VOLUME 4
PART 2

# MEMOIRS OF THE QUEENSLAND MUSEUM
## CULTURAL HERITAGE SERIES

17 OCTOBER 2008



PO Box 3300, South Brisbane 4101, Australia
Phone 06 7 3840 7555
Fax 06 7 3846 1226
Email qmlib@qm.qld.gov.au
Website www.qm.qld.gov.au

National Library of Australia card number
ISSN 1440-4788



A Guide to Authors is displayed at the Queensland Museum web site

A Queensland Government Project
Typeset at the Queensland Museum

CHAPTER 17

# ARCHAEOLOGICAL EXCAVATIONS AT BULBUL, SITE MUA 116

BRUNO DAVID, MEREDITH ORR AND UGO ZOPPI

David, B., Orr, M. & Zoppi, U. 2008 10 17: Archaeological excavations at Bulbul, site Mua 116. *Memoirs of the Queensland Museum, Cultural Heritage Series* **4**(2): 451-456. Brisbane. ISSN 1440-4788.

Geomorphological testing of the coastal ridges at Bulbul in NE Mua (Torres Strait) unexpectedly revealed subsurface archaeological deposits. This paper reports on archaeological excavations undertaken at subsurface site Mua 116 following these geomorphological investigations.
❒ *Torres Strait, late Holocene, archaeological sites, Mua island.*

*Bruno David), School of Geography & Environmental Science, Monash University, Clayton 3800, Australia (Email: Bruno.David@arts.monash.edu.au; Meredith Orr, School of Geography & Environmental Science, Monash University, Clayton 3800, (Email: meredith_orr@optusnet.com.au); Ugo Zoppi, ANSTO, Institute for Nuclear Geophysiology, PMB 1, Menai NSW 2234, (Email: ugo@ansto.gov.au);* *received 21 September 2005.*

