

VOLUME 4
PART 2

MEMOIRS OF THE
QUEENSLAND MUSEUM
CULTURAL HERITAGE SERIES

17 OCTOBER 2008

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National Library of Australia card number
ISSN 1440-4788

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CHAPTER 10

MUA 22: ARCHAEOLOGY AT THE OLD VILLAGE SITE OF TOTALAI

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Ash, J. & David, B. 2008 10 17: Mua 22: Archaeology at the old village site of Totalai. *Memoirs of the Queensland Museum, Cultural Heritage Series* 4(2): 327-348. Brisbane. ISSN 1440-4788.

Totalai is the site of the earliest known village on Mua. This paper presents the results of initial archaeological investigations at this site, discussing in particular implications for an archaeology of the colonial period relative to seascapes. □ *Villages, Torres Strait, Totalai, archaeological sites, Mua, missions, London Missionary Society.*

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The island of Mua and its surrounding islets and seas are rich in cultural sites including villages, temporary camping places, rock-art galleries, story places, fish traps, reefs, passages, geographical features, sentinel points, ritual locales, pearling stations, missions and gardens. The archaeology of some of these site types has been addressed elsewhere (e.g. David et al. 2004; David 'The archaeology of defence on Mua' and 'Archaeological surveys at Bulbul and Gerain' chapters 12, 16, this volume), but generally there have been few published accounts of the nature and antiquity of village life across Torres Strait, and no published accounts of the archaeology of missionisation (but see David & Weisler, 2006; Gahleb, 1990; Rowland, 1985).

In 2003, the Mualgal (Torres Strait Islanders) Corporation Committee, representing the Indigenous people of Mua, requested to one of us (BD) that archaeological research be undertaken at the old village site of Totalai, in northern Mua, in order to augment current knowledge about this locally important historical site. The community at the present Kubin village wished to know more about the history of this ancestral village. Coupled with what was then a paucity of available information on the deep history of village life on Mua and Torres Strait generally, this research at Totalai would provide an opportunity to develop field investigations that integrated community and academic interests on Mua's archaeological history. Here we present initial results of these archaeological excavations.

TOTALAI: THE HISTORICAL SOURCES

Traditional stories suggest that shortly prior to the arrival of Europeans in the early 1870s, the Mualgal – the Indigenous people of Mua – lived in small, dispersed and short-term villages at least in part to avoid detection and surprise attack on enemy head-hunting raiding parties, in particular the neighbouring Badulgal and Goemulgal (e.g. Wilkin, 1904 for oral traditions concerning hostilities). With such factors in mind, for some unknown time before 1870, the Mualgal appear to have largely abandoned earlier coastal villages and moved inland (see David 'The archaeology of defence' chapter 12, this volume; Shnukal 'The last battle of Mua' chapter 3, this volume).

Totalai is of particular historical interest in this regard. Located on a northern promontory along Mua's coastline, this old village location is exposed to view from a considerable distance out to sea. Lacking mangrove cover along much of its foreshore, the site's low, flat coastal plain is for the most part entirely visible to incoming seafarers and in this capacity is highly susceptible to surprise attack. Yet this is also the location of the first sustained London Missionary Society (LMS) station on Mua. Shnukal ('Historical Mua' chapter 4, this volume) has noted that:

The first missionary teachers appointed to Mua landed from the *Viking* on 9 November 1872; they were Gutacene and Waunaea, both from Mare in the Loyalty Islands, who were sent from Dauan to oversee both Mua and Mabuyag. Mua was chosen as a mission station because it was 'said to be free from fever and ague' and

because Gay could be relied on to provide stores and a safe haven if necessary [Captain Gay had shortly before set up a pearling station at Dabu in northwest Mua].

This first mission station (probably located at Dabu in northwest Mua) lasted only a few months, and by August 1874 a second attempt was made to establish an LMS mission station on Mua when, following a brief stint on Badu, the Loyalty Islander and Christian missionary Kerisiano arrived. By all accounts Kerisiano's mission station (or 'school') was located at Totalai. In 1873 Revd A.W. Murray of the LMS had written 'that the people of [Badu and Mua] "are scattered as sheep without a shepherd, and require to be sought out and cared for" – an indication that the Muans had not yet settled at Totalai' (Shnukal 'Historical Mua' chapter 4, this volume).

In 1874 Revd McFarlane (1874: 14-15) further reported:

We expected to find Kerisiano at Badu, or Mulgrave Island to which he was appointed, and where he resided for some time. But finding that the natives objected to settling in one place and forming a village, he left them and settled at Mooa [Mua], where he has built a very good commodious house, which, unlike any other of the teachers' houses, is

covered with bark. The situation is good, and will be, I should think, healthy, being exposed to both SE trade winds and of N monsoons. There is a stream of fresh water and plenty of good land close by. The natives have assisted him in building his house, and promise to form a village there, and as a pledge the chief has placed his son with the teacher.

It is not unusual in Western scholarship to focus on the colonial dimensions of missionary activity (e.g. King, 1999: 104-105). While tales of missionary coercion and hegemonic rule are undoubtedly true, there is also another side to this story – an Indigenous perspective – that is well illustrated by the particular situation on Mua. Why, we may ask, were the Mualgal so willing to help Kerisiano build a mission station at Totalai, especially given that the Badulgal a few kilometres to the west had then refused a similar request? Understanding this historical event requires more than a consideration of the missionary side of the story; it also requires understanding the contemporary Mualgal perspective so as to understand local action as an expression of what Nakata (2007) has termed the 'cultural interface'. We thus find that in the years immediately preceding the arrival of the LMS on Mua, a major calamity had befallen the Mualgal. As Police Magistrate Henry Chester wrote in 1871 after a brief visit to Mua:

It was only after numerous attempts to communicate with the Italeega of Banks island [Mua] that I at length succeeded in overcoming their timidity and inducing them to trade. Living in perpetual dread of their powerful neighbors of Badoo and Marbiack they are compelled to be constantly shifting their camps, which they take great care to conceal on the side to seaward; so that I passed and repassed without any idea of their vicinity. The men complained piteously of the Gamaleega and bewailed the destruction of their tribe which was, they said, no longer able to contend with its numerous enemies; but if the whites would only assist them they would soon be revenged for all they had suffered. They argued that we ought to help them against the Badoo men particularly, who had so often killed white men while the Italeega had always been friendly[...]

Chester's observations suggest that the acceptance of Kerisiano was motivated by a Mualgal wish to establish alliances with the newly arrived colonial authorities, and thereby enable the people of Mua to re-establish and maintain safe and sustainable connections with their lands, waters

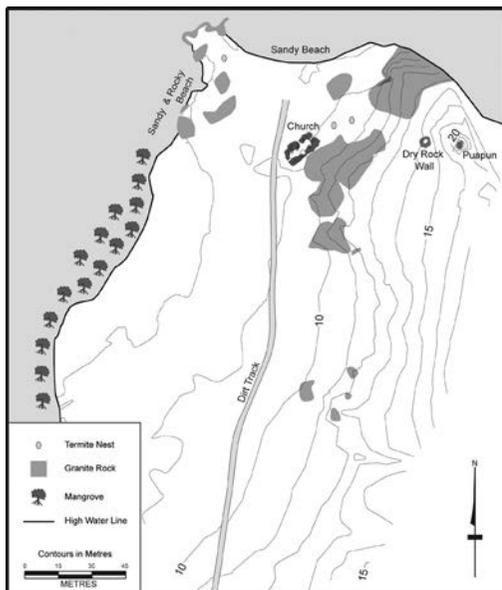


FIG. 1. Map of Totalai, from survey work undertaken by Lynden McGregor.

and kinfolk following a devastating raid by their neighbouring Badulgal and Goemulgal.

We suggest that it is no coincidence that Kerisiano was assigned land at Totalai, which according to oral tradition appears to have been a significant ancestral Mualgal village site exposed to the full view of their Badulgal and Goemulgal enemies. Within two years of their arrival, Revd Mcfarlane noted that Kerisiano and his family had established a plantation and commenced construction of a church at the site (Fig. 1). By May 1875 the desire to form a village at Totalai, with the church and school as the central element, had begun to materialise (a fact which Revd Mcfarlane attributes to the fear of pearl-ers). He wrote in 1875:

[Kerisiano] has got a very substantial and commodious house built after the style of those in his own country, but instead of covering, or rather enclosing it with grass, he has got for this purpose the bark of trees which makes a better roof and a stronger house. He and his good wife have certainly not allowed the grass to grow under their feet, for it is all cleared for a considerable distance round the house and replaced by bananas, sugar cane, sweet potatoes, yams etc., which are looking quite healthy and very tempting. [...] There is plenty of good land in the vicinity, and the people have promised to leave the interior and form a village around the teacher, but at present they are afraid of the shellers. They seem to have perfect confidence in Kerisiano, and he in them, for he moves about amongst and with them all over the island.

