meant that there was potential not only for population movement within, but also between group territories. Such demographic ebb and flow for initiation ceremonies, fights, corrobborees, etc. is well documented (e.g. Petrie 1904; Mathew 1910; Winterbotham 1959; Howitt 1904). Although elementary storage techniques were used to extend the geographical and seasonal availability of resource gluts, specifically bunya nuts and sea mullet (Petrie 1904:13,72), it was clearly the flexibility in dispersal of people across the landscape which maximised the use of localised resource abundances far beyond the capacity of a local group. This must have allowed for a far greater regional population of hunter-gatherers than a relatively "static" territorial system.

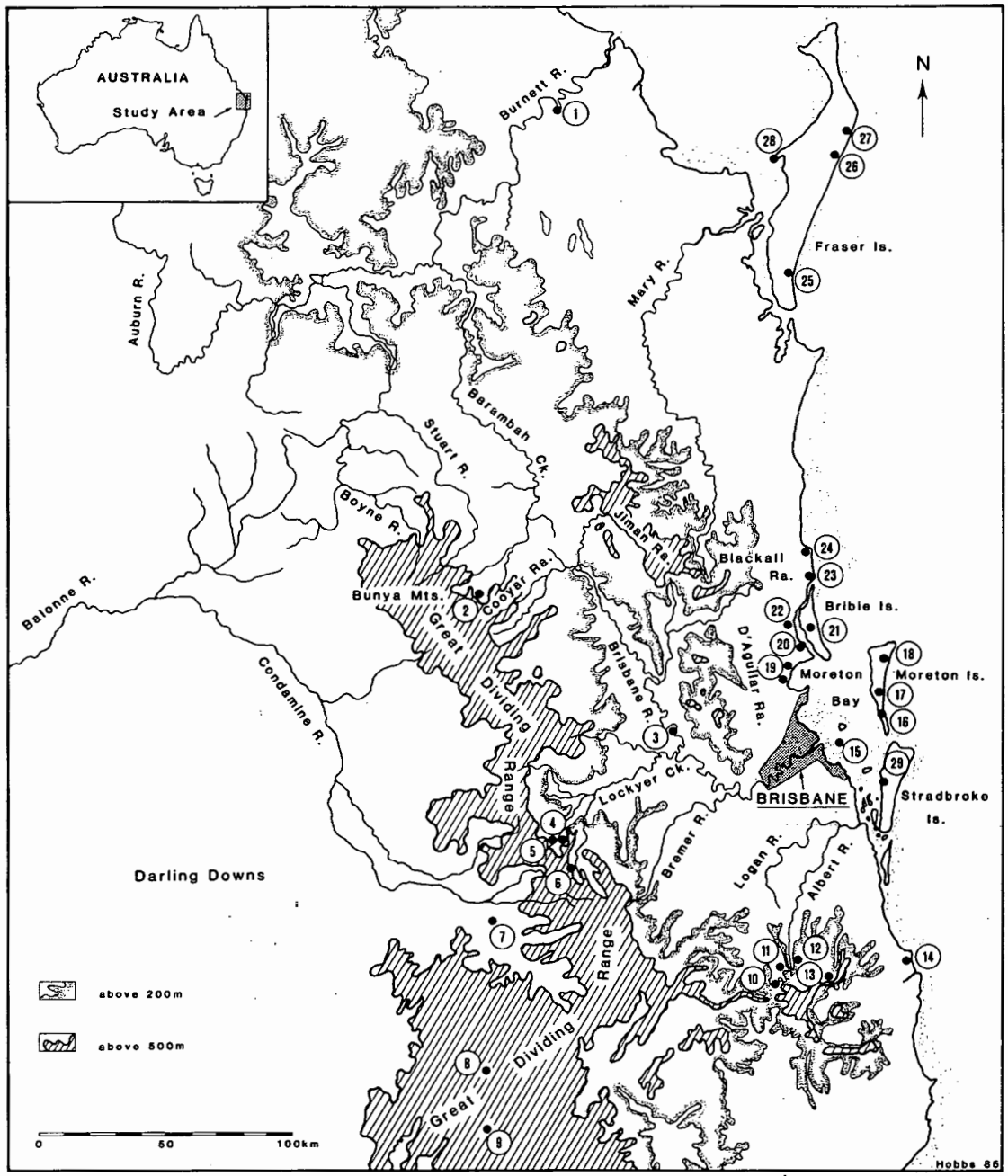


Figure 1. Map of S.E. Queensland showing sites noted in text.

1. Bundaberg engraving site
2. Maidenwell Shelter
3. Platypus Shelter
4. Heifer Creek 1
5. Heifer Creek 2
6. Gatton Shelter
7. Talgai skull
8. Amiens Shelter
9. Ballandean Shelter
10. Neglected Mt.
11. Hillview
12. Bishop's Peak
13. Bushrangers Cave
14. Broadbeach cemetery
15. St. Helena Midden
16. Toulkerrie/Little Sandhills
17. Minner Dint Midden
18. First Ridge Middens
19. Deception Bay 1 & 2
20. Sandstone Point
21. Bribie Island
22. Brown's Road
23. Caloundra Engravings
24. Pt. Cartwright engravings
25. 217/15
26. 796/54
27. 799/54
28. Moon Point
29. Wallen Wallen Ck.

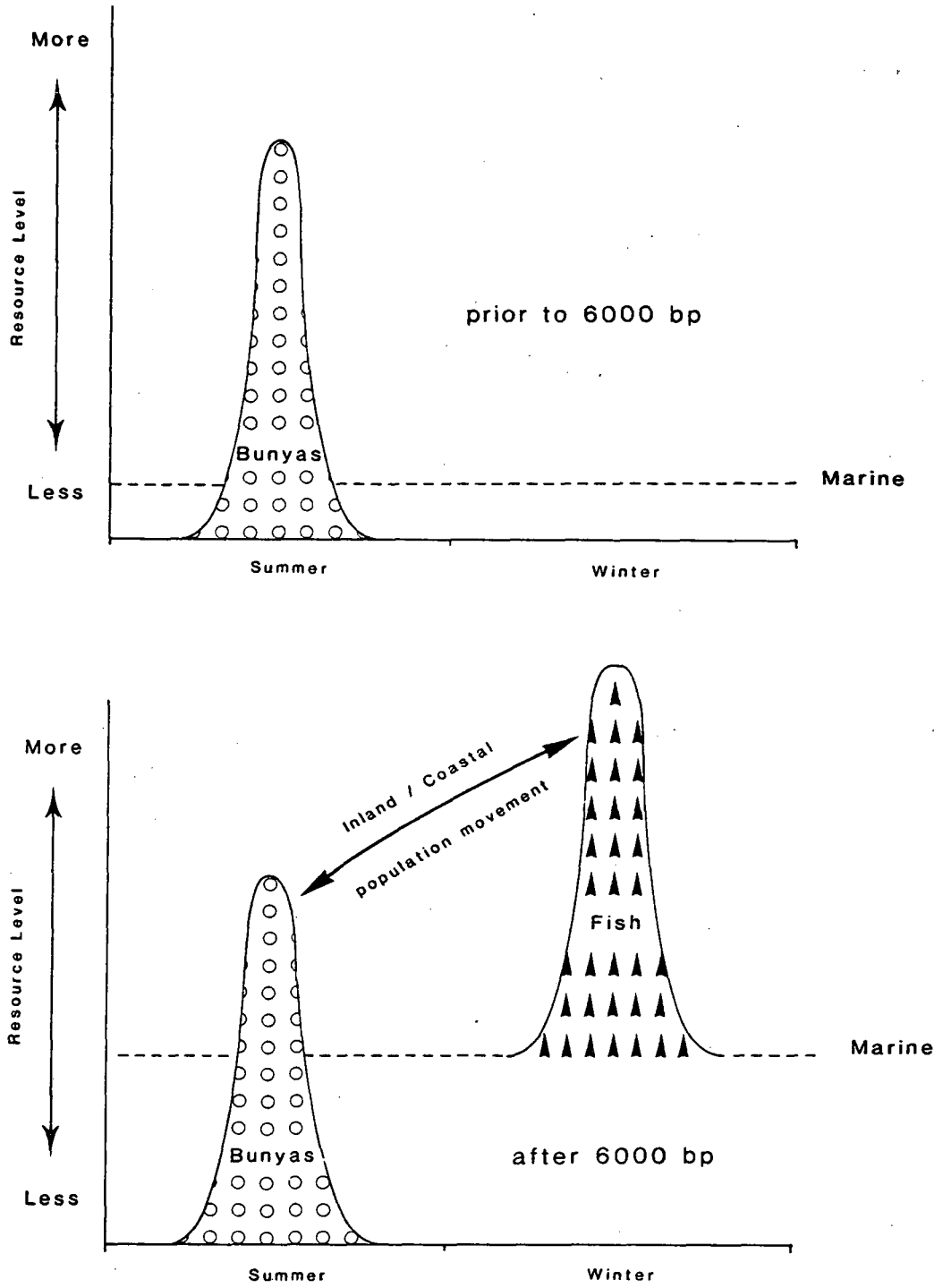


Figure 2. The seasonal distribution of bunya nuts and marine foods in S.E. Queensland before and after 6000 BP. The recent period is distinguished by the bimodal distribution of two geographically and seasonally "patchy" resources. The significant increase in level of marine resources assumes that appropriate "capture" technologies were available or developed (e.g. netting).

The flexibility in population dispersal was underwritten by seasonally and geographically discrete resource gluts, but also required a specific social/alliance infra-structure involving a network of contacts, rights and obligations based on marriage, trade, ceremonies, etc.

(Petrie 1904:59-60; Simpson 1842 in Langevad 1979). It also required sophisticated monitoring of resource availability (e.g. Lang 1861:72; Welsby, in Thompson 1967:87; Winterbotham 1959:55), means for disseminating the information required for constant adjustments to population distribution (Petrie 1904:38; Mathews 1910:114; Winterbotham 1959:60) and mechanisms for controlling the level of violence between disparate groups at large gatherings (e.g. Rudder 1899:9; Petrie 1904:19,23; Simpson 1842:5, 1861: 12 in Langevad 1979; Sullivan 1977:40). One of the principal means for disseminating economic and social information throughout the region was the use of symbolic behaviour such as construction of bora rings, removal of the left little-finger of "coastal" women, body painting, body scarring, carved trees and rock art (e.g. Eades 1982; Howitt, in Etheridge 1918:89; Jackson 1939; Lang 1861:367; Morwood and Fillery 1976:100-104; Petrie 1904:21,38,48; Rola-Wojciechowski 1983; Sutcliffe 1972:6; Winterbotham 1959:59,71).

In S.E. Queensland relations between Aboriginal groups were established, maintained and reinforced by symbolic means for encoding information about group and status similarities and differences. In fact, there is sufficient evidence to show that symbolic behaviour was not just a decorative embellishment of the system, but was a major means for social and economic control (cf. Morphy 1977:1; Munn 1973). The use of multi-media, symbolic paraphernalia, which could be distinctive or shared, was an integral part of Aboriginal social complexity in S.E. Queensland, and rock art was one component of the system. It was on this basis that excavations were carried out at two rock art sites.

Maidenwell and Gatton Shelters are strategically located at important nodes in the network of social and economic ties that characterised Aboriginal life in S.E. Queensland, and both have the potential to reflect regional patterns of change. Maidenwell Shelter lies at the base of the Bunya Mountains, while Gatton Shelter lies along an important access route connecting the Moreton region with the Darling Downs.

MAIDENWELL SHELTER

This site is outside the town of Maidenwell, approximately 15km SE of the Bunya Mountains (Figure 1). The shelter is formed by an overhang on the eastern side of a large granite boulder. This outcrop of pink, feldspar-based granite is restricted to an area about 16km in length and is bounded on the east by quartz conglomerate sandstones of the Tarong region and elsewhere by "basalt country".

The site occurs on a slope fronted by an open forest of grey ironbark, blue gum, Moreton Bay ash and Moreton Bay fig (Plate 1). It overlooks several permanent springs which lie 150m to the north, forming the headwaters of Tanduringie Creek, a tributary to Barambah Creek, which joins the Burnett River to exit at the Pacific Ocean near Bundaberg.

Maidenwell rockshelter was discovered in 1970 by Mr. Ron Bain, while mustering. It provides excellent shelter from wind, rain and sun and has a floor of coarse, loose sand on which a surface scatter of stone artefacts is evident. The shelter also contains a number of paintings along the rear wall, representing at least two painting episodes. The earliest is executed in an orange ochre wash and the most recent is in dark red ochre. All the paintings which are still

discernible are of geometric motifs, including barred circles, series of vertical lines or "tally marks", connected arcs, and connecting lines (Plate 2)

In pre-European times, Maidenwell was part of the Kaiabara (or Bujibara) territory which included the Bunya Mountains (Howitt 1904; Winterbotham 1959). Thus, the Kaiabara were one of the host groups for the famed "Bunya festivals" held in two separate areas of S.E. Queensland - the Bunya Mountains and the Blackall Range. Maidenwell rockshelter is the first site to be excavated within the "Bunya festival" region.

The Excavation

Work at Maidenwell rockshelter was undertaken in December 1981 and December 1982. The excavation was laid out as a transect across the site from the rear wall, across the dripline and out into the the exterior deposits (Figure 3). All excavated deposits were dry-sieved on site through 3mm, 5mm and 7mm sieves, after being weighed. The different sieve fractions were then weighed separately and removed for wet sieving. The excavation employed procedures outlined by Johnson (1979:148-152). The site was gridded into 1m x 1m squares using an alphanumeric coding system (numbers for columns, letters for rows - e.g. 5K, 5P). Each metre square was then subdivided into 50cm squares designated a to d moving anti-clockwise from the SW corner of each square. This corner also served as the 0.0 reference point for x and y coordinates measured within 50cm squares. The 50cm x 50cm squares were the basic excavation units (e.g. 5 Ka, 5 Pd). Depth measurements for spits and artefacts were taken in relation to a permanently fixed datum using water levels. Deposits in each 50cm square were removed in spits averaging 3-5cm in depth with five spot heights being taken at the start and end of each spit.

Within the shelter, deposits varied in depth between 10cm and 60cm while the exterior deposits reached a maximum depth of 65cm. Six stratigraphic layers were distinguished (Figure 4) and bulk samples were taken from all. Analysis of the sediment composition shows a progressive change in the different size fractions with depth, presumably documenting a steady and consistent sediment source from weathered granites. All deposits had a pH of 6.5 but conditions for preservation of organics were poor; minimal faunal remains were recovered and all bones were very eroded, making identification difficult. Chemical weathering of charcoal fragments was also notable (i.e. rounding).

Dating

Two charcoal samples were collected and submitted for dating. The results are as follows:

1. 1210 $\pm$ 100 BP (SUA-1915) for the top of the artefact concentration in Square Oa. Depth 23$\pm$ 2cm.

2. 4,300 $\pm$ 70BP(Beta-6924) for near the base of artefactual material in Square Ob at the interface of Layers 6 and 7 Depth 38 $\pm$ 4 cm.

The dates suggest that sediment deposition at the site has been slow and that chronological resolution at this site is poor. It has limited potential for dating the regional sequence. The problem is compounded by the amorphous nature of the deposits and the fact that it would not be possible to detect disturbance.