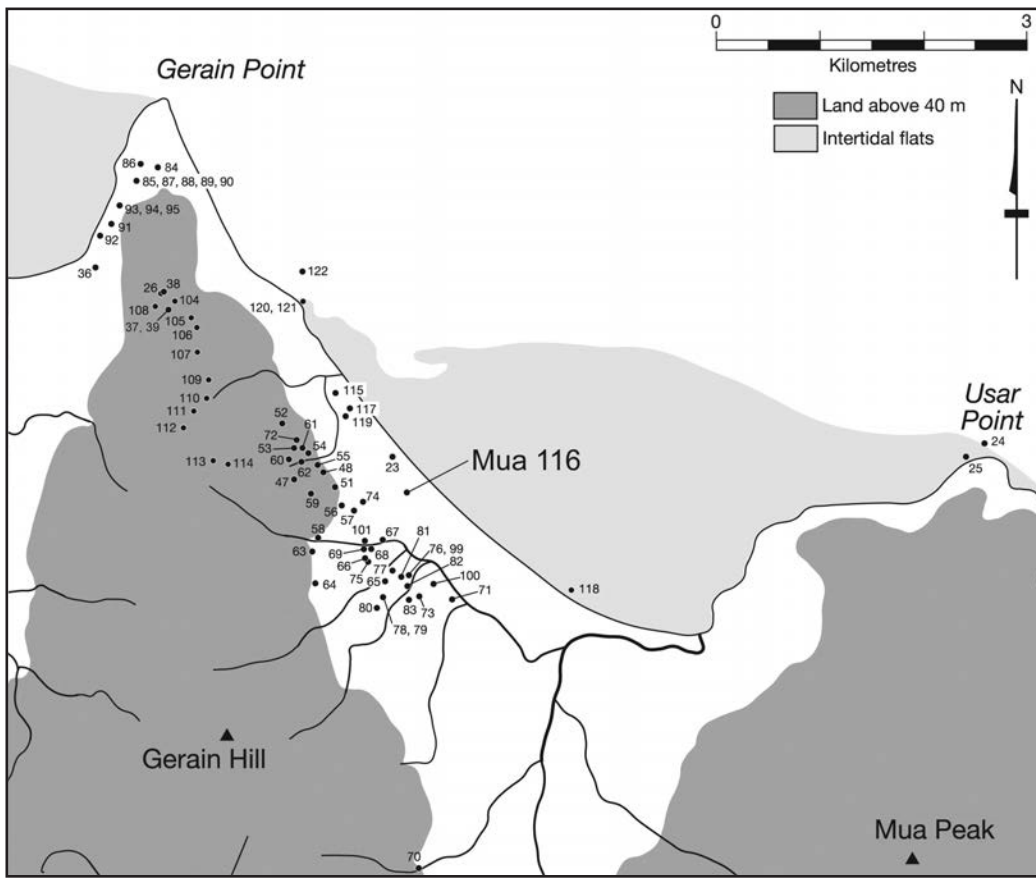


FIG. 1. Map of Bulbul showing location of known archaeological sites, including Mua 116.

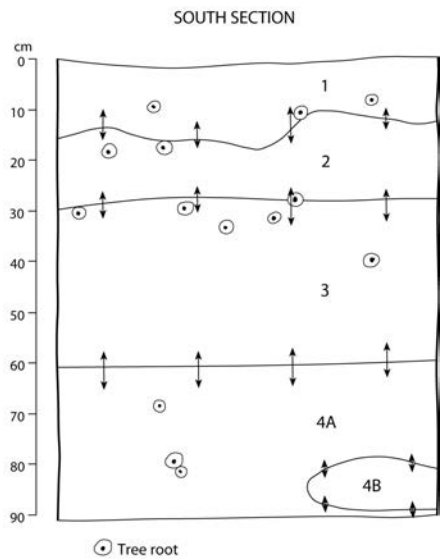


FIG. 2. Mua 116, Square A, section drawing, south section.

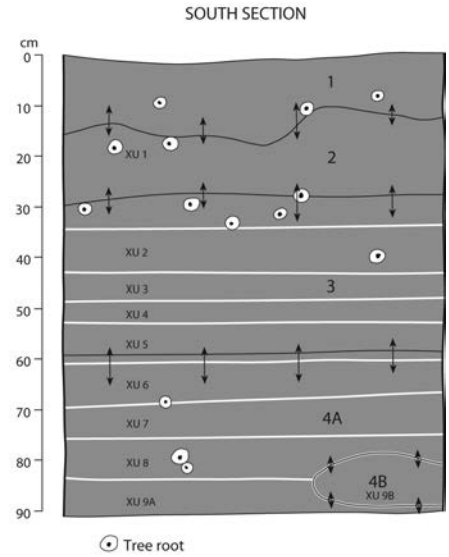


FIG. 3. Mua 116, Square A, south section with XU superimposed on the section drawing.

On the 24th November 2004, while test pitting coastal ridges for geomorphological analyses, one of us (MO) retrieved two small stones located c.55cm below the ridge surface after they were unexpectedly hit with the shovel blade by Mualaig co-researcher Sem Tom. Upon inspection, one of these proved to be a stone artefact. That evening the find was reported to BD, who over the following days undertook a small archaeological excavation immediately adjacent to the find-spot. This paper reports the geomorphological context of this find, and the subsurface archaeological site revealed in the adjacent archaeological excavations.

## MUA 116

A single, 1m × 75cm square (Square A) was located 30cm west of the original geomorphology test pit (Fig. 1). The surface of Square A was excavated as two relatively thick, consecutive Excavation Units (XU), as nearby investigations had already revealed these levels to be culturally sterile (Figs 2-4). All subsequent XU were excavated within Stratigraphic Units (SU). All sediments were sieved through 3mm mesh, and a sample of the <3mm fraction was collected from each XU below XU2. All materials retained in the sieves were sorted and bagged in the field.

GEOMORPHOLOGY. The Mua 116 excavations revealed four major SU, the lowermost (SU4) being subdivided into two subunits (4a and 4b). The soil surface is loose, there is no structure development in any horizon, nor mottling except for clasts in SU3. Table 1 describes each of these SU.

