LIVING IN RAINFOREST:

the prehistoric occupation of North Queensland's humid tropics

Volume 2

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in March 1987

for the degree of Doctor of Philosophy
in the Department of Behavioural Science
at James Cook University of North Queensland

LIST OF FIGURES

List of Figures (cont.)

LIST OF TABLES

List of Tables (cont.)

LIST OF PLATES

List of Plates (cont.)

List of Plates (cont.)

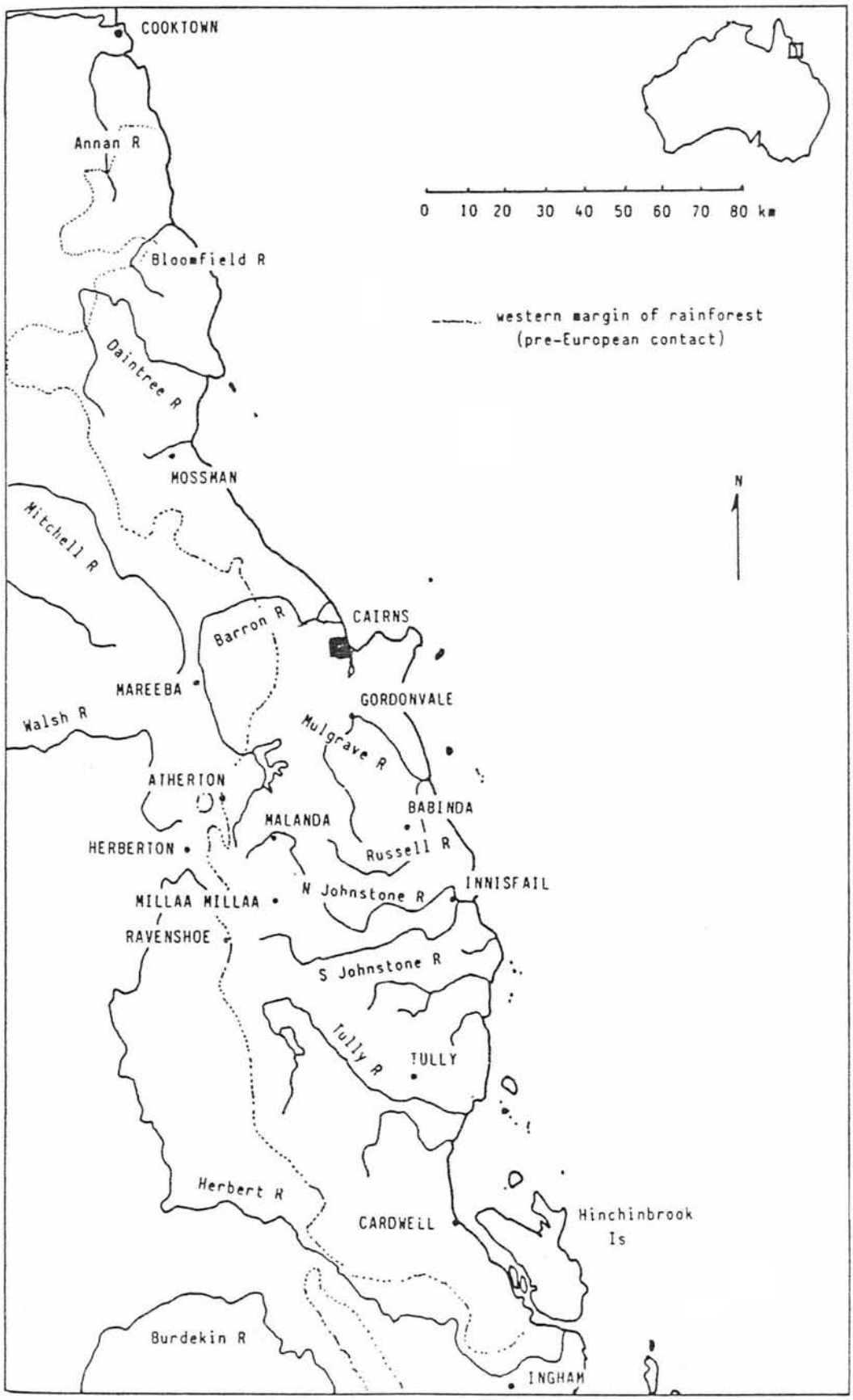


Figure 1.1. The humid tropics of northeast Queensland: towns and rivers.

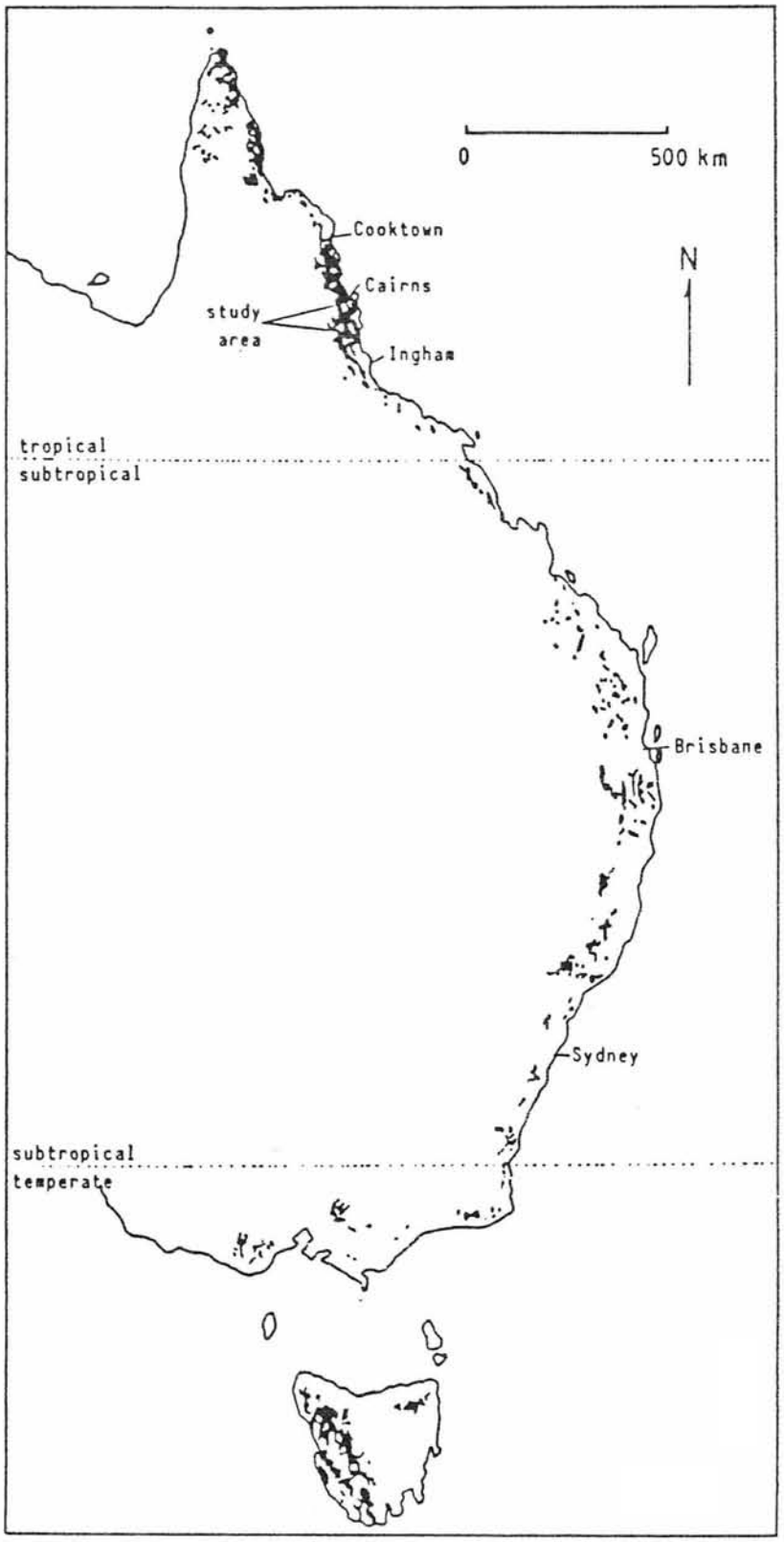


Figure 2.1. Distribution of rainforests in eastern Australia today: tropical, subtropical and temperate.
After Werren 1985; Anon 1975.

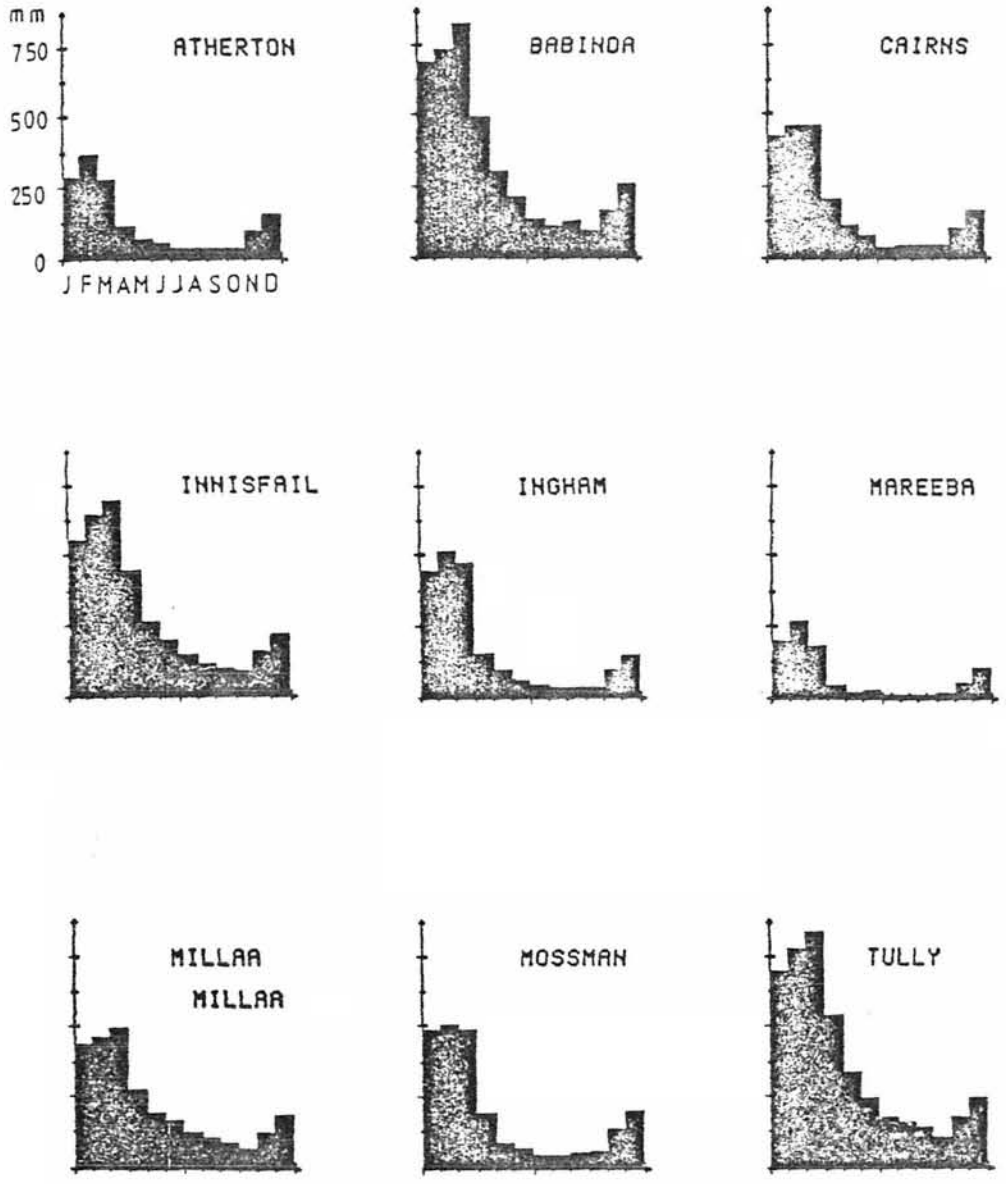


Figure 2.2. Seasonal distribution of rainfall at various localities in the humid tropical region (1931-1960). Data from Australian Bureau of Meteorology (1966).

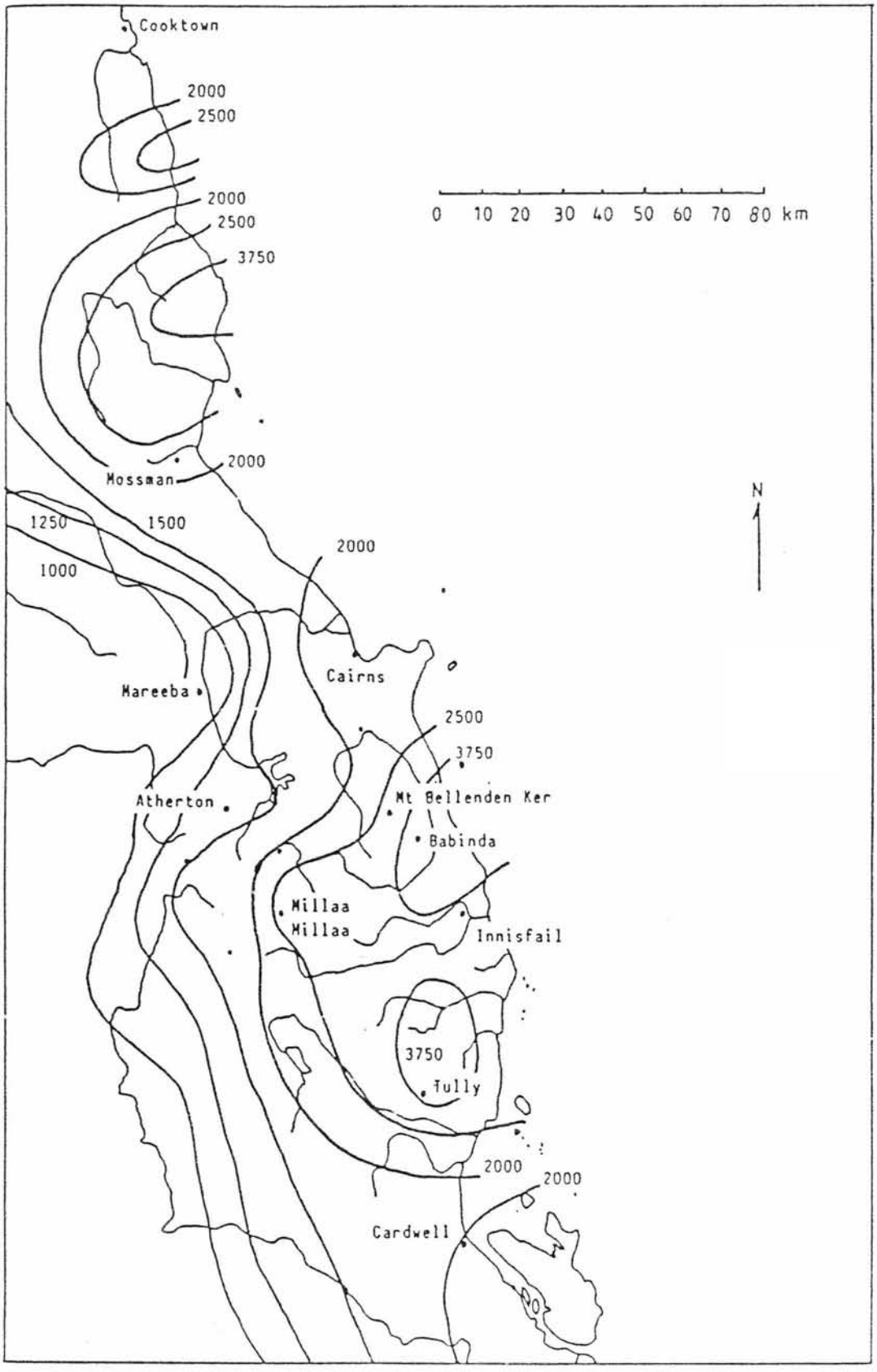


Figure 2.3. Annual average rainfall isohyets (mm). From Tracey (1982: Figure 3).

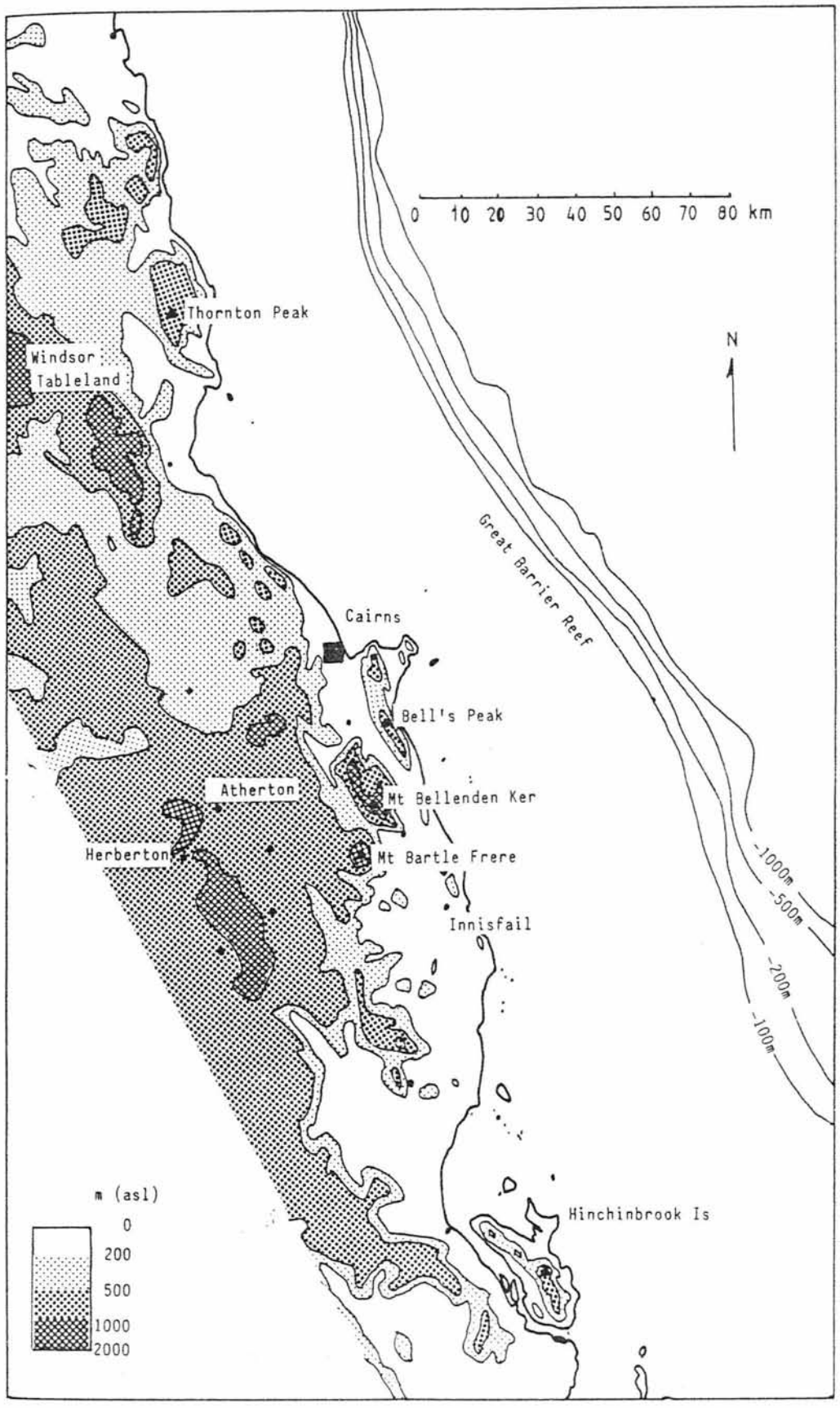


Figure 2.4. Topography of the humid tropical region.

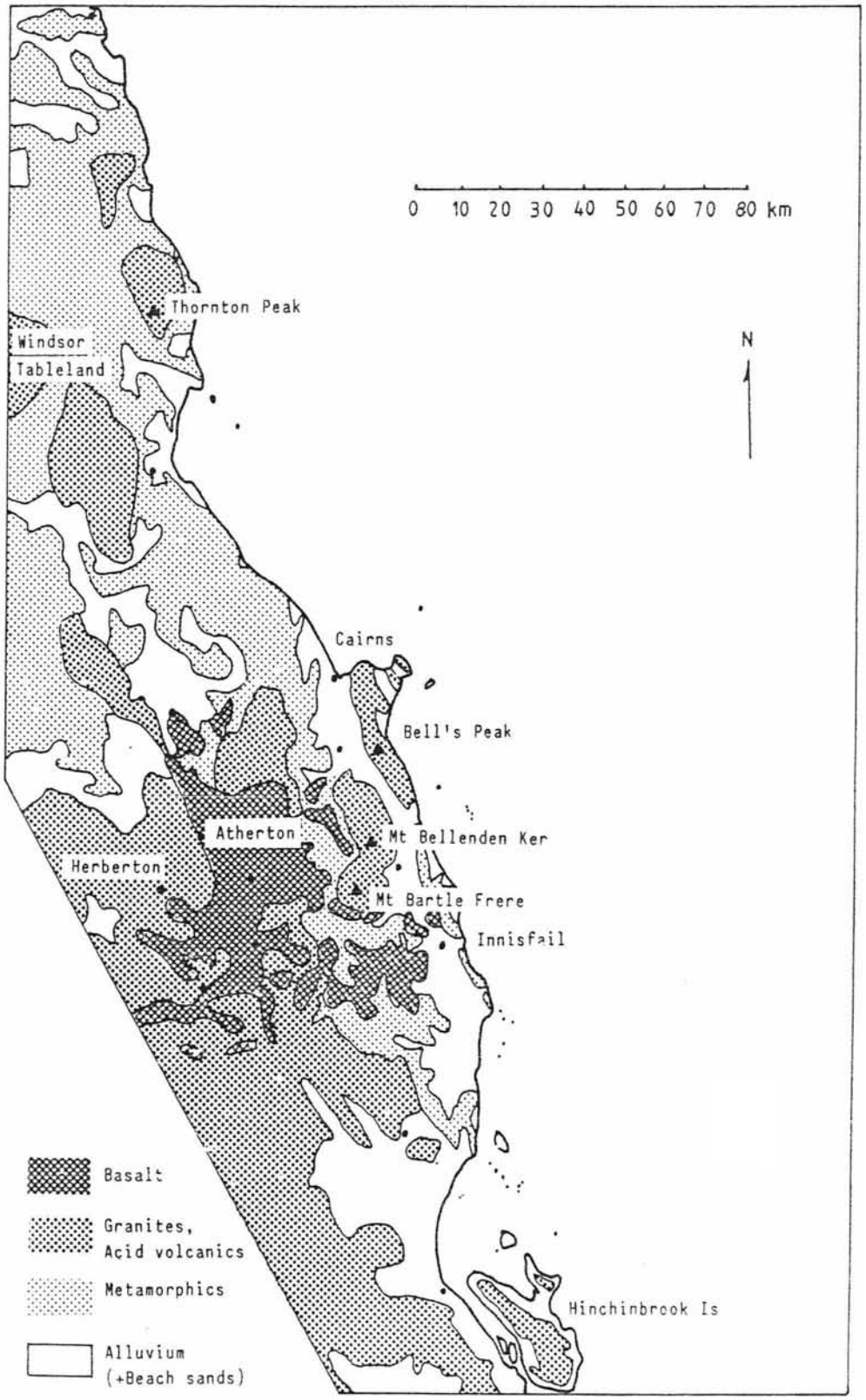


Figure 2.5. Geology of the humid tropical region.

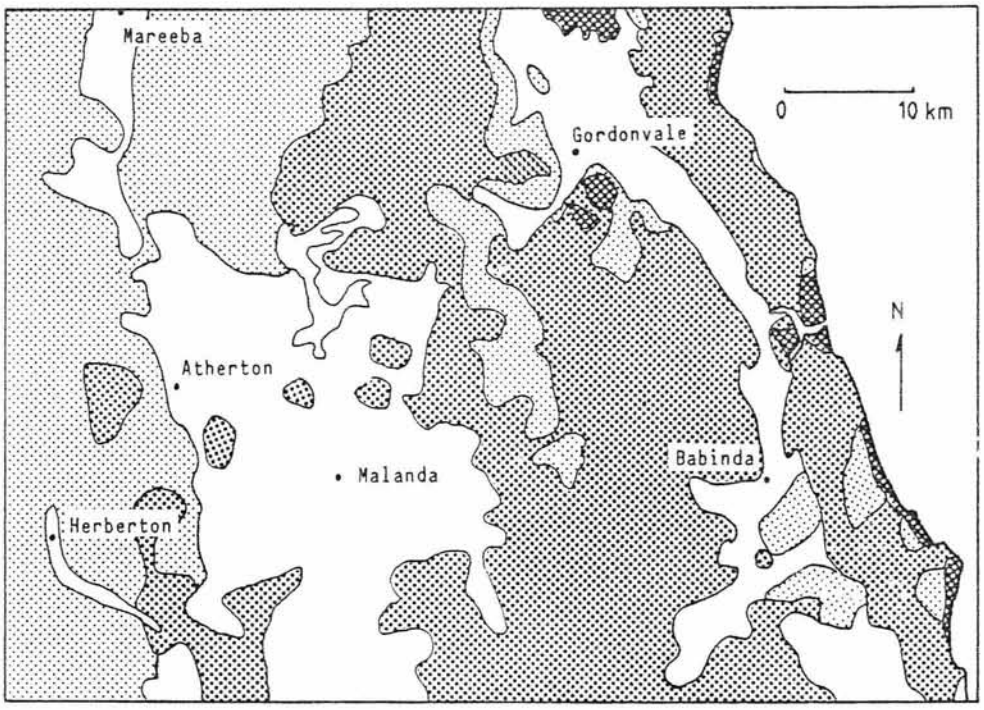


Figure 2.6. Distribution of the major vegetation types in the study area between Cairns and Innisfail. From Tracey and Webb 1975.

Rainforest (types 1-11) and
Mixed Rainforest and sclerophyll (types 12-13)

Open Sclerophyll Forests and Woodlands
(types 14-16)

Vegetation Complexes and Mosaics (types 17-23)

Cleared (Atherton Tableland and coastal plains)

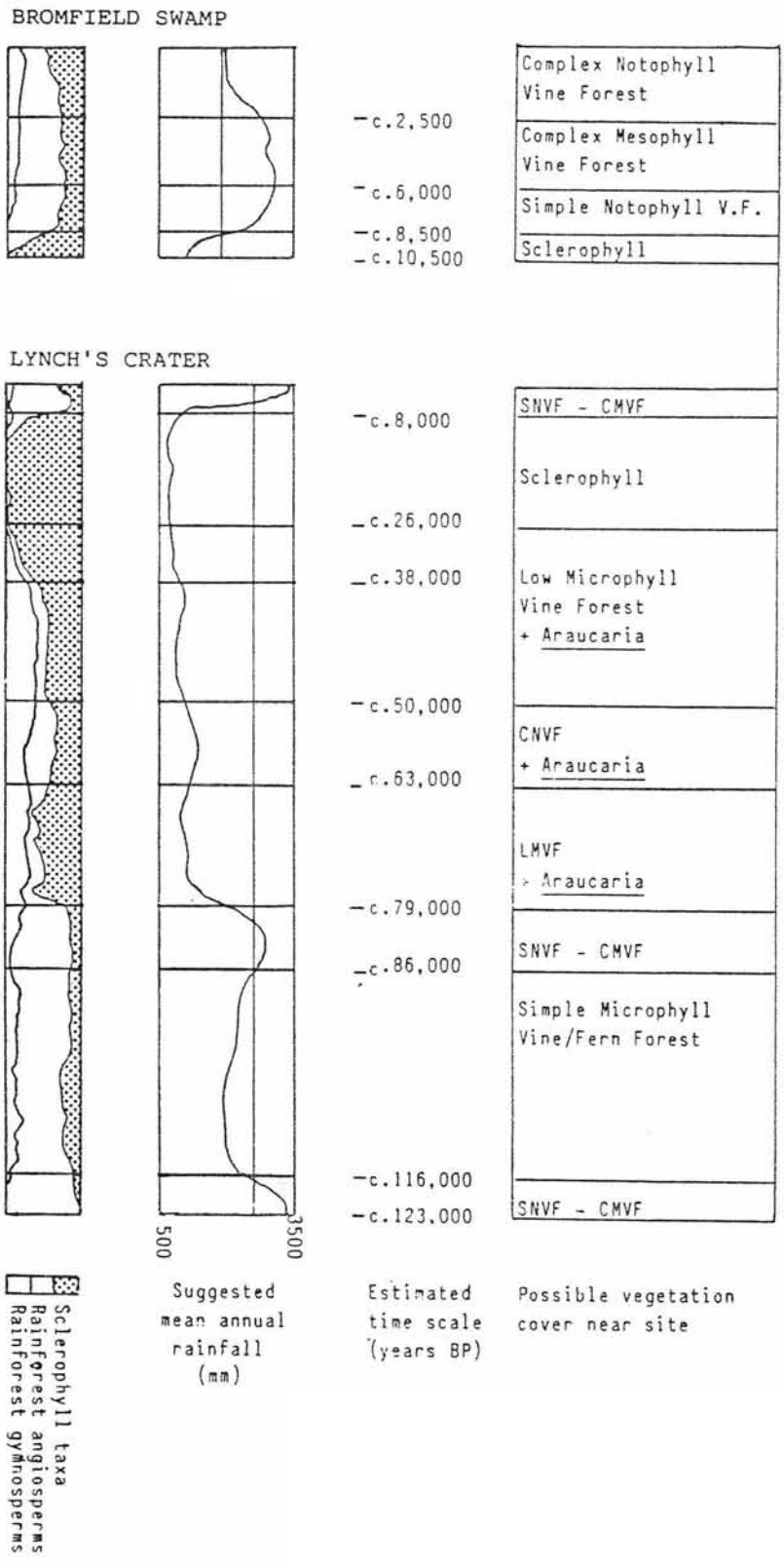


Figure 2.7. Results of pollen analyses at two sites on the Atherton Tableland (locations in Figure 2.8): variations in vegetation type and rainfall.
From Kershaw in Coventry et al. (1980: Figure 12).

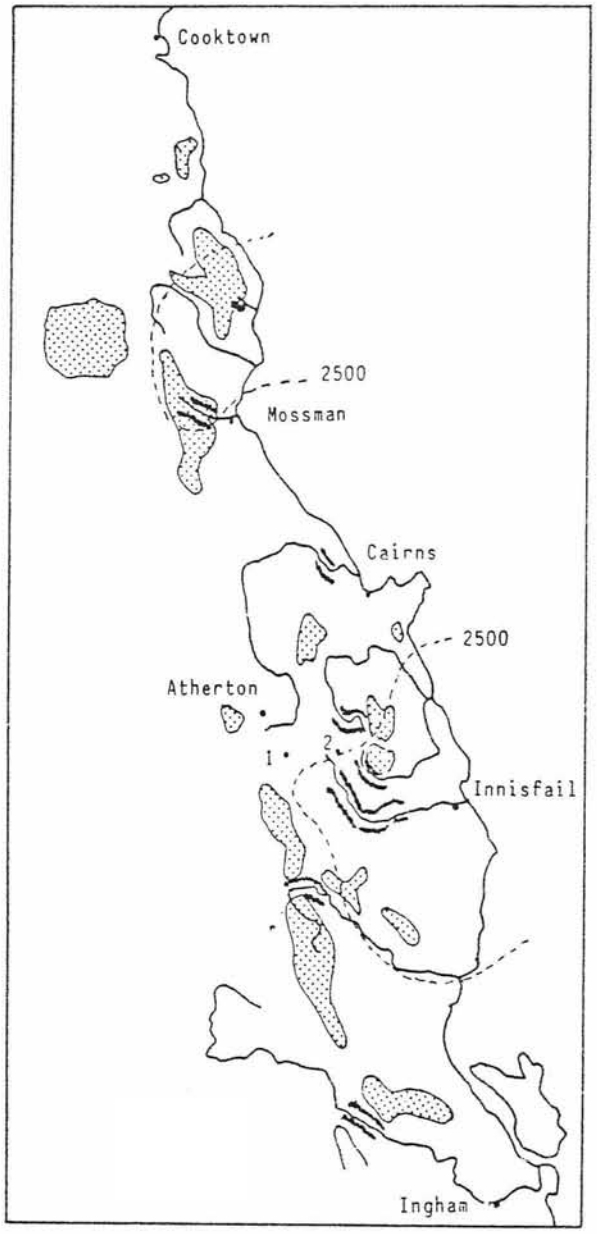


Figure 2.8. Possible rainforest refuge areas in northeast Queensland:
a. cloudy wet mountains (stippled);
b. very wet lowlands within 2500 mm isohyets;
c. wet coastal gorges and gallery forests on rivers as marked.
1. Bromfield Swamp; 2. Lynch's Crater.
From Webb and Tracey (1981: Figure 9).

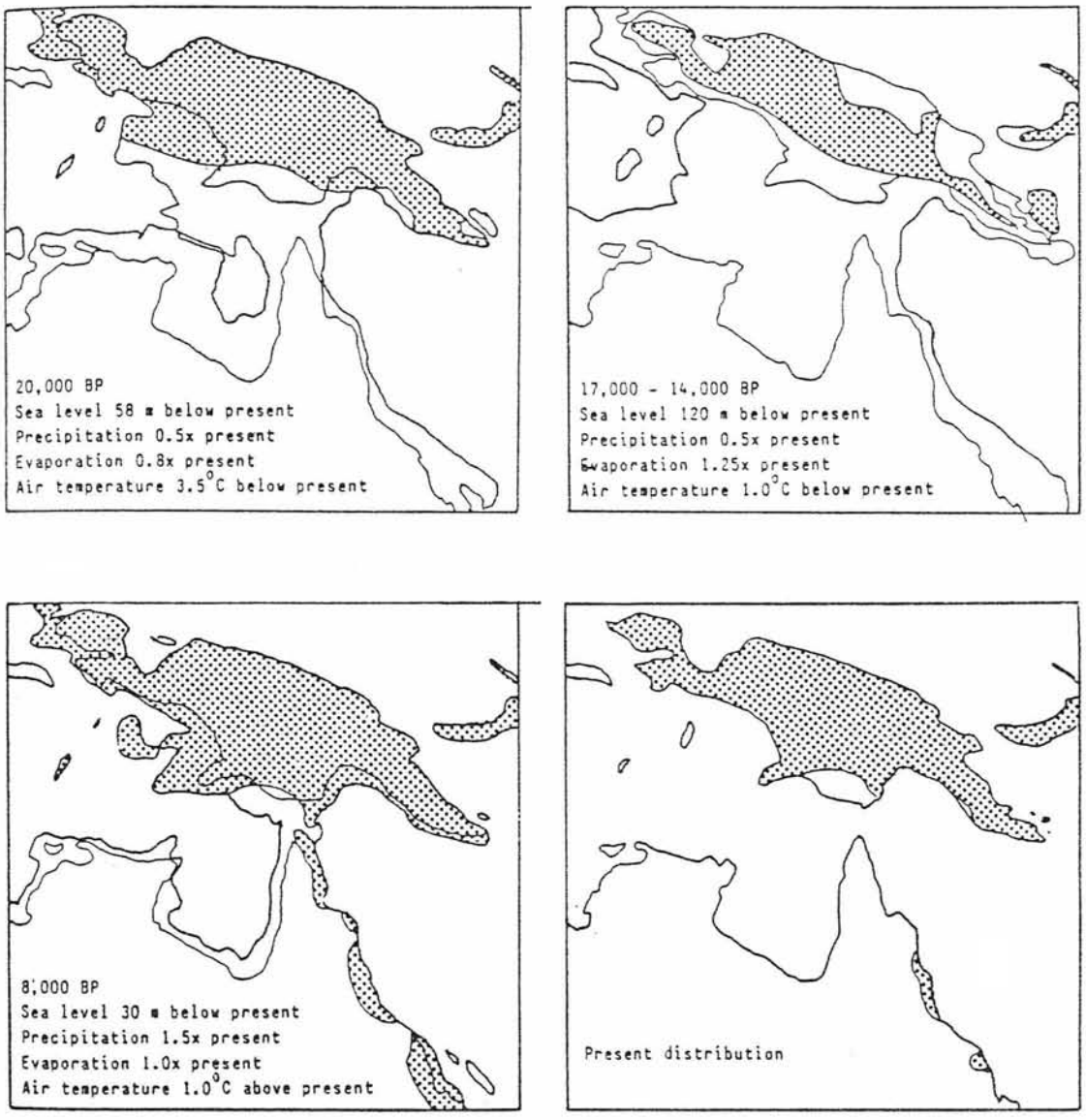


Figure 2.9. Past distribution of rainforest in Australia and New Guinea according to hypothetical climate modelling by Nix and Kalma (1972: Figures 5.9 to 5.12). Stippling represents rainforest.

Table 2.1

Annual rainfall

Location	Yearly average (mm)	Years of records
Atherton	1425	72
Babinda	4174	61
Cairns	2224	75
Cardwell	2129	103
Innisfail	3641	94
Mareeba	914	75
Millaa Millaa	2625	60
Mossman	2338	62
Tully	4321	48

From Australian Bureau of Meteorology 1977.

Table 2.2

Mean daily temperatures (°Celsius)

Locality	Whole Year max	Whole Year min	Jan max	July min
Cairns	28.9	20.7	31.5	16.7
Cardwell	29.1	19.0	31.9	13.3
Herberton	25.6	14.4	28.3	9.5
Innisfail	27.5	19.5	30.3	15.1
Kairi (Atherton)	25.0	15.5	28.3	10.8
Mareeba	28.9	16.4	31.2	11.2
Pt Douglas (Mossman)	28.8	20.4	31.3	17.0

From Australian Bureau of Meteorology 1975.

Table 2.3

Main vegetation types in northeast Queensland (Tracey 1982; mapped by Tracey and Webb 1975).

Type	Rainfall	Altitude	Soils	Species*
RAINFOREST				
1	**Complex mesophyll vine forest CMVF**			
1a	very wet, wet	lowlands, foothills	basalts, basic volcanics, colluvium, alluvia	Alstonia scholaris Castanospermum australe Elaeocarpus grandis Ficus spp Endiandra pubens Calamus spp Bowenia spectabilis Blechnum spp Alpinia spp Alocasia macrorrhiza Musa banksii Pothos longipes
1b	very wet, cloudy	uplands	basalts	Beilschmiedia bancroftii Bowenia spectabilis Pothos longipes Ficus spp
1c	moist, dry	lowlands, gallery forests		Alstonia scholaris Aleurites moluccana Castanospermum australe Elaeocarpus grandis
2	**Mesophyll vine forest MVF**			
2a	very wet, wet	lowlands, foothills	granites, schists	Archontophoenix alexandrae Lepidozamia hopei Licuala ramsayi Randia fitzalani Bowenia spectabilis Calamus spp Pothos longipes
2b	very wet, wet	lowlands	beach sands	Elaeocarpus grandis Ficus racemosa Archontophoenix alexandrae Entada scandens
3	**Mesophyll vine forest with dominant palms MVFDP**			
3a	very wet	lowlands, swamps	basaltic, alluvial	Archontophoenix alexandrae Alstonia scholaris Elaeocarpus bancroftii E. grandis Blechnum indicum Flagellaria indica Pothos longipes
3b	very wet	lowlands, low foothills	schists granites	Bowenia spectabilis Flagellaria indica Pothos longipes

Table 2.3 (continued)

Type	Rainfall	Altitude	Soils	Species*
4	**Semi-deciduous mesophyll vine forest SDMVF**			
	moist, dry	lowlands, foothills	granites, basalts	Canarium australianum Terminalia seriocarpa
5	**Complex notophyll vine forest CNVF**			
5a	cloudy wet	highlands	basalt, basic rocks	Beilschmiedia bancroftii Caesalpinia subtropica Calamus spp Pothos longipes Alocasia macrorrhiza
5b	moist, dry	lowlands, foothills, uplands	basalts	Aleurites moluccana Alstonia scholaris Castanospermum australe Elaeocarpus grandis Ficus spp
6	**Complex notophyll vine forest CNVF with emergent Agathis robusta**			
	moist	foothills, uplands	granites, schists	Aleurites moluccana Ficus Calamus caryotoides
7	**Notophyll vine forest NVF with Acacia emergents**			
7a	moist	lowlands, foothills (coastal)	granites, schists	Ficus microcarpa Ganophyllum falcatum Mimusops elengi Pouteria sericea Flagellaria indica
7b	moist, dry	lowlands	beach sands	as for 7a
8	**Simple notophyll vine forest SNVF with Agathis microstachya**			
	cloudy wet, moist	uplands, highlands	granites, schists, acid volcanics	Podocarpus amarus Cyathea Pandanus Lomandra longifolia Calamus spp
9	**Simple microphyll vine-fern forest MFF with Agathis atropurpurea**			
	cloudy wet	highlands	granites	Archontophoenix alexandrae
10	**Simple microphyll vine-fern thicket MFT**			
	cloudy wet, moist	tops of uplands & highlands	granites	Cyathea

Table 2.3 (continued)

Type	Rainfall	Altitude	Soils	Species*
11	**Deciduous microphyll vine thicket DVT**			
	dry	lowlands, foothills	granite boulders	Cochlospermum gillivraei Ficus spp
MIXED RAINFOREST AND SCLEROPHYLL (Closed forest with sclerophyll emergents and co-dominants - mixed communities representing different stages of succession)				
12	**Vine forests with Acacia**			
12a	very wet, wet	uplands, highlands	granites, metamorphics	see 2a, 2b
12b	wet	foothills	metamorphics	see 12a
12c	very wet, wet	lowlands, foothills	metamorphics	see 12a Planchonella chartacea
12d	cloudy, wet	uplands, highlands	basalts to acid volcanics	see 5a, 8, 9 Cyathea Blechnum
13	**Vine forests with Eucalyptus and Acacia**			
13a	very wet, wet	lowlands, foothills	not basalts	see 1a, 2a Calophyllum Eupomatia laurina Gahnia aspera Melodinus australis
13b	moist	foothills, uplands	not basalts	see 6, 8 Aleurites moluccana
13c	wet, cloudy wet	uplands	granite, acid volcanics	see 8, 9 Eupomatia laurina Calamus moti Rubus
13d	wet, moist	foothills	granite	see 2a Alstonia scholaris Buchanania arborescens Calamus spp Dioscorea transversa
13e	very wet, wet	lowlands, foothills	granites, metamorphics, acid volcanics	see 2a Randia fitzalani Durandea jenkinsii Flagellaria indica
13f	wet, moist	uplands, highlands	granites	see 2a, 8 Eugenia Cyathea

Table 2.3 (continued)

Type	Rainfall	Altitude	Soils	Species*
OPEN SCLEROPHYLL FORESTS AND WOODLANDS				
14	**Tall open forest and tall woodland - generally on western fringes of rainforest**			
14a	cloudy, moist	uplands, highlands	granites, acid volcanics	Calamus australis Flagellaria indica Rubus
14b	drier than 14a	as above	as above	Gahnia aspera Ficus spp
14c	moist	uplands, highlands	basalts	
14d	moist	uplands	various	
15	**Medium open forest and medium woodland**			
15a	wet, very wet	lowlands, poor drainage		Pandanus Elaeocharis Nymphaea gigantea
15b	wet, moist	foothills	granite	Planchonia careya Canarium australianum Cycas media
16	**Medium and low woodland**			
16a-16p	moist to dry	various situations, mainly granitic and metamorphic soils, extending into regions beyond the humid tropics.		Cycas media Planchonia careya
VEGETATION COMPLEXES AND MOSAICS				
17	**Coastal beach ridges and swales**			see 2a Eugenia hemilampra Syzygium rubigniosum Canarium australianum Planchonia careya
18	**Swampy coastal plains**			Nauclea orientalis Pandanus Archontophoenix alexandrae Licuala ramsayi Alstonia scholaris Elaeocarpus grandis Terminalia seriocarpa Randia fitzalani
19	**Coastal floodplains and piedmont slopes**			

Table 2.3 (continued)

Type		Species*
20	**Soils with impeded drainage on coastal plains**	*Xanthorrhoea* *Pandanus* *Blechnum indicum*
21	**Mountain rock pavements**	*Pouteria sericea* *Lomandra longifolia* *Xanthorrhoea*
22	**Saline littoral zone**	
22a	Mangrove forests	*Bruguiera gymnorrhiza* *Hisbiscus tiliaceus* *Barringtonia*
22b	Samphire flats	
23	**Coastal plains and foothills**	
23a	Freshwater swamps of coastal plains	*Nymphaea* spp *Cyperus* *Lepironia*
23b	Fire-degraded grassland with woody regrowth	*Planchonia careya* *Alstonia scholaris*

* This column lists some of the plant species generally associated with each vegetation type, specifically those known to have been utilised by Aborigines, though not necessarily in this region.

Table 2.4

Mammals of the humid tropics, northeast Queensland.

LARGE MAMMALS (>4 kg)

Spotted-tailed Quoll	Dasyurus maculatus	RD
Unadorned Rock-wallaby	Petrogale inornata	
Godman's Rock-wallaby	Petrogale godmani	
Red-legged Pademelon	Thylogale stigmatica	RD
Whiptail Wallaby	Macropus parryi	
Agile Wallaby	Macropus agilis	
Eastern Grey Kangaroo	Macropus giganteus	
Common Wallaroo	Macropus robustus	
Antilopine Wallaroo	Macropus antilopinus	
Swamp Wallaby	Wallabia bicolor	
Lumholtz Tree-kangaroo	Dendrolagus lumholtzi	RD*
Bennett's Tree-kangaroo	Dendrolagus bennettianus	RD*
Dingo	Canis familiaris dingo	RI
Dugong	Dugong dugon	

SMALL/MEDIUM MAMMALS (500 g - 4 kg)

Platypus	Ornithirynchus anatinus	
Echidna	Tachyglossus aculeatus	RI
Northern Quoll	Dasyurus hallucatus	
Northern Brown Bandicoot	Isoodon macrourus	
Long-nosed Bandicoot	Perameles nasuta	RS
Common Ringtail Possum	Pseudocheirus peregrinus	RI
Herbert R Ringtail Possum	Pseudocheirus herbertensis	RD*
Green Ringtail Possum	Pseudocheirus archeri	RD*
Lemuroid Ringtail Possum	Hemibelideus lemuroides	RD*
Greater Glider	Petauroides volans	
Yellow-bellied Glider	Petaurus australis	OF
Common Brushtail Possum	Trichosurus vulpecula	RI
Musky Rat-kangaroo	Hypsiprymnodon moschatus	RD*
Brush-tailed Bettong	Bettongia penicillata	OF
Rufous Bettong	Aepyprymnus rufescens	
Black Flying-fox	Pteropus alecto	
Spectacled Flying-fox	Pteropus conspicillatus	
Water Rat	Hydromys chrysogaster	RI
White-tailed Rat	Uromys caudimaculatus	RD
Black-footed Tree-rat	Mesembriomys gouldii	

SMALL MAMMALS (<500 g)

Yellow-footed Antechinus	Antechinus flavipes	RS
Brown Antechinus	Antechinus stuartii	RD
Atherton Antechinus	Antechinus godmani	RD*
Common Dunnart	Sminthopsis murina	
White-footed Dunnart	Sminthopsis leucopus	
Red-cheeked Dunnart	Sminthopsis virginiae	
Common Planigale	Planigale maculata	
Sugar Glider	Petaurus breviceps	RI
Squirrel Glider	Petaurus norfolcensis	
Striped Possum	Dactylopsila trivirgata	RD
Long-tailed Pygmy-possum	Cercartetus caudatus	RD
Feathertail Glider	Acrobates pygmaeus	
Fawn-footed Melomys	Melomys cervinipes	RS
Grassland Melomys	Melomys burtoni	
Thornton Peak Melomys	Melomys hadrourus	RD*
Common Rock-rat	Zyzomys argurus	
Eastern Chestnut Mouse	Pseudomys gracilicaudatus	
Delicate Mouse	Pseudomys delicatulus	
Prehensile-tailed Rat	Pogonomys mollipilosus	RD
Bush Rat	Rattus fuscipes	RS
Cape York Rat	Rattus leucopus	RD
Swamp Rat	Rattus lutreolus	OF
Canefield Rat	Rattus sordidus	
Pale Field-rat	Rattus tunneyi	

+ 31 species of bats (Chiroptera)

From Australian Heritage Commission (1986: Appendix L).
Weight ranges from Strahan (1983).

Righthand column indicates degree of dependence on rainforest environment for 29 of the flightless species (Winter 1984).
RD = rainforest dependent
RS = rainforest semidependent
RI = rainforest independent
OF = tall open forest
* = unique to region

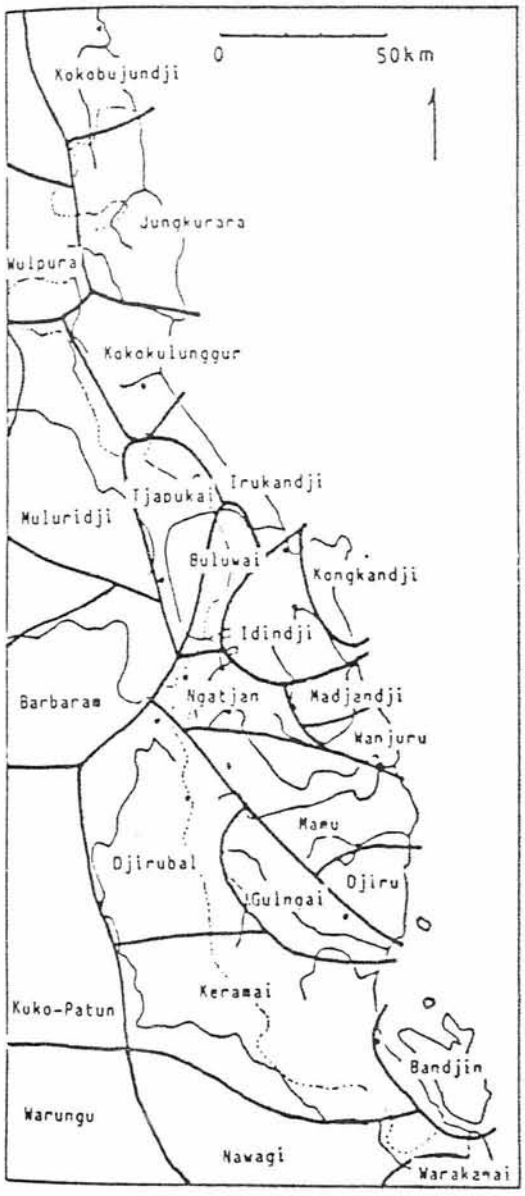


Figure 3.1. 'Tribal' territories according to Tindale (1974).

Figure 3.2. Language boundaries according to Dixon (1976). Guluy, Nyagali & Yirgay from Dixon (1977). Dotted lines mark language boundaries (where known), solid lines indicate groups of related languages.

Table 3.1

Deaths in the rainforest district attributable to Aboriginal attack.

Year	Locality	Nos.	Reliability
1867	Hinchinbrook or Palm Is	4 E	Po
1870	Waterview (Cardwell)	1 M	A
1872	Goold Is	2 E	A
	Maria Ck	14 E	A
1873	Green Is	2 E	A
	Point Cooper	2 Ab	Pr
	Green Is	3 E	A
	" "	1 M	A
1874	" "	1 E	A
1875	Hinchinbrook Channel	2 E	A
1877	Daintree R	3 E*	A
1878	Range west of Cairns	1 E	Po
	King's Reef (Kurrimine)	2 E?	A
	Smithfield (Cairns)	1 Ab*	A
	Cardwell - Townsville	2 E	A
	" "	2 E	Po
1879	Mulgrave R	2 E*	Po
1880	Johnstone R	1 M*	A
1882	Herberton Dist	1 E	A
	near Herberton	1 E	A
	Mareeba - Cairns	7 C*	Pr
1883	Russell R	9 C*	A
1884	" "	1 E*	A
	Mulgrave R	1 E*	A
	" "	1 E*	Po
1885	Mossman R	1 E*	A
	Johnstone R	4 C*	A
1886	C Grafton	1 E*	A
	Cooktown - Bloomfield R	2 C	A
	Russell R	2 Ab*	A
	Johnstone R	2 C*	A
1887	Innisfail	1 E	Pr
1888	Boar's Pocket	1 E*	A
1889	Port Douglas	1 C*	A
	Russell R	3 E*	A
1890	Wooroora (Herberton)	1 Ab	A
	lower Barron R	1 E*	A
1890	Wooroora (Herberton)	2 Ab	A
1892	Myola (Cairns)	1 E*	A
1895	Mareeba	1 C*	A

Adapted from Loos (1982:191-247). E = European, C = Chinese, M = Melanesian ('Kanaka'), Ab = Aboriginal, A = accepted as reliable report, Pr = probably reliable, Po = possibly reliable.

Total deaths listed here are 91 (54E, 26C, 3M, 8Ab), of which 71 are reliably reported (10Pr, 10Po). Loos (1982) allocates 44 of these deaths (16E, 24C, 1M, 3Ab; 34A, 7Pr, 3Po) to the 'rainforest frontier' (marked *). In this table I have included deaths occurring along the rainforest coast, many of which were clearly attributable to the rainforest groups (e.g. the 14 from the wreck of the Maria) as well as several deaths on mining fields or pastoral properties which are close to the rainforests and/or in the territory of one of the rainforest groups (e.g. near Herberton).

Table 3.2

'Tribes' and languages in the rainforest district of northeast Queensland.

'Tribe'* (Tindale 1974)	'Tribe'*	Language (Dixon 1976, 1977)	Linguistic group
Tindale's 'rainforest core '			
Tjapukai	Djabuganjdji	Djabugay	Djabugay
Buluwai	Buluwangjdji	Bulway	"
Idindji	Yidinjdji	Yidinj	Yidinj
Kongkandji	Gungganjdji	Gunggay	"
Madjandji	Madjanjdji	Madjay	"
Wanjuru	(not known)	Wanju(r)	"
Djirubal	Djirbalngan, Djirbaldji	Djirbal	Dyirbal
Ngatjan	Ngadjandji	Ngadjan	"
Mamu	(none)	Mamu	"
Djiru	Djirubagala	Djiru	"
Gulngai	Malanbara	Gulngay	"
Keramai	Giramaygan, Giramayngan	Giramay	"
Other rainforest inhabitants			
—	—	Kuku-Nyungkul**	Gugu-Yalandji
Jungkurara	—	Gugu-Yalandji	"
Kokokulunggur	—	—	—
Irukandji	Yirgandji	Yirgay	Djabugay
Bandjin	Biyagiri	Biyay	Wargamay
Warakamai?	Wargamaygan	Wargamay	"
Other rainforest languages/dialects			
—	—	Guluy	Djabugay
—	—	Nyagali	"
Tribes adjacent to rainforest			
Muluridji	—	Muluridji	Gugu-Yalandji
Barbaram/Mbarbaram	—	Mbabaram	Mbabaram
Warungu	Warungu	Warungu	Warungu
Nawagi	—	Njawaygi	Njawaygi

* See Figures 3.1 and 3.2 for approximate tribal territories.
** Anderson (1983) - upper Annan River.

N.B. There are slight variations in spelling, depending on the orthography used, e.g. Djirbal, Dyirbal; Kuku, Gugu.

Table 3.3

Population figures in 1897
(after Parry-Okeden)

Group name (Parry-Okeden 1897)	Pop. 1897	Probable 'tribe' (Tindale in Birtles 1967)	Probable 'tribe' (Harris 1978)
Chockcull)			
Orlow)			
Bulum Bulum)	53	(Mossman district)	
Chewlie)			
Koolcutta)			
Umbey	50	Buluwai	
Chum Chum	50	Buluwai	
Tinceree	20	Buluwai	
Walpoll	20	Wulpura	
Eaton	100	Ngatjan	Ngatjan
Hucheon	200	Ngatjan	Ngatjan
Tuffelgey	100	Tjapukai	Tjapukai/Buluwai
Yellingie	152	Idindji	Idindji
Yettkie	6	Irukandji	
Mooka	125	Wanjuru	Madjandji/Wanjuru
Koongangie	320	Kongkandji	Kongkandji
Maimbie	50	Mamu	Madjandji/Wanjuru
Woggill	40	Mamu	Mamu
Gijow	25	Mamu	Mamu
Kitba	60	Mamu	Mamu
Warra Warra	40	Mamu	Mamu
Ohalo	50	Mamu	Mamu
Deba	70	Mamu	Mamu
Gerrah	50	Djiru	Djiru
Gillah	80	Djiru	Djiru
Boolboora	50	Djiru	Djirubal
Warryboora	60	Djiru	Djirubal
Chirpa	70	Djirubal	Djirubal
Marapunda	30	Gulngai	Gulngai
Walinganba	30	Gulngai	Gulngai
Kalomonge	30	Gulngai	Gulngai*
Koorrio	30	Gulngai	Gulngai*
Kirrama	300	Keramai	Keramai
Balbarum	70	Barbaram	
Barbarum	30	Barbaram	Djirubal
Wakkamon	60	Wakaman	
Jullankit	100	Koko Patun	
Kokanodna	15	Muluridji	
Mullridgey	180	Muluridji	
Wannacoola	30	(not on map)	Djirubal
Mancobunba	30	(not on map)	Djirubal
Murma	30	(not on map)	Djirubal
Okemo	?	(not on map)	Djirubal

* These two groups were not listed in Harris' Table 1, but must have been included in the population figures.

Table 3.4

Estimated pre-contact population density.

Language group	1897 Pop.	1880 estimated pop. Pop.	density km^2/pers.	Land area km^2
Djabugay/Bulway	100	250	5.20	1300
Yidinj	152	380	2.63	1000
Gunggay	320	800	0.50	400
Madjay/Wanjur(u)	175	438	2.05	900
Ngadjan	300	750	0.67	500
Djirbal	300	750	3.87	2900
Djiru	130	325	0.80	260
Mamu	285	712	1.83	1300
Gulngay	120	300	1.67	500
Giramay	300	750	3.47	2600
Total	2182	5445	2.14	11660

From Harris (1978:123). See Table 3.3 for source of 1897 population figures. Territory areas from Tindale (1974). Spelling after Dixon (1976; see also Table 3.2).

Table 3.5

Food plant species of northeast Queensland

	Species	Uses	Locality where use recorded
	Abelmoschus ficulneus L.	Stem & root roasted & eaten	Herbert R., Cloncurry
	Acmenasperma claviflora	Fruit eaten	Cape Grafton
	Acrostichum speciosum Willd.	Roots roasted & eaten	Cape Grafton
1	Alangium villosum (Blume) Wang.	Fruit eaten	Herberton
	Aleurites moluccana (L.) Willd.	Nut roasted & eaten (raw at Lockhart),	Barron R., Bloomfield R., Cooktown, Lockhart
	Allophylus cobbe (L.) Blume	Fruit eaten	Cape Grafton, Butcher's Hill, PCB
	Alocasia macrorrhiza Schott.	Rhizomes repeatedly roasted & pounded to produce edible cake	Atherton, Tully R., Babinda, Bloomfield R., Cooktown, C.Bedford, Townsville, Rockhampton, Bundaberg, Brisbane
	Alpinia arctiflora F.Muell.	Rhizome eaten raw	Johnstone R., Lockhart
	Alpinia caerula (R.Br.) Benth.	Fruit eaten raw (not at Lockhart), rhizome eaten raw	Cardwell, Dunk Is., CYP
	Amomum dallachyi F.Muell.	Fruit & roots eaten	Bloomfield, Cooktown, C.Bedford, Lockhart
	Amorphophallus galbra F.M.Bail.	Fruit, stem & root eaten roasted	Cairns?, Cooktown, C.Bedford
	Ampelocissus acetosa (F.Muell.) Planch.	Fruit eaten raw (Cooktown). Roots eaten hammered & roasted, not Cktn	Bloomfield R., Cooktown, CYP
	Antidesma bunius (L.) Spreng.	Fruit eaten raw	Tully R., Bloomfield R.
	Antidesma dallachyanum Baill.	Fruit eaten	Atherton, Cape Grafton, Dunk Is.
	Aponogeton natans (L.) Engl.	Tubers eaten raw or roasted	Bloomfield R., Cooktown
	Araucaria bidwillii Hook.	Nuts roasted & eaten	Cardwell, Bundaberg, Brisbane
	Archontophoenix alexandrae (F.Muell.) H.Wendl.	Shoot eaten raw or roasted, pith eaten at Lockhart	Cairns, Dunk Is., Tully R. (Lockhart)
4	Athertonia diversifolia (C.T.White) L.Johnson & Briggs	Seed (nut) eaten raw	?
	Avicennia marina (Forssk.) Vierh.	Fruit eaten after baking & washing	Dunk Is., Cooktown, CYP, Stradbroke Is., Townsville
	Beilschmiedia bancroftii (F.M.Baill.) C.T.White	Nut eaten after roasting & leaching	Bellenden Ker, Cardwell, Tully R.
	Blechnum indicum Burm.f.	Rhizome eaten after roasting & pounding	Tully R., Red Is., Moreton Bay
	Bowenia spectabilis Hook. ex Hook.f.	Root eaten (not Cooktown)	Cape Grafton, Cairns, Bellenden Ker
2	Bruguiera gymnorhiza (L.) Savigny in Lam.	Radicle eaten after roasting & leaching	Tully R., Cooktown, CYP, Stradbroke Is., Bundaberg
	Buchanania arborescens (Blume) Blume	Fruit eaten	Cape Grafton, Bloomfield R., Cooktown, CYP
	Calamus sp.	Flowers in drinking water	Atherton, Tully R., Bloomfield R., PCB, Cooktown, C.Bedford
	Calamus australis Mart.	Fruit eaten	Cairns, Barron R., Bloomfield R., Cooktown
	Calamus caryotoides A.Cunn.	Fruit and shoots eaten	Cairns, Atherton, Bloomfield R., Cooktown
	Calamus moti F.M.Baill.	Shoots roasted & eaten	Atherton, Tully R., Barron R.
	Canthium coprosmoides F.Muell.	Fruit eaten	Bloomfield R., Cooktown, C.Bedford
	Capparis canescens Banks ex DC.	Fruit eaten	Cape Grafton

Table 3.5 (cont.)