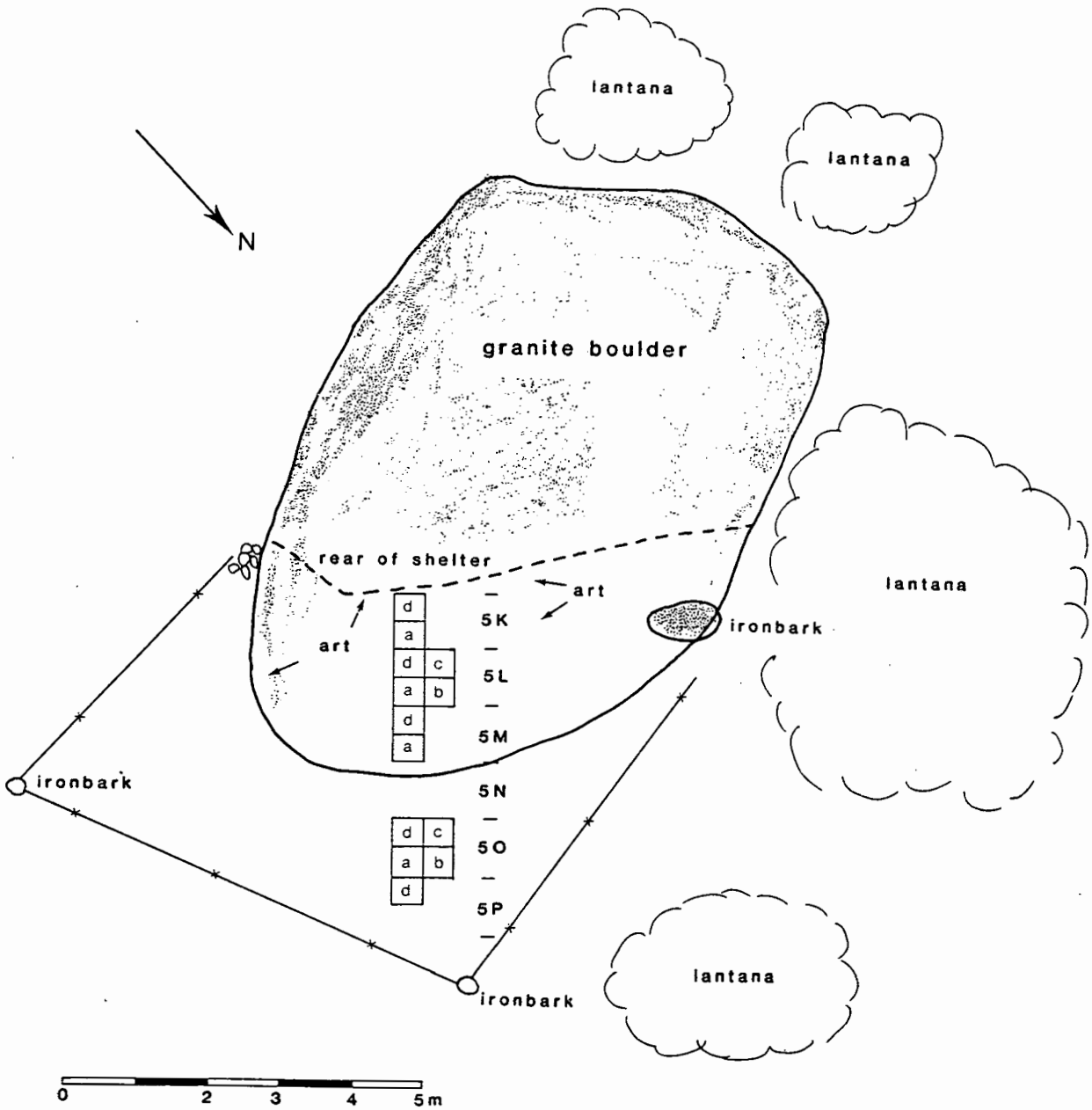
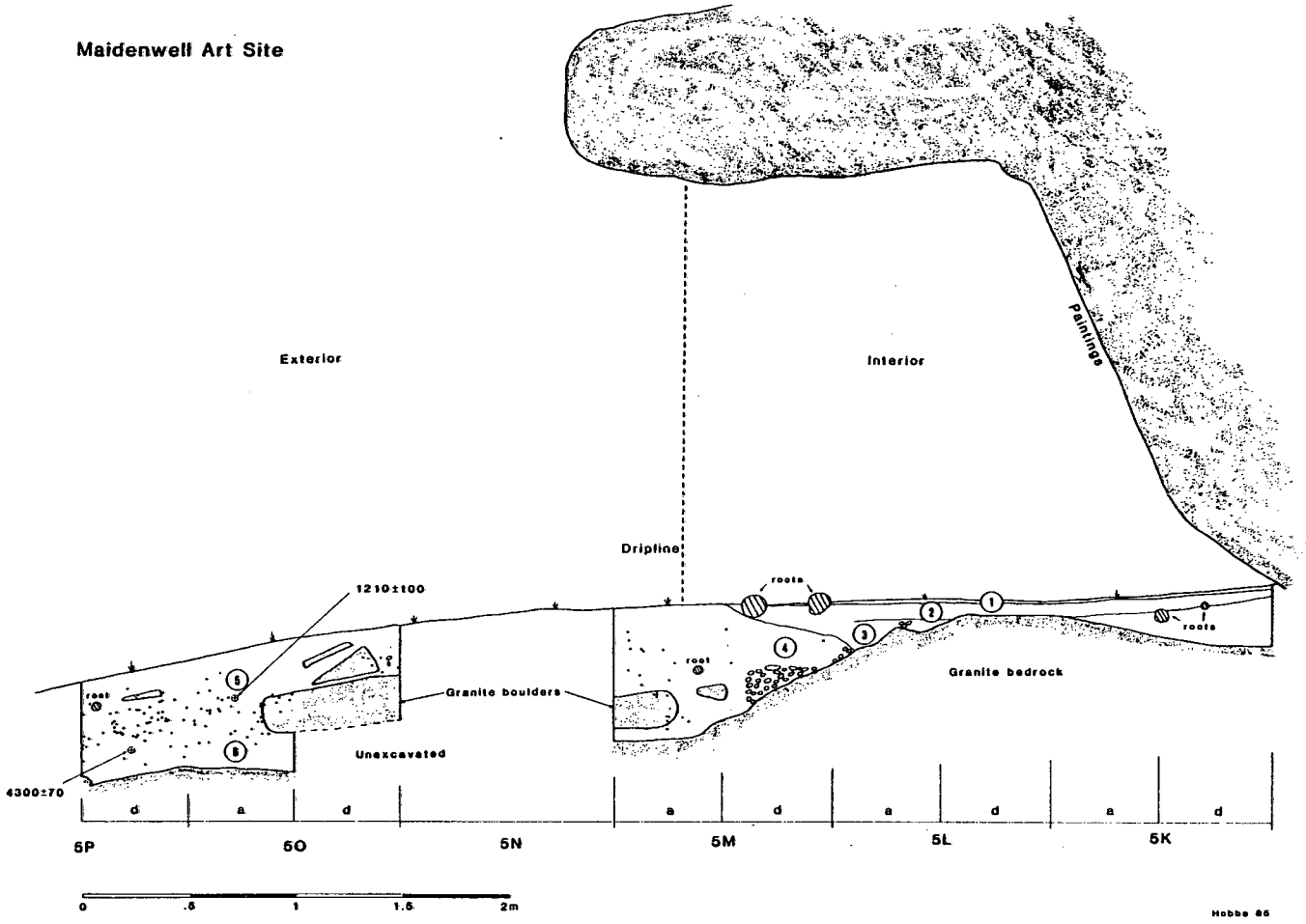


Figure 3. Plan of Maidenwell Shelter showing excavation area.



KEY TO STRATIGRAPHY:

Unit 1 - a mantle of loose, dry sand. Colour 2.5YR 4/2.
Unit 2 - fine, powdery sand. Colour 5YR 5/4.
Unit 3 - pinkish gray, powdery sand from eroded bedrock. Colour 5YR 6/2.
Unit 4 - dark gray, organic rich sediment with many hair roots. 5R 5/1.
Unit 5 - gritty, dark gray soil. Dry and Compact. 5R 5/1.
Unit 6 - compact, gritty sand which merges into weathered granite bedrock. There is no clear boundary between this and Unit 5. Colour 7.5YR 7/6.

Figure 4. Cross-section of Maidenwell Shelter showing stratigraphy and backplots.

Fauna

The faunal assemblage is a meagre one, in poor condition and with few diagnostic pieces. Identifiable bone included "large" macropod, "small" macropod, bandicoot, possum (?) and rodent. Almost all the bone fragments were unburnt and could be the result of natural deaths on site (Luke Godwin, Archaeology & Palaeoanthropology, University of New England, pers. comm. 1986).

Stone Artefacts

The excavation yielded 738 stone artefacts, of which 15 showed retouch and/or usewear (see Appendix 1 for details on measurements and coding). Very few "formal" types were recovered, with 92% of the material being amorphous fragments or flakes (Table 1). Quartz was the predominant material used throughout the history of site use (Table 2), with the most common artefacts being quartz chips from the bipolar working of quartz nodules (presumably derived from the conglomerate sandstones to the east). Siltstone, basalt, chert, silcrete and mudstone were the other principal materials used and all are locally available. For instance, basalt outcrops 300 metres south-east of the site, while extensive deposits of fine-grained silcrete occur within 1km (Ron Bain, pers. comm.).

Table 1. Vertical distribution of stone artefacts in 'outside' squares at Maidenwell Shelter (brackets refer to amorphous artefacts with retouch and/or use-wear).

Depth (cm)	Amorphous	Bipolar Core	Blade Core	Blade	Bondi Point	Geometric Microlith	Burren Adze	Axe	TOTAL
0 - 5	11				1				12
5 -10	23								23
10-15	40			1					41
15-20	89	1	1	2	2				95
20-25	125 (1)	6		8		1		1	141
25-30	153 (1)	3	1	12	2		1		172
30-35	61			2					63
35-40	35 (1)	1							36
40-45	23	1		2					26
45-50	11	1		1					13
50-55	1								1
TOTAL	572	13	2	28	5	1	1	1	623

The vertical distribution of artefacts was not homogeneous but tended to be concentrated between 15cm and 30cm depth or about 1000 - 3000 years BP, on the basis of linear extrapolation. The majority of tools recovered were also from this concentration. They comprised five Bondi points, a geometric microlith, two blades, four amorphous flakes, a burren adze slug with heavy retouch, and two small fragments of ground stone almost certainly derived from edge-ground axes (Figures 5, & 6).

The limited range of stone artefacts suggests that a limited range of activities took place on site. There was no evidence of grindstones and minimal evidence for woodworking. Instead, the predominance of quartz working and the fact that backed blades are the most common artefacts with edge modification, suggest that repair of men's composite weapons such as quartz knives or barbed spears was a common activity (e.g. Steele 1983:282-283). The low density of artefactual material and charcoal in the uppermost deposits suggests a significant reduction in the intensity of site use after 1000 years BP, although artistic activities continued (see below).

Table 2. Vertical distribution of stone artefact materials in 'outside' squares at Maidenwell Shelter (brackets refer to amorphous artefacts with retouch and/or usewear.

Depth (cm)	Basalt	Chert	Mudstone	Quartz	Silcrete	Siltstone	Other	TOTAL
0- 5		1	1(1)	8	2			12
5-10	3		2	18				23
10-15		4	8	25	4			41
15-20	1	12	16(2)	59	5	2		95
20-25	4 (1)	6 (3)	23	96	8	3	1	141
25-30	3 (1)	21 (1)	29(2)	88	20	8	3	172
30-35		4	4	35	20			63
35-40	1	2		8	20(1)	4	1	36
40-45		2	1	13	10			26
45-50			1	6	6			13
50-55					1			1
TOTAL	12	52	85	356	96	17	5	623

The horizontal distribution of stone artefacts is shown in Figure 7. Significant differences are evident, not only in numerical distribution but also in the distribution of artefact types. For instance, all backed blades were recovered from the outermost squares (5Pd, 50a,b,c). Spatial differences in site use and discard provide the most likely explanation for these differences. Either the shelter zone was cleaned out at regular intervals or the focus for stone working was immediately outside. Because of differences in artefact densities and range, as well as stratigraphy, the radiocarbon dates obtained from "outside" squares probably could not be extrapolated to "inside" squares, which, because of their loose nature, are more likely to have been disturbed. Thus, the assemblages from the two zones have not been combined and only the results from the outside area have been presented here (i.e. representing 84% of the stone artefact assemblage).

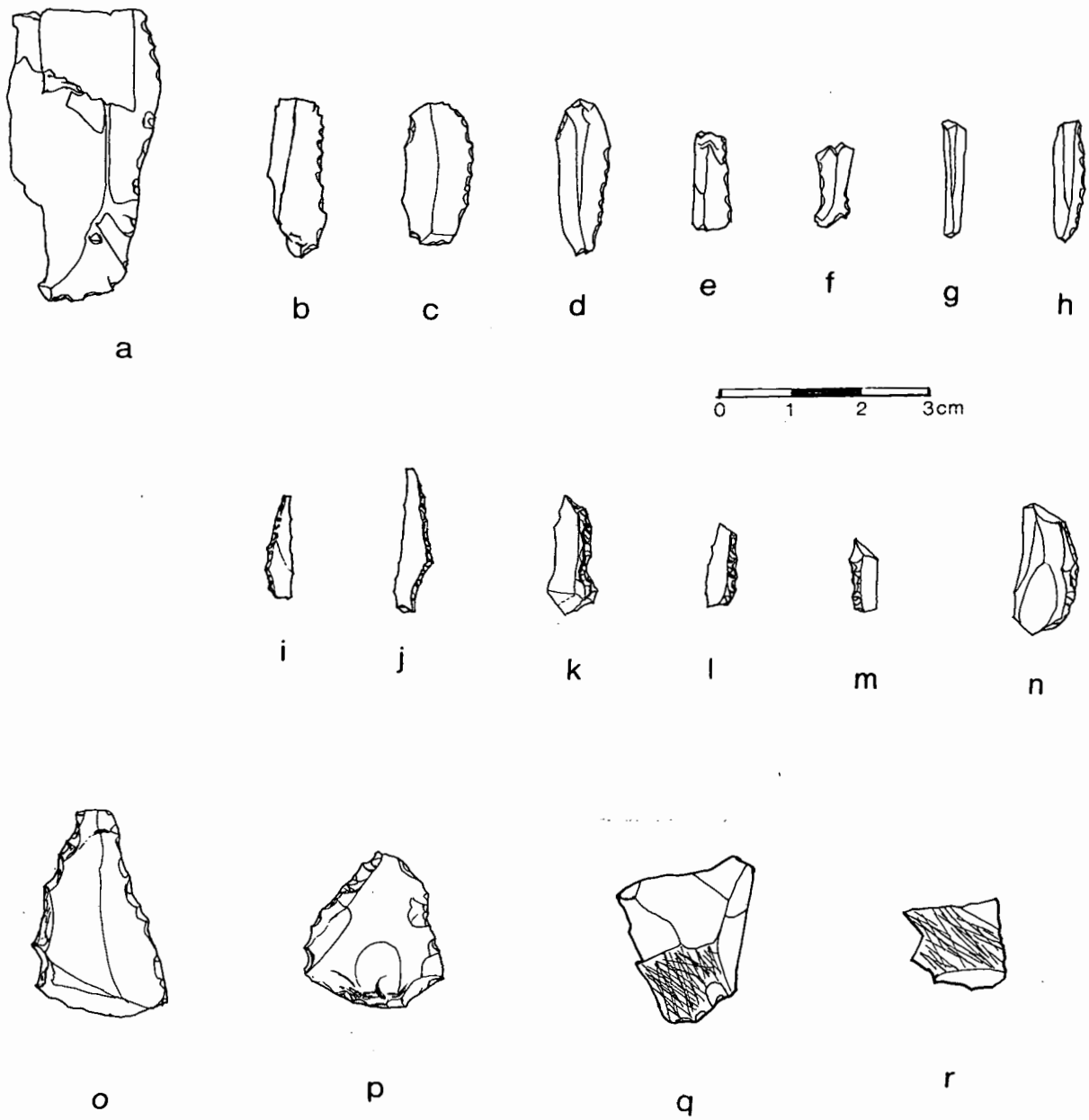


Figure 5. Stone artefacts from Maidenwell Shelter; (a-g) blades, (h-m) Bondi points, (n) geometric microlith, (o) burren adze slug, (p) steep edged scraper, (q-r) fragments of edge-ground axes.