Textures indicate that the sequence is a uniform sand profile and consequently the soil horizons corresponding to the SU are identified on the basis of colour. SU4a is lighter and more colour-saturated than the overlying SU3 and as it has the maximum colour development for the profile it is identified as a B2 horizon. SU3 by its darker colour could be either a buried A1 horizon or a B horizon with translocated organic compounds. Translocated organic compounds were not observed in any other pit created in the beach ridges as part of the study by Orr (chapter 18, this volume), and because a stone artefact was recovered from this unit it is interpreted as a buried surface horizon (2A1). Under this interpretation, SU1 and SU2 are horizons of an overlying and newer soil profile, designated A1 and C horizons on the basis of darker colour and lack of colour development respectively.

Particle size analyses were undertaken on samples from an adjacent pit, named B4 in Orr (chapter 18, this volume). Boundaries between the horizons are deeper at B4 than at Mua 116 because of its different position on the beach ridge slope. At B4 the buried surface

TABLE 1. Description of Stratigraphic Units (SU), the Mua 116 excavations.

| SU | Horizon | Bulk density g/cm3 | Description |
|---|---|---|---|
| 1 | A1 | 1.3 | This is the uppermost SU, consisting of medium-coarse sand, dark in colour, with numerous small roots up to 1cm in diameter. Sediments are not consolidated nor compact, but well held together by the rootlets. Fairly homogeneous in texture and colour across the excavation square. The interface with the underlying SU is not sharp, variably taking place over a vertical distance of c. 4 to 10cm (but mainly within a distance of 3cm). This interface zone also has many small roots. Leaf litter and grass growth are abundant on the ground surface. The uppermost 1cm of deposit consists of a lag surface of pale coarse sand; there is a sharp boundary with underlying sediments. |
| 2 | C | 1.4 | Light-coloured medium sand with coarse sand component, not consolidated nor compact, fairly homogeneous across the excavation square. Interface with underlying SU3 is gradual, taking place over a vertical distance of c. 8 to 10cm (but mainly within a distance of 2cm). Roots up to 3cm in diameter are abundant in SU2. Numerous smaller rootlets occur in the interface zone. |
| 3 | 2A1 | 1.6 | A dark medium sand with coarse sand component, well-defined. Roots are present throughout this SU, but not as abundantly as in SU1 or SU2. Sediment is homogeneous. There are 1-2cm clasts of pale sand in the 45-60cm depth zone. It is in this SU that cultural materials have been found, including Meredith Orr's and Sem Tom's original artefact and burnt piece of granite. The cultural objects we have excavated from this square are from the interface of SU3 and SU4a. This interface is well-defined, taking place over a vertical distance of c. 4cm. Sediments in SU3 are slightly consolidated, but easy to dig. |
| 4a | 2B2 | 1.4 | Medium sand with coarse sand component. Light-coloured sand, unconsolidated, easy to dig, homogeneous across the excavation square. Some roots are present, but not as abundantly as in SU1 and SU2. Interface with SU4b is well marked, taking place over a vertical distance of c. 2cm. We did not reach the base of this SU in the excavations because it is culturally sterile in the excavation. |
| 4b | | | A well-defined lens of dark medium sand with coarse sand component within SU4b. Homogeneous, not consolidated, fine-grained. No roots are present in this SU except for a small one, c. 0.5cm in diameter. SU4b was only exposed and excavated in a small area in the very SW corner of the excavation square (in an area covering c. 30cm W-E by 20cm N-S). SU4a is present underneath SU4b as well as above it. The boundary between SU4a and SU4b is clear. |

TABLE 2. Radiocarbon dates and calibrated ages, Mua 116 Square A (calibrations using Calib 5.0.2; all radiocarbon determinations are on individual charcoal samples using atmospheric Southern Hemisphere option).