The following year, Mcfarlane (1876: 1) further wrote:

teacher, Kerisiano and his good wife well and the flourishing plantation around their house, with the half built chapel close by showed that they had not been idle. This [...] couple have long been endeavouring to persuade the people to leave the bush, where they have gone to live, being afraid of the pearl shellers, who are greatly in want of native divers, and some of whom are not very particular how they get them, and erect houses near the mission station. Their efforts, I am happy to say, have been successful to a very encouraging degree. Several pretty good houses are built after the Lifuan style, and men, women, and children are [...] seen about the teacher's house, evidently regarding him as their protector as well as [?instructor]. Kerisiano has commenced a dayschool, seven boys having been handed over to him for instruction by their heathen parents.

The station is in a prosperous condition. Although the shellers are trying to get the natives from the village, and the boys from the school to go in their boats and dive for shell.

By 1876 Totalai had become a fledgling but established LMS mission, and within a few years it would become the only village on Mua.

TOTALAI AFTER 1872: CENTRALISATION

McNiven (2001) argues that across Torres Strait outsider access to villages and other key inland places (such as freshwater sources) was highly restricted and controlled by local Islanders during the early European contact period (the late 1700s to the mid-1800s). As part of this process, early cross-cultural encounters usually took place either on ships or on the beach, both representing contemporary maritime frontiers. By contrast, after the mid-1860s villages increasingly became the locus of interaction between Torres Strait Islanders and colonial powers, for the village was of strategic administrative and surveillance importance to pearl-ers, Christian missionaries and the state. This changing dynamic intensified when on each island Torres Strait Islander communities centralised into single villages and became subject to increasingly restrictive controls implemented by the institutions of colonialism (both church and state).

The creation of an LMS station at Totalai in 1874 was part of a process of missionisation that involved all of Torres Strait, although on each island the specific reason as to why local Islanders welcomed or allowed missionaries was likely to have been different (this question remains to be explored). The LMS was a multi-denominational protestant organisation that sent Pacific Islander teachers to a number of Torres Strait islands and in villages along coastal New Guinea from 1871. The primary goal of the church leaders was the evangelisation of New Guinea, then-imagined as a continent of 'cannibals' and the great terra incognita of European expansionism; Torres Strait was considered a small but vital springboard for the bigger prize, the eventual Christianisation of New Guinea (Lovett, 1899: 432). On 1 July 1871, the Revd Samuel McFarlane thus landed the first Pacific Islander missionary-teacher on Erub (Darnley Island), an event now celebrated annually across Torres Strait as the 'Coming of the Light' festival. It is in this context that Revd A.W. Murray, on his way to take over administration of the Papuan Mission, landed



FIG. 2. Site of the pre-missionary and missionary villages, Totalai (with Badu visible in background).

the first teacher on Mua on or soon after 18 October 1872 (Murray, 1872: 8), and in which Kerisiano's subsequent settling at Totalai took place.

However, Totalai also has a deep archaeological history that is not recalled by oral narrative. It is this archaeological history that we present in the following section.

MUA 22 (TOTALAI)

The island of Mua is a 171km² landmass with expansive plains of colluvial and alluvial sands interspersed by large granitic hill ranges and rock outcrops, particularly in the northeast (see Barham & Harris, 1983: 533). Vegetation cover inland is predominantly open woodland, with some swamps and with coastal areas populated largely by mangroves interspersed by mudflats, sandy beaches and granitic outcrops. Offshore, mature sea-beds and grasses support a diverse range of shellfish, fish, turtle and dugong. Small offshore islands such as Sarbi immediately opposite Totalai contained (and to some degree still contain) populations of Torres Strait pigeon and freshwater, and were in the

past often used as gardening places and for the collection of turtle eggs.

Totalai Point is a rocky peninsula located on the northernmost point of Mua (Fig. 2). It is at the extreme western margin of a granitic hill system formed during the Upper Carboniferous (Richards & Willmott, 1970) that dominates the northwest part of the island (see fig. 2 in David et al. 'Archaeological excavations at Gerain and Urakaraltam' chapter 14, this volume). Immediately to the west of the hill-slopes are flat coastal plains that extend for some considerable distance southward. To the east of the Point, a shallow embayment, typical of the northern coastline of Mua, consists of 'prograded mud flats, with well developed mangrove communities at the seaward edge [*Rhizophora* mangrove], backed by hypersaline mud flats with irregular and poorly developed chenier ridges' (Barham & Harris, 1983: 534).

ARCHAEOLOGICAL SURVEYS. Systematic archaeological surveys have been undertaken for the entire plain and some of the hill-slope at Totalai. Archaeological evidence dating to the most recent phase of settlement, the early

TABLE 1. Description of SUs, Square A, Mua 22. All SUs were dry at time of excavation.

SU	Sediment description
1	Loose, sun-bleached surface sediments of the current treadage zone, rich in mineral sand. Much grass cover occurring in clumps. Shells and other cultural objects, including glass and other items of the European contact period, occur in this SU. Sediments are neither compact nor consolidated. Homogeneous across the square. SU1 suddenly gives way to the well-defined surface of SU2a.
2a	Dark, slightly loamy sands with numerous fine grass rootlets. Cultural materials noticed in situ. Homogeneous across square. Sediments are slightly consolidated and easy to dig. Boundary with underlying SU2b is indistinct; we are uncertain of the precise thickness of the interface zone because the colours and textures of the two SU are very similar. However, this SU change was fairly well delimited on the northern wall after completion of excavation.
2b	Very dark layer of slightly consolidated loamy sand. Numerous fine grass rootlets present. Homogeneous in colour and texture across square. Cultural materials noticed in situ. Boundary with underlying SU2c is marked.
2c	Darkish layer of sand, slightly lighter in colour than SU2b. Cultural items noticed in situ. Very rich in turtle bones, many of which are burnt, and mostly highly fragmented; these bones tend to occur in varying orientations within SU2c. Sediments are unconsolidated and very easy to dig. Pumice is abundant throughout the square. Homogeneous across square. Interface with underlying SU3a is gradual, taking place over a vertical distance of c.10cm. Change-over from SU2c to SU3 was easily identifiable on the section walls.
2d	Very dark, homogeneous slightly loamy sands. A well-defined, vertical area with very dark sediments. The upper boundary of SU2d is fairly well delimited but not all that easy to see because of the similarity of sediment colours and texture in SU2c and SU2d. SU2d is interpreted as an infilled post-hole, originally dug from within SU2c. The base of SU2d has not been excavated and remains in situ, although an unexcavated large pebble, c.10cm in diameter, was noticed precisely inside the area of the post-hole (SU2d) at its base. This rock does not show up in the section drawings because it was only revealed after excavation was completed, during cleaning of the excavation square following completion of the section drawings. The post-hole represented by SU2d was by chance dissected in half by the southern wall of the excavation. The interface with surrounding SU3a and SU3b in its lower parts is marked.
3a	Granite mineral sands, homogeneous, appeared during excavation to be non-cultural but subsequently showing cultural materials during laboratory analyses. Towards the western end of the square, a few granite rocks (c.10cm diameter) are present. The SU3a sediments are interpreted as an ancient beach-bordering dune or beach deposit.
3b	Sediments are similar to SU3a but slightly darker. SU3b was only noticed in the western end of the square, immediately above and around the upper surface of a large granite boulder exposed at the base of the excavation. Numerous very fine rootlets occur matted along the granite boulder in this SU. We interpret SU3b as representing the area around the boulder where humidity has accumulated; depositionally, it is akin to SU3a.

European contact period, is restricted to the low, flat sandy ground and the lower levels of the western hill-slope (e.g. the ruins of the church, Fig. 3). A seasonal creek to the south of the main site provides a southern and southeastern edge for the site, although small and highly localised scatters of artefacts of the European contact period are occasionally found beyond the creek. The site may also be demarcated from surrounding areas by its floristic composition: by and large, the archaeological site of Totalai is predominately grassland with occasional trees extending southward for some 500m from the northern coastline, whereas further to the south the vegetation is open forest. The archaeological site of Totalai has been allocated the Monash University site survey reference Mua 22 (being the 22nd cultural site recorded on Mua).

ARCHAEOLOGICAL EXCAVATION. A single 1.00 × 0.75m square, aligned north-south/east-west was excavated by one of us (BD) on a slightly elevated part of the sandy plain where surface cultural materials were relatively dense. Here the ground surface is 1.0m above the high tide mark. The excavation square (Square A) was located 25m east of the western, and 28m south of the northern shorelines (Figs 1, 4). The aim of the excavation was to obtain

basic temporal information on the antiquity of occupation at Totalai, in light of its present iconic significance as a key ancestral village to Kubin villagers. Excavation was undertaken in 23 major Excavation Units (XU), the lowermost XU22 and XU23 being sub-divided into three and two minor XUs respectively (so as to differentiate sediments belonging to different SUs at that depth below ground). Excavation Units averaged 3.8cm following the stratigraphy (Stratigraphic Units, SU). The lowermost XU20-23, sampling relatively loose sand which at the time of excavation appeared to be culturally sterile (but which following laboratory analyses were determined to contain cultural materials), were thicker than the overlying XU (averaging 4.8cm and 3.4cm respectively). Selected pieces of charcoal were plotted in 3-dimensions relative to an arbitrary datum, with potential radiocarbon dating in mind. Excavated sediments were sieved in 3mm mesh (measured in the parallel), the retained materials double-bagged and labeled for later sorting in the Monash University archaeology laboratories. A sample of the <3mm residue was collected from each XU for sediment analyses.

