A PRELIMINARY REPORT ON ARCHAEOLOGICAL INVESTIGATIONS AT MALEA ROCKSHelter, PIlBARA Region, Western Australia

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In February and March 1994, McDonald, Hales and Associates conducted on behalf of Hancock Prospecting Propriety Limited (subsequently Hope Downs Management Services) a series of archaeological evaluations within the proposed Hope Downs Iron Ore Project area, located approximately 75 km northwest of Newman, Western Australia (Fig. 1). These evaluations formed part of an on-going programme of Aboriginal heritage research and consultation initiated in March 1992 and only recently completed (McDonald, Hales and Associates 2001). During the course of the archaeological evaluations, some 23 potential archaeological deposits were test-pitted. Of these, only one, named ‘Malea’ by participating members of the Aboriginal community, was found to contain a significant depth of cultural deposit.

Malea faces west across a small north-west/south-east running gully dominated by rocks of the Marra Mamba Iron Ore formation. Situated at an elevation of approximately 15 m above the base of the gully, Malea is quite small, measuring 7 m (N-S) by 4 m (E-W) internally, giving a total floor space of approximately 28 sq.m. The roof of the shelter rises from less than 0.5 m at the rear to a height of more than 2 m at the dripline. The front of the shelter is partially enclosed by a low ridge of large to massive pieces of roof fall, which is believed to have acted as a natural trap for wind-blown sediments, resulting in substantial sediment accumulation within the main portion of the shelter. For the purposes of evaluation, a 0.5 m? test-pit was excavated in the more enclosed northern half of the shelter, immediately rear of the dripline. Owing to the quantity of material recovered, together with concerns over safety and access, the initial test-pit was progressively expanded to 2 m x
Excavation continued to a maximum depth of approximately 1.1 m below floor level, at which point the hard rock base of the shelter was encountered (Fig. 2). The excavated deposit itself was fairly homogenous, comprising a mixture of reddish-brown (5YR 4/6) to dark reddish-brown (5YR 3/4) wind-blown sediment intermixed with ironstone rubble. Soil pH values were found to fall into two relatively distinct horizons, with sediment in the upper 15 excavation units being more alkaline than in the underlying units. This is attributed to the increasing frequency of ashy lenses above excavation unit 15, which may have acted to buffer the naturally acidic sediments within the shelter. Cultural material, including flaked stone artefacts, bone, eggshell and plant remains, as well as the aforementioned ash and charcoal lenses were recorded throughout the deposit. For dating purposes, five samples of diffuse charcoal were submitted to Waikato University Radiocarbon Dating Laboratory. The radiocarbon dates returned represent an internally consistent sequence ranging from 20,360 ± 320 BP (Wk-3210) to 290 ± 50 BP (Wk-3209) (Table 1). Importantly, Wk-3382 provides evidence for the presence of Aboriginal groups in the Pilbara Uplands between 17,900 and 9870 BP (cf Veth 1995:734, 744).

An estimated 30,000 flaked stone artefacts were recovered by excavation, of which only a sample (amounting to 4577 artefacts derived from a 0.5m² quadrat) has been subject to analysis. The assemblage itself is composed primarily of relatively small (<8 mm) unmodified flakes and flaked pieces (n=4555, 99.5%) together with a small number of retouched/utilised pieces (n=14, 0.3%), rejuvenation flakes (n=5, 0.1%), and core fragments (n=3, 0.1%). Ironstone is the predominant stone type accounting for 40.5% of the assemblage total. The remainder of the assemblage comprises chert (35.8%), quartz (13.9%), and various meta-sediments (9.8%), most of which are available from surface exposures within 5 km of the shelter. The main chronological changes observed in the artefact sequence are similar to those documented elsewhere in the Pilbara Uplands (Brown 1987). That is to say, after 2820 BP there is a significant increase in the rate of artefact accumulation, greater utilisation of chert and other fine-grained stone types, and an increase in the proportion of artefacts measuring less than 4 mm in maximum dimension. A further characteristic of the assemblage at this time is the appearance of geometric microliths, examples of which were recovered from excavation units 3, 5 and 6.