Ochreous nodules were found throughout the deposits but no use-striations were observed and it was difficult to differentiate those nodules resulting from the weathering of in situ material. Even so, the evidence indicates that artistic activities have been been a feature of site use throughout the occupational sequence. It is significant that the degree of composition and homogeneity of colour-use in the rock paintings suggests that they represent a very limited number of artistic events, possibly only two.

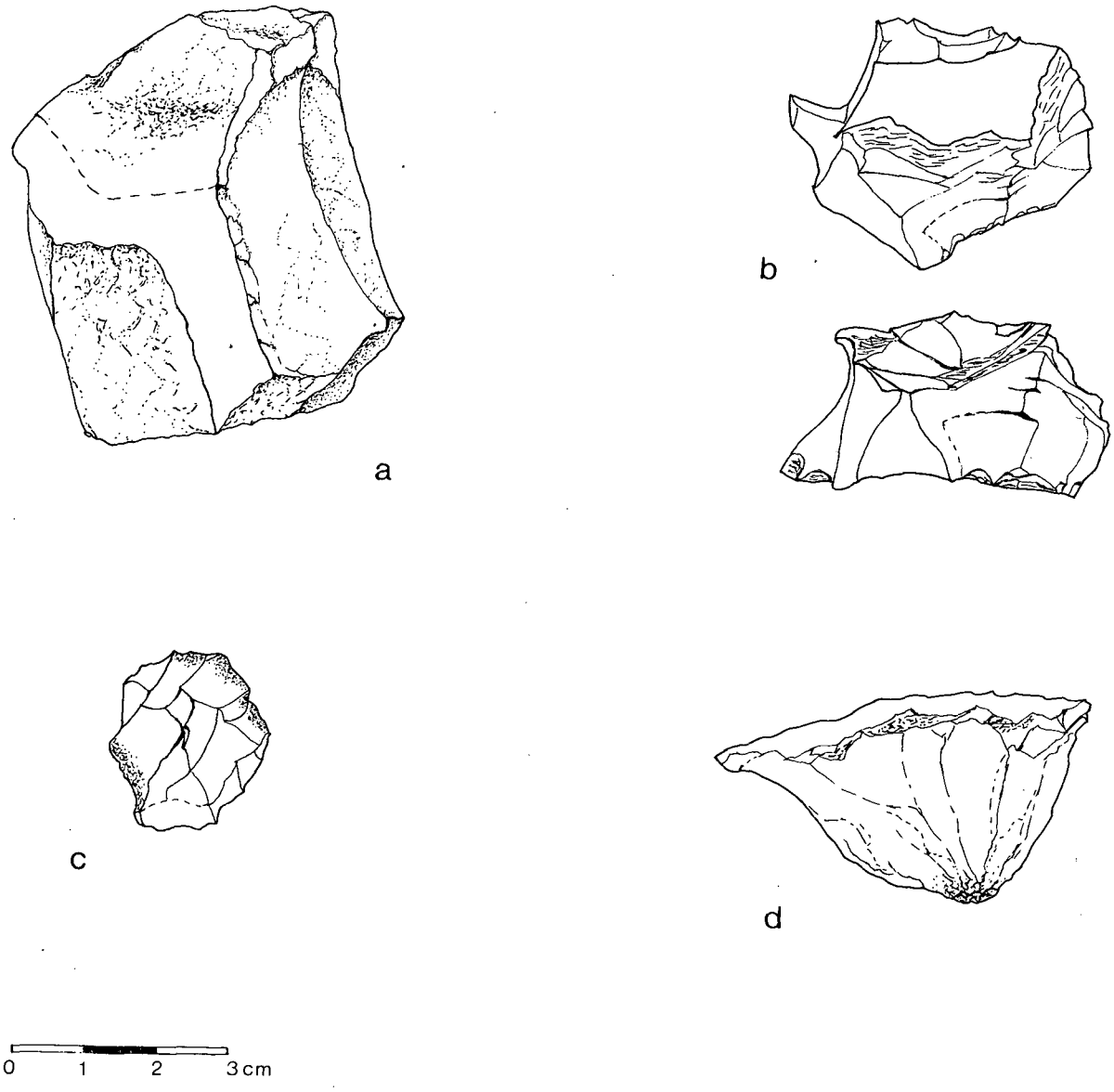


Figure 6. A range of cores from Maidenwell Shelter; (a) multi-platform, (b) single platform, (c-d) quartz bipolar.

In summary, low intensity use of the site began about 4,300 BP. However, backed blades, blade scrapers and axes are not definitely present until ca. 2,800 BP, when there is a significant increase in artefact density. At about 1,000 BP the artefact deposition rate decreased significantly. The use of backed blades may also have ceased at this time; although one was recovered from surface deposits it may have been "scuffed up" from earlier levels. Given the stratigraphic uncertainties, and the small sample size, this "provisional" sequence for the site needs to be assessed in the context of results from other sites with better stratigraphic resolution.

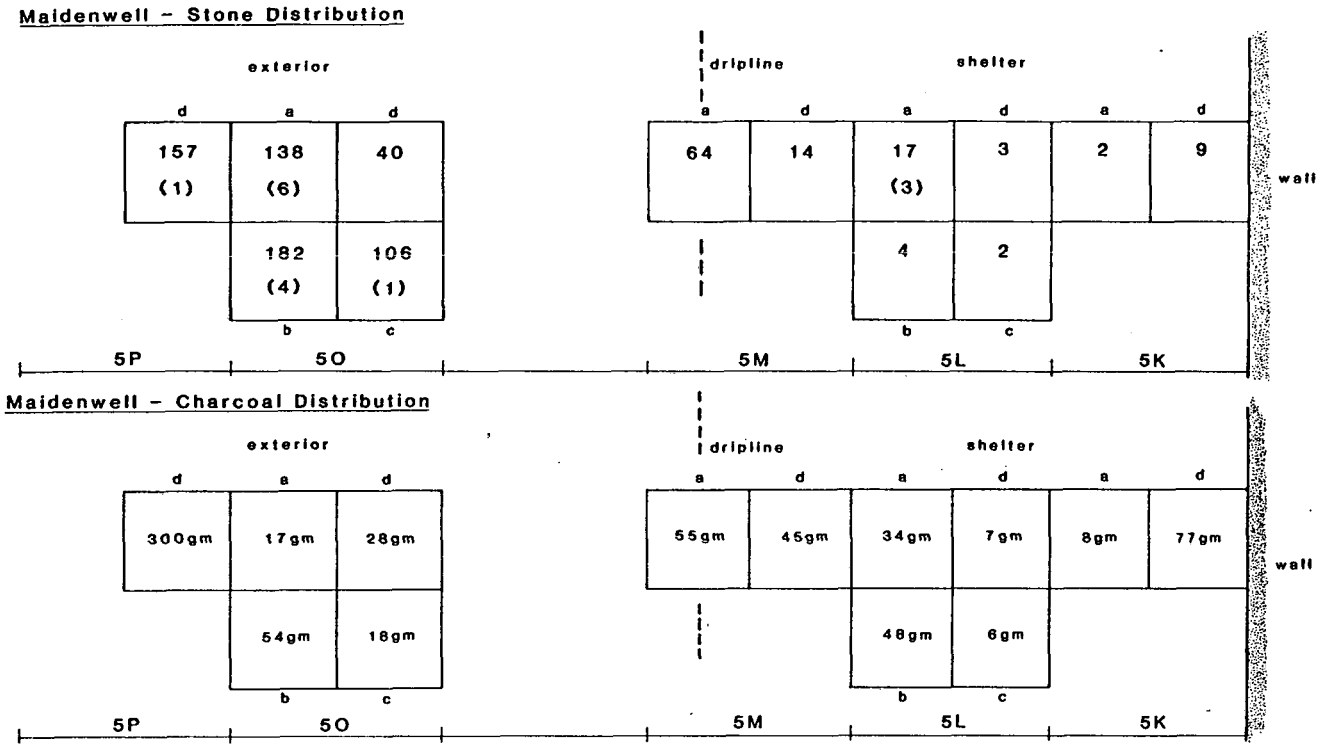


Figure 7. The horizontal distribution of artefacts and charcoal at Maidenwell Shelter.

GATTON SHELTER

> It is very unusual to find in localities frequented by Australian blacks, for camping grounds or other purpose, any but small heaps of ashes. This one was of considerable size however, occupying the whole floor of the rock-shelter and heaped somewhat against the wall on which the figures were delineated. On careful examination these ashes were found to contain fragments of bone, and stone implements (Tryon 1884:52).

So wrote Henry Tryon (1884), Assistant Curator of the Queensland Museum, in what is the first publication dealing with Aboriginal art, stone artefacts and economic remains in Queensland. This rockshelter is on the southern side of Rocky Scrub Creek, a non-perennial tributary of the Lockyer Creek - Brisbane River system (Figure 1). It is located 305m

A.S.L. in the foothills of the Great Dividing Range, which here separate the extensive blacksoil plains of the Darling Downs from those of the Lockyer Valley. Rocky Scrub Creek Gorge forms part of a natural access route between the two regions and such routes are known to have been used by Aborigines from the coast, who travelled through the area to the Darling Downs en route to the Bunya Mountains (Tew 1979:45). This particular gorge was still used by local Aboriginal groups in the 1840s, during the early European settlement period. By 1884, Tryon reported that "the neighbourhood knows the blacks no more" (1884:45) but the gorge or (Hirstvale) was used by Europeans as a bridle path between the Gatton area and Hirstglen. Today, the road up Rocky Scrub Creek Gorge is mainly used by heavy trucks servicing the diatomaceous-earth quarry immediately above the site.

The site occurs in an outcrop of the upper Marburg sandstone, about 4m above and 10m distant from the creek (Plate 3). This sandstone tends to weather by block collapse and both ends of the shelter are terminated by massive sandstone slabs. A wide range of resources for stone artefact and pigment manufacture is available within the immediate vicinity; basalt and haematite occur in the creek bed and diatomaceous earth outcrops above the site. Diatomaceous earth is suitable for white pigment and also contains siliceous nodules for implement manufacture. The evidence indicates that all these resources were exploited throughout the history of site use.

The original vegetation of the general area has been extensively cleared and replaced by thick lantana scrub. Remnants of softwood scrub occur along the creek, while on the surrounding higher country open eucalypt forest is dominated by ironbark with a lantana understorey. When Tryon visited the site he noted that it occurred near where the bridle path emerged from the "scrub" to ascend the Great Dividing Range.

The thick lantana makes systematic survey all but impossible but there is evidence that the area may have a high archaeological site density. For instance, Queensland Museum records indicate that at least four rockshelters in the vicinity contain occupation deposits (Richardson 1982:62). Two rock painting sites are also known from the adjacent Heifer Creek system, while the findspot of the famed Talgai skull is only 35km distant.

The most notable feature of Gatton Rockshelter is the extensive assemblage of pecked, abraded and drilled engravings along the rear wall of the shelter. As one of the four known engraving sites in S.E. Queensland, the site has been described or referred to several times in the literature on Australian Aboriginal art (e.g. Davidson 1936; Elkin 1949; Quinnell 1972; Maynard 1979). The assemblage is dominated by simple drilled holes, although lines, circles, inverted "U"s, tracks and arcs also occur (Plate 4).

In addition to art, the site has rich occupation deposits as attested by a general scatter of stone artefacts, bone, shell, ochre and charcoal, particularly on the slope down to the creek. The importance of this site, the only known example in S.E. Queensland where rock engravings occur in association with datable deposits, has been recognised by the Queensland Government; it is one of the few sites in Queensland that has been "declared" under the Aboriginal Relics Preservation Act of 1967.

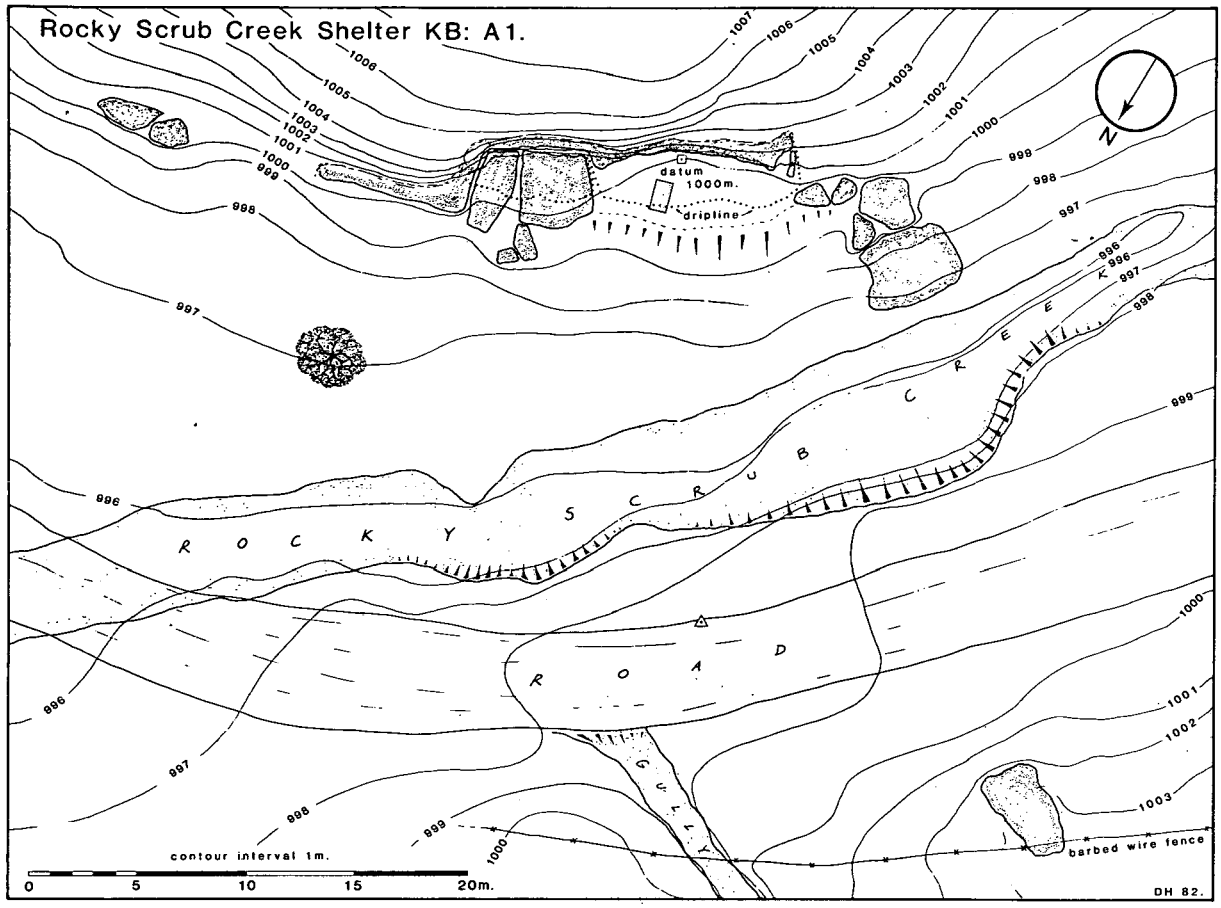


Figure 8. Plan of Gatton Shelter showing excavation.

