10

Eurimbula Creek 1

Introduction

This chapter reports archaeological excavations at the site of Eurimbula Creek 1, a small shell midden on the north bank of Eurimbula Creek. Small, stratified middens are rare on the southern Curtis Coast, where the archaeology is dominated by large linear deposits. Other recorded small middens are limited to surface contexts and/or exhibit signs of significant disturbance. Excavations and analyses presented in this chapter demonstrate that Eurimbula Creek 1 represents a single or limited number of occupation events over a relatively short interval in the recent past. The restricted range of activities represented at the site may indicate a specialised extraction function related to logistical patterns of local residential mobility.

Site description and setting

Eurimbula Creek 1 consists of a thin shell layer visible along a 3m section of a low erosion bank (c.40cm high) on the northern margin of Eurimbula Creek (Latitude: 24°09′54″S; Longitude: 151°49′02″E) (Figs 10.1–10.2). The site is situated on the western edge of a narrow projection of land separating Eurimbula Creek from the open ocean beach bordering Bustard Bay. Eurimbula Creek 1 is discrete, being visible only in the erosion bank as a single thin layer of shell dominated by rock oyster (*Saccostrea glomerata*) and pearl oyster (*Pinctada albina sugillata*) located c.18cm below the ground surface. Shell is concentrated over a $5m^2$ area where it has deflated onto an erosion surface which gently slopes to a narrow band of saltgrasses bordering a dense mangrove fringe (Fig. 10.3). Despite intensive ground survey and good visibility, very little shell was located on the surface or the erosion face in the vicinity of the exposure, reinforcing the apparent discreteness of the site. A single valve of pearl oyster was observed on the surface of an inactive brush-turkey (*Alectura lathami*) mound located c.50m northwest of the site and surface shell densities away from the concentration of shell are low, in the order of one fragment/$20m^2$. The site is immediately

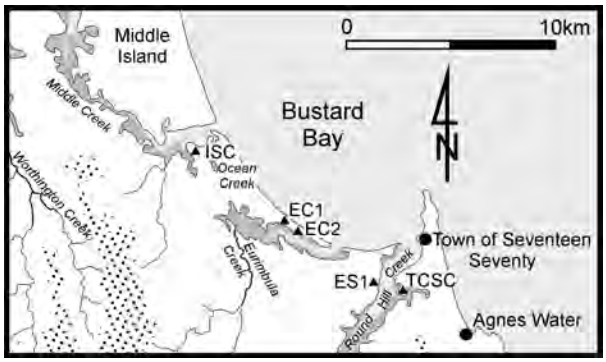

Figure 10.1 The Eurimbula Creek catchment area showing the location of Eurimbula Creek 1 (EC1) and nearby excavated sites (ISC=Ironbark Site Complex; EC2=Eurimbula Creek 2; ES1=Eurimbula Site 1; TCSC=Tom's Creek Site Complex). Dark grey shading indicates the general extent of mangrove, saltflats and claypans. Dotted shading indicates land above 200m. Solid dots indicate local population centres.

adjacent to extensive tidal flats to the west and southwest, with access to the main channel of Eurimbula Creek c.200m to the south. A deeply incised tidal inlet transects the frontal dune bordering Eurimbula Creek 100m east of the site. This ephemeral inlet circles around to the north of the site in a roughly northwest arc (Fig. 10.2). Many trees on the fringing beach have eroded out of bank deposits, indicating some bank recession along the creek. No tree stumps in growth position are evident on the creekward margin of the erosion bank, however, suggesting that the current phase of bank recession is recent. Cattle grazing has exacerbated bank erosion, as evidenced by cattle faeces and tracks close to the bank edge.

Dunes in the vicinity of the site support open forest dominated by eucalypts (*Eucalyptus tessalaris*), burdekin plum (*Pleiogynium timorense*), wattle (*Acacia aulacocarpa*) and red ash (*Alphitonia excelsa*). More diverse plant communities are also located nearby. Extensive swamps border the western and southern margins of Eurimbula Creek and include melaleucas (*Melaleuca quinquenervia*), eucalypts (*E. tereticornis*), swamp box (*Lophostemon suaveolens*), cloudy teatree (*M. dealbata*) and weeping cabbage palm (*Livistonia decipiens*). An area of closed dry rainforest also occurs on the lower southern margin of Eurimbula Creek comprising diverse vegetation including many Aboriginal bush food sources such as burdekin plum, bumpy ash (*Flindersia schottiana*), brown pine (*Podocarpus elatus*) and native cherry (*Exocarpus latifolius*). Mangrove vegetation adjacent to the site comprises a dense fringe of spotted mangroves (*Rhizophora stylosa*) along the northern margin of the creek with yellow mangroves (*Ceriops tagal*) and grey mangroves (*Avicennia marina*) tending to dominate the southern margin (Olsen 1980a:18). Extensive sandy to muddy intertidal flats adjoin the site, supporting a variety of molluscs dominated by gastropods, in particular the telescope mud whelk (*Telescopium telescopium*) which are common amongst the rearward spotted and grey mangroves (Shanco and Timmins 1975) (Fig. 2.8). Freshwater bivalves (*Alathyria pertexta* and *Velesunio ambiguus*) have also been collected from the nearby freshwater sections of Eurimbula Creek (Woodall et al. 1991).