Sediments and stratigraphy. Archaeological excavation in Square A proceeded to a maximum 82.7cm below present ground level.

TABLE 2. Square A, Mua 22: details of each XU.

XU	SU	Mean Depth Below Surface at Top (cm)	Mean Depth Below Surface at Base (cm)	Mean Thickness of XU (cm)	Area (m ²)	Volume (l)	Weight (kg)	Weight of >3mm Non-Cultural Sediments (kg)	Kg per Litre	% of Sediments >3mm (by weight)	pH
1	1	0.0	1.8	1.8	0.75	17.0	19.3	0.400	1.1	2.07	6.47
2	2a	1.8	3.2	2.8	0.75	22.5	25.8	0.625	1.1	2.42	6.35
3	2a	3.2	5.7	2.5	0.75	21.5	25.2	0.375	1.2	1.49	6.38
4	2a+2b	5.7	8.1	2.4	0.75	22.0	26.9	0.550	1.2	2.04	6.31
5	2b	8.1	11.3	3.2	0.75	27.5	34.2	0.900	1.2	2.63	6.35
6	2b	11.3	14.4	3.1	0.75	25.0	33.3	1.025	1.3	3.08	6.29
7	2b	14.4	17.5	3.1	0.75	22.0	32.8	1.536	1.5	4.68	6.39
8	2b	17.5	20.4	2.9	0.75	28.0	37.5	1.750	1.3	4.67	6.45
9	2b	20.4	23.8	3.4	0.75	28.0	36.4	2.250	1.3	6.18	6.36
10	2b+2c	23.8	26.8	3.0	0.75	27.0	36.9	2.724	1.4	7.38	6.41
11	2b+2c	26.8	30.5	3.7	0.75	30.0	37.9	2.142	1.3	5.65	6.55
12	2b+2c	30.5	34.7	4.2	0.75	39.0	46.8	3.637	1.2	7.77	6.53
13	2b+2c	34.7	38.5	3.8	0.75	37.0	47.3	3.367	1.3	7.12	6.52
14	2c	38.5	41.6	3.1	0.75	28.0	37.1	2.511	1.3	6.77	6.50
15	2c	41.6	45.3	3.7	0.75	33.5	44.0	2.940	1.3	6.68	6.53
16	2c+2d	45.3	48.7	3.4	0.75	31.0	40.2	3.050	1.3	7.59	6.57
17	2c+2d+3a	48.7	52.9	4.2	0.75	36.5	48.5	2.975	1.3	6.13	6.68
18	2c+2d+3a	52.9	58.0	5.1	0.75	53.0	66.7	2.975	1.3	4.46	6.86
19	2c+2d+3a	58.0	64.2	6.2	0.75	47.0	64.5	1.625	1.4	2.52	6.66
20	3a	64.2	68.7	4.5	0.64	33.5	47.9	0.625	1.4	1.30	6.64
21	3a	68.7	72.5	3.8	0.73	32.0	42.1	0.600	1.3	1.43	6.55
22a	3a+3b	72.5	77.7	5.2	0.72	32.0	55.6	1.275	1.7	2.29	6.68
22b	2d+3a	72.5	77.7	5.2	0.01	4.0	6.3	0.175	1.6	2.78	6.73
22c	2d	72.5	77.7	5.2	0.02	0.5	1.1	0.025	2.2	2.27	6.59
23a	3a+3b (+2d)	77.7	82.7	5.0	0.73	30.5	42.4	0.925	1.4	2.18	6.74
23b	2d	77.7	82.7	5.0	0.02	9.5	12.7	0.325	1.3	2.56	7.02
Total				82.7		717.5	949.4	41.307			

Sediments were consistently slightly acidic but close to neutral, with pHs ranging between 6.29 and 7.02; the slightly higher pHs in SU3a and SU3b is consistent with their lower charcoal content. Table 1 presents a description of sediments by SU. Table 2 gives details of the excavation by XU. Figs 5-7 show stratigraphic details on the excavation walls after completion of excavation.

Radiocarbon dating. Four charcoal samples were sent to ANSTO for AMS radiocarbon dating (Table 3). The age determinations were calibrated using Calib 5.0.2 (Stuiver and Reimer, 1993; Stuiver et al., 2005) and the Southern Hemisphere Calibration (McCormac et al., 2004). Unless otherwise specified, estimated calibrated dates discussed are presented in-text as the highest probability 2 sigma age-range.

Charcoal from a depth of 64-69cm (XU20) was sent for radiocarbon determination and revealed an age of 1670±50 years BP (OZH933); it calibrates to 1384-1621 cal BP (.985 probability of 2 sigma). This level represents the earliest known phase of occupation of Totalai, although the base of SU3 has not been reached and therefore it is not known how long before c. 1400-1600 years ago people first began to frequent this area. While there is the possibility of vertical displacement of artefacts in the loose sandy matrix (particularly of the small quartz flakes), this does not explain the presence of a large and intact valve of *akul* (*Polymesoda erosa*) 78-83cm below the surface in the basal unit of the square. The low intensities of cultural materials in these SU3 XUs are not indicative of intensive use of the area at this time, and we therefore interpret this phase as a sign of



FIG. 3. The ruins of the old church, Totalai (archaeological research at this church is in progress and have not been reported in this paper).

episodic camping activity rather than sustained village life at Totalai.

A sample of charcoal from XU18 at a depth of 53-58cm below ground was also submitted for radiocarbon determination. This XU marks the beginning of a new phase of occupation at Totalai. Archaeologically, this new period of deposition is notable for a sudden increase in

the quantities of turtle and/or dugong bone, fish bone, hearth stones, charcoal and quartz artifacts. This phase corresponds in timing with the period of deposition of rich cultural SU2c and SU2d sediments, and is also associated with the commencement of sustained deposition of shark and macropod teeth (see below). The high quantities of charcoal, hearth stones and fragmented burnt bones suggest that SU2c is an

TABLE 3. AMS radiocarbon ages and calibrated ages on single pieces of charcoal, Square A, Mua 22 (calibrations using Calib 5.0.2, with Southern Hemisphere option).

14C laboratory #	XU	SU	Depth below ground (cm)	$\delta^{13}C$ ‰	% Modern	14C age (years BP)	Calibrated age AD, 1 sigma 68.3% probability (probability)	Calibrated age AD, 2 sigma 95.4% probability (probability)
OZ1297	9	2b	20-24	-25.6	96.87±0.44	255±40	1644-1673 (.395) 1741-1797 (.605)	1511-1551 (.038) 1558-1572 (.008) 1622-1699 (.398) 1722-1809 (.534) 1838-1845 (.004) 1867-1878 (.007) 1930-1951 (.012)
OZ1298	12	2b+2c	31-35	-27.9	86.75±0.38	1140±40	896-923 (.327) 940-993 (.673)	882-1024 (1.000)
OZ1299	18	2c+2d+3a	53-58	-28.4	82.73±0.37	1525±40	565-636 (1.000)	443-451 (.007) 462-484 (.024) 533-657 (.969)
OZH933	20	3a	69	-30.6	81.21±0.46	1670±50	401-471 (.549) 477-534 (.451)	263-277 (.015) 329-566 (.985)



FIG. 4. Discussions between Mualgal Committee and archaeologists after completion of excavation at Square A, Totalai.



FIG. 5. South wall, Square A, Mua 22 showing the infilled post-hole in the southwest corner.

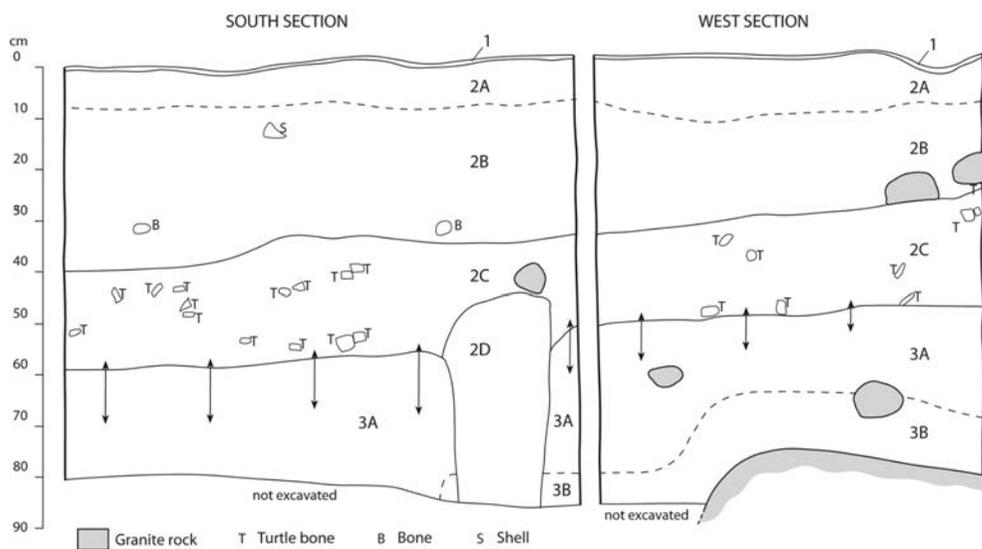


FIG. 6. Section drawings of south and west walls of Square A, Mua 22. The arrows indicate the thickness of the stratigraphic interface between SU2c and SU3a.

earth oven. The charcoal date from XU18 indicates an age of 1525 ± 40 years BP (OZI299), which calibrates to 1293-1417 cal BP (.969 probability of 2 sigma), indicating that c.1300-1400 years ago people established a village at Totalai and made a hearth in this part of the site.