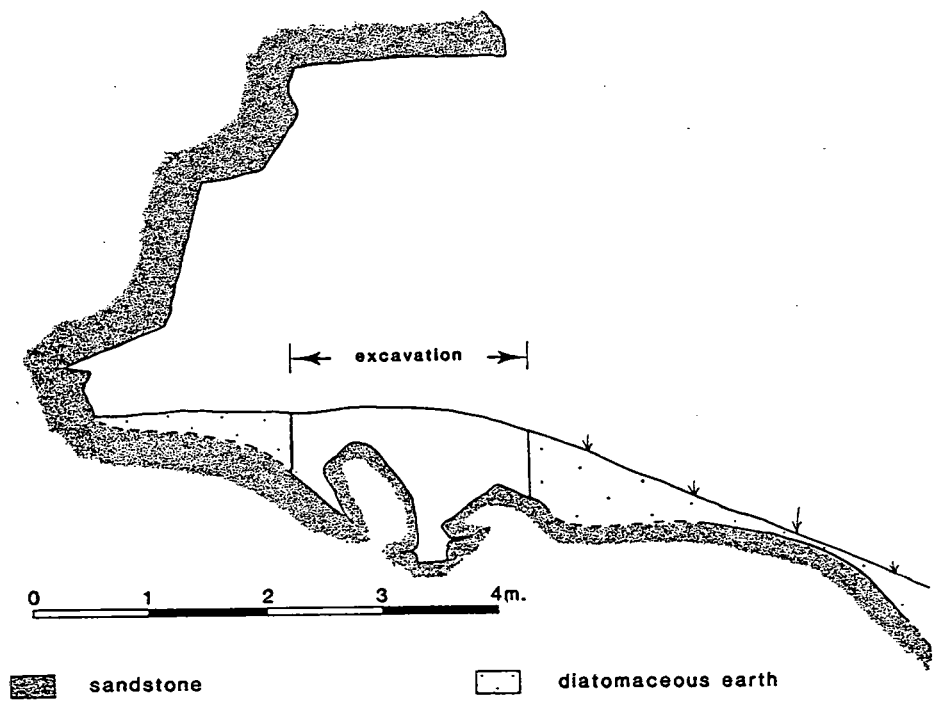


Figure 9. Cross-section of Gatton Shelter (KB:A1).

The Excavation

In March and June 1982 a small 2m x 1m excavation was undertaken but was terminated at a massive rockfall. In January 1986 the trench was reopened and sledge-hammers, crowbars, picks and chisels were used to excavate to bedrock. The excavated area was selected so that shelter, dripline and exterior zones of the deposit were sampled (Figures 8 and 9) while the excavation and analytical procedures were the same as those employed at Maidenwell. Nine stratigraphic units were distinguished (Figure 10). In each case the bulk of the sediments appeared to be of diatomaceous earth, with varying amounts of organic material. It is clear that the majority of the deposit is derived from slope-wash material entering both ends of the shelter and that the history of sediment deposition within the shelter is a reflection of local slope instability.

In Square G3b the end of an illegal fossicker's trench was discovered. The interface between "disturbed" and in situ deposits could be clearly identified both in plan and section views, which speaks for the stratigraphic integrity of the remaining deposits. Quinnell (1972:217) reported that in 1969 there was evidence of "recent illegal excavations" at the site, so the trench was probably excavated about this date. As well as precluding analysis of material excavated from Square G3b, soil excavated from the illegal trench is likely to contaminate the uppermost Layer 1 elsewhere in the site and this had to be taken into account in the analysis.

In contrast, all evidence suggests that the dripline area (Unit 8) has not suffered major disturbance or vertical displacement of artefacts. For instance, changes in ecofactual density and range occur at the same depth in all excavated areas of the site, while only an "insignificant" proportion of the large bone assemblage from the dripline zone has any trace of smoothing or abrading by water action (see Solomon, Appendix 2). Despite the complications caused by the fossicker's trench, the site offers good potential for obtaining a well dated sequence for the area. The evidence indicated that:

i) The compact nature of the deposits has minimised vertical movement of artefacts, except where there has been disturbance.

ii) The subtle colour distinctions in the deposits, reflecting different amounts of organic material, mean that any post-depositional disturbance, such as burrows, fossickers trenches, and so on, is instantly recognisable.

iii) Sequential evidence from the different areas of the excavation can be combined with confidence.

These characteristics of the deposit were illustrated with a simple experiment. On a preliminary visit to the site, six months before the main excavation, the excavation area was mapped out and 20 small screws, 10 bolts, 10 large washers, 10 medium washers, and 10 small washers were placed at predetermined points within the area to be excavated. The site is frequently visited by interested humans, as well as local wildlife, and it was thought that the resulting vertical and horizontal movement of "planted" material would help with the interpretation of the

archaeological evidence. It was found that over most of the excavation area no screws, bolts or washers penetrated further than the top 2-3cm of loose, surface deposits. On the other hand, in the area disturbed by the fossicker's trench planted material had sunk up to 10cm. There was also limited horizontal displacement of material over the 6 months.

Gatton Rockshelter - East Section, natural stratigraphy.

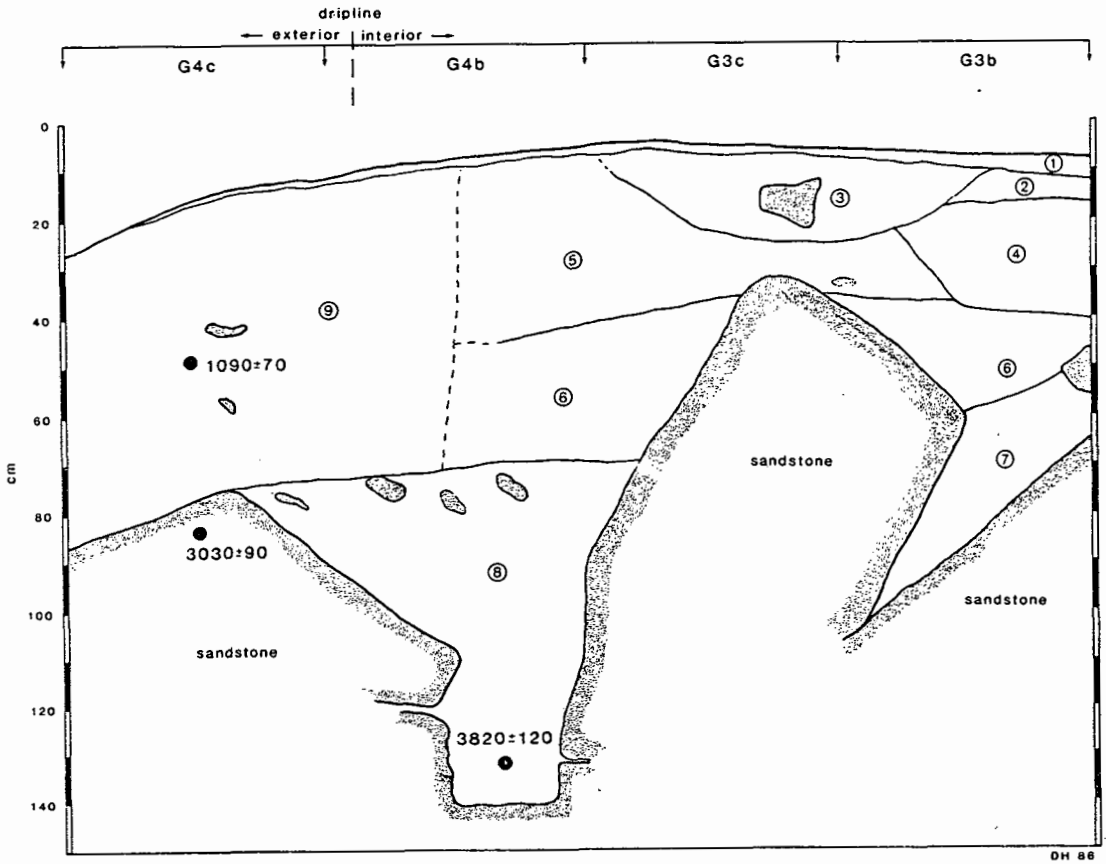


Figure 10. Stratigraphy at Gatton Shelter.

Key to Stratigraphy:

Unit 1 - a loose, disturbed surface layer of very fine sand, which averaged 1-3cm depth. Colour 10YR 5/2.

Unit 2 - a more compacted version of Layer 1, up to 5cm thick.

Unit 3 - a dark-brown, disturbed lens. Compacted with fine rootlets. Colour 10YR 4/2.

Unit 4 - a light grey lens of diatomaceous earth. Probably pit infill. Colour 10YR 6/2.

Unit 5 - diatomaceous earth ranging from white to light grey. Few rootlets. Colour 10YR 7/2.

Unit 6 - characterised by a mottled texture and dense rootlet penetration. Colour 10YR 6/2.

Unit 7 - loose, grey diatomaceous earth which has accumulated between bedrock and talus. Colour 10YR 6/2.

Unit 8 - a dripline feature of compact, brown sediments. Degree of compactness variable. Colour 7.5YR 3/2.

Unit 9 - extremely compact, clay-rich sediments with many small talus fragments. Colour 10YR 4/2.

Dating

Three radiocarbon dates were obtained on charcoal samples from Gatton Rockshelter as follows:

1. 1090 ± 70 BP (Beta-5897) for Spit 13 in Square G4c. This dates the upper limit of concentration of artefacts, as well as the most recent backed blades. Depth 31 ± 2cm.

2. 3030 ± 90 BP(Beta 5898) for Spit 26 in Square G4c. This dates the base of the main artefact concentration. Depth 67 ± 2cm.

3. 3820 ± 120 BP (Beta 15811) for Spit 32 in Square G4b. This was immediately above bedrock. Depth 122 ± 4cm.

Fauna

Preservation of faunal material in the deposits was excellent and the assemblage was both large and diverse, 9,534gm of bone and bone fragments representing a minimum of 34 species. These come from the full range of habitats which were/are present in the general vicinity of the site (Table 3). They include wet schlerophyl forest with a dense understorey (e.g.*Thylogale* sp., *perameles nasuta*), open eucalypt forest (*Petauroides volans*, *Phascolarctus cinerus*), grassland forest edge (*Canis familiaris*); open dry schlerophyl forest with dense ground vegetation (*Bettongia* sp.), undulating or hill country with open forest and a grass understorey (*M. parryi*), riverine vegetation (*M. agilis*) and aquatic (e.g. *Unio* sp.).

Table 3. List of fauna identified at Gatton Shelter.

SCIENTIFIC NAME	COMMON NAME
1. *Canis familiaris*	Dingo
2. *Macropus giganteus*	Eastern Grey Kangaroo
3. *M. robustus*	Wallaroo
4. *M. rufogriseus*	Red-necked Wallaby
5. *M. parryi*	Whiptail Wallaby
6. *M. agilis*	Agile Wallaby
7. *M. dorsalis*	Black-striped Wallaby
8. *Macropus* sp.	macropod
9. *Wallabia bicolor*	Swamp Wallaby
10. *Thylogale* sp.	Pademelon
11. *Bettongia* sp.	Bettong
12. *Potorous tridactylus*	Long-nosed Potoroo
13. *Isoodon macrourus*	Northern Brown Bandicoot
14. *I. obesulus*	Southern Brown Bandicoot
15. *Perameles nasuta*	Long-nosed Bandicoot
16. *Petauroides volans*	Greater Glider
17. *Petaurus* sp.	Glider
18. *Trichosurus vulpecula*	Brushtailed Possum
19. *Pseudecheirus peregrinas*	Common Ringtailed Possum
20. *Phascolarctus cinereus*	Koala
21. *Sminthopsis murina*	Common Dunnart
22. *Rattus* sp.	Rat
23. *Melomys cervinipes*	Fawn-footed Melomys
24. *Pseudomys delicatulus*	Delicate Mouse
25. *Dasyurus maculatus*	Tiger Cat
26. *Dasyurid* (cf.*D geoffreyii*)	Western Native Cat
27. *Varanus* sp.	Goanna
28. *Morelia spilotes*	Python
29. Non-boid snake	Snake
30. *Amphibolurus barbatus*	Bearded Dragon
31. *Skinkinae*	Lizard
32. *Agamidae*	Dragon Lizard
33. *Alectura lathami*	Brush turkey
34. Aves (small)	Bird
35. Perciform fish	Perch
36. Freshwater mussel	Freshwater mussel

Table 4: MNI estimates for the faunal assemblage from Gatton Shelter; (a) Petaurus australis, (b) Petaurus norfolcensis, (c) Rattus fuscipes, (d) Amphibolurus barbatus, (e) Trachydosuarus sp., (f) Tiliqua sp., (g) Alectura lathami, (h) eggshell. (+ = present)

	Depth (cm)																																			
	0	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	Total
Canis familiaris													1																							1
Macropus giganteus		1	1		1		1					1	1	1			1																			8
M. robustus								1																												1
M. rufogriseus												1																								1
M. parryi		1				1	1												2																	5
M. agilis												1			1				1																	3
M. dorsalis	1	1	1	2		1	1	2	2	1	1	1	3	3	1	1	2	2	1	1	1	1		1					1							32
Wallabia bicolor				1											1			1																		3
Thylogale sp.	1	2	2	1	1	2	3	1	1	1		1	2	2	1	1	2	1	3	1	2						1									32
Bettongia sp.		1				1	1	1		1		1																								6
Potorous tridactylus	1		1		1				1				1	1																						6
Macropus sp.				1				1	3	3	1					1					1	2	1	1	1	3	1		1		2			1		24
Isoodon macrourus	1	1	2	1	2	1	1	1	1	1		1		1	1	1	1									1										18
I. obesulus						1				1	1											1			1											5
Perameles nasuta		2	1	2	1	2		2	1	1		1		1	1	1																				16
Petaurus sp.		1a		1b		1b					1a		1																							5
Petauroides volans	1		1			1		1					1																							5
Trichosurus vulpecula	1	1	1	1	1	3	2		1	2		1																								14
Pseudocheirus peregrinus	1	1	1	1	1	2	2	2	1				1							1	1															15
Phascolarctos cinereus		1	1				1		1						1																					5
Rattus sp.		1c	1					1							1		1			1	1	1	1	1	1	1				1						9
Melomys cervinipes		1		1	1	2	1	1	2	1	1			1			1	1																		18
Pseudomys delicatulus						1					1																										2
Sminthopsis murina														1																							1
Dasyurus geoffroii																		1																			1
Dasyurus maculatus									1																												1
Varanus sp.	1	1	1	1			1																														5
Morelia spilotes	1	1	1	1	1	1	1	1	1			1	1	1	1			1																			14
Non-boid			1					1		1				1	1	1		1																			7
Agamidae		1	1		1d	1d	1	1	1d	1				1	1	1	1e		1		1	1	1													16
Skinknae				1f			1	1	1f					1																							5
Bird		2g	1h	1																				1													5
Perch			1			1															1																3
F.W. mussel			+		+																															
Pedinogyra hayii	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+																	
Coelocion australis							+																													

Several factors suggest that the bulk of the material is humanly deposited. These include the proportion of burnt bone, the predominance of specific macropod species outside their normal habitat zones, and the minor contribution of very small animals. In addition, Tryon (1884:52) noted that "all the medullary bones of the animals mentioned had been split across and in some instances slight cuts had been made to the shafts of the long bones" (See Appendix 2).

Species identification was undertaken by Steve van Dyke (Queensland Museum) and Malcolm Abel (University of New England) using both cranial and post-cranial material. The minimum number of individuals represented in the assemblage was then calculated for each 4cm depth unit across the excavation, on the assumption that each unit was independent (Table 4). Although the method tends to minimize the contribution of abundant species and maximize the importance of rarities, a number of trends are still apparent.

Macropods are the most significant component of the assemblage both in frequency and biomass, with two species, M. dorsalis and Thylogale sp., being the most common throughout. Furthermore, the relative importance of macropods decreased over time, as indicated by the appearance of aboreals (glider possum, koala) and goannas. This trend is not due to the differential preservation of smaller species, as all bone is well preserved throughout, but indicates an expansion of resource base over time. Although three species (M. agilis, Isoodon obesulus, Dasyurus geoffroii) are only found in levels predating 600 years before present, their disappearance from the sequence may mark their disappearance from the region; all three are now locally extinct.

Rates of faunal deposition increased significantly over the last 1000 years, with the upper levels having more than double the number of individuals per spit per 100 years, than basal levels. This suggests that the intensity of shelter use increased late in the sequence.