	Species	Uses	Locality where use recorded
	Capparis humistrata (F.Muell.) F.Muell.	Fruit eaten	Cape Grafton
	Capparis ornans F.Muell. ex Benth.	Fruit eaten	Atherton
	Castanospermum australe A.Cunn.& Fraser ex Hook.	Fruit (nut) eaten after roasting & leaching	Atherton, Tully R., Cape Grafton, Barron R. Bellenden Ker, Russell R., Bloomfield R., Cooktown, Bundaberg, Brisbane
3	Cayratia clematidea (F.Muell.) Domin.	Roots eaten after roasting & pounding	Bellenden Ker?, Cooktown, C.Bedford
	Cochlospermum gillivraei Benth.	Roots eaten raw	Atherton, CYP
	Cordia dichotoma Forst.	Fruit eaten	Bellenden Ker, Forest Hill
5	Cordyline terminalis Kunth.	Roots eaten after leaching	Tully R.
4	Cryptocarya globella Domin.	Fruit raw (not nut)	Tully district
	Curculigo ensifolia R.Br.	Rhizomes roasted & eaten	Dunk Is., Bloomfield R., Cooktown, PCB, C.Bedford, Palmer R., Butchers Hill, Laura
	Cyathea australis (R.Br.) Domin.	Pith of trunk tip eaten raw or roasted	Tully R.
	Cyathea woollsiana (F.Muell.) Domin.	Shoot roasted & eaten	Atherton
	Cycas media sensu lato	Fruit (nuts) eaten after roasting & leaching	Atherton, Cape Grafton, Tully R., Cooktown, Bloomfield R., C.Bedford, Rockhampton, Cairns, Lockhart, Laura
	Cyperus esculentus L.	Tubers eaten raw or roasted	Tully R., CYP, Rockhampton
	Davidsonia pruriens F.Muell.	Fruit eaten	Tully R.
2	Dioscorea bulbifera L. var.bulbifera	Yam eaten after baking & leaching	Bloomfield R., Cooktown, CYP
2	Dioscorea bulbifera L. var.elongata (F.M.Bail.) Prain & Burkill	Tubers eaten after baking & roasting	Bloomfield R., CYP
2	Dioscorea transversa R.Br.	Yam eaten roasted or raw	Atherton, CYP
	Elaeagnus latifolius L.	Fruit eaten	Atherton
	Elaeocarpus bancroftii F.Muell. & F.M.Baill.	Nut eaten raw	Bellenden Ker
	Elaeocarpus grandis F.Muell.	Fruit eaten raw	Bellenden Ker, Cape Grafton, Atherton, Tully R., Bloomfield R., Cooktown, C.Bedford, Lockhart
	Eleocharis dulcis (Burm.f.) Trin. ex Hensch.	Tubers eaten raw or roasted	Tully R., Bloomfield R., Cooktown, CYP, Rockhampton, Lockhart
	Endiandra pubens Meissn.	Nut eaten after roasting & leaching	Atherton
	Endiandra palmerstonii (F.M.Bail.) C.T.White & W.D.Francis	Nut eaten after roasting & leaching (?)	Bellenden Ker, Bloomfield R., Atherton, Barron R.
	Entada phaseoloides (L.) Merr.	Fruit (seed) eaten after roasting & leaching	Cardwell, Bloomfield R.,, Cooktown, CYP, Townsville, Lockhart
	Epipremnum mirabile Schott.	Stem for food	Tully R.
	Eupomatia laurina R.Br.	Fruit eaten	Bellenden Ker, Tully R.
2	Fenzlia obtusa Endl.	Fruit eaten	Cape Grafton, C.Bedford, Cape York
	Ficus drupacea Thunb.	Fruit eaten	Cape Grafton
	Ficus fraseri Miq.	Fruit eaten	Cape Grafton
	Ficus hispida L.f.	Fruit & leaves eaten raw	Tully R.
	Ficus microcarpa L.f. var. latifolia Corner	Fruit eaten	Cape Grafton
	Ficus microcarpa L.f.	Fruit eaten	Cape Grafton, CYP

Table 3.5 (cont.)

	Species	Uses	Locality where use recorded
	Ficus obliqua Forst.f.	Fruit eaten	Cape Grafton, Cape Melville
	Ficus pleurocarpa F.Muell.	Fruit eaten	Atherton
	Ficus racemosa L.	Fruit eaten	Cardwell, Cooktown, Rockhampton, C.Melville
	Ficus variegata Bl.	Fruit eaten	Tully R.
	Ficus virgata Reinw. ex Bl.	Fruit eaten	Cape Grafton
	Ganophyllum falcatum Blume	Fruit eaten	Cape Grafton
3	*Garcinia mestoni* F.M.Bail.	Fruit eaten?	Bellenden Ker?
	Hibiscus sp.	Roots eaten raw	Bloomfield R., Cooktown, PCB, Cloncurry
3	*Hibiscus rhodopetalus* F.Muell.	Roots eaten	Bellenden Ker?
5	*Hicksbeachia pinnatifolia* F.Muell.	Seed eaten after leaching	?
	Hornstedtia scottiana (F.Muell.) K.Schum.	Fruit eaten raw	Cape Grafton, Johnstone R., Bloomfield R., Lockhart
	Ipomoea pes-caprae (L.) Sweet	Rhizome eaten (baked & pounded)	Cape Grafton, Cooktown, C.Bedford
	Ixora timorensis Dcne.	Fruit eaten	Cape Grafton, CYP
	Lepidozamia hopei Regel	Seeds eaten after treatment	Cairns, Bellenden Ker
2	*Lepironia articulata* (Retz.) Domin.	Tubers eaten	Cape Grafton
	Licuala muelleri H.Wendl. & Drude	Shoot eaten	Cairns, Tully R., Bloomfield R.
	Macadamia whelanii (F.M.Bail.) F.M.Bail.	Nuts eaten after treatment	Bellenden Ker
	Melodinus australis (F.Muell.) Pierre	Fruit eaten	Barron R., Tully R.
	Melodinus guilfoylei F.Muell.	Fruit eaten	Tully R., Bellenden Ker
	Melodinus bacellianus	Fruit eaten	Russell R.
	Microstemma tuberosum R.Br.	Tubers eaten raw or roasted	Bloomfield R., Cooktown, C.Bedford, PCB, Palmer R.
	Mimusops elengi L.	Fruit eaten	Cape Grafton, CYP
	Morinda citrifolia L.	Fruit eaten	Bloomfield R., Cooktown, PCB, Lockhart
	Musa sp.	Fruit eaten?	Bloomfield R.
	Nauclea orientalis L.	Fruit eaten raw	Dunk Is., Cardwell, Bloomfield R., Cooktown, Palmer R, Townsville, Rockhampton, Gladstone, Cloncurry, Mitchell R.
	Nelumbo nucifera Gaertn.	Seeds and roots eaten	Cardwell, Cooktown, Rockhampton
	Normanbya normanbyi (W.Hill) L.H.Bail.	Buds & leafstalks eaten	Bloomfield R., Cooktown, C.Bedford
	Nypa fruticans Wurmb.	Seeds eaten	Cardwell, Herbert R., CYP
	Omphalea queenslandiae F.M.Bail.	Fruit eaten?	Johnstone R.?
	Palaquium galactoxylum (F.Muell.) H.J.Lam.	Fruit eaten	Cape Grafton
	Pandanus sp.	Fruit & seeds eaten, flowers in drinking water	Cape Grafton, Tully R., Bloomfield R., CYP, Cooktown, Rockhampton
	Pandanus aquaticus Warb.	Fruit & seeds eaten	Cairns, Dunk Is., Mitchell R., Palmer R.
	Pandanus pedunculatus R.Br.	Seeds & base of leaves eaten	Cairns, Cape York, Moreton Bay, Torres St.
	Pandanus spiralis R.Br.	Fruit & seeds eaten	Dunk Is., Cape York, Torres St.
	Passiflora foetida L. (introduced)	Fruit eaten	Tully R., Cooktown
	Piper rothiana F.M.Bail.	Fruit eaten raw	Atherton
	Planchonella brownlessiana (F.Muell.) van Royen	Fruit eaten	Bloomfield R.
	Planchonella chartacea (F.Muell.) Lam.	Fruit eaten raw or roasted	Barron R., Atherton, Cooktown, PCB
	Planchonella pohlmaniana (F.Muell.) Pierre ex Dubard	Fruit eaten (roasted?)	Barron R., Laura, Aurukun

Table 3.5 (cont.)

Species	Uses	Locality where use recorded
Planchonia careya (F.Muell.) R.Knuth	Fruit eaten raw	Cape Grafton, Tully R., CYP, Palmer R., Cloncurry, Mitchell R., Rockhampton Gladstone
Pleiogynium timorense (DC.) Leenh.	Fruit eaten raw	Bloomfield R., Cooktown, Rockhampton, Gladstone, Bundaberg
Podocarpus amarus Blume	Fruit and/or seeds eaten	Atherton, Bellenden Ker
Podocarpus elatus R.Br. ex Mirb.	Fruit eaten	Cape Grafton, Barron R., Mooloolah
Pothos longipes Schott	Fruit eaten raw or roasted	Atherton, Tully R., Bellenden Ker, Herbert R., Johnstone R.
Prunus turnerana (F.M.Bail.) Kalkm.	Nuts eaten	Barron R., Bloomfield R.
Psychotria simmondsiana F.M.Bail.	Fruit eaten	Atherton
Randia fitzalanii (F.Muell.) F.Muell. ex Benth.	Fruit eaten raw or roasted	Bellenden Ker, Bloomfield R., Cooktown
Rapanea porosa (F.Muell.) Mez	Fruit eaten	Cape Grafton
Rhodomyrtus macrocarpa Benth.	Fruit eaten raw or roasted	Cape Grafton, Tully R., Dunk Is., Cooktown, Bloomfield R., C.Bedford
Rubus rosifolius Sm.	Fruit eaten raw	Dunk Is., Rockhampton
Securinega melanthesoides (F.Muell.) Airy Shaw	Fruit eaten raw	Bloomfield R., Cooktown, CYP
Semecarpus australiensis Engl.in A.&C.de Candolle	Fruit eaten	Cape Grafton, Annan R., Cooktown, C.Bedford, Torres St.
Sloanea australis F.Muell.	Fruit eaten?	Herberton Range
Sterculia quadrifida R.Br.	Seeds eaten raw, roots eaten roasted	Cape Grafton, Atherton, Cooktown, CYP, Rockhampton
Syzygium grande Walp.	Fruit eaten	Herberton
Syzygium cormiflorum	Fruit eaten	Cape Grafton, Atherton, Barron R., Bloomfield R., Cooktown
Syzygium erythrocalyx	Fruit eaten raw	Bloomfield R., Cooktown
Syzygium kuranda	Fruit eaten	Atherton, Barron R.
Syzygium suborbiculare (Benth.) Hartley & Perry	Fruit eaten raw or baked	Tully R., Dunk Is., Cape Grafton, Cooktown, Bloomfield R., Mitchell R., CYP, Torres St.
Tacca leontopetaloides (L.) O.Kuntze	Root eaten after processing	Cape Grafton, Bloomfield R., Cooktown, CYP, Torres St., Laura
Terminalia seriocarpa F.Muell.	Fruit eaten	Bloomfield R., Cooktown, C.Bedford
Triglochin procera R.Br.	Root roasted & eaten	Cardwell, Cooktown, C.Bedford, PCB
Typhonium brownii Schott.	Tubers roasted & eaten	Bloomfield R., Cooktown, CYP
2 Vandasia retusa (Benth.) Domin.	Yam eaten after roasting & pounding	Cape Grafton, C.Bedford, PCB
Vitex glabrata R.Br.	Fruit eaten	Bloomfield R., Cooktown, C.Bedford, CYP
Xanthorrhoea sp.	Base of leaf & shoots eaten raw,	Bloomfield R., Cooktoen, CYP, Rockhampton
Ximenia americana L.	Fruit eaten	Cape Grafton, Bellenden Ker, Dunk Is.

Ethnobotanical data from Langevad (1983),
with the following alterations and additions:
1 Ethnobotanical data may not relate to Queensland
2 Additional data from Roth (1901b, 1904)
3 Use at Bellenden Ker from Bailey in Meston (1904)
4 Data from R.M.W.Dixon & A.Irvine pers.comm.
5 Flecker et al. (1948)

Nomenclature follows Beck (1985:Appendix 1) where this differs from Langevad (1983), with some revisions from Flora of Australia (Volumes 8, 22 and 25) and A.Irvine (pers.comm.). An index of the more frequently encountered synonyms and common names is given in Appendix E.

N.B. CYP = Cape York Peninsula
PCB = Princess Charlotte Bay

Table 3.6

Plant species with non-food uses in northeast Queensland

Species	Uses	Locality where use recorded
Abrus precatorius L.	Seeds for decoration	Cardwell, Cooktown, CYP, Torres St.
Aleurites moluccana (L.) Willd.	Oil from nut used as ochre fixative	Barron R., Bloomfield R., Cooktown, Lockhart
Alphitonia excelsa (Fenzl.) Benth.	Bark for dye, leaves, bark & roots for medicine	Cairns, Cooktown, CYP, Moreton Bay
Alpinia sp.	Fruit is soporific	Bloomfield R.
Alstonia scholaris R.Br.	Gum for decoration and medicine	Babinda, Barron R., Cairns
Archontophoenix alexandrae (F.Muell.) H.Wendl.	Timber for spears, leaves made into containers	Cairns, Dunk Is., Tully R. (Lockhart)
Breynia stipitata Muell Arg.	Leaves for medicine	Bloomfield R.
Bruguiera gymnorhiza (L.) Savigny in Lam.	Wood for oars	Tully R., Cooktown, CYP, Stradbroke Is., Bundaberg
Calamus sp.	Cane for implements, games, medicine	Atherton, Tully R., Bloomfield R., PCB, Cooktown, C.Bedford
Calamus australis Mart.	Cane for traps etc.	Cairns, Barron R., Bloomfield R., Cooktown
Calamus caryotoides A.Cunn.	Shoots for medicine, cane for bags	Cairns, Atherton, Bloomfield R., Cooktown
Calophyllum inophyllum L.	Oil from nut for medicine & lubricant	Cape Grafton, Cardwell, Dunk Is.
Canarium muelleri F.M.Baill.	Gum/resin	Bloomfield R.
Cassytha glabella R.Br.	Medicine	Bloomfield R.
Ceriops tagal (Perr.) C.B.Rob.	Wood for paddles	Russell R., CYP
Clerodendrum inerme L.Gaertn.	Leaves & bark for medicine	Bloomfield R.
Cochlospermum gillivraei Benth.	Bark for fibre/rope, 'cotton' for medicine	Atherton, CYP
Commersonia bartramia (L.) Merr.	Bark for fibre/rope (nets, lines)	Bellenden Ker?
Cordia dichotoma Forst.	Bark for fibre, wood for firesticks	Bellenden Ker, Forest Hill
Cordyline terminalis Kunth.	Medicine?	Tully R.
Cryptocarya murrayi F.Muell.	Wood for firesticks	Tully R., Atherton, Cooktown-Ingham
	Leaf for medicine	
Cymbidium madidum Lindl.	Bulb for medicine (eaten at Gladstone)	Bellenden Ker, Tully R
Dendrocnide sp.	Leaves as a narcotic?	Tully R.
Derris sp.	Bark for medicine	Bloomfield R.
* *Derris koolgibberah* F.M.Bail.	Fish poison	Edmonton
Derris trifoliata Lour.	Leaves & stem for fish poison	Tully R., Herbert R., Cooktown
* *Desmodium umbellatum*	Fish poison	Dunk Is.
Diospyros hebecarpa A.Cunn. ex Benth.	Fruit for fish poison	Cape Grafton, Bloomfield R., Barron R., Cooktown, C.Bedford
* *Diospyros maritima*	Fish poison	Yarrabah
Durandea jenkinsii (F.Muell.) Stapf	Tendril for fish-hook	Tully R.
Elaeocarpus grandis F.Muell.	Nuts for decoration	Bellenden Ker, Cape Grafton, Atherton, Tully R., Bloomfield R., Cooktown, C.Bedford, Lockhart

Table 3.6 (cont.)

Species	Uses	Locality where use recorded
Eleocharis dulcis (Burm.f.) Trin. ex Hensch.	Stems for weaving bags & mats	Tully R., Bloomfield R., Cooktown, CYP, Rockhampton, Lockhart
Entada phaseoloides (L.) Merr.	Leaves for fish poison	Cardwell, Bloomfield R.,, Cooktown, CYP, Townsville, Lockhart
Eryatamia orientalis (R.Br.)	Fruit for medicine	Cape Grafton
Faradaya splendida F.Muell.	Bark for fish poison	Tully R., Dunk Is.
Ficus sp.	Gum for bird lime	Tully R.
Ficus hispida L.f.	Bark for fibre/twine	Tully R.
Ficus microcarpa L.f.	Bark for twine	Cape Grafton, CYP
Ficus obliqua Forst.f.	Bark for twine	Cape Grafton, Cape Melville
Ficus opposita Miq.	Sap for medicine	Bloomfield
Ficus pleurocarpa F.Muell.	Bark for blankets	Atherton
Ficus racemosa L.	Bark for fibre/twine	Cardwell, Cooktown, Rockhampton, C.Melville
Ficus variegata Bl.	Wood for shields, bark for blankets	Tully R.
Flagellaria indica L.	Stems for fishnets etc.	Tully R., CYP, Torres St., Stradbroke Is.
Gymnostachys anceps R.Br.	Leaves for fibre/twine	Russell R.
Hibiscus sp.	Leaves? for medicine	Bloomfield R., Cooktown, PCB, Cloncurry
Hibiscus tiliaceus L.	Bark for fibre/rope & twine, wood for firesticks, tapsticks	Tully R., Dunk Is., Cooktown, CYP, Moreton Bay
Imperata cylindrica (L.Beauv.) var. major	Leaves for bags, medicine	Tully R., C.Bedford
* Jagera pseudorhus (A.Rich.) Radlk.	Fish poison	Hull R.
Lomandra longifolia Labill.	Leaves for bags, baskets, medicine	Tully R., Bloomfield R., Cooktown, Lockhart, C. Bedford
Lomandra multiflora (R.Br.) J.Britt.	Leaves for bags	Bloomfield R.
Macaranga tanarius Muell. Arg.	Bark for fibre/twine and canoes, wood for spears	Bellenden Ker, PCB, Cape Melville, Stradbroke Is.
Melia azedarach	Bark leaves & shoots for fish poison	Tully R.
Melicope australasica F.Muell.	Gum for adhesive	Tully R.
Mimusops elengi L.	Wood for spear-thrower	Cape Grafton, CYP
Morinda gigantea DC.	Ornamental (?)	Cardwell
Musa banksii F.Muell.	Sap for medicine, fruit eaten Townsville, not elsewhere	Bloomfield R., Dunk Is., CYP, Townsville
Myristica muelleri Warburg	Gum for medicine	Cairns
Nauclea orientalis (L.) L.	Bark for medicine	Dunk Is., Cardwell, Bloomfield R., Cooktown, Palmer R, Townsville, Rockhampton, Gladstone, Cloncurry, Mitchell R.
Normanbya normanbyi (W.Hill) L.H.Bail.	Leaf-fibre for bags, wood for spears	Bloomfield R., Cooktown, C.Bedford
Pandanus sp.	Leaves for bags etc.	Cape Grafton, Tully R., Bloomfield R., CYP, Cooktown, Rockhampton
Pandanus aquaticus Warb.	Leaves for bags	Cairns, Dunk Is., Mitchell R., Palmer R.
* Petalostigma pubescens Domin.	Fruit for fish poison	Mona Mona, Bundaberg
Piper novae-hollandiae Miq.	Medicine	Cairns

Table 3.6 (cont.)

Species	Uses	Locality where use recorded
Planchonella pohlmaniana (F.Muell.) Pierre ex Dubard	Leaves & twigs for medicine	Barron R., Laura, Aurukun
Planchonia careya (F.Muell.) R.Knuth	Bark and roots for fish poison, bark for twine & medicine	Cape Grafton, Tully R., CYP, Palmer R., Cloncurry, Mitchell R., Rockhampton, Gladstone
Polyscias murrayi Harms	Gum	Tully R.
Pongamia pinnata (L.) Pierre	Roots (& stems ?) for fish poison	Cardwell, Cooktown, C.Bedford, PCB, Gladstone
Premna obtusifolia R.Br.	Wood for firesticks & spears	Tully R., CYP
Rhaphidophora australasica F.M.Bail.	Roots & leaves for medicine	Bloomfield R.
Sonneratia alba J.Smith	Wood for canoes	Johnstone R., Cooktown
Spilanthes acmella Murr.	Roots for medicine	Mareeba?
Stephania japonica (Thunb.) Miers	Medicine	Bellenden Ker?
Sterculia quadrifida R.Br.	Bark? for fibre/twine	Cape Grafton, Atherton, Cooktown, CYP, Rockhampton
Ternstroemia cherryi	Bark for fish poison	Atherton
Tetrasynandra laxiflora (Benth.) Perk.	Wood for firesticks	Tully R.
Vandasia retusa (Benth.) Domin.	Root bark for fibre/twine	Cape Grafton, C.Bedford, PCB
Xanthorrhoea sp.	Wood for firesticks, spears, resin for adhesive	Bloomfield R., Cooktoen, CYP, Rockhampton

Sources: Langevad (1983)
* as listed in Queensland Museum catalogue

Nomenclature as for Table 3.5.

N.B. CYP = Cape York Peninsula
PCB = Princess Charlotte Bay

Table 3.7

Items exchanged by Gungganjdji people (Yarrabah) with their neighbours

Item	To
Bicornual dilly basket	Port Douglas, Mulgrave R., Barron R., Mareeba, Herberton
Grass bugle necklace	Mulgrave R., Russell R.
Four-pronged fishing spear	Mulgrave R., Johnstone R., upper Russell R., Clump Pt.
Straight spear-thrower (without shell haft)	Mulgrave R., Johnstone R., Russell R.
Bent spear-thrower Large fighting shield Single-handed sword	Barron R. and north

Item	From
Hourglass woven dilly-bag Round-base basket Beeswax necklace Straight spear-thrower (shell-hafted) bamboo spear square nautilis shell necklace cockatoo top-knot headdress	Barron R., Pt.Douglas and north
sword boomerang shield possum-string armlets oval pearlshell chest ornaments	Mulgrave R and south

Source: Roth (1910a:19).

Plate 3.1. Campsite on a river bank, North Queensland.
(Atkinson, QM PE147)

Plate 3.2. A 'group' in the Tully district.
(Atkinson, QM PE82)

Plate 3.3. Construction of a rainforest hut near Atherton.
(Colclogh?, QM PE196)

Plate 3.4. Hut thatched with fan palm leaves in the Cairns district. Note the bicornual basket, typical of the rainforest district.
(QM PE152)

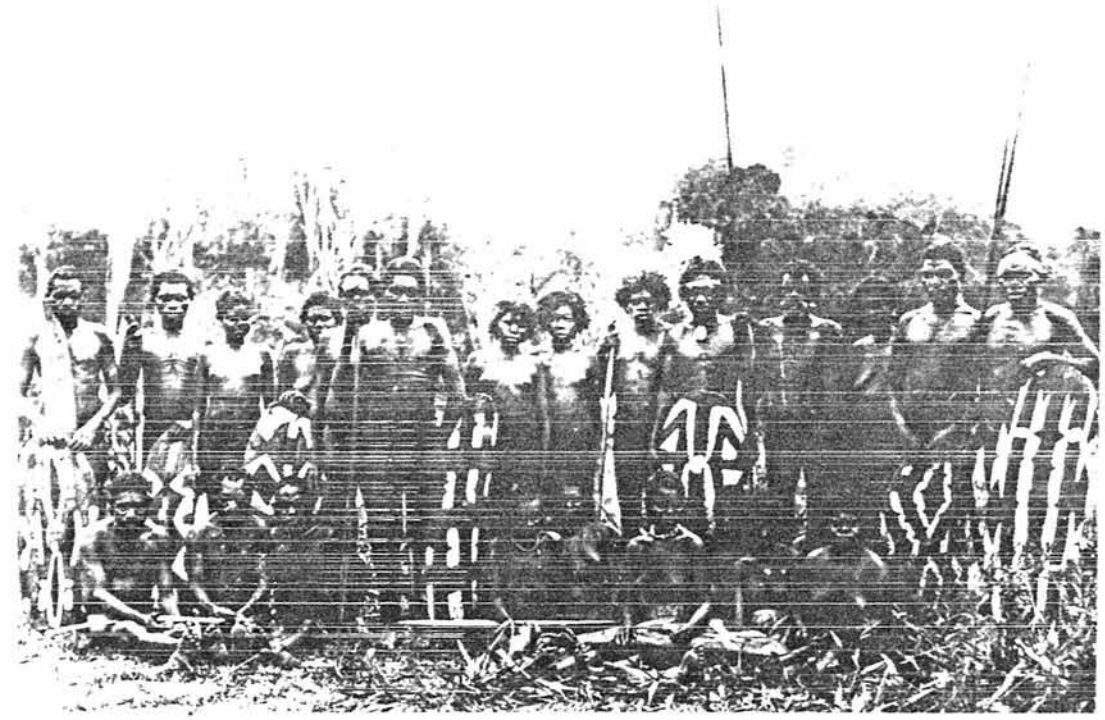


Plate 3.5. Group of Aborigines near the Bellenden Ker Range. Note the cockatoo feather headdresses, cicatrices on men, large painted shields, wooden 'swords' and spears.
(Atkinson, QM PE121/2)

Plate 3.6. Group of Aborigines, Russell River district. Note the large shields and 'swords', cicatrices and feather decorations.
(QM PE184)

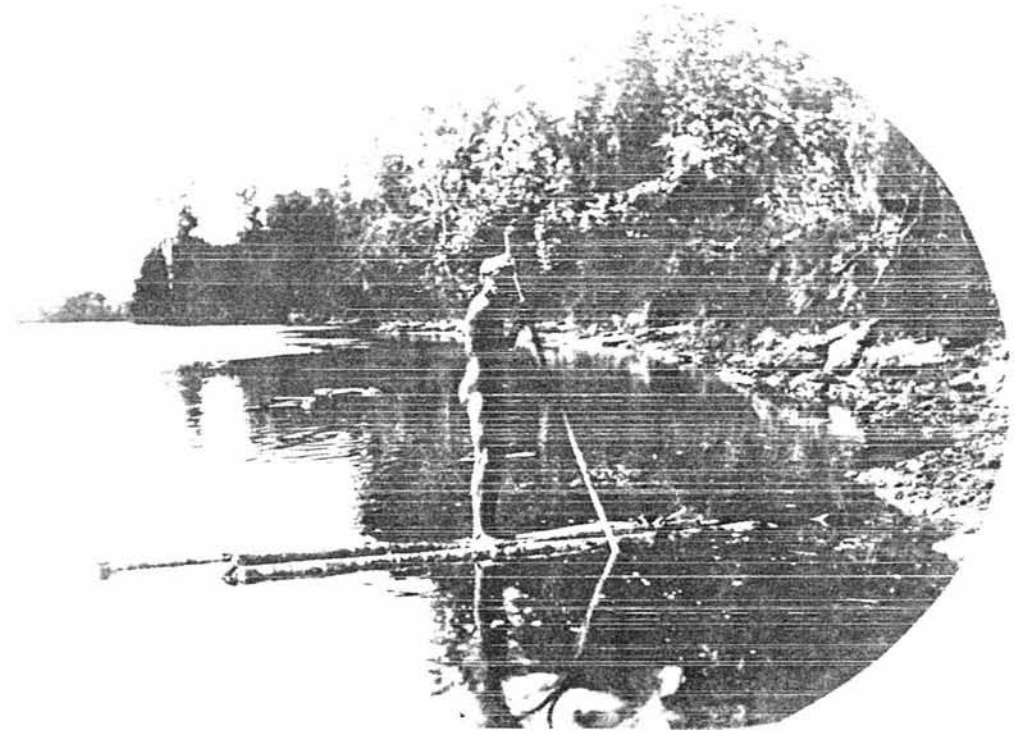


Plate 3.7. Log raft, Tully district.
(Roth, QM PE93)

Plate 3.8. Dugout canoe with a single outrigger, Russell River. Note the long-handled paddle and the curved spear-thrower, usually used with fish spears.
(Colclough?, QM PE181)

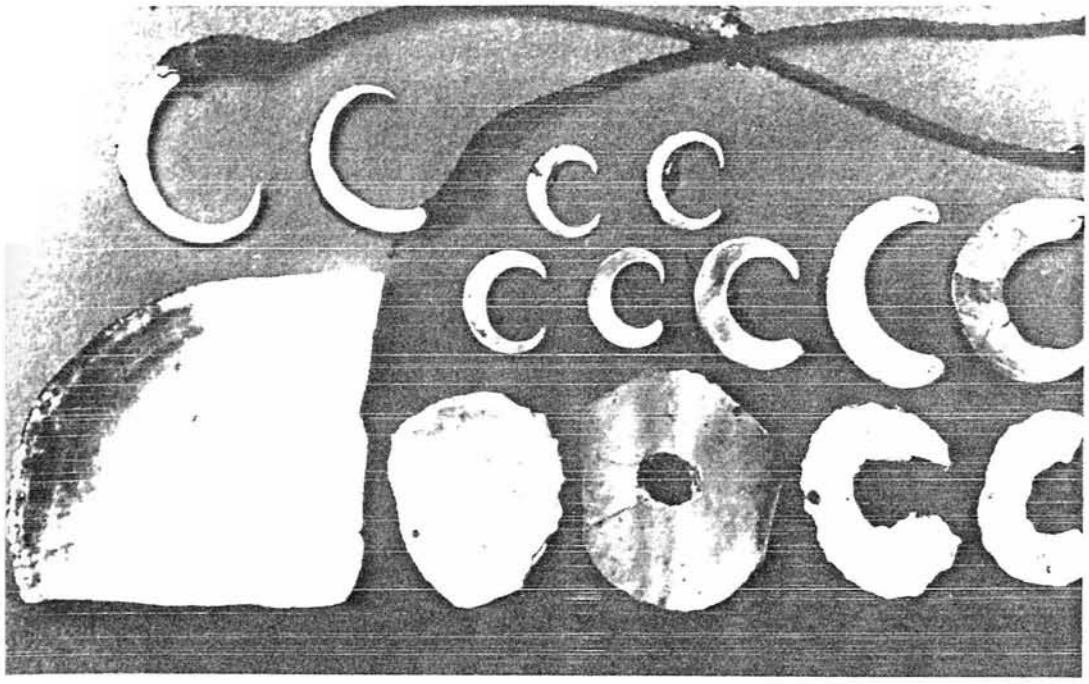


Plate 3.9. Stages in the manufacture of shell fishhooks, Dunk Island. (QM PE227)

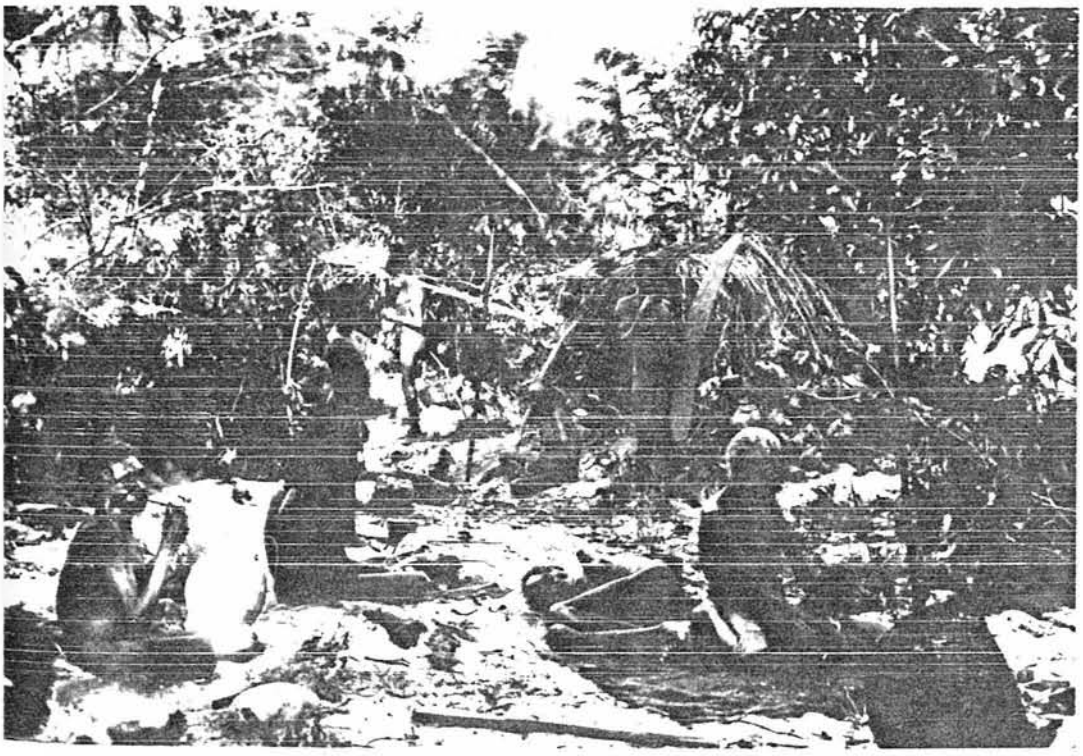


Plate 3.10. Campsite, North Queensland. Note the bicornual baskets, wooden 'sword', grindstones at lower left, dome-shaped huts and also European goods (pipe, tin billy, blanket). (Atkinson, QM PE163/2)

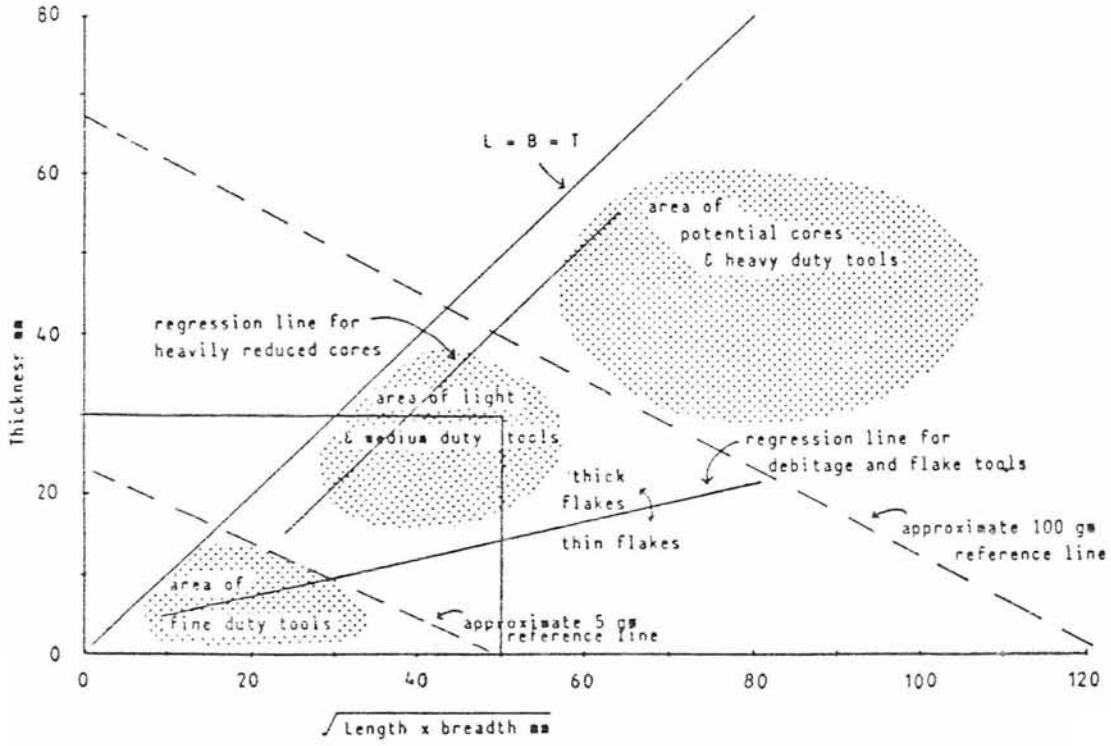


Figure 4.1. Reduction chart layout indicating areas where different implements and sizes will be plotted. From Witter (1984). Rectangle in lefthand corner indicates the portion of this layout where the majority of quartz artefacts examined in this thesis fall.

Table 4.1.

Notes on journeys into Jiyer Cave, 1982-83.

Date	Number of Personnel*	Comments
30.7.82- 2.8.82	2	Introductory visit. Did not find direct route in or out (1.5 days each way). Fine weather initially, drizzle on last day.
12.8.82- 14.8.82	3	Preliminary trip to locate direct route and carry in some equipment. Abandoned because of injury and difficulty in locating track. Heavy rain.
21.8.82- 5.9.82	Week 1: 3 Week 2: 5	Carried in equipment and food for one week. Again could not locate direct route and took 1.5 days to reach site. Heavy rain. At end week helpers left to get supplies and escort second team. Found direct route out, but had difficulties coming back to site. Weather clearing. At end of fortnight's excavation walked out on direct route without difficulty.
15.10.82- 17.10.82	7	To pick up rest of finds not able to be carried out previously. Fine weather, track clear.
1.7.83- 3.7.83	5	Preliminary trip to mark track and carry in equipment. Fine weather, route located with little difficulty.
8.7.83- 23.7.83	Week 1: 4 Week 2: 6	Fine weather, track clear. At end of first week, two returned to vehicle to collect supplies and escort two more helpers. At end of fortnight, three left downriver and the rest of us returned to the vehicle on Tableland. Most of the finds and equipment cached on site.
26.8.83- 10.9.83	4	Track clear, weather fine. Halfway through fortnight, two returned to vehicle to collect supplies. They missed part of the track on the way out, but returned without incident. Walked out at end of excavation with some finds and equipment, caching the rest.
13.9.83- 14.9.83	3	Helicopter from Cairns into site to pick up finds and equipment (400kg). Helpers went out downriver, I returned to Cairns with chopper and picked them up at exit point.

* including self

Table 4.2

Excavation parameters

Site	Area excavated (m^2)	Area of excav. units	Spit depth	3D* record	Sedim. weighed	Mesh size	Wet/dry sieve	Time taken
SF1 (May '82)	0.72	60cm x 60cm	5cm	no	no	6mm	dry	3 days
SF2 (May '82)	0.72	60cm x 60cm	5cm	no	no	6mm	dry	2.5 days
JC (Aug '82)	1.50	K14 - 1m x 1m K13 - 1m x 50cm	5cm	yes	no	1mm	upper - dry lower - wet	2 weeks
MR1 (Nov '82)	0.25	50cm x 50cm	5cm	no	no	3mm	dry	3 days
MR2 (Nov '82)	0.25	50cm x 50cm	5cm	no	no	3mm	wet	2 days
JC (Jul '83, Sep '83)	3.00	upper - 50cm x 50cm middle - 1m x 50cm lower - 1m x 1m	5cm	yes	yes	6mm, 3mm	wet	4 weeks
BBM1 (Oct '83)	3.00	1m x 1m	5cm	no	yes	6mm, 3mm	dry	6 days
MR2 (Aug '84)	3.00	1m x 1m	5cm	yes	yes	6mm, 3mm	wet	2 weeks

* see text for details

Plate 4.1. Make-shift sieve made from flyscreen, lawyer cane and wire, used at Jiyer Cave in 1982.

Plate 4.2. Paired sieves used at Jiyer Cave in 1983. The shelter is beyond the tree on the left and the Russell River can be seen to the right.

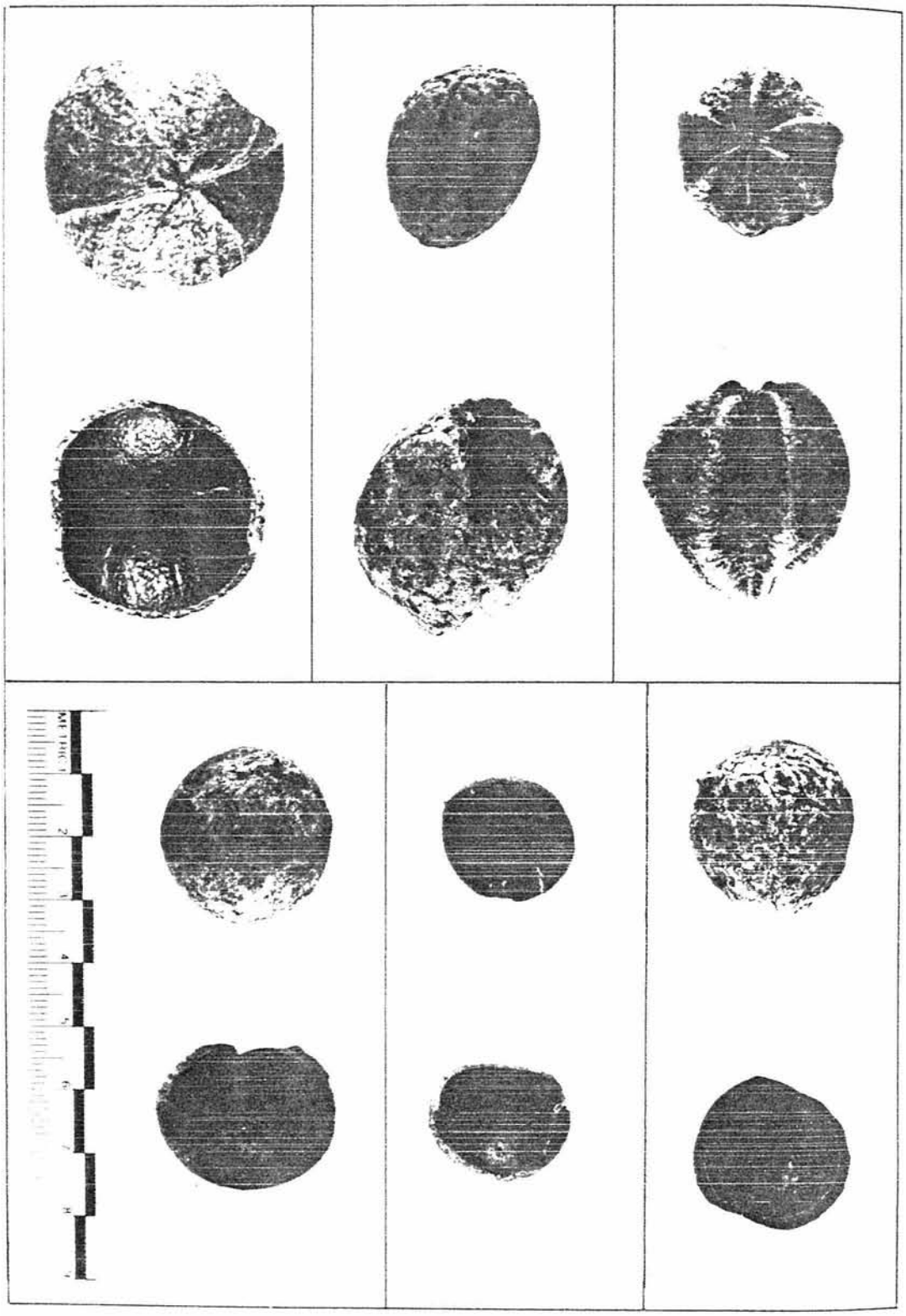


Plate 4.3. Nutshells belonging to rainforest trees of northeast Queensland: top row left to right: Beilschmiedia bancroftii (yellow walnut), Elaeocarpus bancroftii (Johnstone R. almond), Cryptocarya globella (poison walnut); bottom row, left to right: Endiandra palmerstonii (black walnut), Prumnopitys amarus (black pine), Aleurites moluccana (candlenut).

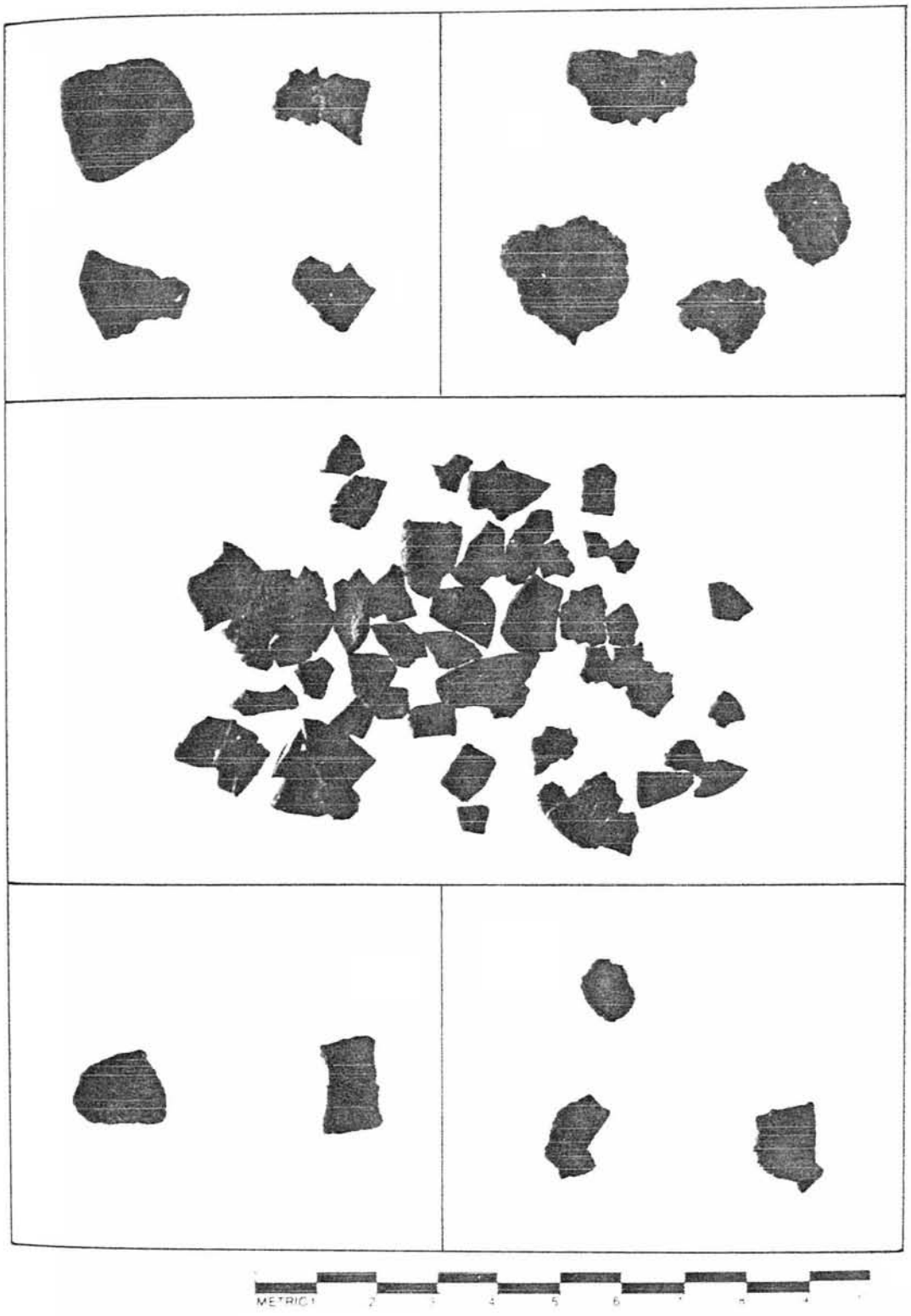


Plate 4.4. Charred plant remains from excavated sites in northeast Queensland rainforests: top left, Beilschmiedia bancroftii (yellow walnut); top right, Pandanus sp.; centre, unsorted nutshells; bottom left, Elaeocarpus bancroftii (Johnstone R. almond); bottom right, Endiandra pubens (hairy walnut).

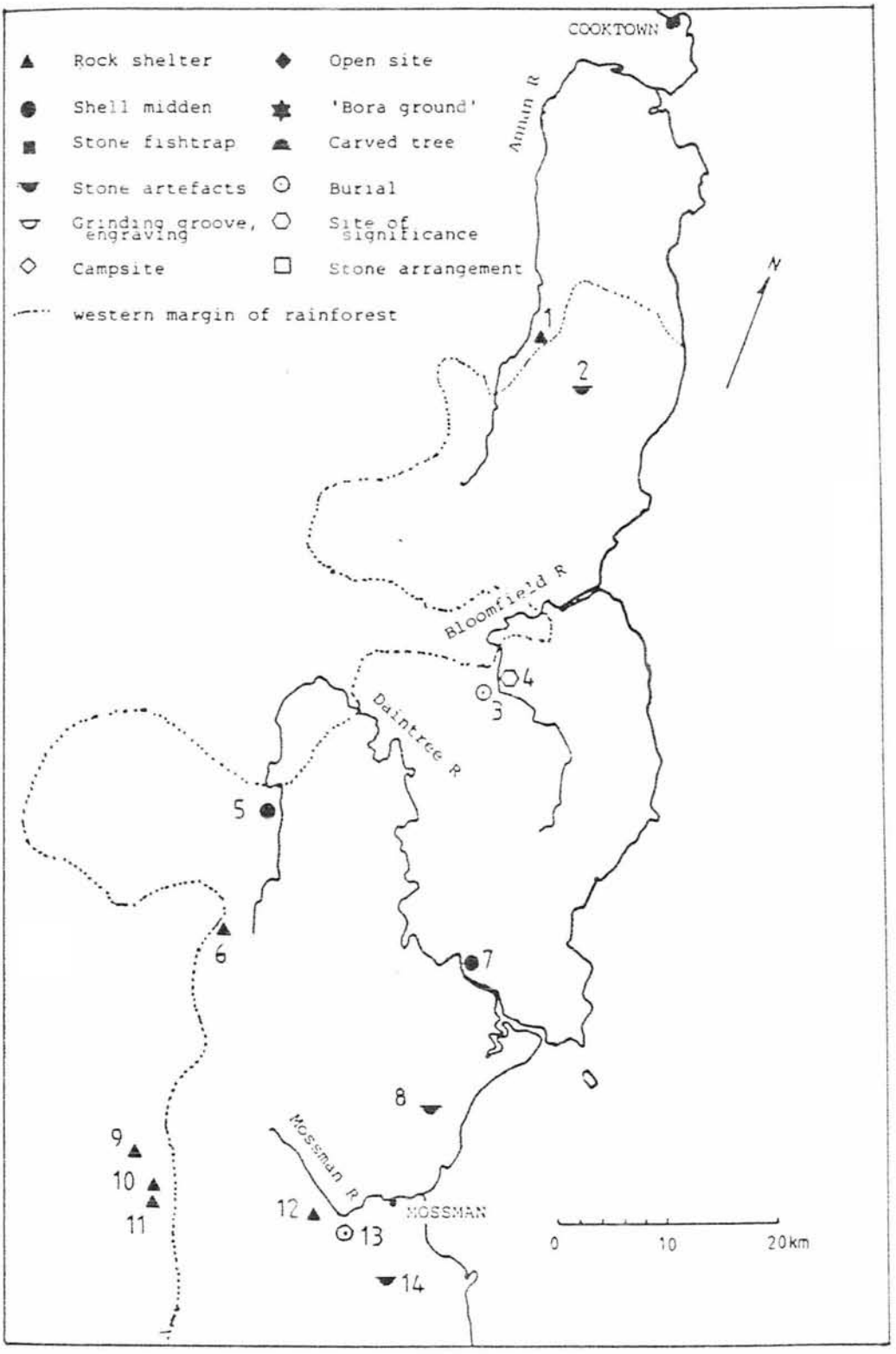


Figure 5.1. Locations of sites recorded in rainforest district between Cooktown and Mossman.

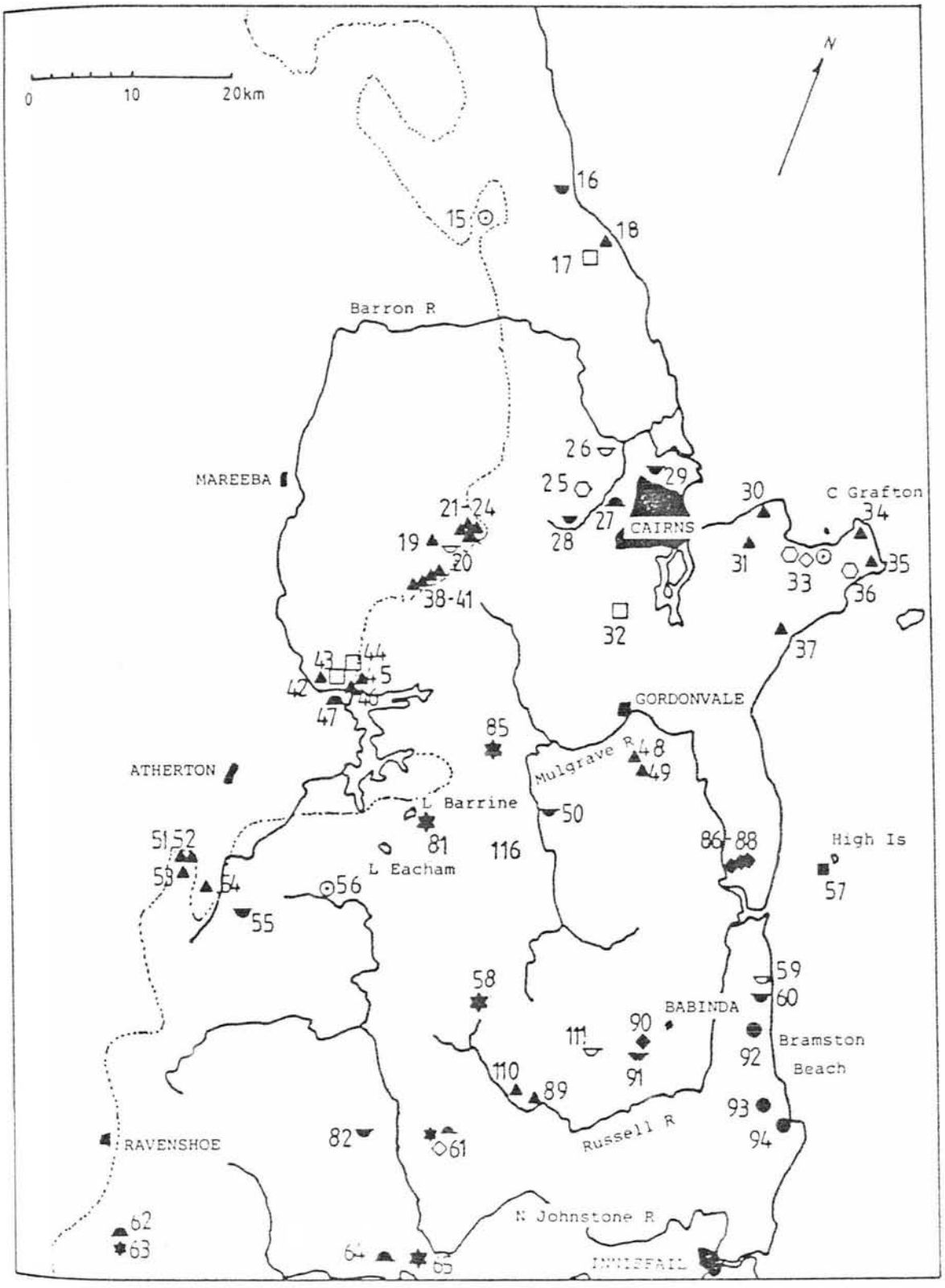


Figure 5.2. Locations of sites recorded in rainforest district between Cairns and Innisfail.
For key see Figure 5.1.

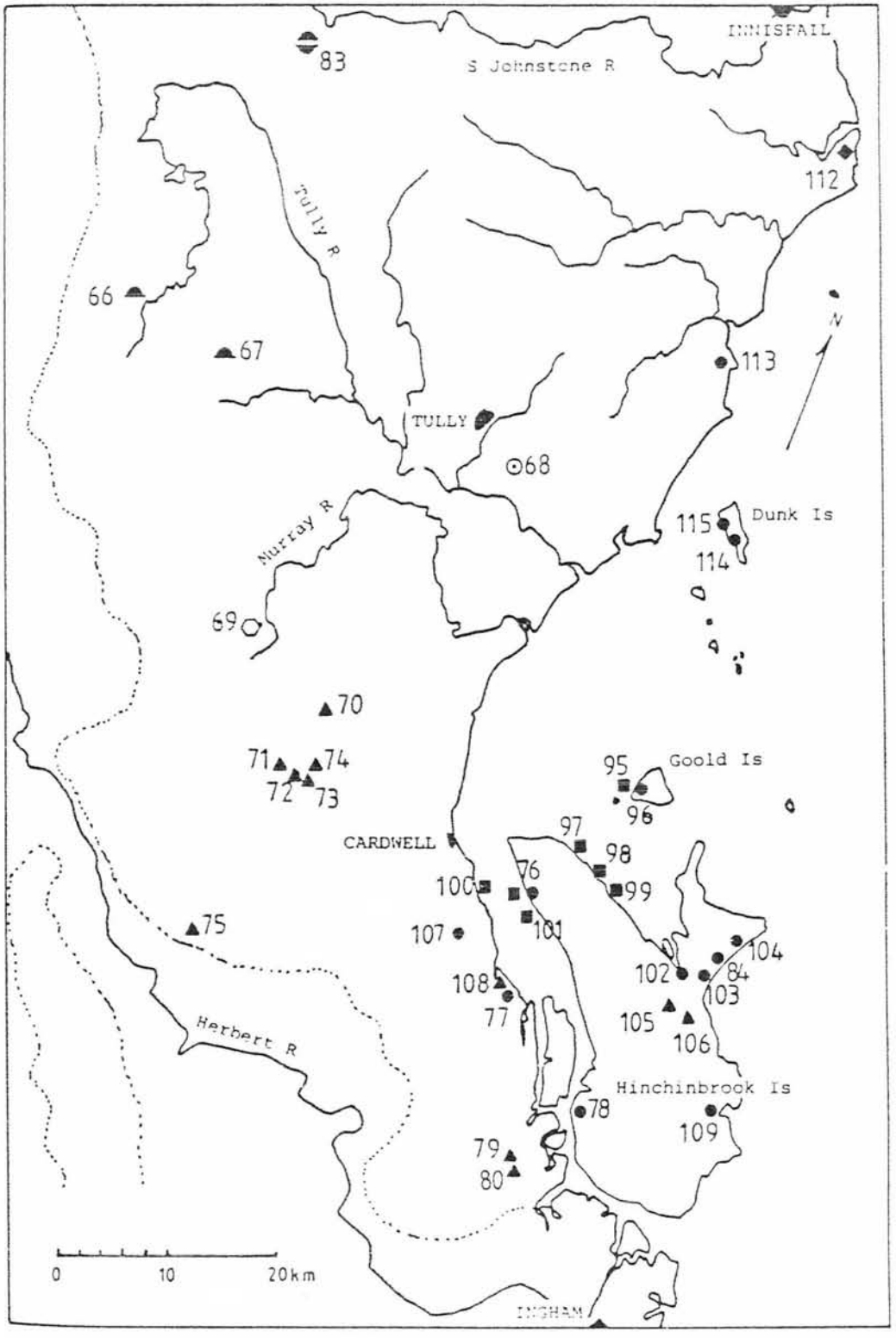


Figure 5.3. Locations of sites recorded in rainforest district between Innisfail and Ingham.
For key see Figure 5.1.

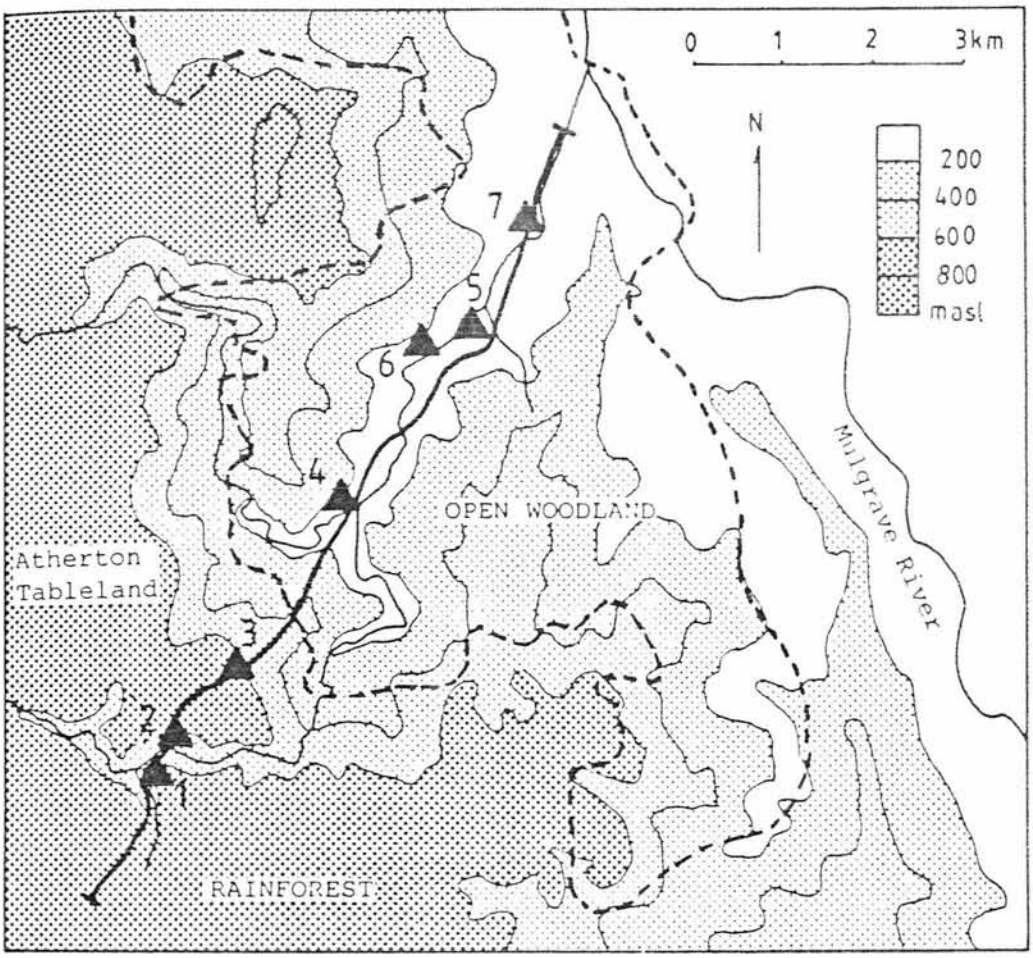


Figure 5.4. Route of the Yidinjdji trail showing seven campsites. Not all watercourses shown. Dashed line marks the approximate boundary between rainforest and open woodland.