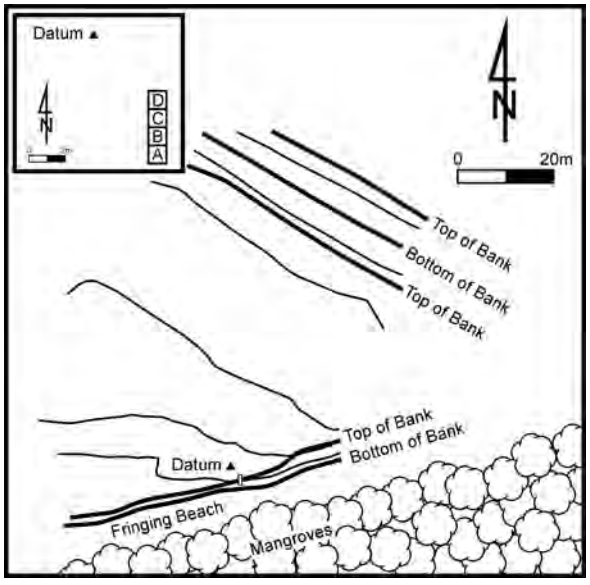

Figure 10.2 Site plan of Eurimbula Creek 1 area. Contours are in 0.5m intervals.

Evidence for non-Indigenous use of the site area is limited. The land to the east of Eurimbula Creek is effectively an island: it is bordered to the east by Bustard Bay and to the west by Eurimbula and Ocean Creeks (Fig. 10.1). The small area of land between the upper reaches of the two creeks is of very low elevation and is frequently waterlogged, preventing easy vehicular access. Introduced weeds constitute the major evidence for non-Aboriginal occupation of the area, with

groundsel (*Baccharis halimifolia*) and lantana (*Lantana camara*) concentrated along the upper margins of the two creeks. The site is likely to have been logged in the late nineteenth century (see Chapter 9) and ballast associated with the early timber industry remains in the creek mouth. Eurimbula Creek 1 is located on a Special Purposes Reserve jointly administered by the Queensland Environmental Protection Agency (EPA) and Department of Natural Resources, Mines and Energy. Although Eurimbula Creek is closed to crabbing, line fishing is popular with recreational fishers who access the creek by small boat from a Queensland Parks and Wildlife Service camping area in Eurimbula National Park on the southern head of Eurimbula Creek. Thick mangroves bordering the north bank of Eurimbula Creek effectively prevent access to the site area from the creek itself.

The site was recorded on 2 October 1996 by the author during systematic pedestrian transect surveys focussing on the lower reaches of major estuaries in the study area conducted as part of the Gooreng Gooreng Cultural Heritage Project (GGCHP) (see Lilley et al. 1997). The site was originally designated as GGCHP Site Number CC37 and subsequently registered on the EPA's Indigenous Sites Database as KE:B19. It is registered as Queensland Museum Scientific Collection Number S231.

Several sites have been recorded in the Eurimbula Creek area. Large numbers of modified and apparently unmodified pieces of rhyolitic tuff occur at several sites on the mudflats and claypans of the upper reaches of both Eurimbula and Ocean Creeks at sites KE:B11, KE:B12 and KE:B16 (see Fig. 2.11, Appendix 2). Blocks of rhyolitic tuff have also been transported almost to the mouth of Eurimbula Creek at site KE:B21. The closest major outcrops of rhyolitic tuff are in the vicinity of the Ironbark Site Complex c.5km to the northwest and the Tom's Creek Site Complex c.5km to the southeast. The location of rhyolitic tuff away from natural occurrences is thought to result from a combination of deliberate transport and recession of dune deposits containing cultural material leaving lag deposits of heavier material in the intertidal zone. The southern bank of Eurimbula Creek is yet to be surveyed in detail.

Figure 10.3 Excavations in progress at Squares A–D, showing cattle track on western (left) margin of the excavation. Facing north.

Figure 10.4 General view of completed excavation, Squares A–D, showing transect through erosion bank. Facing north.

Figure 10.5 General view of completed excavation, Squares A–D, showing transect through erosion bank. Facing east.