The assemblage has implications for developments in patterns of habitat exploitation (Edgar 1985:34). In the earliest levels there was emphasis upon exploitation of two species from ecotonal areas between wet sclerophyll forest and rainforest (i.e. M. dorsalis and Thylogale sp.). It is relevant that both animals travel along well defined pathways on a regular, predictable basis. Other macropods from open forest habitats were also taken but the small numbers indicate less systematic, opportunistic predation. Subsequently, the resource base was expanded to include Peramelids and animals characteristic of canopy and hollow tree locations in dry and wet sclerophyll forests (e.g. aboreals, goannas, pythons).

The faunal assemblage also provides evidence for a range of hunting techniques. For instance, many of the species (including the numerically predominant pademelons and black-striped wallabies, as well as bettongs, bandicoots and swamp wallabies) occupy dense undergrowth/scrub and are most readily caught in communal drives using hunting nets. Petrie (1904: 86) notes that this was the method for hunting wallabies, kangaroo rats, "paddymelons" and bandicoots used by Aborigines in the general Brisbane area. He adds that "kangaroos" were also netted but could be stalked and speared, while goannas, possums, koalas, gliders and "sugar-bags" were located then cut out of hollow trees. It seems likely that the full range of hunting techniques from "communal efforts"

to "individual pursuit" are represented at the site.

There are few seasonal indicators in the faunal assemblage but the presence of reptiles in all levels and also of perch, indicates use of the site during summer but does not preclude winter use as well. This is not incompatible with the model advanced by Lilley (1984:27) for local Aboriginal subsistence-settlement strategy which holds that during winter, groups aggregated near major rivers and lakes, then dispersed into small mobile groups along tributary streams in the foothills during summer.

Stone

A total of 5,826 stone artefacts was recorded from the undisturbed section of the site, of which 3,342 (56%) were recovered from the two "dripline squares" G4c and G4b. The horizontal distribution of the assemblage is illustrated in Figure 11. Variations in the distribution of material reflect two main factors:

i) Differences in the depth of deposit in different areas of the excavation. Squares G3d and G4d contain large boulders and are of limited depth. In contrast squares G3a, G3b and G4c include deeper areas between boulders and must have acted as "sumps" for cultural material.

ii) The effects of water run-off at the dripline as a concentrating agent are also clearly evident.

Given these two site-formation processes and the small size of the excavation, it is difficult to identify any spatial patterns of discard in the assemblage.

Vertical differences in the artefact distribution are apparent in Table 5, Figures 12 and 13 In all areas with deposits spanning the entire sequence (i.e. G4a, G4b, G4c), the majority of stone artefacts occur in deposits dating between 3,000 and 1,000 BP, when the range of knapping debris, number of stone artefact types, and stone artefact deposition rates are greatest. A general three-part sequence can be defined on the basis of these changes. In the lowest levels of the site, the number of artefacts is small, there is minimal knapping waste, and the majority of identified stone tools are either backed blades or small flakes with adhering resin ("barbs"). From 3000 BP there were increases in artefact deposition rates, range of knapping debris, and range of stone tool types (Figures 14, 15). The appearance of grindstones, axe fragments and adze slugs in the sequence also indicates an expansion of site-activity range at this time. About 1000 years ago, the manufacture of backed blades and "barbs" appears to have ceased and there was an associated decrease in the range of knapping debris (although two backed blades were recovered from surface deposits, these are likely to have been derived from the fossicker's trench).

There are corresponding differences in raw material use (Table 6; Figure 16). Chert, from the nearby diatomaceous-earth deposits, and silcrete were the most commonly used materials throughout the sequence but around 3000 years ago there was an expansion of the range of raw materials being exploited for stone artefact manufacture (e.g.

quartzite, sandstone, mudstone, petrified wood, jasper). This change in raw-material use is correlated with the increase in the range of artefacts being produced but may also reflect a widening of the site resource catchment.

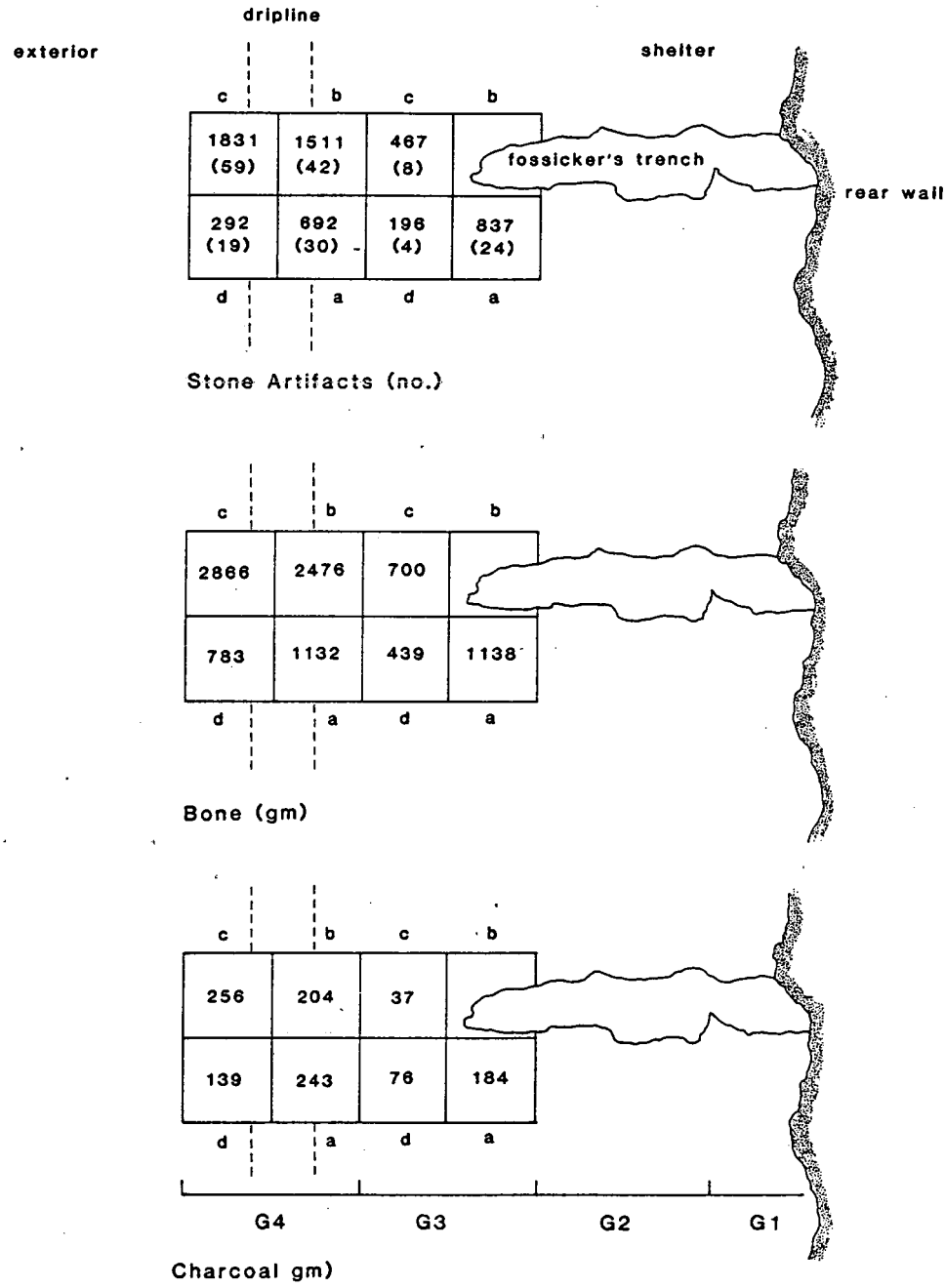


Figure 11. Horizontal distribution of stone artefacts, bone and charcoal excavated at Gatton shelter.

Table 5: Vertical distribution of stone artefacts at Gatton Shelter.

Depth in cm	Amorphous	Amorphous Core	Multi-Core	Platform Core	Bipolar Core	Blade Core	Blade	Geometric Microlith	Bondi Point	'Barb'	Backed Misc.	Elouera	Burren Adze	Tula Adze	Grindstone	Muller	Axe	Hammerstone	TOTAL	
0																				
	190						3	1	1		1		1						197	
	263	1					9										3		276	
	164	3			1		7												175	
	185	1					4				1								191	
20	147	1					4												152	
	239	1		2			3						1				2		248	
	206			1			3							1					211	
	247	1	1	1	1		6		1				2					1	261	
	356		2	1			4		1		1		1				1		367	
40	323		1			1	8	2	1	1	1	1					1		340	
	200	1		1	2		6		3				1						214	
	348	2			1	1	11	1					1				1		366	
	513	2			5	1	18	1	2	1					1		1		545	
	426	1			1	1	20		4										453	
60	421	2					21	1	1		2		1		1	1	2		453	
	244				2		15		1										262	
	276	1					13	1	5		1								297	
	206	1			1	1	4		5										218	
	143						11	1	1										156	
80	31																		31	
	69						2												71	
	95																		95	
	52								1										53	
	27							2		1									30	
100	34																		34	
	57							1											58	
	8						1												9	
	5																		5	
	3							1											4	
120	8																		8	
	21							1	1	1									24	
	5									1									6	
	16																		16	
TOT.	5528	18	4	6	14	5	173	13	28	5	7	1	8	1	2	1	11	1	5826	

Table 6: Vertical distribution of stone artefact materials at Gatton Shelter.

Depth in cm.	Volcanic	Chert	Quartz	Quartzite	Silcrete	Sandstone	Other	TOTAL
0	16	124	1		54		2	197
	13	170	5		86		2	276
	8	111	2		53		1	175
	14	102	1	2	71		1	191
20	7	76	3	3	55	1	7	152
	20	136	6	1	82		3	248
	6	144	1	8	52			211
	15	195	8	3	40			261
	21	285	12	5	43		1	367
40	3	295	9	1	31		1	340
	4	181	13		15		1	214
	13	305	17	2	25	2	2	366
	19	478	17		27		4	545
	5	395	17		32		4	453
60	13	411	10	1	17	1		453
	5	225	15		16		1	262
	7	269	6		9		6	297
	8	193	7	1	9			218
	1	138	4		13			156
80		29			2			31
		64			6		1	71
	2	79	1		13			95
		50			3			53
		24			6			30
100		31			3			34
		54	1		3			58
	2	6	1					9
		4			1			5
		4						4
120		6			2			8
	1	22	1					24
		5			1			6
		16						16
TOT	203	4627	158	27	770	4	37	5826

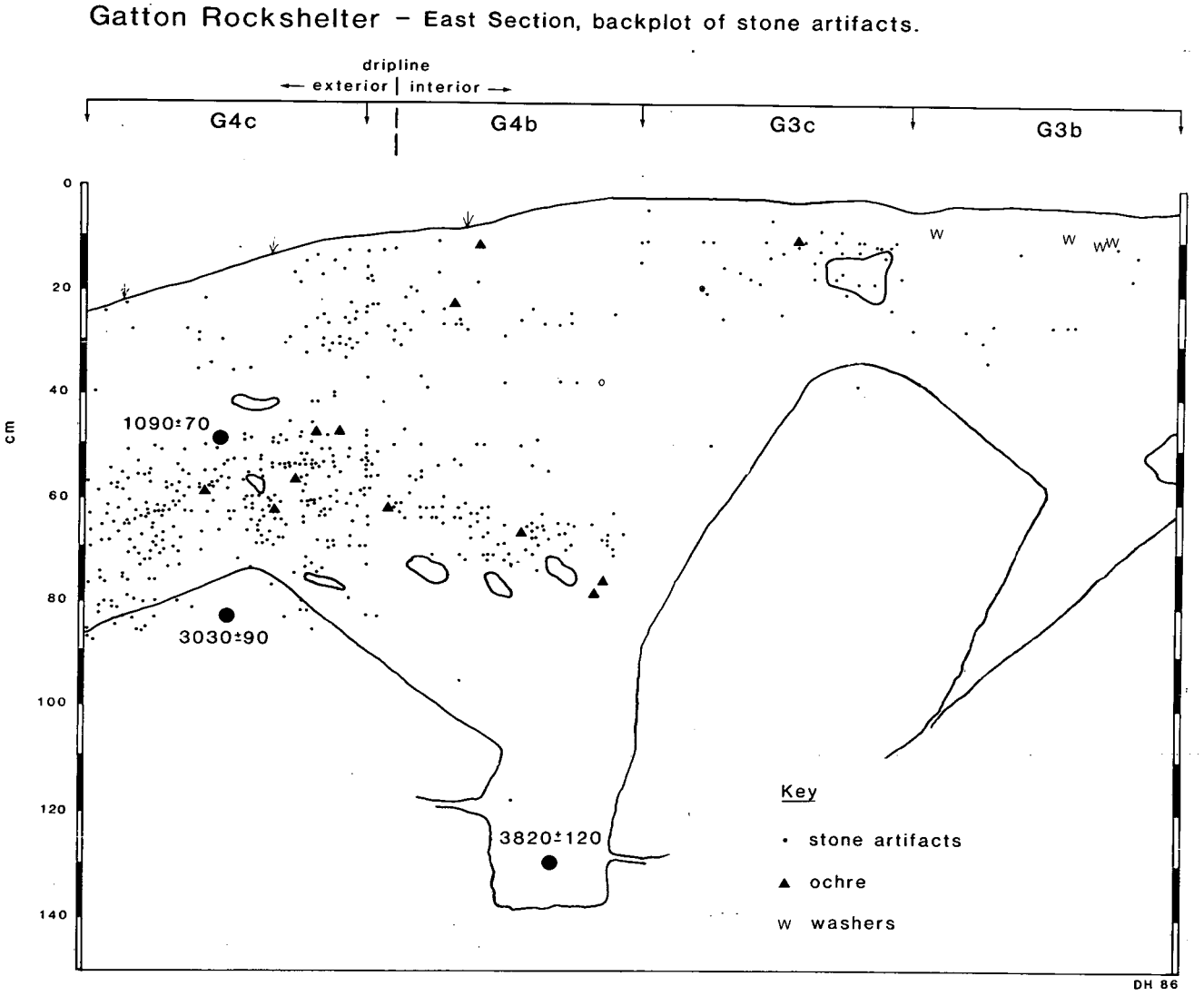


Figure 12. Backplots of stone artefacts excavated at Gatton Shelter.

The evidence suggests that early, ephemeral use of the site by small groups, with limited maintenance of hunting implements, was followed by more intensive use with a wider range of activities. In contrast, the last 1000 years of the sequence is marked by technological change, namely the loss of backed blades and "barbs", which were of specialised extractive function. In the New England region of New South Wales, McBryde (1976:57, 58) has noted that the loss of backed blades seems to be correlated with a change in the range of fauna represented - i.e. macropods predominate in levels with backed blades, whereas possums predominate later in the sequence. She suggests that the loss of backed blades is related to a change in hunting strategies, from the spearing of macropods to the "cutting out" of possums from trees. The faunal assemblage at Gatton Rockshelter does not support such a simple interpretation but there are still interesting economic and technological implications.