A radiocarbon date was also obtained from XU12, located at a depth of 31-35cm below surface. This level is slightly below, and therefore probably slightly predates, the beginning of significant decreases in quantities of cultural materials, in particular turtle and/or dugong bone.

The charcoal from this XU revealed an age of 1140 ± 40 years BP (OZI298), or 926-1068 cal BP (at 1.000 probability of 2 sigma). Shortly above this date – in XU9, at 20-24cm below the surface, or 7cm above OZI298 – a radiocarbon date was also obtained, revealing an age of 255 ± 40 years BP (OZI297) which calibrates to 141-228 cal BP (at .534 probability of 2 sigma). This level shortly predates the first appearance of European objects in XU5 (8-11cm below ground, or 9cm above OZI297), and may thus either represent the initial period of missionisation at Totalai

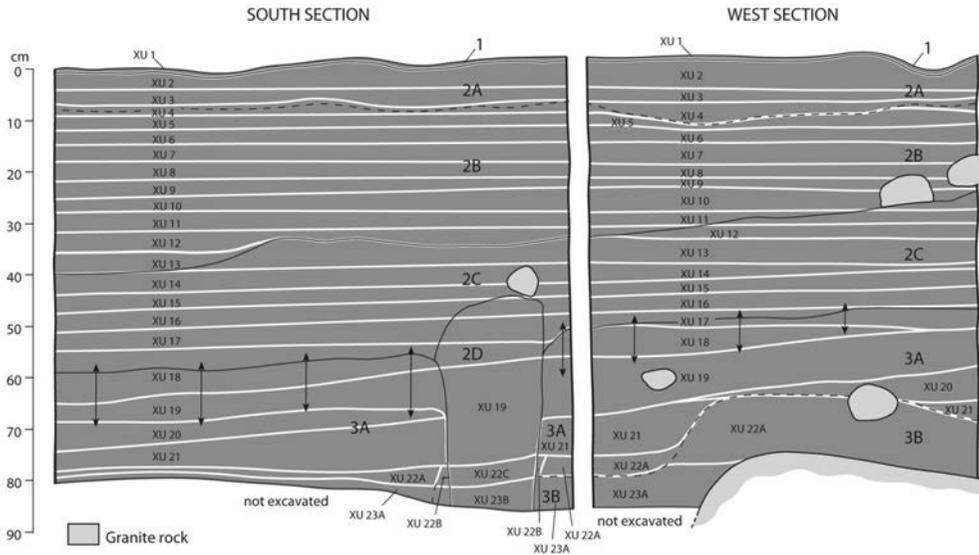


FIG. 7. Section drawings of south and west walls of Square A, Mua 22, with superimposed XUs.

during the 1870s (when presumably European objects were still rare), or shortly precede it.

Cultural features: the SU2d post-hole. SU2d is an intrusive vertical stratigraphic feature identified in the southwest corner of the excavation square. Its uppermost level begins within the mid-levels of SU2c in XU15 or XU16, projecting downwards into underlying SU3a and SU3b. Radiocarbon dating on charcoal from XU18 and XU12 indicates that this feature was thus created sometime between about AD 600 and 1000 (or, sometime between c.1400 and 1000 years ago).

The SU2d feature is interpreted as an infilled post-hole, evidencing the existence of a structure more than 1000 years ago in this part of Totalai. The precise nature of this structure – platform, fence or house – is unknown, but we suggest it is likely to have been a house or platform because of the relatively large size of the post-hole (20cm diameter). In one interpretation, however, the fact that this post-hole was created from a level mid-way into what appears to have been an *amai* earth oven (given the large quantities of hearth stones, charcoal and fragmented burnt bone in SU2c surrounding the uppermost, construction level of the SU2d post-hole) suggests that the original post may not have been part of a house, but rather some kind of construction related to communal cooking and food processing. In this scenario, a platform for processing cooked communal foods such as

turtle and dugong would be the preferred kind of structure represented by the SU2d post-hole.

Alternatively – or additionally – the SU2d post-hole may have had a different function altogether. Rainfall during the *kuki* (monsoon) season is very high (1608.8 mm) and accounts for 92% of the mean annual rainfall of 1745.9mm for this part of Torres Strait (Bureau of Meteorology, 2004). We do not know whether this, along with the prevailing northwest monsoonal winds and the rapid rise in the mosquito population at this time of the year, necessitated the construction of sleeping platforms over smoking fires to repel mosquitoes. Certainly technological features in housing forms – such as stilt housing, evident in parts of southwest Torres Strait during the early European contact period – suggests that architectural forms played some role in mitigating such factors (Fig. 8; for details, see David & Ash, this volume). It is possible in this context that the SU2d post-hole represents a sleeping platform over a functional hearth strategically positioned for its ability to produce smoke to repel mosquitoes below residential quarters. While we do not prefer this explanation for the simple fact that the SU2c deposit indicates the cooking of large, communal foods (including turtle and/or dugong, see below) – and thus we prefer the cooking platform scenario – such factors need not eliminate this explanation from the realm of possibility. Further excavation would be needed



FIG. 8. Kaurareg house form in September 1888, southwest Torres Strait (Haddon 1912: 94).

in the area immediately around Square A to reveal more details about the size and nature of this structure, and its relationship to other surrounding cultural materials.

Faunal remains. Torres Strait Islanders were during the early European contact period, and continue to be today, highly specialised sea peoples heavily reliant upon the resources of the marine and littoral environments (see Barham et al., 2004; Bird et al. 2004; Crouch et al., 2007; McNiven, 2006; McNiven & Hitchcock, 2004; McNiven et al., 2006). While a range of both terrestrial and marine bone and shell remains were recovered from the Mua 22 Square A excavation, the archaeological record is dominated by marine remains (dugong, turtle, fish, shellfish) with only small amounts of avian

TABLE 4. Distribution of food items by XU, Square A, Totalai.

XU	SU	Turtle/ Dugong Bone	Fish Bone	Stingray Dermal Denticle		Shark Teeth		Macropod Teeth Fragments		Bird Bone		Lizard Vertebrae		Snake Vertebrae		Unidentified Bone		Sepidae Cuttlebone	Marine Shell
		g	g	#	g	#	g	#	g	#	g	#	g	#	g	#	g	g	g
1	1	29.53																	129.7
2	2a	22.15	0.03																99.7
3	2a	25.92	0.06											2	0.04				79.8
4	2a+2b	27.86	0.26																58.0
5	2b	94.84	0.44							1	0.22								35.6
6	2b	105.00	0.26					1	1.50										22.0
7	2b	163.99	0.94							2	0.09			2	0.06				7.2
8	2b	185.47	0.06							3	0.17								33.0
9	2b	194.03	0.72			1	0.26	1?	0.20										1.0
10	2b+2c	215.64	0.52													1	0.21		56.6
11	2b+2c	313.65	0.03			1	0.03	1	0.13	3	0.69					2	0.08		41.3
12	2b+2c	267.34	3.47			1	0.18	1?	0.14							11	2.90		
13	2b+2c	513.14	0.43			1	0.02	1?	0.03										4.2
14	2c	578.29	0.90			1	0.03	2?	0.13										0.2
15	2c	1015.89	3.14			10	0.45	3	1.01					1	0.03	3	3.36		1.8
16	2c+2d	708.48	1.48			2	0.13	2	0.22									0.34	6.7
17	2c+2d+3a	1098.45	4.68			3	0.21	3	0.19	1	0.05	1	0.01			5	3.03		14.2
18	2c+2d+3a	1661.08	4.29			2	0.06	1?	0.02	4	1.51					12	20.14		7.1
19	2c+2d+3a	107.52	0.63	1	0.06											3	9.13		6.5
20	3a	33.37	0.31																0.5
21	3a	18.28	0.34			1	0.04	1?	0.06							1	0.33		8.1
22a	3a+3b	27.73	0.65																49.3
22b	2d+3a	6.55	0.07													1	0.06		2.0
22c	2d	4.38	0.11																
23a	3a+3b (+2d)	13.69	0.27																1.5
23b	2d	7.24	0.53																12.6
Total		7439.51	24.62	1	0.06	23	1.41	10 (+7?)	3.63	14	2.73	1	0.01	5	0.13	39	39.24	0.34	678.6

and terrestrial (macropod, lizard, snake) bones present.