Table 5.1

List of recorded rainforest sites

Map* No.	Site type	Locality	DAIA '82 Site No.	DCS '85 Site No.	Field Code
1	Rockshelter, paintings	Helenvale	EP A63	EP A63	
2	Stone artefacts	Rossville			
3	Burials, post-contact	Bloomfield			
4	Significant site	Roaring Meg Falls	EN A26	EN A25	
5	Shell midden	upper Daintree R.			
6	Rockshelter, paintings	upper Daintree R.	EN A31	EN A28	
7	Shell midden	lower Daintree R.	EN A30	EN A29	
8	Stone artefact	Mossman	EN A29	EN A30	
9	Rockshelter, paintings	near Mt.Carbine	EN A21	EN A21	
10	Rockshelter, paintings	near Mt.Carbine	EN A20	EN A20	
11	Rockshelter, paintings, deposit	near Mt.Carbine	EN A19	EN A19	
12	Rockshelter, paintings, artefacts	Mossman Gorge	EN A27	EN A26	
13	Burials, post-contact	Mossman Gorge			
14	Stone artefact	Rex Range	EN A1	EN A1	
15	Burials, post-contact	Mona Mona	FN A5	FN A10	
16	Stone artefacts	Hartleys Ck.	FN A12	FN A9	
17	Stone arrangement (?Aboriginal)	near Ellis Beach			
18	Rockshelter, paintings	Ellis Beach	FN A6,9	FN A5	
19	Rockshelter, paintings	Tank Rock	FM A4	FM A3	
20	Grinding grooves (?Aboriginal)	Tank Rock	FM A10	FM A9	
21	Rockshelters (4, incl.next 3?), paintings	Bare Hill	FN A13	FN A10	
22	Rockshelter, paintings, deposit	Bare Hill	FN A14	FN A11	
23	Rockshelter, paintings, ?deposit	Bare Hill	FN A15	FN A12	
24	Rockshelter, paintings, ?deposit	Bare Hill	FN A16	FN A13	
25	Significant site	Freshwater Ck.	FN A7,8	FN A6	
26	Rock engravings	Redlynch	FN A4	FN A3	
27	Carved tree	Whitfield Range			
28	Stone artefacts	Freshwater Ck.	FN A11	FN A8	
29	Stone artefacts	Mt. Whitfield	FN A10	FN A7	
30	Rockshelter, paintings, ?deposit	Koombal Park	FN A3	FN A2	
31	Rockshelter, paintings, deposit	Bessie Falls	FN A5	FN A4	
32	Stone arrangement	?Stoney Ck.			
33	Significant sites (2), campsites (3), burials (3)	Yarrabah		FN A16	
34	Rockshelter, paintings	C. Grafton			
35	Rockshelter, paintings, deposit	Kings Pt.		FN A15,17	
36	Significant site	Kings Beach			
37	Rockshelter, paintings	Buddabadoo		FN A1	
38	Rockshelter, paintings	Mt. Turtle	FM A11	FM A10	
39	Rockshelter, paintings	Mt. Turtle	FM A12	FM A11	

Table 5.1 (cont.)

Map* No.	Site description	Locality	DAIA '82 Site No.	DCS '85 Site No.	Field Code
40	Rockshelter, paintings	Mt. Turtle	FM A13	FM A13	
41	Rockshelter, paintings	Mt. Turtle	FM A14	FM A14	
42	Rockshelter, paintings	Tinaroo Dam	FM A2	FM A1	
43	Stone arrangement (?Aboriginal)	Tinaroo Dam	FM A18	FM A18	
44	Stone arrangement (?Aboriginal)	Tinaroo Ck.			
45	Rockshelter, paintings	Tinaroo Dam	FM A3	FM A2	
46	Rockshelter, paintings	Tinaroo Dam	FM A5	FM A4	
47	Carved tree	Tinaroo Dam			
48	Rockshelter, paintings, artefacts	Walsh's Pyramid	FM A15	FM A15	
49	Rockshelter, paintings, artefacts	Walsh's Pyramid	FM A16	FM A16	
50	Stone artefacts	upper Mulgrave R.	FM A6	FM A5	
51	Rockshelter, paintings	Atherton	EM A24	EM A24	
52	Rockshelter, paintings	Atherton	EM A25	EM A25	
53	Rockshelter, paintings	Atherton	EM A40	EM A41	
54	Rockshelter, paintings	Atherton	EM A41	EM A42	
55	Stone artefacts	upper Barron R.			
56	Burials	Malanda			
57	Stone fishtrap	High Is.		FM A31	
58	'Bora ground'	Gourka Gourka		FM A33	
59	Grinding grooves	Bramston Beach	FM A10	FM A12	
60	Stone artefacts	Bramston Beach			
61	'Bora ground', carved tree, campsite	N. Johnstone R.			
62	Carved tree	Vine Ck., Ravenshoe	FM A7	FM A6,8	
63	'Bora ground'	Vine Ck., Ravenshoe		FM A39	
64	Carved tree	Jordan Ck.			
65	'Bora ground'	Chunga	FM A8	FM A7	
66	Carved tree	Culpa		FM A37	
67	Carved tree	Echo Ck.		FM A38	
68	Burials, post-contact	Mt. Mackay, Tully		FM A36	
69	Significant site	Murray Falls	FL A9		
70	Rockshelter, paintings	Mt. Carruchan	FL A22	FL A19	
71	Rockshelter, paintings, deposit	Kennedy C	FL A11	FL A11	
72	Rockshelter, paintings, deposit	Kennedy A	FL A9,16	FL A9	
73	Rockshelter, paintings, deposit	Kennedy B	FL A10,17	FL A10	
74	Rockshelter, paintings	Kennedy D	FL A19	FL A17	
75	Rockshelter, paintings	Gowrie Ck.	FL A18	FL A16	
76	Shell middens (4), stone fishtraps (3)	Scraggy Pt.	FL A28	FL A23	
77	Shell midden	Round Hill	FL A25	FL A20	
78	Shell midden	Leefe Pk.	FL A26	FL A21	
79	Rockshelter, paintings, deposit	Rungoo	FL A1,21	FL A1	

Table 5.1 (cont.)

Map* No.	Site description	Locality	DAIA '82 Site No.	DCS '85 Site No.	Field Code
80	Rockshelter, paintings, deposit	Rungoo	FL A2,23,24	FL A2	
81	'Bora ground'	L. Barrine		FM A29	
82	Stone artefacts	Millaa Millaa		FM A27	
83	Carved trees, stone artefacts	Maalan		FM A28	
84	Shell midden	Ramsay Bay		FL A24	
85	'Bora ground'	Goldsborough		FM A25	MR3
86	Open site	lower Mulgrave R.		FM A26	MR1
87	Open site	lower Mulgrave R.		FM A19	MR2
88	Open site	lower Mulgrave R.			MR5
89	Rockshelter, paintings, deposit	Jiyer Cave		FM A17	JC
90	Open site	Babinda		FM A20	SF1
91	Stone artefacts	Babinda		FM A21	SF2
92	Shell midden	Bramston Beach		FM A24	BBM1
93	Shell scatter	Bramston Beach			BBM2
94	Shell midden	Bramston Beach			BBM3
95	Stone fishtrap	Goold Is.			
96	Shell midden	Goold Is.			
97	Stone fishtraps (4)	Missionary Bay			
98	Stone fishtrap	Missionary Bay			
99	Stone fishtraps (2)	Missionary Bay			
100	Stone fishtraps (2)	near Cardwell			
101	Stone fishtrap	Scraggy Pt.			
102	Shell midden	Ramsay Bay			
103	Shell midden	Ramsay Bay			
104	Shell midden	Ramsay Bay			
105	Rockshelter, deposit	Hinchinbrook Is.			
106	Rockshelter, deposit	Hinchinbrook Is.			
107	Shell midden	near Cardwell			
108	Rockshelter, paintings, deposit	Round Hill			
109	Shell middens (2)	Zoe Bay			
110	Rockshelter, paintings	upper Russell R.		FM A22	RR
111	Grinding groove?	Mt. Bartle-Frere		FM A23	BF
112	Open site	Mourilyan Harbour			
113	Shell midden	N. Mission Beach			
114	Shell midden	Dunk Is.			
115	Shell midden	Dunk Is.			
116	Campsites, significant sites, artefacts	Yidinjdji trail		FM A40	

* Map No: see Figures 5.1, 5.2 and 5.3 for approximate location of sites.

Table 5.2

Types of sites recorded in rainforest district of northeast Queensland

Type of site	No. (range)
Rockshelters with paintings	25-27
Rockshelters with deposits	19
Shell middens	23
Stone fish traps	15
Stone artefact scatters or finds	12
Grinding grooves and engravings	4
Open sites	5
Campsites	4
'Bora grounds'	6
Carved trees	8
Burials	8
Sites of significance to Aborigines	6
Stone arrangements	0-4
Total (range)	135-141

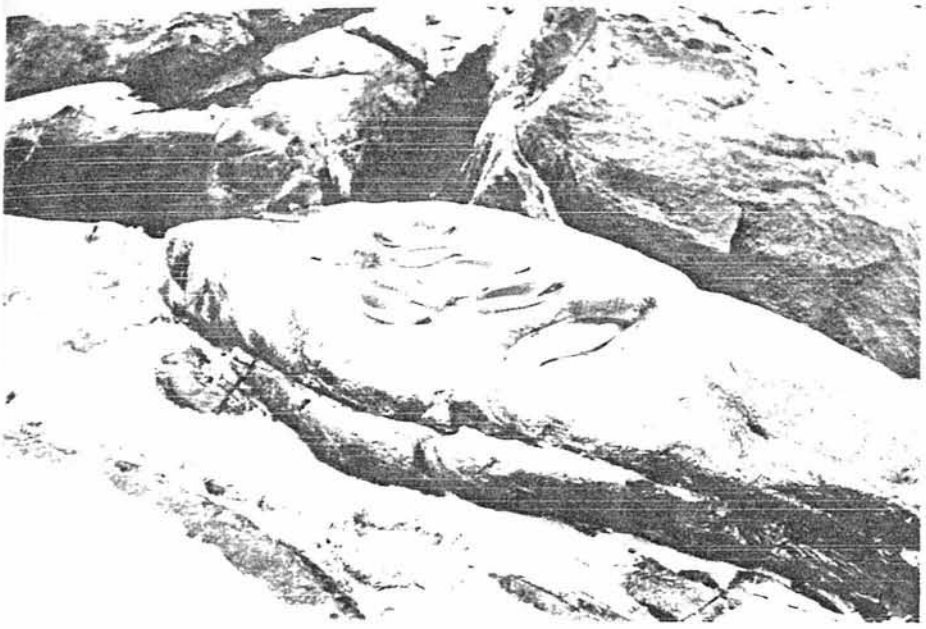


Plate 5.1. Axe-grinding grooves on Bramston Beach (Site No.59).

Plate 5.2. Unusual stone arrangement near Tinaroo Creek (Site No.44), possibly not of Aboriginal origin.
(S.St.Cloud)

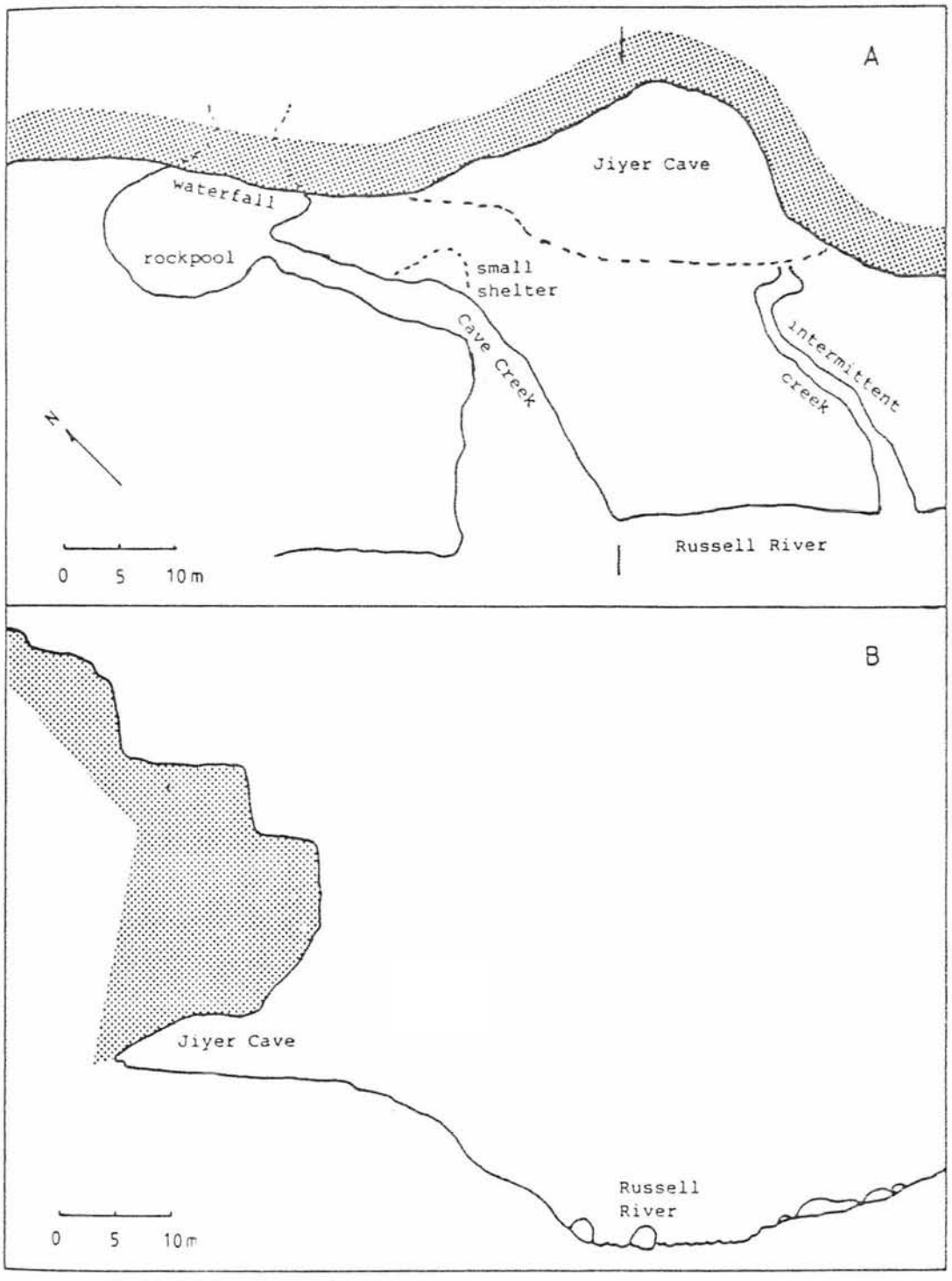
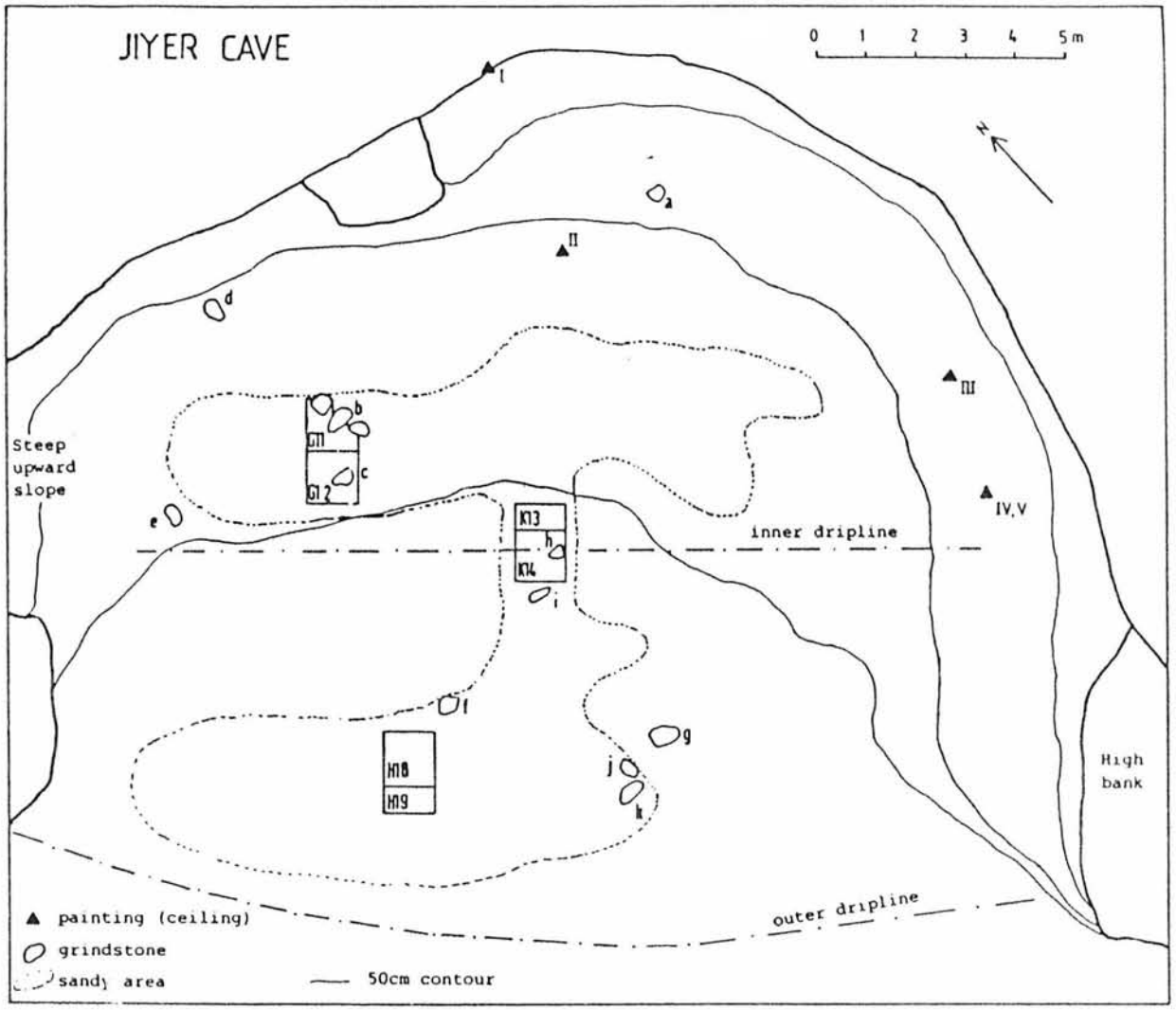


Figure 6.1. Jiyer Cave. A. General plan. B. Profile.
Original drawing by Campbell.

Figure 6.2. Jiyer Cave: Plan showing position of paintings, excavations and surface implements. From original by Campbell.



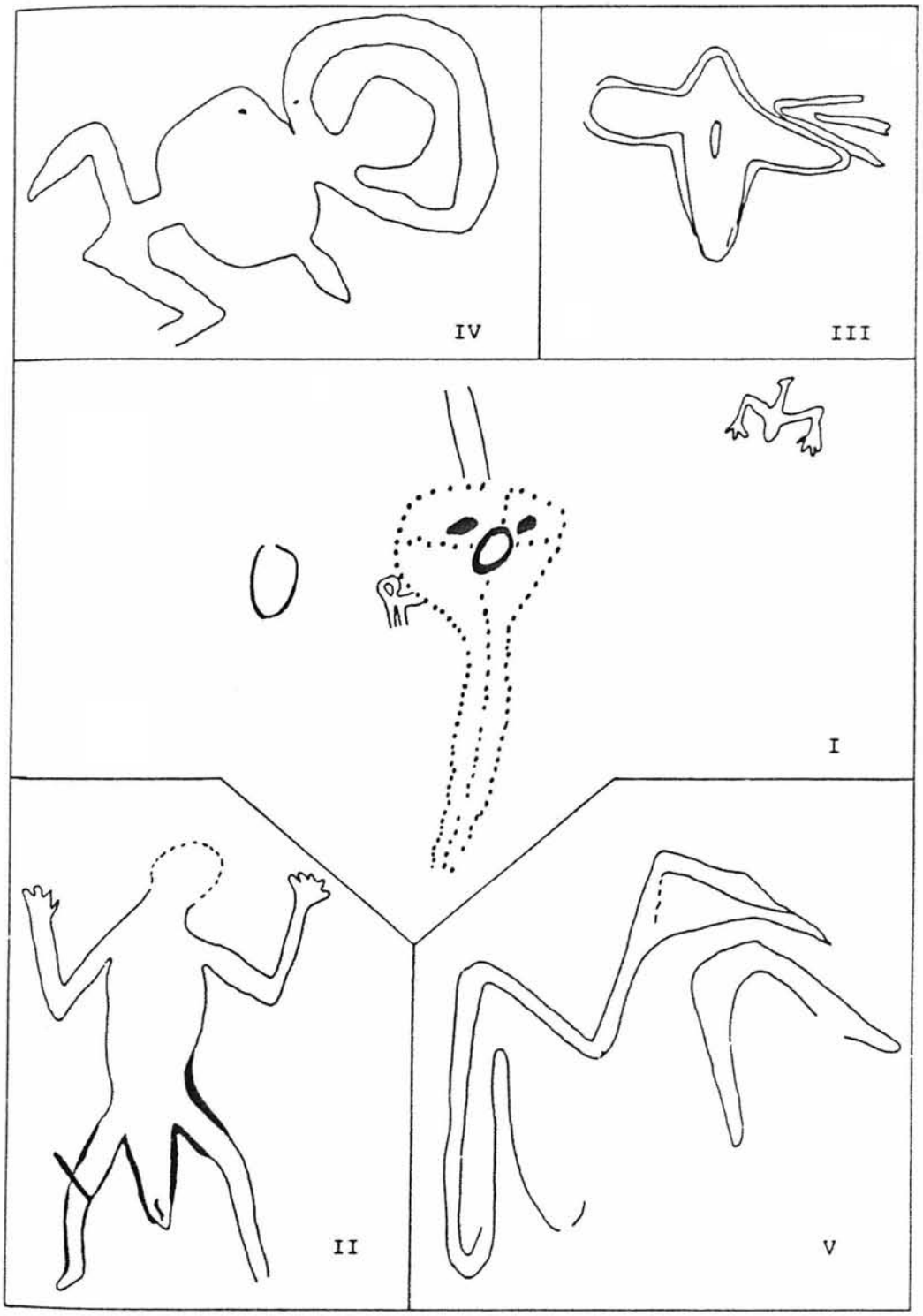


Figure 6.3. Jiyer Cave paintings. From original sketches by R. Brown 1982. Not to scale. Roman numerals indicate position of paintings in Figure 6.2.

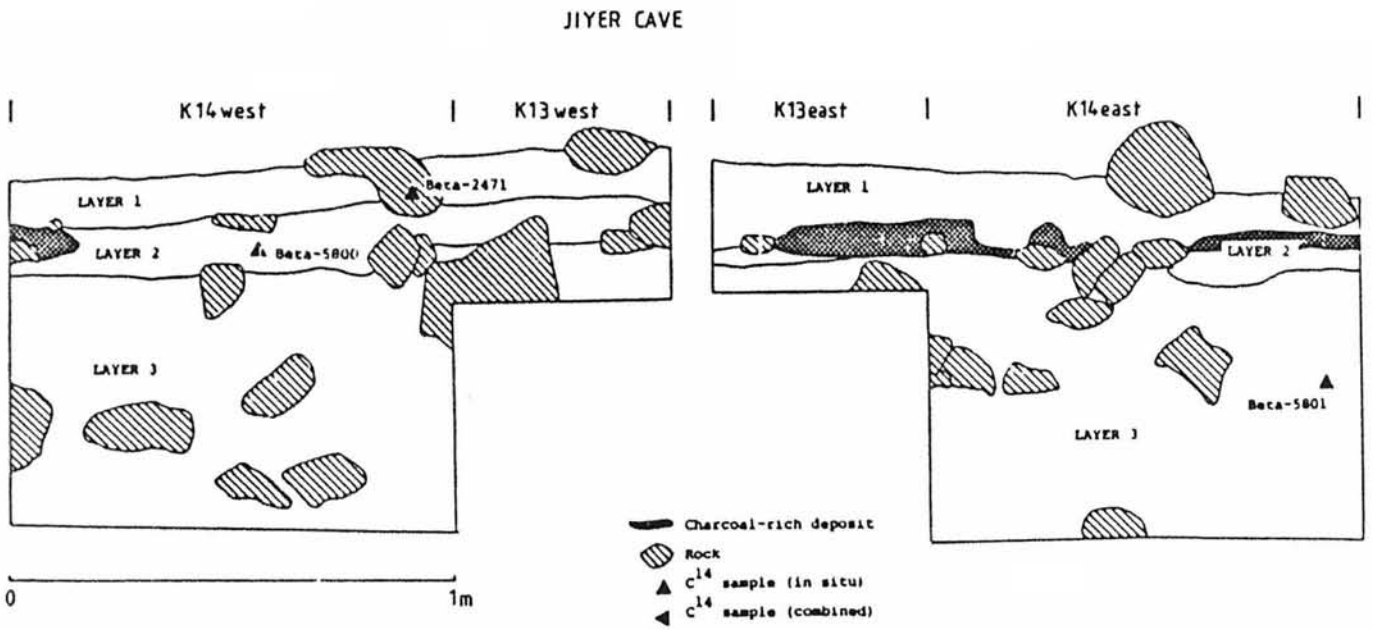


Figure 6.4. Jiyer Cave: western and eastern sections of K14 and K13S.

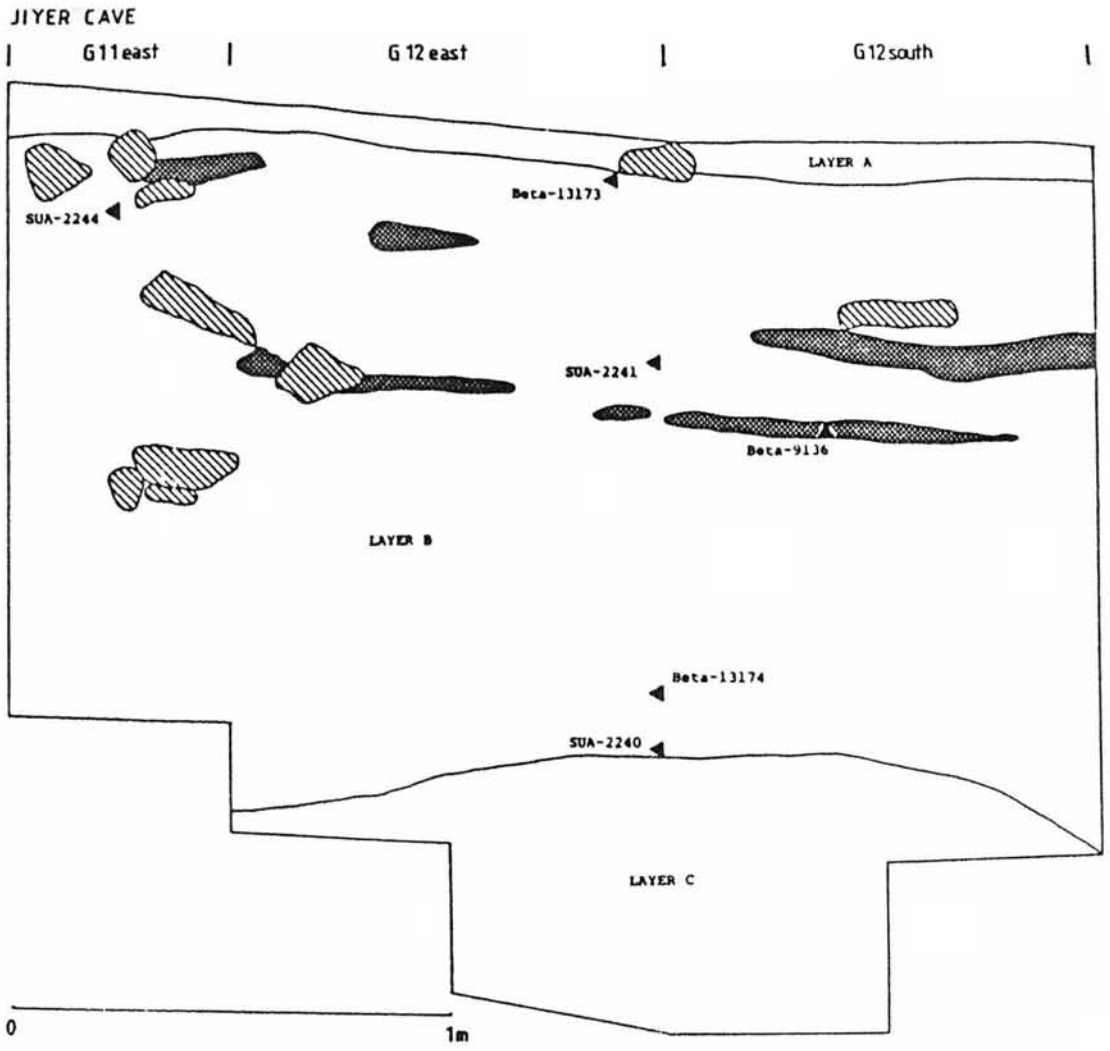


Figure 6.5. Jiyer Cave: eastern and southern sections of G12 and G11S. For key see Figure 6.4.

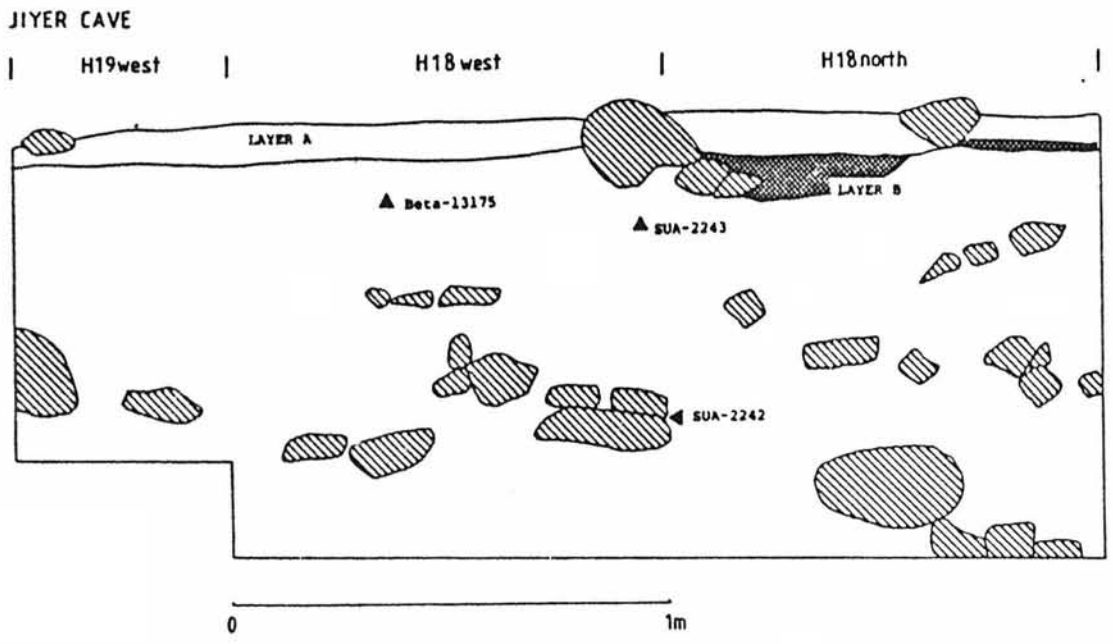


Figure 6.6. Jiyer Cave: western and northern sections of H18 and H19N. For key see Figure 6.4.

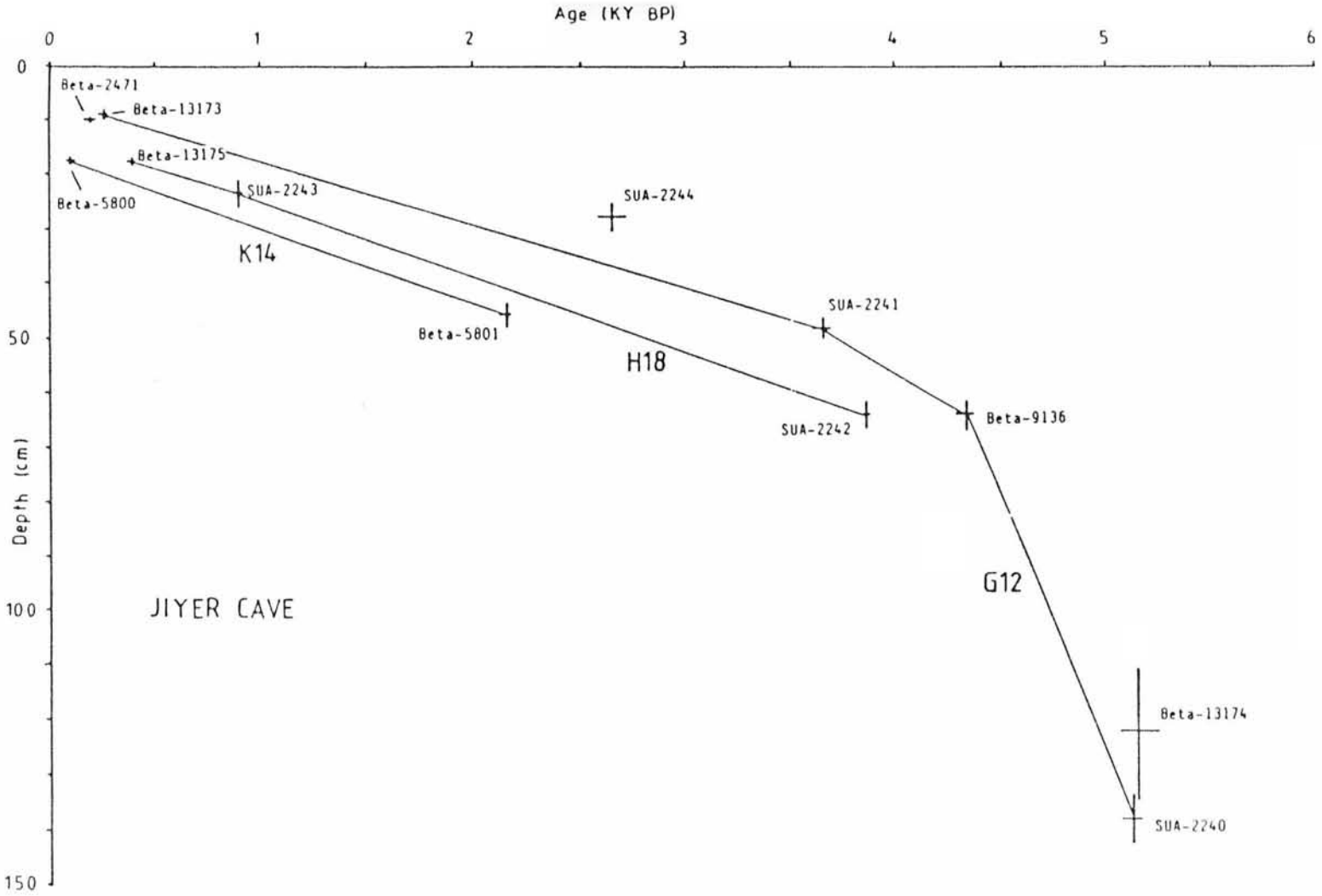


Figure 6.7. Jiyer Cave: radiocarbon ages against depth.

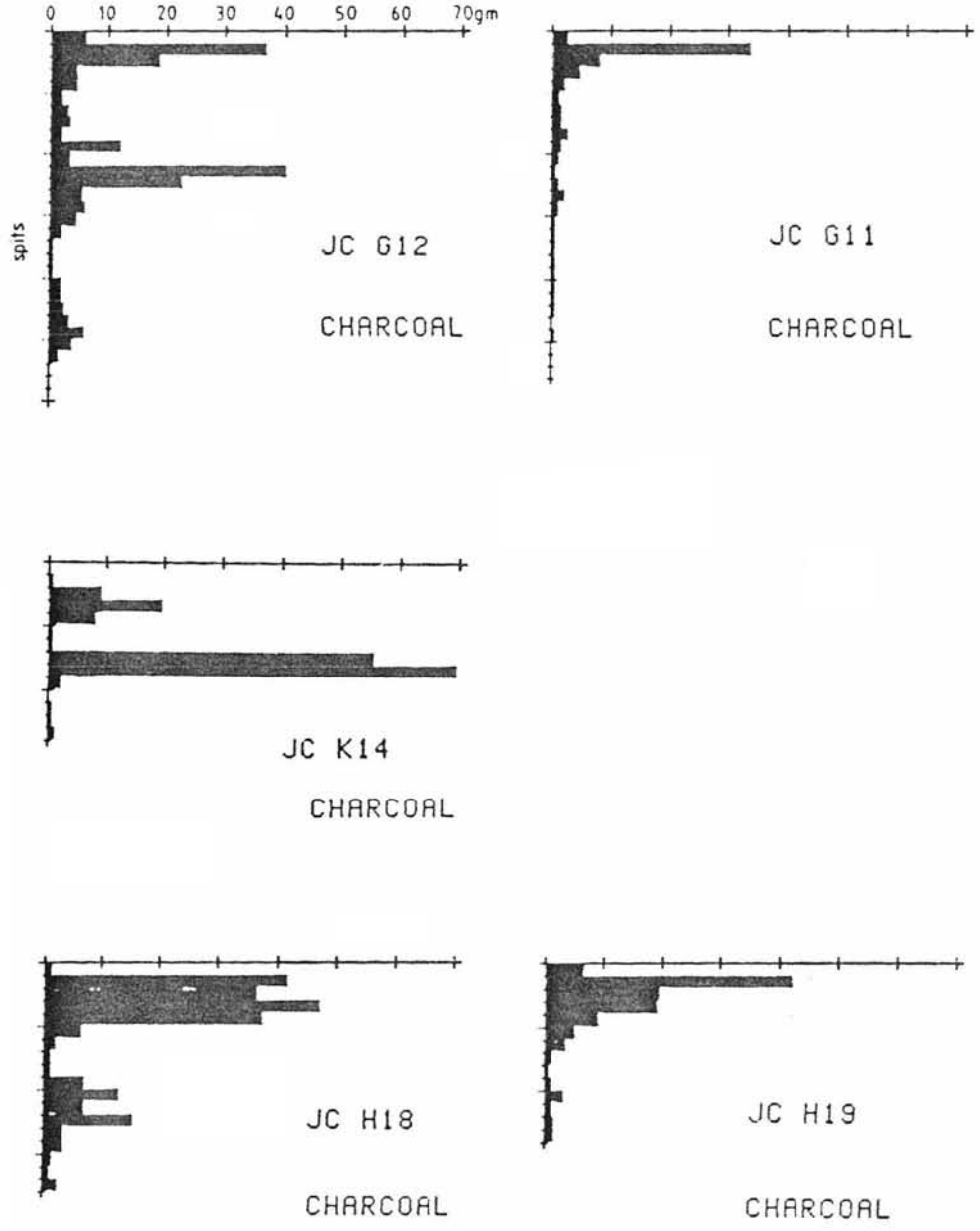


Figure 6.8. Jiyer Cave: vertical distribution of charcoal by weight. Spits numbered as in Tables 6.3 - 6.8. (N.B. G11 and H19 are half squares.)

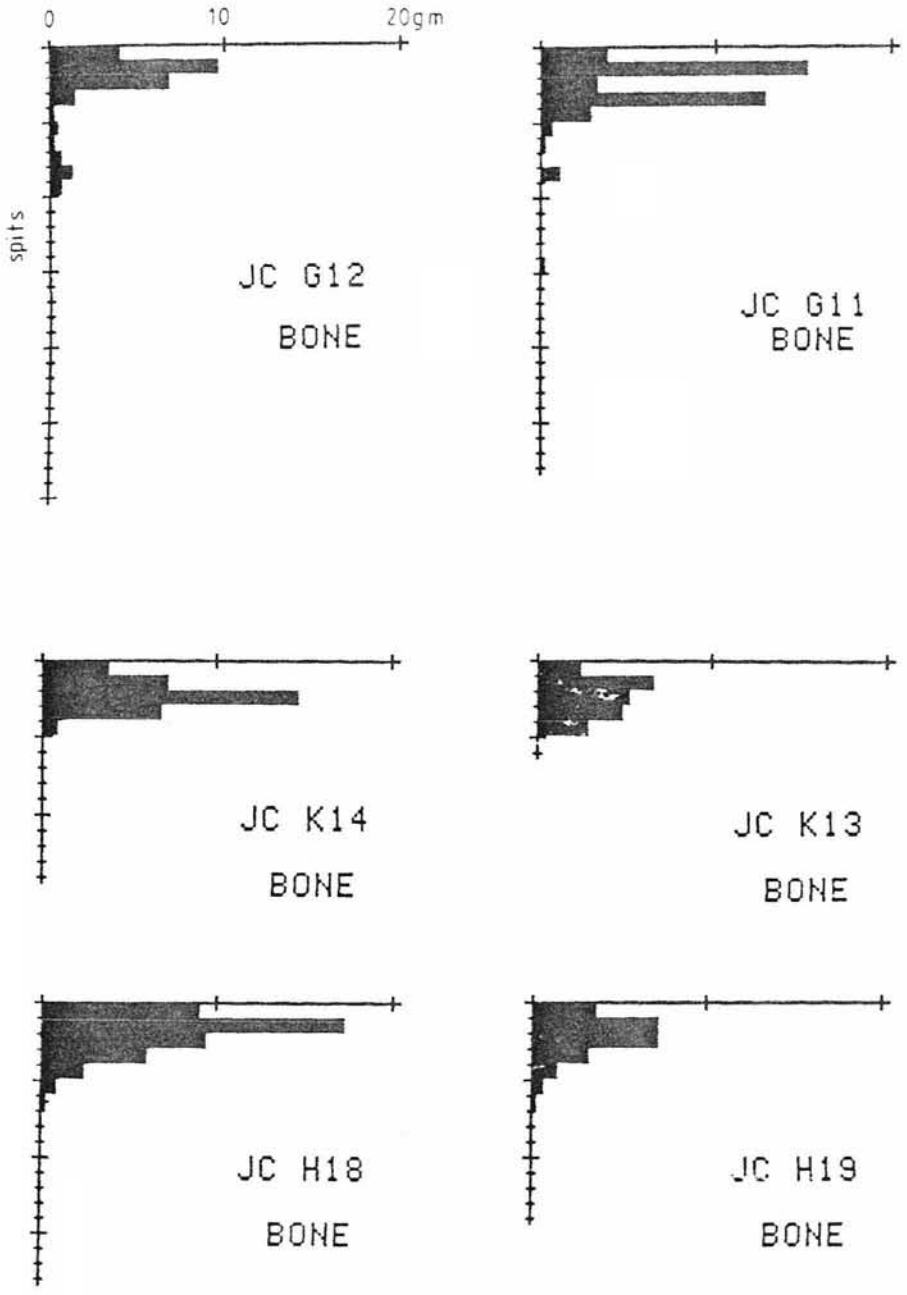


Figure 6.9. Jiyer Cave: vertical distribution of bone by weight. Spits numbered as in Tables 6.3 - 6.8. (N.B. G11, K13 and H19 are half squares.)

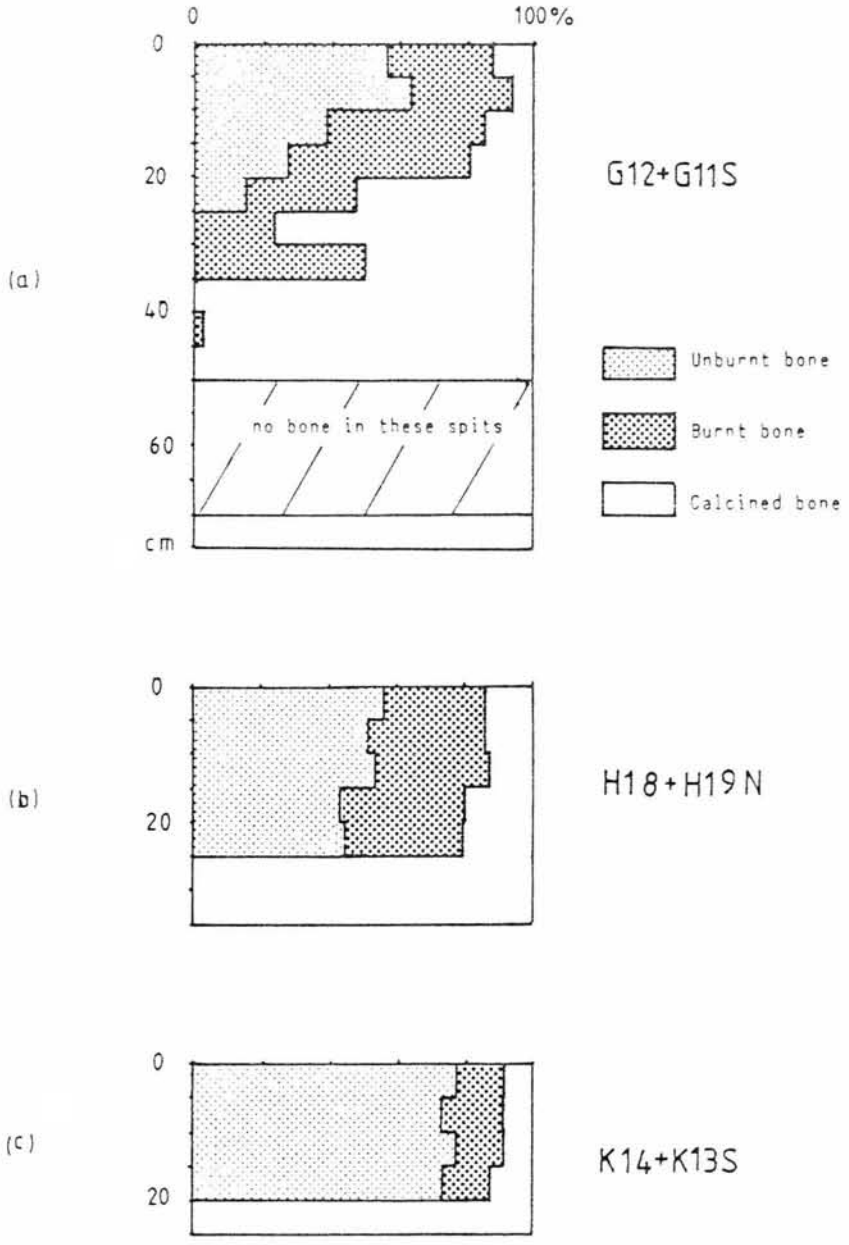


Figure 6.10. Jiyer Cave: proportions of unburnt/ burnt/calcined bone by depth for each of the three excavated areas.

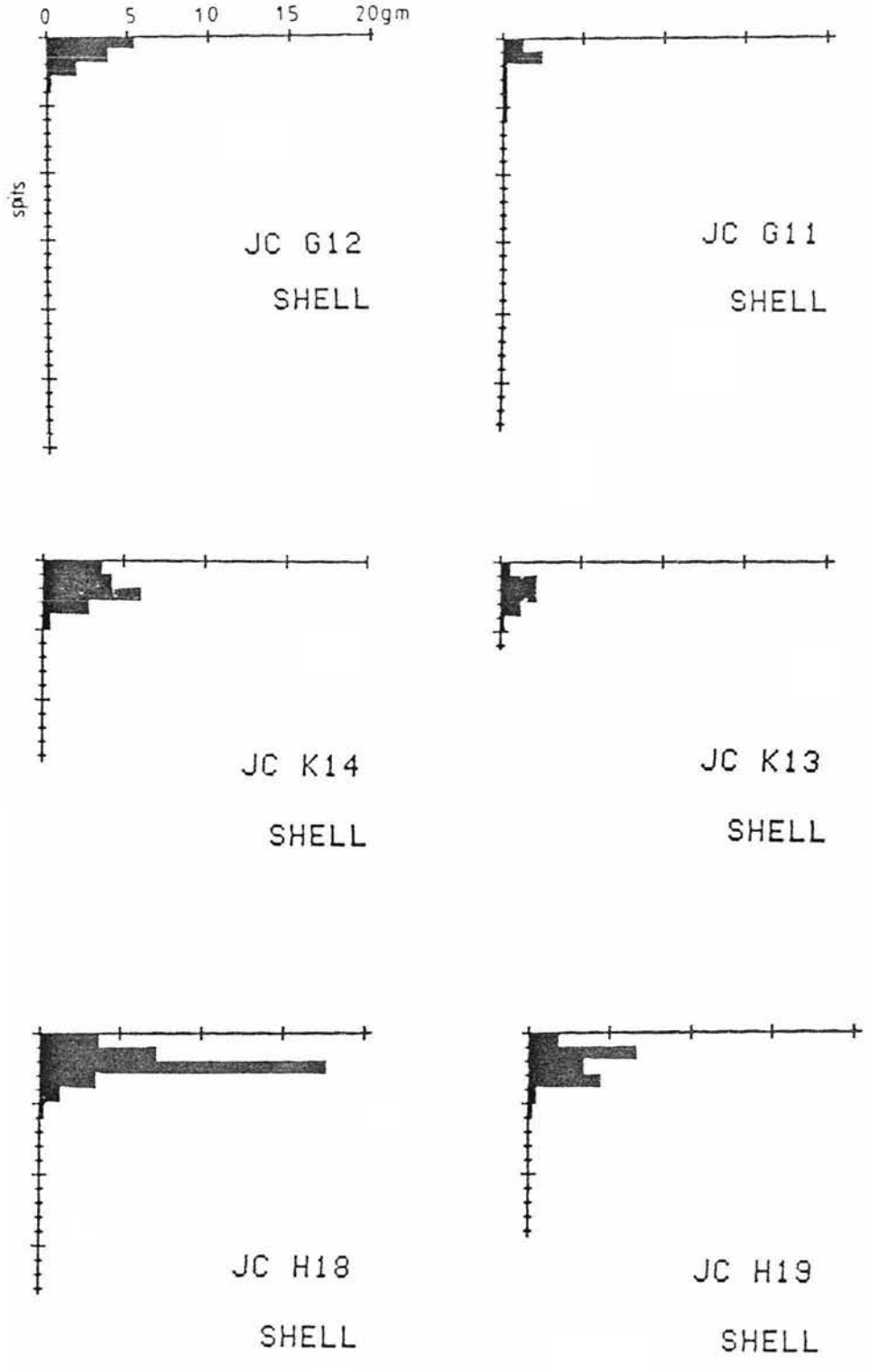


Figure 6.11. Jiyer Cave: vertical distribution of shell by weight. Spits numbered as in Tables 6.3 - 6.8. (N.B. G11, K13 and H19 are half squares.)

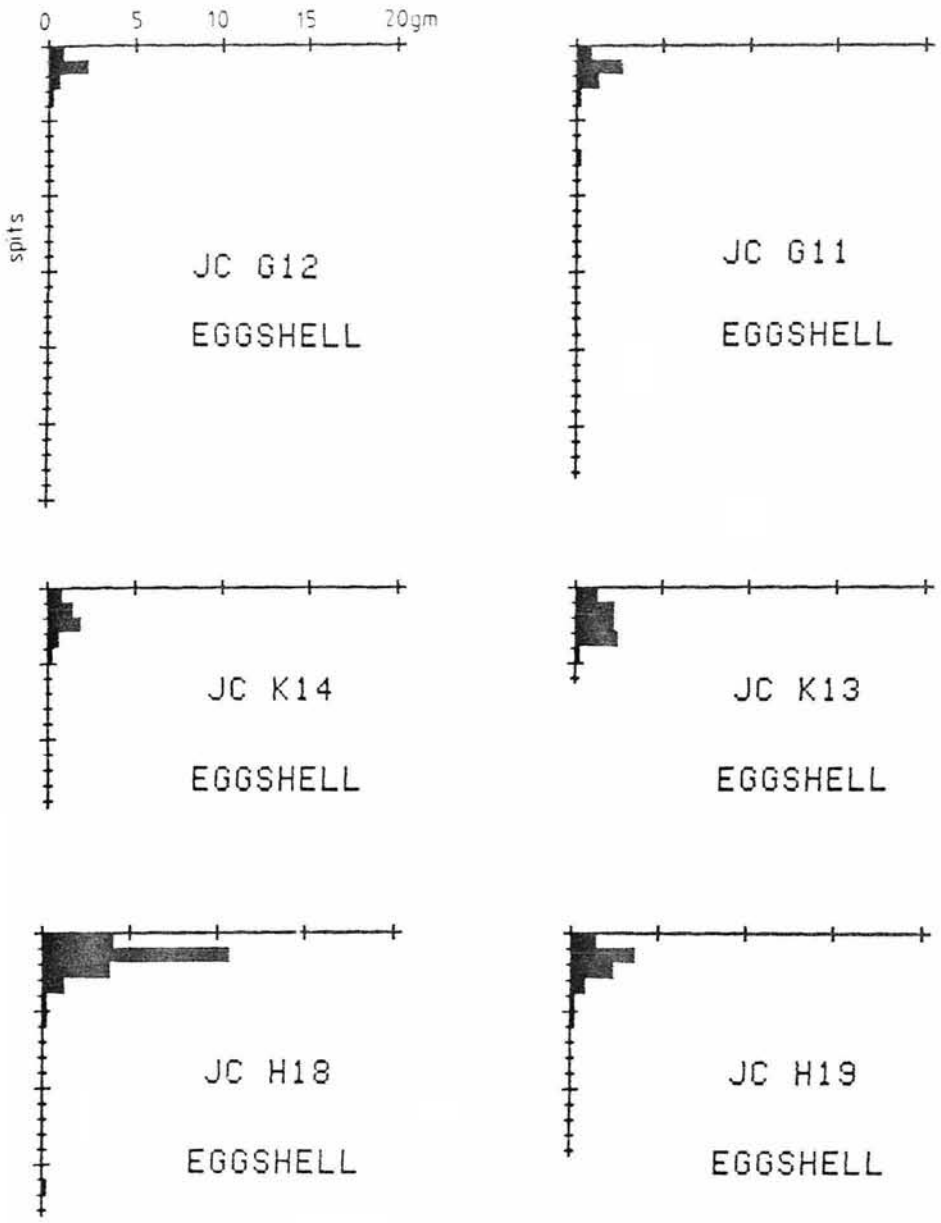


Figure 6.12. Jiyer Cave: vertical distribution of eggshell by weight. Spits numbered as in Tables 6.3 - 6.8. (N.B. G11, K13 and H19 are half squares.)

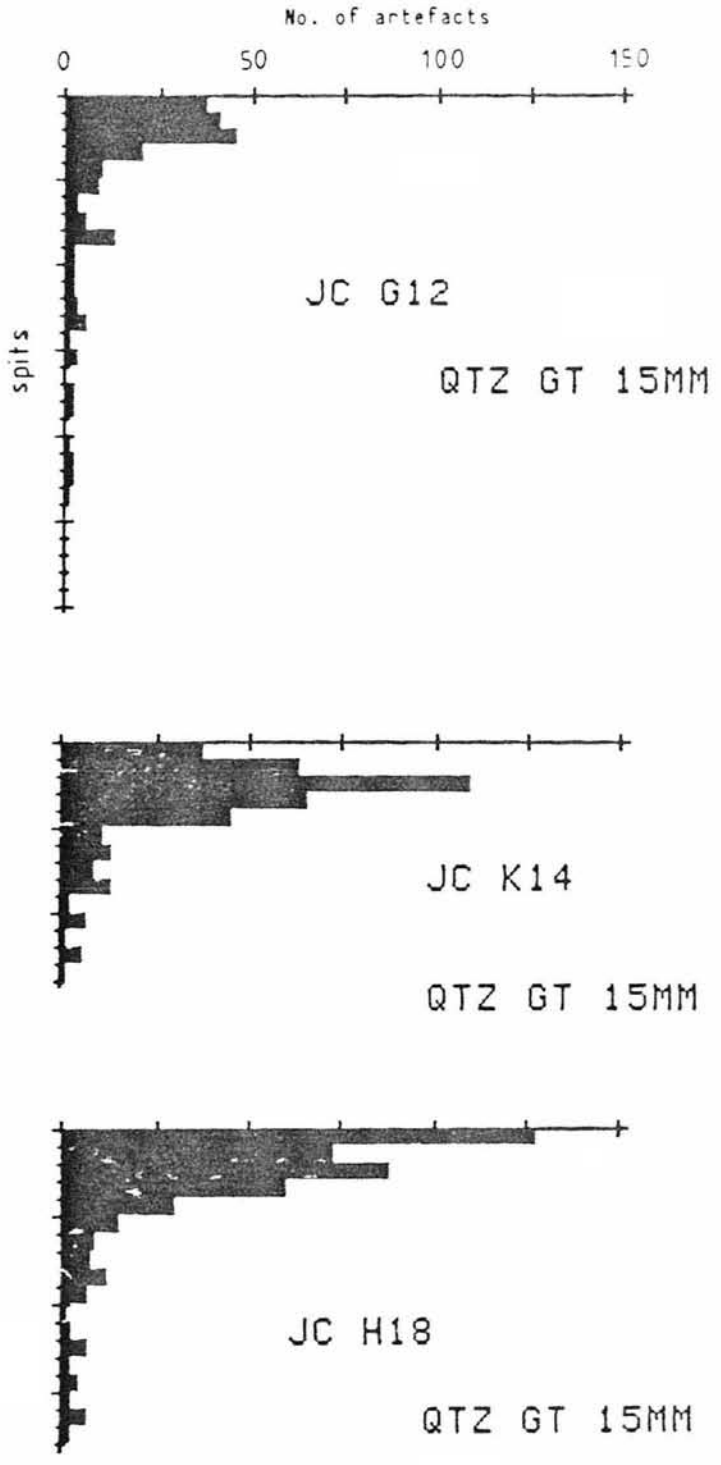


Figure 6.13. Jiyer Cave: vertical distribution of quartz artefacts longer than 15 mm (numbers of artefacts). Spits numbered as in Tables 6.12, 6.14 and 6.16.

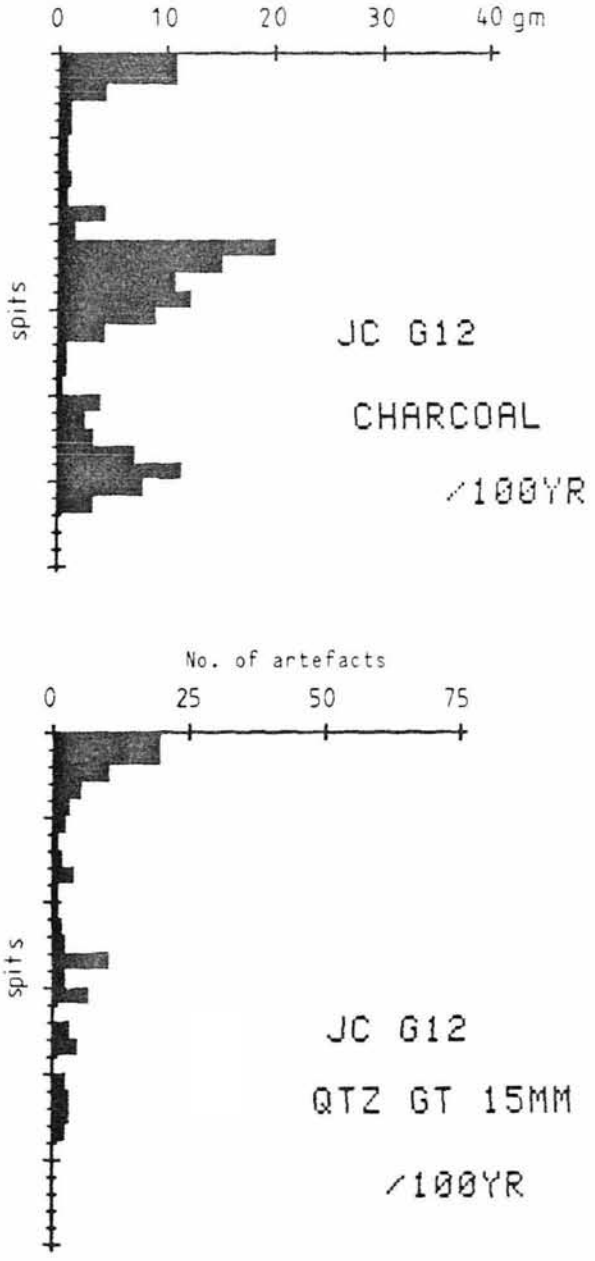


Figure 6.14. Jiyer Cave: deposition rates for charcoal and quartz artefacts longer than 15 mm. Spits numbered as in Table 6.17.

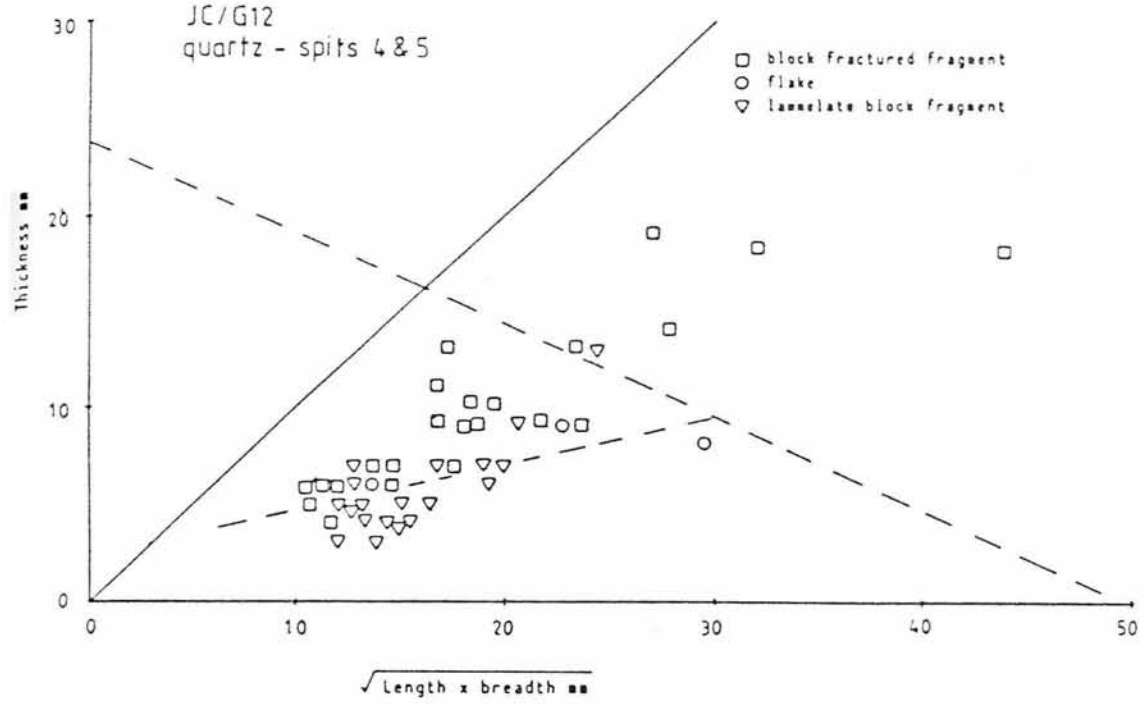


Figure 6.15. Jiyer Cave: reduction chart for quartz artefacts from square G12 spits 4 & 5. Note that most fall in the area of fine duty tools (cf. Figure 4.1). Lammelates 42% of total number.