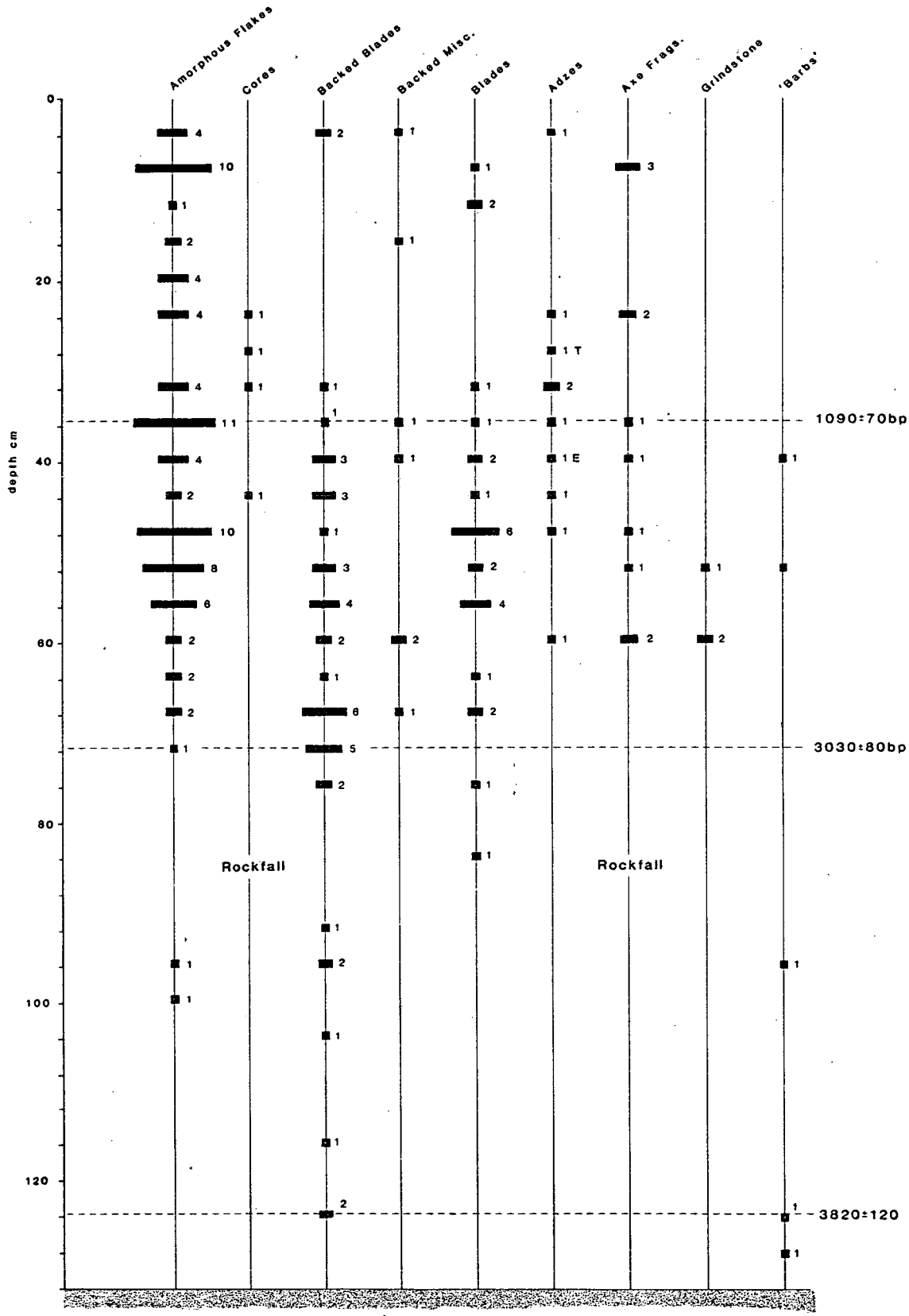


Figure 13. The vertical distribution of stone tools from Gatton Shelter.

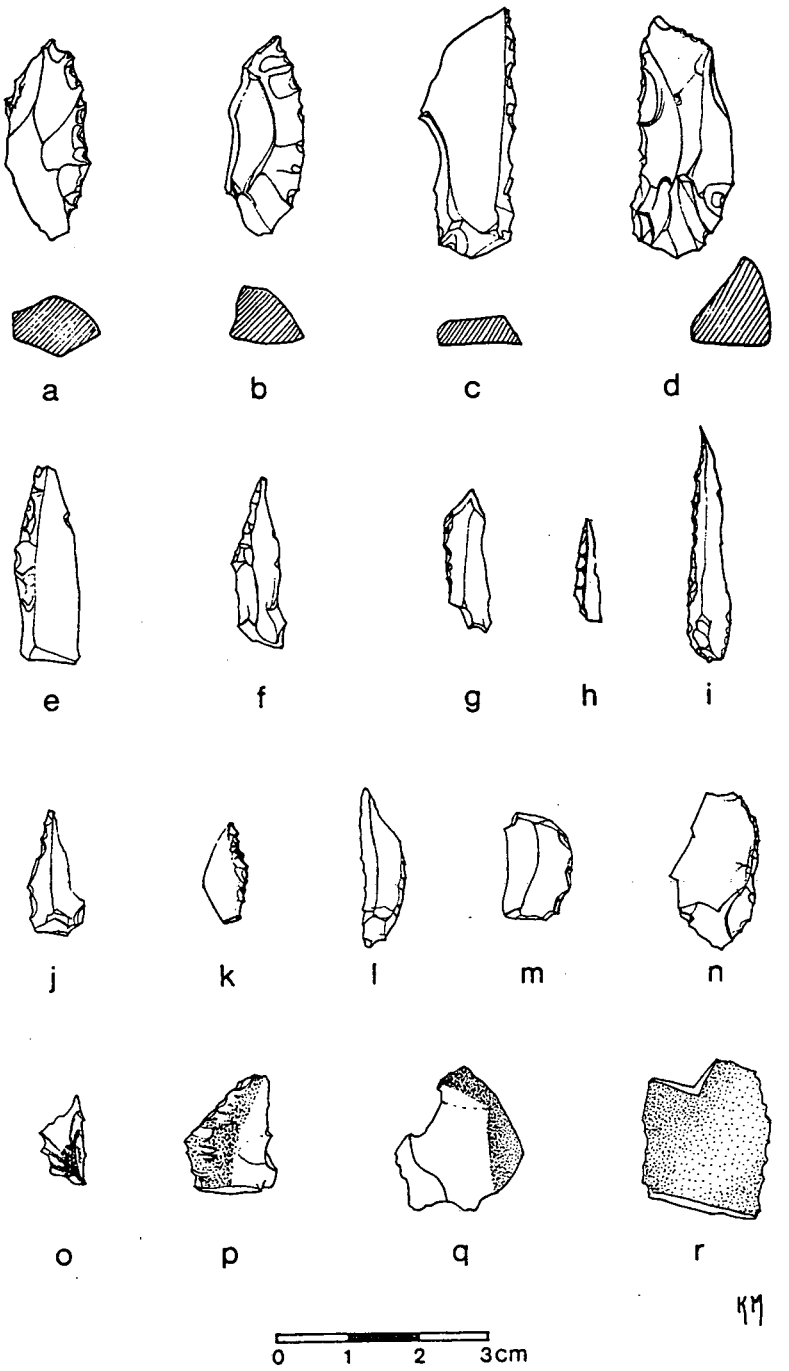


Figure 14. Stone artefacts from Gatton Shelter; (a-d) adze slugs, (e-k) Bondi points, (l-m) geometric microliths, (n) backed miscellaneous, (o) "barb" with resin, (p-q) fragments of edge-ground axes, (r) fragment of grindstone.

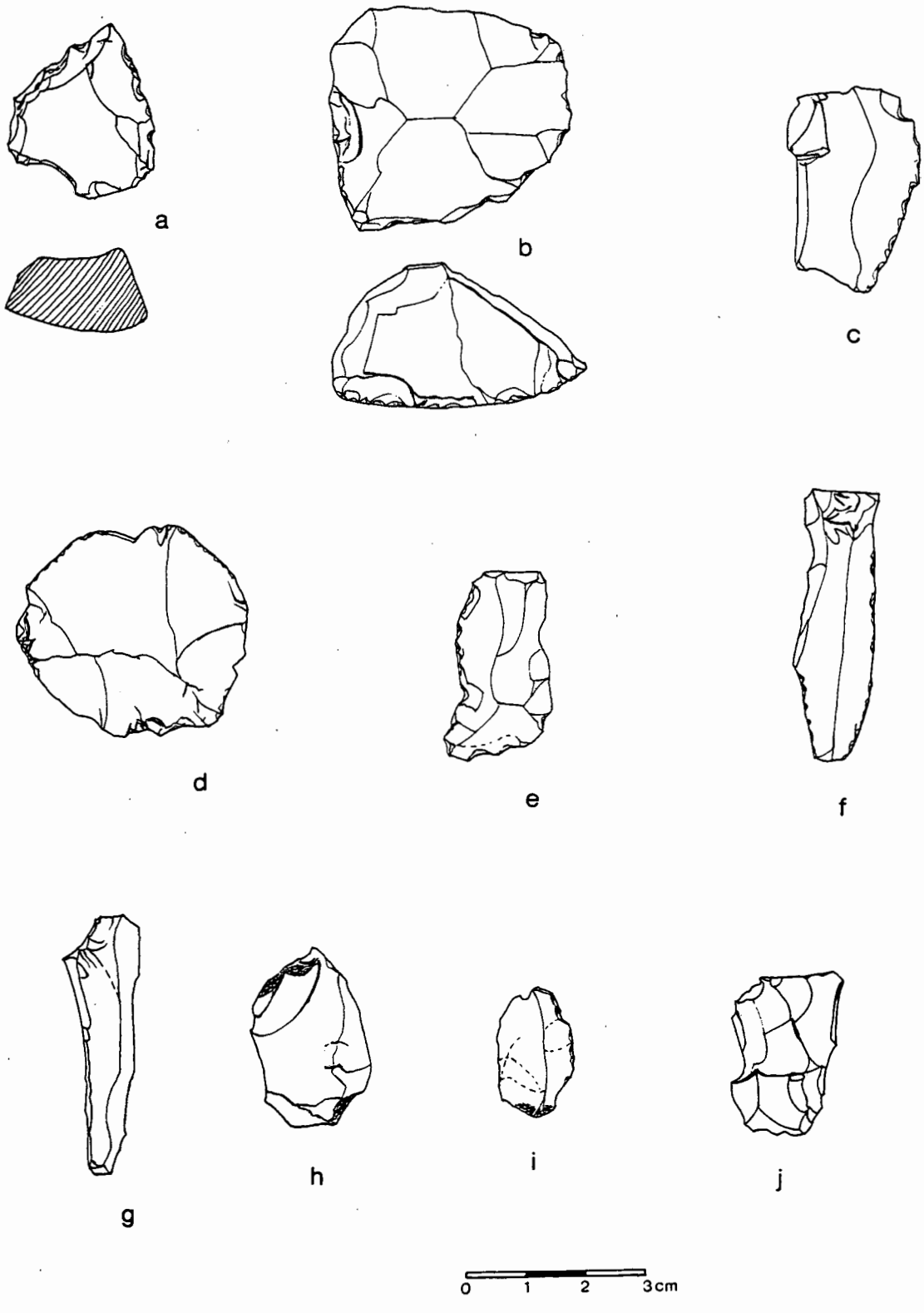


Figure 15. Stone artefacts from Gatton Shelter; (a-b) steep-edged scrapers, (c-d) retouched flakes, (e-f) blades, (g) blade core, (h) bipolar core, (i) bipolar flake, (j) blade core.

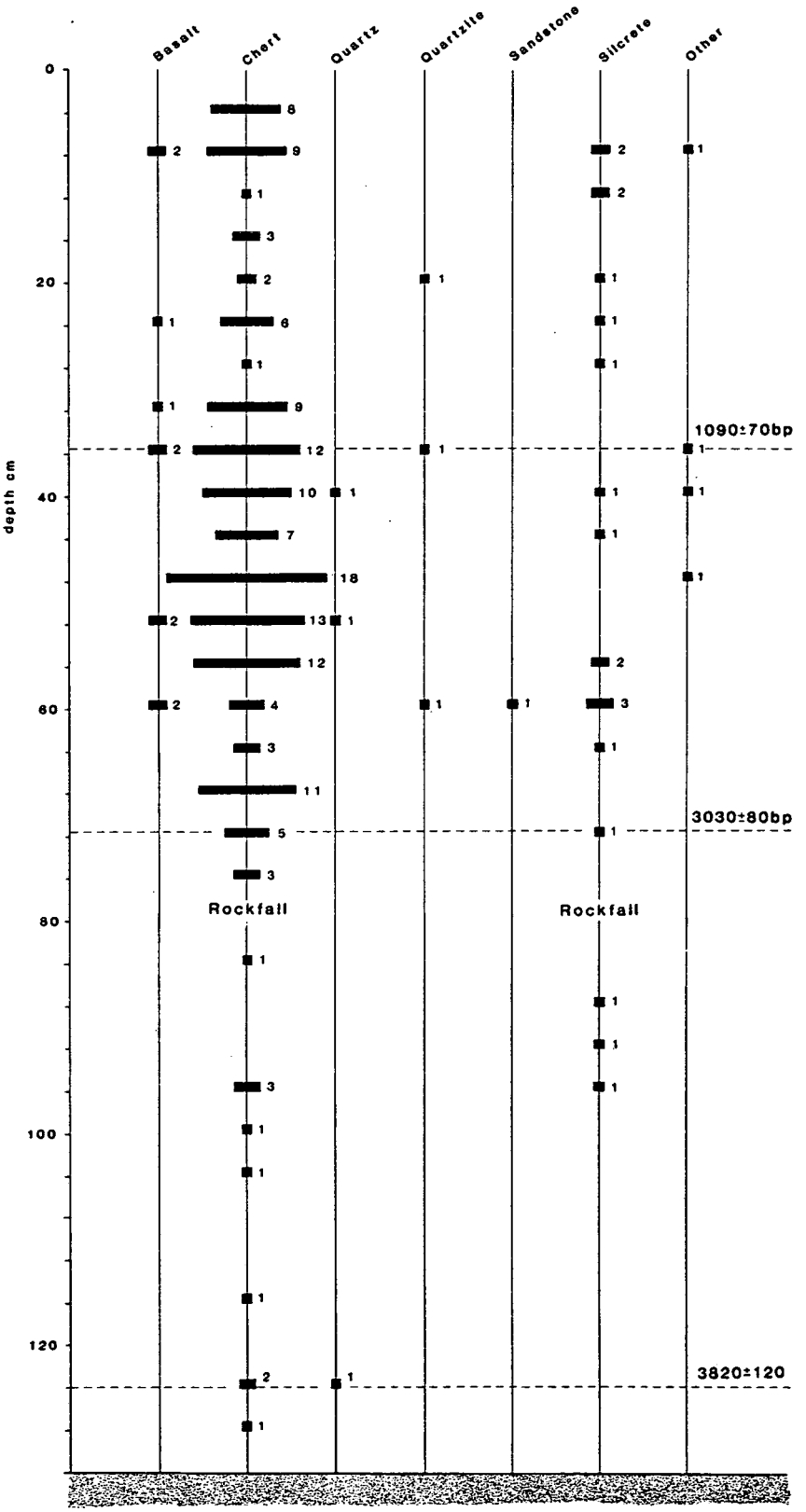


Figure 16. Vertical distribution of stone tool materials at Gatton Shelter.