The small size and apparent discreteness of Eurimbula Creek 1 is unusual for archaeological sites in the region, which typically cover very large areas. Excavations aimed to help develop an

understanding of activities undertaken at smaller sites and how these relate to activities undertaken at larger sites which dominate the archaeology of the region (see Chapters 8, 9, 12, 13). Additionally, the presence of pearl oyster (*P. sugillata*) in both the deflated and *in situ* deposits is unusual as it is uncommon on the surface of other recorded sites in the region and is not well-represented in excavated samples analysed to date.

Excavation methods

A single 2m × 40cm trench was marked out over the exposure at right angles to the erosion bank as 4 × 40cm × 50cm pits (Squares A–D) (Figs 10.3–10.5). Squares C and D were situated on top of the low erosion bank, Square B consisted of the bank margin and adjacent deflation surface, and Square A was wholly located on the deflation surface and contained no material considered to be in primary depositional context. The inclusion of Squares A and B, while lacking stratigraphic integrity, aimed to characterise the broad composition of the site by increasing the volume of recovered material. Excavations were conducted between 10–22 March 1999.

Excavation proceeded in shallow, arbitrary excavation units averaging 3.3cm in depth and 9.5kg in weight. Excavation ceased at an average maximum depth of 51.7cm (Square D) below surface after several units of culturally-sterile sediments had been removed. A total of 47 XUs was removed, distributed as follows: Square A (5 XUs), Square B (11 XUs), Square C (15 XUs), Square D (16 XUs). A total of 448.2kg of sediment was excavated. Excavated sediments were gently dry-sieved through 3mm screens onto a plastic tarpaulin located 5m north-northeast of the excavation grid (Fig. 10.3). XU1–3 of Square A were bulk sampled because their high moisture content prevented effective dry sieving. Shell (n=85), charcoal (n=5) and stone (n=1) specimens encountered *in situ* during excavation were plotted three-dimensionally. A layer of plastic sample bags was placed over the base of Squares A–D which were then backfilled with sediments which had passed through the 3mm mesh and with sands from the beach fringing Eurimbula Creek (see Chapter 3 for a detailed discussion of the standard excavation methods employed at all sites).

Cultural deposit and stratigraphy

Excavation reflected the structure of the site as observed in the eroding section, with a low density sequence of cultural material dominated by rock oyster (*S. glomerata*) and the fragile pearl oyster (*P. sugillata*) concentrated 10–25cm below surface. Small quantities of charcoal, pumice and non-artefactual stone were also recovered. Excavation demonstrated that the majority of cultural material is restricted to the level of the layer visible in the erosion bank and decreases with distance from the creek margin (Table 10.1).

As expected, virtually all of the shell from the deflation surface of Square A was recovered from the first two excavation units, within 6cm of the surface. Square B comprised a surface unit of leaf litter (XU1), a 10cm thick unit of sediment overlying the *in situ* shell layer (XU2), and the *in situ* shell layer itself (XU3–6). Below this level it was not possible to keep material from the deflation surface separated from the *in situ* cultural material in the bank with any confidence as there was no clear separation in the sediments. Parts of the erosion bank are also either slightly undercut or slope to the south to join the deflation surface.

Sediments comprise quartz-dominated sands of the low transgressive dunes which can be divided into two stratigraphic units (SUs) on the basis of colour and texture (Table 10.2, Fig. 10.6). Apart from the moisture-laden lower portion of the excavated profile, there is no clear variation in the sediments in the trench. Squares C and D and the northern third of Square B on the top of the erosion bank are capped by a shallow layer of matted roots and humic material (SUI). Virtually all

cultural material was recovered from a narrow band across the top of SUII, with occasional shell fragments located lower in the unit. The shallow and limited distribution of cultural materials suggests that all material is roughly contemporaneous. The pH values range from acidic at the top of the sequence (5.5) to slightly alkaline (8.5) in the basal sterile sediments.

Table 10.1 Eurimbula Creek 1, Squares A–D: summary excavation data and dominant materials.

SQUARE	XUs (#)	DEPTH (cm)	WEIGHT (kg)	SHELL (g)	BONE (g)	CHARCOAL (g)	STONE (g)	ORGANIC (g)
A	5	13.66	52.10	245.31	0.02	4.12	40.88	42.28
B	11	41.94	81.50	499.85	0.07	12.69	155.66	253.19
C	15	46.82	152.10	288.18	0.02	23.89	389.25	1101.98
D	16	51.66	162.45	296.90	0.01	35.78	429.99	1353.80
Total	47	–	448.15	1330.24	0.12	76.48	1015.78	2751.25

Table 10.2 Stratigraphic Unit descriptions, Eurimbula Creek 1, Squares A–D.

