A NOTE ON RADIOCARBON DATES FROM THE PARABURDOO, MOUNT BROCKMAN AND YANDICOOGINA AREAS OF THE HAMERSLEY PLATEAU, PILBARA, WESTERN AUSTRALIA

Bruce Veitch and Fiona Hook
Archae-Aus Pty Ltd, PO Box 177, South Fremantle, WA 6162, Australia.

Elizabeth Bradshaw
Principal Advisor Cultural Heritage, Community Relations, Rio Tinto Ltd., 55 Collins Street, Melbourne, VIC 3000, Australia.

Introduction
Excavations have been carried out at a number of rock-shelters in the Pilbara region of Western Australia as part of mitigative salvage work and research supported by Hamersley Iron Pty Ltd (Fig. 1). The excavations commenced in 1998 and are ongoing. At all times, the work was conducted with participation of and supervision from the relevant Aboriginal people. These people are the Innawonga in the Paraburdoo area, the Gurama in the Mount Brockman area and the Bandjima and Njbarli in the Yandicoogina area. Their contributions to the research are gratefully acknowledged.

Thus far, 24 radiocarbon dates have been obtained from 10 rock-shelters (Table 1) in the iron rich gorges and gullies of the Hamersley Plateau. The dates obtained range from the Pleistocene through to the late Holocene. Most dates, however, are confined to the last 2000 years. Although some of the work is ongoing, this short report has been prepared to provide access to the radiocarbon dates and a brief description of each site beyond the grey literature of consulting reports. A more detailed article will be forthcoming.

Paraburdoo
CME-A-18
This site is a large rock-shelter near the top of the Channar Ranges. Large quantities of burnt timber, some of which has been straightened, one flaked stone artefact and one piece of modified spinifex resin were located on the rock-shelter floor.

Six thin timber pieces appear to have been heat straightened and are partially burnt; four of the six have pointed ends. The spinifex resin has four elongate linear marks on its surface similar to finger marks. The pointed timber pieces, modified spinifex resin and the stone artefact are consistent with ethnographic accounts describing spear manufacture and resultant debris (Hayden 1981:76, Plate 16). Furthermore the pointed timber pieces indicate that composite spears may have been made at this site (Bindon and Lofgren 1982:116-123; Davidson 1935).

A piece of straightened timber and a fragment of modified spinifex resin were submitted for radiometric analysis. The results suggest that this site was used from around 1000 BP to 350 BP (see Table 1). A number of items were salvaged from the site, conserved and mounted in a display case, which is to be returned to the relevant communities.

CME-A-30
This site is a large rock-shelter near the top of the Channar Ranges. A dead tree trunk (Acacia sp.), trimmed of peripheral branches was located in the shelter’s rear. The trunk is adjacent to two rock-shelves/niches 1.5 m above the shelter floor and appears to have been deliberately positioned as a ladder. One wood sample from the tree trunk was submitted for radiometric analysis, which resulted in an age estimation of 440 ± 70 BP (Table 1).

Yirra
CME-A-31
The site is a large rock-shelter in a low gully near a large riverbed in the Channar Ranges. A 1 m by 1 m test-pit was excavated at this site with bedrock encountered at 79 cm. Flaked stone artefacts, burnt plant remains and hearth features were noted throughout the deposit (Veitch et al. 2004) (Table 1).

Preliminary results obtained indicate several artefact and charcoal concentrations. Of significant interest is the lowest concentration in the depth range of 43.13 to 51.50 cm below the surface, which is bracketed by the dates of 16,950 ± 90 BP and 19,270 ± 140 BP (from depth range of 38.63 and 55.80 cm below surface respectively). This concentration is consistent with the use of the Hamersley Plateau as a refugium during the Last Glacial Maximum (LGM) (Hiscock 1988; Smith 1988; Thorley 1998; Veth 1989, 1993). Above this concentration, there are two others that may relate to post-glacial amelioration and later Holocene developments (e.g. Smith 1988; Veitch et al. 2003; Veth 1989, 1993). These alternatives will be more fully developed in a later publication.

There is an obvious problem with the anomalously young age returned for Wk-12536. This result is believed to be owing to limited bioturbation by ants (eg. Hussey 2002). This matter will be taken up in more detail in a future article dealing with aspects of bioturbation. Given that all other dates are in sequence, it is concluded that the level of bioturbation in this deposit has been minimal. Additionally, Hamersley Iron has undertaken to support further excavations at this site and to avoid it.