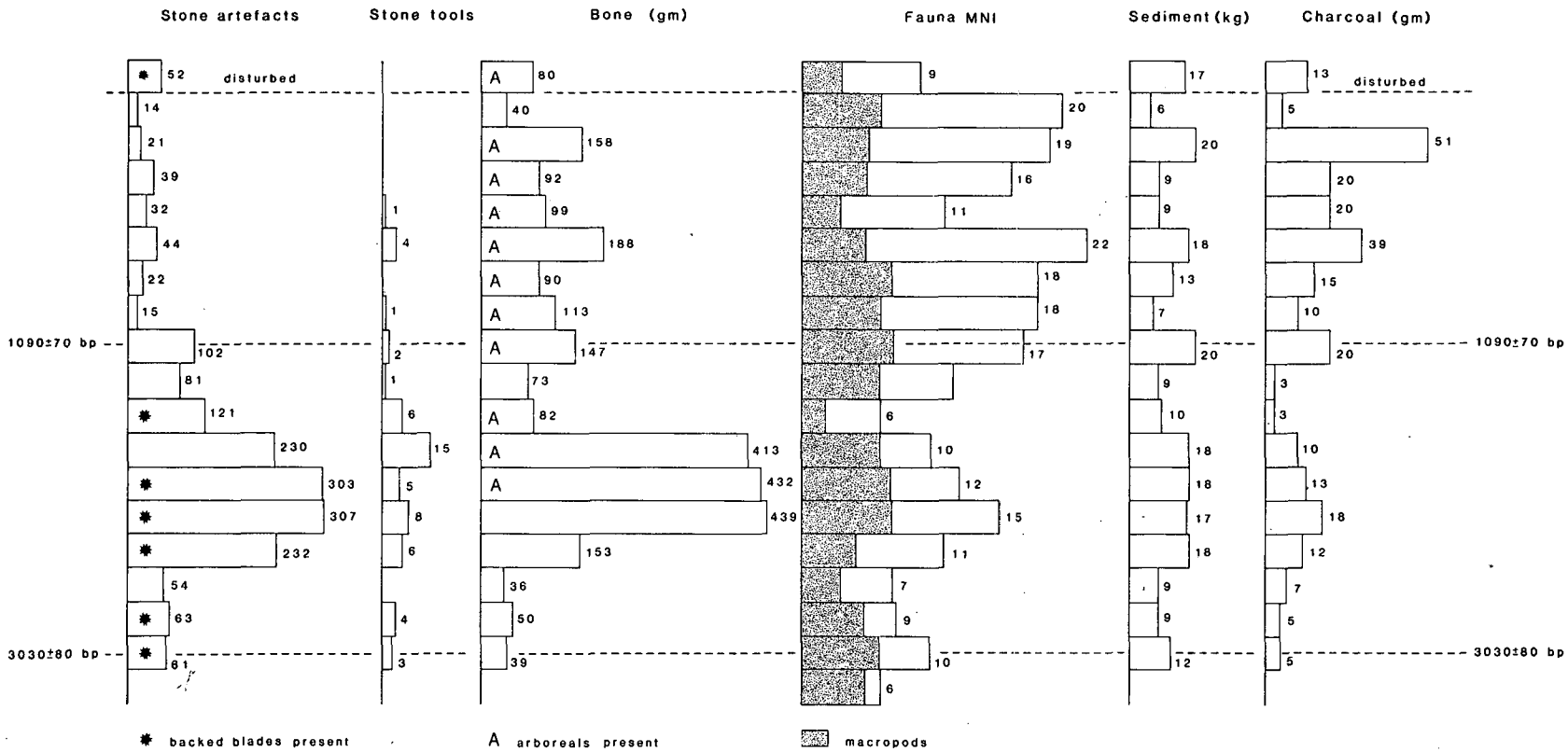


Figure 17. The vertical distribution of stone artefacts, stone tools, bone, sediment and charcoal in G4c at Gatton shelter. The MNI estimates are based on the faunal assemblage from the whole excavation. Note that the basal units took about twice as long to accumulate as equivalent units in the uppermost deposits.

At Gatton Shelter the manufacture of backed blades and "barbs" ceased and stone artefact deposition rates decreased around 1000 years ago. If interpreted in isolation, this suggests a late decrease in activity range and occupational intensity. However, increased rates of faunal, charcoal and sediment deposition indicate that the site was being used more intensively, while late increases in faunal diversity show a broadening of the resource base, with more extensive exploitation of wider habitat and species ranges (Figure 17). If changes in the artefactual and faunal sequences are functionally related, then general changes in the technology of predation are indicated. These possibly involved a change in emphasis from "individual pursuit strategies" (ambush, tracking, stalking), in which both spears and macropods featured prominently, to use of both individual pursuit and co-operative hunting strategies using nets.

Given the integrated nature of subsistence-settlement systems, there are likely to have been associated changes in other components such as group size, frequency of site occupation, duration of occupation and inter-site distribution of activities. Further assessment now requires comparable data from other sites, especially from the extensive stone artefact scatters which are so common on the alluvial terraces near Gatton rockshelter.

General Discussion

Aspects of the archaeological record at Gatton and Maidenwell art sites have implications for regional patterns of change. For instance, all excavated rock art sites in S.E. Queensland - Maidenwell, Gatton and Bishop's Peak (Edmonds 1986) - were first utilised at 4000 $\pm$ 300 BP, right at the point of inflection in the site frequency curve for the region (Figure 18), and associated with the appearance of new technologies and artefact types of diverse origin (cf. Morwood 1984:369). If the growth of site numbers over time provides a general measure of population increase (see Ross 1985, Hughes and Lampert 1982), then more people were obviously interacting more intensively, and in new ways.

The appearance of sites in new environmental zones (Figure 18) also suggests a geographical and ecological expansion of resource base from this time, possibly involving technological developments as well as changes in land-use strategy. Decreases in stone artefact discard rates in the uppermost levels at Wallen Wallen (Neal and Stock 1986:620), Bishop's Peak (Edmonds 1986:90-1), Bushrangers Cave (Hall 1986:96), Maidenwell and Gatton may reflect these developments. The same trend is evident in rockshelter sequences in other regions, where different explanations have been offered (e.g. Attenbrow 1982:74; Hiscock 1986:45-8, Jones 1985:296; Morwood 1984:359).

This interpretation of general changes in site distribution is borne out by the patterns of economic change within specific sites: at Gatton there is an early emphasis on large and medium sized macropods with later diversification to include harvesting of smaller species. A coastal version of the same trend is evident in the Wallen Wallen site on Stradbroke Island (Neal and Stock 1986:618-21). In the lowermost midden of mid-Holocene age, there is emphasis upon larger terrestrial and aquatic vertebrate fauna such as dugong, pademelon and python, while higher in the sequence an exclusively coastal economy appears, based on fish and shellfish with limited dugong hunting. Recent specialization

upon "r-selected" coastal resources at Wallen Wallen may be a measure of the reliability of these resources given the development of appropriate extractive technologies and techniques, but the economic diversification at both Gatton and Wallen Wallen also implies periods of resource stress (Hayden 1981:523). The question still remains open as to whether these recent developments in S.E. Queensland were environmentally, demographically and/or socially determined.

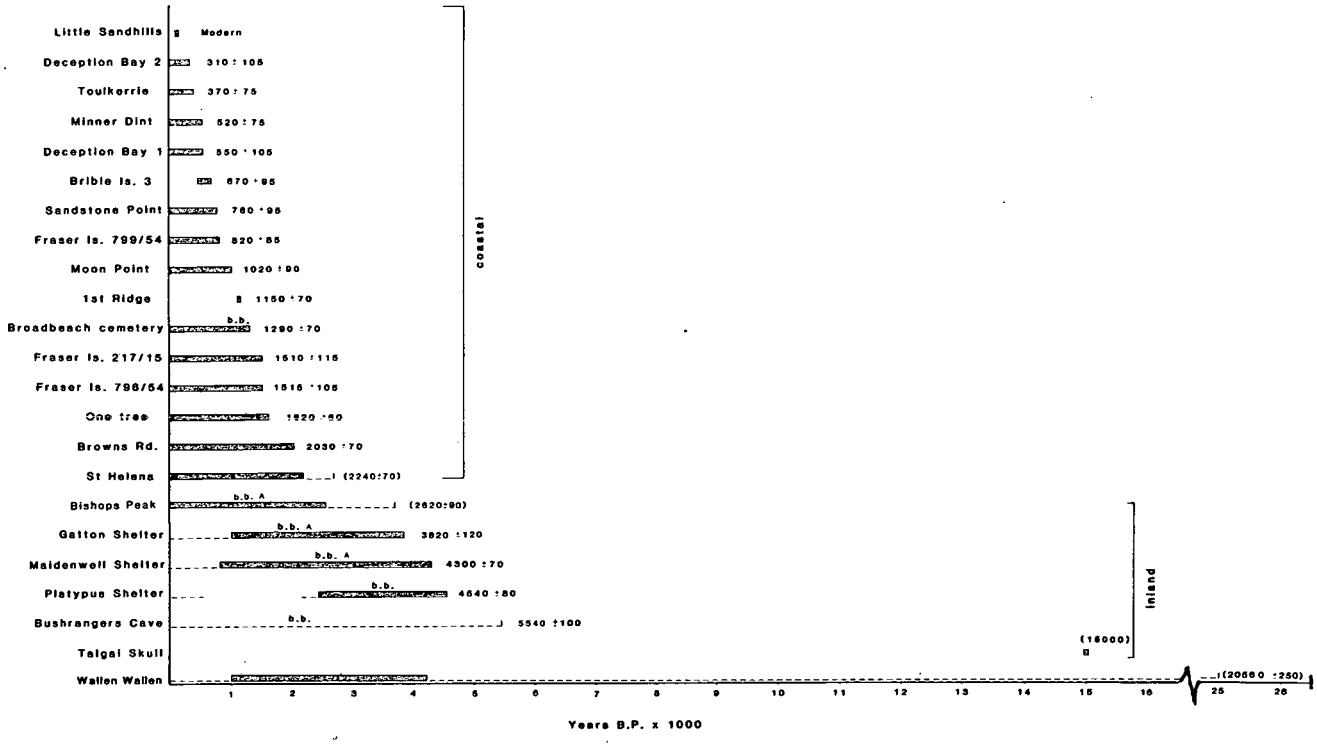


Figure 18. Occupation sequences for excavated sites in S.E. Queensland based on conventional 14C ages (Alfredson 1983:83; Edmonds 1986:55; Haglund 1976; Hall 1982:88, 1984:67, 1986:94; Kelly 1982). Bracketed dates are not from basal deposits which are dated by extrapolation. Broken lines indicate low artefact deposition rates (b.b. = backed blades present; A = rock art present).

In conclusion, the evidence indicates that patterns of change in S.E. Queensland resource structure, technology, economy and symbolic behaviour were functionally related. This is hardly surprising, given the interdependence between the social and economic components of Aboriginal society in S.E. Queensland during historic times. Further investigation of sites, or site complexes, with evidence for a range of such activities is now planned.

ACKNOWLEDGEMENTS

The Australian Heritage Commission, Archaeology Branch, D.C.S., and University of New England provided generous financial support. The faunal analysis by Steve van Dyke was funded by A.R.G.S. through Jay Hall, Director of the Moreton Region Archaeological Project. Permission to excavate at the sites was given by Ron Bain and Minerals Pty. Ltd.

The fieldwork and laboratory processing could not have been carried out without the assistance of many individuals, including: Malcolm Abel, Lukki Blackman, Pam Blackman, Andrew Border, Lindsay Charman, Denise Donlon, Steve van Dyke, Bob Edgar, Vanessa Edmonds, Klim Gollan, Gwyneth Hobbs, Iolanthe Hoberg, Jan Hunter, Tony Johnson, Harvey Johnston, Barbara Mason, Jenny Murray, David Rhodes, Caroline Rola-Wojciechowski, Su Solomon, Steve Sutton, Greg Taylor, Bruce Veitch, Rita Wilkinson, Bruce Wright and particularly Doug Hobbs. Drawings are by Doug Hobbs and Kathy Morwood while Di Watson typed the draft.

Comments by Graham Connah, Iain Davidson, Harry Lourandos, Dan Witter, Anne Ross and Luke Godwin on earlier drafts of this paper were much appreciated.

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APPENDIX 1 VARIABLES FOR THE ANALYSIS OF THE STONE MATERIAL

Variable	Columns	Code	Value
A) All excavated stone artefacts			
Square	1 - 2		As excavated
Spit	3 - 4		
Element no.	5 - 7		
Material	8	B	Basalt
		C	Chert
		D	Duricrust
		M	Mudstone
		N	Sandstone
		P	Petrified wood
		Q	Quartzite
		S	Silcrete (fine-grained)
		Z	Quartz
Blank	9	-	Flake
		2	Core
		3	Amorphous
		6	Amorphous (grouped)
Class	10-12	-	Amorphous
		3	Single plat. core
		4	Blade core
		6	Bipolar core
		7	Multi-plat. core
		9	Geometric micro.
		10	Bondi point
		12	Backed misc.
		16	Blade
		18	Burren adze slug
		19	Tula adze slug
		22	Axe fragment
		23	Grindstone frag.
		29	Hammerstone
		30	Elouera
Completeness	13	B	Broken
Length (max)	14-16	To nearest 15mm for blank '6' size classes, 0 - 5 = > 5-10 = 10 etc.	
Width (max)	17-19	To nearest .5mm	
Thickness (max)	20-22	To nearest .5mm	
Composite	23-25	As counted (for 'Blank' = 6)	

APPENDIX 1 Continued.

Variable	Columns	Code	Value
B) Utilized and/or retouched artefacts			
Status	27	-	Unused
		1	Use-wear
		2	Retouched
		3	Ground
		4	Retouch & usewear
Edge no	28	-	As numbered
Edge modification	29	U	Usewear
		R	Retouch
		B	Both
		G	Ground
Modification type	30	1	Unifacial
		2	Bifacial
		3	Rounded
Edge length	31-33	To nearest 0.5mm	
Edge shape	34	1	Very concave
		2	Concave
		3	Straight
		4	Convex
		5	Very convex
		6	Concave/nosed
		7	Notched
Edge angle	35-37	Maximum to nearest 1.0 degree	
C) Complete flakes			
Platform thickness	38-39	To nearest 0.5mm	
Flake length	40-42	To nearest 0.5mm	
Flake width	43-45	To nearest 0.5mm	

APPENDIX 2: A TAPHONOMIC ANALYSIS OF THE FAUNA FROM GATTON ROCK SHELTER (Squares G4c and G4d)

By SU SOLOMON

The rationale of this analysis was to identify the principal agents of bone deposition and destruction/removal at this site. There are a number of possibilities including humans, other animals (specifically dingoes and quolls), natural on-site deaths, and chemical and/or physical degradation. This analysis involved examination of all tooth/use wear marks on bones from Squares G4c and G4d using the techniques outlined in Solomon (1985), followed by a closer examination of fracture patterns evident in material from G4c. Due to the sheer size of the Gatton assemblage, a 36% sample (by weight of total bone) was chosen for the study.

Examination of tooth/use wear involved the microscopic inspection of all the material in the sample at 10 X power. The following observations are relevant:

1. Distinctive percussion marks were identified on 41 macropod long bone fragments. On 5 of these, quoll (?) tooth marks had been made after the bones were broken (Plate 5a - arrowed).

2. Stone tool cut marks were identified on 4 bone fragments (Plate 5b).

3. Human tooth marks were identified on 3 bone fragments (Plate 5b).

4. Usewear and/or resin was identified on 7 thylogale mandibles that appear to have been used as engravers (Plate 6). A collection of macropod mandibles held in the Queensland Museum (Reg. QE 2038 and 939) and presumed to have been used as engravers was used as reference material for usewear identification.

5. 70 macropod long bones appear to have been broken when fresh by hammer and anvil.

6. Carnivore tooth marks (quoll?) were identified on 49 fragments of bone. No dingo tooth marks were apparent but one fragment of macropod metatarsal had Bower Bird gloss at one end (see Solomon, Minnegal and Dwyer. 1986).

This evidence strongly suggests that humans were the major agent of deposition at this site. The small number of identifiable quoll tooth marks show that this animal was present but did not have a major effect on the bone as Witter (n.d.) records that these heavily mark bones when eating. The fact that 10% of quoll marks occur on bones smashed by humans suggests that there was minor scavenging of human refuse (see Plate 5a). Gatton lies in the distribution range of the Spotted Bower Bird (Chlamydera maculata) (Caley 1982:102). The one example of Bower Bird gloss suggests that limited scavenging of bones from the site by these birds may have occurred.