Macropod remains. Seventeen confirmed macropod and probable macropod teeth fragments were recovered from Totalai (Table 4). Each of the 10 confirmed macropod teeth has been identified as Agile Wallaby (*Macropus agilis*). All teeth except for one are molars or premolars; the exception is an incisor. Most teeth show little if any wear, indicating young individuals.

With the exception of Mai and Giralag (Friday) islands, there are no ethnographically documented resident macropod populations for any of the islands of Torres Strait (McNiven & Hitchcock, 2004: 118-119). Of significance to understanding the origins of the Mua 22 archaeological macropod teeth, with the single exception of an unidentified macropod molar from Ormi on Dauar (Carter, 2004: 324), the only macropod remains yet recovered in Torres Strait have all come from Mua; indeed, here nearly every excavation undertaken dating to more than a few hundred years ago has contained archaeological evidence of macropods. Harris et al. (1985) excavated teeth from *M. agilis*, and teeth, long bone, vertebra and metatarsal of what were then identified to be remains of the Common Wallaroo (*Macropus robustus*) from Wag (St Paul's) Middens 2 and 4 in undated but stratified cultural contexts (Tony Barham (pers. comm., 2005) points out that it is possible that these bones were then misidentified to the wrong macropod species). David recovered a *Macropus agilis* molar from Urakaraltam (Mua 36), dating to sometime after AD 1271 but before the 1700s (at 2 sigma probability; David et al. 'Archaeological excavations at Gerain and Urakaraltam' chapter 14, this volume). David et al. (2004) excavated a *M. agilis* premolar from XU4 of the rockshelter site at Turau Kula near Uma, in a level dating to shortly before the XU3 calibrated radiocarbon date of AD 1458-1674 (at .908 of 2 sigma probability). McNiven & Hitchcock (2004) have hypothesised that a pre-contact resident macropod population on Mua is unlikely, and suggest that isolated macropod remains probably point 'to importation of macropods, most likely from Kaurareg neighbours to the south. Whether or not the wallabies were a live import or from a small and well-controlled local population descended from live imports is unknown' (McNiven & Hitchcock, 2004: 119). The presence of numerous macropod teeth occurring in sequential sedimentary contexts at Mua 22 between XU21 and XU9, certainly dating from around 1300-1400 years ago to 900-1100

years ago, and possibly to more recent times also (depending on the stratigraphic integrity and thus age of the single confirmed macropod tooth from XU6, and the possible tooth from XU9), increases the likelihood of relic macropod populations since land-bridge times on Mua. However, the apparent absence of other, non-tooth macropod remains (in a stratigraphic context where large amounts of bone from other fauna have preserved in excellent condition) is worrying for the resident population argument. Also at stake is the fact that the Wag Middens 2 and 4 remains were identified as *M. robustus*, not *M. agilis*; while we acknowledge the possibility of erroneous identification (see also McNiven & Hitchcock, 2004), we cannot at this stage rely on this argument to make a case for a resident population of *M. agilis* on Mua (we have not been able to find these Wag archaeological materials, despite numerous searches). At this stage, it is too early to say with any surety, whether the macropod teeth came to Mua 22 as live or dead animals from elsewhere; whether there was a resident population of *M. agilis* on Mua (either relic from the land-bridge stage or the subsequent import and release of macropods into the wild – see also McNiven & Hitchcock (2004)); or whether only teeth were imported as items of material culture around 1400 to 1000 years ago. We note in this latter regard, that most of the teeth recovered from Mua 22 are in pristine condition and possess barely any mastication wear. Interesting transverse fractures through the tough calcareous core of some of the teeth are unusual and may potentially be pressure-induced. Macroscopic analyses do not show any modifications either to the crown or root of the teeth; however the ethnographic literature describes macropod teeth necklaces on Mabuyag (e.g. Haddon, 1912a: Plate IX), but these must have been imported either from Cape York, New Guinea or perhaps even Mua due to the absence of macropods on Mabuyag. We leave more secure interpretation of the Mua macropod remains for future investigation.

Shark teeth. Twenty-three shark teeth were excavated from levels identical to the macropod teeth levels (except for XU6, which does not contain any shark teeth). This close stratigraphic coincidence of shark and macropod teeth suggest that an understanding of site use at this time needs to take into account their associated deposition. One significant factor is that both sharks and *M. agilis* represent large and shared (communal) food resources. Their presence in a hearth layer (SU2c)

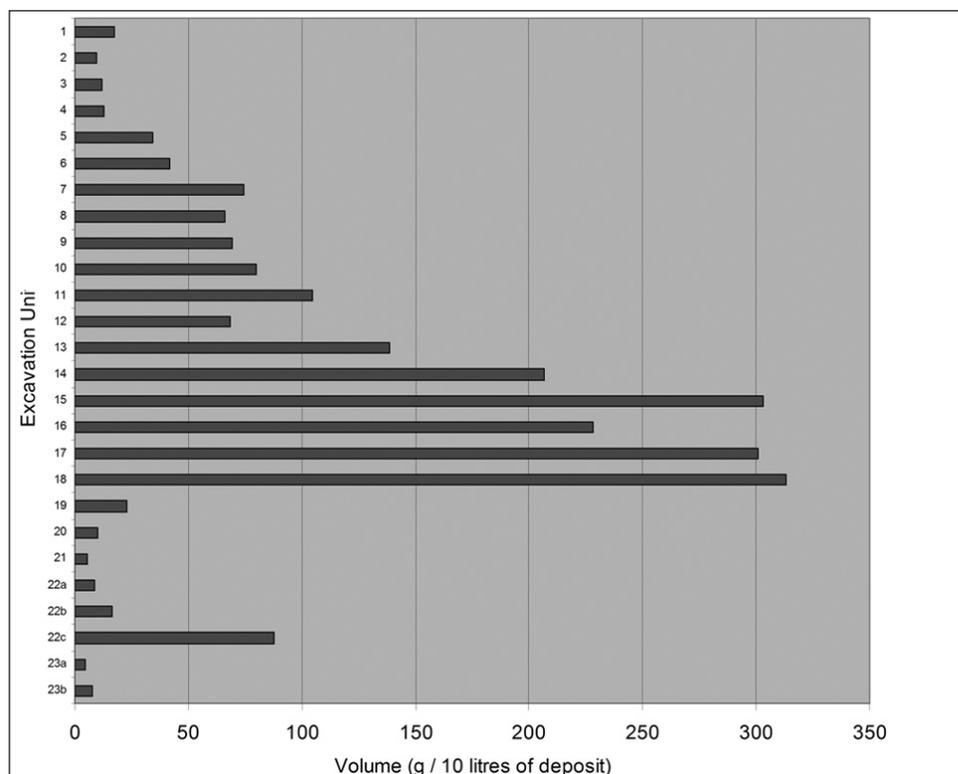


FIG. 9. Vertical distribution of turtle and/or dugong bone densities, by XU.

is consistent with this stratum representing a cooking feature associated with communal events. We will return to this point below.

Turtle and/or dugong bone. A total of 7,439.5g of turtle and/or dugong bone was recovered from the excavation, representing the predominant cultural component of the entire deposit. The dugong and turtle bones have not yet been systematically differentiated into their separate taxa, and are therefore combined for purposes of this site report; further research on these bones are forthcoming. Fig. 9 shows the vertical distribution of turtle/dugong bone weights per ten litres of deposit, by XU.

There is a small amount of turtle and/or dugong bone in SU3A at the base of the excavation; we are not certain whether this material is in situ or whether in these unconsolidated sands it represents post-depositional movement from above. From XU18 upwards, until XU13 especially (representing SU2c), there is a large quantity of fragmented confirmed turtle and

possibly also dugong bone; a total of 5575.3g of turtle and/or dugong bone was recovered from SU2c (XU13-18), representing 75% of the total excavated turtle/dugong bone. This peak in deposition is clearly apparent in Fig. 9. Reduced but still very high quantities of bone continue upwards to XU9, subsequently rapidly diminishing to very small amounts in those uppermost XU associated with European cultural objects (glass, metal, shotgun pellets).

The levels of peak turtle and/or dugong bone correspond also with those XU where macropod and shark teeth are found. As previously noted, these are all large (and thus presumably shared) food animals, giving further weight to the interpretation of SU2c as a communal earth oven feature.