| XU | Type of 14C date | Depth below ground (cm) | Radiocarbon laboratory # | Material dated | % Modern | Radiocarbon date (years BP) | Calibrated age AD (68.3% probability) | Calibrated age AD (95.4% probability) |
|---|---|---|---|---|---|---|---|---|
| 1 | AMS | 16 | OZH936 | charcoal | 131.81±0.71 | 'Modern' | 1958-1993 | ? |
| 6 | AMS | 63.2-70.5 | OZH934 | charcoal | 92.38±0.42 | 640±40 | 1316-1355<br>1382-1402 | 1298-1413 |
| 9b | AMS | 85.3-92.0 | OZH935 | sand | 107.71±0.57 | 'Modern' | 1958-1959 | 1958-1959 |

TABLE 3. Excavation details, Mua 116 Square A. The cultural sediments were sieved twice, through 3mm mesh and then again through 4mm mesh.

| XU | SU | Mean Depth at Top (cm) | Mean Depth at Centre (cm) | Mean Depth at Base (cm) | Mean Thickness of XU (cm) | Area (m2) | Volume (l) | Weight (kg) | Weight of >3mm Non-Cultural Sediments (g) | Weight of >4mm Non-Cultural Sediments (g) | Kg per Litre | pH | Munsell |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1/2 | 0 | 32.5 | 35.0 | 35.0 | 0.75 | 294.0 | 380.8 | 0 | 0 | 1.3 | ? | ? |
| 2 | 3 | 35.0 | 39.4 | 43.7 | 8.7 | 0.75 | 64.0 | 91.9 | 0 | 0 | 1.4 | ? | ? |
| 3 | 3 | 43.7 | 46.5 | 49.3 | 5.6 | 0.75 | 44.5 | 63.1 | 38 | 12 | 1.4 | 5.51 | 10YR 4/2 dark grayish brown |
| 4 | 3 | 49.3 | 52.2 | 55.1 | 5.8 | 0.75 | 42.0 | 63.1 | 34 | 11 | 1.5 | 5.56 | 10YR 4/2 dark grayish brown |
| 5 | 3/4A | 55.1 | 59.2 | 63.2 | 8.1 | 0.75 | 62.0 | 91.3 | 32 | 7 | 1.5 | 5.63 | 10YR 4/2 to 10YR 4/3 dark grayish brown to brown |
| 6 | 3/4A | 63.2 | 66.9 | 70.5 | 7.3 | 0.75 | 63.0 | 88.9 | 19 | 8 | 1.4 | 5.58 | 10YR 5/3 brown |
| 7 | 4A | 70.5 | 74.2 | 77.8 | 7.3 | 0.75 | 58.0 | 82.4 | 13 | 8 | 1.4 | 5.69 | 10YR 5/3 brown |
| 8 | 4A | 77.8 | 81.6 | 85.3 | 7.5 | 0.75 | 56.5 | 81.5 | 4 | 2 | 1.4 | 5.54 | 10YR 6/3 to 10YR 5/3 pale brown to brown |
| 9a | 4A | 85.3 | 88.7 | 92.0 | 6.7 | 0.75 | 44.5 | 62.1 | 1 | 0 | 1.4 | 5.52 | 10YR 6/3 pale brown |
| 9b | 4B | 85.3 | 88.7 | 92.0 | 6.7 | 0.75 | 3.5 | 5.1 | 0 | 0 | 1.5 | 5.62 | 10YR 5/2 grayish brown |
| Total | | | | | 92.0 | | 732.0 | 1010.2 | 141 | 48 | | | |

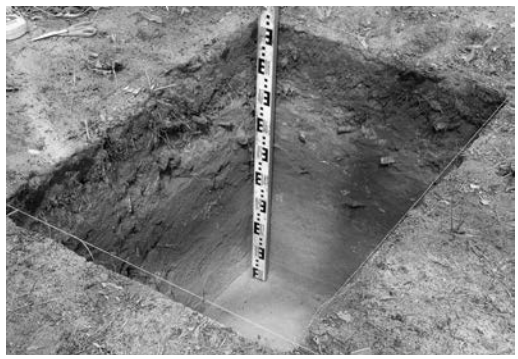

FIG. 4. Mua 116, Square A, the west and north walls after completion of excavation.