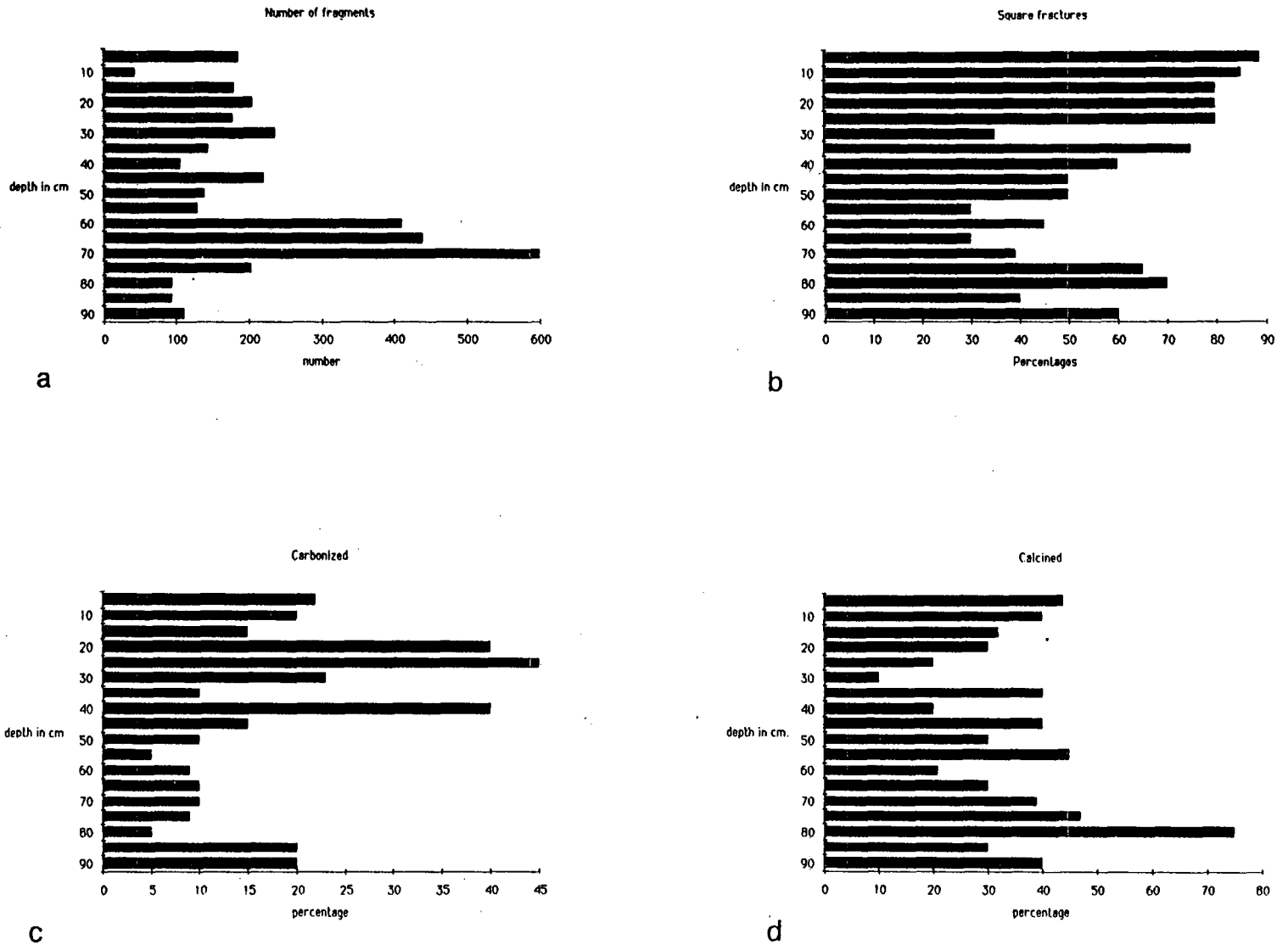

Figure 19. The vertical distribution of bone fragments (<3cm), square fractured bone, burned bone and calcined bone in G4c.

Overall, scavenging does not appear to have been a major factor as there is a large quantity of small animal, post cranial bones. Although some 5,011 fragments of bone fall within the size range for dingo scats (less than 4cm), no dingo tooth marks were observed. This result would be expected if the material had passed through the gut of a dingo. Studies by the writer (unpublished data) have demonstrated that only about 0.7% of bone fragments in dingo scats will bear tooth marks.

Analysis of fragmentation pattern also indicates that humans were the main deposition mechanism. A very high percentage of the bone less than 3cm maximum dimension exhibits square fracturing which is highly correlated with the percentage of carbonized and calcined bone per spit (Figure 19). It is suggested that the square fracturing of the bone may be attributable to the bone being burnt.

The evidence also suggests that chemical and physical degradation of the assemblage is minimal. There are only 15 bone fragments from Spits 7 and 8 in G4c, the dripline square, that have been smoothed and rounded by water action. This is an insignificant proportion of the 4,146 fragments examined from the square. In addition, all of the bone from Gatton appears to be well preserved, with trabecular bone being well represented throughout the sequence. For example, at the bottom of G4c, 10% of the 112 unidentifiable fragments of bone are trabecular. If intensive scavenging of the remains had occurred, one would not anticipate that such highly favoured bone would have remained.

Some physical degradation of the bone assemblage may have occurred as evidenced by the fairly steady decline in the ratio of carbonized to calcined bone (Figure 19). For example, carbonized bone comprises 40% of burnt bone in the top spit and 20% at the bottom. The weight of overburden may account for this progressive loss.

Conclusion

A range of evidence including tooth/cut/percussion marks, fragmentation patterns, proportion of square fractured, calcined and carbonized bone, and representation of body parts, suggests that humans were the major depositors of bone at this site. The faunal assemblage is overwhelmingly human refuse and appears to have suffered minimal damage from other agencies.

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Plate 1: General view of Maidenwell Shelter during excavation.

Plate 2: Closeup of rock paintings at Maidenwell Shelter.

Plate 3: General view of Gatton Shelter during excavation.

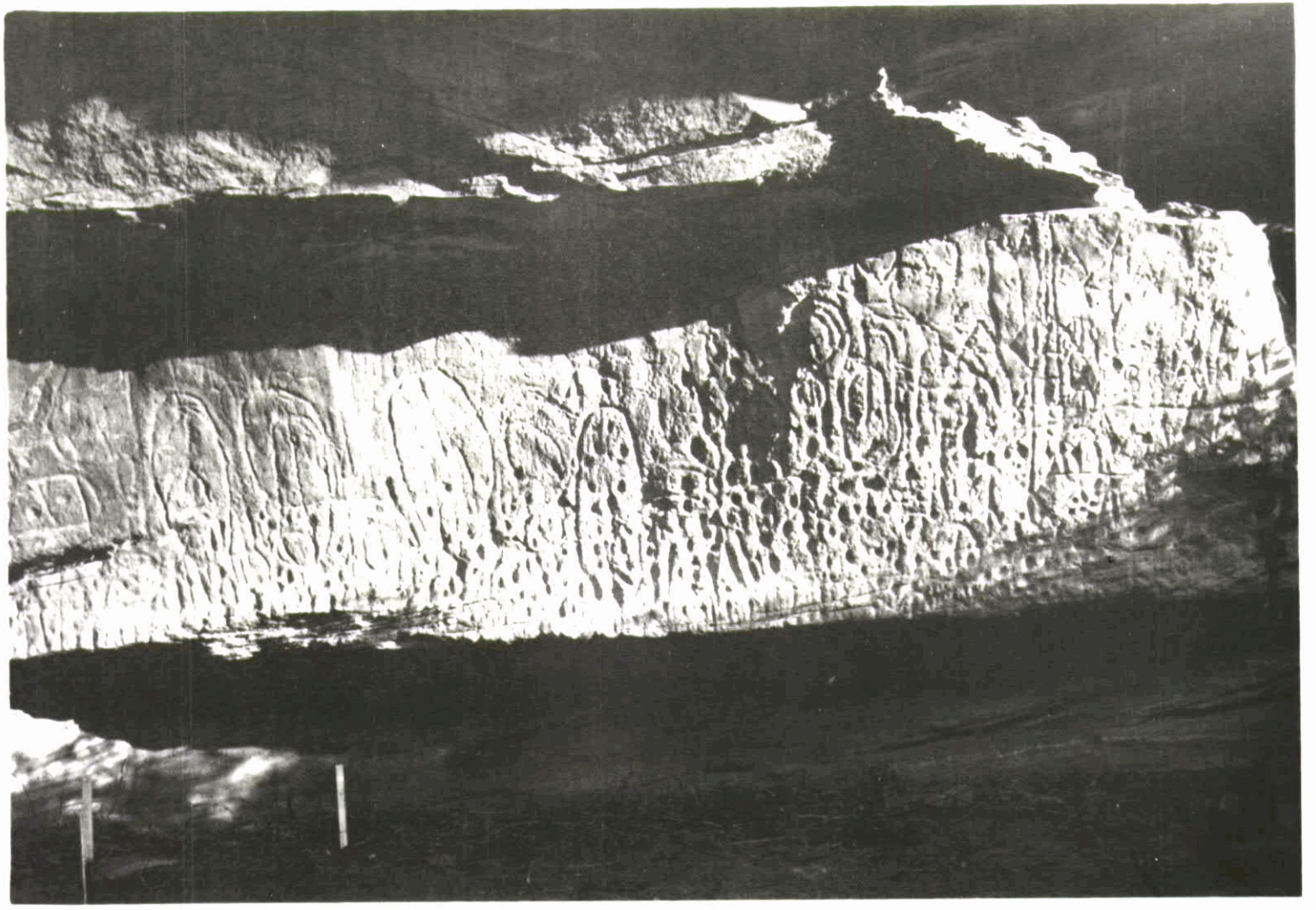

Plate 4: Rock engravings at Gatton Shelter.

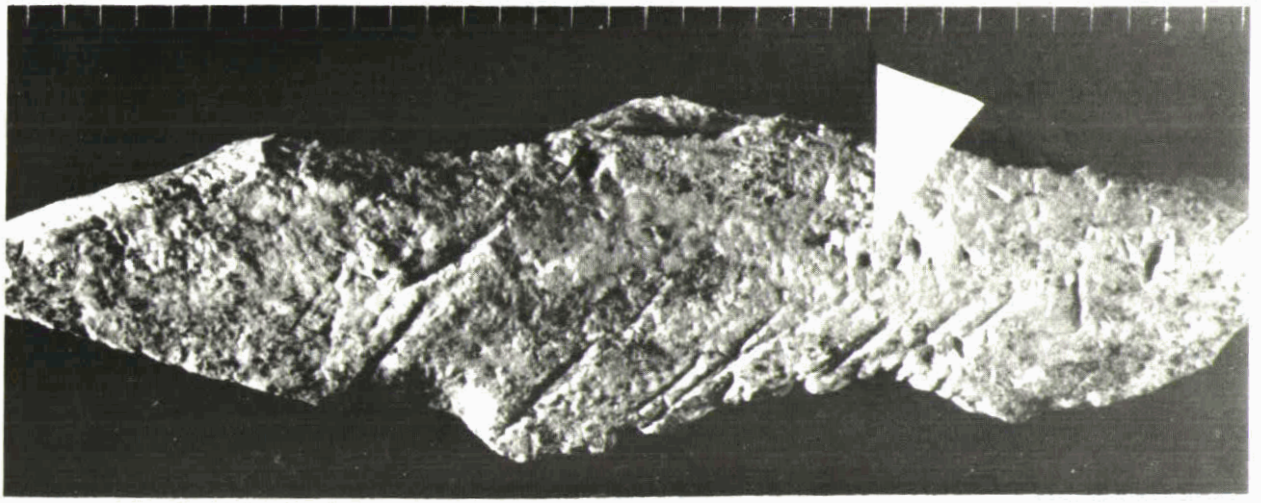

Plate 5a. Stone tool cutmarks and quoll tooth marks (arrowed).

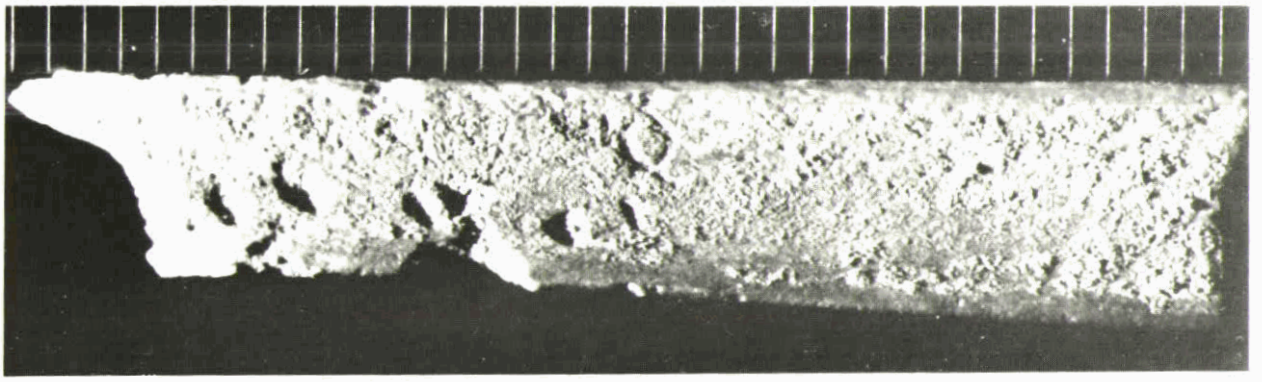

Plate 5b. Human tooth marks (scale in mm).

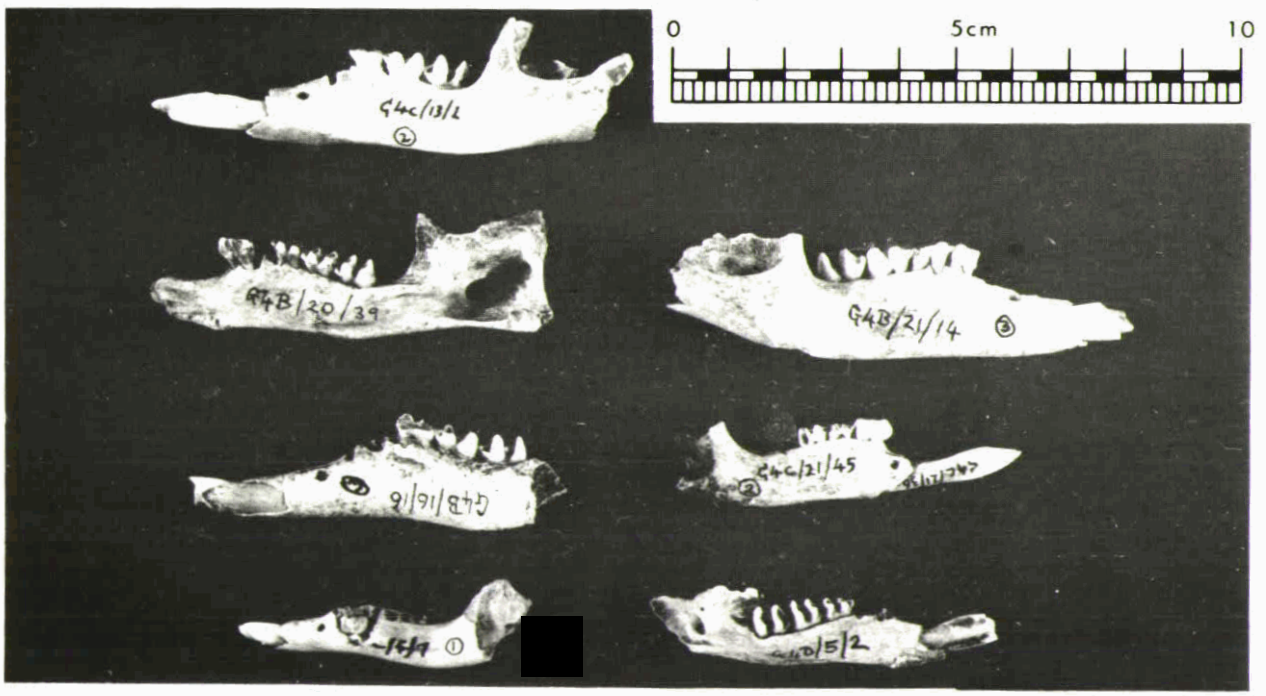

Plate 6. Thylogale mandibles identified as engravers on the basis of adhering resin and/or usewear.