The faunal assemblage comprises some 1667g of bone together with smaller quantities of eggshell, insect cases and plant material recovered from the upper 16 excavation units. The restricted distribution of faunal material is believed to be a function of differential preservation conditions within the deposit, rather than cultural factors per se. Analysis of the faunal assemblage was hampered by the fact that much of the material was highly fragmented; indeed, identification to species level was possible in only 11 instances. Nevertheless, the assemblage points to a well-developed terrestrial hunting strategy involving the exploitation of macropods (Macropus robustus, M. Rufus, Lagorchestes conspicillatus, L. hirsutus and Petrogale rothschildi) and bandicoots (Isoodon auratus). The remainder of the bone assemblage has been assessed as

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Excavation unit</th>
<th>Depth below surface (cm)</th>
<th>Sample size</th>
<th>Conventional age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wk-3209</td>
<td>2</td>
<td>6.3 - 9.9</td>
<td>18.30g</td>
<td>290 ± 50</td>
</tr>
<tr>
<td>Wk-3381</td>
<td>6</td>
<td>27.0 - 30.4</td>
<td>3.00g</td>
<td>2820 ± 80</td>
</tr>
<tr>
<td>Wk-5748</td>
<td>11</td>
<td>55.0 – 60.0</td>
<td>13.4g</td>
<td>6570 ± 60</td>
</tr>
<tr>
<td>Wk-3382</td>
<td>16</td>
<td>72.5 - 79.6</td>
<td>12.70g</td>
<td>15,230 ± 230</td>
</tr>
<tr>
<td>Wk-3210</td>
<td>19</td>
<td>97.3 - 102.1</td>
<td>2.85g</td>
<td>20,360 ± 320</td>
</tr>
</tbody>
</table>

Table 1 Radiocarbon dates, Malea Rockshelter.
comprising small to medium macropods, rodents, bird, lizard and at least one bat. While the species represented in the Malea assemblage are similar to those flourishing in the region today, several, such as Lagorcheses conspicillatus and L. hirsutus, are locally extinct. Fragmentary remains of a member of the genus Bettongia were also recovered for which no comparable specimen could be found in the collections of the Western Australian Museum. Consequently, the Malea specimen may represent a species not previously recorded in the Pilbara, or a now extinct species that is new to science.

While analysis of the cultural material recovered from Malea is on-going, it is clear that the site has considerable potential to inform current debate concerning the timing and nature of Aboriginal occupation of the Pilbara Uplands and surrounding areas. In light of this, we hope to present in the near future a more detailed treatment of the site and its contents.

Acknowledgements

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References


SANDSTONE QUARRIES AND GRINDING STONE MANUFACTURE: SURVEY AND EXCAVATION AT YAMBACOONA HILL IN SOUTH-EASTERN AUSTRALIA

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Grinding stones are a ubiquitous feature of arid and semi-arid Australia, yet there have been few investigations into production at particular quarries (e.g. McBryde 1997, Mulvaney 1998). These implements were manufactured in many parts of Australia to process a variety of materials: ochre, bone, small animals, wood, and plant foods such as nuts and grass seeds (McCarthy 1967, Field & Fullagar 1998). Seed-grinding stones provided a crucial technology for occupation of drier regions (Smith 1986, Balme 1991, Edwards & O’Connell 1995).

We report surveys and excavations at Yambacoona Hill (also known as Mt Druid), a grindstone quarry near Brewarrina and 120 km north-west of the Pleistocene archaeological site of Cuddie Springs, where grinding stones are dated to c.30,000 BP (Fullagar and Field 1997, Field & Dodson 1999) (Fig. 1). Yambacoona Hill (29° 59’ S, 146° 34’ E) is an elongate sandstone outcrop rising 60 m above the Darling River floodplain (Figure 2). It is the largest sandstone quarry in the region and accumulated sediments in quarry pits offer potential for radiometric dating.

The project aims were to: (i) describe the quarry at Yambacoona Hill through survey and mapping; (ii) determine site antiquity by dating excavated material from Yambacoona and related occupation sites; and (iii) undertake sourcing studies by petrographic analysis (including image analysis and point counting) of the sandstone from Yambacoona Hill, regional surface collections and excavated material (including Cuddie Springs). Preliminary reports of the first two aims are presented here.

Recent survey of Yambacoona documented over 370 depressions or pits excavated into weathered surface rubble (Figure 3). More than 200 of these were located in two areas, on the hilltop and on a low-lying south-western spur (Fig. 2). Within each area, pits have formed elongate clusters, slightly offset from the long axis of the hill. The pits ranged from 2-10 m wide and 0.5-2 m deep. Occupation sites (flaked and ground stone artefacts, burnt clay and charcoal) were also recorded at the foot of the outcrop and on the adjacent floodplain.

The Yambacoona pits have numerous archaeological features in common with quarries reported from central and northern Australia (McBryde 1997, Mulvaney 1998). These features include flaked slabs, grinding stone blanks, hammer-