SU	DESCRIPTION
I	Extends across the surface of Squares C and D and the northern third of Square B on the top of the erosion bank with an average depth of 7cm and a maximum depth of 10cm below the surface. It comprises a thin layer of matted fibrous roots and other organic matter including leaves, roots and bark. Sediments are extremely unconsolidated, consisting of dark brown (10YR-3/3), poorly-sorted, coarse, subangular particles. Pumice is present as small nodules and some charcoal occurs. Minute shell fragments are occasionally present. pH values are slightly acidic to acidic (5.5–6.0).
II	Extends across the entire trench with a minimum thickness ranging from 10–48cm and a maximum depth of at least 55cm below the surface. The base of this unit was not reached. Sediments are generally poorly consolidated, poorly-sorted, fine and subrounded to rounded. Moisture content of the sediments increases with depth, making the lower sediments appear darker in colour. Sediments are generally brown (10YR-4/3). A variety of shell taxa was recovered across the upper margin of the unit, including rock oyster and pearl oyster. Small blocky charcoal fragments and occasional large pumice nodules are common. Roots are present throughout, though less numerous and generally larger than SUI. pH values are slightly acidic to slightly alkaline (6.0-8.5).

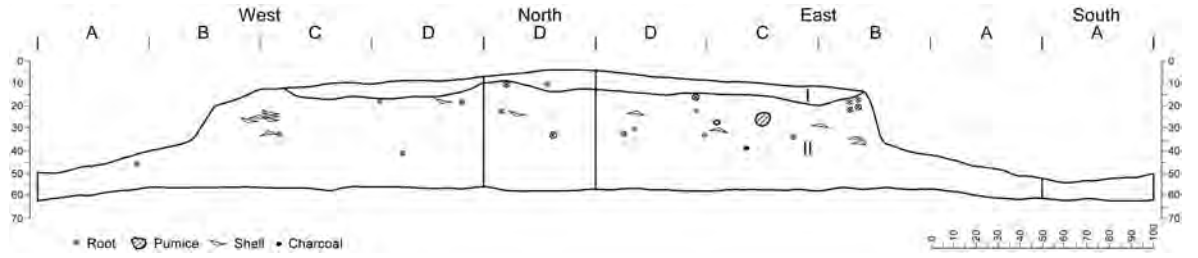

Figure 10.6 Stratigraphic section, Eurimbula Creek 1, Squares A–D.

Radiocarbon dating and chronology

A date for the site was obtained on a large blocky charcoal sample weighing 3.4g from Square C, XU6 (Table 10.3). The sample returned a value of 230±60 BP (Wk-7680) which equates to calibrated ages of 279, 171, 152 and 5 cal BP. These multiple intercepts are equally probable and are caused by short-term variation in atmospheric radioactive carbon activity in this segment of the radiocarbon calibration time-scale introduced by large-scale fossil fuel combustion beginning in the late nineteenth century. The absence of post-contact material culture (e.g. glass artefacts) in the assemblage, in evidence at other sites in the region, indicates a probable pre-European origin for the Eurimbula Creek 1 assemblage. In summary, the limited vertical distribution of recovered material and single radiocarbon date indicate that cultural deposits are very recent, probably being deposited in the 300 year period between AD 1652–AD 1950. The absence of post-contact materials narrows the probable chronology to before about AD 1900.

Table 10.3 Radiocarbon dates from Eurimbula Creek 1 (see Appendix 1 for full radiometric data).

SQUARE	XU	DEPTH (cm)	LAB. NO.	SAMPLE	$\delta^{13}C$ (‰)	^{14}C AGE	CALIBRATED AGE/S
C	6	14.9-18.3	Wk-7680	charcoal	−26.1±0.2	230±60	298(279,171,152,5)2

Stratigraphic integrity and disturbance

Several lines of evidence suggest that the stratified deposits exhibit good integrity. The location of excavated cultural materials is consistent with the pattern of distribution observed in section in the erosion bank. This pattern indicates that the extant bank deposits exhibit reasonable integrity, although of major concern is the differential representation of deposits caused by bank recession. As noted above, the absence of trees in growth position on either the fringing beach between the bank and mangrove forest or further south towards the creek suggests that the current phase of bank recession is of recent origin.

Evaluation of stratigraphic integrity using bivalve conjoin analysis was limited by the small number of *A. trapezia* valves in the shellfish assemblage. Only three intact and broken *A. trapezia* valves were recovered, one from Square A and two from Square D. Methods proceeded as described in Chapter 5. A single conjoin was identified. A right valve recovered from Square D, XU6, was found to conjoin with a left valve from Square D, XU10. This pair is separated by a minimum vertical distance of 8.6cm and a maximum of 15.2cm. This finding lends further support to the argument that the site represents a single or limited number of occupation events.

Although most shell was recovered 10–25cm below ground surface, occasional minute shell fragments were recovered to the base of excavations. These are considered unlikely to be in primary depositional context and are thought to have been displaced from the shell layer by crab burrowing and root penetration. Although no voids or other unambiguous evidence for burrowing was encountered during excavation, smooth-handed ghost crabs (*Ocypode cordimanus*) are common in the area.