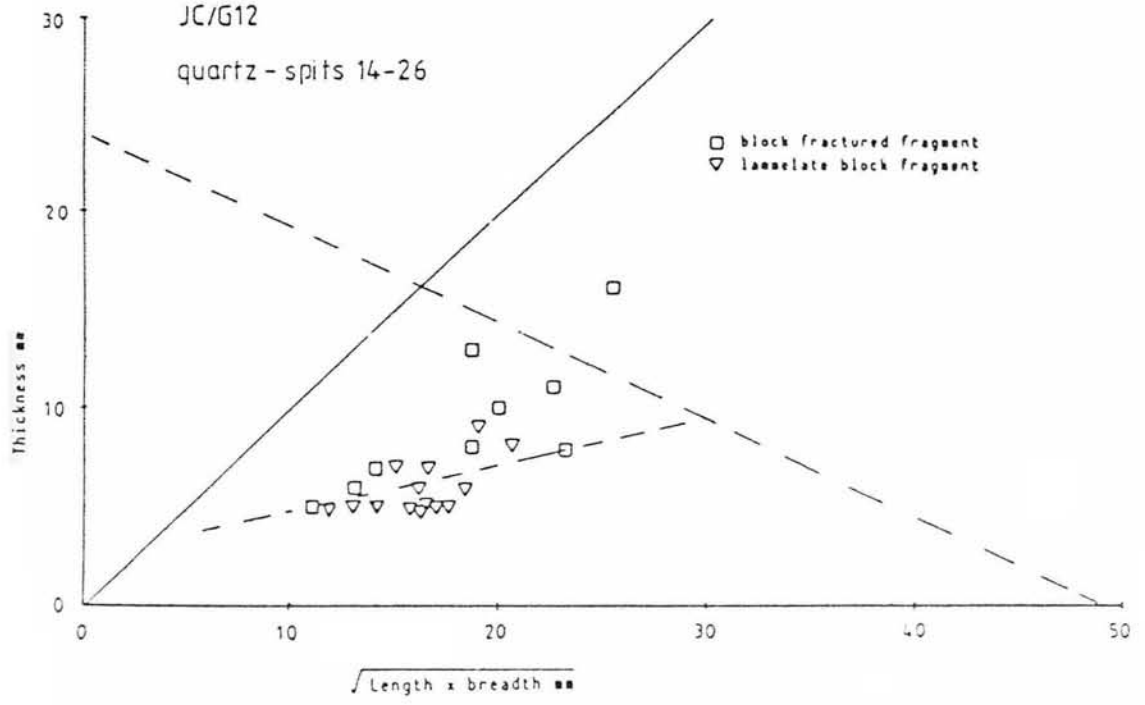


Figure 6.16. Jiyer Cave: reduction chart for quartz artefacts from square G12 spits 14 - 29. Lammelates 58% of total number.

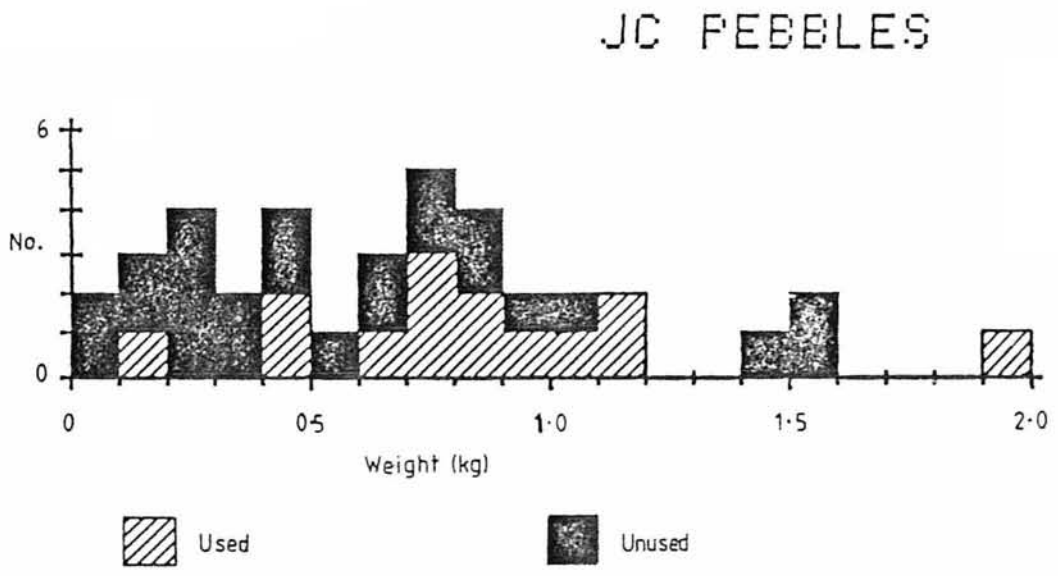


Figure 6.17. Jiyer Cave: weight range for used and unused pebbles from excavated deposits.

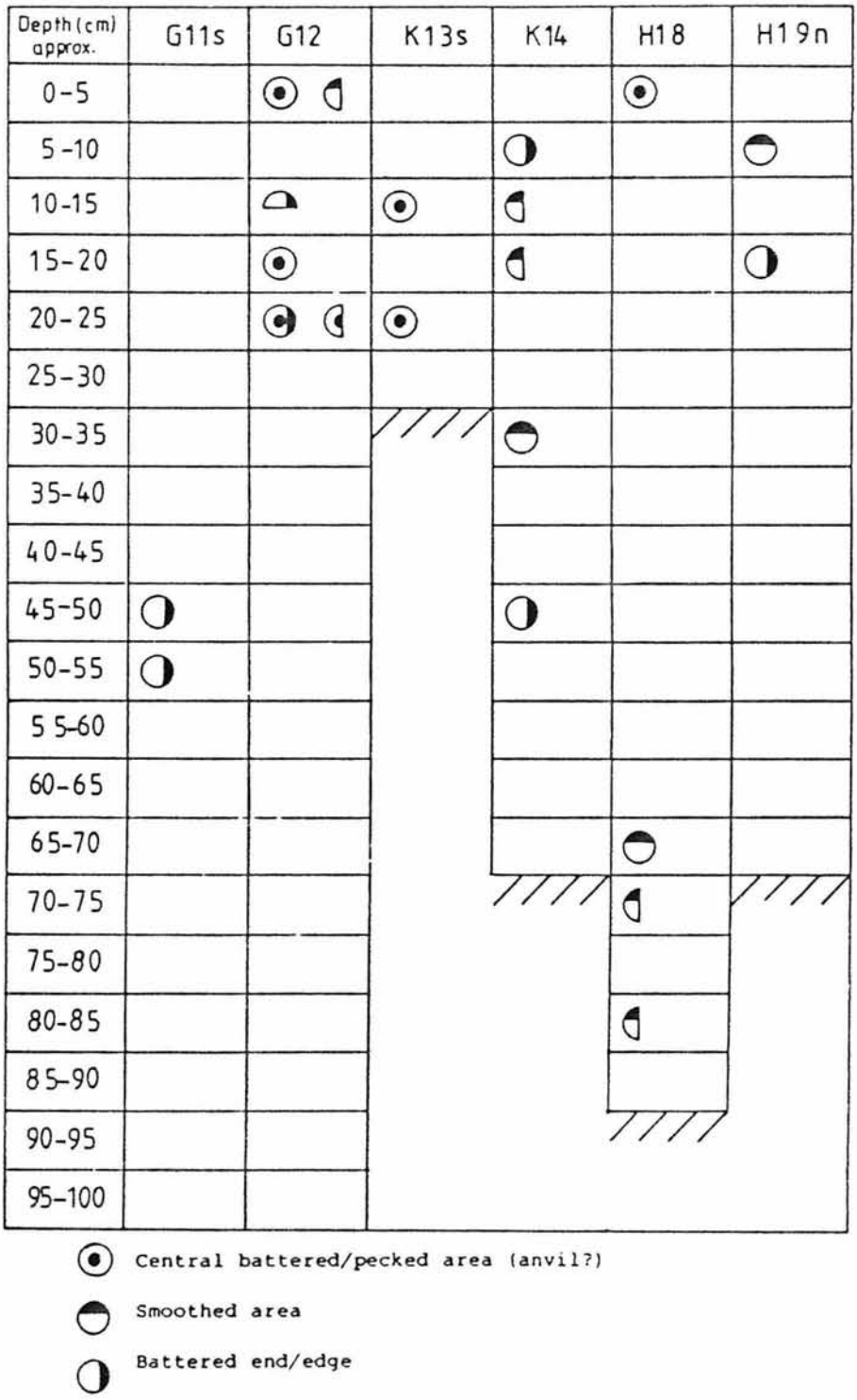


Figure 6.18. Jiyer Cave: distribution of utilised pebbles by depth and square. Semi-circles indicate broken pebbles.

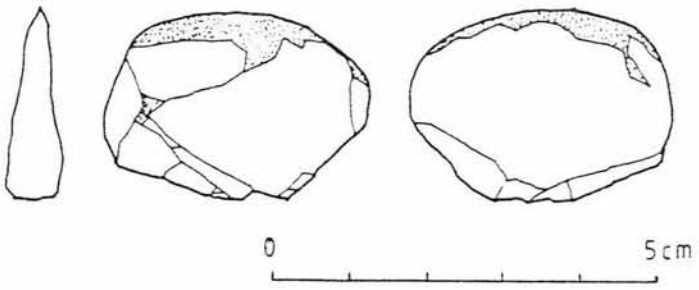


Figure 6.19. Jiyer Cave: ground-edge basalt flake.
From drawing by M.Mardaga-Campbell.

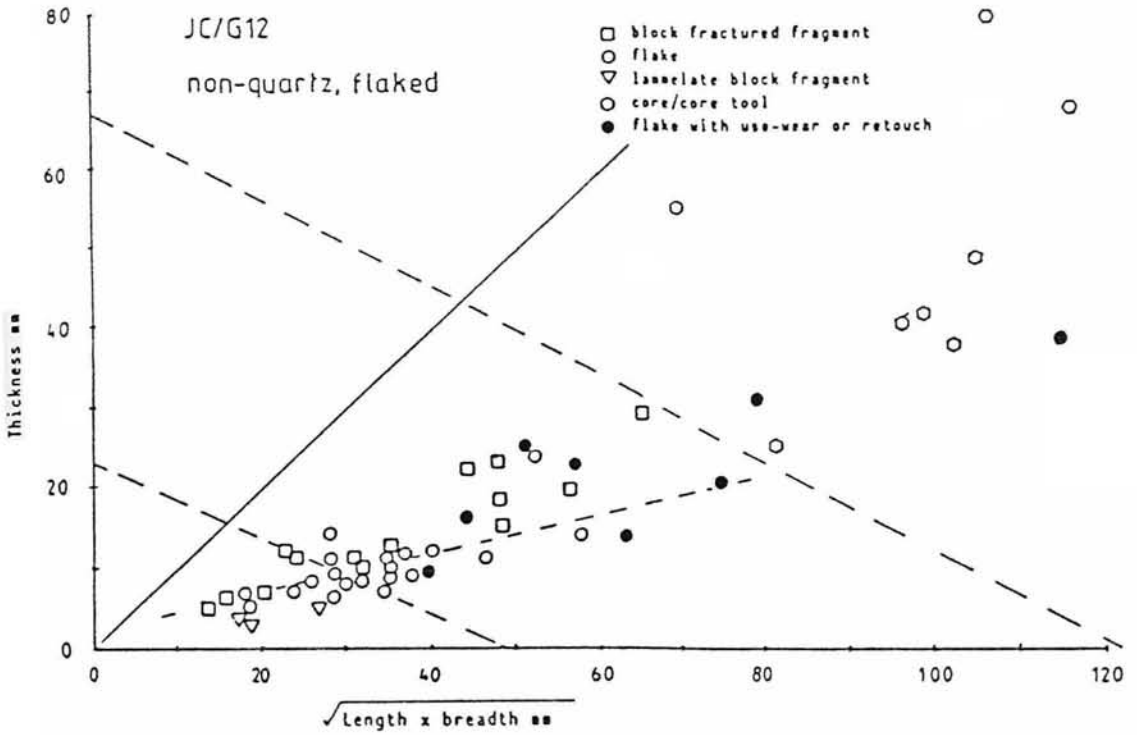


Figure 6.20. Jiyer Cave: reduction chart for non-quartz flaked artefacts from square G12 (all spits). Note that this chart is on a different scale from those displaying quartz artefacts, and that the latter fall mainly in the lefthand corner. Note also the higher proportion of recognisable flakes and cores and the reduced number of lammelates compared with the quartz assemblages.

Table 6.1

Some plant species found near Jiyer Cave and their Aboriginal uses

Species	Uses*
Alocasia macrorrhiza	food (medicine)
Alpinia caerula	food (technology)
Alstonia scholaris	medicine
Archontophoenix alexandrae	food, technology
Bowenia spectabilis	food
Calamus australis	food, technology
Calamus motí	food
Castanospermum australe	food
Cryptocarya murrayi	technology
Davidsonia pruriens	food
Dendrocnide moroides	narcotic? (medicine)
Elaeagnus latifolius	food
Elaeocarpus grandis	food
Eugenia cormiflora	food
Eugenia kuranda	food (firewood)
Faradaya splendida	fish poison
Ficus variegata	food, technology (medicine)
Ficus virgata	food (medicine)
Flagellaria indica	technology (food, medicine)
Lepidozamia hopei	food
Lomandra longifolia vel aff.	medicine, technology (food)
Musa acuminata ssp banksii	food (medicine)
Piper novaehollandiae vel aff.	medicine (food)
Prunus turnerana	food
Raphidophora australasica	medicine

From a list of 102 species recorded in 1979 by A.Irvine (pers.comm.).

* Uses as given in Tables 3.5 and 3.6 (additional uses in parentheses from A.Irvine).

Table 6.2

Radiocarbon ages for Jiyer Cave

Sample No.	Years BP	Square/spit	Depth(cm)	Material
Beta-2471*	200 ± 80	K14/2	9-10	charcoal
Beta-5800	100 ± 60	K14/5	17-18	charcoal
Beta-5801	2160 ± 60	K14/10	42-47	charcoal
Beta-13173	260 ± 50	G12/3	8-10	charcoal
SUA-2241	3660 ± 80	G12/12	46-50	charcoal
Beta-9136	4320 ± 90	G12/15	61-66	charcoal
Beta-13174	5130 ± 140	G12/24-27	110-133	charcoal
SUA-2240	5110 ± 100	G12/28-29	133-142	charcoal
SUA-2244	2650 ± 160	G11/6	25-30	charcoal
Beta-13175	390 ± 50	H18/4	17-18	charcoal
SUA-2243	900 ± 50	H18/5	21-26	charcoal
SUA-2242	3860 ± 60	H18/13	61-66	charcoal

* Obtained by Campbell (1982a)

Table 6.3

Jiyer Cave, G12
Quantitative data (except stone artefacts)

Spit	Depth (cm)	Total sediments (kg)	Coarse rocks (kg)	Fine rocks (kg)	Ochre (gm)	Charcoal (gm)	Nutshells (gm)	Bone (gm)	Shell (gm)	Eggshell (gm)	Glass (gm)	Metal (gm)
1	0-6	81.1	12.0	1.92	2.0	5.8	0.2	3.9	10.8	0.7	4.8	2.2
2/3	6-11	96.5	42.4	4.00	3.3	36.1	2.3	9.6	7.3	2.2	2.8	-
4/5	11-16	71.4	20.9	3.20	217.7	18.4	1.0	6.8	3.6	0.5	-	-
6	16-21	61.3	19.4	3.26	95.0	4.3	0.1	1.3	0.2	0.1	-	-
7	21-26	77.0	32.7	2.32	69.2	4.2	0.2	0.2	-	0.1	-	-
8	26-31	75.7	23.9	1.99	12.0	2.0	0.1	0.3	-	-	-	-
9	31-36	66.4	22.0	2.14	22.1	2.9	-	0.1	-	-	-	-
10	36-41	77.8	47.6	3.21	47.3	3.1	-	0.5	-	-	-	-
11	41-45	73.3	34.6	6.04	56.8	2.0	-	1.1	-	-	-	-
12	45-50	62.7	24.6	3.52	218.8	11.9	0.2	0.6	-	-	-	-
13	50-56	89.8	42.4	3.76	14.1	3.3	0.2	-	-	-	-	-
14	56-61	70.0	26.0	3.80	70.5	40.0	0.1	-	-	-	-	-
15	61-66	65.8	25.8	3.79	16.6	22.1	-	-	-	-	-	-
16	66-72	65.2	35.2	3.85	11.0	5.2	0.2	-	-	-	-	-
17	72-77	59.0	19.4	3.50	44.3	6.0	-	-	-	-	-	-
18	77-82	80.6	24.2	3.32	20.1	4.3	0.1	-	-	-	-	-
19	82-88	80.3	16.6	1.52	7.9	2.0	-	-	-	-	-	-
20	88-94	71.3	4.9	0.82	2.1	0.3	-	-	-	-	-	-
21	94-99	66.3	4.6	0.66	12.7	0.2	-	-	-	-	-	-
22	99-105	64.2	12.8	0.91	12.3	0.1	-	-	-	-	-	-
23	105-110	76.7	33.2	1.87	139.6	1.8	-	-	-	-	-	-
24	110-116	78.4	20.0	3.63	4.7	1.8	-	-	-	-	-	-
25	116-122	59.7	10.7	3.95	13.5	2.3	-	-	-	-	-	-
26	122-128	89.2	26.7	7.62	12.5	3.5	0.1	-	-	-	-	-
27	128-133	92.2	32.3	7.50	10.2	5.7	-	-	-	-	-	-
28	133-137	83.0	31.1	7.47	123.5	3.8	-	-	-	-	-	-
29	137-142	81.3	20.5	7.27	7.1	1.5	-	-	-	-	-	-
30	142-147	81.6	17.3	8.06	11.1	-	-	-	-	-	-	-
31	147-152	74.4	15.5	5.22	2.3	-	-	-	-	-	-	-
32	152-157	93.6	4.7	5.58	6.1	-	-	-	-	-	-	-
Total		2265.8	704.0	115.60	1286.4	194.6	4.8	24.4	21.9	3.6	7.6	2.2

N.B. A sounding which extended 30 cm below Spit 32 was devoid of both rocks and cultural deposits.

Table 6.4

Jiyer Cave, G11S
Quantitative data (except stone artefacts)

Spit	Depth (cm)	Total sediments (kg)	Coarse rocks (kg)	Fine rocks (kg)	Ochre (gm)	Charcoal (gm)	Nutshell (gm)	Bone (gm)	Shell (gm)	Eggshell (gm)	Glass (gm)	Metal (gm)
1S	0-6	47.2	2.8	1.03	2.8	2.2	0.3	3.8	2.3	0.8	14.3	-
2S	6-11	45.5	18.2	1.71	3.6	30.4	2.7	15.1	4.8	2.5	9.2	11.9
3S	11-15	25.1	8.3	1.87	14.9	3.6	0.4	3.1	0.1	1.1	-	-
4S	15-20	33.3	13.3	1.86	10.5	2.9	0.8	12.8	0.1	0.1	-	-
5S	20-25	20.7	8.8	0.77	14.3	5.1	1.7	2.7	0.1	-	-	-
6S	25-30	49.4	23.8	1.13	6.1	7.2	0.3	0.6	0.1	-	-	-
7S	30-34	46.5	20.3	1.42	12.4	2.0	-	0.2	-	-	-	-
8S	34-39	36.8	22.7	1.08	1.9	1.6	-	-	-	0.1	-	-
9S	39-44	33.8	20.9	1.51	35.8	9.4	0.1	0.9	-	-	-	-
10S	44-49	35.3	8.3	1.27	1.3	1.3	-	-	-	-	-	-
11S	49-54	34.1	11.0	1.29	16.7	3.6	-	-	-	-	-	-
12S	54-59	36.5	16.5	1.65	40.9	3.5	-	-	-	-	-	-
13S	59-63	20.8	8.6	1.37	2.1	1.8	-	-	-	-	-	-
14S	63-69	42.0	16.4	2.56	5.1	0.5	-	-	-	-	-	-
15S	69-75	34.9	17.8	1.79	25.0	0.4	-	0.2	-	-	-	-
16S	75-80	26.8	12.5	1.60	3.6	3.6	-	-	-	-	-	-
17S	80-86	48.7	9.7	1.45	48.8	0.7	-	-	-	-	-	-
18S	86-91	35.2	9.7	1.08	70.4	0.2	-	-	-	-	-	-
19S	91-94	56.2	21.9	2.27	0.2	0.1	-	-	-	-	-	-
20S	94-99	44.6	27.1	2.27	-	0.1	-	-	-	-	-	-
21S	99-104	32.5	13.5	1.78	11.5	0.1	-	-	-	-	-	-
22S	104-108	52.5	21.0	3.28	15.0	0.6	-	-	-	-	-	-
23S	108-115	53.1	18.5	4.50	0.6	0.4	-	-	-	-	-	-
24S	115-118	41.8	12.4	5.45	4.4	3.2	-	-	-	-	-	-
25S	118-122	45.2	14.7	8.77	0.7	0.1	-	-	-	-	-	-
26S	122-128	43.4	15.5	7.25	-	-	-	-	-	-	-	-
27S	128-133	51.3	24.4	7.55	13.4	0.1	-	-	-	-	-	-
28S	133-138	51.1	22.4	7.01	0.2	-	-	-	-	-	-	-
Totals		1124.3	447	76.57	362.2	84.7	6.3	39.4	7.5	4.6	23.5	11.9

Table 6.5

Jiyer Cave, K14
Quantitative data (except stone artefacts)

Spit	Depth (cm)	Ochre (gm)	Charcoal (gm)	Nutshell (gm)	Bone (gm)	Shell (gm)	Eggshell (gm)	Glass (gm)	Metal (gm)
1	0-5	-	-	0.5	3.8	7.2	0.8	44.7	-
2/3	5-12	12.2	0.5	0.3	7.1	8.3	1.3	170.8	-
4	12-17	1.5	8.7	0.2	14.6	11.8	1.8	108.0	-
5	17-22	13.1	19.4	-	6.8	5.4	0.5	-	-
6	22-27	22.0	7.8	0.1	0.8	0.8	0.1	-	-
7	27-32	0.9	0.4	0.2	-	-	-	-	-
8	32-37	-	0.1	-	-	-	-	-	-
9	37-42	6.9	55.5	-	-	-	-	-	-
10	42-47	27.9	69.5	-	-	-	-	-	-
11	47-52	1.1	1.8	0.2	-	-	-	-	-
12	52-57	-	-	-	-	-	-	-	-
13	57-62	9.7	0.3	0.1	-	-	-	-	-
14	62-67	18.8	0.1	-	-	-	-	-	-
15	67-72	5.4	0.9	0.1	-	-	-	-	-
Total		119.5	165.0	1.7	33.1	33.5	4.5	323.5	-

Table 6.6

Jiyer Cave, K13S
Quantitative data (except stone artefacts)

Spit	Depth (cm)	Ochre (gm)	Charcoal (gm)	Nutshell (gm)	Bone (gm)	Shell (gm)	Eggshell (gm)	Glass (gm)	Metal (gm)
1	0-6	-	0.6	-	2.3	1.1	1.1	17.4	-
2	6-11	-	-	-	6.5	4.1	2.2	29.2	2.9
3/4	11-16	-	18.1	5.5	5.1	4.4	2.1	51.9	-
5/6	16-20	-	24.0	12.9	4.7	2.3	2.4	1.2	4.2
7	20-25	0.5	2.8	-	2.8	0.1	0.2	-	-
8	25-31	-	-	0.1	-	-	-	-	-
Total		0.5	45.5	18.5	21.4	12.0	8.0	99.7	7.1

Table 6.7

Jiyer Cave, H18
Quantitative data (except stone artefacts)

Spit	Depth (cm)	Total sediments (kg)	Coarse rocks (kg)	Fine rocks (kg)	Ochre (gm)	Charcoal (gm)	Nutshell (gm)	Bone (gm)	Shell (gm)	Eggshell (gm)	Glass (gm)	Metal (gm)
1	0-5	104.5	18.1	5.33	20.6	1.0	0.3	9.0	7.2	4.0	61.8	–
2	5-11	96.8	15.4	4.14	20.5	41.2	4.9	17.1	14.2	10.5	0.2	12.6
3	11-16	75.5	13.1	4.54	12.8	36.5	1.8	9.3	35.2	3.8	–	–
4	16-21	70.4	14.8	4.41	20.9	47.0	1.3	6.0	6.5	1.2	–	–
5	21-26	72.6	24.1	3.45	22.3	37.1	0.3	2.3	2.3	0.2	–	–
6	26-31	90.4	37.7	2.54	8.0	6.1	0.4	0.7	0.1	0.1	–	–
7	31-36	90.0	41.0	1.81	25.8	1.7	0.1	0.1	–	–	–	–
8	36-41	94.4	44.2	3.05	32.3	0.9	–	–	–	–	–	–
9	41-46	70.3	29.1	3.42	35.4	0.7	0.1	–	–	–	–	–
10	46-52	91.1	42.3	4.32	182.7	6.8	0.1	–	–	–	–	–
11	52-56	143.1	69.4	4.98	42.4	12.7	1.1	–	–	–	–	–
12	56-61	63.2	19.7	2.34	1.8	7.0	0.1	–	–	–	–	–
13	61-66	85.5	33.2	2.90	23.9	15.3	0.1	–	–	–	–	–
14	66-71	76.2	20.5	2.66	65.6	3.3	–	–	–	–	–	–
15	71-76	76.4	24.0	2.10	25.3	3.3	0.1	–	–	–	–	–
16	76-81	98.0	46.1	1.73	24.8	1.3	–	–	–	–	–	–
17	81-86	78.8	27.0	1.84	42.8	1.0	0.1	–	–	0.1	–	–
18	86-91	84.8	23.1	2.48	11.6	2.5	–	–	–	–	–	–
Total		1562.0	542.8	58.04	619.5	225.4	10.8	44.5	65.5	19.9	62.0	12.6

Table 6.8

Jiyer Cave, H19N
Quantitative data (except stone artefacts)

Spit	Depth (cm)	Total sediments (kg)	Coarse rocks (kg)	Fine rocks (kg)	Ochre (gm)	Charcoal (gm)	Nutshell (gm)	Bone (gm)	Shell (gm)	Eggshell (gm)	Glass (gm)	Metal (gm)
1	0-4	39.5	9.2	1.92	7.9	6.1	0.4	3.5	3.3	1.3	10.1	–
2	4-9	35.4	7.5	1.73	2.9	41.9	3.7	7.1	13.0	3.5	1.3	–
3	9-14	38.6	11.3	1.63	10.5	19.1	1.5	7.2	6.8	2.3	1.1	–
4	14-19	37.7	7.0	1.91	5.6	19.0	1.2	3.2	8.5	0.7	–	–
5	19-24	31.2	11.9	1.26	7.4	8.7	0.7	1.3	0.6	0.2	–	–
6	24-29	45.6	25.3	1.09	4.1	4.9	0.2	0.5	0.2	0.1	–	–
7	29-34	43.5	18.8	0.86	8.0	3.3	0.1	0.1	–	–	–	–
8	34-39	40.5	20.2	0.63	17.2	0.6	–	–	–	–	–	–
9	39-44	38.9	11.4	0.91	13.6	0.4	–	–	–	–	–	–
10	44-50	63.2	38.2	1.37	19.6	0.6	0.1	–	–	–	–	–
11	50-54	33.8	12.1	1.56	27.3	2.6	–	–	–	–	–	–
12	54-60	44.9	18.5	1.95	10.2	0.8	–	–	–	–	–	–
13	60-64	28.6	7.9	1.22	24.5	1.4	–	–	–	–	–	–
14	64-69	43.7	17.7	1.57	22.4	1.1	0.1	–	–	–	–	–
Total		565.1	217.0	19.61	181.2	110.5	8.0	22.9	32.4	8.1	12.5	–

Table 6.9

Identification of plant remains from Jiyer Cave

Species	Part	Square/spit			
Beilschmiedia bancroftii (yellow walnut)	nutshell	G12/2	G11/2 G11/4	H18/3 H18/4	H19/2 H19/4 H19/5
Elaeocarpus bancroftii (Johnstone R. almond)	nutshell			H18/11	H19/2
Elaeocarpus grandis (blue quandong)	seed			H18/2	
Endiandra palmerstonii (black walnut)	nutshell	G12/5	G11/1 G11/4		H19/2
Endiandra pubens (hairy walnut)	nutshell		G11/1 G11/4 G11/5		K14/1
Endiandra sp ?	nutshell			H18/2 H18/3 H18/12	

Table 6.10

Distribution of excavated material between squares (gm)

	G12/G11S	K14/K13S	H18/H19N
Bone	63.8	54.5	67.4
Shell	29.4	45.5	97.9
Eggshell	8.2	12.5	28.0
Charcoal	279.3	210.5	335.9
Nutshell	11.1	20.2	18.8
Glass	31.1	423.2	74.5
Metal	14.1	7.1	12.6

N.B. Figures for charcoal and nutshell are not strictly comparable between squares because of differing depths of excavations (see text).

Table 6.11

Faunal list, Jiyer Cave excavations

Square/ spit	Small mammal	Large mammal	Fish	Turtle	Snake	Lizard	Frog
G11/1	+	+	+	+		Agamid	
G11/2	Cape York Rat White-tailed Rat		+	+	+ ✓	Agamid	
G11/3	Green Ringtail Possum		+	+		Agamid	+
G11/4	+	Wallaby*	+	+	Boid	Agamid	
G11/5	Musky Rat-kangaroo	Wallaby*	+	+			
G11/6	+		+				
G11/7				+			
G11/9		+					
G11/15							
G12/1	Green Ringtail Possum Rat	Wallaby*	+	+	+	Agamid	
G12/2+3	Green Ringtail Possum White-tailed Rat	Wallaby*	+		Boid	Agamid	+
G12/4+5	Green Ringtail Possum	+	+	+	Boid	Agamid	
G12/6	Musky Rat-kangaroo	Wallaby*	+		+		
G12/7	+						
G12/8			+				
G12/9			+				
G12/10	+	+					
G12/11	+		+				
G12/12	+						
H18/1	Green Ringtail Possum	Wallaby*	+			Agamid	
H18/2	Green Ringtail Possum	Wallaby*	+	+	Boid	Agamid	+
H18/3	Green Ringtail Possum Musky Rat-kangaroo	+	+	+		Agamid	
H18/4	+	Wallaby*	+	+	+	Agamid	
H18/5	Green Ringtail Possum		+				
H18/6			+	+			
H18/7			+				
H19/1	Green Ringtail Possum		+		Boid	Agamid	+
H19/2	Green Ringtail Possum Bandicoot	Wallaby*	+	+	Boid	Agamid	
H19/3	+	Wallaby*	+			Agamid	+
H19/4	Green Ringtail Possum Musky Rat-kangaroo	Dog	+	+	+		
H19/5	+		+		+	Agamid	
H19/6	+		+				
H19/7			+				
K13/1	+		+				
K13/2	Green Ringtail Possum	Wallaby*	+		Boid	Agamid	
K13/3+4	Rat		+	+	Boid	Agamid	+
K13/5+6	+	Wallaby*	+		Boid	Agamid	
K13/7	+		+			Agamid	+
K14/1	Platypus	Wallaby*	+		+	Agamid	
K14/2+3	Rat	Wallaby*	+	+	Boid	Agamid	
K14/4	Green Ringtail Possum large Rat	Wallaby*	+	+	Boid	Agamid	
K14/5	Green Ringtail Possum	Wallaby*	+	+	Boid	Agamid	+
K14/6	Green Ringtail Possum Fruit Bat		+				

Bones identified by K. Aplin (School of Zoology, UNSW). See text (section 6.4.5) for scientific names of mammals.

* Small wallaby, probably Thylogale or Petrogale.
\+ Bone material not identifiable beyond the broad taxonomic category, with the exception of fish bones, most of which were identified as Black Bream (probably Hephaestus fuliginosus).

Table 6.12

Jiyer Cave: G12, quartz artefacts

Spit	< 15mm		15-20mm		20-30mm		30-40mm		> 40mm		> 15mm		Total	
	no	wt	no	wt	no	wt	no	wt	no	wt	no	wt	no	wt
1	274	28.3	29	26.0	5	13.7	3	16.0	0	–	37	55.7	311	84.0
2/3	282	33.9	23	29.8	15	41.4	2	12.5	0	–	40	83.7	322	117.6
4/5	331	39.3	27	29.7	11	31.6	6	35.4	1	26.1	45	122.8	376	162.1
6	149	14.3	9	11.7	9	30.2	1	5.0	1	44.9	20	91.8	169	106.1
7	87	8.3	7	7.5	2	12.7	0	–	0	–	9	20.2	96	28.5
8	55	7.0	3	2.0	3	12.7	2	16.1	0	–	8	30.8	63	37.8
9	41	2.4	1	1.1	2	4.5	0	–	0	–	3	5.6	44	8.0
10	47	6.6	1	0.9	3	20.3	0	–	1	157.5	5	178.7	52	185.3
11	90	8.1	9	13.2	1	22.0	1	16.4	1	12.6	12	64.2	102	72.3
12	49	4.3	1	1.3	1	7.8	0	–	0	–	2	9.1	51	13.4
13	45	3.0	2	1.8	0	–	0	–	0	–	2	1.8	47	4.8
14	49	1.9	1	1.0	1	1.9	0	–	0	–	2	2.9	51	4.8
15	39	2.2	1	1.1	2	4.8	0	–	0	–	3	5.9	42	8.1
16	36	2.0	4	3.0	1	2.1	0	–	0	–	5	5.1	41	7.1
17	31	2.6	0	–	1	4.9	0	–	0	–	1	4.9	32	7.5
18	22	1.9	1	0.6	2	21.0	0	–	0	–	3	21.6	25	23.5
19	7	0.5	0	–	0	–	0	–	0	–	0	–	7	0.5
20	7	1.9	0	–	2	12.2	0	–	0	–	2	12.2	9	14.1
21	3	0.4	2	2.2	0	–	0	–	0	–	2	2.2	5	2.6
22	8	0.9	0	–	0	–	0	–	0	–	0	–	8	0.9
23	12	1.5	1	1.0	0	–	0	–	0	–	1	1.0	13	2.5
24	13	0.8	1	0.9	1	4.1	0	–	0	–	2	5.0	15	5.8
25	12	1.1	0	–	2	5.8	0	–	0	–	2	5.8	14	6.9
26	4	0.3	1	1.3	0	–	0	–	0	–	1	1.3	5	1.6
27	7	1.5	0	–	0	–	0	–	0	–	0	–	7	1.5
28	4	1.9	0	–	0	–	0	–	0	–	0	–	4	1.9
29	1	0.1	0	–	0	–	0	–	0	–	0	–	1	0.1
30	0	–	0	–	0	–	0	–	0	–	0	–	0	–
31	1	0.1	0	–	0	–	0	–	0	–	0	–	1	0.1
32	0	–	0	–	0	–	0	–	0	–	0	–	0	–
Total	1706	177.1	124	136.1	64	253.7	15	101.4	4	241.1	207	732.3	1913	909.4

Table 6.13

Jiyer Cave: G11, quartz artefacts

Spit	< 15mm	15-20mm		20-30mm		30-40mm		> 40mm		> 15mm		Total
	gm	no	gm	no	gm	no	gm	no	gm	no	gm	gm
1	22.4	18	22.7	9	31.9	1	4.7	–	–	28	59.3	81.7
2	20.0	10	11.0	3	6.5	0	–	–	–	13	17.5	37.5
3	22.7	10	11.6	11	38.2	1	2.3	–	–	22	52.1	74.8
4	18.3	12	16.8	10	39.4	1	3.8	2	156.8	25	216.8	235.1
5	2.0	4	7.0	0	–	0	–	–	–	4	7.0	9.0
6	6.1	1	0.6	2	14.0	1	8.4	–	–	4	23.0	29.1
7	3.5	2	1.6	1	12.8	0	–	–	–	3	14.4	17.9
8	1.6	5	11.2	0	–	0	–	–	–	5	11.2	12.8
9	3.3	1	0.7	3	15.8	0	–	–	–	4	16.5	19.8
10	0.1	0	–	1	6.1	1	14.7	–	–	2	20.8	20.9
11	0.9	0	–	0	–	0	–	–	–	0	–	0.9
12	1.7	1	2.2	3	17.0	0	–	–	–	4	19.2	20.9
13	2.3	2	1.8	0	–	0	–	–	–	2	1.8	4.1
14	1.6	0	–	1	5.1	0	–	–	–	1	5.1	6.7
15	1.3	0	–	2	5.7	0	–	–	–	2	5.7	7.0
16	1.3	1	1.3	3	11.8	0	–	–	–	4	13.1	14.4
17	0.9	0	–	0	–	0	–	–	–	0	–	0.9
18	–	2	4.2	0	–	0	–	–	–	2	4.2	4.2
19	0.3	0	–	0	–	0	–	–	–	0	–	0.3
20	0.3	0	–	1	2.0	1	11.6	–	–	2	13.6	13.9
21	0.6	0	–	0	–	0	–	–	–	0	–	0.6
22	0.3	0	–	0	–	0	–	–	–	0	–	0.3
23	0.3	0	–	0	–	0	–	–	–	0	–	0.3
24	0.3	0	–	0	–	0	–	–	–	0	–	0.3
25	–	0	–	0	–	0	–	–	–	0	–	–
26	0.2	0	–	0	–	0	–	–	–	0	–	0.2
Totals	112.3	69	92.7	50	206.3	6	45.5	2	156.8	127	501.3	613.6

Table 6.14

Jiyer Cave: H18, quartz artefacts

Spit	< 15mm	15-20mm		20-30mm		30-40mm		> 40mm		> 15mm		Total
	gm	no	gm	no	gm	no	gm	no	gm	no	gm	gm
1	129.5	68	82.8	51	156.5	8	92.7	0	-	127	332.0	461.5
2	96.9	40	45.5	27	74.3	2	26.0	3	137.4	72	283.2	380.1
3	104.4	42	57.5	38	86.0	7	41.3	0	-	87	184.8	289.2
4	93.1	37	45.2	18	73.2	4	28.3	1	22.3	60	169.0	262.1
5	46.5	15	16.8	12	22.3	2	12.3	0	-	29	51.4	97.9
6	23.5	8	8.8	4	12.6	2	24.2	1	44.8	15	90.4	113.9
7	12.0	3	2.3	5	17.4	0	-	0	-	8	19.7	31.7
8	7.9	3	2.8	3	15.2	1	4.0	0	-	7	22.0	29.9
9	10.8	6	11.4	4	8.6	0	-	1	111.8	11	131.8	142.6
10	14.0	1	0.9	5	15.5	0	-	0	-	6	16.4	30.4
11	7.1	1	1.7	0	-	0	-	0	-	1	1.7	8.8
12	5.9	0	-	2	3.2	0	-	0	-	2	3.2	9.1
13	5.7	1	1.2	4	14.4	1	4.9	0	-	6	20.5	26.2
14	4.6	1	1.6	1	2.7	0	-	0	-	2	4.3	8.9
15	3.8	2	4.0	0		0	-	0	-	2	4.0	7.8
16	1.1	1	2.3	2	2.5	0	-	0	-	3	4.8	5.9
17	1.5	0	-	1	1.3	1	2.0	0	-	2	3.3	4.8
18	4.5	2	1.4	5	8.0	0	-	0	-	7	9.4	13.9
Total	572.8	231	286.2	182	513.7	28	235.7	6	316.3	447	1351.9	1924.7

Table 6.15

Jiyer Cave: H19, quartz artefacts

Spit	< 15mm	15-20mm		20-30mm		30-40mm		> 40mm		> 15mm		Total
	gm	no	gm	no	gm	no	gm	no	gm	no	gm	gm
1	44.6	27	37.0	8	15.8	2	7.0	1	28.8	38	88.6	133.2
2	65.5	45	65.9	18	66.8	4	18.9	0	–	67	151.6	217.1
3	43.4	33	50.6	8	24.7	1	13.0	0	–	42	88.3	131.7
4	40.7	22	42.0	16	57.1	2	11.6	0	–	40	110.7	151.4
5	25.7	17	19.2	12	39.6	1	14.6	1	33.5	31	106.9	132.6
6	17.9	11	13.5	10	44.2	1	6.9	3	96.7	25	161.3	179.2
7	5.0	5	6.9	1	1.3	0	–	0	–	6	8.2	13.2
8	2.4	0	–	1	3.4	0	–	0	–	1	3.4	5.8
9	1.3	0	–	0	–	0	–	0	–	0	–	1.3
10	3.1	1	0.8	3	31.4	0	–	0	–	4	32.2	35.3
11	1.6	1	1.5	5	15.2	0	–	0	–	6	16.7	18.3
12	3.7	0	–	0	–	0	–	0	–	0	–	3.7
13	2.8	1	1.3	0	–	0	–	0	–	1	1.3	4.1
14	2.2	0	–	1	1.9	0	–	0	–	1	1.9	4.1
Totals	259.9	163	238.7	83	301.4	11	72.0	5	159.0	262	771.1	1031.0

Table 6.16

Jiyer Cave: K14, quartz artefacts

Spit	< 15mm		15-20mm		20-30mm		30-40mm		> 40mm		> 15mm		Total	
	no	gm	no	gm	no	gm	no	gm	no	gm	no	gm	no	gm
1	95	25.2	23	29.4	11	25.1	3	24.1	0	–	37	78.6	132	103.8
2/3	180	46.1	30	42.4	28	100.3	4	57.3	1	42.7	63	242.7	243	288.8
4	240	75.1	60	82.3	46	155.6	2	15.7	1	66.2	109	319.8	349	394.9
5	202	86.5	31	43.4	26	76.4	8	95.5	0	–	65	215.3	267	301.8
6	79	33.6	19	33.2	22	68.6	3	25.2	0	–	44	127.0	123	160.6
7	30	9.4	2	4.0	6	18.3	2	40.5	0	–	10	62.8	40	72.2
8	53	21.4	4	6.2	6	31.6	1	16.9	1	14.5	12	69.2	65	90.6
9	40	14.5	5	6.7	3	17.3	0	–	0	–	8	24.0	48	38.5
10	50	9.2	6	6.9	6	22.5	0	–	0	–	12	29.4	62	38.6
11	25	4.4	0	–	2	6.0	0	–	0	–	2	6.0	27	10.4
12	18	2.3	3	3.4	2	3.9	1	25.6	0	–	6	32.9	24	35.2
13	16	2.7	1	2.3	0	–	0	–	0	–	1	2.3	17	5.0
14	20	2.8	2	3.3	3	17.7	0	–	0	–	5	21.0	25	23.8
15	12	3.2	0	–	1	14.7	0	–	0	–	1	14.7	13	17.9
Totals	1060	336.4	186	263.5	162	558.0	24	300.8	3	123.4	375	1245.7	1435	1582.1

Table 6.17

Jiyer Cave: G12
Deposition rates for charcoal and quartz artefacts

Spit	Years	Charcoal gm/100yrs	Quartz gt 15 mm gm/100yr	#/100yr
1				
2/3	400	10.5	34.9	19.3
4/5	450	4.1	27.3	10.0
6	450	1.0	20.4	4.4
7	400	1.1	5.1	2.3
8	450	0.4	6.8	1.8
9	450	0.6	1.2	0.7
10	350	0.9	51.1	1.4
11	350	0.6	18.3	3.4
12	300	4.0	3.0	0.7
13	300	1.1	0.6	0.7
14	200	20.0	1.5	1.0
15	150	14.7	3.9	2.0
16	50	10.4	10.2	10.0
17	50	12.0	9.8	2.0
18	50	8.6	43.2	6.0
19	50	4.0	-	-
20	75	0.4	16.2	2.7
21	50	0.4	4.4	4.0
22	50	0.2	-	-
23	50	3.6	2.0	2.0
24	75	2.4	6.7	2.7
25	75	3.1	7.7	2.7
26	50	7.0	2.6	2.0
27	50	11.4	-	-
28	50	7.6	-	-
29	50	3.0	-	-
1-5	850	7.1	30.9	14.4
6-15	3500	2.7	11.7	1.9
16-29	800	4.2	7.4	2.4

Calculated from data in Tables 6.3 and 6.12, using the age-depth curve in Figure 6.7.

Table 6.18

Jiyer Cave: grindstones

Square	Spit	Depth (cm)	Cat. No.	Plan*	Raw Mat.	LxBxT (cm)	Wt (kg)	Description
D13	surf			e	m	33x22x3		pecked, concave
E9	surf			d	m	25x20x6		pecked
G11	surf			bi	m	37x25x7		pecked, concave
G11	surf			bii	m	40x28x10		pecked, concave
G11	surf			biii	m	38x25x9	13	
G11	7	34			m	35x32x13	20	pecked, smoothed, flat
G12	2	8	1008	c	m	39x31x8	16	pecked, concave
I17	surf			f	m	47x37x8		pecked
K14	4	17	646	h	m	35x27x7	10	pecked, flat
K14	13	62	811		b	8x7x8	0.8	red ochre in natural hollow
K15	surf			i	m			pecked, concave, ochre+charcoal
M7	surf			a	b	24x23x17		natural hollow, ?smoothed
M17	surf			g	m	43x30x9		pecked, concave
M18	surf			j	m			pecked, flat
M19	surf			k	m			pecked, flat

m = metamorphic
b = basalt

* location of surface grindstones marked in Figure 6.2
N.B. Locations of surface grindstones i, j and k recorded, but no measurements taken; few of the surface finds weighed.

Table 6.19

Jiyer Cave: whole pebbles, utilised and unmodified

Square	Spit	Cat. No.	Raw mat.	Wt. (gm)	Modification
G12	1	1005	m	782	
G12	1	1006	m	1165	pecked hollow on face
G12	6	1029	m	835	battered on face
G12	7	1034	m	741	battered on face and end
G12	8	1035	b	1032	
G12	10	1038	m	914	?resin/ochre residue
G12	10	1040	m	881	
G12	14	1049	b	1544	
G12	16	1050	b	768	
G12	16	1051	b	600	
G12	23	1053	m	1564	
G11	2	1060	m	378	
G11	10	1072	m	771	battered on end
G11	11	1074	m	686	battered on ends and edge
G11	11	1075	m	575	
G11	25	1079	m	204	
K14	3	631	m	1062	battered on ends
K14	4	1093	b	867	
K14	7	733	m	369	
K14	8	743	b	1970	smoothed
K14	9	764	b	43	
K14	10	773	m	218	
K14	10	775	m	634	
K14	10	2470	m	44	
K14	11	787	m	855	battered on end
K14	14	819	b	262	
K13	2	855	m	247	
K13	3	874	m	402	battered on face, ochre
K13	3	876	b	414	
K13	3	878	m	164	
K13	7	1092	b	904	battered on face
H18	1	1080	m	452	battered on face
H18	9	1082	b	1443	
H18	14	1083	b	743	striations on face
H19	2	1085	m	1171	smoothed
H19	4	1086	m	196	battered edges
H19	6	1091	m	166	
H19	7	1088	m	427	

m = metamorphic
b = basalt

Table 6.20

Jiyer Cave: broken pebbles, utilised and unmodified

Square	Spit	Cat. No.	Raw mat.	Wt. (gm)	Modification
G12	1	1003	m	662	smoothed
G12	1	1002	m	18	
G12	2	1009	m	162	
G12	4	1013	m	116	
G12	4	1015	m	81	
G12	5	1017	m	104	
G12	5	1024	m	63	
G12	5	1021/22	b	482	battered end?
G12	7	1094	m	34	
G12	7	1032	m	83	groove 2x1 cm on face
G12	7	1030/31	m	286	
G12	12	1044/45	m	632	
G12	24	1054	m	419	
G12	25	1096	m	32	
G11	3	1381	m	31	
G11	5	1064	m	458	
G11	15	1485	b	16	
K14	1	106	m	20	
K14	3	629	m	105	smoothed?
K14	3	2281	m	22	
K14	4	559	m	53	
K14	5	2399	b	9	smoothed?
K14	8	741	b	55	
K14	9	756	m	93	
K14	9	761	m	236	resin?
K14	9	759	m	128	
K14	10	2469	m	45	
K13	5	894	m	266	
K13	7	906	m	862	
H18	1	1554	m	52	
H18	3	1089	m	109	
H18	7	1917	m	32	
H18	7	1916	b	272	
H18	8	1921	m	13	
H18	15	1964	m	257	smoothed
H18	15	1961	m	42	
H18	15	1966	b	15	
H18	17	1970	m	92	smoothed
H18	17	1971	b	6	
H18	18	1976	m	7	
H19	1	1090	m	133	
H19	2	2059	m	47	
H19	5	1087	m	262	

m = metamorphic
b = basalt

Table 6.21

Jiyer Cave: ground and polished artefacts

Square	Spit	Cat. No.	Raw Mat.	Wt. gm	Comment
G11	14	1076	b	8.9	flake with bifacially ground edge
G11	17	1502	m	6.0	flaked piece with smooth ground area*
K14	1	115	b	10.3	flaked piece with smooth ground area*
K14	1	118	b	1.5	flaked piece with smooth ground area*
K14	5	703	b	404.0	natural piece with polished face and edges
G12	14	1310	m	16.9	flaked piece with smooth ground surface*

* these may be fragments from ground-edge axes or from pebbles with smoothing use-wear.

b = basalt, m = metamorphic

Table 6.22

Jiyer Cave: non-quartz flaked artefacts, retouched or used

Square	Spit	Cat. No.	Raw Mat.	L cm	B cm	T cm	Wt. gm	Description
H18	5	1889	b	59	55	22	72.7	flake, proximal fragment, lateral retouch
H19	1	1084	b	126	104	39	645.0	*pebble flake, unifacial retouch
G11	3	1062	b	105	62	25	165.0	natural slab, bifacially flaked edge
G11	6	1066	b	141	79	49	510.0	natural slab, bifacially flaked edge
G12	10	1292	m	89	62	21	123.0	cortical flake, lateral retouch
G12	12	1046	b	118	113	68	886.0	*piece of columnar basalt, bifacially flaked edge
G12	12	1047	b	67	39	25	68.5	flake, retouch
G12	16	1318	b	77	55	29	121.0	flaked piece, retouch
G12	16	1321	b	46	42	16	31.6	flake, retouch
G12	22	1095	b	104	100	38	506.0	flat pebble, weathered, bifacially flaked edge
K14	1	58	b	108	90	42	456.0	*flake, unifacial retouch
K14	5	692	b	118	75	41	371.0	*flaked piece, unifacial retouch
K14	7	729	m	100	62	31	216.0	flake, distal retouch
K13	3	883	b	83	48	13	61.0	flaked piece, retouch

b = basalt, m = metamorphic

* illustrated in Plates 6.20 to 6.23.

Table 6.23

Jiyer Cave: non-quartz flaked artefacts, not retouched or used

	Spit	No.	Wt.(gm)
G11S	1	-	-
	2	1	8.6
	3	3	2.7
	4	-	-
	5	1	6.7
	6	3	6.8
	7	1	6.8
	8	-	-
	9	8	121.1
	10	-	-
	11	7	17.3
	12	3	74.4
	13	2	17.9
	14	5	31.7
	15	3	8.6
	16	3	145.2
	17	4	17.4
	18	-	-
	19	2	22.4
	20	-	-
	21	1	0.8
	22 to 26	-	-
G12	1	2	1.7
	2/3	2	29.5
	4/5	2	314.3
	6	2	71.9
	7	1	1394.0
	8	2	19.4
	9	1	1.5
	10	4	48.5
	11	-	-
	12	1	74.2
	13	3	66.1
	14	3	6.5
	15	3	8.6
	16	5	117.2
	17	2	14.5
	18	4	49.5
	19	3	21.0
	20 to 32	-	-
H19N	1	4	181.5
	2	3	12.2
	3	1	3.8
	4	4	21.5
	5	2	36.1
	6	2	5.3
	7 to 13	-	-
	14	1	39.0
H18	1	7	154.3
	2	-	-
	3	1	1.4
	4	-	-
	5	-	-
	6	2	73.7
	7	-	-
	8	1	39.0
	9	2	39.7
	10	-	-
	11	-	-
	12	-	-
	13	1	41.1
	14	-	-
	15	1	25.1
	16	-	-
	17	-	-
	18	2	56.1
K14	1	2	20.7
	2/3	2	2.9
	4	3	148.4
	5	-	-
	6	-	-
	7	-	-
	8	2	12.7
	9	-	-
	10	-	-
	11	-	-
	12	-	-
	13	1	12.3
	14	-	-
	15	-	-
K13S	1	-	-
	2/3	-	-
	4	1	75.2
	5 to 8	-	-

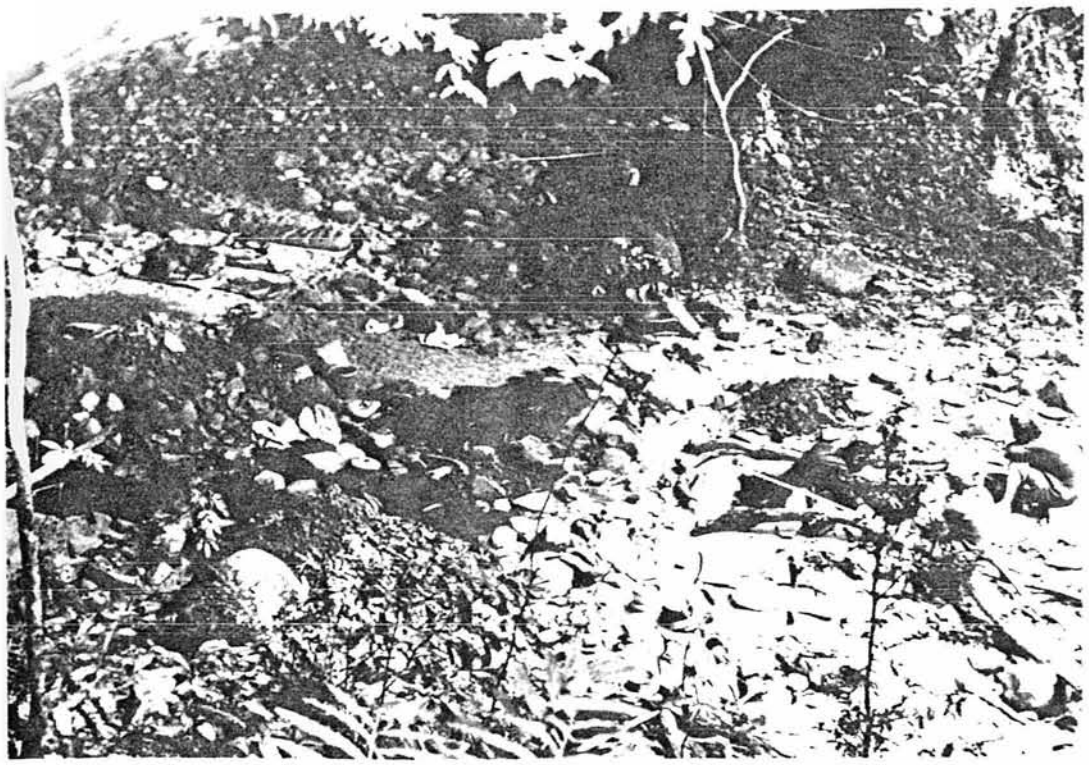


Plate 6.1. Jiyer Cave: squares G12+G11 on left, squares H18+H19 on right. Damp area in centre is produced by the inner dripline.

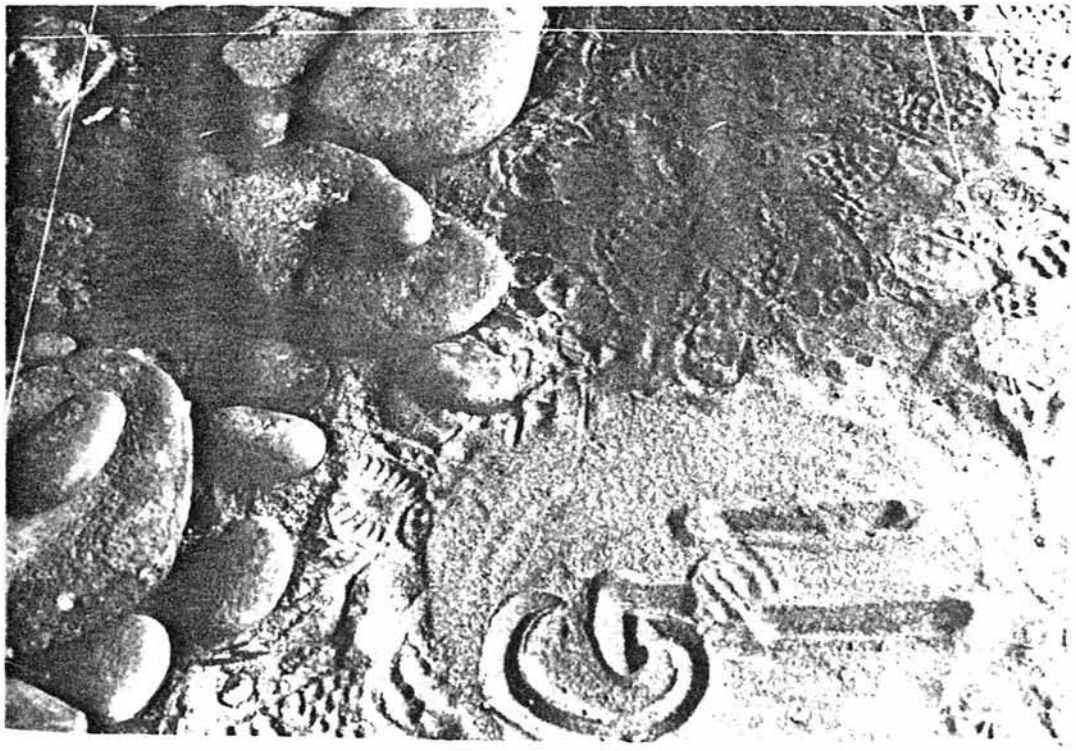


Plate 6.2. Jiyer Cave: square G11 with grindstones (front to rear bi, bii, biii) and pebble topstones.

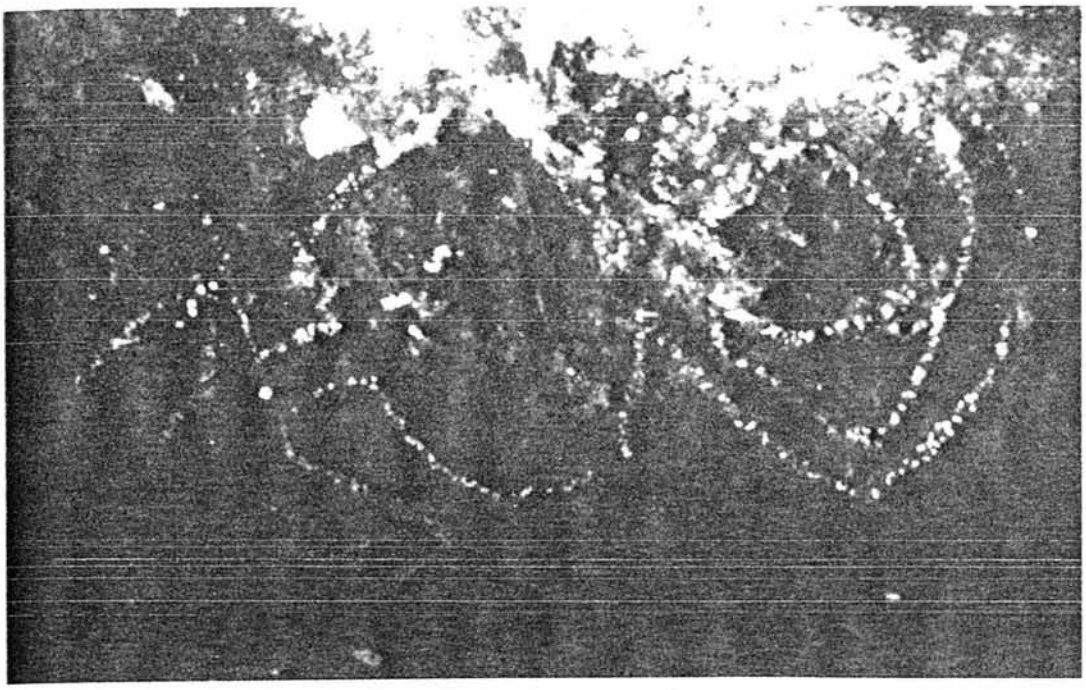


Plate 6.3. Jiyer Cave: painting of anthropomorphic figure (IV in Figure 6.3). Approx. 68 x 33 cm.

Plate 6.4. Jiyer Cave: painting (III in Figure 6.3). Approx. 37 x 28 cm. Note additional motifs at top of photo, not apparent on visual inspection.

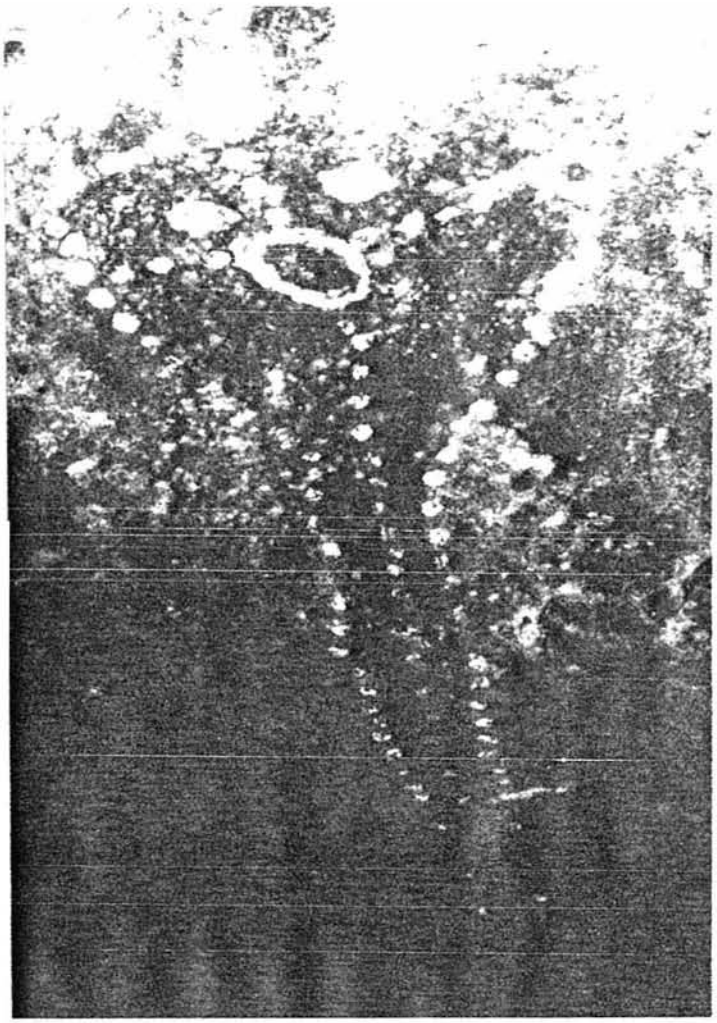


Plate 6.5. Jiyer Cave: painting (I in Figure 6.3). Approx. 95 x 27 cm.

Plate 6.6 (below). Jiyer Cave: pecked grindstone with surface deposit of red ochre and charcoal, found inverted on surface of site. Scale marked in 5 cm intervals.