FIG. 5. Meredith Orr extracting bulk density samples from the walls of the Mua 116 pit after completion of the archaeological excavations.

is located at 45cm depth compared to around 30cm depth at Mua 116. Particle size analysis results for B4 are shown in Fig. 4 of Orr (chapter 18, this volume), corresponding to beach ridge 2. The sample depth of 40cm is from horizon C (equivalent of SU2) and samples at 80cm and 90cm correspond to horizon 2B2 (equivalent of SU4a). The very slight difference in the particle size distribution of the 40cm sample compared to the 80 and 90cm samples indicates that the sediment that buried SU3 was not further sorted and deposited by wind or water, but that it was likely deposited by mass movement from an immediately proximal source on the beach ridge with minimal sorting of the sands before restabilisation. Devegetation of the beach ridge slope is a mechanism that could be used to explain this surface destabilisation and sediment movement down the slope.

Bulk density values obtained using a bulk density ring for the units at Mua 116 (Table 1) are slightly different from density values given in Table 3 using a different collection method, but the variations in the profile are similar in both sets of results. The most compacted unit is SU3, corresponding to the interpreted buried surface horizon, with a bulk density value of 1.6g/cm$^3$. Compaction in this case is not likely to be the result of the weight of the overlying materials, as the deeper SU4a has a lower bulk density value of 1.4 g/cm$^3$. Compaction is likely instead to have occurred during the period of its exposure at the surface. The bulk density of SU1, at 1.3 g/cm$^3$, indicates that the present soil surface is not as compacted as the buried soil surface and it is more consistent with the lower

TABLE 4. Details of contents, Mua 116 Square A excavations.

| XU | Charcoal (g) | Flaked Igneous Artefact (#) | Flaked Igneous Artefact (g) | Granite Slab (#) | Granite Slab (g) | Burnt Granite (g) | Red Ochre (#) | Red Ochre (g) | Pumice (#) | Pumice (g) | Land Snail (g) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ? | | | | | | | | | | |
| 2 | ? | | | | | | | | | | 0.04 |
| 3 | 0.05 | | | | | 166.7 | | | | | |
| 4 | 0.03 | | | | | 54.5 | | | 1 | 5.01 | |
| 5 | 0.09 | | | | | | | | | | |
| 6 | 0.02 | | | 1 | 862.9 | | 1 | 0.09 | | | |
| 7 | | 1 | 3.21 | | | 8.3 | 2 | 2.09 | | | |
| 8 | | | | | | | 1 | 0.04 | | | |
| 9a | | | | | | | | | | | |
| 9b | | | | | | 0.9 | | | | | |
| Total | 0.19 | 1 | 3.21 | 1 | 862.9 | 230.5 | 4 | 2.22 | 1 | 5.01 | 0.04 |

values expected for A1 horizons with included organic matter and low amounts of surface traffic.

RADIOCARBON DATING. Three radiocarbon dates have been obtained from Mua 116 (Table 2). The uppermost determination comes from 16cm below the ground surface in SU1, and dates to sometime between 1958 and 1993 AD. A radiocarbon date was also obtained from a piece of charcoal collected from XU6 (63.2-70.5cm below the surface). It comes from the interface between SU3 and SU4a, and dates the base of the cultural layer (SU3) from which the artefact revealed during geomorphological testing came from. It revealed a calibrated age of 1298-1413 AD (at 2 sigma). The basal determination was not undertaken on charcoal but on dark sand submitted in the expectation that the dark staining had been caused by ancient fires. Carbon content on the sand was negligible and the resulting determination does not appear to be chrono-stratigraphically reliable; we therefore discard this radiocarbon date.