Laboratory methods

Owing to the small size of the excavation and the relatively low density of cultural material recovered from Eurimbula Creek 1, all squares were analysed to maximise the available sample (see Chapter 3 for a detailed discussion of the standard laboratory methods employed at all sites). In the sections below, the results from all squares are summarised, although only selected data from Squares C and D are illustrated in Figures 10.7–10.12. This approach was adopted to emphasise results from the intact deposits rather than Squares A and B, which are impacted by tidal action. Further summary results for all excavated squares are available in Appendix 4.

Cultural materials

Invertebrate remains

Fourteen taxa of shellfish weighing 1,330.2g were recovered from Squares A–D, consisting of six marine bivalves, four marine gastropods and four terrestrial gastropods (Table 10.4). The shell assemblage is dominated by rock oyster (*S. glomerata*) comprising 86.7% of the shell assemblage by weight (Figs 10.7–10.8), followed by the fragile pearl oyster (*P. sugillata*) (7.5%), mud ark (*A. trapezia*) (3.1%) and hercules club shell (*Pyrazus ebininus*) (2.2%). The remaining 10 taxa are relatively rare, each contributing less than 1% of the shell assemblage by weight. The assemblage

exhibits low diversity with a calculated Shannon-Weaver Function (H') of 0.507 and Simpson's Index of Diversity (1–D) of 0.21. A single pipi (*Donax deltoides*) valve was recovered from Square C, XU5. This finding of a non-estuarine open beach dweller is significant because it provides evidence from a stratified context for Aboriginal use of resources from the open beach located a minimum of 450m to the northeast (see Fig. 10.1). Square B yielded the most shell despite the small volume of the excavation, with 499.9g consisting of 451.8g of rock oyster. Shell in Squares C and D is concentrated between XU4–9, which equates to depths of 10–25cm. The range of shellfish taxa indicates gathering focussed on the intertidal zone and creek margins adjacent to the site. Shell sizing indicates that the shellfish assemblage is skewed towards larger sizes, consistent with a cultural origin for the deposit. The restricted range of taxa also suggests targetted collection. A small piece of crustacean carapace, probably mud crab (*Scylla serrata*), was recovered from Square A, XU1. This fragment may not derive from human behaviour, however, as it is situated in a deflation zone impacted by tidal inundation.

Vertebrate remains

Fourteen pieces of fish bone were recovered, weighing 0.13g. Three specimens were recovered from Square A, eight from Square B, two from Square C and one from Square D (Table 10.5). This material was highly fragmented and none could be identified to taxon. The specimen from Square A, XU1, is a vertebrae with a centrum diameter of 4.6mm. The cultural origin of this specimen is equivocal, however, given the deflated surface provenance of the sample in a zone of tidal influence. A single burnt cleithrum (the bone attached to the base of the pectoral fin) was recovered from Square B, XU6, suggesting a cultural origin (see Vale 2004 for further details).

Table 10.4 Presence/absence of shellfish identified in Eurimbula Creek 1, Squares A–D.

FAMILY	TAXON	A	B	C	D	TOTAL (g)
			MARINE BIVALVIA			
Arcidae	*Anadara trapezia*	X	X		X	41.3481
Donacidae	*Donax deltoides*			X		2.1999
Mytilidae	*Trichomya hirsutus*				X	0.0111
Ostreidae	*Saccostrea glomerata*	X	X	X	X	1153.3280
Pteriidae	*Pinctada albina sugillata*	X	X	X	X	100.6465
Veneridae	*Irus* sp.			X		0.1251
			MARINE GASTROPODA			
Batillariidae	*Pyrazus ebininus*		X	X	X	28.9469
Littorinidae	*Bembicium nanum*		X			0.0252
Neritidae	*Nerita balteata*	X				0.0999
Trochidae	*Thalotia* sp.	X				0.0714
			TERRESTRIAL GASTROPODA			
Camaenidae	*Figuladra* sp.			X	X	1.7902
Camaenidae	*Trachiopsis mucosa*	X				0.0252
Pupillidae	*Pupoides pacificus*	X				0.0415
Subulinidae	*Eremopeas tuckeri*		X		X	0.0265

Table 10.5 Fish bone abundance, Eurimbula Creek 1, Squares A–D.