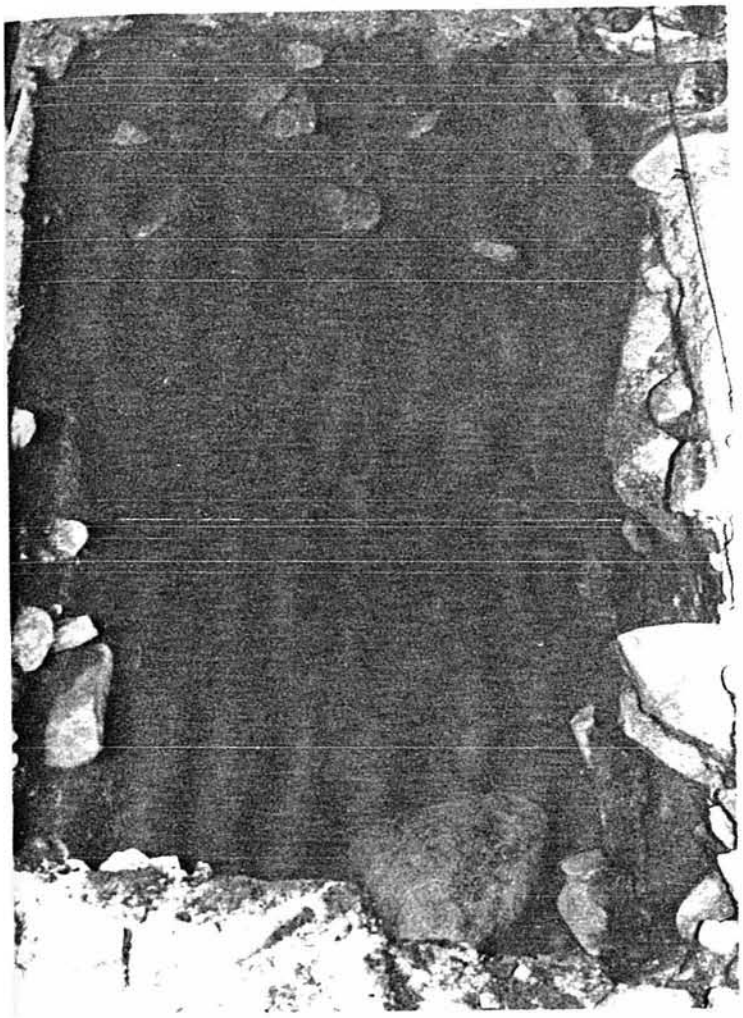


Plate 6.7. Jiyer Cave: south wall of square G12. Note charcoal lenses & step of G11 in foreground.

Plate 6.8. Jiyer Cave: north and east walls of squares H18+H19.

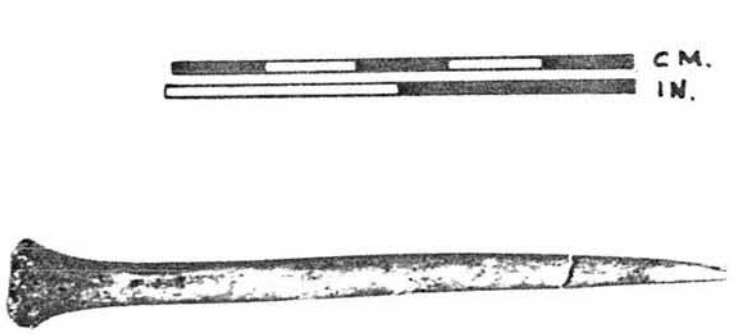


Plate 6.9. Jiyer Cave: bone point from square K14 spit 4.

Plate 6.10. Jiyer Cave: shell ring from square G11 spit 2. Possibly a stage in fishhook manufacture.

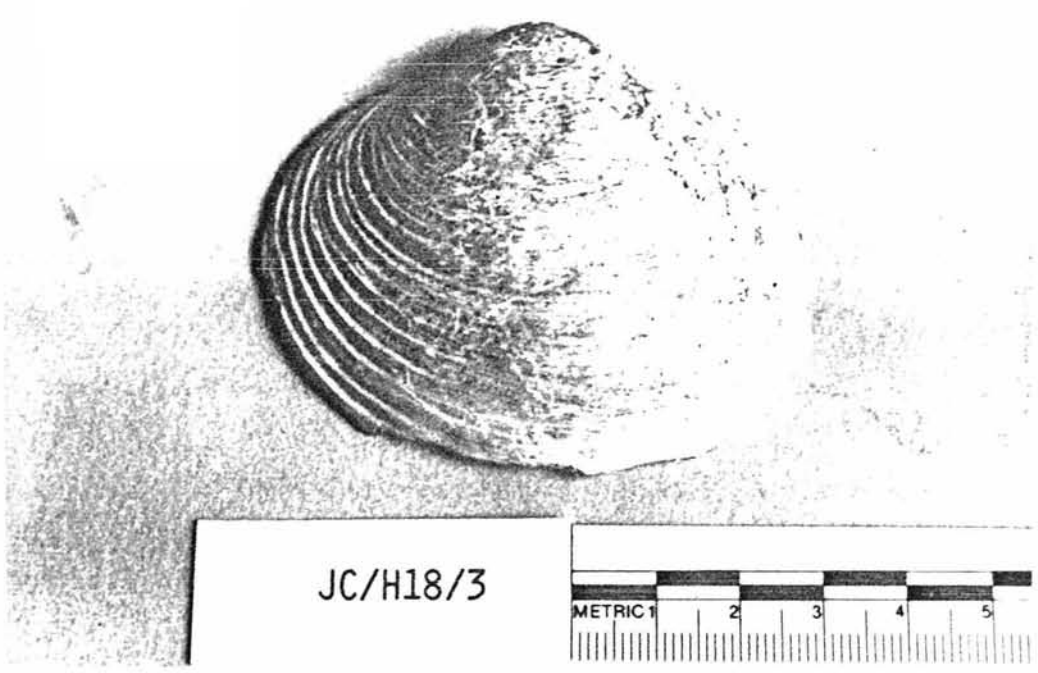


Plate 6.11. Jiyer Cave: shell scraper from square H18 spit 3.

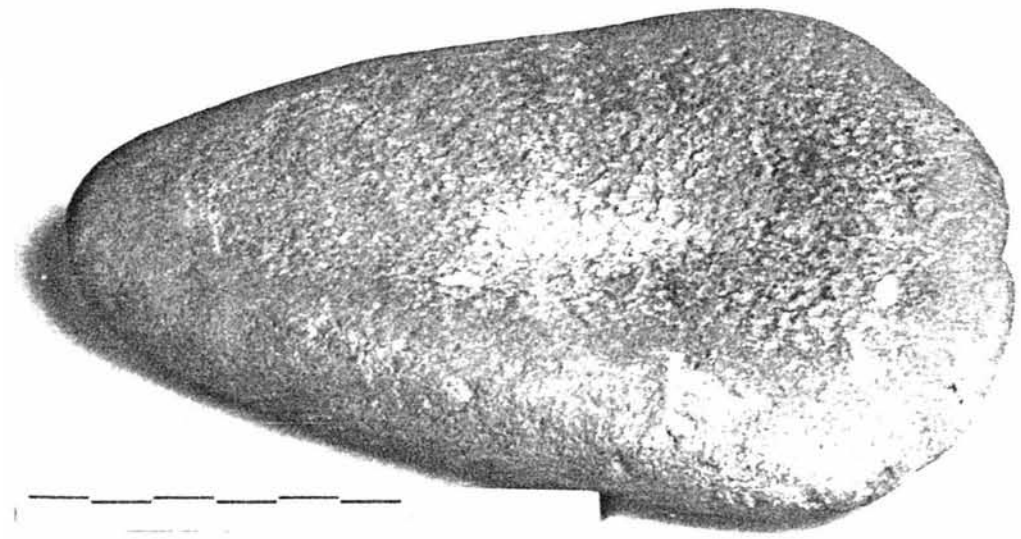


Plate 6.12. Jiyer Cave: pecked grindstone from square G12 spit 2.

Plate 6.13. Jiyer Cave: a naturally concave piece of basalt containing a red ochre deposit, from square K14 spit 13.

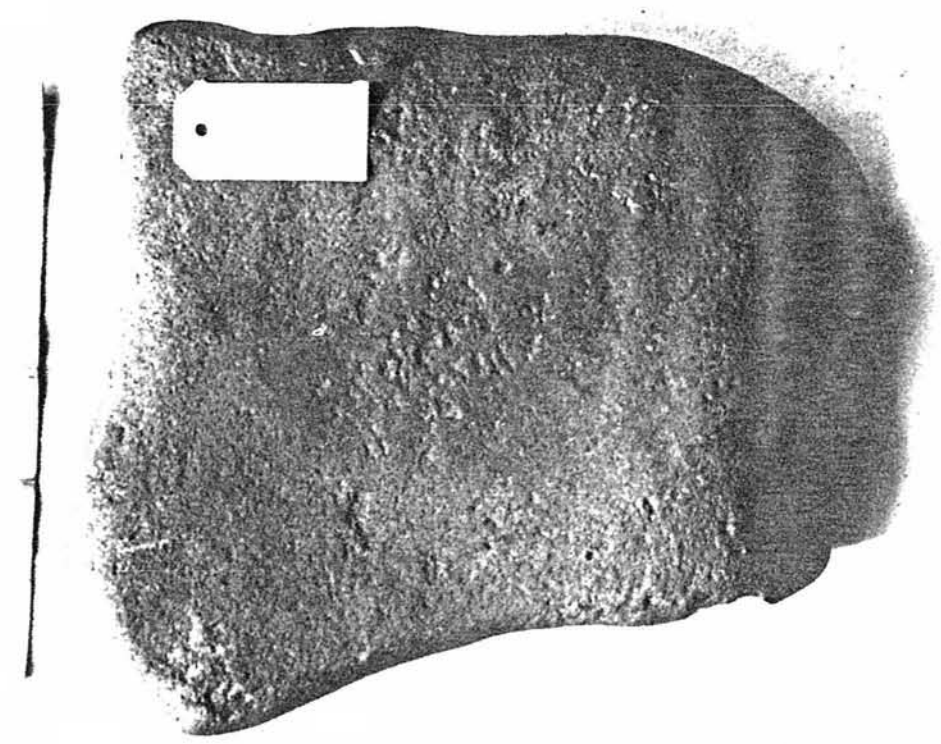


Plate 6.14. Jiyer Cave: probable grindstone/anvil with pecking and smoothing on flat surface, from square G11 spit 7. Scale in 5 cm divisions. (not collected, left at site in backfill)

Plate 6.15. Jiyer Cave: broken pebble with pecked area, possibly from use as an anvil, from square H18 spit 2.

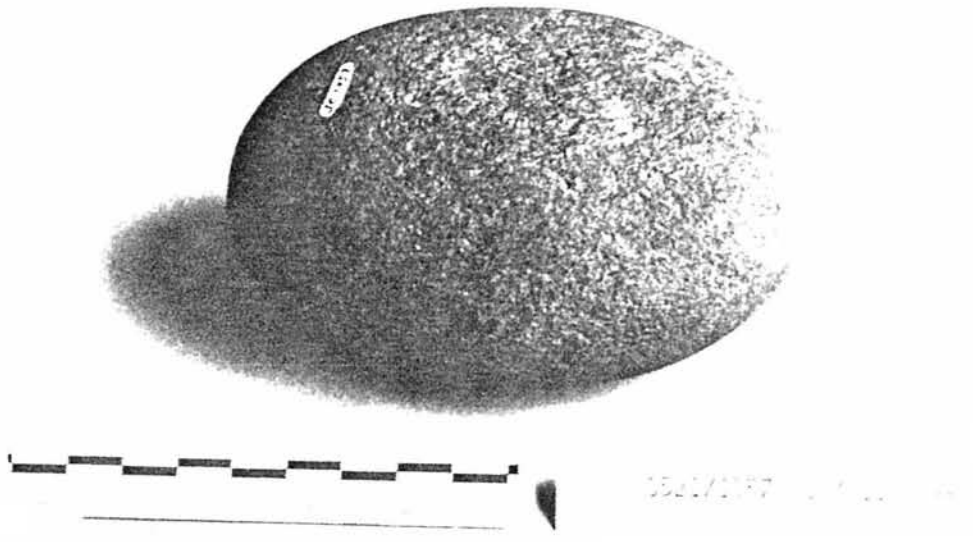


Plate 6.16. Jiyer Cave: pebble artefact with smoothed area (centre front) possibly from grinding use, from square G11 surface.

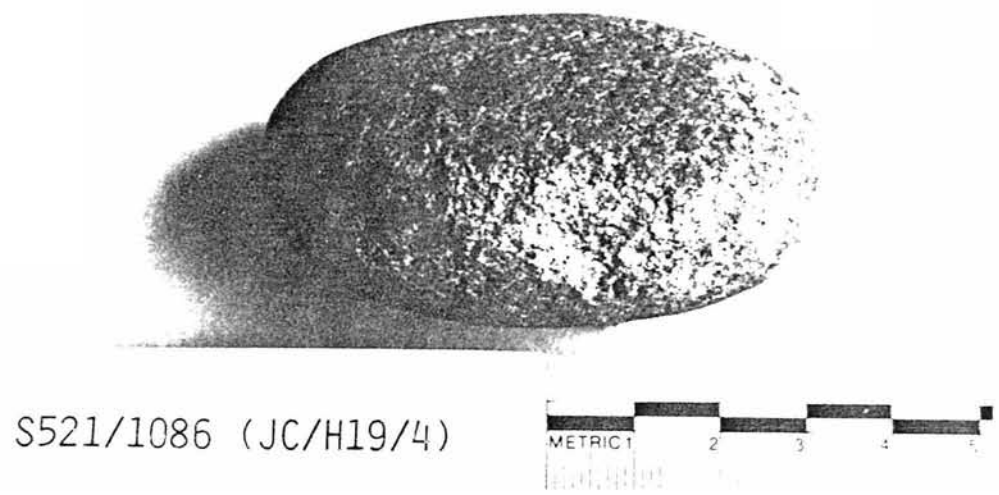


Plate 6.17. Jiyer Cave: pebble with battered end and edges, from square H19 spit 4.

Plate 6.18. Jiyer Cave: pebble with pecked or battered areas possibly from use as a hammerstone, from square G12 spit 7.

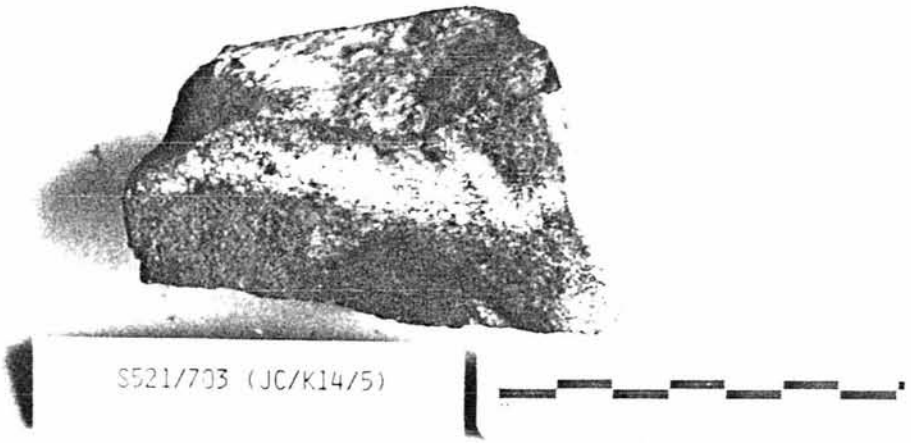


Plate 6.19. Jiyer Cave: a natural piece of basalt with polished faces and a facetted edge, from square K14 spit 5.

Plate 6.20. Jiyer Cave: a flaked piece of basalt from square K14 spit 5. The edge is predominantly unifacial.

Plate 6.21. Jiyer Cave: steeply retouched basalt flake or flaked piece with crushing (at left) possibly from use, from square K14 spit 1.

Plate 6.22. Jiyer Cave: unifacially retouched pebble flake from square H19 spit 1.

Plate 6.23. Jiyer Cave: a piece of columnar basalt with bifacial flaking at one end, from square G12 spit 12.

Plate 6.24. Jiyer Cave: pieces of ochre with ground faces, from square H19 spit 5 (left, red) and square G12 spit 28 (right, yellow).

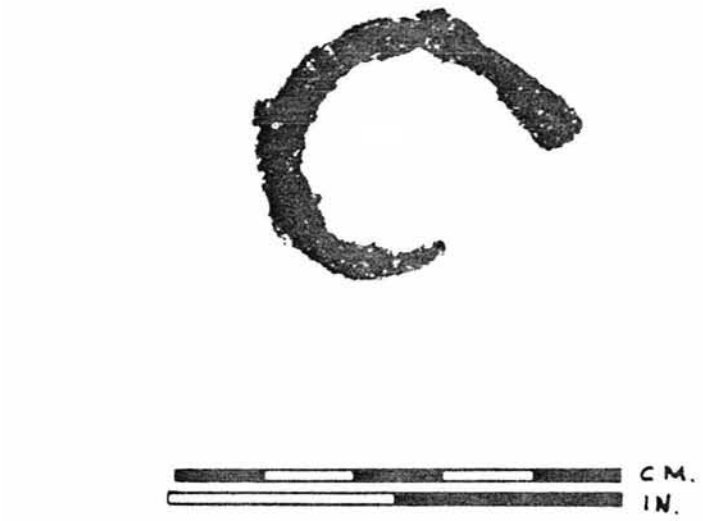


Plate 6.25. Jiyer Cave: fishhook made from a bent nail, from square K13 spit 3.

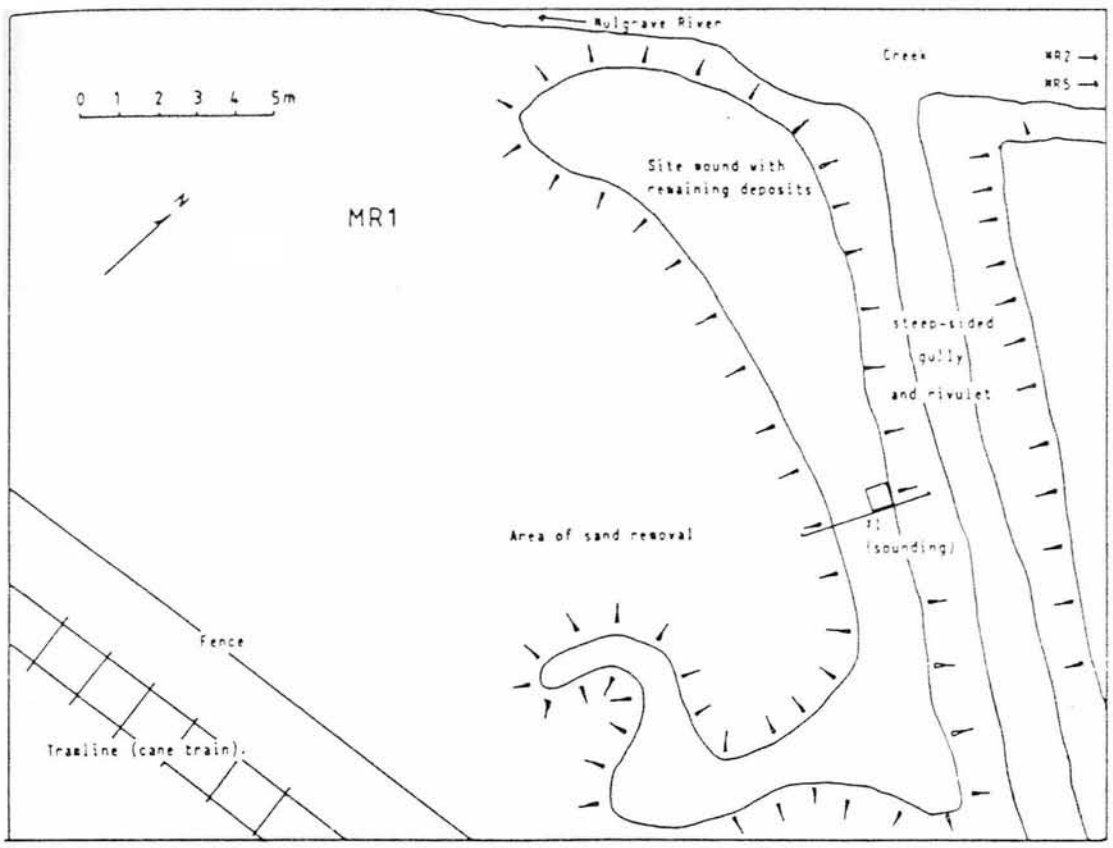


Figure 7.1. Mulgrave River Site 1 (MR1): plan of site.

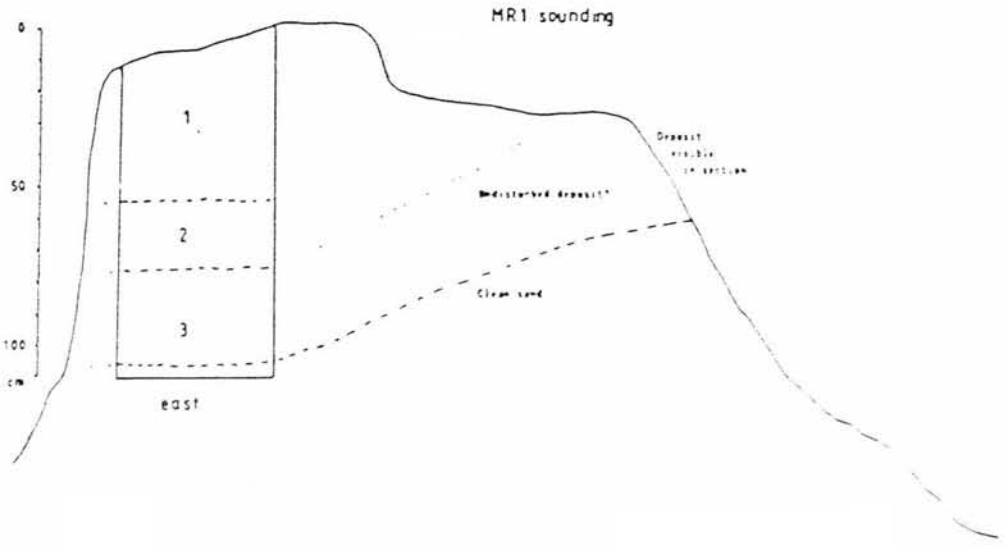


Figure 7.2. MR1: eastern section of sounding (X1)

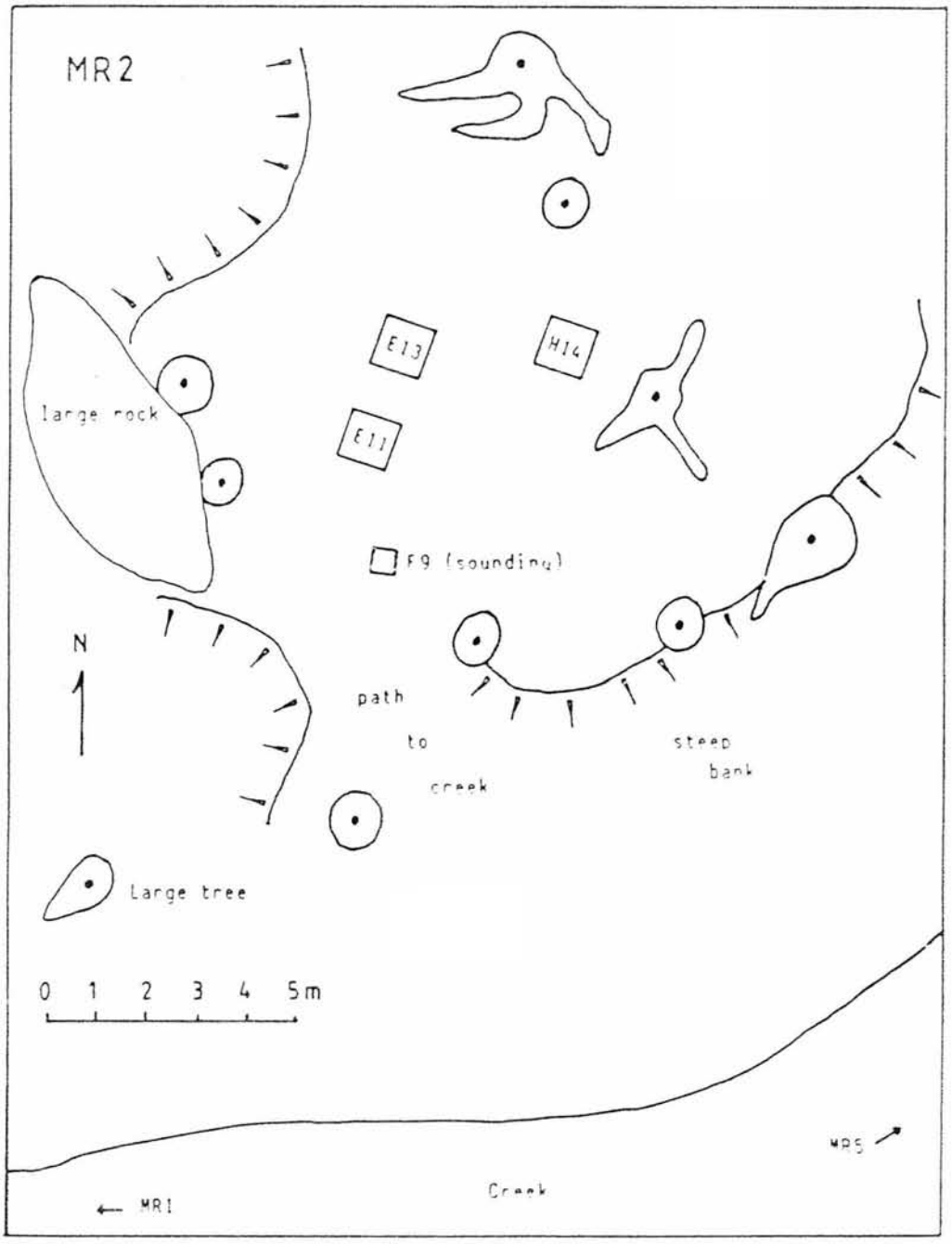


Figure 7.3. Mulgrave River 2 (MR2): plan of site.

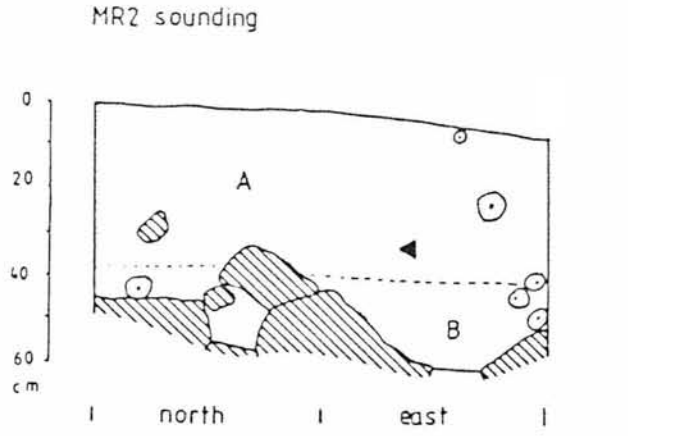


Figure 7.4. MR2: northern and eastern sections of sounding F9.

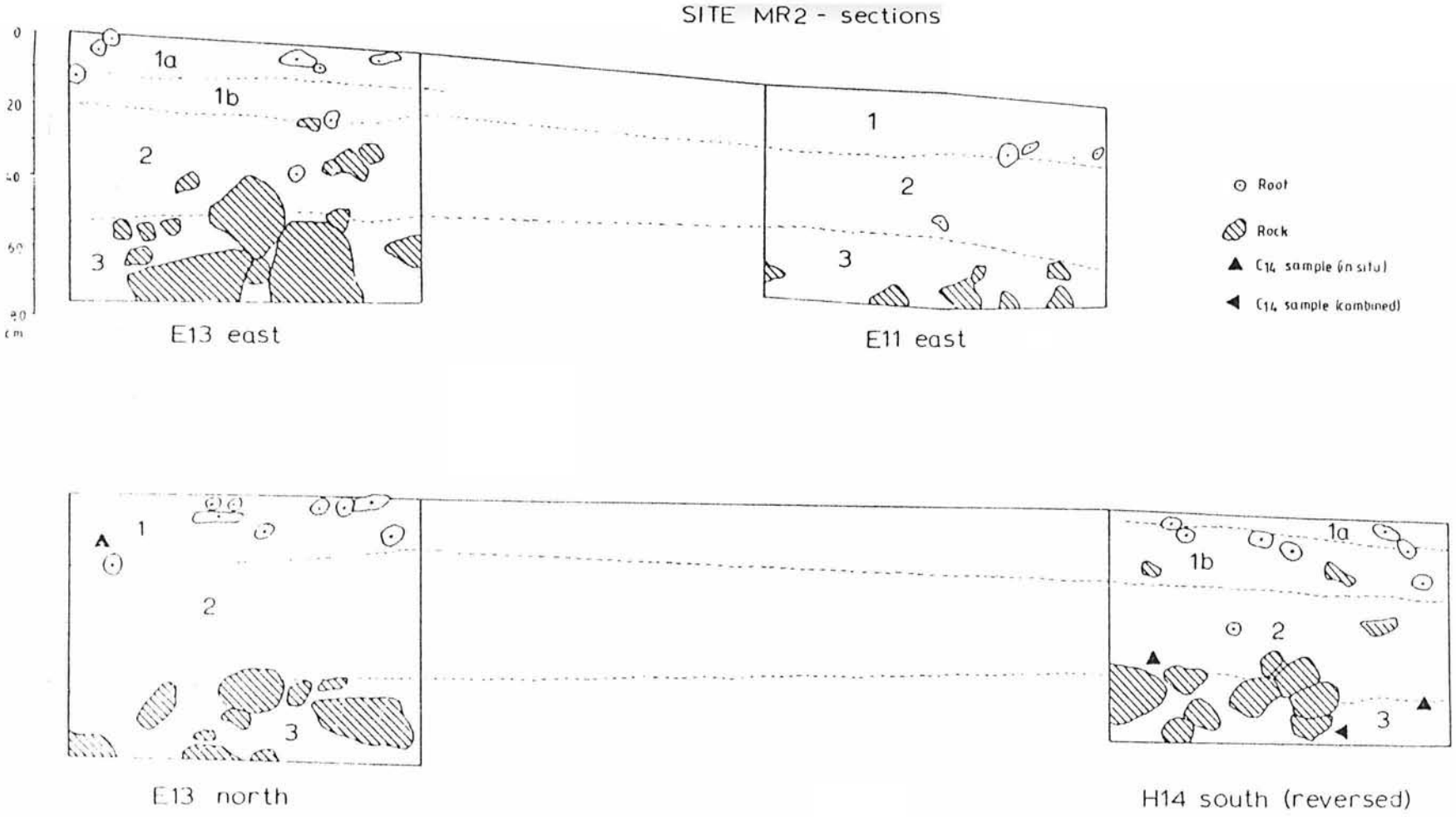


Figure 7.5. MR2: eastern and southern sections of main excavations (E11, E13, H14).

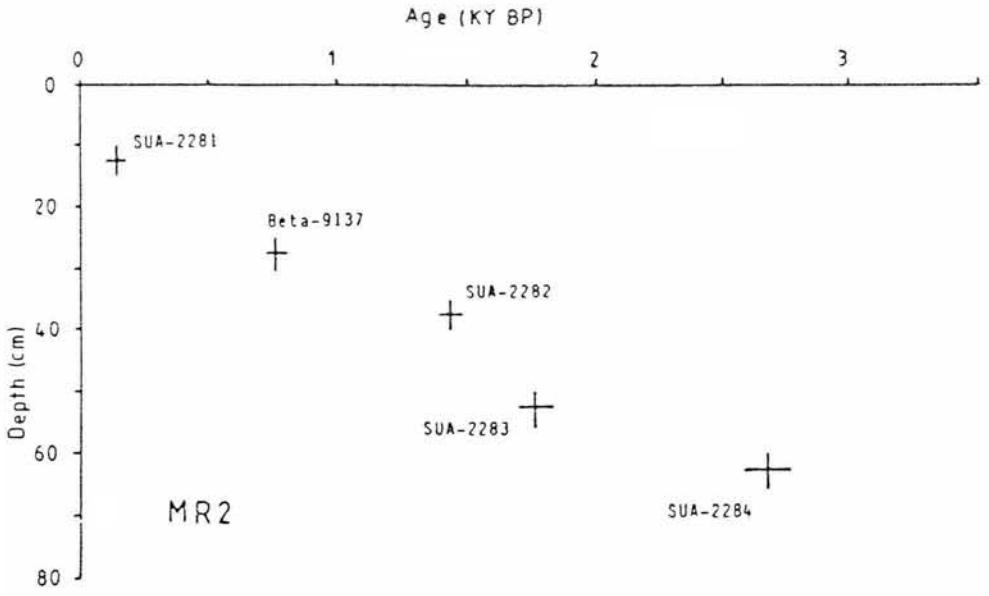


Figure 7.6. MR2: radiocarbon ages against depth.

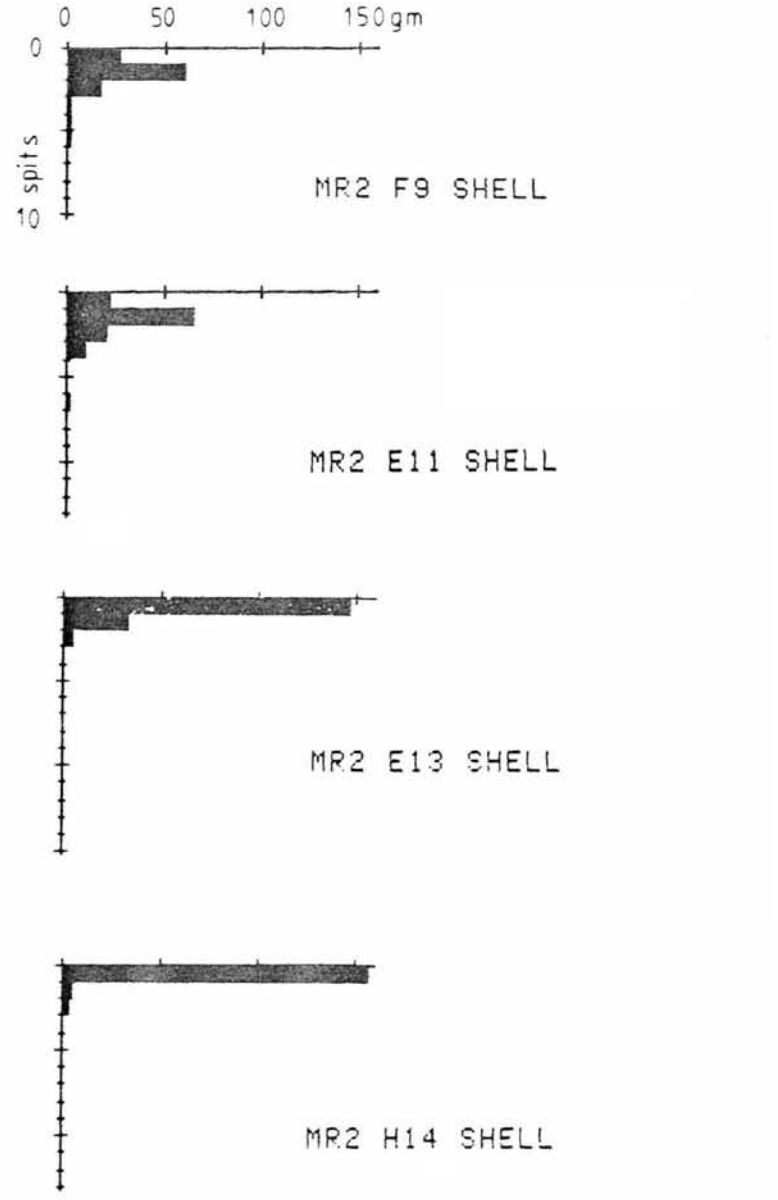


Figure 7.7. MR2: vertical distribution of shell by weight.

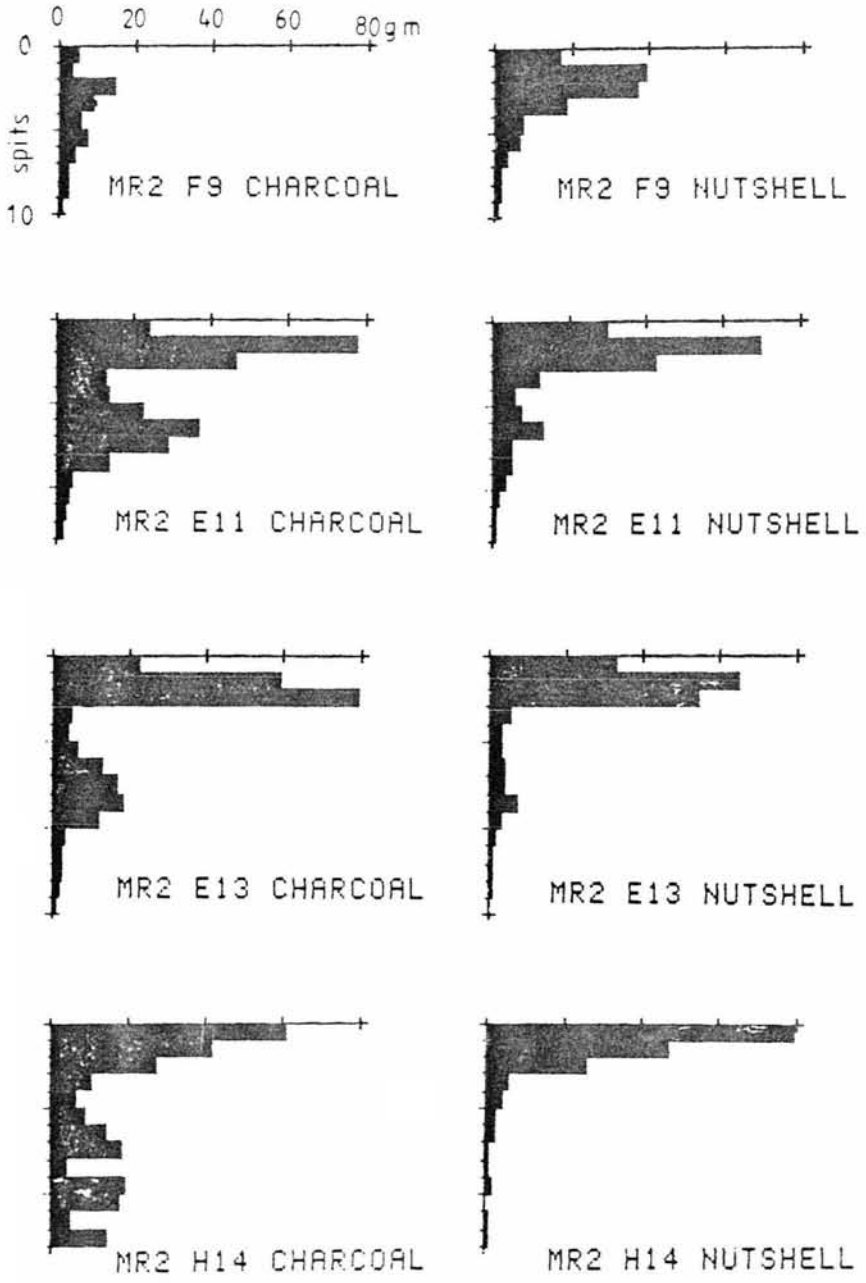


Figure 7.8. MR2: vertical distribution of charcoal and nutshells by weight.

Figure 7.9. MR2: vertical distribution of quartz artefacts by numbers.

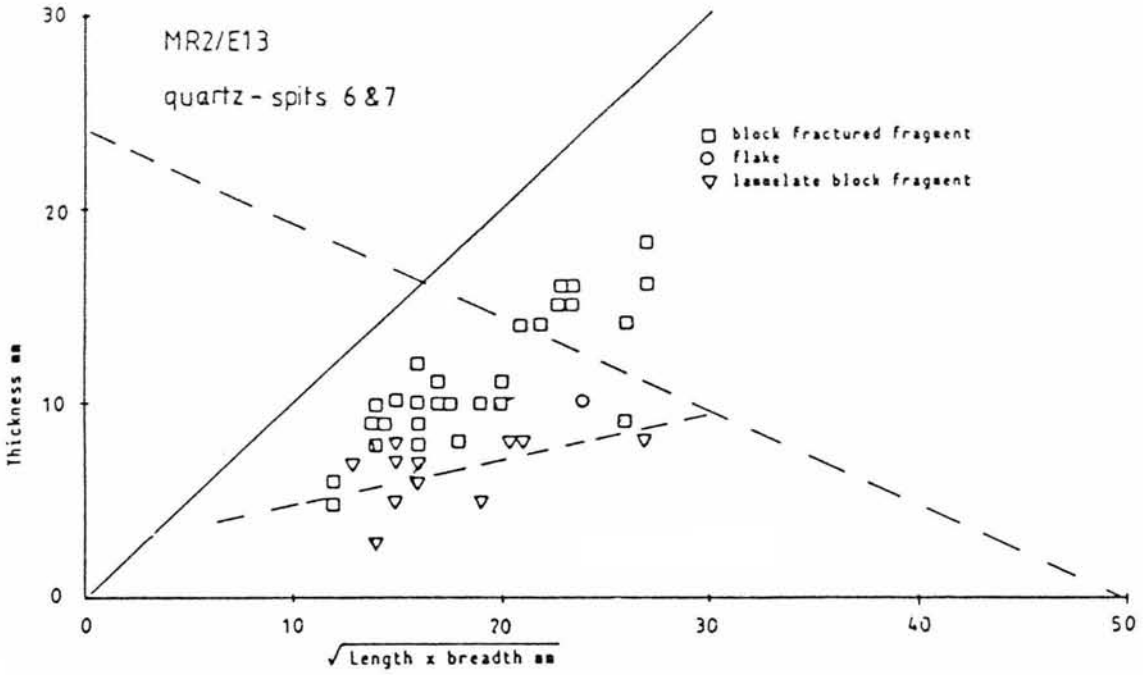


Figure 7.10. MR2: reduction chart for quartz artefacts from square E13 spits 6 & 7. Lammelates 28% of total number.

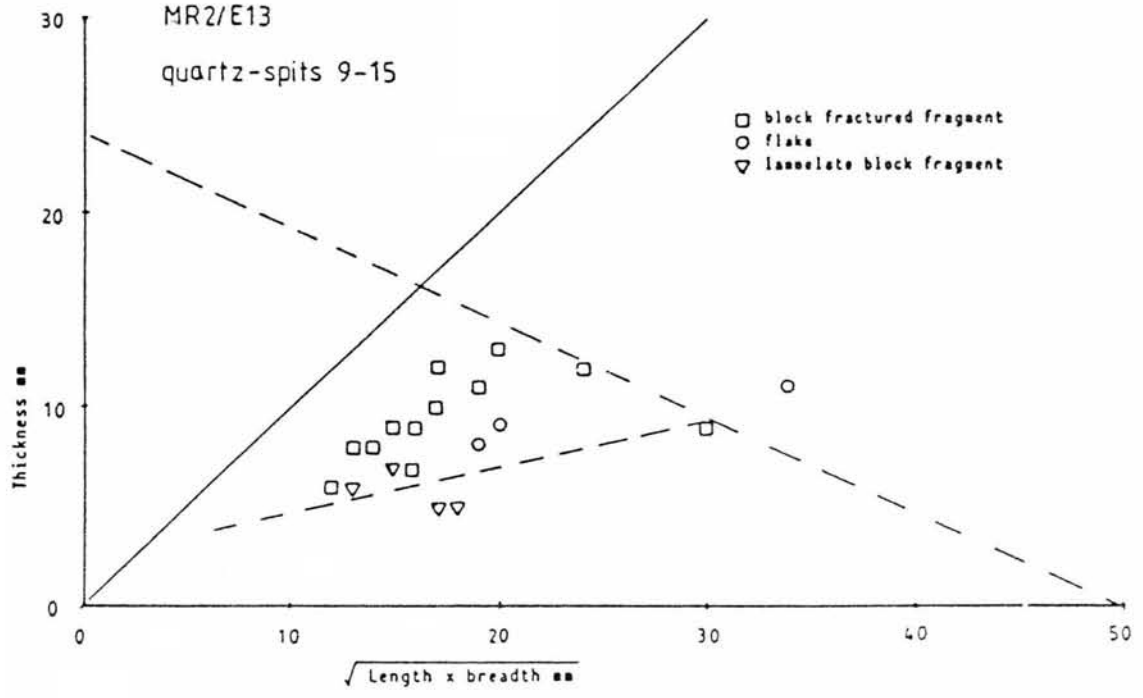


Figure 7.11. MR2: reduction chart for quartz artefacts from square E13 spits 9 - 15. Lammelates 22% of total number.

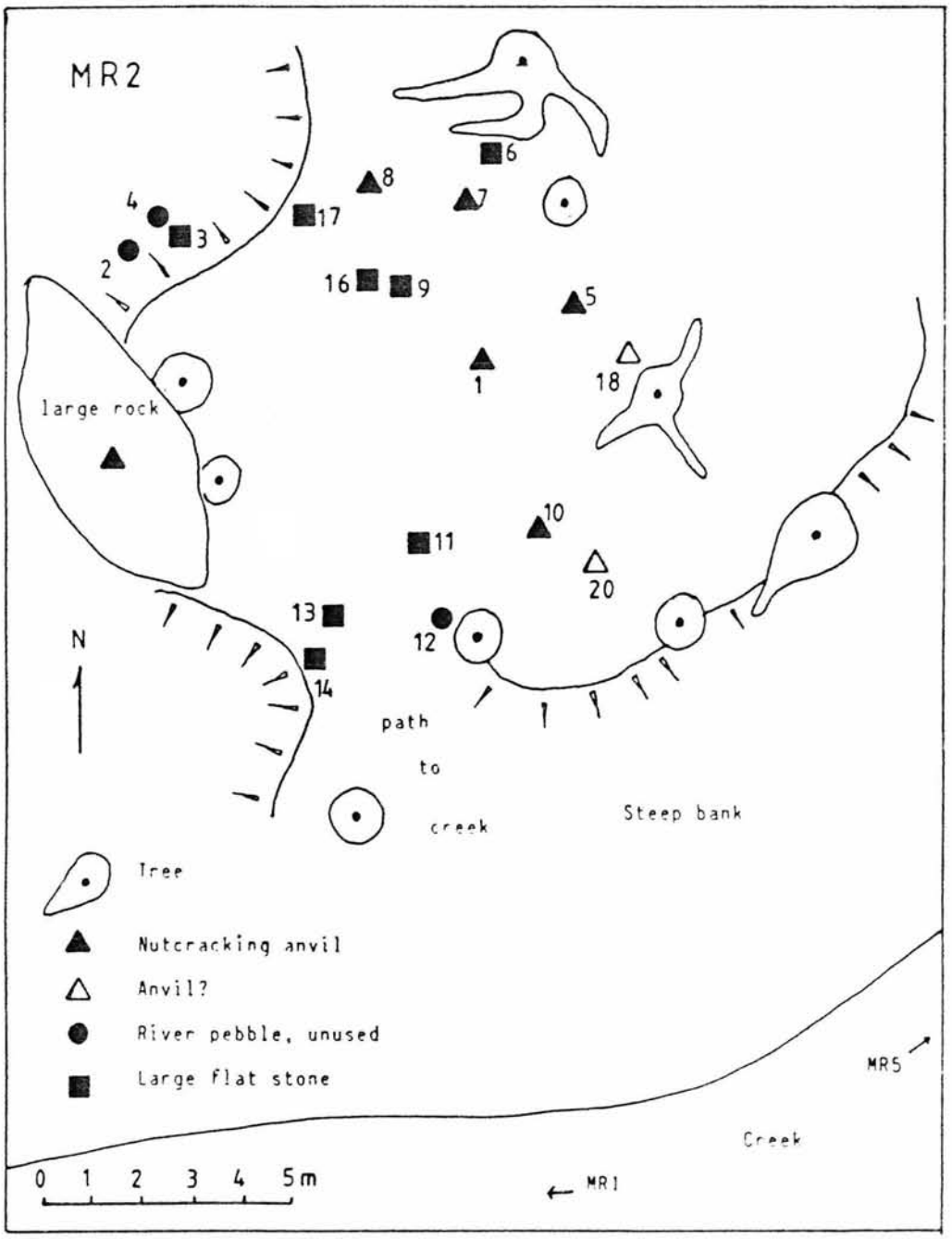


Figure 7.12. MR2: plan of site showing location of surface implements and possible artefacts.

Table 7.1

Some plant species noted
near the Mulgrave River archaeological sites
and their Aboriginal uses

Species	Uses*
Calamus sp.	food, technology
Elaeocarpus bancroftii	food
Elaeocarpus grandis	food
Entada phaseoloides	food, fish poison
Faradaya splendida	fish poison
Lepidozamia hopei	food
Licuala ramsayii	food
Mangifera indica	food
Rubus moluccanus	food
Syzygium kuranda	food

* Uses as given in Tables 3.5 and 3.6. Note that M. indica (mango) is an introduced plant. R. moluccanus is not listed in Table 3.5, but all native raspberries are edible and were probably utilised.

N.B. This is by no means a comprehensive list for the locality, even of species utilised by Aborigines.

Table 7.2

Radiocarbon ages for Mulgrave River sites

	Sample No.	Years BP	Square/spit	Depth(cm)	Material
MR1	SUA-2285	240 ± 60	X1/10	51-56	charcoal
	SUA-2286	Modern	X1/14-15	71-81	charcoal
MR2	Beta-9137	780 ± 50	F9/6	25-30	charcoal
	SUA-2281	140 ± 60	E13/3	12	charcoal
	SUA-2282	1440 ± 50	H14/8	36	charcoal
	SUA-2283	1770 ± 70	H14/11	48-50	charcoal
	SUA-2284	2690 ± 100	H14/13	60-65	charcoal

Table 7.3

Plant remains from Mulgrave River excavation sites

Species identified at MR1:

Aleurites moluccana
Elaeocarpus bancroftii
Endiandra palmerstonii?

Species identified at MR2:

	(lowest occurrence)	
Beilschmiedia bancroftii	F9/6?	E11/11
Elaeocarpus bancroftii	F9/9	E11/10
Endiandra palmerstonii?	F9/8?	E11/13?
Endiandra pubens	F9/9?	E11/8
Omphalea queenslandiae		E11/2

Cryptocarya globella)
Macadamia whelanii) surface layer only
Syzygium kuranda)

N.B. All these remains were nutshell fragments, except for S. kuranda which is a thin-skinned fruit. Remains of the last (and possibly the other surface only finds, perhaps also O. queenslandiae) are probably post-occupation additions to the deposits, since most specimens were uncharred and unlikely to be preserved for more than a few years at most.

Table 7.4

MR2: F9, quantitative data

Spit	Shell gm	Charcoal gm	Nutshell gm	Quartz > 15 mm no	Quartz > 15 mm gm
1	25.9	4.7	16.2	-	-
2	60.3	2.8	39.0	-	-
3	17.5	13.8	36.8	3	4.4
4	1.0	8.4	17.8	1	1.0
5	0.4	5.6	6.9	1	2.0
6	0.1	7.0	6.4	1	6.7
7	-	3.4	2.5	-	-
8	-	2.1	1.5	-	-
9	-	1.8	1.2	3	6.5
10	-	0.4	0.1	1	3.6
Total	105.2	50.0	128.4	10	24.2

Table 7.5

MR2: E11, quantitative data

Spit	Total sediment kg	Coarse Rocks kg	Shell gm	Charcoal gm	Nutshell gm	Quartz > 15 mm no	Quartz > 15 mm gm	Ochre gm	Glass gm
1	36.8	0.3	21.3	24.0	29.1	-	-	1.3	1.7
2	51.7	1.3	64.2	77.0	69.0	1	4.8	3.9	2.4
3	57.9	2.6	19.8	46.0	42.4	8	39.2	2.7	0.9
4	55.1	4.7	9.3	12.2	12.0	4	9.3	1.2	-
5	63.9	8.2	-	13.2	5.0	8	163.2	1.4	-
6	70.0	6.9	-	22.1	6.6	13	43.9	1.0	-
7	76.1	4.9	0.3	36.6	12.1	27	61.7	6.3	-
8	70.0	3.7	-	28.7	4.6	22	72.0	12.9	-
9	64.8	0.7	-	13.6	4.6	9	78.4	8.6	-
10	65.2	1.0	-	4.0	3.0	4	9.1	0.1	-
11	61.1	3.6	-	3.2	1.1	-	-	2.4	-
12	54.5	10.6	-	1.8	0.8	2	6.4	-	-
13	58.8	7.7	-	1.4	0.6	1	3.0	4.0	-
Total	785.9	56.2	114.9	283.8	190.9	99	491.0	45.8	5.0

Table 7.6

MR2: E13, quantitative data

Spit	Total sediment kg	Coarse rocks kg	Shell gm	Charcoal gm	Nutshell gm	Quartz > 15 mm no	Quartz > 15 mm gm	Ochre gm	Glass gm	Metal gm
1	39.4	0.5	146.8	22.0	32.6			0.5	2.6	4.1
2	55.0	0.9	32.7	58.7	64.3			4.9	12.1	12.0
3	69.7	4.2	4.6	78.8	54.3			4.7	0.8	0.7
4	59.0	3.2		4.6	5.4	3	4.2	4.0	0.4	
5	71.8	2.8	0.1	4.0	2.6	3	5.4	3.9		
6	62.8	1.5		5.7	2.6	20	66.0	16.6		
7	60.1	3.8		12.5	4.0	19	58.4	3.0		
8	70.9	9.3		16.5	3.6	18	78.4	11.0		
9	70.6	4.3		18.2	6.6	10	33.5	4.5		
10	70.1	2.0		11.5	2.9	2	6.1	2.1		
11	60.3	2.5		3.0	1.1			2.8		
12	48.6	4.5		1.9	0.7	3	5.5	10.9		
13	61.3	10.5		1.7	0.3	1	1.3	1.2		
14	69.2	10.9		1.6	0.5	1	1.5	0.8		
15	60.1	4.9		0.7		2	2.7	0.2		
Total	928.9	65.8	184.2	241.4	181.5	82	263.0	71.1	15.9	16.8

Table 7.7

MR2: H14, quantitative data

Spit	Total sediment kg	Coarse rocks kg	Shell gm	Charcoal gm	Nutshell gm	Quartz > 15 mm no	Quartz > 15 mm gm	Ochre gm	Glass gm
1	38.3	1.8	156.3	60.7	78.8			5.6	0.2
2	61.7	4.6	4.4	41.0	47.0			0.6	0.3
3	69.9	1.7	2.4	27.0	25.2	4	38.5	1.5	
4	63.0	1.4		10.0	4.9	3	5.5	3.5	
5	64.9	2.4		5.7	3.5	6	20.9	3.1	
6	59.9	1.2		8.6	2.4	4	52.9	3.4	
7	63.1	1.4		13.9	2.3	4	9.5	0.7	
8	60.4	4.7		18.0	0.6			3.9	
9	58.7	5.2		3.5	0.3	4	6.9		
10	65.5	10.4		18.7	1.0			0.1	
11	63.1	7.2		17.3		2	4.1		
12	59.4	9.5		4.4	0.3	2	29.0		
13	81.7	23.8		14.4	0.4	1	1.1		
Total	809.6	75:369	163.1	243.2	166.7	30	168.4	22.4	0.5

Table 7.8

MR2: size of quartz artefacts

Spit	< 15 mm		15-20 mm		20-30 mm		30-40 mm		> 40 mm	
	no.	gm	no.	gm	no.	gm	no.	gm	no.	gm
Square E11										
1	-	-	-	-	-	-	-	-	-	-
2	1	0.2	-	-	1	4.8	-	-	-	-
3	11	2.3	3	5.7	4	17.5	1	16.0	-	-
4	8	5.2	1	3.8	3	5.5	-	-	-	-
5	10	3.3	3	5.0	1	6.2	3	75.0	1	77.0
6	30	8.6	6	4.9	6	34.1	1	4.9	-	-
7	49	20.4	14	17.5	12	37.2	1	7.0	-	-
8	43	16.1	10	16.8	12	55.2	-	-	-	-
9	21	5.2	4	6.4	4	6.9	-	-	1	65.1
10	19	6.1	2	2.1	1	2.4	1	4.6	-	-
11	6	1.3	-	-	-	-	-	-	-	-
12	7	2.8	1	3.7	1	2.7	-	-	-	-
13	5	2.1	1	3.0	-	-	-	-	-	-
Square E13										
1	2	0.4	-	-	-	-	-	-	-	-
2	4	1.5	-	-	-	-	-	-	-	-
3	12	3.1	-	-	-	-	-	-	-	-
4	16	6.4	3	4.2	-	-	-	-	-	-
5	26	8.8	2	1.3	1	4.1	-	-	-	-
6	30	8.8	11	16.6	8	44.2	1	5.2	-	-
7	42	14.5	10	12.9	8	40.2	1	5.3	-	-
8	52	20.3	7	12.4	8	32.9	3	33.1	-	-
9	46	18.9	6	8.8	2	6.3	2	18.4	-	-
10	17	4.6	1	1.3	1	4.8	-	-	-	-
11	5	1.0	-	-	-	-	-	-	-	-
12	1	0.6	2	3.9	1	1.6	-	-	-	-
13	7	2.9	1	1.3	-	-	-	-	-	-
14	3	0.9	1	1.5	-	-	-	-	-	-
15	-	-	2	2.7	-	-	-	-	-	-
Square H14										
1	2	0.4	-	-	-	-	-	-	-	-
2	6	2.0	-	-	-	-	-	-	-	-
3	8	2.4	2	1.6	1	1.1	-	-	1	35.8
4	10	2.8	3	5.5	-	-	-	-	-	-
5	12	5.1	1	0.6	5	20.3	-	-	-	-
6	13	3.3	-	-	1	1.8	2	28.9	1	2.2
7	15	5.3	1	0.6	2	6.6	1	2.3	-	-
8	7	1.3	-	-	-	-	-	-	-	-
9	6	1.5	4	6.9	-	-	-	-	-	-
10	-	-	-	-	-	-	-	-	-	-
11	3	0.6	2	4.1	-	-	-	-	-	-
12	2	0.7	-	-	1	10.8	1	18.2	-	-
13	-	-	1	1.1	-	-	-	-	-	-

Table 7.9

MR2 excavations:
Stone artefacts and probable manuports, non-quartz

Square /spit	Depth (cm)	Inv. No.	Description	Raw material	Weight (gm)
F9/4	15-20	250	flaked piece	m	22
F9/6	25-30	251	broken pebble, weathered	g	251
F9/7	35-40	252	*smoothed pebble	g	337
F9/7	"	253	broken pebble, weathered	m	150
F9/7	"	254	large pebble	g	1317
F9/9	40-45	255	weathered flake	?m	123
E11/1	0-5	256	pebble	g	537
E11/4	15-20	257	*polisher with ground faces		96
E11/5	20-25	258	large flat rock	g	254
E11/8	35-40	259	pumice	p	6
E13/3	10-15	260	broken large pebble	g	450
E13/3	"	261	large flat pebble	g	1230
E13/4	15-20	262	*smoothed pebble, broken	g	179
E13/5	20-25	263	pebble	g	407
H14/2	5-10	264	pebble	g	248
H14/2	"	265	large flat slab	m	1595
H14/7	30-35	266	*large pebble with pecked area	g	1589

* = used artefact
g = granite, m = metamorphic rocks, p = pumice

Table 7.10

MR2: surface implements and possible artefacts

No.*	Description	L x B (cm)
1	granite cobble, 3 nutcracking hollows, one on each face	13 x 11
2	small pebble, unmodified	9 x 9
3	flat slatey rock, possible grindstone	18 x 11
4	granite cobble, unmodified	13 x 7
5	granite cobble, 2 nutcracking holes (face 1) + 1 (face 2)	23 x 15
6	large rock, flat surface, possible grindstone	43 x 34
7	large granite rock, 5 nutcracking hollows	36 x 17
8	large granite rock, 7 nutcracking hollows	30 x 29
9	large rock, flat surface, possible grindstone	43 x 27
10	granite slab, 4 nutcracking hollows	40 x 21
11	concave slab, possible grindstone	43 x 37
12	granite cobble, unmodified	29 x 20
13	granite slab, concave surface, possible grindstone	19 x 17
14	flat smooth stone, possible grindstone	15 x 12
16	concave slab, possible grindstone	49 x 29
17	large flat slab (granite?), possible grindstone	56 x 30
18	large flat slab, minor surface depressions, ?anvil	40 x 33
20	large concave slab, 1 shallow depression, ?anvil	49 x 24

* Number indicates position in Figure 7.9.

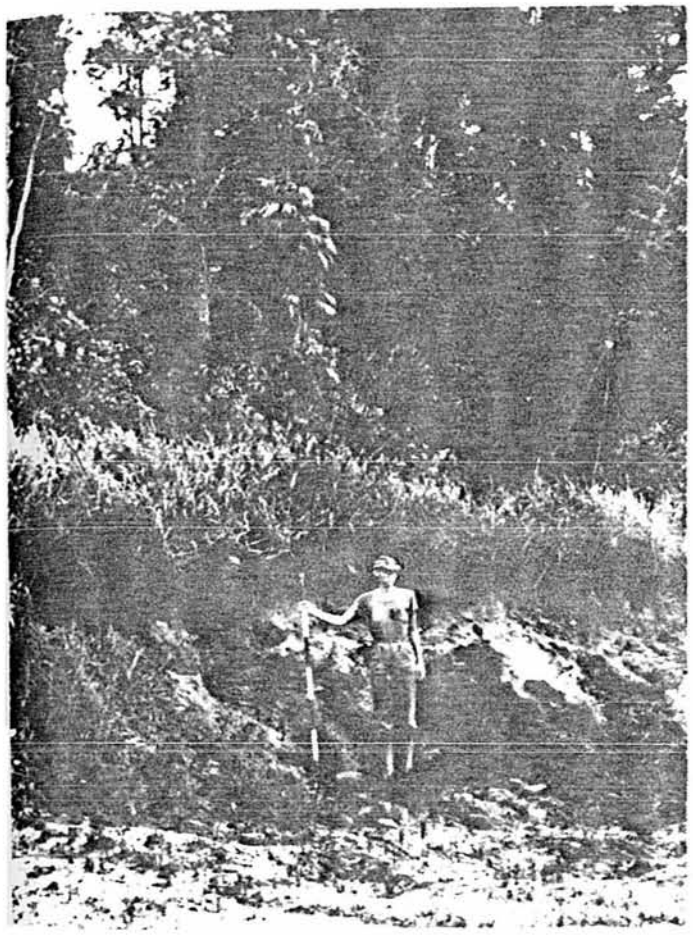


Plate 7.1. Mulgrave River 1: facing northeast from disturbed part of site.

Plate 7.2. Mulgrave River 2: looking north from creek. Track on left leads to site, which is level with the upper part of the tripod.

Plate 7.3. Mulgrave River 2: note numerous young saplings and surface litter. Camera faces south towards creek, square E13 in centre.