Marine Shell. Eleven 'economic' shellfish species (gastropods and bivalves with individuals >1.5cm length) were identified (Table 5). The predominant species are *akul* (*Polymesoda erosa*) and *Turbo* sp., which together account for 22 of the total

44 economic shellfish MNI excavated (MNI calculations undertaken by XU). Other taxa found in small numbers are: *mudu* (*Anadara antiquata*), *it* (*Chama limbula*), *budi* (*Monodonta labio*), *budi* (*Nerita undata*), *Asaphis violascens*, *Polyplacophera*, *Tridacna gigas*, *Terebralia sulcata* and *kabar* (*Trochus* sp.). All of these species are accessible from the rock, sand, reef and mangrove tidal habitats close to Totalai. No modifications to the edges or apices of the shells were noticed, suggesting that they are unlikely to have been used as tools or ornaments. Rather,

the Square A shells are here interpreted as food remains.

Shellfish are a minor resource in the faunal assemblages in much of the deposit. It is during the early European contact period that we find the first (and only) sustained period when levels of marine shell deposition are high relative to other faunal remains (in particular, SU2a). While a few individual shells were recovered from the pre-European contact period, a MNI of 25 shells (57% of the total 44 shells) were found in those upper layers that also contained

TABLE 5. Distribution of marine shell MNI, Square A, Mua 22, by XU. MNI were calculated by counting for each XU the highest incidence of posterior, median and anterior valves for Polyplacophera; the highest incidence of apices, >50% posterior teeth, >50% outer lip teeth, and >50% height for *Nerita undata*; incidence of apices, >50% aperture, >50% opercula, and >50% height for *Turbo* sp.; incidence of apices, >50% aperture, and >50% height for *Monodonta labio*; >50% left versus right valves for *Polymesoda erosa* and *Chama limbula*; >50% left versus right valve umbo, and >50% left versus right valve width for other bivalves. Species represented by undiagnostic shell components were allocated an MNI of 1 if not represented by any diagnostic parts in any XU (this applied to *Tridacna gigas* and *Trochus niloticus* only, from XU8 and XU21 respectively).

XU	Polyplacophera	<i>Nerita undata</i>	<i>Tridacna gigas</i>	<i>Terebralia sulcata</i>	<i>Polymesoda erosa</i>	<i>Asaphis violascens</i>	<i>Anadara antiquata</i>	<i>Chama limbula</i>	<i>Turbo</i> sp.	<i>Trochus niloticus</i>	<i>Monodonta labio</i>	Unidentified gastropod fragments (g)	Unidentified bivalve fragments (g)	Unidentified shell fragments (g)	'Non-cultural' gastropods <1.5cm long (g)	'Non-cultural' bivalves <1.5cm long (g)
1					3		1		1				20.08			
2					1	1	1		1				25.12			
3					4				3			0.1	14.04			
4					2		1		1			0.6	9.32			
5				1	1			1	1		1	0.2	5.22			
6							1					0.3	2.86			
7												0.4	5.99			
8			1										10.32			
9													0.98			
10								2				0.3	2.48	0.12		
11							1						2.54			
12																
13								1				0.6	1.41			
14													0.20			
15														0.43		
16		1							1			0.7	0.62	0.51	1.77	0.56
17		1							1		1	0.9	0.03	2.45	3.56	2.93
18	1											0.8	1.48	2.98	1.27	
19		1										0.1	2.60	1.37	0.67	
20									1					0.09		
21										1		0.3	0.16	0.03	0.19	
22a											1		10.58	1.28	0.34	
22b												0.6	1.27	0.04	0.08	
22c																
23a													0.13	0.34	0.34	
23b													0.01	0.63	0.03	
Total	1	3	1	1	11	1	5	4	10	1	3	5.8	117.44	10.27	8.25	3.49

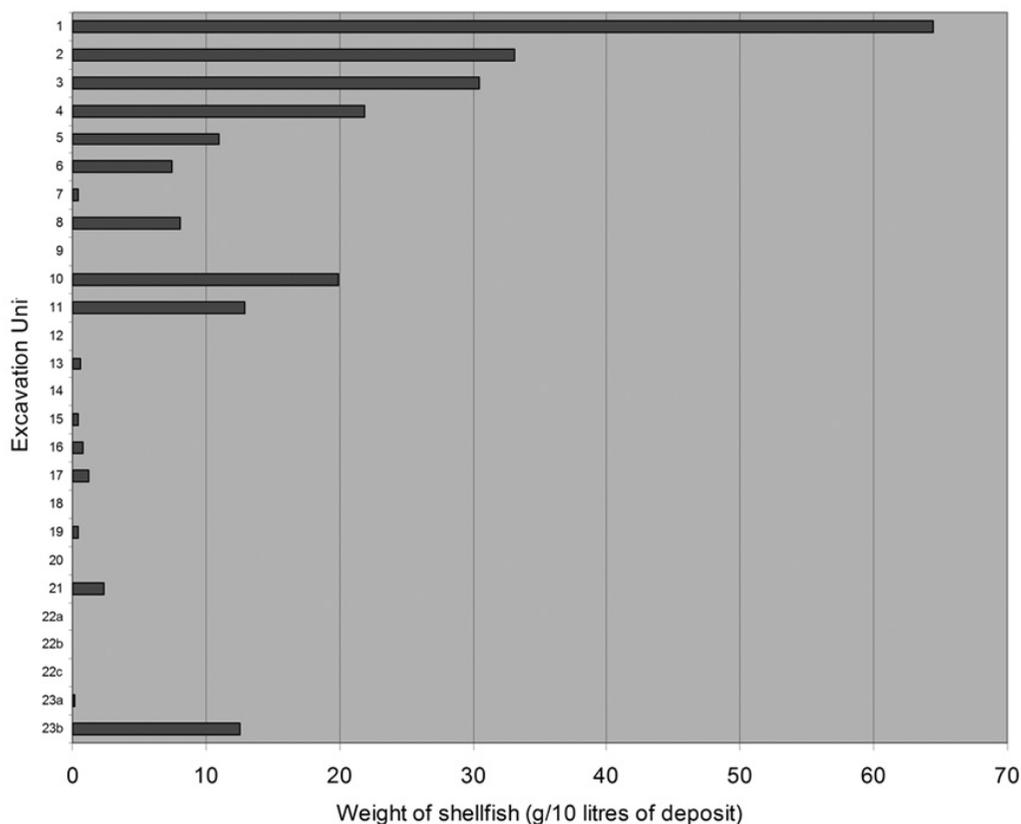


FIG. 10. Vertical distribution of shell densities, by XU.

European contact objects. These accounted for most of the *Polymesoda erosa*, *Turbo* sp., *Anadara antiquata* and *Terebralia sulcata* (species frequenting muddy substrates including mangroves), and some of the *Monodonta labio*, *Chama limbula* and *Asaphis violascens*. The implication is that the period following European contact – representing the last c.130 years of Mualgal history – contains at Mua 22 more shellfish remains than for the preceding 1400 years or so (see Fig. 10). During this recent period the mangroves to the immediate west of Totalai, and/or those to the immediate east on the other side of Totalai Point, appear to have been particularly targeted as a food resource zone.

Lithics. Twenty-six igneous stone manuports or hammerstones (pebbles and pebbles with possible impact-pitting), three quartz manuports or hammerstones, an impact-edge igneous artefact, a pebble with possible red-ochre staining and a pebble with possible yellow-ochre staining,

an igneous ground rock, and two possible anvils were recovered from the Square A excavations. Also excavated were 852 flaked quartz (393.7g) and 69 flaked igneous (220.2g) artefacts (Table 6, Fig. 11).

The flaked quartz artefacts are generally small, weighing on average 0.46g. Quartz represents 92.5% of the entire assemblage of flaked artefacts. The granitic hills southeast of Totalai contain quartz veins with evidence of quarrying (e.g. Fig. 12), and the presence of water-rolled cortex on some of the flaked artefacts excavated at Mua 22 suggests that these were also probably collected from tidal flats and/or river-beds. Crushing on both the distal and proximal ends of some flakes indicates the use of bipolar reduction technology. The recovery of two probable anvils in XU10 and XU12 supports this view. The Mua 22 flaked artefacts conform largely with observations previously made by McNiven (2006) on Dauan, when he suggested that a