SQUARE	XU	NUMBER SPECIMENS	TOTAL WEIGHT (g)	NISP	WEIGHT NISP (g)	MNI	% IDENTIFIED BY WEIGHT
A	1	1	0.0256	0	0	0	0
A	5	2	0.0149	0	0	0	0
B	4	1	0.0050	0	0	0	0
B	6	7	0.0695	0	0	0	0
C	6	2	0.0136	0	0	0	0
D	9	1	0.0053	0	0	0	0
Total	–	14	0.1339	0	0	0	0

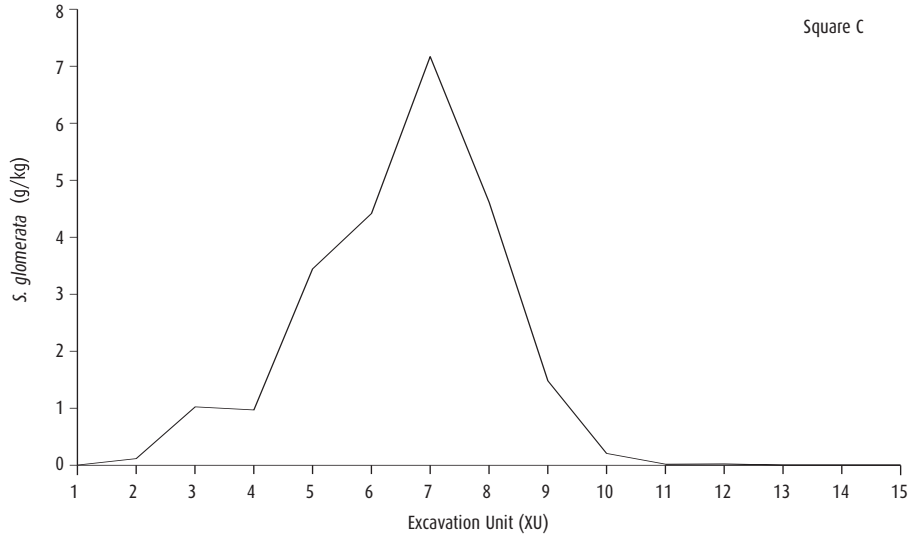

Figure 10.7 Abundance of oyster (*S. glomerata*).

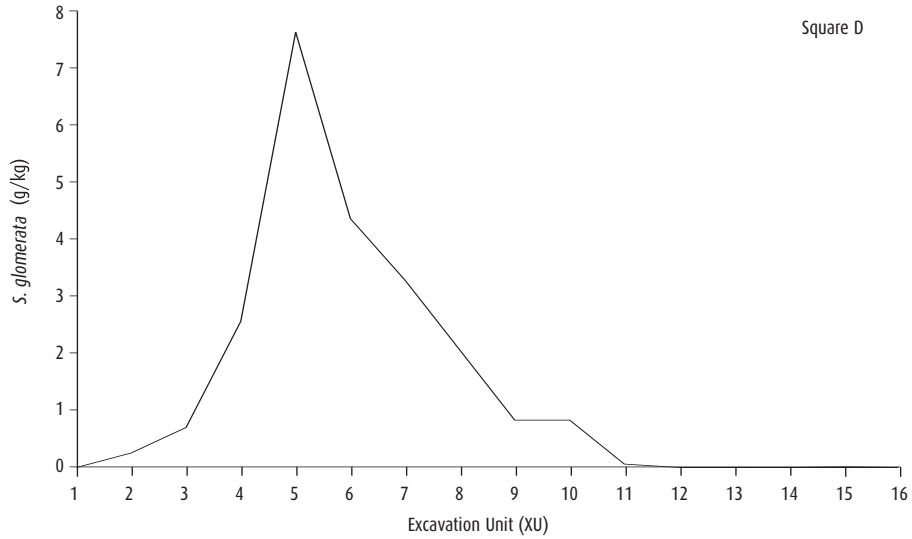

Figure 10.8 Abundance of oyster (*S. glomerata*).

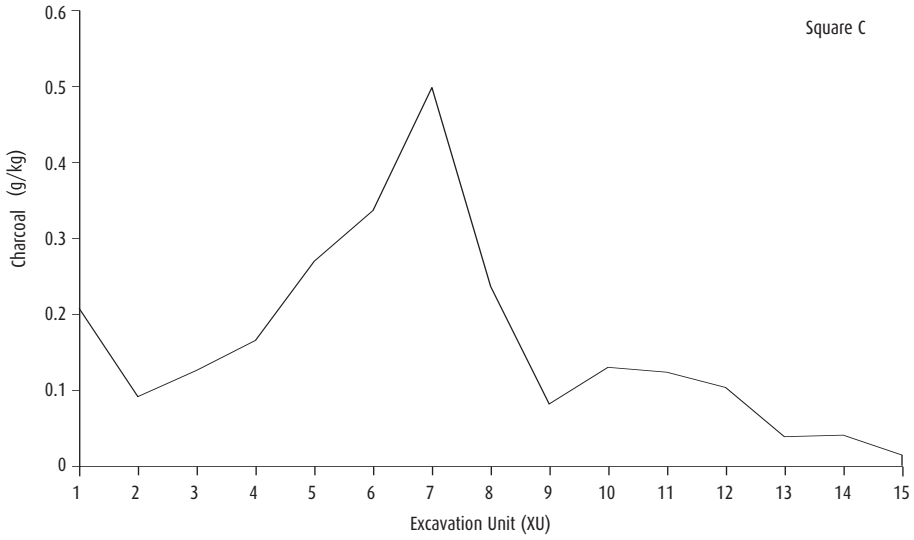

Figure 10.9 Abundance of charcoal.