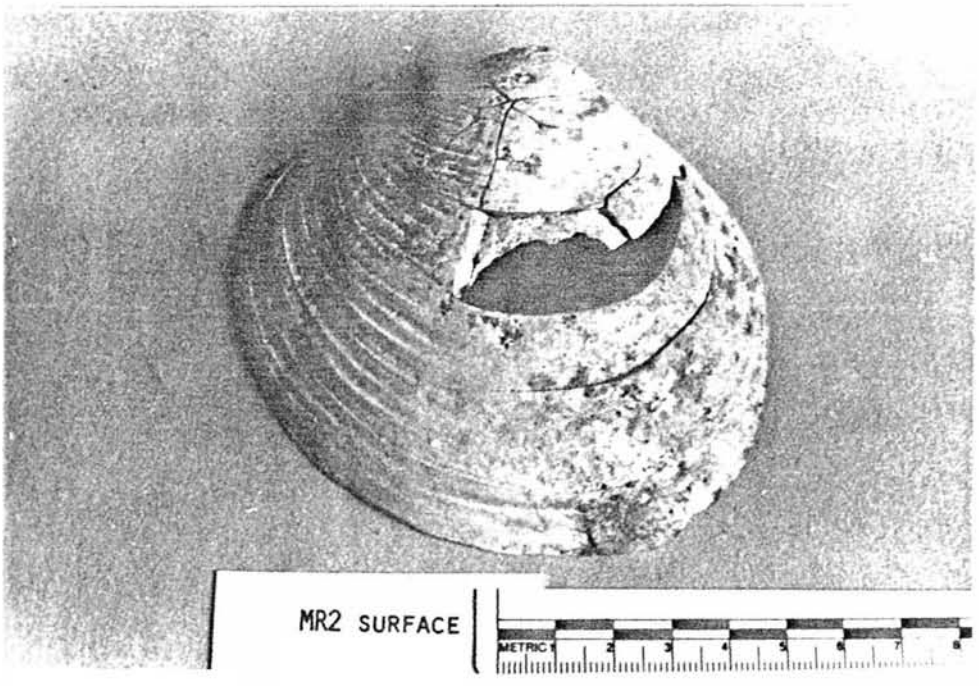


Plate 7.4. Mulgrave River 2: possible shell artefact, may have been used for slicing plant foods (see text).

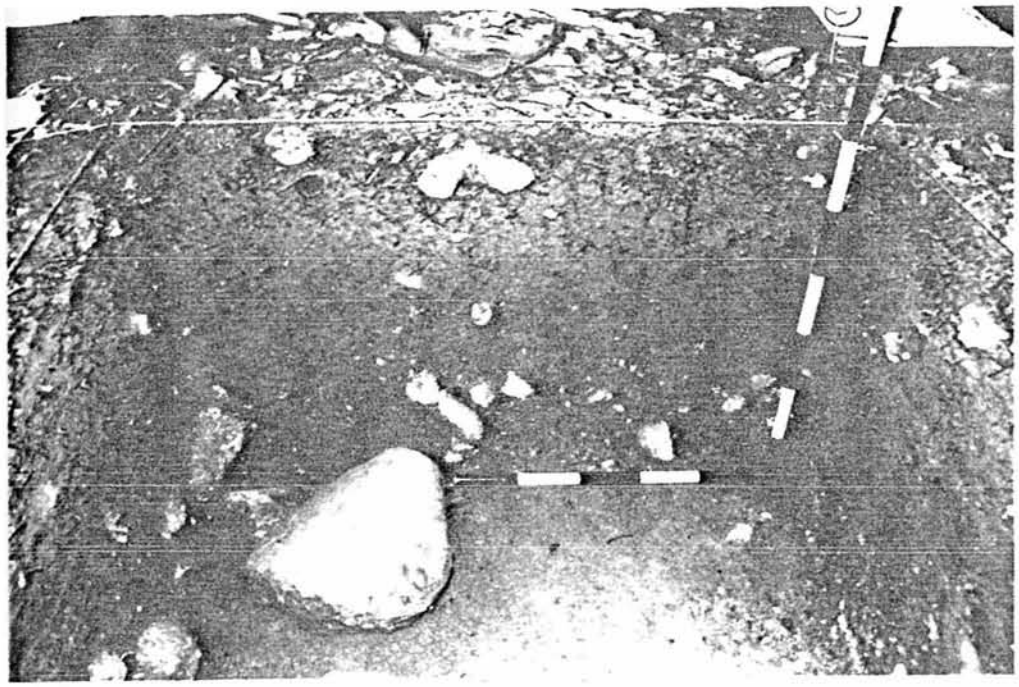


Plate 7.5. Mulgrave River 2: square H14 spit 12. Note gradual transition between layers.

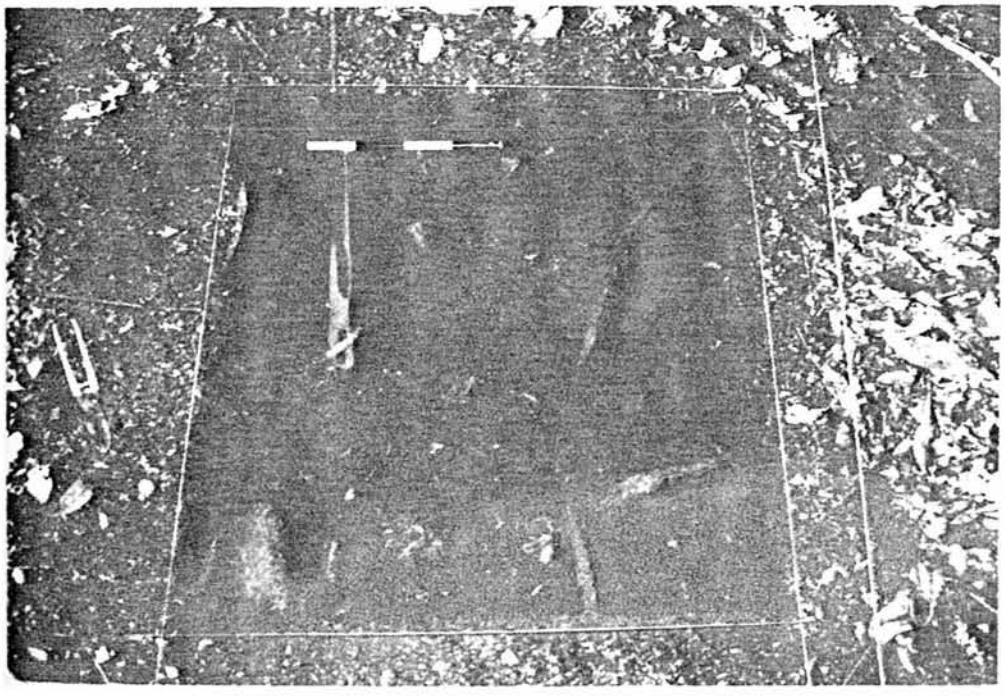


Plate 7.6. Mulgrave River 2: square E11 spit 4, showing roots in Layer 1.

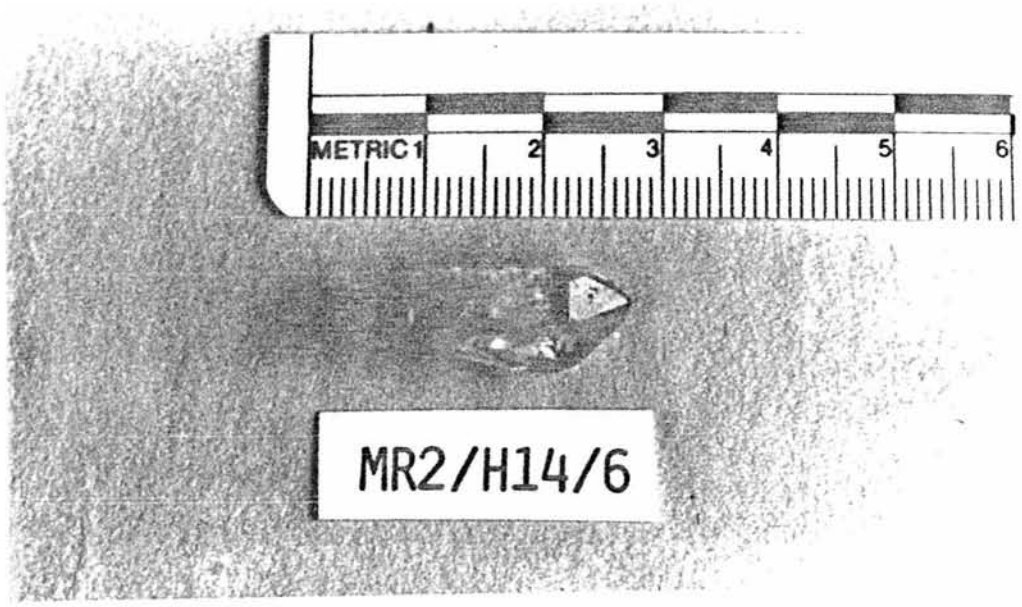


Plate 7.7. Mulgrave River 2: quartz crystal from square H14 spit 6.

Plate 7.8. Mulgrave River 2: 'polisher' with ground faces and edges, from square E11 spit 4.

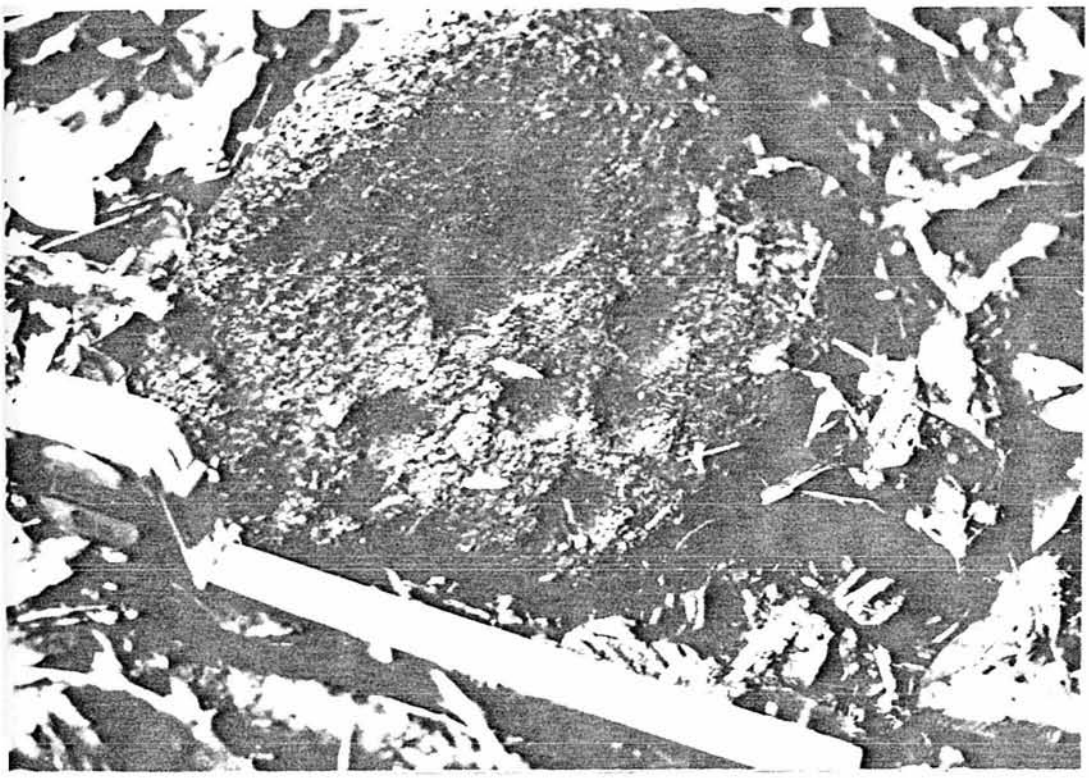


Plate 7.9. Mulgrave River 2: nutcracking anvil on surface of site (No.8 in Figure 7.12 and Table 7.10). Approx. 25 cm of scale showing.

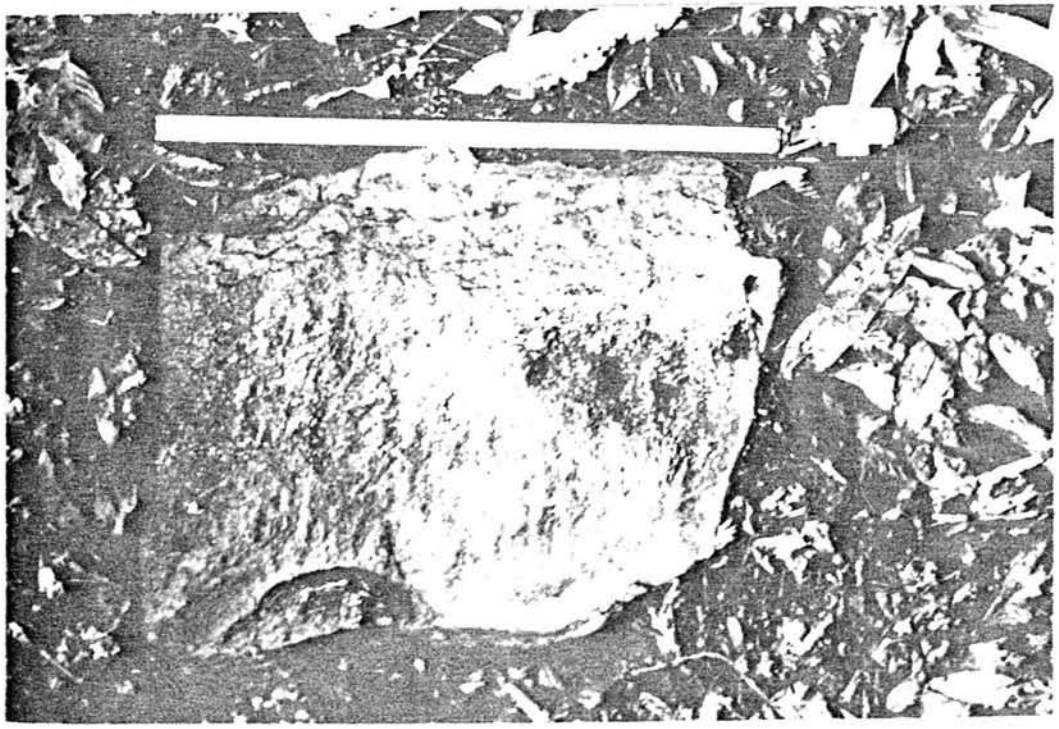


Plate 7.10. Mulgrave River 2: concave slab on surface of site (No.11 in Figure 7.12 and Table 7.10), possibly used as a grindstone. Approx. 40 cm of scale showing.

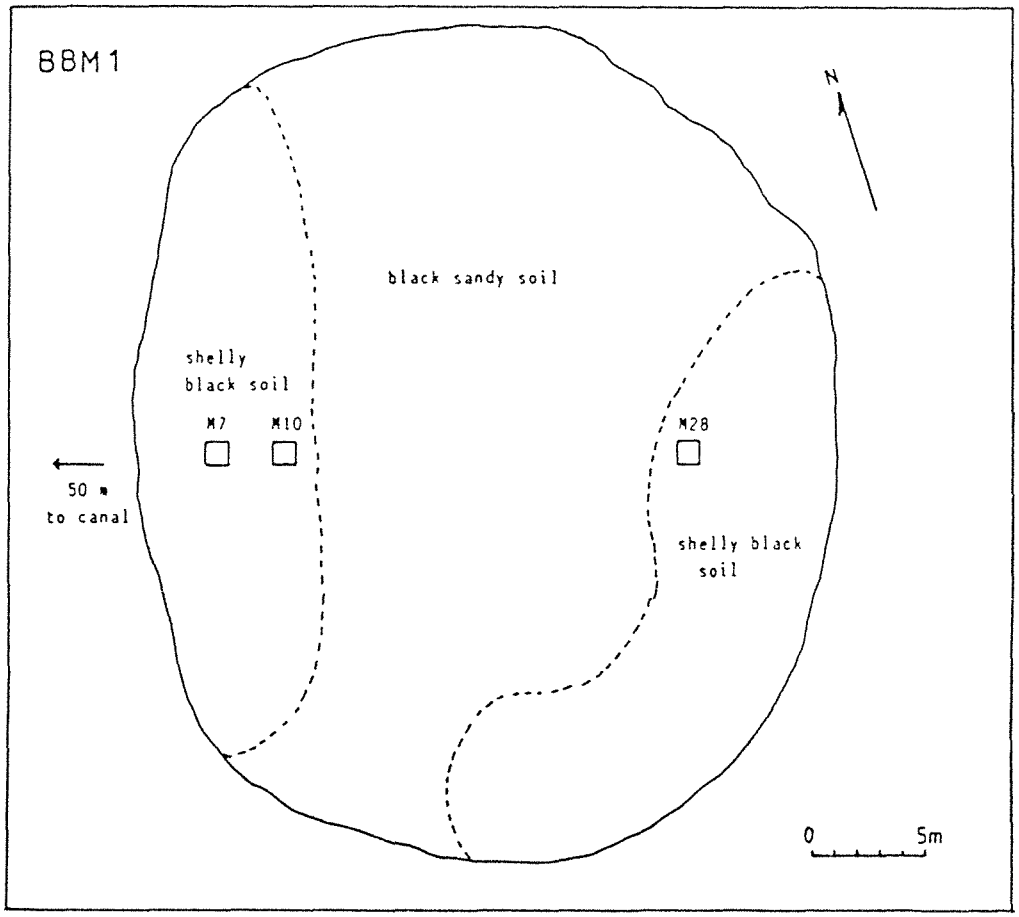


Figure 8.1. Bramston Beach Midden 1 (BBM1): plan of site.

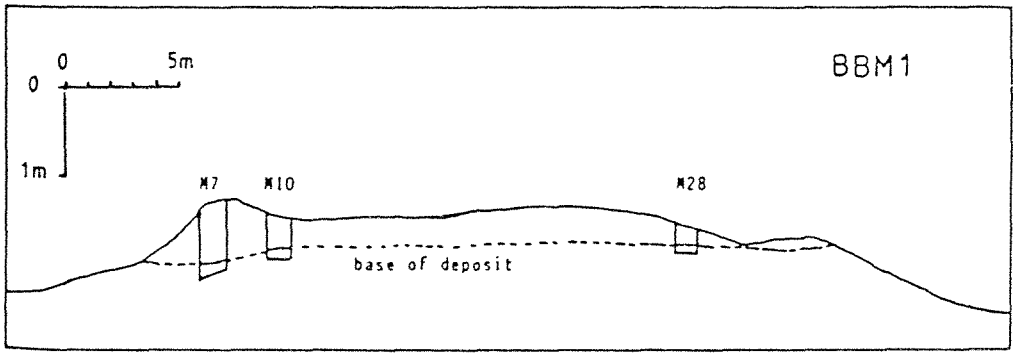


Figure 8.2. BBM1: site profile (vertical scale exaggerated).

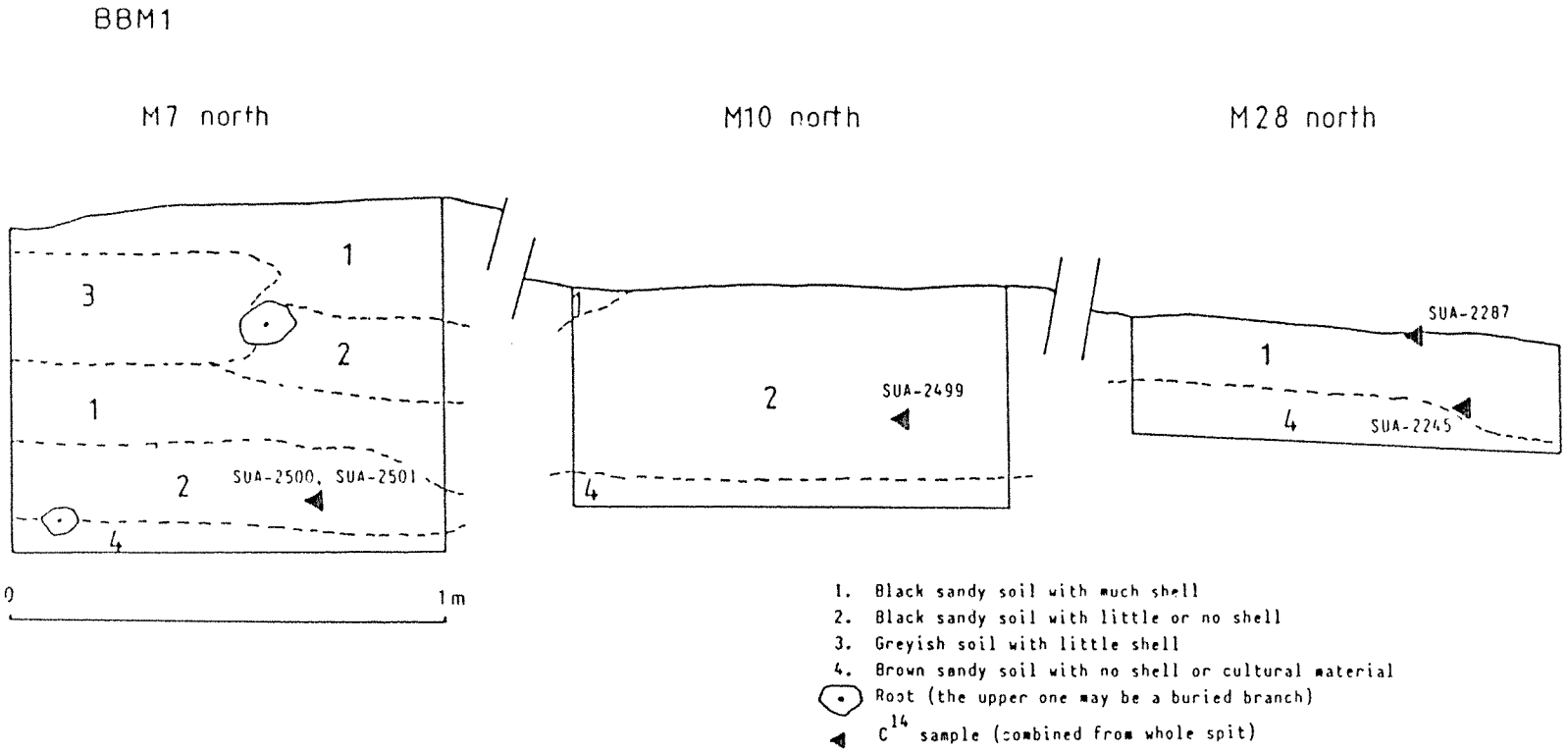


Figure 8.3. BBM1: northern sections of M7, M10 and M28.

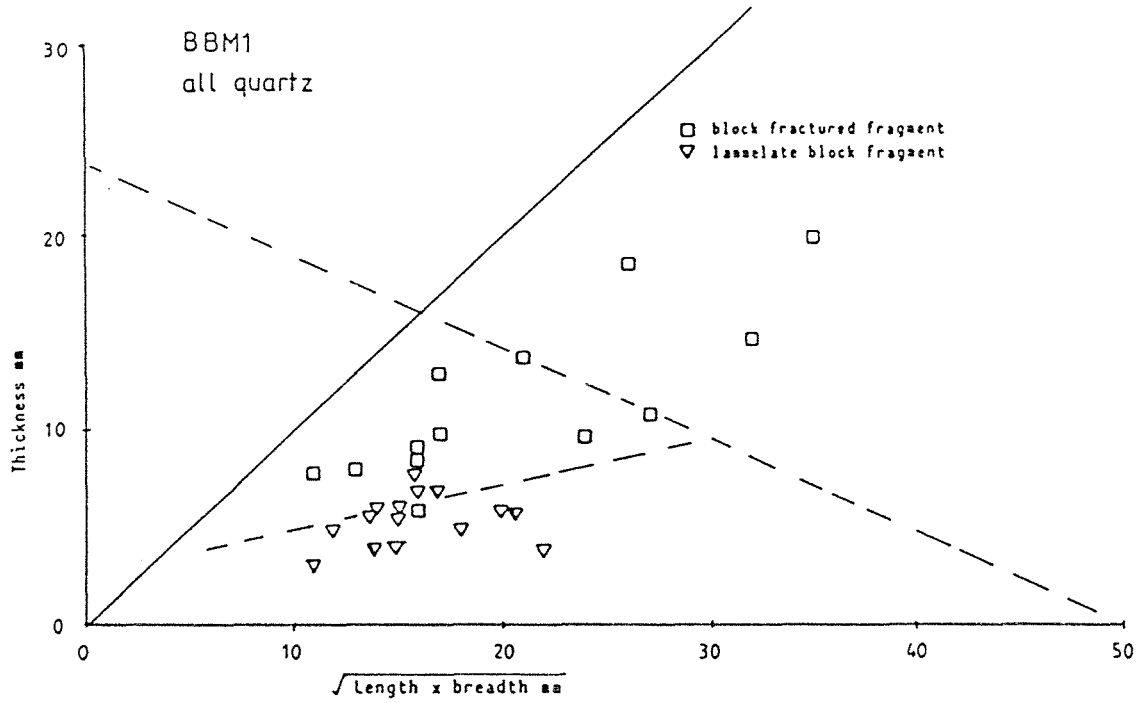


Figure 8.4. BBM1: reduction chart for quartz artefacts (all those in Table 8.4). Lammelates 54% of total number.

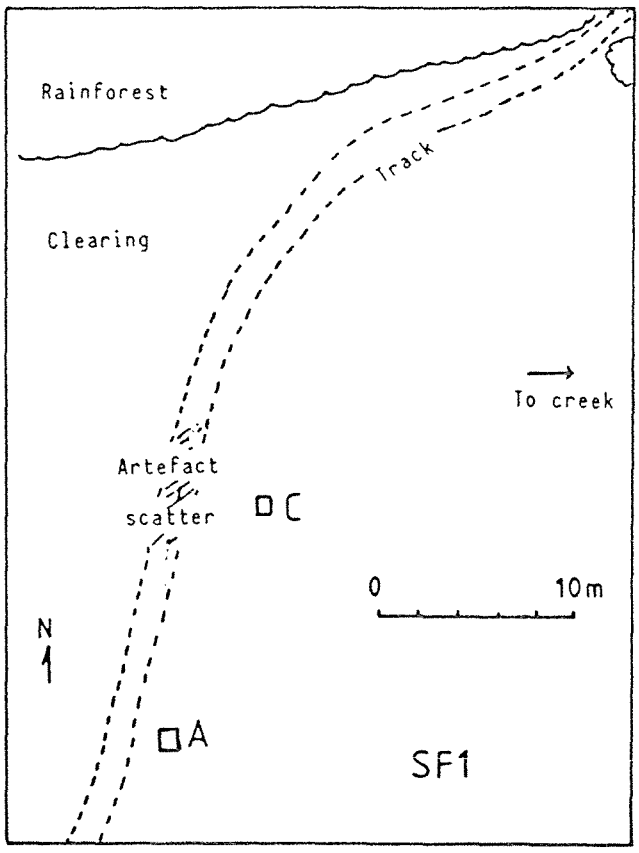


Figure 8.5. SF1: plan of site.

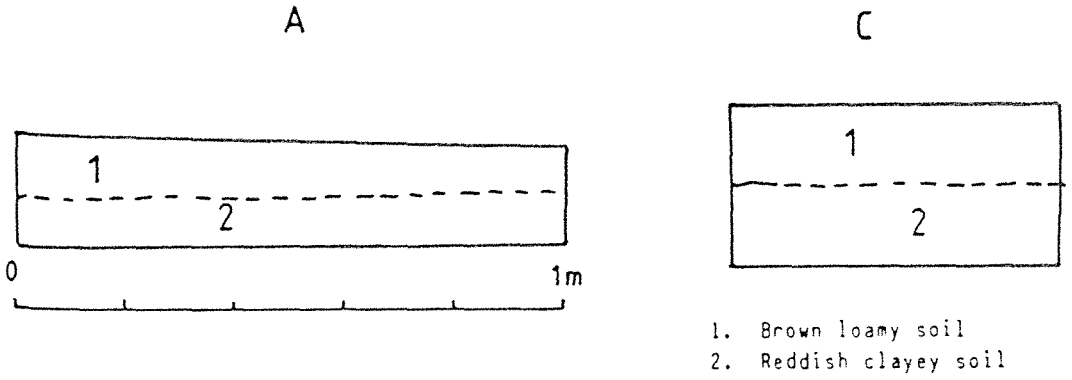


Figure 8.6. SF1: northern sections of soundings A & C.

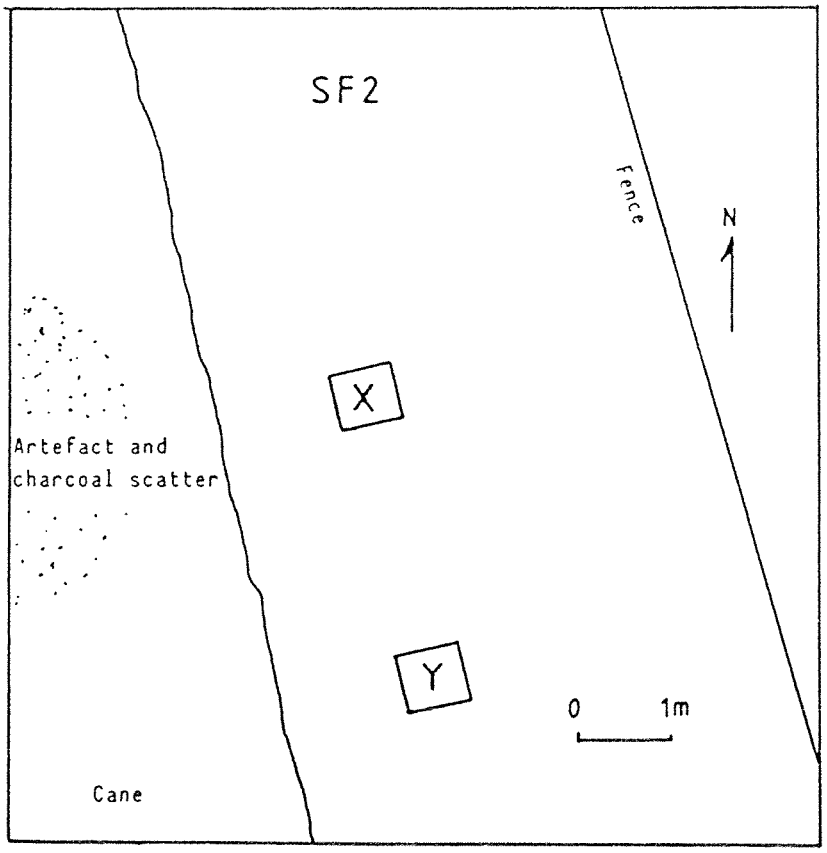


Figure 8.7. SF2: plan of site.

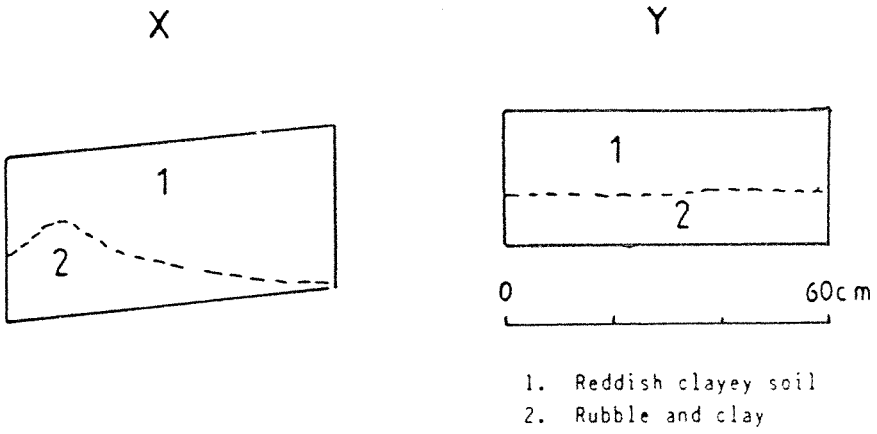


Figure 8.8. SF2: northern sections of soundings X & Y.

Table 8.1

Radiocarbon ages for Bramston Beach Midden (BBM1)

Sample No.	Years BP	Square/spit	Depth(cm)	Material
SUA-2287	710 ± 50	M28/1	0-3	shell
SUA-2245	660 ± 70	M28/5	12-17	shell
SUA-2499	520 ± 50	M10/7	27-32	charred nutshell (*Eleaocarpus bancroftii*)
SUA-2500	540 ± 50	M7/16	65-70	wood charcoal
SUA-2501	580 ± 40	M7/16	65-70	shell

N.B. Shell samples were all pipi (*Donax* sp.)
All shell dates are uncorrected for O.R.C.

Table 8.2

Bramston Beach Midden: quantitative data

	Spit	Sediments (kg)	Rocks (gm)	Shell (kg)	Bone (gm)	Charcoal (gm)	Nutshell* (gm)	Quartz > 15 mm (gm)	Pumice (gm)	Ochre (gm)
M28										
	1	47.8	712	5.55	1.4	25.2	2.0	8.0	1.6	30.6
	2	61.3	1135	13.98	3.4	107.0	9.1	44.8	0.5	1.5
	3	69.1	714	9.80	6.8	68.4	3.2	6.6	4.2	0.6
	4	60.8	547	9.51	7.4	67.0	3.9	0.0	3.1	2.5
	5	61.8	52	0.94	2.4	13.8	0.6	0.0	33.7	0.5
	6	68.2	426	0.06	1.6	7.3	0.1	0.0	34.8	0.0
M7										
		Spits 1 - 12 not sorted - see text								
	13	67.5	450	7.81	3.0	122.6	4.8	0.0	0.7	0.0
	14	54.0	643	3.11	2.5	52.8	5.2	2.8	0.6	0.0
	15	58.6	841	1.47	0.7	26.1	2.2	0.0	4.0	0.3
	16	68.0	75	0.33	3.2	14.8	0.5	0.4	0.1	0.0
	17	67.2	7	0.10	0.0	7.0	0.2	0.0	0.0	0.0
M10										
				(gm)						
	1	51.9	8	0.0	0.0	1.7	0.0	0.0	17.0	0.0
	2	57.3	254	78.3	0.0	45.0	0.5	2.0	0.0	0.9
	3	not sorted - see text								
	4	74.5	1516	4.5	0.0	21.3	5.3	23.7	7.6	6.3
	5	68.1	753	6.3	0.0	34.4	22.1	2.6	9.0	14.9
	6	not sorted - see text								
	7	102.6	492	3.4	0.0	26.0	15.4	7.7	1.2	0.4
	8	not sorted - see text								
	9	" " " "								
	10	85.5	22	0.0	0.0	0.7	0.0	0.0	14.2	0.0

* Includes drupe fragments of Pandanus sp.
Nutshells identified as Elaeocarpus bancroftii.

Table 8.3

BBM1: identification of shell species in M28

		Weight (gm)	% of total marine	% of non-pipi marine
Bivalves	Donax sp.	38750.0	97.48	n.a.
	Polymesoda coaxans	321.5	0.81	32.15
	Anadara granosa	46.9	0.12	4.69
	Saccostrea sp.	24.0	0.06	2.4
	Pecten sp.	0.9	0.00	0.09
Gastropods	Thais bufo	517.8	1.30	51.78
	Oliva sp.	10.4	0.03	1.04
	Melo sp.	4.3	0.01	0.43
	Nerita sp.	0.6	0.00	0.06
Unidentified marine shells		84.5	0.21	8.45
Total marine shells		39750.5		
Total non-pipi marine shells		1000.5		
Landsnails	Xanthomelon sp.	30.6		
	unidentified	2.4		
(Coral fragments		11.7)		

Table 8.4

BBM1: quartz artefacts

		Total quartz (gm)	< 15 mm (gm)	15-20 mm (no)	20-30 mm (no)	> 30 mm (no)	> 15 mm (no)	> 15 mm (gm)
M28	1	12.2	4.2	3	1	-	4	8.0
	2	55.6	10.8	7	2	2	11	44.8
	3	9.5	2.9	3	-	-	3	6.6
	4	0.5	0.5	-	-	-	-	0.0
	5	0.2	0.2	-	-	-	-	0.0
	6	0.0	0.0	-	-	-	-	0.0
M7	13	0.7	0.7	-	-	-	-	0.0
	14	3.4	0.6	2	-	-	2	2.8
	15	0.0	0.0	-	-	-	-	0.0
	16	0.9	0.5	-	1	-	1	0.4
	17	0.4	0.4	-	-	-	-	0.0
M10	1	0.0	0.0	-	-	-	-	0.0
	2	2.4	0.4	-	1	-	1	2.0
	4	28.5	4.8	1	-	1	2	23.7
	5	4.3	1.7	1	1	-	2	2.6
	7	8.3	0.6	1	1	-	2	7.7
	10	0.0	0.0	-	-	-	-	0.0

Table 8.5

Stager Farm sites: quartz artefacts

SF1 Square/spit	quartz > 15 mm (no.)	(gm)
A/1	4	32.2
A/2	2	2.4
A/3	5	42.9
A/4	0	-
A/total	11	77.5
C/1	10	42.1
C/2	6	8.9
C/3	7	65.5
C/4	23	129.4
C/5	0	-
C/6	0	-
C/total	46	245.9

SF2 Square/spit	quartz > 15 mm (no.)	(gm)
X/1	2	34.5
X/2	0	-
X/3	0	-
X/4	3	51.8
X/5	2	15.1
X/6	2	4.1
X/total	9	105.5
Y/1	0	-
Y/2	0	-
Y/3	2	4.5
Y/4	4	17.8
Y/5	0	-
Y/total	6	22.3

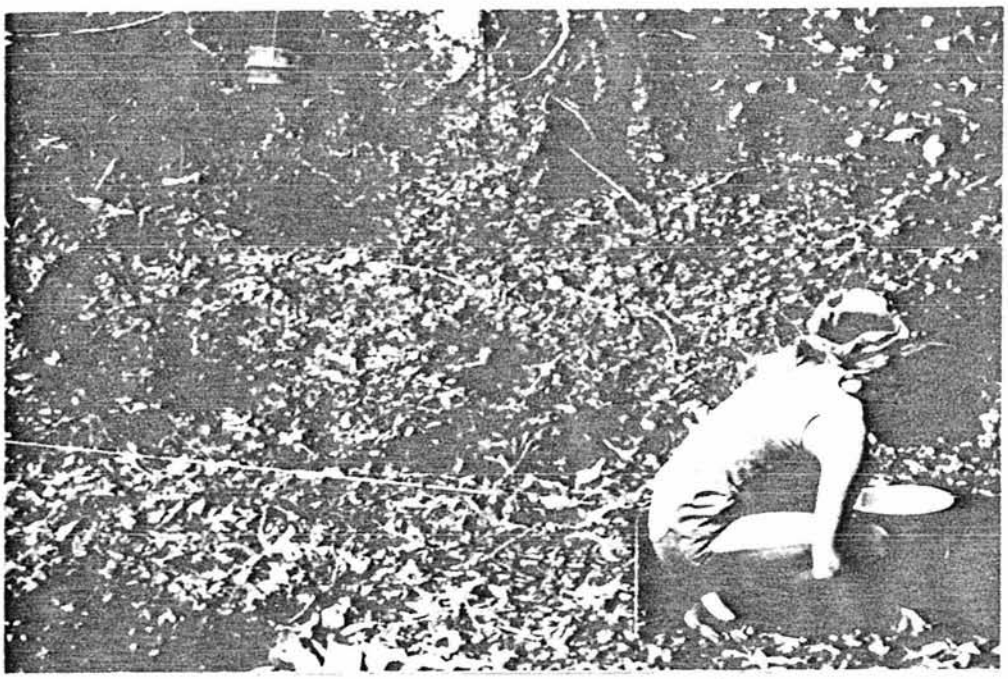


Plate 8.1. Bramston Beach Midden 1: facing south, square M10 on right. Note dense ground cover.

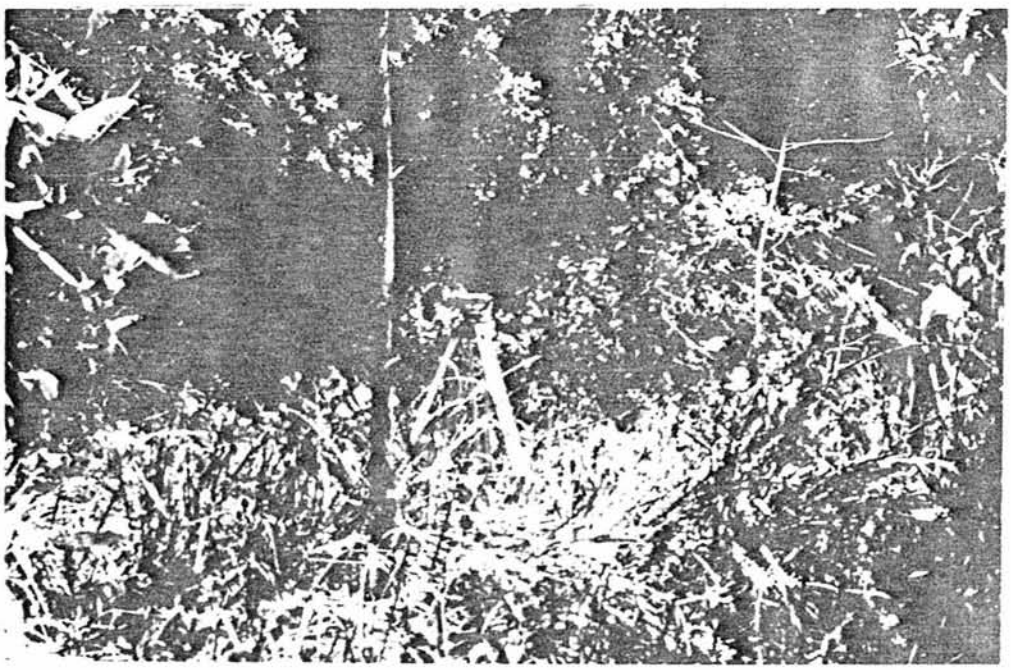


Plate 8.2. Bramstone Beach Midden 1: facing north towards dense vegetation on western edge of site.

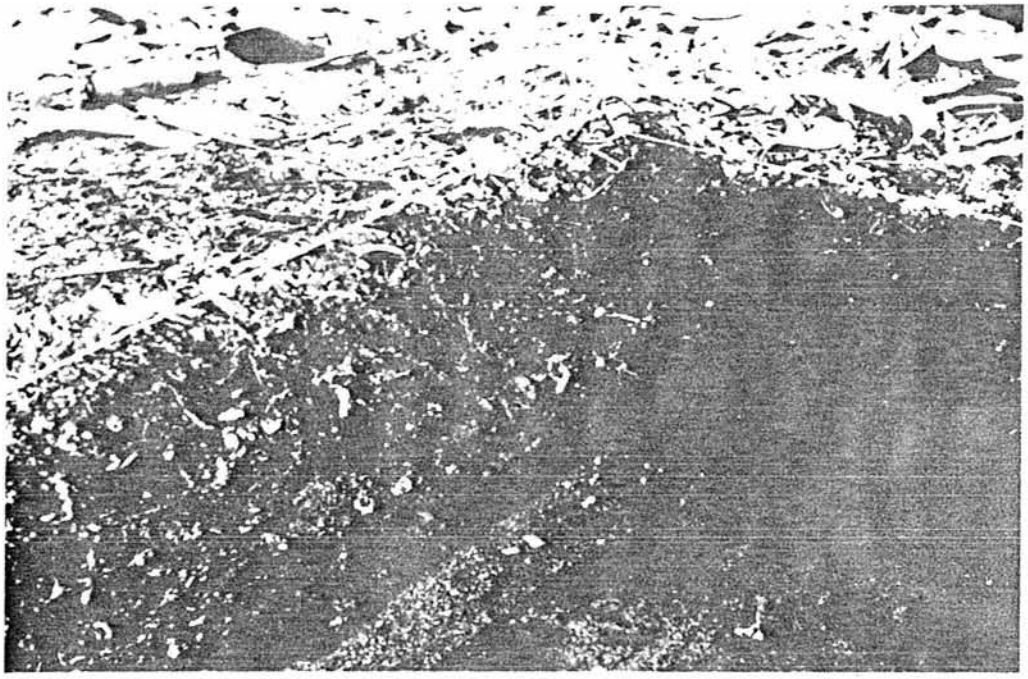


Plate 8.3. Bramston Beach Midden 1: southeast corner of square M28.

Plate 8.4. Stager Farm 1: facing north, stone scatter on track near seated figure, soundings placed to right of track.

Plate 8.5. Stager Farm 2: facing south, sounding X in foreground, sounding Y beyond. Artefacts and charcoal found in cane paddock to right

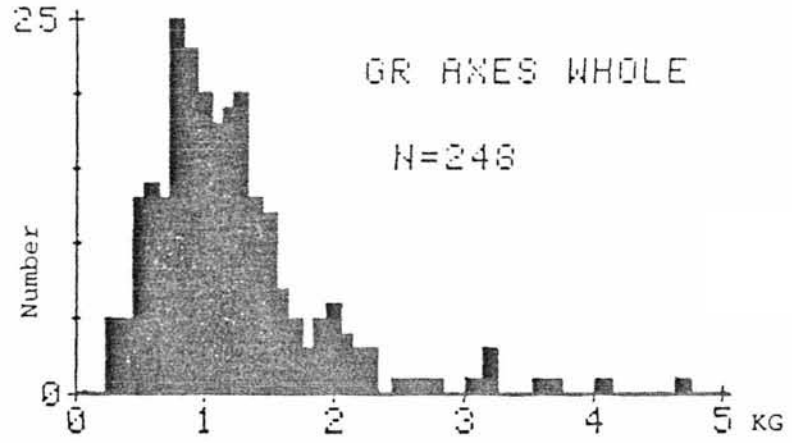


Figure 9.1. Weight range for whole ground-edge implements (axes, chisels, knives, 'splitters') from museum and private collections. N = 248.

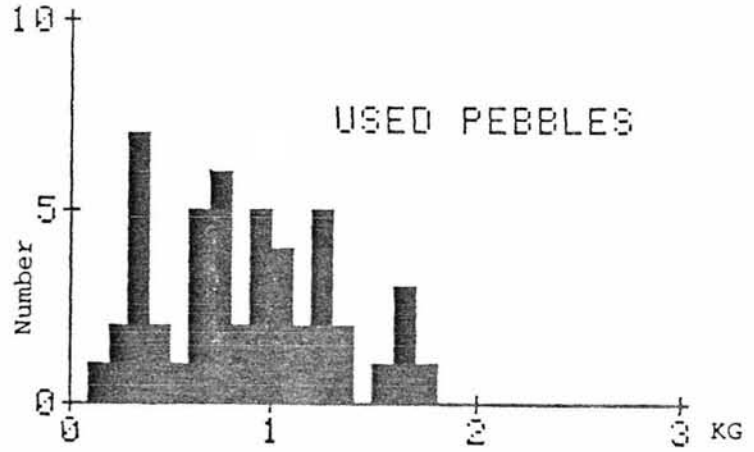


Figure 9.2. Weight range for utilised pebbles from museum and private collections. N = 49.

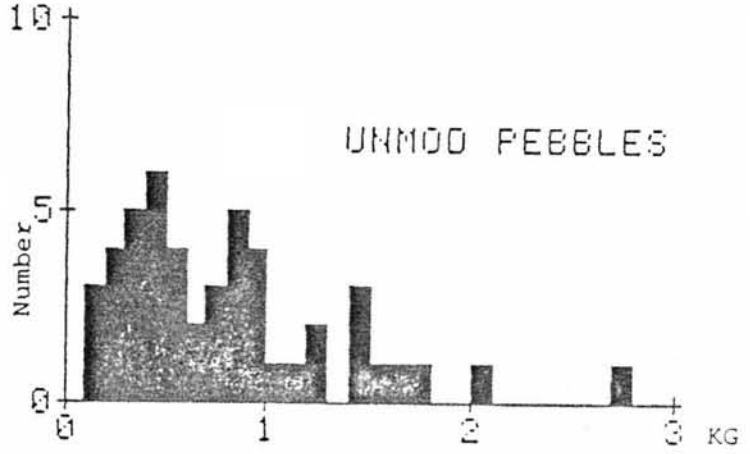


Figure 9.3. Weight range for unmodified pebbles from museum and private collections. N = 48.

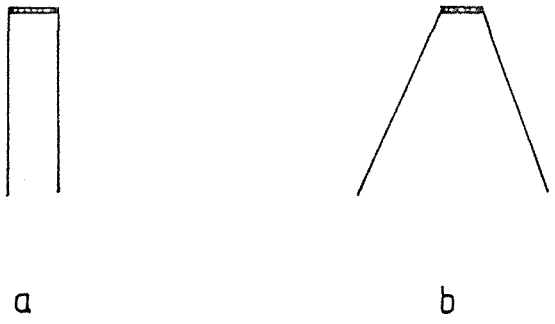


Figure 9.4. Types of flat ground edges.
(a) Flat edge perpendicular to adjoining faces.
(b) Flat edge forms obtuse angle with adjoining faces.

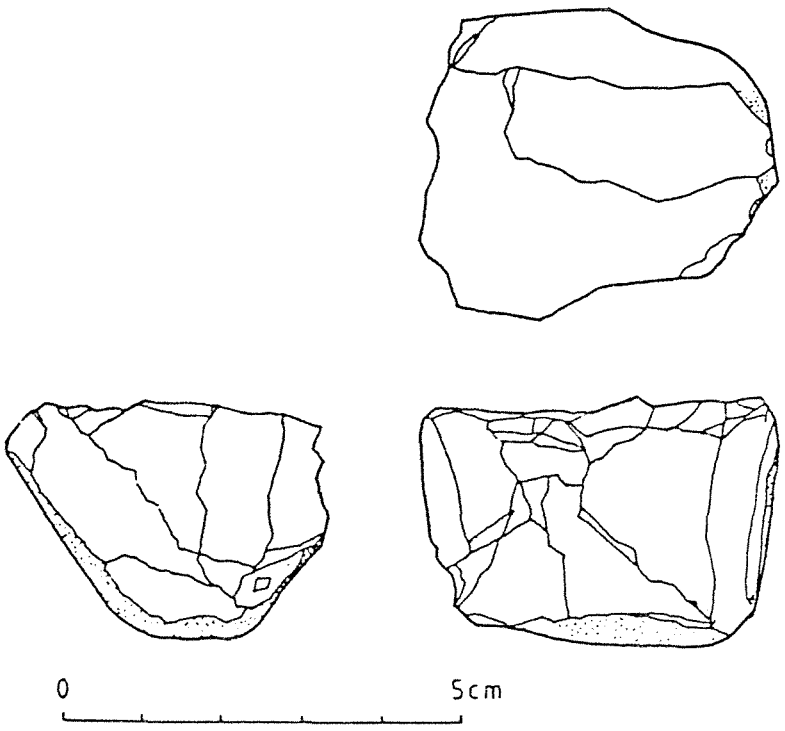


Figure 9.5. Quartz core from Stager Private Collection. Stippling represents pebble cortex. From original drawing by M. Mardaga-Campbell.

Table 9.1

Surface collections from northeast Queensland

Collection	Total no.	ground-edge axes (a)	(b)	(c)	grind-stone	nut anvil	pebble (a)	(b)	ooyurka	other ground	flaked (a)	(b)	non-artefact
Australian Museum	34	24	1	-	-	-	1	1	4	-	3	-	-
" (Roth)	21	20	1	-	-	-	-	-	-	-	-	-	-
Queensland Museum	66	8	1	-	12	3	11	3	13	2	3	7	3
" (at JCU)	41	34	3	2	1	-	-	-	-	-	1	-	-
" (Colliver)	17	6	-	-	-	-	8	3	-	-	-	-	-
" (Tuttle)	23	7	1	-	3	2	2	1	5	1	-	-	1
Anthrop Mus (U of Q)	95	51	7	-	7	-	9	5	5	2	6	2	1
Victoria Museum	15	13	-	-	1	-	-	-	-	-	1	-	-
Mat Cult Unit JCU	51	37	2	-	3	-	4	2	1	-	1	-	1
" (Taylor)	481	271	43	22	33	6	18	38	17	9	8	-	16
Domin PC	21	9	3	-	-	-	4	3	-	-	2	-	-
Stager PC	167	100	23	3	13	1	16	1	1	2	6	1	-
Mansfield PC	52	34	5	-	4	-	3	2	3	-	1	-	-
Scrool PC	28	12	-	-	3	-	9	1	-	-	3	-	-
Stonehouse PC	27	13	1	-	3	-	10	-	-	-	-	-	-
Nella PC	49	22	3	-	4	-	18	-	-	-	2	-	-
Irvine PC	46	16	7	4	-	-	2	2	-	-	14	-	1
Totals	1234	677	101	31	87	12	115	62	49	16	51	10	23

See text for descriptions of categories and subcategories.
PC = private collection

Table 9.2

Provenance of artefacts in surface collections

	Total No.	ground-edge axes a	b	c	grind stone	anvil	pebble a	b	ooy-urka	other ground	flakes a	b	non-artefact
Bloomfield River & Mossman district													
Bloomfield	4	3	-	-	-	-	-	1	-	-	-	-	-
China Camp	1	1	-	-	-	-	-	-	-	-	-	-	-
Mossman	4	2	-	-	-	1	-	-	-	-	1	-	-
Pt. Douglas	1	-	-	-	-	-	-	1	-	-	-	-	-
Rumula	1	1	-	-	-	-	-	-	-	-	-	-	-
total	11	7	0	0	0	1	0	2	0	0	1	0	0
Atherton Tableland													
Atherton & district	12	6	-	-	1	-	3	2	-	-	-	-	-
Atherton Tableland	3	1	-	-	-	-	-	-	2	-	-	-	-
Barron R. (upper)	2	2	-	-	-	-	-	-	-	-	-	-	-
Chumbrumba	4	3	-	-	-	-	1	-	-	-	-	-	-
Danbulla	1	-	-	-	1	-	-	-	-	-	-	-	-
East Barron	104	47	4	-	10	-	37	1	-	-	5	-	-
Elinjaa	2	-	-	-	-	-	-	2	-	-	-	-	-
Lake Barrine	1	-	-	-	-	-	-	-	-	-	-	1	-
Lake Eacham	2	2	-	-	-	-	-	-	-	-	-	-	-
Malanda	7	-	1	-	2	-	-	-	3	-	1	-	-
Mazlin Creek	3	3	-	-	-	-	-	-	-	-	-	-	-
Millaa Millaa	41	31	3	-	2	-	3	-	1	-	1	-	-
Nigger Creek	2	2	-	-	-	-	-	-	-	-	-	-	-
Ravenshoe	2	2	-	-	-	-	-	-	-	-	-	-	-
Tarzali	2	-	-	1	-	-	-	-	-	-	-	-	1
Tolga	1	1	-	-	-	-	-	-	-	-	-	-	-
Yungaburra	1	1	-	-	-	-	-	-	-	-	-	-	-
total	190	101	8	1	16	0	44	5	6	0	7	1	1

Table 9.2 (cont.)

	Total No.	ground-edge axes a	b	c	grind stone	anvil	pebble a	b	ooy-urka	other ground	flakes a	b	non-artefact
Cairns district, Mulgrave River & Yarrabah													
Barron Falls	2	1	-	-	-	-	-	-	-	-	1	-	-
Cairns & district	22	12	1	-	3	-	2	-	1	1	-	2	-
Cairns (south)	46	16	7	4	-	-	2	2	-	-	14	-	1
Cairns (west)	1	-	-	-	-	-	1	-	-	-	-	-	-
Edmonton	3	2	-	-	-	-	-	-	-	-	1	-	-
Gordonvale	1	1	-	-	-	-	-	-	-	-	-	-	-
Green Hill	3	2	-	-	-	-	1	-	-	-	-	-	-
Hambledon	1	1	-	-	-	-	-	-	-	-	-	-	-
Kamerunga	1	-	-	-	-	-	1	-	-	-	-	-	-
Kappa Creek	3	-	-	-	-	-	3	-	-	-	-	-	-
Mt. Sophia	1	-	-	-	1	-	-	-	-	-	-	-	-
Riverstone	1	1	-	-	-	-	-	-	-	-	-	-	-
Wright's Creek	3	2	-	-	1	-	-	-	-	-	-	-	-
Yarrabah	1	1	-	-	-	-	-	-	-	-	-	-	-
total	89	39	8	4	5	0	10	2	1	1	16	2	1
Babinda & lower Russell River													
Babinda	188	107	28	4	13	3	17	1	4	3	6	1	1
Bartle Frere	28	10	3	-	2	-	7	3	1	-	2	-	-
Bellenden Ker	1	1	-	-	-	-	-	-	-	-	-	-	-
Bramston Beach	3	3	-	-	-	-	-	-	-	-	-	-	-
Corroboree Creek	4	1	-	-	2	1	-	-	-	-	-	-	-
Dinner Creek	2	1	-	-	-	1	-	-	-	-	-	-	-
Deeral	1	1	-	-	-	-	-	-	-	-	-	-	-
Eubenangee	43	14	1	2	2	-	7	13	-	-	1	-	3
Miriwinni	87	39	7	-	8	2	7	8	7	2	3	-	4
Pawngilly	25	12	-	1	1	-	2	3	2	-	3	-	1
Russell R.	2	1	-	-	-	-	-	-	-	-	1	-	-
Woopen Creek	2	2	-	-	-	-	-	-	-	-	-	-	-
total	386	192	39	7	28	7	40	28	14	5	16	1	9

Table 9.2 (cont.)

Innisfail district	Total No.	ground-edge axes a	b	c	grind stone	anvil	pebble a	b	ooy-urka	other ground	flakes a	b	non-artefact
Boobah Creek	14	6	2	1	2	-	-	1	-	-	-	-	2
Charappa	3	1	2	-	-	-	-	-	-	-	-	-	-
Clump Pt.	5	5	-	-	-	-	-	-	-	-	-	-	-
Cowley Beach	3	3	-	-	-	-	-	-	-	-	-	-	-
Daradgee	11	7	-	1	1	1	1	-	-	-	-	-	-
East Palmerston	10	5	-	-	2	-	-	-	3	-	-	-	-
Ella Bay	1	1	-	-	-	-	-	-	-	-	-	-	-
Elstob Rd.	6	3	-	-	1	-	1	1	-	-	-	-	-
Etty Bay	2	-	-	-	1	1	-	-	-	-	-	-	-
Flying Fish Pt.	1	1	-	-	-	-	-	-	-	-	-	-	-
Garradunga	13	9	-	-	1	-	2	1	-	-	-	-	-
Goondi	1	1	-	-	-	-	-	-	-	-	-	-	-
Francis Range	2	1	-	-	1	-	-	-	-	-	-	-	-
Innisfail & district	303	180	32	16	16	1	4	13	18	9	7	-	7
Japoon	14	6	5	-	2	-	1	-	-	-	-	-	-
Johnstone R.	1	-	-	-	-	-	-	-	1	-	-	-	-
Liverpool Creek	4	2	-	-	2	-	-	-	-	-	-	-	-
Martyville	2	-	1	-	-	-	-	1	-	-	-	-	-
Mena Creek	7	4	-	-	-	-	-	1	2	-	-	-	-
Mourilyan	23	17	1	-	-	-	2	1	1	-	-	-	1
Mt. Cooroo	2	-	-	-	-	-	1	1	-	-	-	-	-
Mundoo	3	3	-	-	-	-	-	-	-	-	-	-	-
Palmerston	3	2	-	-	-	-	-	1	-	-	-	-	-
South Johnstone	3	2	-	-	1	-	-	-	-	-	-	-	-
Tchuken	3	1	-	-	1	-	1	-	-	-	-	-	-
total	440	260	43	18	31	3	13	21	25	9	7	0	10
Tully district, Maria Creek to Murray River													
Dunk Is.	16	1	-	-	2	-	3	2	-	-	1	6	1
Maadi	3	3	-	-	-	-	-	-	-	-	-	-	-
Midgenoo	1	-	-	-	-	-	-	-	1	-	-	-	-
Mission Beach	1	1	-	-	-	-	-	-	-	-	-	-	-
Murdering Pt.	1	1	-	-	-	-	-	-	-	-	-	-	-
Murray R.	3	1	-	-	1	-	1	-	-	-	-	-	-
Murray Upper	7	6	1	-	-	-	-	-	-	-	-	-	-
Tully & district	11	10	-	-	-	-	-	-	-	-	1	-	-
Tully Falls	2	2	-	-	-	-	-	-	-	-	-	-	-
Tully Flats	4	3	-	-	-	-	1	-	-	-	-	-	-
Tully R.	2	2	-	-	-	-	-	-	-	-	-	-	-
Walter Hill Range	1	1	-	-	-	-	-	-	-	-	-	-	-
	[illegible]	[illegible]	[illegible]	0	[illegible]	0	5	2	1	0	2	6	1

Table 9.2 (cont.)

	Total No.	ground-edge axes a	b	c	grind stone	anvil	pebble a	b	ooy-urka	other ground	flakes a	b	non-artefact
Cardwell district													
Cardwell	4	2	-	-	-	-	-	-	-	1	1	-	-
Hinchinbrook Is.	1	1	-	-	-	-	-	-	-	-	-	-	-
total	5	3	0	0	0	0	0	0	0	1	1	0	0
Ingham district													
Herbert Gorge	1	1	-	-	-	-	-	-	-	-	-	-	-
Ingham	15	13	-	-	-	-	-	1	-	-	1	-	-
total	16	14	0	0	0	0	0	1	0	0	1	0	0
Location uncertain													
Clyde Rd.	2	1	-	-	-	1	-	-	-	-	-	-	-
N Qld/NE Qld	10	6	-	-	3	-	-	1	-	-	-	-	-
not recorded	1	1	-	-	-	-	-	-	-	-	-	-	-
Puram Creek	1	-	-	-	-	-	1	-	-	-	-	-	-
rainforest	1	1	-	-	-	-	-	-	-	-	-	-	-
unknown	2	-	-	-	-	-	-	-	1	-	-	-	1
total	17	9	0	0	3	1	1	1	1	0	0	0	1
Cape York Peninsula													
Coen	1	-	-	-	-	-	-	-	1	-	-	-	-
Cooktown	5	4	1	-	-	-	-	-	-	-	-	-	-
total	6	4	1	0	0	0	0	0	1	0	0	0	0
western Atherton Tableland													
Evelyn Tableland	2	1	-	-	1	-	-	-	-	-	-	-	-
Herberton	15	13	1	1	-	-	-	-	-	-	-	-	-
Mt. Molloy	4	2	-	-	-	-	2	-	-	-	-	-	-
Thornborough	1	1	-	-	-	-	-	-	-	-	-	-	-
total	22	17	1	1	1	0	2	0	0	0	0	0	0

Table 9.3

Ground-edge knives from rainforest collections

Collection	Cat. no.	Length mm	Width mm	Thickness mm	Locality
MCU/Taylor	L81.1.345	180	85	28	Innisfail
MCU/Taylor	L81.1.403	145	105	25	Innisfail
MCU/Taylor	L81.1.705	150	80	31	Eubenangee
MCU/Taylor	L81.1.787	160	72	31	Bartle Frere
Stager	106	190	90	20	Babinda
Nella	63	220	100	20	East Barron
Etheridge (1890)		127	63	20	
Dickson replica (1981)		120	75	20	

(MCU = Material Culture Unit, James Cook University)

Table 9.4

Ground-edge chisels from rainforest collections

Collection	Cat. no.	Length mm	Width mm	Thickness mm	Locality
MCU/Taylor	L81.1.709	73	52	15	Eubenangee
Aust. Mus.	E54269	112	53	25	Atherton
Dickson (1981)		60-164	21-51	11-23	

(MCU = Material Culture Unit, James Cook University)

Table 9.5

Artefact categories found in excavation sites

Tool-type	JC	MR1	MR2	BBM1	All
Ground-edge axes	+(a)	-	-	-	+
Grindstones - grooved	-	+(b)	-	-	+
pecked	+	-	-	-	+
smoothed	+	-	-	-	+
Nutcracking anvil	-	+(b)	+(c)	-	+
Pebbles - smoothed	+	+(b)	+	-	+
battered edges	+	+(b)	-	-	+
battered faces (anvil?)	+	+(b)	-	-	+
bevelled	-	-	-	-	-
unmodified	+	+	+	+	+
'Ooyurkas'	-	-	-	-	-
Other ground artefacts	+	-	±	-	+
Large flaked artefacts	+	+	-	-	+
Small flaked artefacts - quartz	+	+	+	+	+
other	+	+	+	+	+

(a) One tiny edge-ground flake and four possible axe fragments.
(b) Not in stratigraphic context.
(c) Surface artefacts.