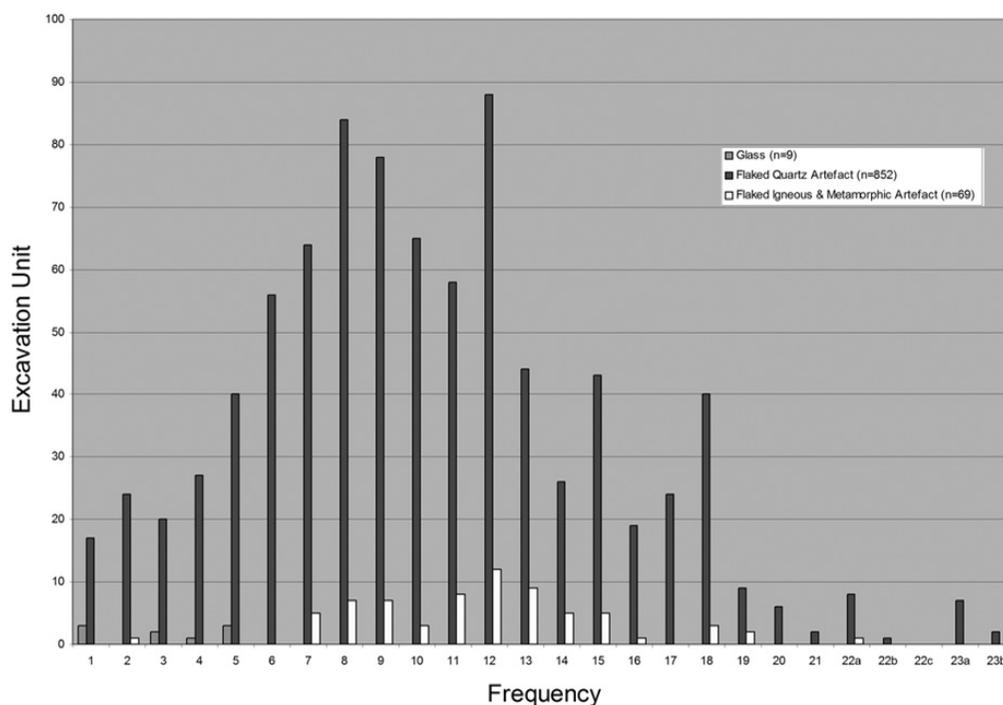


FIG. 11. Frequency of flaked stone artifacts by raw material, by XU.

predominance of small bipolar quartz artefacts is generally typical of stone artefact assemblages found in western Torres Strait.

The igneous flaked artefacts average 3.19g each, about seven times the average size of the quartz artefacts. A technological analysis of these artefacts has not yet been attempted, and it is possible (and indeed likely) that the size difference may be explicable by differences in reduction strategies (i.e. direct freehand percussion of the igneous artefacts, versus bipolar flaking of the quartz) or core size availability. Resolution of this matter will have to await more detailed technological analyses of the Mua 22 artefacts.

Deposition of igneous flaked artefacts ends abruptly with the onset of European objects in the upper XUs, including glass. While it may be that glass replaced locally procured stone as a cutting tool, other interpretations may be required, such as the cessation of igneous flakes as a result of changing exchange networks or loss of regular access to traditional quarries. Again, this matter awaits further investigation.

DISCUSSION OF THE EXCAVATED ASSEMBLAGE. The major archaeological trends in Square A at Mua 22 concern 1) the changing incidence of turtle/dugong, shark, macropod and fish relative to shellfish; and 2) the decreased incidence of flaked quartz artefacts (and cessation of igneous flaked artefacts) and addition of glass artefacts following European contact. There are various ways to account for these changes. In the first instance, the concentration on marine shell at the expense of larger, communally shared fauna in the upper units of Square A is a function of changing forms of site use; it signals the emergence of newly focused subsistence practices, either specifically for this part of the site, for the site as a whole, or regionally. Because of the embeddedness of subsistence practices in other social fields and processes, we can say that the new focus towards shellfish at the partial expense of large communal vertebrate foods indicates changing social processes of food production and consumption.

Today and in the recent past, the sea plays an important role in the everyday life of the Mualgal and other Torres Strait Islanders. It

is from the sea that the vast majority of meat foods are obtained; it is through the sea that communication between islands takes place; it is from the sea that spiritual forces largely emanate; it is across the sea that the spirits of the dead depart; it is from the sea that strangers – friendly or unfriendly – come; and it is on the sea that Islanders spend much of their time. Thus, to one degree or another, directly or indirectly, the sea is implicated in virtually all aspects of Islander life. Clearly, a shift from dugong, turtle, fish and macropod to an increasing focus on shellfish implicates a shift in access (environmental or social) to the resources of the sea. It locates the upper levels of the Totalai excavation in what McNiven (2006) has called an emerging ‘ethnographically-known social arrangement’ that implicates engagements with the sea. That is, it signals new conceptions and relationships between people and their surrounding land and seascapes as social fields of engagement.

We present below a number of possible explanations for these changes documented from Square A at Totalai. These various scenarios implicate new social and environmental relationships for the European contact period, with possible but uncertain historical antecedents for the immediate pre-European contact period.

Turtle/dugong and marine shell discard rates at other sites on Mua. The relatively low turtle and/or dugong bone densities recorded in the upper levels of Square A at Totalai appear to begin with the first arrival of missionaries on the island in the 1870s. However, it is possible that in fact the change commences slightly earlier, in XU9, 9cm below the first glass artefacts. Our preferred interpretation is that the very earliest European-contact years are unlikely to reveal European objects in the small, excavated part of the site, because such objects are likely to have been initially rare at Totalai (due to Mua’s relative isolation from sources of European goods). Alternatively, the fact that shellfish begin to significantly increase relative to turtle/dugong and other large fauna shortly prior to the first European objects, in association with a radiocarbon date of 255±40 years BP, may indicate that this change slightly pre-dates the settlement of Mua by Europeans, taking place at Totalai around 200 rather than 130 years ago. The available radiocarbon evidence and the stratigraphic integrity of sediments in these soft sands are not fine-grained enough to answer this question, requiring further radiocarbon dating

and archaeological investigation in other parts of the site.

The decrease and partial replacement of turtle/dugong with shellfish shortly before the early European contact period has previously been noticed for other sites on Mua. At Turau Kula (site Mua 10) near Uma in southwest Mua, turtle/dugong bones ceased above a radiocarbon date of 325±61 years BP (Wk-9943), corresponding to a period commencing sometime after AD 1458-1674 (.908 probability of 2 sigma; David et al., 2004). In this particular case, a change from regular use of the rockshelter whereby small groups of people shared meat foods (such as turtle or dugong), to its rare use by individuals requiring brief shelter is apparent. Here the change from turtle/dugong bone to shellfish can be related to oral traditions identifying this area as the site of a head-hunting raid by Badulgal warriors and the beheading of Goba’s father shortly before the arrival of missionaries in 1872. Subsequent to this event, Turau Kula practically ceased to be used for communal activities. It may be that, following sustained hostilities between Badulgal and Goemulgal (from Badu and Mabuyag) on the one hand and Mualgal on the other, the abandonment of villages and the onset of more mobile, smaller and short-duration encampments elsewhere on Mua (for reasons of protection from incoming raiding parties) resulted in significant decreases in the frequency of dugong and turtle hunting (because male hunting parties would have been vulnerable to seafaring enemy raiders, leaving also more vulnerable to attack the remaining members of the small villages; see David ‘The archaeology of defence’ chapter 12, this volume). In this scenario, dugong and turtle hunting diminished following intensified hostilities between Mua and neighbouring Badu and Mabuyag, and the abandonment of long-term exposed coastal villages for more mobile inland settlements led to changing domestic relations, including a decreased incidence of communal gatherings involving large shared foods from the sea (turtle/dugong, shark) or accessed from distant allied groups (e.g. macropods from the Kaurareg). If this interpretation is correct (but see below), future archaeological research should find a contemporaneity in new defence strategies (e.g. sentinel points, inland villages) and significant decreases in dugong and turtle hunting rates pre-dating the arrival of Europeans at sites across Mua.



FIG. 12. Quartz quarry on Totalai ridge-top, near the monolith boulder of Puapun. (photo: Liam Brady, 2006)

The impact of ritual sites on domestic archaeological deposits. David & Mura Badulgal Committee (2006) and McNiven & Feldman (2003) have noted that c.400 to 300 years ago there emerged in western Torres Strait new ritual sites associated with dugong hunting. Following McNiven & Feldman (2003: 188), ‘If Torres Strait Islanders used numerous dugong bones to construct and maintain ritual bone mounds, to what extent are their secular middens representative of subsistence practices? That is, to what extent do middens under-represent dugong consumption because significant quantities of dugong bones are discarded in other (ritual) contexts’. Dugong bone mounds excavated at a number of sites on Pulu (Moegi Sibuy: McNiven & Feldman, 2003), Mabuyag (Goemu: Ghaleb, 1990; Dabangai: McNiven & Bedingfield, 2008), Koey Ngurtai (KN6, KN17, KN18: David & McNiven, 2005), and Tudu (McNiven & Feldman, 2003) are consistent with significant increases in dugong bone deposition within ritual rather than domestic sites.

Dugong hunting magic and associated paraphernalia has been recorded on Mua in the past. Haddon collected a dugong ‘charm’, now housed in the British Museum, used in hunting magic rituals (Haddon 1912b: 390; McNiven & Feldman, 2003: 177-178; Moore, 1984: 50; see Fig. 13) and there is a rock in the shape of a dugong tail on the western coast once used to ‘get more *dhangal*’ (Fr John Manas, pers. comm., 2005). However, we do not favour this interpretation for the decrease of archaeological turtle/dugong bone at Mua 22 because no dugong bone mounds have been found on Mua (despite intensive archaeological surveys), nor on Kaurareg lands to the southwest (Haddon considered Mualgal and Kaurareg a discrete sub-group of the broader western Torres Strait cultural complex; see Haddon, 1935: 37). Furthermore, it does not account for the decrease in turtle bone (which occurs in high quantities in the lower levels of the excavation), nor does it mathematically explain the associated peak in shell deposition rates (which are statistically independent of the bone deposition rates; see below).