At the adjacent pit of site B4, used in Orr (chapter 18, this volume), a radiocarbon date was derived at 40-45cm depth that in the B4 profile is equivalent to SU2 of Mua 116. The calibrated age, using Calib 5.0.2, is 1595-1822 cal BP (0.982 probability of 2 sigma) for this unit. The result is consistent with the interpreted origin of the profile, in that SU1 and SU2 represent sediment remobilised from the beach ridge slope and deposited over SU3 and SU4a, in this case incorporating older charcoal that was originally present in the beach ridge slope into the upper sediment. The age reversal in the sequence adds further support to the interpretation that SU3 is a buried surface soil horizon, and in this case the burial would have had to have occurred after 1298-1413 AD, the date obtained from the interface between SU3 and SU4a.

ARCHAEOLOGY. Tables 3 and 4 list the excavation details and cultural contents by XU. The cultural layer is SU3, the dark sand unit dating to 700-600 years ago. A single unretouched stone flake was found in situ here in addition to the one unexpectedly retrieved during the initial geomorphological work. The former weighs 3.20g and measures 31.3mm percussion length × 35.6mm width × 4.6mm thickness; it contains a bending initiation on the proximal and possible but uncertain impact initiation point on the distal end, and may therefore represent an unusually large bipolar igneous flake. The igneous flake originally revealed during geomorphological investigations is unretouched, point-shaped, weighs 27.12g, and measures 69.8 × 38.1 × 13.7mm. Additionally, a large unmodified granite slab, and 221g of burnt granite were found in this layer of what is otherwise sand. The granite slab and the stone artefact were found at the very base of SU3, on the old land surface upon which SU3 built up, at a stratigraphically comparable depth to the original sample obtained by MO and Sem Tom. The burnt granite pieces indicate that camp fires (hearths) were probably built nearby within this stratum around 700-600 years ago.

## CONCLUSION

The Mua 116 excavations have revealed minor cultural elements embedded within a sedimentary layer of heightened cultural activity dating to sometime between about 700 and 600 years ago. However, this cultural activity was probably not continuously sustained into very recent times. Rather, at an undated time corresponding to the top of SU3, around 30cm below the present ground surface, cultural activity in this part of Bulbul, including firing of the landscape (as implied by the significantly less fire-stained sediments of SU2), appears to have decreased, possibly until 350-250 years ago when archaeological deposits across Bulbul become demonstrably abundant (see David, chapter 16, this volume; Orr, chapter 18, this volume). We interpret these results as support for Ian McNiven's (2006: 10) notion that across much of Western Torres Strait around 800-600 years ago there witnessed 'broader scale cultural changes in settlement, demography, mobility, rituals, seascape construction, social alliances and exchange relationships and a major cultural transformation'. Further site reports are now needed to better explore these notions of landscape history.

## ACKNOWLEDGEMENTS

Thanks to the Mualgal (Torres Strait Islanders) Corporation Committee members and Kubin Community Council, and the people of Kubin, for friendship and advice in undertaking this work – Father Manas and Mrs Manas, Mr Oza and Mrs Lilian Bosun, Louise Manas, Saila Savage, Paul Tom, Freddy Joe, the Chairperson of the Corporation, Douglas Tomsana, Donald Namai, Matilda Neliman, Mabel Kaitup, Alima Savage, Dennis Batu, and those who participated in the fieldwork: Sem Tom, Moses Kaitap, Jaclyn Ward and Joel Mayes.

Thanks also to Gary Swinton and Kara Valle of the School of Geography and Environmental Science at Monash University for drafting the Figures; Shane Revell and Jean Newey for administrative support; Ian McNiven and Jeremy Ash at Monash University for comments on an earlier draft of this paper; Ian McNiven for checking the stone artefact characteristics; the Australian Research Council for ARC Discovery grant DP0344070, and the Australian Institute of Aboriginal and Torres Strait Islander Studies for funding; AINSE for a grant for radiocarbon dates; and ANSTO for undertaking the radiocarbon dating analyses.

## LITERATURE CITED

MCNIVEN, I.J. 2006. Dauan 4 and the emergence of ethnographically-known social arrangements across Torres Strait during the last 600-800 years. Australian Archaeology 62: 1-12.