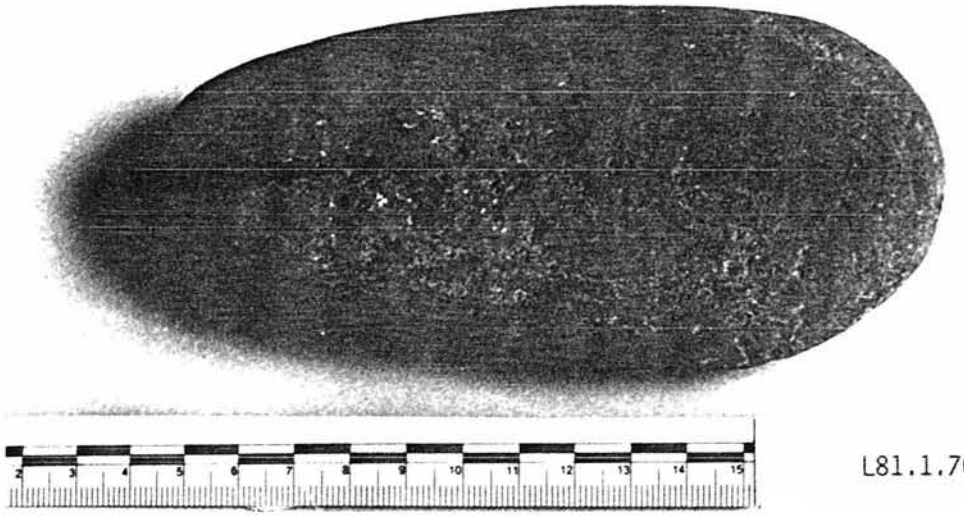


Plate 9.1. Ground-edge knife, ground along long edge facing camera.

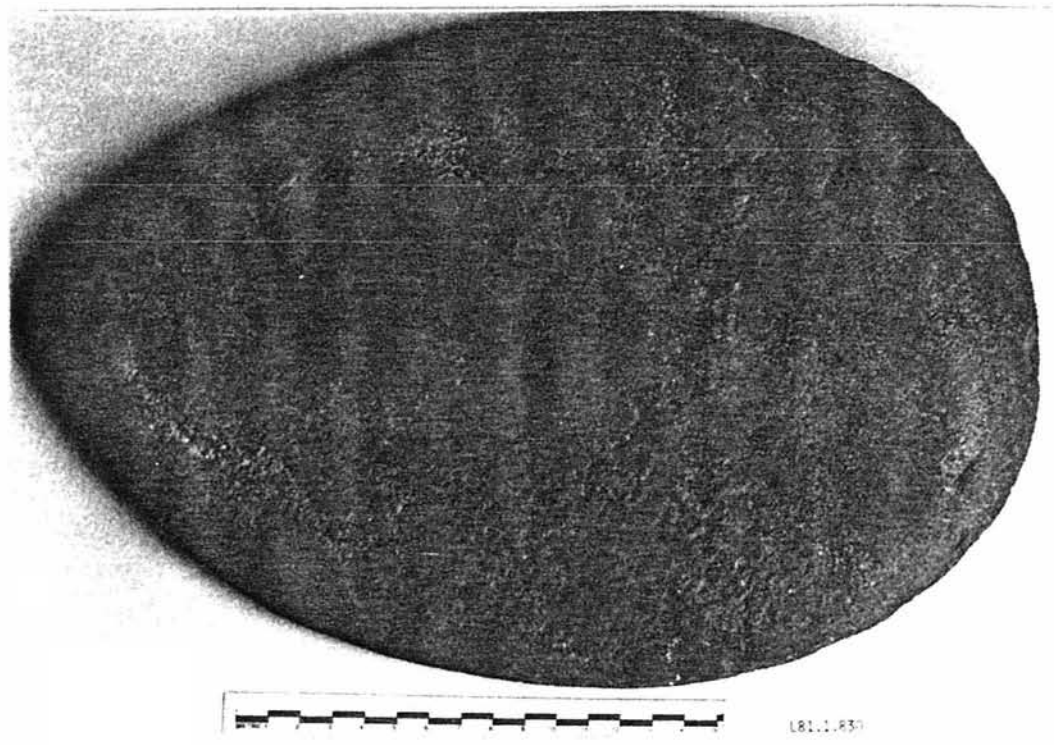


Plate 9.2. Large ground-edge axe or 'splitter'. Note that grinding is continued around entire edge (though blunted, not sharp), and butt appears undamaged.

Plate 9.3. Ground-edge axe with central groove continuing right around axe.

Plate 9.4. Ground-edge axe with groove placed nearer to butt than to ground edge. Flaking at butt may be due to shaping of implement or possibly to use as a hammer.

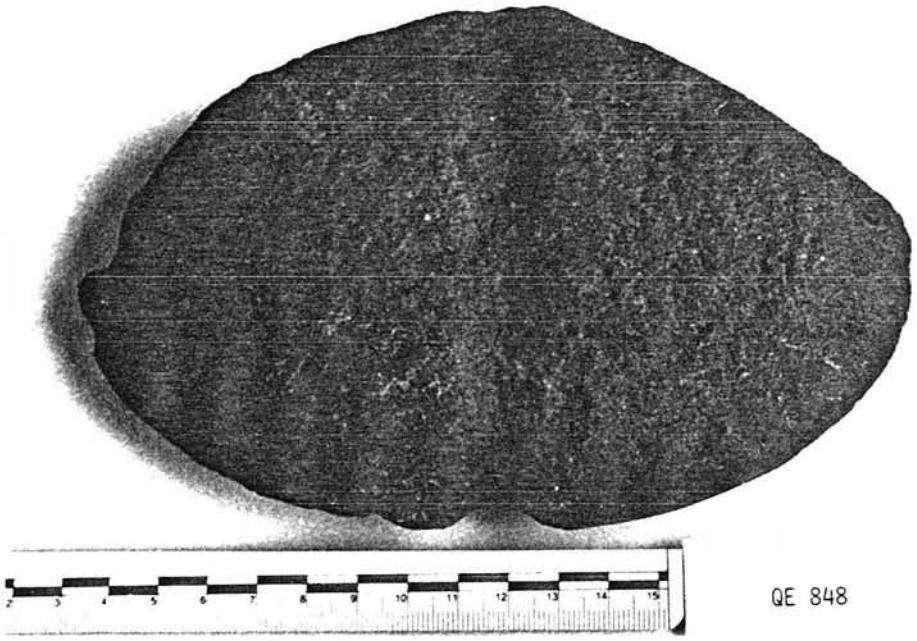


Plate 9.5. Double-ended ground-edge axe with central groove. Note hammer dressing on surface.

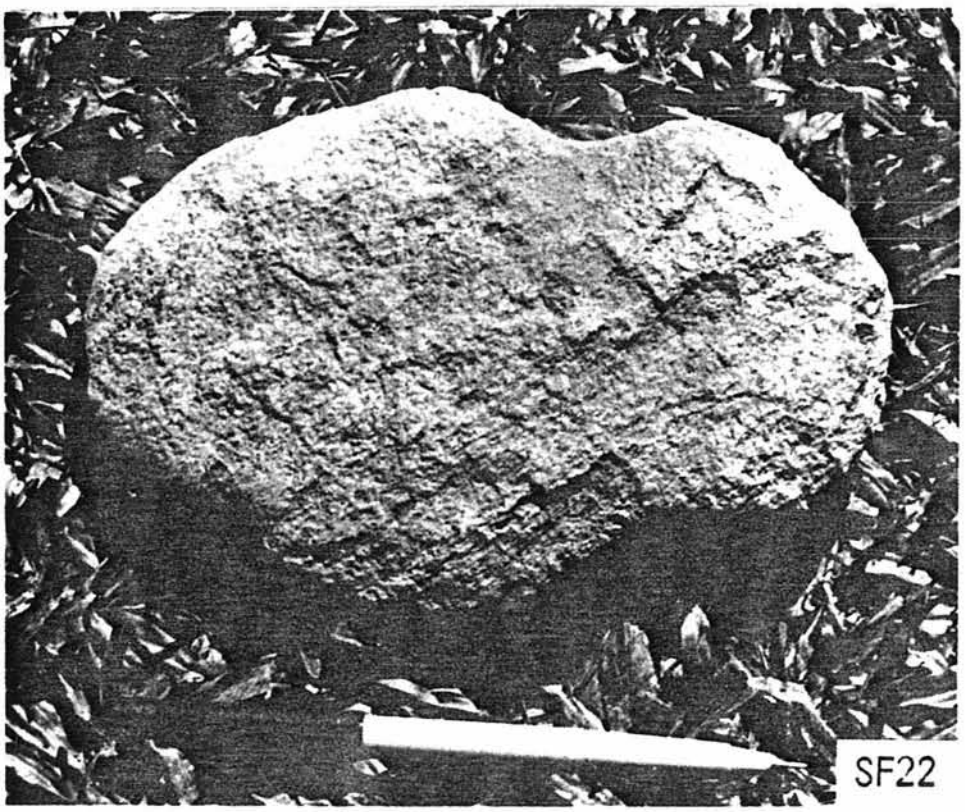


Plate 9.6. Waisted axe, very weathered and with edge-grinding no longer visible, but probably once present. Pen is 15 cm long.

Plate 9.7. Waisted and partly shouldered ground-edge axe.

Plate 9.8. Ground-edge axe with pecked or battered areas (centre, lower right possibly from use as an anvil e.g. in quartz flaking.

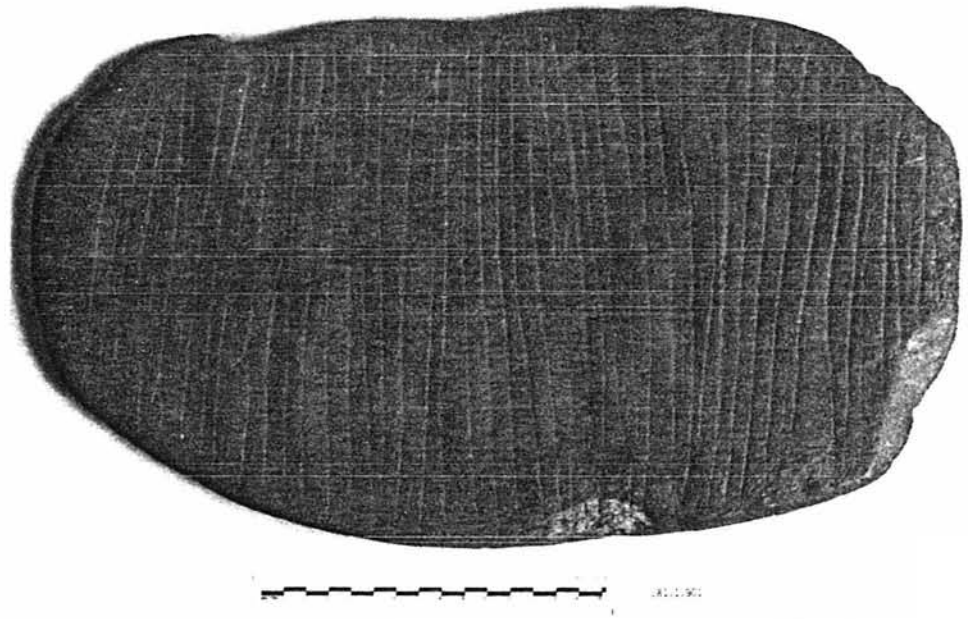


Plate 9.9. Grooved slate grindstone or 'morah'. Note short grooves at right angles to the rest on left edge.

Plate 9.10. Concave grindstone with smoothed working surface (reverse face of nutcracking anvil shown in Plate 9.11).

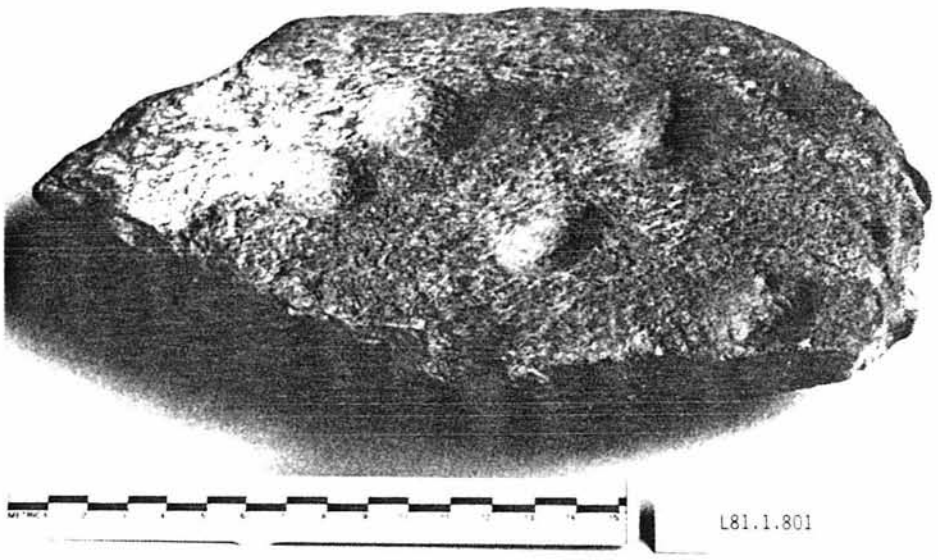


Plate 9.11. Nutcracking anvil (rock is type of schist).

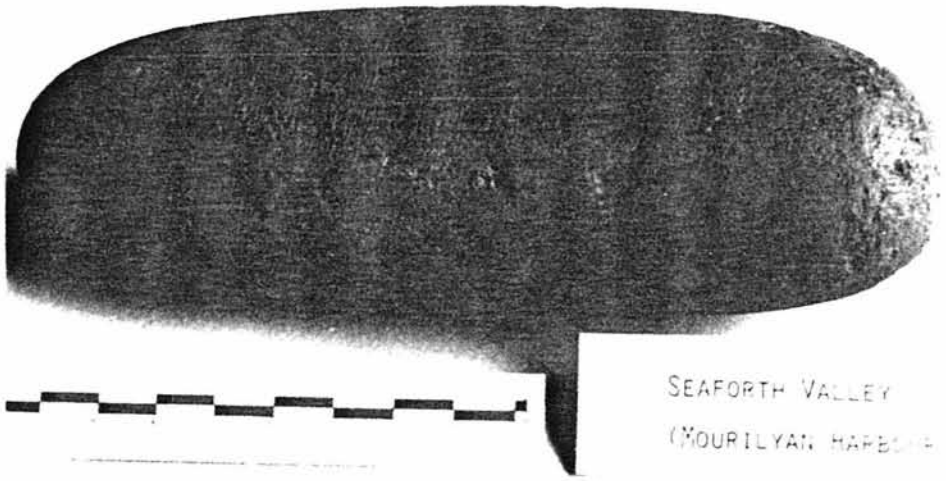


Plate 9.12. Pebble artefact with smoothing (along lower edge) and transverse striations (upper centre), possibly used with a grindstone.

Plate 9.13. Pebble artefact with indentations in face, possibly used as a hammerstone and/or an anvil.

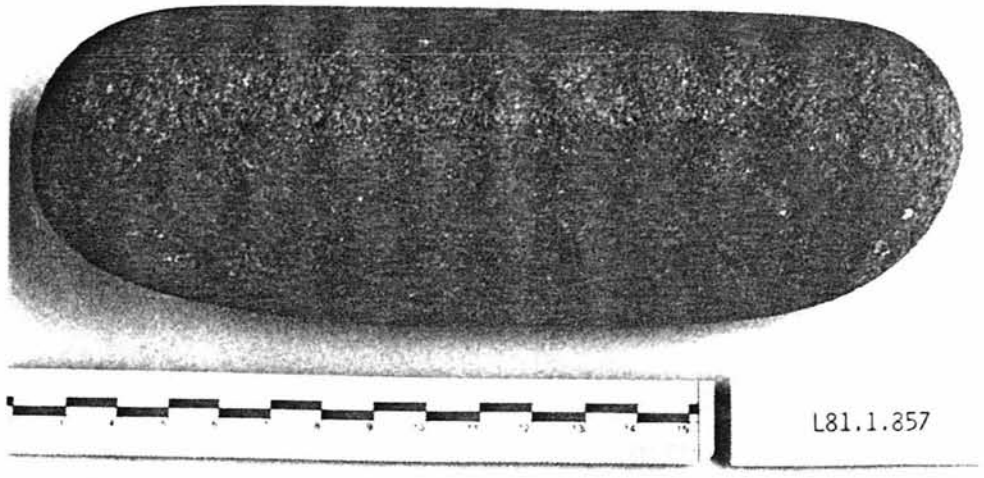


Plate 9.14. Pebble artefact with flattened edges forming a bevel. Grinding or other wear on the bevel edge not apparent.

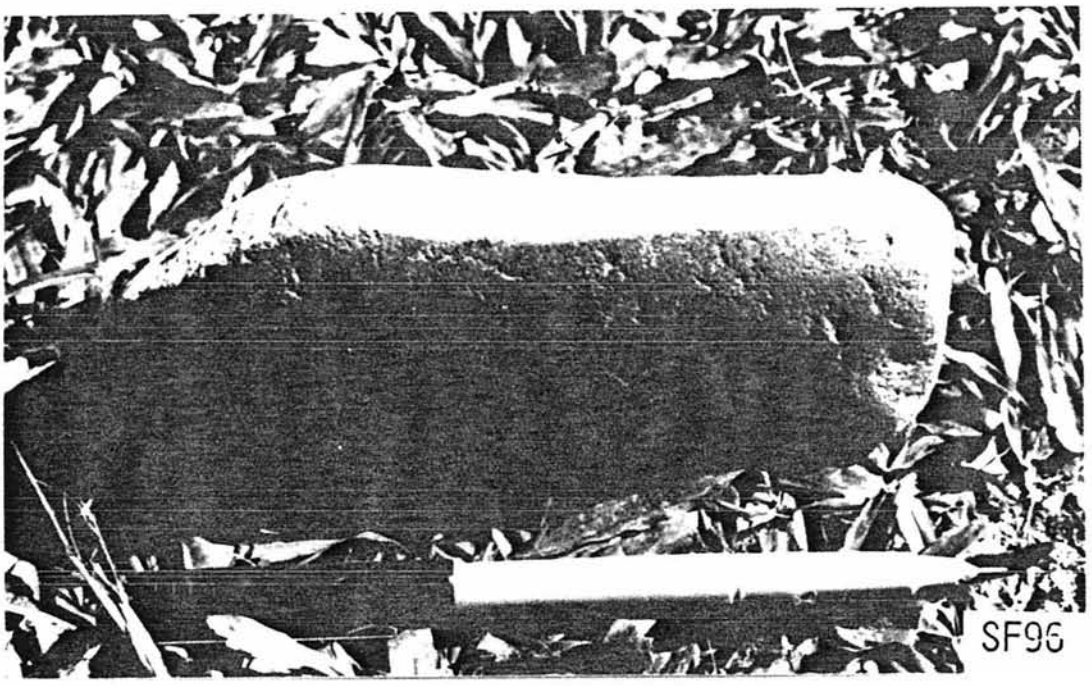


Plate 9.15. Pebble artefact with ground sides and edge forming a bevel. (Pen is 15 cm long.)

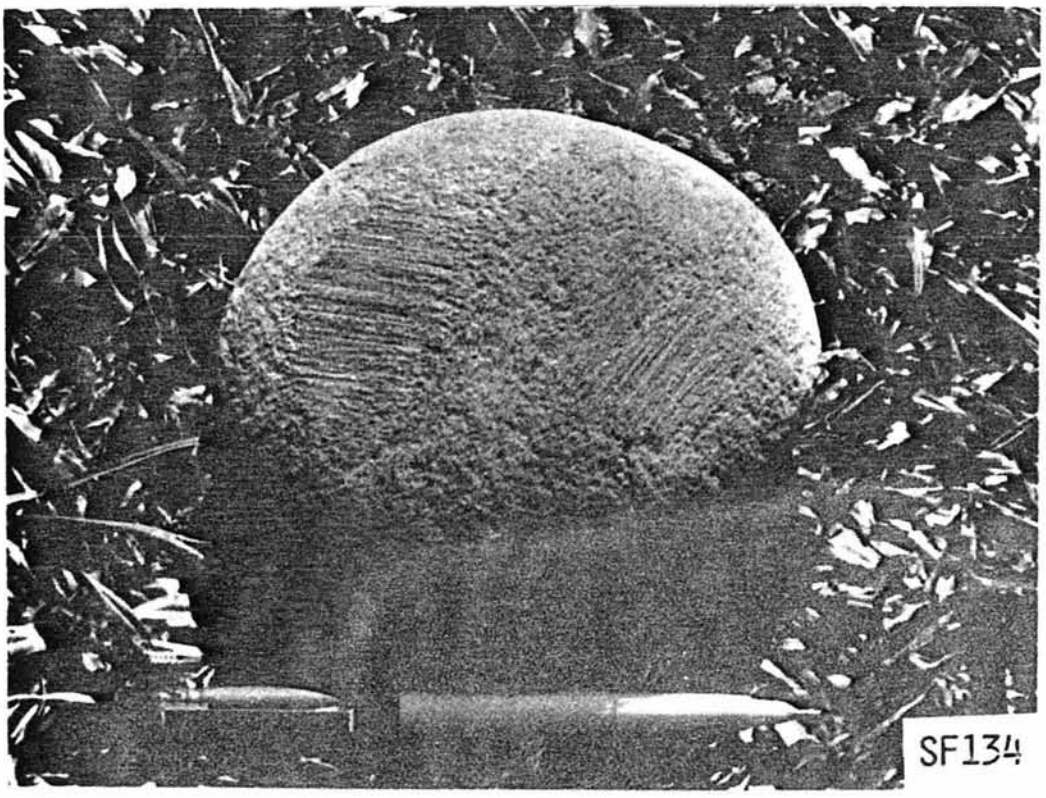


Plate 9.16. Pebble artefact with two areas of parallel striations. (Pen is 15 cm long.)

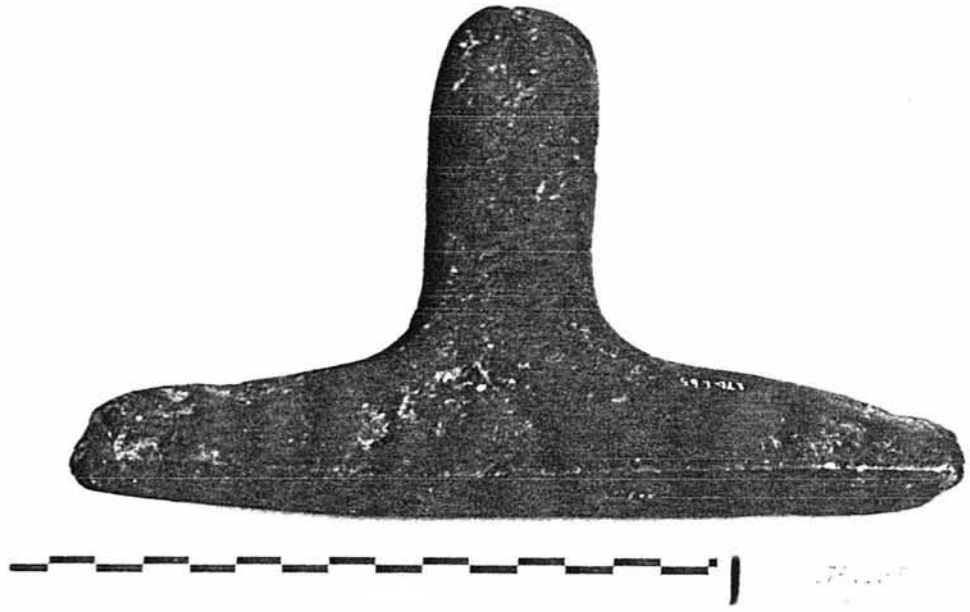


Plate 9.17. Ooyurka, showing shaped and smoothed 'handle' and ground edge at the top of the T (facing camera).

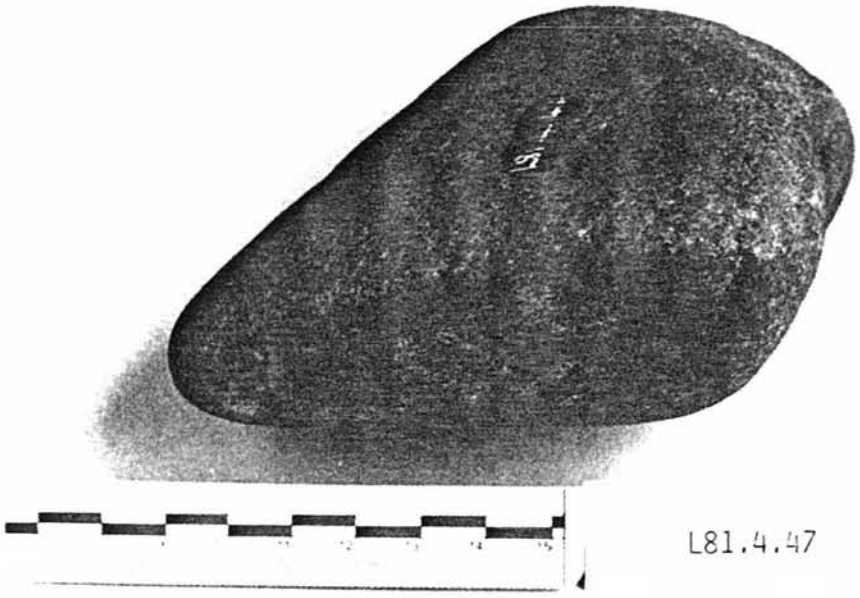


Plate 9.18. Pebble half with flat ground edge (facing camera) possibly with similar functions to an ooyurka.

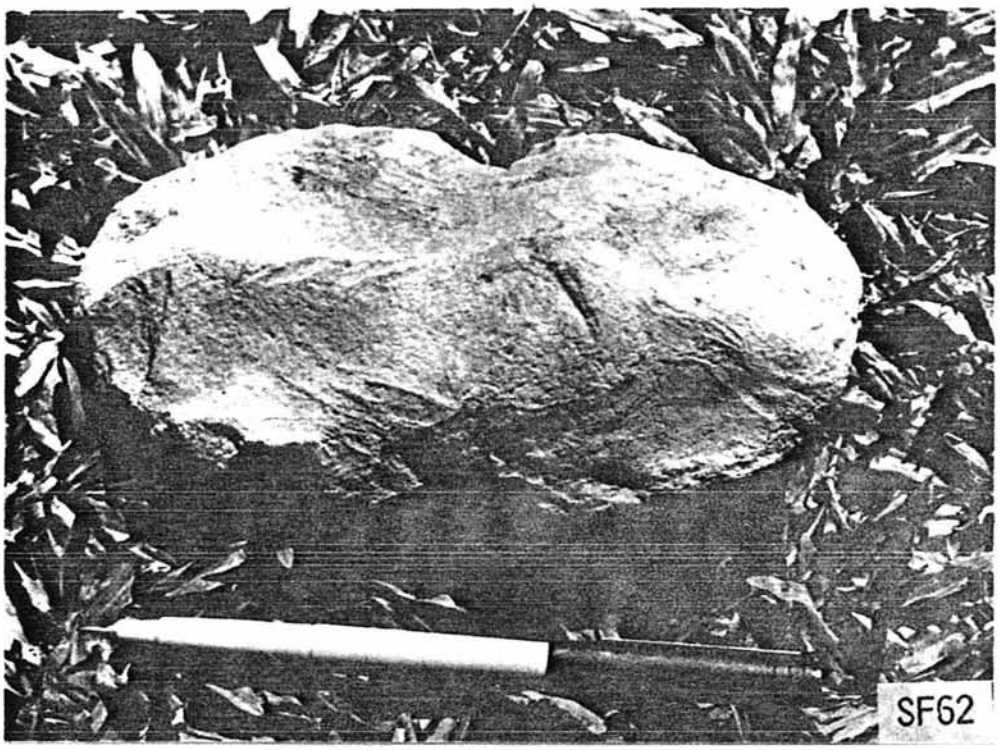


Plate 9.19. Waisted flaked 'chopper'; very weathered basalt with no trace of grinding. (Pen is 15 cm long.)

Plate 9.20. Waisted flaked implement, possibly a hammer. (Pen is 15 cm long.)

Table 10.1

Plants with toxic substances,
apparently eaten raw

Species	Part eaten	Toxins*
Alangium villosum	fruit	9, -30, 33
Capparis canescens	fruit	9, -9, -30
Davidsonia pruriens (Davidson's plum)	fruit	-6, 6, -9, -30
Elaeocarpus grandis (blue quandong)	fruit	?9
Ficus microcarpa v.latifolia (fig)	fruit	-30, 34
Ganophyllum falcatum	fruit	-9, 30
Hicksbeachia pinnatifolia	seed	6, 9, -30
Melodinus australis	fruit	9, -9, ?9, 30, -30, 34
Melodinus guilfoylei	fruit	9, -9, ?9, 30, -30, 31, 34
Melodinus murpe	fruit	6, 7
Morinda citrifolia	fruit	9, ?9, -30
Nelumbo nucifera (lotus)	seeds, roots	9, -9, -30
Planchonia careya (cocky apple)	fruit	-9, 30, -30, 31, 33, 34
Podocarpus elatus (brown pine)	fruit	30

N.B. Flecker et al. (1948) say H. pinnatifolia requires complex treatment including leaching, but give no further details.

* Key to toxic substances (from Beck 1985: Appendix 1)

6	cyanogenetic glycosides
7	glucosinolates
8	aliphatic nitro-compounds (not otherwise specified)
9	alkaloids (not otherwise specified)
21	amino acids & amines (not alkamines)
22	toxalbumins or phytotoxins
23	oxalates
25	coumarin derivatives
30	saponin glycosides & saponins (not otherwise specified)
31	steroidal glycosides
33	triterpenoid compounds
34	terpenoid compounds (not otherwise specified)
42	Toxic principles not specifically characterised or recorded
-	negative test result
?	doubtful test result

Table 10.2

Plants with toxic substances, eaten raw or cooked

Species	Part eaten	Toxins*
Aleurites moluccana (candlenut)	nut, raw or roasted	-9, 9, ?22, ?30, 42
Dioscorea transversa (yam)	yam, raw or roasted	?9, -9, -30
Randia fitzalani	fruit, raw or roasted	?9, -9, 30, 31
Rhodomyrtus macrocarpa (finger cherry)	fruit, raw or roasted	-9, 25, -30, 42
Triglochin procera (water-ribbon)	root, roasted	-6, 9, -9, -30

* See Table 10.1 for key to toxic substances.

Table 10.3

Food plants eaten in northeast Queensland after alternate roasting and pounding

Species	Part eaten	Toxins*
Alocasia macrorrhiza (cunjevoi)	rhizomes	?9, 23, 42
Ampelocissus acetosa (native grape)	roots	—
Blechnum indicum (bungwall in S.Qld.)	rhizome	-6, -9, -30, 42
Cayratia clematidea	roots	-9
Ipomoea pes-caprae (goatsfoot convolvulus)	rhizome	-9
Vandasia retusa	yam	-9, 30, 31

* See Table 10.1 for key to toxic substances.

Table 10.4

Food plants eaten in northeast Queensland after washing or leaching

Species	Form, habitat, distribution	Part eaten	Toxic substances*
Avicennia marina (grey mangrove)	tree, mangroves, widespread	seed	
Beilschmiedia bancroftii (yellow walnut)	tree, rainforest, N.Qld. (Bloomfield to Tully)	nut	9,-9,-30,30
Bowenia spectabilis	shrub, wet lowlands, N.Qld. (Bloomfield to Tully)	root	8,22,42
Bruguiera gymnorhiza (red mangrove)	tree, mangroves, widespread	seedling	-9
Castanospermum australe (black bean, Moreton Bay chestnut)	tree, rainforest, Qld., NSW (Cooktown to Bellinger R.)	seed	-9,9,-6,30, 31,33,42
Cycas media	tree, eucalypt forests, northern Australia	seed	8,21,42
Dioscorea bulbifera ('cheeky' yam)	vine, rainforest, widespread in tropics	yam	-9,-30
Endiandra palmerstonii (black walnut)	tree, rainforest, N.Qld. (Bloomfield to Tully)	nut	?9
Endiandra pubens (hairy walnut)	tree, rainforest, N.Qld. (Bloomfield to Ingham), SE.Qld. and northern NSW	nut	-9,?9
Entada phaseoloides (matchbox bean)	woody climber, rainforest, northern Australia, Asia, Africa	seed	-9,6,30
Lepidozamia hopei	tree, rainforest, N.Qld. (Bloomfield to Tully)	seed	?8,21,42
Macadamia whelanii	tree, rainforest, N.Qld. (C.Tribulation to Cardwell)	nut	6
Podocarpus amarus (black pine)	tree, rainforest, N.Qld. (Bloomfield to Townsville)	nut	
Prunus turnerana (wild almond)	tree, rainforest, Cape York Peninsula to Townsville	nut	6,-9,-30,34
Tacca leontopetaloides (Polynesian arrowroot)	herb, eucalypt forest, widespread in tropics	root	-6,-9,?9,-30

N.B. Flecker et al. (1948) also list Hicksbeachia pinnatifolia and Cordyline terminalis as requiring complex treatment including leaching.

Sources for habitat and distribution data:
Cribb & Cribb (1974); Francis (1981); Levitt (1981); A. Irvine and B. Jackes (pers.comms.).

* See Table 10.1 for key to toxic substances.

Table 10.5

Summary of food processing techniques in northeast Queensland
(see also Appendix D)

Species	Technique	Locality	Source
Avicennia marina	cooked, washed in bag, squeezed dry	CYP	Roth (1901b:9)
Beilschmiedia bancroftii	cooked, pounded, leached	Tully	Roth (1901b:11)
Bowenia spectabilis	cooked	(not given)	Bailey (1906:188)
	decomposed	Dunk Is.	Banfield (1908/1982:169)
Bruguiera gymnorhiza	cooked, pounded, peeled, washed, drained in sand	CYP	Roth (1901b:10)
	cooked, peeled, sliced, soaked	Tully	Roth (1901b:10)
Castanospermum australe	cooked, pounded, sifted, washed, drained in sand	Bloomfield	Roth (1901b:10)
	cooked, sliced, leached	Atherton	Roth (1901b:10)
	cooked, sliced, leached	Tully	Roth (1901b:10)
	steeped, sliced, dried, pounded, cooked on hot stone	Tully	Carron (1849:28)
	cooked, soaked, sliced, soaked	Innisfail	Johnstone (1904:30)
	cooked, sliced, leached, pounded	(not given)	Johnstone (1904:50-51)
Cycas media	pounded, roasted, soaked	Herbert R.	Lumholtz (1889:181)
	cooked, kept 4-5 days, pounded, sifted, leached	Bloomfield	Roth (1901b:11)
	cooked, sliced, leached	Tully	Roth (1901b:11)
	cooked, kept few days, pounded, sifted, leached	(not given)	Johnstone (1904:50)
Dioscorea bulbifera	cooked, mashed, strained, washed 7-8 times, drained	Bloomfield	Roth (1901b:11-12)
Endiandra palmerstonii	cooked, pounded, leached	Atherton, Bloomfield	Roth (1901b:11)
	cooked	Johnstone R.	Palmerston (1885-6:242)
Endiandra pubens	cooked, pounded, leached	Atherton	Roth (1901b:12)
	* cooked 10-12 hours	Johnstone R.	Palmerston (1885-6:242)
Entada phaseoloides	cooked, pounded, leached	Bloomfield, CYP	Roth (1901b:12)
Macadamia whelanii	cooked	Bellenden Ker Ra.	Meston (1889)
	careful preparation	Bellenden Ker Ra.	Meston (1904:15)
Podocarpus amarus	cooked, ground, mixed with water	Atherton Tab.	Roth (1901b:15)
	cooked, chopped, ground, sieved	Atherton Tab.	Dixon (1977:10)
	* cooked, ground, leached	Herbert R.	Lumholtz (1889:251)
Prunus turnerana	pounded, sifted, damped & made into cakes, cooked	Bloomfield R.	Roth (1901b:15)
	* ground, soaked, cooked	Johnstone R.	Palmerston (1885-6:243)
Tacca leontopetaloides	cooked, mashed, cooked	Bloomfield	Roth (1901b:16)
	pounded, soaked, cooked	Cape Grafton	Roth (1901b:16)
	soaked, hammered, roasted	Cape York	Roth (1901b:16)
	grated, sieved, washed 1-2 times, cooked	Cape York Peninsula	Roth (1901b:16)

N.B. CYP = Cape York Peninsula

* see footnote in Appendix D.

Table 10.6

Nutritional values for some noxious food plants

Species	protein %	fat %	carbo-hydrate %	energy kJ/100gm	
Aleurites moluccana (raw)	7.8	49.9	n.d.	2426	*1
Aleurites moluccana (treated)	0.5	0.5	n.d.	1400	1
Aleurites moluccana (raw)	17.7	63.7	7.9	2849	2
Beilschmiedia bancroftii (raw)	8.0	0.6	71.8	1396	2
Brugulera gymnorhiza (raw)	4.5	0.3	70.0	1295	2
Castanospermum australe (raw)	1.5	0.0	15.8	298	2
Castanospermum australe (treated)	3.8	2.9	n.d.	873	1
Cycas media (raw)	5.1	0.2	43.5	845	2
Cycas media (treated)	4.1	1.5	n.d.	537	1
Dioscorea bulbifera (treated)	3.6	0.1	n.d.	453	1
Dioscorea bulbifera (raw)	2.8	0.5	24.2	482	2
Dioscorea bulbifera (raw)	2.4	0.2	7.2	163	3
Dioscorea bulbifera (treated)	1.6	0.2	5.8	127	3
Dioscorea bulbifera (treated)	4.2	0.3	25.9	497	3
Elaeocarpus bancroftii (edible raw)	7.2	45.1	19.8	2170	2
Tacca leontopetaloides (raw)	3.3	.1	39.2	737	2

*Sources: 1. Armed Forces Food Science Establishment, Scottsdale, Tasmania (Les Hiddins, Townsville, pers.comm.)
2. Harris (1975)
3. Brand and Cherikoff (1985)

n.d. = data not given

Table 10.7

Availability of some toxic food plants

Species	When available
Beilschmiedia bancroftii	mid Jan. to mid Feb. on tree, 2-3 months on the ground
Bowenia spectabilis	all year
Castanospermum australe	late Jan. to April on coast mid Feb. to June on Atherton Tab.
Cycas media	mainly July/Aug. and Dec. to Feb., also sporadically all year
Endiandra palmerstonii	similar to E. pubens
Endiandra pubens	Dec. to Feb. (Atherton Tab.)
Podocarpus amarus	late Jan. to April

Table 10.8

Toxic food plants eaten in northeast Queensland; apparent regional variation in preference

Species \ Locality* / Sources**	Cktn, CYP (R)	Blmfld (R)	Athtn (R)	CGrftn (R)	Yidin (D)	BellKer (M)	JnstnR (P)	Tully (R)	Tully (D/I)	HerbtR (L)
Avicennia marina	+									
Beilschmiedia bancroftii					+	+	+	+	+	
Bowenia spectabilis	-	+		+		+			+	
Bruguiera gymnorhiza	+							+		
Castanospermum australe	+	+	+	+		+		+	+	
Cycas media	+	+	+	+	+			+	+	+
Dioscorea bulbifera	+	+								
Endiandra palmerstonii		+	+		+	+	+		+	
Endiandra pubens			+			+			+	
Entada phaseoloides	+	+							-	
Lepidozamia hopei									+	
Macadamia whelanii						+			+	
Podocarpus amarus			+		+				+	+
Prunus turnerana		+					+		+	
Tacca leontopetaloides	+	+		+					+	

+ = use recorded for district
- = non-use recorded

* Locality: Cktn (Cooktown); CYP (Cape York Peninsula); Blmfld (Bloomfield River); Athtn (Atherton); CGrftn (Cape Grafton); Yidin (Yidinjdji territory); BellKer (Bellenden Ker Range); JnstnR (Johnstone River); HerbtR (Herbert River).

** Sources: D (Dixon 1977); D/I (Bob Dixon & Tony Irvine pers.comm.1985); L (Lumholtz 1889); M (Meston 1889, 1904); P (Palmerston 1885-6); R (Roth 1901b).

Table 11.1

Some Australian noxious food plants
also eaten in other countries

	Country/region	Sources
Aleurites moluccana	Java, New Guinea	Burkill 1935 Henty 1980 Powell 1976
Alocasia macrorrhiza	Malaysia, Philippines, New Guinea	Burkill 1935 Monsalud *et al*.1966 Powell 1976
Avicennia spp.	Celebes, Java, Philippines	Burkill 1935 Monsalud *et al*.1966
Blechnum indicum	Malaysia	Golson 1971
Bruguiera spp.	Malaysia, Annam, Celebes, Philippines, New Guinea	Burkill 1935 Monsalud *et al*.1966 Powell 1976
Cycas spp. and related genera	Guam, Indonesia, Philippines, Fiji, Ceylon, SE.Asia, Columbia, Mexico, Japan, Honduras, Florida, India, E.Africa, S.Africa	Burkill 1935 Monsalud *et al*.1966 Whiting 1963 Beaton 1977
Dioscorea spp. ('cheeky' yam)	Malaysia, Philippines, tropical Africa, tropical Asia, S.America, New Guinea	Burkill 1935 Monsalud *et al*.1966 Coursey 1967 Beck 1985 Powell 1976
Entada phaseoloides	Andaman Is., Indonesia, India	Burkill 1935 Monsalud *et al*.1966
Ipomoea pes-caprae	Malaysia	Golson 1971
Tacca leontopetaloides	Philippines Malaysia	Monsalud *et al*.1966 Golson 1971

APPENDIX A

Published in: Queensland Archaeological Research 1:164-172 (1984).

THEORISING ABOUT NORTHEAST QUEENSLAND PREHISTORY

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INTRODUCTION

Rainforests are distributed unevenly throughout eastern Australia, but only in one portion of the tropics between Cairns and Cardwell (Figure 1) has a distinct Aboriginal "culture area" been recognised (Peterson 1976). The Aborigines of this area have attracted a fair amount of attention from various researchers in physical anthropology, linguistics and material culture. However, little archaeological research has been undertaken in the region. Some sites have been excavated in and near the rainforest district (Wright 1971, Brayshaw 1977, Campbell 1979, 1982a,1982b) but so far archaeological deposits older than 2,000 years have not been recorded, and little progress has been made towards a regional prehistory. In this paper I outline various theories about the prehistory of the rainforests and provide a framework for future archaeological research.

AN EARLY THEORY OF RAINFOREST PREHISTORY

The earliest theory about Aboriginal occupation of the North Queensland rainforests was put forward by Tindale and Birdsell (1941). In 1938-39 they studied the tribes of this region, describing them as:

> characterized by a high incidence of relatively and absolutely small stature, crisp curly hair, and a tendency toward yellowish-brown skin colour (Tindale and Birdsell 1941:1).

These tribes variously referred to as "negritos", "Tasmanoids", "pygmies" or "Barrineans", were believed by Tindale and Birdsell to be closely related to the Tasmanian Aborigines and other small-statured groups in the extreme southeast and southwest of the mainland. Their cultural affinities were also seen as being with the people of southern Australia rather than with their nearer neighbors.

This led to the hypothesis that all these small statured groups were descendants of the first human populations to colonise Australia. They were later displaced to marginal areas by the arrival of at least one other group with different racial affiliations. According to Birdsell, little racial mixing occurred in the Cairns rainforest region,

Appendix A (cont.)

and thus many characteristics of the original colonists were preserved to the present day (Birdsell 1949). This theory was based largely on the physical appearance of the rainforest dwellers, and also on the linguistic and cultural characteristics, as they were perceived at the time. It may also have owed much to a low opinion on the part of the researchers as to the suitability of rainforests for human habitation:

> Dense wet forests become refuge areas only to be sought by those less fortunate tribes whose physical and mental inferiorities condemn them to the least desirable parts of primitive man's environment (Tindale 1940:149).

Subsequent research has not confirmed this first theory of North Queensland prehistory. There may well have been more than one race of Homo sapiens reaching Australia (Jones 1979). However, the Cairns rainforest people cannot be identified as descendants of any particular group. They do not stand out from other Queensland Aboriginal populations on the basis of cranial studies (Lanarch and Macintosh 1970), nor on the basis of blood group or other gene frequencies (Kirk 1973). Neither do the languages of the region differ in any significant way from other Australian languages (Dixon 1966, 1972, 1980). There do appear to have been cultural differences from neighbouring groups, though the early ethnographic evidence is scanty (mainly Roth 1901-1910). However, many aspects of the culture, especially the distinctive material culture items noted by Roth and others, can be seen to be at least partly the result of the tropical rainforest environment, which supplies a somewhat different resource base from that of most other Australian environments.

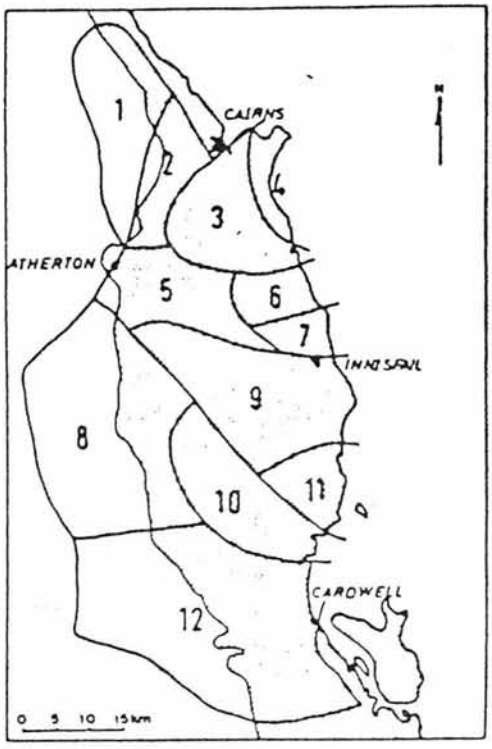

Figure 1. The rainforest "culture area" showing tribal territories and names (from Tindale 1974) and Pre-European distribution of rainforest (shaded)(from Birtles 1967).

1. Tjapukai
2. Buluwai
3. Idindji
4. Kongkandji
5. Ngatjan
6. Madjandji
7. Wanjuru
8. Djirubal
9. Mamu
10. Gulngai
11. Djiru
12. Keramai

Appendix A (cont.)

Nor is it possible to agree with Tindale's low opinion of rainforests and their inhabitants. A reconstruction (Harris 1978) of rainforest society as it was just prior to contact points to a population demographically well adapted to its environment, with a high population density (estimated at $2km^2$/person), large and frequent gatherings, and a pattern of intensive resource use. This last included heavy dependence on leaching technology for removing the toxic and/or bitter principles present in so many rainforest plants. The notion of a viable and vigorous rainforest population is reinforced by Dixon (1972:350), who suggests on linguistic grounds that the Djirbal-speaking people expanded their population and spread from the coastal rainforests toward the Atherton Tableland, displacing the Mbabaram-speaking people in the process.

In summary, the Tindale-Birdsell theory of rainforest prehistory has been shown by various researchers to be inadequate. It should therefore be discarded. In the absence of adequate archaeological data, can a better one be proposed? The last part of this paper presents a speculative framework which might have some predictive value for future archaeological research in the area. However, it is first necessary to discuss the temporal and spatial variations of the rainforests as far as they are understood.

VEGETATION HISTORY

The notion of human adaptation to the rainforest environment (Birdsell 1949, Harris 1978) is basic to this discussion. It would seem logical to assume that for a well adapted "rainforest culture" to develop and maintain itself, rainforests must constitute a major part of its environment and must have done so for a considerable period of time. (Such a situation can be contrasted to those drier or monsoonal regions in which patches of rainforest occur; rainforest species in these patches are often utilised, but in the overall pattern of exploitation, other species contribute the major portion of the diet). Since human adaptation to the rainforest clearly depends on having a rainforest to adapt to, a knowledge of the prehistoric environment of the area would be most useful in reconstructing the prehistory of peoples living there.

Analysis of pollen in sediments from the Atherton Tableland has enabled Kershaw (1975, 1978, and in Coventry et al. 1980:398-402) to reconstruct the following sequence. Araucarian rainforests were dominant from the beginning of the record about 120,000 years ago until 38,000 BP. From 38,000 to 27,000 BP, rainforest species decreased and were largely replaced by sclerophyll species such as eucalypts and acacias. The sclerophyll forest remained dominant until 9,500 BP. Between that time and 6,000 BP, rainforest species again increased, though the composition of the resultant rainforest community was different from the previous one. Finally, during the last 3,000 years, the rainforests have again been partly replaced by sclerophyll vegetation.

These vegetation changes are considered to be related to changes in precipitation, and Kershaw (1978, also Coventry et al. 1980:400-401) has produced a mean annual rainfall curve for the sequence (Figure 2). It should be noted that the data derives solely from sources on the Atherton Tableland. No information is available for the lowland region or the coastal ranges. Rainforests may have continued to flourish in these areas and/or on those portions of the continental shelf exposed by lower sea levels even during periods of reduced precipitation.

Appendix A (cont.)

167

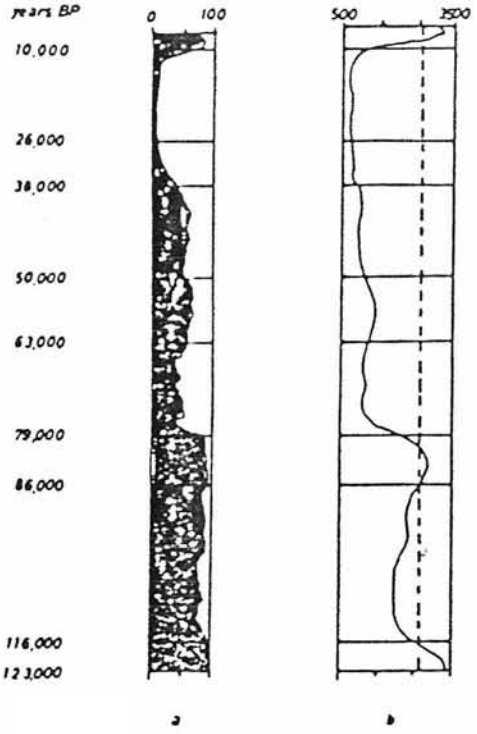

Figure 2. (a), Pollen diagram from Lynch's Crater, Showing percentage of rainforest (shaded) to sclerophyll taxa. (b), Suggested mean annual rain-fall (mm). Dashed line represents present rainfall (from Kershaw 1978).

N.B. Dates beyond 38,000 B.P. are extrapolated from sedimentation rates

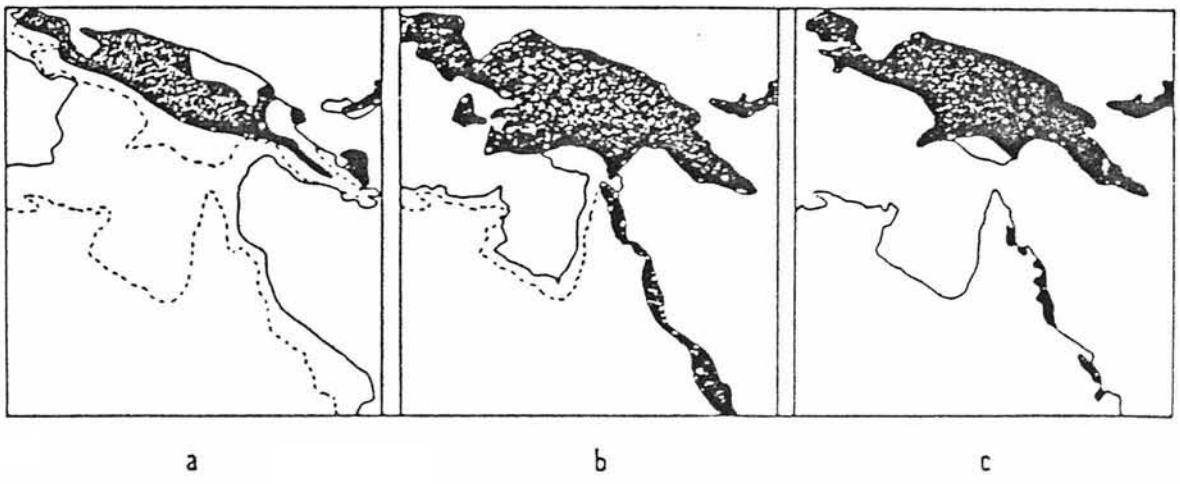

Figure 3. Postulated extent of prehistoric rainforests. (a) 17,000-14,000 BP (b) 8,000 BP, (c) Present (from Kershaw 1975).

Appendix A (cont.)

An admittedly speculative reconstruction of the vegetation distribution in northern Australia and New Guinea by Nix and Kalma (1972) also demonstrates dramatic fluctuations in the extent of North Queensland rainforests during the last 20,000 years (Figure 3). However, its parameters are too broad to permit detailed inferences to be drawn. For instance, no closed forests are shown in eastern Australia at 17,000-14,000 BP, yet major pockets must have remained to allow the recolonisation of the Atherton Tableland as demonstrated in the pollen record.

Thus, an adequate reconstruction of the prehistoric vegetation of the entire Cairns/Cardwell district is not possible at present. It is to be hoped that future research will widen the data base.

MORE RECENT THEORIES OF RAINFOREST PREHISTORY

Both Brayshaw (1977) and Harris (1978) made use of Kershaw's pollen analyses when discussing prehistoric occupation of the North Queensland rainforests. Brayshaw suggested that, with a higher rainfall prior to 3,000 BP, the rainforests may have been much more extensive than they are today (see Figure 3b). If such were the case, the four sites she excavated would then have been within the rainforest. None of the sites was older than 2,000 years, which led her to conclude that perhaps human occupation of the tropical rainforests is quite recent.

Harris (1978) implied a rather different sequence of events. He thought it possible that human populations were already occupying the Atherton Tableland before 9,500 BP at a time when the vegetation was predominantly sclerophyll. As the rainforests regenerated, the inhabitants adapted to the new environment. Interestingly, a legend recorded by Dixon (1972:29) indicates that people were indeed living on or near the Atherton Tableland when it was "not jungle - just open scrub".

Neither of these two theories was designed as a predictive model for archaeological research. In order to make a detailed hypothesis with some predictive value, I find it necessary to make explicit two major assumptions. First, it was noted above that the rainforest dwellersof just prior to European contact appear to have been well adjusted to their environment. It would be fair to assume that an intensive exploitation pattern of the kind suggested by Harris, supporting a fairly large population, would have been preceded by a pattern of less intensive exploitation by a smaller population, making infrequent use of the leaching technology or perhaps lacking it all together.

A brief discussion of the antiquity of the leaching process is in order here. It is not certain how long such a technique has been part of the Australian tool kit. The only archaeological evidence to date relates to cycads, an extremely toxic group of plants requiring leaching or fermentation to remove or destroy the toxins (Beaton 1977). The oldest evidence for Aboriginal exploitation of these plants comes from southern West Australia at 13,200 BP (Smith 1982). At this site cycads appear to have been a minor dietary component. A date of 4,300 BP for the use of cycads in central Queensland (Beaton 1977, 1982) appears to be associated with more intensive exploitation, to feed participants at large ceremonial gatherings. In North Queensland, other toxic species besides cycads were used as staples. The use of leaching as an everyday technique as recorded for the rainforests may postdate its use in a ceremonial context further south, though casual use of toxic plants may extend back into the Pleistocene. Lack of data from the rainforests does not allow us to do more than speculate.

Appendix A (cont.)

169

A second reasonable assumption that I wish to make explicit is that the intensive use of toxic plant products by means of the leaching process is essential if a given area of rainforest is to support a large population. Rainforests are typically low in animal biomass, though the inevitable creeks and rivers are a source of fish, shellfish, etc. The leaching technique enables otherwise toxic nuts and roots (many of which are high in protein and fat) to be added to the diet. In short, I would assume that high population density and dependence on the leaching technology went hand in hand in the North Queensland rainforests.

Given these assumptions, I shall hypothesise that early occupation of the rainforests was at a low population level, with little or no use of toxic plant products. Such occupation might (or might not) date from the earliest colonisation of Australia. I shall further hypothesise that the patterns of life in the rainforests altered at some later time, perhaps in response to some external stimulus, perhaps as part of the continuing interaction between people and their environment. Population density increased, resource exploitation intensified and the leaching technique was either invented, introduced, or its already known application increased. No order of events is necessarily implied in this list.

At this stage one can speculate that environmental changes may have influenced the course of events. For instance, sea level rise at the end of the Pleistocene resulted in a decrease in the land area of Australia. By 5-6,000 BP the present coastline was reached, and any rainforest that existed on the continental shelf would have vanished. The remaining areas of rainforest might now have been required to support a larger population than previously, and methods of intensive resource exploitation such as the leaching technique would certainly have enabled this. The rainforests may have further decreased in area from 3,000 BP following the lowered precipitation suggested by Kershaw (1978) (Figure 2).

Alternatively, it is possible that the shrinking of the rainforests had very little to do with a more intensive pattern of resource exploitation. The change from one pattern to another may have occurred at quite a different time, perhaps with the increase in extent of rainforests from 9,500 BP, or perhaps only within the last millennium or so.

CONCLUSION

This hypothesis is both less and more detailed than those of Brayshaw and Harris. It refrains from specificity about dating, but includes various assumptions whose validity may be checked by archaeological research, if the requisite data can be unearthed. The testing of archaeological hypotheses is not as straightforward as in some other disciplines where experiments can be carried out under artificial conditions. Archaeological data is subject to decay and destruction, and once gone it is not renewable. In the tropical rainforest region, local conditions of high humidity and temperature contribute to a rapid rate of decay of organic remains. Also, regular flooding and intensive European utilisation of the land have contributed to site destruction.

Ideally to test the first phase of this hypothesis, archaeological evidence of early, low intensity occupation will need to be found, together with firm palaeo-ecological evidence of a rainforest environment. The discovery of a suitable site will necessarily be serendipitous, especially if this phase of occupation really is early.

Appendix A (cont.)

Finding data on the later phase of occupation should be less difficult, since it was still extant about a hundred years ago. The leaching technique utilised stone tools such as nut-cracking stones and morahs for crushing kernels to a coarse flour. Many of these tools have been ploughed up in areas now cleared of rainforest, though unfortunately none have yet been found in a datable context. If relevant stratified sites can be found, it should be possible to date the first appearance of such tools, and/or demonstrate a change in patterns of site utilisation in the past.

I am aware that the foregoing is a very flimsy framework on which to construct a prehistory. My aim was to explore the various possibilities from an archaeological viewpoint. My current research in the region should begin to fill in the gaps in this outline and expose its deficiencies.

ACKNOWLEDGEMENTS

My thanks to John Campbell and Anne Blackwell for helping me to express what I was trying to say.

REFERENCES

Beaton, J.M. 1977 Dangerous Harvest: Investigations in the Late Prehistoric Occupation of Upland South-East Central Queensland. Unpublished PhD thesis, Australian National University.

Beaton, J.M. 1982 Fire and Water: Aspects of Australian Aboriginal Management of Cycads. Archaeology in Oceania 17:51-58.

Birdsell, J.B. 1949 The Racial Origin of the Extinct Tasmanians. Records of the Queen Victoria Museum, Launceston 2(3):105-122.

Birtles, T.G. 1967 A Survey of Land Use, Settlement and Society in the Atherton-Evelyn District, North Queensland. Unpublished MA thesis, University of Sydney.

Brayshaw, H.C. 1977 Aboriginal Material Culture in the Herbert/Burdekin District, North Queensland. Unpublished PhD thesis, James Cook University.

Campbell, J.B. 1979 Settlement Patterns on Offshore Islands in Northeastern Queensland. Australian Archaeology 9:18-32.

Campbell, J.B. 1982a New Radiocarbon Results for North Queensland Prehistory. Australian Archaeology 14:62-66.

Campbell, J.B. 1982b Automatic Seafood Retrieval Systems: The Evidence From Hinchinbrook Island and Its Implications. In S. Bowdler (Ed.) Coastal Archaeology In Eastern Australia, pp. 96-107. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

Appendix A (cont.)

171

Coventry, R.J., D. Hopley, J.B. Campbell, I. Douglas, N. Harvey, A.P. Kershaw, J. Oliver, C.V.G. Phipps and K. Pye 1980 The Quaternary of Northeastern Australia. In R.A. Henderson and P.J Stephenson (Eds.) The Geology and Geophysics of Northeastern Australia, pp. 375-417. Geological Society of Australia, Queensland Division: Brisbane.

Dixon, R.M.W. 1966 Mbabaram: A Dying Australian Language.Bulletin of the School of Oriental and African Studies, University of London 29(1):97-121.

Dixon, R.M.W. 1972 The Dyirbal Language of North Queensland. Cambridge University Press: Cambridge.

Dixon, R.M.W. 1980 The Languages of Australia. Cambridge University Press: Cambridge.

Harris, D.R. 1978 Adaptation to a Tropical Rainforest Environment: Aboriginal Subsistence in Northeastern Queensland. In N.G. Blurton-Jones and V. Reynolds (Eds.) Human Behaviour and Adaptation, pp. 113-134. Taylor and Francis: London.

Jones, R. 1979 The Fifth Continent: Problems Concerning the Human Colonization of Australia. Annual Review of Anthropology 8:445-466.

Kershaw, A.P. 1975 Late Quaternary Vegetation and Climate in Northeastern Australia. In R.P. Suggate and M.M. Cresswell (Eds.) Quaternary Studies, pp. 181-187. Royal Society of New Zealand: Wellington.

Kershaw, A.P. 1978 Record of the Last Interglacial-Glacial Cycle From Northeastern Queensland. Nature 272:159-161.

Kirk, R.L. 1973 The Human Biology of Aborigines in Cape York Australian Aboriginal Studies No. 44. Australian Institute of Aboriginal Studies: Canberra.