Increased formalisation of access to hunting grounds and moderated rates of hunting. Assuming that dugong bone mounds were not a significant part of the Mualgal constructed landscape, it may be that the rate and intensity of dugong hunting in the Mualgal and Kaurareg seascape was moderated in part by access to the dugong-rich ‘expansive sea-grass beds across Orman Reef and associated reefs in the northwest Strait’ (McNiven & Feldman, 2003: 175). While access to rich hunting locations may simply be an issue of proximity, it may also, in a regional context, potentially signal an increasing inter-island regularisation of marine resources and/or off-shore reef allotments associated with the emergence of highly formalised ritual dugong bone mounds in tandem with the emergence of other ritual practices in the last 400 years or so. Such a scenario suggests that the differential hunting rates of dugong across island communities may be correlated with the ways in which people contextualise and engage with their seascapes, territorially and ritually. Such access will also be linked to the changing social patterns of alliance and hostility between islands.

Shellfish. We cannot properly understand the decrease in turtle/dugong bones at Totalai without also considering the contemporaneous increase in shell deposition. Here, again, we have to ask the important question: does the shift from turtle/dugong towards shellfish at Mua 22 date

to the period of missionisation, or does it begin shortly before the arrival of the LMS on Mua? It is possible that the peak marine shell presence deposition rates in the upper levels of Totalai are a local expression of regional village-based subsistence practices across Mua, given that:

1. shellfish exploitation seems to have also intensified at Gerain, Urakaraltam and Turau Kula in the past 150-250 years, shortly pre-dating colonisation by Europeans and Pacific Islanders (see David et al. 'Archaeological excavations at Gerain and Urakaraltam' chapter 14, this volume);
2. there is an increased rate of shellfish deposition in non-village settings across Bulbul and Gerain in the last two or three hundred years (see David 'Archaeological surveys at Bulbul and Gerain' chapter 16, this volume).

However, at Urakaraltam the peak shellfish rates are accompanied by similar peaks in turtle/dugong bone deposition rates, so there it is not a question of replacement of one resource with another. The increase in shellfish relative to decrease in turtle/dugong may thus be better understood as a post-European contact phenomenon and associated with the emergence of new, centralised village settlements and associated changes in land and sea use following missionisation and the onset of the near-contemporary (and articulating) pearl shelling industry. Although the radiocarbon dating evidence for Square A at Mua 22 is ambiguous with respect to the precise decade of change, we favour this latter explanation as it is consistent with the archaeological evidence (including, within its statistical degree of resolution, the dating evidence), and with what we know of changing domestic lifestyles on Mua following pearling and missionisation.

First, the centralisation of Mualgal at Totalai within a single village setting during the early colonial period fundamentally altered settlement demographics. Historians have previously commented on colonial obsessions with the use of space as a means of social control (see Lycett, 2004; Noyes, 1992; Shnukal, 2004). Certainly the journals and letters of the European LMS missionaries considered societal change, including the willingness of Islanders to establish and live in a centralised mission, as a measure of successful conversion from 'dark to light'. Such a restructuring of social space was more than an exercise in settlement location: it was a dimension of proxemics that involved a reorientation of social action and interaction that revolved around a commitment to the church and changing attitudes of restraint and commitment to new ideals. Where



FIG. 13: Dugong 'charm' collected from Mua by A.C. Haddon in 1888. The fibulae of the maidhalaig (sorcery man) was later attached to the charm to make it more efficacious (Haddon, 1904: Plate XVI, fig. 1).

the sacred or political life of Islanders conflicted with such an agenda, LMS teachers engineered a re-organisation of the physical landscape to reflect the 'new order' (e.g. with the church or 'school' forming the new focus of ritualised, communal interaction in the village). Anna Shnukal (2004: 334) describes this as colonial rule 'spatialised through a geometry of dwelling space'. By the late 19th century, Islander communities across Torres Strait thus began to relocate to large, centralised settlements focused around the church and school house (see Mullins, 1995: 173-174; Shnukal, 2004: 334) and cultural sites outside of these centralised villages were in many instances physically or memorially 'erased' as their use was discontinued. By the late 1870s, significant cultural sites across Torres Strait, such as head-houses and *kod* sites (ritual and sacred places), were destroyed by Pacific Islander missionary teachers and pearlers (see Fraser, 1960: 26; Shnukal, 2004: 333).

The increased use of shellfish and decrease in turtle/dugong at Totalai needs to be understood in such a context of changing village life. While the Mualgal were encouraged by the LMS 'teachers' to settle at Totalai, the missionary letters also make numerous references to the rapidly growing number of children attending their 'school'. An important dimension of this change is that after 1870 into the 1900s Mualgal men became intensively involved in the pearl-shelling industry, spending considerable amounts of time on pearling luggers away from home villages (see Shnukal 'Historical Mua' chapter 4, this volume). Today as in recent times, dugong and turtle

hunting are exclusively male activities in Torres Strait, whereas shell-fishing is often undertaken by both women and children (cf. Bird & Bliege Bird, 2000; see also Lahn, 2006 for fishing on Warraber); Haddon (e.g. 1912c: 154-155, 160, 166) shows that this was the case also towards the end of the 1800s. The changing emphasis from turtle/dugong to shellfish at Totalai can be related to these broader social transformations as evidence for changing village subsistence demographics, in particular the increasing role of women and children in everyday village sustenance. Increased centralisation following missionisation facilitated co-ordinated male departure during the pearling season, enhancing the acceptability of secure locations of residence for the rest of the family who could co-ordinate both domestic and ritual life in the hands of resident missionaries who oversaw the spiritual well-being of the community. In light of previous hostilities between the Mualgal and their neighbouring Badulgal and Goemulgal, the new centralised settlements that came with missionisation enabled the safe temporary departure of men (previously also warriors and community guards) in the pearling industry, seasonally stripping the remaining home residents of dugong and turtle during the pearling season. With an increasing dependence on women's and children's products that came from the nearby seashore (such as the mangrove swamps to the immediate west and east of Totalai) in centralised settlements came also heightened levels of visibility (and thus surveillance) of everyday actions, including food production, centralisation thus serving the colonial project. It is in this light, we suggest, that Mua 22's changing archaeological evidence is best seen: not simply as a quantitative change in food consumption, but as changing social relations of production, implicating circumstances of colonialism, subsistence, ritual, defence and gender relations.

This analysis opens up new scope for the exploration and implications of missionary activities in Torres Strait. It highlights the intimate articulation of, and inappropriateness of disengaging, subsistence from ritual/spiritual domains of everyday life (a general point previously also made by McNiven & Feldman, 2003: 170-171). In the particular case of Totalai and Mua, it also highlights hitherto poorly-discussed impacts of colonial attitudes upon spiritual life (and more generally the colonial encounter) on Islander subsistence practices, and

the significance of what McNiven & Feldman (2003) have termed the 'ritual orchestration of the seascape' to the colonial period. These processes identify the seascape as a dynamic and critical baseline for exploring the considerable social and cultural transformations in Torres Strait Islander societies, both before and after European colonisation. It provides Torres Strait history with a spatialised cultural milieu by which to better understand the changing challenges and opportunities that faced Islanders in light of new contexts of interaction, both with other Islanders and with colonial powers (of private enterprise, church and state). It locates discussions of colonial process(es) and cultural transformation in ongoing and dynamic engagements with a seascape that continues to underpin Mualgal culture to this day.

ACKNOWLEDGEMENTS

This research was made possible by the support and encouragement of many people. First and foremost we thank the people of Kubin for inviting and welcoming us to Kubin and Mua over the years. In particular, we thank Mualgal Elders Mr Osa Bosun and Fr John Manas and the Mualgal (Torres Strait Corporation) Committees, and the Kubin Community Council, for the hospitality and encouragement we have enjoyed – *kaima eso*. Thank you also to the 2004 and 2005 archaeologists and fieldworkers: Diana Arbelaez Ruiz, Basu (Moses Kaitap), David Bosun, Joe Crouch, Cyril Manas, Walter Manus, Joel Mayes (Melbourne), Charlie Namai, Sem Tom and Jaclyn Ward. Lynden McGregor (Geomatix Pty Ltd) surveyed Totalai during the 2005 season and prepared Fig. 1. Kara Rasmanis, Phil Scamp, and Gary Swinton prepared the figures for publication. Many thanks to Prof. Tim Flannery for identifying the macropod teeth; AINSE for a radiocarbon grant (Grant # 06/039); and the Australian Institute of Aboriginal and Torres Strait Islander Studies, and the Australian Research Council for ARC Discovery grant DP0344070, for funding this research. Thanks to Joe Crouch, Jane Lydon and Ian McNiven for comments on an earlier draft of this paper.

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