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-
stones, and flaking debris. Pits extend below the level of the most weathered rock on the surface (sometimes to bedrock). Some flaked slabs represent stages in the reduction of grinding stone blanks, while others have only one or two flakes removed, consistent with the testing of material or the removal of small thin slabs along bedding planes. Grinding stone blanks range from 10-50 cm in maximum dimension, comparable with ethnographic and archaeological grinding stones. No bedding plane removal scars more than 20 cm long were found, suggesting that this is the maximum length of slabs removed with this technique - possibly for small multi-purpose grinding stones (cf. Fullagar and Field 1997, Mulvaney 1998, Smith 1986). Many flaked slabs were positioned vertically in the rubble, possibly to facilitate removals, either by direct percussion or with wedges.

Two test-excavations in quarry pits and a section through a quarry pit showed that there was up to 70 cm of sediment above large boulders or bedrock. Charcoal samples for radiocarbon dating were collected from deposits containing flaked stone. Modern material (bullet casings, modern bone) was confined to upper sediments.

Further objectives are to assess physical qualities of the various sandstone formations used to make grinding stones and compare technological and typological variation in grinding stones obtained from this and other sandstone quarries. Petrographic and mechanical properties of sandstones may provide a basis for understanding preferential use of particular quarries by Aboriginal groups. Of particular interest are the Dreaming stories of the Ngemba people, the traditional owners of the Yambacoona quarry and surrounding lands. These stories relate how the creator spirit Baiame determined different rules of access to sandstone quarries in Ngemba country, specifically Yambacoona and a second quarry called Mt Oxley, 50 km south-west of Yambacoona. Following McBryde (1997), we propose to evaluate sandstone quality, geographic location and social context as equally significant factors in local and wider Aboriginal exchange networks that distributed materials and stories across the continent.

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References