Lanarch, S.L. and N.W.G. Macintosh 1970 The Craniology of the Aborigines of Queensland. Oceania Monograph No. 15.

Nix, H. A. and J.D. Kalma 1972 Climate as a Dominant Control in the Biogeography of Northern Australia and New Guinea. In D. Walker (Ed.) Bridge and Barrier: The Natural and Cultural History of Torres Strait, pp. 61-91. Australian National University: Canberra.

Peterson, N. 1976 The Natural and Cultural Areas of Aboriginal Australia. In N. Peterson (Ed.) Tribes and Boundaries in Australia, pp. 50-71. Australian Institute of Aboriginal Studies: Canberra.

Roth, W.E. 1901-1910 North Queensland Ethnography Bulletins. Nos. 1-8, Government Printer: Brisbane. Nos. 9-18, Records of the Australian Museum 6-8.

Appendix A (cont.)

Smith, M. 1982 Late Pleistocene Zamia Exploitation in Southern Western Australia. Archaeology in Oceania 17:117-121.

Tindale, N.B. 1940 Results of the Harvard-Adelaide Universities Anthropological Expedition 1938-39: Distribution of Australian Aboriginal Tribes: A Field Survey. Transactions of the Royal Society of South Australia 64(1):140-231.

Tindale, N.B. 1974 Aboriginal Tribes of Australia. Australian National University Press: Canberra

Tindale, N. B. and J.B. Birdsell 1941 Results of the Harvard-Adelaide Universities Anthropological Expedition 1938-39: Tasmanoid Tribes in North Queensland. Records of the South Australian Museum 7:1-9.

Wright, R.V.S. 1971 Prehistory of the Cape York Peninsula. In D.J. Mulvaney and J. Golson (Eds.) Aboriginal Man and Environment in Australia, pp. 133-140. Australian National University Press: Canberra.

APPENDIX B

Published in: Archaeology at ANZAAS 1983, M. Smith ed. Ppl72-178.
Western Australian Museum: Perth. (1983)

EXCAVATIONS AT JIYER CAVE, NORTHEAST QUEENSLAND: SOME RESULTS

NICKY HORSFALL *

Appendix B (cont.)

Appendix B (cont.)

Appendix B (cont.)

Appendix B (cont.)

Appendix B (cont.)

Appendix B (cont.)

APPENDIX C

Published in: Australian National Rainforest Study Report to the World Wildlife Fund (Australia) Volume 1. Proceedings of a workshop on the past, present and future of Australian rainforests, Griffith University, December 1983. Pp524-528. Geography Department, Monash University, for the Australian Conservation Foundation. (1984)

THE PREHISTORIC OCCUPATION OF AUSTRALIAN RAINFORESTS

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Appendix C (cont.)

Appendix C (cont.)

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Appendix C (cont.)

APPENDIX D

Details of processing techniques for toxic plant foods in northeast Queensland as given in early sources

Avicennia marina (A. officinalis)

> Fruit put in the ashes, and covered over with tea-tree bark and ashes, i.e. baked. It is then removed and put into a (sieve) dilly-bag, and washed in it, the water and debris passing through: the bag with its contents is finally dried by squeezing, and the "mush" poured onto a piece of bark and eaten (Roth 1901b:9).

Beilschmiedia (Cryptocarya) bancroftii

> Nut roasted in its shell, shell cracked, kernel pounded between round and flat stone, and then soaked in water, which percolates through a dilly-bag immersed in it (Roth 1901b:11).

Bowenia spectabilis

> The thick fleshy rhizome used for food, after being cooked (Bailey 1906:188).
>
> The hard rhizome [can be eaten] after being allowed weeks to decompose (Banfield 1908 1982:169).

Bruguiera gymnorrhiza (including B. rheedii)

> The elongating radicles are eaten, after being prepared as follows. Baked in the ashes for some considerable time to allow of them becoming quite soft, these radicles are pounded between two stones, the skins picked off and thrown aside, and the yellowish-looking mass "washed" in fresh water contained in one of the ordinary bark-troughs. The washing consists of squeezing up the pulpy mass with the fingers under water, allowing it time to settle, and pouring off the clear surface-water. After some four or five of such washings - according to the quantity of vegetable being treated - the powdery-looking mass is transferred to a more or less circular basin-shaped hole scooped out in the sand. The hole has this peculiarity, and evidently an important one, that its entire lining is well damped and so smoothed into shape. When the mass has been poured in, the lining of the hole acts as a kind of fine colander, allowing the water to pass through in to the sand below, but retaining what now looks very much like some mashed mealy potato, which indeed it also resembles somewhat in taste. On occasion, if too much water has been poured in, and it is not percolating as quickly as might be wished, some

Appendix D (cont.)

of the top water is got rid of by means of a small surface drain. These holes in the sand are often to be noticed along the coast-line, especially in the neighbourhood of the mangrove swamps (Roth 1901b:10).

[Tully River] Radicle first of all baked, then skin scraped off, sliced up with a snail-shell knife, and finally soaked in water all night, when it is ready for eating (Roth 1901b:10).

Castanospermum australe

On the Bloomfield, this nut is nearly always obtainable, but, like the Entada scandens [E. phaseoloides], it is not relished. It is one of the worst foods to prepare, a long time being required to wash away the disagreeable flavour. It is first of all baked in a stone oven, then pounded and sifted, put into a bark trough, and treated with like the Dioscorea sativa [D. bulbifera] yam (R.Hislop in Roth 1901b:10).

At Atherton, the shells being broken, the kernels are commenced to be baked about sunrise, the covering leaves and earth being removed about mid-day. They are then cut up into very fine chips with a sharp shell etc., and at about sunset are put into a lawyer-cane dilly-bag, through which the creek (i.e. running water) is made to percolate, and there it remains until the following morning, when it is about ready to eat (Roth 1901b:10).

On the lower Tully River, after the beans have been gathered, the nuts are removed, and placed in heaps in the ground-ovens. After covering with leaves and sand, a fire is lit on top, with the result that the nuts are practically steamed, a process occupying from a few hours up to a whole day. When removed, they are sliced up very fine with a snail-shell knife, and put in dilly-bags in a running stream for quite a couple of days, when they are ready. If not sliced up very fine, the bitter taste remains (Roth 1901b:10).

[The Aborigines] informed me that they steep them in water for five days, and then cut them into thin slices and dry them in the sun; they are then pounded between two large stones, and the meal being moistened with water is baked on a flat stone, raised from the ground a few inches, with a fire burning beneath. I

Appendix D (cont.)

> afterwards saw some of the meal baked, but it was not very palatable (Carron 1849:28).
>
> This bean in its natural state contains a strong purgative; this they extract by baking and soaking in water, after which it is sliced very fine with a shell and again soaked. It is very tasteless stuff, but there are also several nuts and roots which require to be prepared in a similar manner, and all are equally tasteless (Forster in Johnstone 1904:30).
>
> ...one of the most plentiful, yet one of the most tedious and difficult of the aboriginal foods to prepare. It is obtainable all year round. The mode of preparation is as follows: The pods, after being gathered, are placed in heaps and opened, then covered with leaves and soil to prevent burning. A fire is lighted on top, and kept burning all day, and next morning the oven is opened, when it is found that the nuts are cooked or steamed. They are then sliced with a shell knife, the finer the better, as if cut too thick the bitter property is not removed. The sliced nuts are then put in a cane dillybag, and placed in a running stream, with the water constantly flowing through and over the sliced nuts. This is continued for two or more days, when the slices are pounded together and fit to be eaten (Johnstone 1904:50-51).

Cycas media

> When the nut is cracked, the kernel is subjected to an elaborate process of pounding, roasting, and soaking, until all is changed into a white porridge (Lumholtz 1889:181).
>
> On the Bloomfield River it is fit to eat from July to January. The nuts are gathered by old men, women, and girls. They are roasted and cracked, the kernels being kept for some four or five days before being pounded up into flour by the women. The reason for letting these few days elapse is said to lie in the fact that the delay helps to make them pound up more finely. The pounded nut is next sifted through a palm-fibre dilly-bag, which, having a mesh with smaller interspaces than the other varieties of bag, prevents the coarser particles getting through. The flour is next put into a grass dilly-bag, which has been previously folded sideways upon itself so as to form a basin-like receptacle, and placed near a stream. With the

Appendix D (cont.)

help of leaves acting as a trough, water is allowed to continue flowing into the receptacle, matters being so regulated that the water never overflows the edges. Fresh water is thus continually percolating through the Zamia flour in its dilly-bag colander, right through the night, and in the morning it is ready to be eaten. It may, however, be kept for some three or four days, up to which time it is believed to improve; it will not, however, keep good any longer than that (R.Hislop in Roth 1901b:11).

On the lower Tully River it is steamed and cut up like Castanospermum australe, but rushing water is made to fall from a height on to the contents of the dilly-bag held below, so as to keep the mass both strained and well-stirred - a process which is kept up continually for quite a day (Roth 1901b:11).

It bears a very handsome cone-shaped fruit, which is composed of a number of nuts, which are gathered by blacks, roasted, and cracked; the kernels are kept a few days, then pounded into flour, then sifted through a dillybag into a large open dillybag, and taken to a running stream, where, with a trough made of leaves, water is made to continually flow over the meal, but not sufficient to wash the meal away. This is continued for a day, and the meal is fit to be eaten. It will keep for two or three days (Johnstone 1904:50).

Dioscorea bulbifera var.bulbifera
(D. sativa v.rotunda)

On the Bloomfield, this is suitable for use from about the middle of February to about the middle of May, the approximate extent of the wet season, during which it constitutes the main article of diet. It is dug up and prepared for use by both men and women; but if by the former, it may be eaten by males only. The actual mode of preparation is as follows:- After being dug out, it is carefully washed, and all dirt and adventitious roots removed. It is next baked in a stone oven for about four hours, at the end of which time it is mashed up in a grass dilly-bag, and then strained through a dilly-bag into a bark trough. The dilly-bag remains in the trough, and the yam "mash", to which water has been added, is stirred about and worked up until everything but the fibre and husk strains through into the trough below. The next process

Appendix D (cont.)

is to fill up what is now in the trough with water, to mix the "mess" well up, and allow it to stand therein for a good half-hour or so, i.e., until such time as the water clears, when it is poured off, and fresh water added. It sometimes takes seven or eight waters before the disagreeable taste is removed. As soon as the cook considers it fit, she digs a hole of about the same size and shape as the inside of an ordinary wash-hand basin; this is always done in some sandy place, the excavation being lined with clean sand. Into this hole the now semi-liquid mass is gently poured, and when the water is all drained off it is ready for eating, the prepared article looking much like the ordinary preserved (tinned) potato. It has to be eaten the same day as prepared: fermentation takes place quickly (R.Hislop in Roth 1901b:11-12).

Endiandra (Cryptocarya) palmerstonii

The nut is roasted, cracked, kernel pounded into flour, and treated in the same way as Cycas media, except that it is ready for eating after the water has been percolating for some five or six hours; sometimes, however, it may be left in the water all night (R.Hislop in Roth 1901b:11).

The nut is perfectly round, and about 6 inches in circumference, with a thin shell. When in the fruit it is gree and ribbed with a few converging lines. The fruit, which is useless, fastens to the nut like glue. Hit it against some hard substance and the fruit breaks, allowing the nut to roll out cleanly. The nut needs no preparation, only roasting till nicely browned. If eaten raw it resembles the uncooked English potato (Palmerston 1885-6:242 for 'coohoy' nut).

Endiandra pubens (E. insignis)

Prepared like the [E. palmerstonii] (Roth 1901b:12).

* When in fruit these nuts grow to the size, shape, and colour of our largest apples, and are divested of their fruit just as easily as the "Coohoy", which they resemble in size and shape. These nuts must be eaten with caution as they contain the most poisonous properties. When divested of fruit and shell they sould be placed in a basin-shaped oven of red hot stones, and

Appendix D (cont.)

covered over with a layer of green ferns. In this place the nuts, and another thick layer of green ferns on top, heaped over with sand; place a large fire oven over that again, and fairly steam the nuts for ten or twelve hours - all night is the rule - and they are fit for food next morning (Palmerston 1885-6:242 for 'damboon').

Entada phaseoloides (E. scandens)

Apparently only eaten when nothing else is available. The seed is first baked in the ashes, then cracked up, and, inside a dilly-bag, left in running water all night (Roth 1901b:12).

Macadamia whelanii

Kernels eaten, usually roasted (Meston 1889).

The large smooth nuts used, after careful preparation, as food by the aborigines (Bailey in Meston 1904:15).

Podocarpus amarus

Fruit roasted, rolled, and rubbed between two stones, mixed with a little water, and eaten (Roth 1901b:15).

This is first roasted in its shell, then the shell is broken and the kernel roasted, then the dried nuts are hung up in a dilly-bag for a short while. The nuts are chopped up, with a stone, and then ground fine, and sieved through a dilly-bag before being eaten (although this process can be shortened, and [black pine] eaten after only a few minutes preparation) (Dixon 1977:10).

* ...the main food of the natives during about two months of the year. This fruit, which grows in the scrubs on the mountain tops, is of a bluish colour, and of the size of a plum. The tree is very large and has long spreading branches, so that the natives prefer waiting until the fruit falls on the ground to climbing the trees for it. It is gathered by the women and brought to the camp, where it is roasted over the fire until the flesh is entirely burnt off and the kernel is thoroughly done. The shell round the kernel then becomes so brittle that it is easily peeled off. Then the kernels are beaten between two flat stones until they form a mass like paste. When they have been beaten thoroughly in

Appendix D (cont.)

this manner, they are placed in baskets and set in the brook to be washed out, and the day after they are fit to be eaten. The paste, which is white as chalk and contains much water, looks inviting, but is wellnigh tasteless (Lumholtz 1889:251 for 'tobola').

Prunus turnerana (Pygeum turnerianum)

On the Bloomfield River, it is in season from January to March. It is only used quite fresh, as the fruit-husk must be over the shell. The whole thing - fruit-husk, shell, and kernel - is pounded up together, sifted through a palm-tree dilly-bag, after which the resulting meal is damped, kneaded into cakes, wrapped up in wild-ginger leaves, and baked in the ashes (R.Hislop in Roth 1901b:15).

* The fruit is similar to a small black plum. A heap of them are placed in a hollow rock in which water is poured, then the fruit is tramped off, next divested of its shell, then crushed into meal between two stones, a flat one on the ground; the other, a small round one, kept in the hand. The meal is then placed between two frond-like leaves, and toasted on the coals like Johnny-cakes. The fruit adheres to the nut which has a wrinkled surface. The fruit also contains evil properties, and requires soaking in water four or five hours after it is crushed (Palmerston 1885-6:243 for 'too-moo).

Tacca leontopetaloides (T. pinnatifida)

On the Bloomfield, etc., this tuber is baked in the ashes, mashed up, rolled in ginger-leaves, and then baked (R.Hislop in Roth 1901b:16).

At Cape Grafton, the tubers are pounded between stones, put in water all day, the sediment removed and cooked on hot ashes (Roth 1901b:16).

At Red Island it is soaked, hammered, and roasted (Roth 1901b:16).

On the Morehead and Musgrave Rivers, I have seen it prepared as follows:- The tubers are rubbed up against a rough stick (acting after the method of a "nutmeg-grater") into a bark trough containing water. The mixture is next put through a "sieve" formed of an infolded dilly-bag: it is squeezed through this into some fresh water contained in another trough. Here

Appendix D (cont.)

> it is allowed to settle, for which some time is required, then washed once or twice, the water allowed to run off, and the remaining sediment scraped up with a shell, and then cooked in hot ashes like a "damper" (Roth 1901b:16; similar methods given for the Palmer River and the Pennefather River.)

*The nuts to which these descriptions apply are only identified by Aboriginal names in the literature, and were tentatively assigned to these species after discussions with Tony Irvine of Forest Research, CSIRO, Atherton. Note that Harris (1975) identified 'damboon' and 'too-moo' as Macadamia whelanii and Cryptocarya globella (C.pleurosperma) respectively.

APPENDIX E

Index to some common plant names and synonyms

for	see
Achras chartacea	Planchonella chartacea
Achras pohlmaniana	Planchonella pohlmaniana
Acrostichum aureum	Acrostichum speciosum
Allophylus serratus	Allophylus cobbe
almond, Johnstone River	Elaeocarpus bancroftii
almond, Queensland	Elaeocarpus bancroftii
almond, wild	Prunus turnerana
Alsophila australis	Cyathea australis
Alsophila woollsiana	Cyathea woollsiana
Aponogeton monostachyon	Aponogeton natans
Aponogeton queenslandicus	Aponogeton natans
arrowroot, Polynesian	Tacca leontopetaloides
Avicennia officinalis	Avicennia marina
banana	Musa spp.
bean, black	Castanospermum australe
bean, matchbox	Entada phaseoloides
black bean	Castanospermum australe
black pine	Podocarpus amarus
black walnut	Endiandra palmerstonii
Blechnum serrulatum	Blechnum indicum
blue quandong	Elaeocarpus grandis
brown pine	Podocarpus elatus
Bruguiera rheedii	Bruguiera gymnorhiza
Buchanania angustifolia	Buchanania arborescens
Buchanania muelleri	Buchanania arborescens
candlenut	Aleurites moluccana
Canthium barbatum	Canthium coprosmoides
Careya australis	Planchonia careya
Ceriops candolleana	Ceriops tagal
cheeky yam	Dioscorea bulbifera var. bulbifera
chestnut, Moreton Bay	Castanospermum australe
Chilocarpus australis	Melodinus australis
cocky apple	Planchonia careya
Colocasia macrorrhiza	Alocasia macrorrhiza
Commersonia echinata	Commersonia bartramia
Cordia myxa	Cordia dichotoma
Cryptocarya bancroftii	Beilschmiedia bancroftii
Cryptocarya infectoria	Cryptocarya murrayi
Cryptocarya insignis	Endiandra pubens
Cryptocarya palmerstoni	Endiandra palmerstonii
Cryptocarya pleurosperma	Cryptocarya globella
cunjevoi	Alocasia macrorrhiza
Curculigo orchioides	Curculigo ensifolia
Cyathea cooperi	Cyathea woollsiana
Cymbidium albuciflorum	Cymbidium madidum
Davidson's plum	Davidsonia pruriens
Derris uliginosa	Derris trifoliata
Dioscorea sativa var. elongata	Dioscorea bulbifera var. elongata
Dioscorea sativa var. rotunda	Dioscorea bulbifera var. bulbifera
Drymophloeum normanbyi	Normanbya normanbyi
Elaeocarpus sphaericus	Elaeocarpus grandis
Eleocharis sphacelata	Eleocharis dulcis

Appendix E (cont.)

for	see
Elettaria scottiana	Hornstedtia scottiana
Endiandra insignis	Endiandra pubens
Entada scandens	Entada phaseoloides
Eugenia cormiflora	Syzygium cormiflorum
Eugenia grandis	Syzygium grande
Eugenia hislopii	Syzygium erythrocalyx
Eugenia kuranda	Syzygium kuranda
Eugenia leptantha	Acmenasperma claviflorum
Eugenia suborbicularis	Syzygium suborbiculare
Ficus ehretioides	Ficus variegata
Ficus esmeralda	Ficus virgata
Ficus eugenioides	Ficus obliqua
Ficus glomerata	Ficus racemosa
Ficus nitida	Ficus microcarpa
Ficus orbicularis	Ficus opposita
Ficus pilosa	Ficus drupacea
Ficus retusa	Ficus microcarpa
Ficus stenocarpa	Ficus fraseri
Ficus thynneana	Ficus microcarpa var. latifolia
fig	Ficus spp.
finger cherry	Rhodomyrtus macrocarpa
Flueggea microcarpa	Securinega melanthesoides
Fluggea obovata	Securinega melanthesoides
Garcinia cherryi	Ternstroemia cherryi
grass-tree	Xanthorrhoea spp.
grey mangrove	Avicennia marina
hairy walnut	Endiandra pubens
Hardenbergia retusa	Vandasia retusa
Heleocharis sphacelata	Eleocharis dulcis
Helicia diversifolia	Athertonia diversifolia
Helicia whelani	Macadamia whelanii
Hellenia coerulea	Alpinia caerula
Hibiscus ficulneus	Abelmoschus ficulneus
Hicksbeachia diversifolia	Athertonia diversifolia
Hornstedtia scotti	Hornstedtia scottiana
Hugonia jenkinsii	Durandea jenkinsii
Imperata arundinacea	Imperata cylindrica var.major
Ixora klanderana	Ixora timorensis
Johnstone River almond	Elaeocarpus bancroftii
Kuranda quandong	Elaeocarpus bancroftii
Laportea spp.	Dendrocnide spp.
laywer cane/vine	Calamus spp.
Lepironia mucronata	Lepironia articulata
Licuala muelleri	Licuala ramsayi
Lucuma galactoxylon	Palaquium galactoxylon
Macrozamia hopei	Lepidozamia hopei
mangrove, grey	Avicennia marina
mangrove, red	Bruguiera gymnorhiza
Marlea vitiensis	Alangium villosum
matchbox bean	Entada phaseoloides
Melia composita	Melia azedarach
Melia dubia	Melia azedarach
Melodinus murpe F.M.Bail.	Melodinus bacellianus
Mimusops parvifolia R.Br.	Mimusops elengi
Mollinedia subternata	Tetrasynandra laxiflora
Moreton Bay chestnut	Castanospermum australe

Appendix E (cont.)

for	see
Musa brownii	*Musa banksii*
Myrsine crassifolia	*Rapanea porosa*
Nauclea coadunata	*Nauclea orientalis*
Nelumbium speciosum	*Nelumbo nucifera*
Normanbya muelleri	*Normanbya normanbyi*
Panax murrayi	*Polyscias murrayi*
Pandanus odoratissimus	*Pandanus spiralis*
pine, black	*Podocarpus amarus*
pine, brown	*Podocarpus elatus*
Planchonia crenata	*Planchonia careya*
Plectronia barbata	*Canthium coprosmoides*
Pleiogynium solandri	*Pleiogynum timorense*
Podocarpus pedunculatus	*Podocarpus amarus*
poison walnut	*Cryptocarya globella*
Polynesian arrowroot	*Tacca leontopetaloides*
Pongamia glabra	*Pongamia pinnata*
Pygeum turnerianum	*Prunus turnerana*
quandong, blue	*Elaeocarpus grandis*
quandong, Kuranda	*Elaeocarpus bancroftii*
Queensland almond	*Elaeocarpus bancroftii*
red mangrove	*Bruguiera gymnorhiza*
Rhaphidophora lovellae	*Epipremnum mirabile*
Rhaphidophora pinnata	*Epipremnum mirabile*
Rhizophora tagal	*Ceriops tagal*
rickety nut	*Cycas media*
Russell River nut	*Omphalea queenslandiae*
Sarcocephalus cordatus	*Nauclea orientalis*
Sarcocephalus leichhardtii	*Nauclea orientalis*
Schmidelia serrata	*Allophylus cobbe*
Sideroxylon brownlessianum	*Planchonella brownlessiana*
Sideroxylon chartaceum	*Planchonella chartacea*
Sideroxylon dugulla	*Planchonella pohlmaniana*
spike rush	*Eleocharis dulcis*
Stephania hernandiaefolia	*Stephania japonica*
stinging tree	*Dendrocnide* sp.
Syzygium hislopii	*Syzygium erythrocalyx*
Syzygium leptanthum	*Acmenasperma claviflorum*
Tabernaemontana orientalis	*Ervatamia orientalis*
Tacca brownii	*Tacca leontopetaloides*
Tacca pinnatifida	*Tacca leontopetaloides*
Vitis acetosa	*Ampelocissus acetosa*
Vitis clematidea	*Cayratia clematidea*
walnut, black	*Endiandra palmerstonii*
walnut, hairy	*Endiandra pubens*
walnut, poison	*Cryptocarya globella*
walnut, yellow	*Beilschmiedia bancroftii*
wild almond	*Prunus turnerana*
Xerotes longifolia	*Lomandra longifolia*
Xerotes multiflora	*Lomandra multiflora*
yam	*Dioscorea bulbifera* var. *elongata*
yam	*Dioscorea transversa*
yam, cheeky	*Dioscorea bulbifera* var. *bulbifera*
yellow walnut	*Beilschmiedia bancroftii*

REFERENCES

N.B. For some of the earlier publications which have since been reissued, the date of the original version is cited in the text to make the age of the information clear, but the page numbers refer to the later edition, where these are different.

Abernathy, L.M.
1984 Rainforest Aboriginal Shields: Analysis of a technological style. Unpublished Grad Dip Mat Cult thesis, James Cook University.

Amos, B.J. and F. de Keyser.
1964 Mossman, Qld - 1:250,000 Geological Series Sheet SE/55-1. Explanatory notes. Australia Bureau of Mineral Resources, Geology and Geophysics: Canberra.

Anderson, C.
1979 Aboriginal economy and contact relations at Bloomfield River. Australian Institute of Aboriginal Studies Newsletter 12:33-37.

1983 Aborigines and tin mining in North Queensland: A case study in the anthropology of contact history. Mankind 13:473-498.

1984 The political and economic basis of Kuku-Yalanji social history. Unpublished Ph D thesis, University of Queensland.

Anderson, J.
1984 Between Plateau and Plain. Occasional Papers in Prehistory, No.4. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

Anon.
1975 Inside our rainforests. Ecos 6:4-12.

Ash, J.
1983 Rainfall patterns in northeastern Queensland: 7+/-2KYA. In J.M.Bowler, J.Chappell and J.Hope (eds.), Proceedings of the CLIMANZ Conference 1981, p90. Department of Biogeography and Geomorphology, Research School of Pacific Studies, Australian National University:Canberra.

Australian Bureau of Meteorology.
1966 Rainfall statistics Queensland. Australian Bureau of Meteorology: Canberra

1975 Climatic averages, Australia (metric edition). Australian Bureau of Meteorology: Canberra.

1977 Rainfall statistics, Australia (metric edition). Australian Bureau of Meteorology: Canberra.

Australian Heritage Commission.
1986 Tropical Rainforests of North Queensland: their conservation significance. Australian Government Publishing Service: Canberra.

Bailey, F.M.
1906 The Weeds and Suspected Poisonous Plants of Queensland. H.Pole: Brisbane.

Banfield, E.J.
1908 The Confessions of a Beachcomber. Unwin: London. (1968 edn., Angus and Robertson: Sydney.)

Barrau, J.
n.d. An ethnobotanical guide for anthropological research in Malayo-Oceania (preliminary draft). UNESCO Science Cooperation Office for Southeast Asia.

Beaglehole, J.C. (ed.)
1962 The Endeavour Journal of Joseph Banks. Volume II. Angus and Robertson: Sydney.

Beale, E.
1970a Kennedy Workbook. Wollongong University College: Wollongong.

1970b Kennedy of Cape York. Rigby: Adelaide.

Beaton, J.
1977 Dangerous harvest: investigations in late prehistoric occupation of upland south-east central Queensland. Unpublished Ph D thesis, Australian National University.

1982 Fire and water: aspects of Australian Aboriginal management of cycads. Archaeology in Oceania 17:51-58.

1985 Evidence for a coastal occupation time-lag at Princess Charlotte Bay (North Queensland) and implications for coastal colonization and population growth theories for Aboriginal Australia. Archaeology in Oceania 20:1-20.

Beck, W.
1985 Technology, toxicity and subsistence: a study of Australian Aboriginal plant food processing. Unpublished Ph D thesis, La Trobe University.

Bellwood, P.
1983 New perspectives on Indo-Malaysian prehistory. Bulletin of the Indo-Pacific Prehistory Association 4:71-83.

Bender, B.
1978 Gatherer/hunter to farmer: a social perspective. World Archaeology 10:204-222.

1981 Gatherer-hunter intensification. In A. Sheridan and G. Bailey (eds.) Economic Archaeology, pp.149-157. BAR International Series No.96. British Archaeological Reports: Oxford.

Berndt, R.M.
1959 The concept of 'the tribe' in the western desert of Australia. Oceania 30:81-107.

Best, E.
1942 Forest lore of the Maori. Dominion Museum Bulletin 14. (Reprinted 1977, Government Printer: Wellington.

Binford, L.R.
1964 A consideration of archaeological research design. American Antiquity 29:425-441.

Birdsell, J.B.
1949 Results of the Harvard-Adelaide Universities Anthropological Expedition, 1938-1939: The racial origins of the extinct Tasmanians. Records of the Queen Victoria Museum Launceston 2(3):105-122.

1957 Some population problems involving Pleistocene man. Cold Spring Harbor Symposia on Quantitative Biology 22:47-70.

1967 Preliminary data on the trihybrid origin of the Australian Aborigines. Archaeology and Physical Anthropology in Oceania 2:100-155.

1977 The recalibration of a paradigm for the first peopling of Greater Australia. In J.Allen, J.Golson and R.Jones (eds.), Sunda and Sahul: Prehistoric Studies in Southeast Asia, Melanesia and Australia, pp113-167. Academic Press: London.

Birtles, T.G.
1967 A survey of land use, settlement and society in the Atherton-Evelyn district, North Queensland. Unpublished M.A. thesis, University of Sydney.

Bolton, G.
1970 A Thousand Miles Away: a history of North Queensland to 1920. Australian National University Press: Canberra.

Bowdler, S.
1983 Aboriginal Sites on the Crown Timber Lands of NSW. A report to the Forestry Commission of NSW: Sydney.

Brand, J.C. and V. Cherikoff.
1985 Australian Aboriginal bushfoods: the nutritional composition of plants from arid and semiarid areas. Australian Aboriginal Studies 1985/2:38-46.

Bray, W.
1977 From foraging to farming in early Mexico. In J.V.S.Megaw (ed.), Hunters, Gatherers and First Farmers beyond Europe, pp225-250. Leicester University Press: Leicester.

Brayshaw, H.C.
1975 Ethnohistory and archaeology in the Herbert/Burdekin. Lectures on North Queensland History, pp9-19. Second Series. Department of History, James Cook University: Townsville.

1977 Aboriginal material culture in the Herbert/Burdekin district, North Queensland. Unpublished Ph D thesis, James Cook University.

Brockwell, C.J.
1977 Cannibalism in Queensland. Unpublished BA(Hons) thesis, Australian National University.

Bulmer, S.
1977 Waisted blades and axes. In R.V.S.Wright (ed.), Stone Tools as Cultural Markers: change, evolution and complexity, pp40-59. Australian Institute of Aboriginal Studies: Canberra.

Burkill, I.H.
1935 A Dictionary of the Economic Products of the Malay Peninsula. Crown Agents for the Colonies: London.

Cairn, E.J. and R.Grant.
1890 Report of a collecting trip to north-eastern Queensland during April to September 1889. Australian Museum Records 1:27-31.

Callen, E.O.
1967 Analysis of the Tehuacan coprolites. In D.S.Byers (ed.), The Prehistory of the Tehuacan Valley Volume 1, pp261-289. University of Texas Press: Austin.

Campbell, J.B.
1979 Settlement patterns on offshore islands in northeastern Queensland. Australian Archaeology 9:18-32.

1982a New radiocarbon results for North Queensland prehistory. Australian Archaeology 14:62-66.

1982b Automatic seafood retrieval systems: the evidence from Hinchinbrook Island and its implications. In S.Bowdler (ed.), Coastal Archaeology in Eastern Australia, pp96-107. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

1984 Extending the archaeological frontier: a review of work on the prehistory of North Queensland. Queensland Archaeological Research 1:173-184.

Carron, W.
1849 Narrative of an Expedition undertaken under the direction of the late Mr Assistant Surveyor E.B.Kennedy for the exploration of the country lying between Rockingham Bay and Cape York. Kemp and Fairfax:Sydney.

Casey, D.A.
1936 Ethnological notes. Memoirs of the National Museum Victoria 9:90-104.

Chase, A. and P. Sutton.
1981 Hunter-gatherers in a rich environment: Aboriginal coastal exploitation in Cape York Peninsula. In A.Keast (ed.), Ecological Biogeography of Australia, Volume 3, pp1817-1852. Junk: The Hague.

Clark, J.G.D.
1954 Prehistoric Europe: the economic basis. Methuen: London.

Clegg, J.
1978 Mathesis pictures, mathesis words. Clegg Calendars: Sydney.

Colliver, F.S. and F.P.Woolston.
1966 Anthropological notes from Queensland. Queensland Naturalist 18:21-28.

1980 The rain forest sword and shield in Queensland. Occasional Papers in Anthropology, No.10, pp63-93. Anthropology Museum, University of Queensland: Brisbane.

Cosgrove, R.
1980a Ground edge artifacts from the rainforest area northeast Queensland - a preliminary review. Unpublished report to the Australian Institute of Aboriginal Studies: Canberra.

1980b Rainforest Aboriginal lithic technology - a preliminary study of the ooyurka. Bulletin of the Conference of Museum Anthropologists 6:11-18.

1984 A Stylistic and Use-wear Study of the Ooyurka. Unpublished MA Thesis, James Cook University.

Coursey, D.G.
1967 Yams: an account of the nature, origins, cultivation and utilisation of the useful members of the Dioscoreaceae. Longmans Green: London.

Coutts, P.J.F.
1983 An Archaeological Perspective of Panay Island, Philippines. University of San Carlos Press: Cebu City.

Coventry, R.J., D.Hopley, J.B.Campbell, I.Douglas, N.Harvey, A.P.Kershaw, J.Oliver, C.V.G.Phipps, and K.Pye.
1980 The Quaternary of Northeastern Australia. In R.A.Henderson and P.J.Stephenson (eds.), The Geology and Geophysics of Northeastern Australia, pp375-417. Geological Society of Australia, Queensland Division:Brisbane.

Cribb, A.B. and J.W.Cribb.
1974 Wild Food in Australia. Collins: Sydney.

Crowe, A.
1981 A Field Guide to the Native Edible Plants of New Zealand: including those plants eaten by the Maori. Collins: Auckland.

Dalrymple, G.E.
1874 Narrative and reports of the Queensland North-East Coast Expedition of 1873. Queensland Legislative Assembly, Votes and Proceedings 2:615-668.

Davis, G. and J.Covacevich.
1984 Aboriginal Walkway. Wildlife Australia 21(2):8-10.

Davis, G., J.Covacevich, R.M.W.Dixon and A.Irvine.
(in prep.) The Yidin Trail.

Dick, R.S.
1975 A map of the climates of Australia according to Koppen's principles of definition. Queensland Geographical Journal 3:33-69.

Dickson, F.P.
1981 Australian Stone Hatchets: a study in design and dynamics. Academic Press: Sydney.

Dixon, R.M.W.
1972 The Dyirbal Language of North Queensland. Cambridge University Press: Cambridge.

1976 Tribes, languages and other boundaries in northeast Queensland. In N. Peterson (ed.), Tribes and Boundaries in Australia, pp.207-238. Australian Institute of Aboriginal Studies: Canberra.

1977 A Grammar of Yidin. Cambridge University Press: Cambridge.

Douglas, D.
1882 The Explorer: Herberton to Mourilyan. The Queenslander, June 17.

Duke, A.
(in prep.) A study of Aboriginal material anthropology at Murray Upper, North Queensland. Unpublished Ph D thesis, James Cook University.

Etheridge, R.
1890 An abnormal form of tomahawk from Port Stephens. Proceedings of the Linnean Society of New South Wales 5:291-292.

Everist, S.L.
1974 Poisonous Plants of Australia. Angus & Robertson: Sydney.

Fardon, R.H.S. and F.de Keyser.
1964 Cairns, Qld - 1:250,000 Geological Series Sheet SE/55-2. Explanatory notes. Australia Bureau of Mineral Resources, Geology and Geophysics: Canberra.

Flecker, H.
1954 Ooyurkas. North Queensland Naturalist 22(108):17-21.

1955 Further notes on ooyurkas. North Queensland Naturalist 23(111):7.

1956 Two more ooyurkas. North Queensland Naturalist 25(116):7-8.

Flecker, H., G.B. Stephens and S.E.Stephens.
1948 Edible Plants in North Queensland. North Queensland Naturalists' Club: Cairns.

Flood, J.
1983 Archaeology of the Dreamtime. Collins: Sydney.

Francis, W.D.
1981 Australian Rain-forest Trees. Australian Government Publishing Service: Canberra.

Gentilli, J.
1972 Australian Climate Patterns. Nelson: Adelaide.

Gillespie, R. and H.A.Polach.
1979 The suitability of marine shells for radiocarbon dating of Australian prehistory. In R.Berger and H.Suess (eds.), Radiocarbon Dating: Proceedings of the 9th International Conference on Radiocarbon Dating, pp.404-21. University of California Press: Los Angeles.

Gillieson, D.S. and J.Hall.
1982 Bevelling bungwall bashers: a use-wear study from south-east Queensland. Australian Archaeology 14:43-61.

Golson, J.
1971 Australian Aboriginal food plants: some ecological and culture-historical implications. In D.J.Mulvaney and J.Golson (eds.), Aboriginal Man and Environment in Australia, pp196-238. Australian National University Press: Canberra.

Gorman, C.F.
1970 Excavations at Spirit Cave, North Thailand: some interim interpretations. Asian Perspectives 13:79-107.

Gribble, E.R.
1933 A Despised Race. Australian Board of Missions: Sydney.

Groube, L., J.Chappell, J.Muke and D.Price.
1986 A 40,000 year-old human occuption site at Huon Peninsula, Papua New Guinea. Nature 324:453-455.

Hale, H.M. and N.B.Tindale.
1933 Aborigines of Princess Charlotte Bay, North Queensland. Records of the South Australian Museum 5:63-172.

Hamlyn-Harris, R.
1916 Queensland ethnological notes. Proceedings of the Royal Society of Queensland 28:104-106.

Hamlyn-Harris, R. and F.Smith.
1916 On fish-poisoning and poisons employed among the Aborigines of Queensland. Queensland Museum Memoirs 5:1-22.

Harris, D.R.
1975 Traditional patterns of plant-food procurement in the Cape York Peninsula and Torres Strait Islands. Unpublished report to the Australian Institute of Aboriginal Studies: Canberra.

1978 Adaptation to a tropical rain-forest environment: Aboriginal subsistence in northeastern Queensland. In N.G.Blurton-Jones and V.Reynolds (eds.), Human Behaviour and Adaptation, pp113-134. Taylor and Francis: London.

Helbaek, H.
1960 The paleoethnobotany of the Near East and Europe. In R.J.Braidwood and B.Howe (eds.), Prehistoric Investigations in Iraqi Kurdistan, pp99-118. Chicago University Press: Chicago.

Henty, E.E.
1980 Harmful Plants in Papua New Guinea. Department of Forests, Division of Botany: Lae.

Hiatt, L.R.
1962 Local organisation among the Australian Aborigines. Oceania 32:267-286.

Hiscock, P.
1981 Comments on the use of chipped stone artefacts as a measure of 'intensity of site usage'. Australian Archaeology 13:30-34.

1986 Technological change in the Hunter River valley and its implications for the interpretation of late Holocene change in Australia. Archaeology in Oceania 21:40-50.

Hohenschutz, L.D., E.A.Bell, P.J.Jewess, D.P.Leworthy, R.J.Pryce, E.Arnold and J.Clardy.
1981 Castanospermine, a 1,6,7,8-tetrahydroxyoctahydroindolizine alkaloid from seeds of Castanospermum australe. Phytochemistry 20:811-814.

Hopley, D.
1973 Geomorphic evidence for climatic change in the late Quaternary of northeast Queensland, Australia. Journal of Tropical Geography 36:20-30.

Horsfall, N.
1983 Excavations at Jiyer Cave, northeast Queensland: some results. In Smith, M. (ed.), Archaeology at ANZAAS 1983, pp172-178. Western Australian Museum: Perth.

1984a Theorising about northeast Queensland prehistory. Queensland Archaeological Research 1:164-172.

1984b The prehistoric occupation of Australian rainforests. In G.L.Werren and A.P.Kershaw (eds.), Australian National Rainforest Study Report to the World Wildlife Fund (Australia) Volume 1. Proceedings of a workshop on the past, present and future of Australian rainforests, Griffith University, December 1983, pp524-528. Geography Department, Monash University: Melbourne.

1985 Continuation of an archaeological survey of the proposed transmission line between Kareeya and Turkinje, North Queensland. Unpublished report to the Queensland Electricity Commission: Townsville.

Hughes, P.J. and R.J.Lampert.
1982 Prehistoric population change in southern coastal New South Wales. In S.Bowdler (ed.), Coastal Archaeology in Eastern Australia, pp16-28. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

Isaac, G.L.
1982 The earliest archaeological traces. In J.D.Clark (ed.), The Cambridge History of Africa Volume 1, pp.157-247.

Jack, R.L.
1888 Geology of the Russell River. Queensland Legislative Assembly Votes and Proceedings 3:499.

Jackes, B.R.
1981 Poisonous Plants in North Queensland Gardens. Botany Department, James Cook University: Townsville.

Johnstone, R.A.
1874 Report of the expedition. Queensland Legislative Assembly, Votes and Proceedings 2:656-661.

1904 Spinifex and Wattle: reminiscences of pioneering in North Queensland. The Queenslander, 2 May 1903 - 11 March 1905. (Reprinted n.d., c.1985, G.K.Bolton: Cairns)

Jones, D.
1961 Cardwell Shire Story. Jacaranda Press: Brisbane.

1973 Hurricane Lamps and Blue Umbrellas: a history of the Shire of Johnstone to 1973. G.K.Bolton: Cairns.

1976 Trinity Phoenix: a history of Cairns. Cairns Post: Cairns.

Jones, R.
1975 The Neolithic, Palaeolithic and the Hunting Gardeners: man and land in the Antipodes. In R.P.Suggate and M.M.Cresswell (eds.), Quaternary Studies, pp21-34. The Royal Society of New Zealand: Wellington.

Jones, R. (ed.)
1985 Archaeological Research in Kakadu National Park. Special Publication No.13, Australian National Parks and Wildlife Service: Canberra.

Jukes, J.B.
1847 Narrative of the surveying voyage of H.M.S. Fly commanded by Captain F.P.Blackwood (1842-46). T.&W.Boone: London.

Kennedy, K.
1949 Two stone artifacts from North Queensland. North Queensland Naturalist 16(91):25.

1950a Further notes on the ooyurka of North Queensland. North Queensland Naturalist 17(94):5-6.

1950b A large grooved axehead. North Queensland Naturalist 18(93):4-5.

1953 An exceptionally large stone axehead. North Queensland Naturalist 21(105):6

Kershaw, A.P.
1970 A pollen diagram from Lake Euramoo, north-east Queensland, Australia. New Phytologist 69:785-805.

1971 A pollen diagram from Quincan Crater, north-east Queensland, Australia. New Phytologist 70:669-681.

1974 A long continuous pollen sequence from north-eastern Australia. Nature 251:222-223.

1975a Stratigraphy and pollen analysis of Bromfield Swamp, north-eastern Queensland, Australia. New Phytologist 75:173-191.

1975b Late Quaternary vegetation and climate in northeastern Australia. In R.P.Suggate and M.M.Cresswell (eds.), Quaternary Studies, pp181-187. The Royal Society of New Zealand:Wellington.

1976 A late Pleistocene and Holocene pollen diagram from Lynch's Crater, north-eastern Queensland, Australia. New Phytologist 77:469-498.

1978 Record of last interglacial-glacial cycle from northeastern Queensland. Nature 272:159-161.

1983 A Holocene pollen diagram from Lynch's Crater, north-eastern Queensland, Australia. New Phytologist 94:669-682.

1985 An extended late Quaternary vegetation record from north-eastern Queensland and its implications for the seasonal tropics of Australia. Proceedings of the Ecological Society of Australia 13:179-189.

1986 Climatic change and Aboriginal burning in north-east Australia during the last two glacial/interglacial cycles. Nature 322:47-49.

Kershaw,A.P. and I.R.Sluiter.
1982 Late Cenozoic pollen spectra from the Atherton Tableland, north-eastern Australia. Australian Journal of Botany 30:279-295.

Keyser, F.de
1964 Innisfail, Qld - 1:250,000 Geological Series Sheet SE/55-6. Explanatory notes. Australia Bureau of Mineral Resources, Geology and Geophysics: Canberra.

Keyser, F.de, R.S.H.Fardon and L.G.Cuttler.
1965 Ingham, Qld - 1:250,000 Geological Series Sheet SE/55-10. Explanatory notes. Australia Bureau of Mineral Resources, Geology and Geophysics: Canberra.

King, P.P.
1827 Narrative of a survey of the intertropical and western coasts of Australia 1818-1822. (Facsimile edition 1969) Libraries Board of South Australia: Adelaide.

Kirk, R.L. (ed.)
1973 The Human Biology of Aborigines in Cape York. Australian Institute of Aboriginal Studies: Canberra.

1983 Aboriginal Man Adapting: the human biology of Australian Aborigines. Oxford University Press: Melbourne.

Knight, J.
1986 Bang those rocks together guys. Unpublished BA(Hons) thesis, James Cook University.

Kroeber, A.L.
1953 Handbook of the Indians of California. Californian Book Co.: Berkeley.

Kumm, A.
1980 Jumbun Lifestyle: past and present (a preliminary survey of post-European contact change in the Murray Upper region). Unpublished Grad Dip Mat Cult thesis, James Cook University.

Lampert, R.
1981 The Great Kartan Mystery. Terra Australis No.5. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

1983 Waisted blades in Australia? Records of the Australian Museum 35:145-151.

Langevad, B.S.
1983 Queensland Ethnobotanical Records: a computerised information storage and retrieval system. Copy held at Department of Behavioural Sciences, James Cook University.

Larnarch, S.L. and N.W.G.Macintosh.
1970 The Craniology of the Aborigines of Queensland. Oceania Monographs No.15. Oceania Publications, University of Sydney: Sydney.

Lathrap, D.W.
1970 The Upper Amazon. Ancient Peoples and Places Series No.70. Thames and Hudson: London.

Lawrence, R.
1968 Aboriginal Habitat and Economy. Occasional Papers No.6. Department of Geography, School of General Studies, Australian National University: Canberra.

Leakey, M.
1971 Olduvai Gorge Volume 3: Excavations in Beds I and II, 1960-1963. Cambridge University Press: Cambridge.

Levitt, D.
1981 Plants and People: Aboriginal uses of plants on Groote Eylandt. Australian Institute of Aboriginal Studies: Canberra.

Linares de Sapir, O. and A.J.Ranere.
1971 Human adaptation to the tropical forests of western Panama. Archaeology 24:346-355.

Longman, K.A. and J.Jenik.
1974 Tropical Forest and its Environment. Longman: London.

Loos, N.
1982 Invasion and Resistance: Aboriginal-European Relations on the North Queensland Frontier 1861-1897. Australian National University Press: Canberra.

Lourandos, H.
1980a Forces of change: Aboriginal technology and population in southwestern Victoria. Unpublished Ph D thesis, University of Sydney.

1980b Change or stability?: hydraulics, hunter-gatherers and population in temperate Australia. World Archaeology 11:245-264.

1983 Intensification: a late Pleistocene-Holocene archaeological sequence from Southwestern Victoria. Archaeology in Oceania 18:81-97.

1985 Intensification and Australian Prehistory. In T.D.Price and J.A.Brown (eds.), Prehistoric Hunter-Gatherers: the emergence of cultural complexity, pp.385-423. Academic Press.

Luebbers, R.
1978 Meals and menus: a study of change in prehistoric coastal settlements in South Australia. Unpublished Ph D thesis, Australian National University.

Lumholtz, C.
1889 Among Cannibals. (Reprinted 1980.) Australian National University Press: Canberra.

McBryde, I.
1978 Wil-im-ee Mooring: or, where do axes come from? Mankind 11:354-382.

1984 Kulin greenstone quarries: the social contexts of production and distribution from the Mt. William site. World Archaeology 16:267-285.

McCarthy, F.D.
1940 The stone axes of Australia. Australian Museum Magazine 7:223-228.

1941 Aboriginal grindstones and mortars. Australian Museum Magazine 7:329-333.

1941-2 Aboriginal ritual and mystery stones. Australian Museum Magazine 7:366-369.

1944 Some unusual stone artefacts from Australia and New Guinea. Records of the Australian Museum 21:264-266.

1949 Waisted hammerstones from the Mackay district, Queensland. Records of the Australian Museum 22:151-154.

1952 Some new records of tanged implements and pounders in eastern Australia. Mankind 4:361-364.

1976 Australian Aboriginal Stone Implements. The Australian Museum Trust: Sydney.

McConnell, U.H.
1935 Inspiration and design in Aboriginal art. Art in Australia May:49-68.

1939 Social organization of the tribes of Cape York Peninsula, North Queensland (I). Oceania 10:54-72.

Macgillivray, J.
1852 Narrative of the voyage of H.M.S. Rattlesnake (commanded by the late Captain Owen Stanley) during the years 1846-50. T.& W.Boone: London. (Facsimile edn.1967.)

Mack, G.
1961 A stone implement from north-east Queensland. Memoirs of the Queensland Museum 12:105-106.

McManus, K.
1982-3 Who are indigenous? (Letter to editor) Geo 4(4):4.

Mardaga-Campbell, M. and J.B.Campbell.
1985 Lithic occurrences and stratigraphic problems at Turtle Rock (Hervey Range), North Queensland. Queensland Archaeological Research 2:98-131.

May, C.
1984 Topsawyers: the Chinese in Cairns 1870-1920. Department of History, James Cook University: Townsville.

Meehan, B.
1971 The form, distribution and antiquity of Australian Aboriginal mortuary practices. Unpublished MA thesis, University of Sydney.

1982 Shell Bed to Shell Midden. Australian Institute of Aboriginal Studies: Canberra.

Meston, A.
1889 Report of the Government Scientific Expedition to Bellenden-Ker Range. Government Printer: Brisbane.

1904 Expedition to the Bellenden-Ker Range. Report to both Houses of Parliament. Government Printer: Brisbane.

Mjöberg, E.
1918 Among the stone age men of the Queensland wilderness. Alb Bonniers Boktryckeri: Stockholm. (Summary translation by D.Clark, James Cook University Library).

1925 Beitrage zur Kenntris der Eingeborenen von Nord-Queensland. Archiv fur Anthropologie ns 20(9):108-135. (English translation, Australian Institute of Aboriginal Studies: Canberra.)

Monsalud, M.R., A.L.Tongacan, F.R.Lopez and M.Q.Lagrimas.
1966 Edible wild plants in Philippine forests. The Philippine Journal of Science 95:431-561.

Moore, D.R.
1979 Islanders and Aborigines at Cape York. Australian Institute of Aboriginal Studies: Canberra.

Morrill, J.
1863 Sketch of a residence among the Aboriginals of northern Queensland for sixteen years. Courier General Printing Office: Brisbane.

Muke, J.
1984 The Huon discoveries: a preliminary report on the stone artefacts and a comparative analysis of the distribution of waisted tools in Greater New Guinea. Unpublished B.Litt. thesis, Australian National University.

Mulvaney, D.J.
1975 The Prehistory of Australia. (revised edn.) Penguin: Ringwood.

Mulvaney, D.J. and E.B.Joyce.
1965 Archaeological and geomorphological investigations on Mt. Moffat Station, Queensland, Australia. Proceedings of the Prehistoric Society 31:147-212.

Nix, H.A. and J.D.Kalma.
1972 Climate as a dominant control in the biogeography of northern Australia and New Guinea. In D.Walker (ed.), Bridge and Barrier: The Natural and Cultural History of Torres Strait, pp61-91. Department of Biogeography and Geomorphology, Research School of Pacific Studies, Australian National University:Canberra.

Noone, H.V.V.
1949 Large Australian axeheads. Man 49:107-108.

Palmerston, C.
1883 From Mourilyan Harbour to Herberton. The Queenslander, 22 Sept (477-478), 29 Sept (518-519), 6 Oct (557-558).

1885-6 From Herberton to the Barron Falls, North Queensland. Transactions and Proceedings of the Royal Geographical Society of Australasia (NSW branch) 3/4:231-244.

1887 The diary of a northern pioneer. The Queensland Figaro, 12 Feb-23 April (pp265-266, 295, 346, 351, 385, 433, 467, 491, 545-546, 596, 651).

Parry-Okeden, W.E.
1897 Report on the North Queensland Aborigines and the Native Police. Queensland Parliament Votes and Proceedings Legislative Assembly.

Peterson, N. (ed.)
1976 Tribes and Boundaries in Australia. Australian Institute of Aboriginal Studies: Canberra.

Petrie, C.C.
1904 Tom Petrie's Reminiscences of Early Queensland. Watson Ferguson: Brisbane. (reprinted 1975, Lloyd O'Neil: Melbourne)

Pope, K.
1967 An examination of the material culture of south eastern Cape York Peninsula, based on the Roth Ethnographic Collection at the Australian Museum, Sydney. Unpublished Dip Anthrop thesis, University of Sydney.

Powell, J.M.
1976 Ethnobotany. In K.Paijmans (ed.), New Guinea Vegetation, pp106-183. Australian National University Press: Canberra.

Rainey, A.
1984 A quartzite assemblage from the Tully district. The Artefact 9:29-32.

Redman, C.L.
1974 Archaeological Sampling Strategies. Modules in Anthropology No.55. Addison-Wesley: Reading.

Reichel-Dolmatoff, G.
1965 Columbia. Ancient People and Places Series No.44. Thames and Hudson: London.

Renvoize, B.S.
1972 The area of origin of Manihot esculenta as a crop plant - a review of the evidence. Economic Botany 26:352-360.

Rhoads, J.W.
1980 Through a glass darkly. Unpublished Ph D thesis, Australian National University.

Rogers, D.J.
1963 Studies of Manihot esculenta Crantz and related species. Bulletin of the Torrey Botanical Club 90:43-54.

1965 Some botanical and ethnological considerations of Manihot esculenta. Economic Botany 19:369-377.

Rosenfeld, A., D.Horton and J.Winter.
1981 Early Man in North Queensland. Terra Australis No.6. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

Ross, A.
1981 Holocene environment and prehistoric site patterning in the Victoria Mallee. Archaeology in Oceania 16:145-154.

1985 Archaeological evidence for population change in the middle to late Holocene in southeastern Australia. Archaeology in Oceania 20:81-89.

Roth, H.L.
1918 Notes on some large stone implements from Queensland. Man 18:17-19.

Roth, W.E.
1898a Some ethnological notes on the Atherton Blacks. Report to the Commissioner of Police: Brisbane.

1898b Some of the plants of economic value to the coastal Aboriginals of north east Queensland, with notes on their preparation, uses, native names etc. Report to the Commissioner of Police: Brisbane.

1900 On the natives of the (lower) Tully River. Scientific report to the Under Secretary: Brisbane.

1901a String and other forms of strand: basketry-, woven bag-, and network. North Queensland Ethnography Bulletin No.1. Government Printer: Brisbane.

1901b Food: its search, capture and preparation. North Queensland Ethnography Bulletin No.3. Government Printer: Brisbane.

1902 Games, sports and amusements. North Queensland Ethnography Bulletin No.4. Government Printer: Brisbane.

1904 Domestic implements, arts and manufactures. North Queensland Ethnography Bulletin No.7. Government Printer: Brisbane.

1907 Burial ceremonies and disposal of the dead. North Queensland Ethnography Bulletin No.9. Records of the Australian Museum 6:365-403.

1908a Australian canoes and rafts. Man 8:88-89.

1908b Miscellaneous papers. North Queensland Ethnography Bulletin No.11. Records of the Australian Museum 7:74-107.

1909a On certain initiation ceremonies. North Queensland Ethnography Bulletin No.12. Records of the Australian Museum 7:166-185.

1909b Fighting weapons. North Queensland Ethnography Bulletin No.13. Records of the Australian Museum 7:189-211.

1910a Transport and trade. North Queensland Ethnography Bulletin No.14. Records of the Australian Museum 8:1-19.

1910b Decoration, deformation and clothing. North Queensland Ethnography Bulletin No.15. Records of the Australian Museum 8:20-54.

1910c Huts and shelters. North Queensland Ethnography Bulletin No.16. Records of the Australian Museum 8:55-66.

Rouse, I. and J.M.Cruxent.
1963 Venezuelan Archaeology. Yale University Press: New Haven.

Russell-Smith, J.
1985 Studies in the jungle: people, fire and monsoon forest. In R.Jones (ed.), Archaeological Research in Kakadu National Park, pp241-267. Special Publication No.13. Australian National Parks and Wildlife Service: Canberra.

Seaton, D.
1952 Rock paintings of the Kongkandji people. North Queensland Naturalist 20(101):19.

1959 Making of a stone axe. North Queensland Naturalist 27(122):5-7.

Schiffer, M.B., A.P.Sullivan and T.C.Klinger.
1978 The design of archaeological surveys. World Archaeology 10:1-28.

Schrire, C.
1982 The Alligator Rivers: prehistory and ecology in western Arnhem Land. Terra Australis No.7. Department of Prehistory, Research School of Pacific Studies, Australian National University: Canberra.

Shackleton, N.J. and N.D.Opdyke.
1973 Oxygen-isotope and paleomagnetic stratigraphy of equatorial Pacific core V28-238: oxygen isotope temperatures and ice volumes on a 10^5 year and 10^6 year scale. Quaternary Research 3:39-55.

Sharp R.L.
1938-39 Tribes and totemism in north-east Australia. Oceania 9:254-275, 9:439-461.

Singh, G., A.P.Kershaw and Robin Clark.
1981 Quaternary vegetation and fire history in Australia. In A.M.Gill, R.A.Groves and I.Noble (eds.), Fire and the Australian Biota, pp23-54. Australian Academy of Science:Canberra.

Smith, L.R.
1980 The Aboriginal Population of Australia. Australian National University Press: Canberra.

Smith, M.
1982 Late Pleistocene zamia exploitation in southern Western Australia. Archaeology in Oceania 17:117-121.

Smith, M.A.
1986 The antiquity of seedgrinding in central Australia. Archaeology in Oceania 21:29-39.

Specht, J.
1985 Crabs as disturbance factors in tropical archaeological sites. Australian Archaeology 21:11-18.

Stanner, W.E.H.
1965 Aboriginal territorial organisation: estate, range, domain and regime. Oceania 36:1-26.

Steward, J.H. and L.C.Faron.
1959 Native Peoples of South America. McGraw-Hill: New York.

Strahan, R. (ed.)
1983 Complete Book of Australian Mammals. Angus and Robertson: Sydney.

Thomson, D.F.
1936 Notes on some bone and stone implements from North Queensland. Journal of the Royal Anthropological Institute of Great Britain and Ireland 66:71-74.

1939 The seasonal factor in human culture. Proceedings of the Prehistoric Society 5:209-221.

Thozet, A.
1866 Notes on some of the roots, tubers, bulbs, and fruits used as vegetable food by the Aboriginals of Northern Queensland. Buzacott: Rockhampton.

Tindale, N.B.
1940 Results of the Harvard-Adelaide Universities Anthropological Expedition 1938-1939. Distribution of Australian Aboriginal tribes: a field survey. Transactions of the Royal Society of South Australia 64:140-231.

1974 Aboriginal Tribes of Australia. Australian National University Press: Canberra.

Tindale, N.B. and Birdsell, J.B.
1941 Results of the Harvard-Adelaide Universities Anthropological Expedition 1938-1939: Tasmanoid tribes in North Queensland. Records of the South Australian Museum 7:1-9.

Tozer, H.
1897 Measures recently adopted for the amelioration of the Aborigines. Queensland Parliament, Votes and Proceedings 2:347.

Tracey, J.G.
1982 The Vegetation of the Humid Tropical Region of North Queensland. Commonwealth Scientific and Industrial Research Organisation: Melbourne.

Tracey, J.G. and L.J.Webb.
1975 Vegetation of the humid tropical region of North Queensland. (15 maps at 1:100,000 scale and key) Commonwealth Scientific and Industrial Research Organisation: Indooroopilly.

Trezise, P.J.
1971 Rock Art of South-east Cape York. Australian Institute of Aboriginal Studies: Canberra.

Turnbull, C.M.
1961 The Forest People. Picador: London.

Webb, L.J.
1948 Guide to the medicinal and poisonous plants of Queensland. Commonwealth Scientific and Industrial Research Bulletin No.232.

1959 A physiognomic classification of Australian rain forests. Journal of Ecology 47:551-570.

1960 Some new records of medicinal plants used by the Aborigines of tropical Queensland and New Guinea. Proceedings of the Royal Society of Queensland 71:103-110.

1968 Environmental relationships of the structural types of Australian rain forest vegetation. Ecology 49:296-311.

1978 A general classification of Australian rainforests. Australian Plants 9:349-363.

Webb, L.J. and J.G.Tracey.
1981 Australian rainforests: patterns and change. In A.Keast (ed.), Ecological Biogeography in Australia, pp607-694. Junk:The Hague.

Webster, J., W.Beck and B.Ternai.
1984 Toxicity and bitterness in Australian Dioscorea bulbifera L. and Dioscorea hispida Dennst. from Thailand. Journal of Agricultural and Food Chemistry 32:1087-1090.

Werren, G.
1985 A catalogue of Australian rainforests. Habitat Australia 13(2):15-25.

Werren, G.L. and A.P.Kershaw (eds.).
1984 Australian National Rainforest Study Report to the World Wildlife Fund (Australia) Volume 1. Proceedings of a workshop on the past, present and future of Australian rainforests, Griffith University, December 1983. Geography Department, Monash University: Melbourne.

Wharton, W.J.L. (ed.)
1893 Captain Cook's journal during his first voyage around the world made in H.M. Bark Endeavour 1768-1771. (Australian Facsimile Edition No 188, 1968). Libraries Board of South Australia: Adelaide.

White, F.
1969 Appendix C: identification of fruits and seeds from Site B, Kalambo Falls. In J.D.Clark, Kalambo Falls Prehistoric Site, Volume I: the Geology, Palaeoecology and Detailed Stratigraphy of the Excavations, pp216-217. Cambridge University Press: Cambridge.

White, J.P., K.A.W.Crook and B.P.Ruxton.
1970 Kosipe: a late Pleistocene site in the Papuan Highlands. Proceedings of the Prehistoric Society 36:152-170.

White, J.P. and J.F.O'Connell.
1982 A Prehistory of Australia, New Guinea and Sahul. Academic Press: Sydney.

Whiting, M.G.
1963 Toxicity of cycads. Economic Botany 17:271-302.

Williams, E.
1985 Wet underfoot? Earth mound sites and the recent prehistory of southwestern Victoria. Unpublished Ph D thesis, Australian National University.

Winter, J.
1984 Mammals of the wet tropics of Australia. Wildlife Australia 21(2):24-28.

Witter, D.
1984 A report on the analysis of stone artefacts from two sites in the ACT. Unpublished report.

Woolston, F. and S.Colliver.
1973 Some stone artifacts from North Queensland rainforests. Occasional Papers in Anthropology 10:63-93.

Wright, R.V.S.
1971 Prehistory of the Cape York Peninsula. In D.J.Mulvaney and J.Golson (eds.), Aboriginal Man and Environment in Australia, pp133-140. Australian National University Press: Canberra.

1986 How old is zone F at Lake George? Archaeology in Oceania 21:138-139.