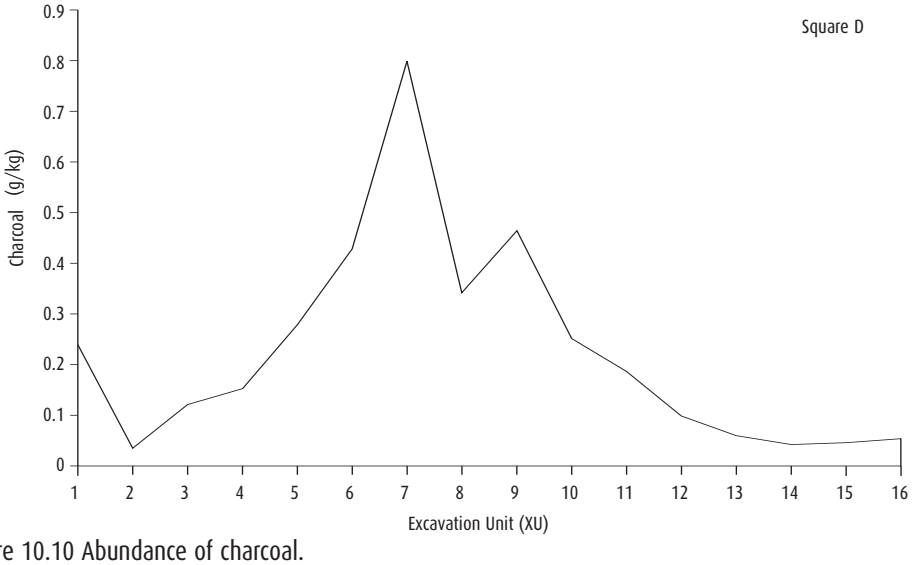

Figure 10.10 Abundance of charcoal.

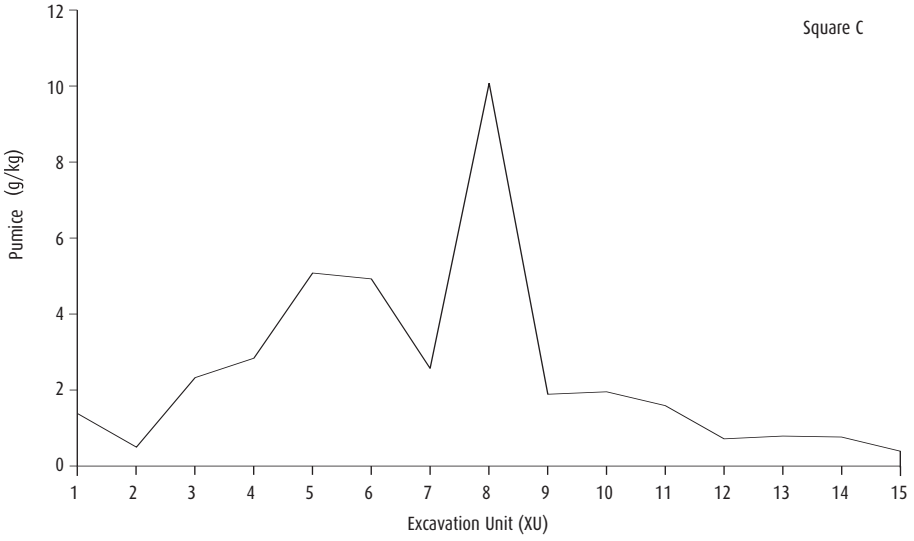

Figure 10.11 Abundance of pumice.

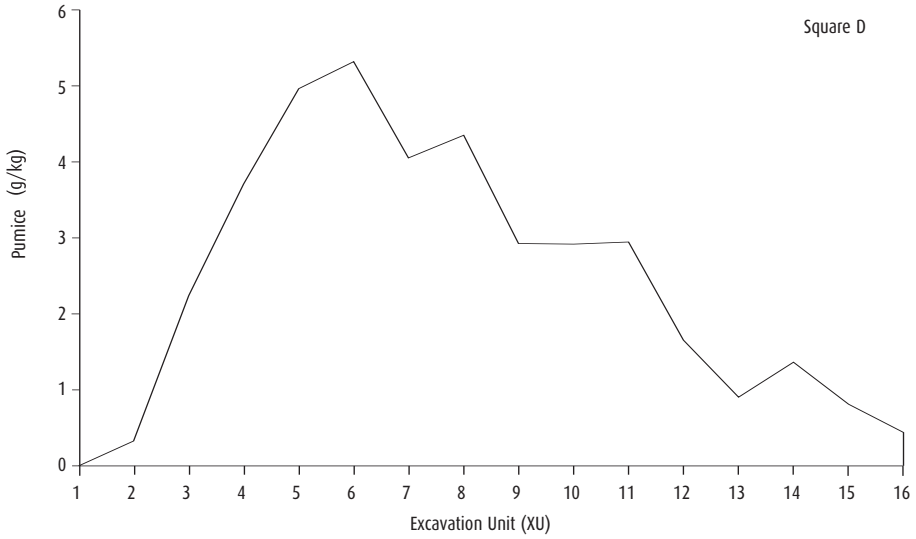

Figure 10.12 Abundance of pumice.

Other remains

Scattered fragments of charcoal totalling 76.5g were recovered from every excavation unit except the surface of Square B, with concentrations in the upper units coincident with the distribution of shell (Figs 10.9–10.10). Pumice totalling some 1,011.7g occurs throughout the bank deposits (Figs 10.11–10.12). Several large nodules of pumice in Square D account for most of the weight in the middle units of the deposit. Pumice is thought to have entered the site through a combination of wind and sea-rafting.

Discussion

Excavation at Eurimbula Creek 1 revealed a shallow, low density shell deposit consistent with observations of the material exposed in the erosion section. The apparent vertical and horizontal discreteness of the shell material, dominance of larger shellfish size-classes, absence of small shellfish and shell fragments, restricted range of shellfish taxa and presence of burnt fish bone support a cultural origin for the deposit. The concentration of shell material between 10–25cm and the single bivalve conjoin indicating a separation of contemporaneous cultural material of up to 15.2cm suggests that all recovered materials probably belong to a single or closely spaced series of small-scale deposition events.

Small-scale shellfishing and fishing are represented by the assemblage. The small extent of the site, low diversity of taxa and absence of evidence for stone artefact manufacture or maintenance is consistent with a site function as a 'dinner-time camp'. Meehan (1982:26) defined 'dinner-time camps' as 'small camp sites used during the middle of the day while people are engaged in hunting trips away from their home base. At these sites they cook and eat food that has been procured up to that time'. Bird and Bliege Bird's (1997) study of contemporary shellfish gathering among the Meriam of eastern Torres Strait concluded that small dinner-time camps might be expected during collective gathering activities taking place relatively far (average 1.9km) from the residential base. Meehan (1988) has noted that other factors also impact on the establishment of dinner-time camps, such as season and location of the home base. Dinner-time

camps are commonly established on the foreshore fringe adjacent to the gathering area, where a large proportion (up to 75%) of food might be consumed. Meehan (1982:117) found that shellfish processing sites (as opposed to dinner-time camps) usually included only one taxon.

A key difference between long-term residential base camps and short-term dinner-time camps is the diversity of taxa targetted. Meehan's (1988) ethnographic observations documented that while 70 taxa were consumed at the base camp during April 1973, the 32 temporary dinner-time camps established during the same period only had an average of c.6.5 taxa/visit (data for all individual visits is not presented), with a range of 2–22 taxa. Meehan (1988) also noted the small size of dinner-time camps (maximum of 15m × 10m) versus base camps (200m × 100m) and the presence of manufacturing and maintenance activities at base camps. Together this evidence is consistent with ephemeral site creation during foraging activities focussed on the intertidal zone.

The recovery of a single pipi (*D. deltoides*) valve dated to the last 200 years is consistent with dated surface samples of pipi from the Middle Island Sandblow Site to the north (see Chapter 2), suggesting use of pipi over the last 550 years. Although pipi is not common in the area today, the volume of remains of this taxon on the Middle Island Sandblow Site and local oral history suggest it was more abundant at times in the recent past. It is thus curious that pipi is absent from excavated deposits on estuary margins dating to the last 500 years, despite close proximity to the ocean beach. At least three explanations are possible to account for this pattern. First, pipi may not have been actively targetted. Second, pipi were actively targetted and discarded in open beach environments prone to loss through erosion on the supratidal dune fringe. Third, pipi may have been occasionally consumed at temporary (dinner-time) camps on the open foreshore during foraging expeditions, with field processing of the remainder for transport of the meat only to nearby residential bases.

Summary

Eurimbula Creek 1 represents a different form of site from those which dominate the archaeological record of the southern Curtis Coast. It is one of the few sites investigated that does not appear to represent multiple occupation events spanning long periods of time. Radiocarbon dating indicates that the site was used within the last 200 years, contemporaneous with the period of greatest evidence for land-use in the region. These results provide an insight into patterns of resource procurement away from the large linear sites on lower creek margins that appear to have functioned as residential base camps.