ERP-04
Site ERP-04 is a small rock-shelter located near the
summit of the Eastern Ranges. A total of nine flaked stone artefacts and one ironstone millstone are located on the shelter floor. A 50 cm x 50 cm test-pit was excavated to bedrock reaching a depth of 18.6 cm. The excavated deposit contained one hearth feature and four flaked stone artefacts. A charcoal sample from the hearth feature was submitted for radiometric analysis, which returned an estimation of 2000 ± 50 BP (Table 1).

**ERP-11B(ii)**

This site is a large rock-shelter within the Eastern Ranges. A scatter of 61 artefacts was located on the rock-shelter surface. A 1.0 m x 0.50 m test-pit was excavated to bedrock reaching a depth of 20.1 cm. A total of 100 flaked stone artefacts were recovered. Only scattered charcoal was present within the deposit. Two samples of charcoal were submitted for radiocarbon determinations, which suggest very recent use (i.e. from around 370 ± 50 BP and 350 ± 50 BP, Table 1). A further excavation measuring 2.5 m by 0.5 m was conducted in October 2002. The analysis of the more recently excavated material has yet to be completed.

**ERP-15**

This site is a medium sized rock-shelter among a series of steep gullies in the Eastern Ranges. The shelter contains a small surface assemblage of flaked stone artefacts and manuports. Two 50 cm x 50 cm test-pits were excavated to bedrock reaching a depth of 15.8 cm and 19.3 cm respectively. No flaked stone artefacts were recovered from either test-pit but one charcoal concentration, interpreted as a hearth, was encountered in test-pit 1 at a depth of 3.0 cm. A charcoal sample from this hearth returned an age estimation of 950 ± 50 BP (Table 1).

**ERP-22**

ERP-22 is a small rock-shelter containing a hearth on the surface of the shelter floor. No artefacts of any kind were noted on the surface of the deposit. The site was excavated to determine if it constituted a site as defined under the WA Aboriginal Heritage Act 1972. Three 50 cm x 50 cm test-pits were excavated in the rock-shelter. With the exception of the hearth, no cultural features or artefacts were encountered. Charcoal was recovered from the upper layers of test-pit 1, where the hearth feature was located. One sample of charcoal from test-pit 1 was submitted for radiometric analysis and returned an age estimation of 560 ± 50 BP (Table 1).

**ERP-26**

This site is a medium sized rock-shelter near the base of a shallow north/south oriented gully. A single quartzite muller was recorded within the shelter, on a rock shelf at the rear centre of the shelter. In addition two manuports, both large flat ironstone slabs interpreted as anvils, were recorded on the shelter floor.

Initially, a single 50 cm x 50 cm test-pit was excavated to a depth of 24 cm. This test-pit was not excavated to bedrock because a relatively large number of flaked stone artefacts and a hearth feature were encountered. These were considered sufficient to evaluate the archaeological potential of the site, as specified by the Excavation Permit. A total of 28 flaked stone artefacts were recovered. A distinct hearth feature was also encountered. A charcoal sample from this feature was submitted for radiometric analysis and resulted in an age estimation of 1840 ± 50 BP (Table 1).

Hamersley Iron has undertaken to avoid this site. At the
request of the Aboriginal community the excavation was expanded and continued to bedrock in October 2002. The deposit reached a depth of 65 cm and was found to contain one hearth and flaked stone artefacts. The analysis of the more recently excavated material has yet to be completed.

Little charcoal was preserved beneath the hearth and consequently no further radiometric determinations have been obtained.

Yandicoogina

**Y97-28**

This site is a medium sized rock-shelter which had a large surface scatter of flaked stone artefacts, a high proportion of grinding material and a fragment of baler shell (*Melo* sp.). The presence of a large amount of grinding material in this rock-shelter indicated its use for either the storing of grindstones or for intensive seed grinding.

Two test-pits, measuring 1 m x 1 m and 0.5 m x 0.5 m respectively, were excavated to bedrock reaching depths of 45 cm and 17 cm. Both squares contained abundant flaked stone artefacts and scattered charcoal but no hearth features. Test-pit 1 contained 272 flaked stone artefacts and test pit 2 contained 73 artefacts. Four samples of charcoal and shell were submitted for radiometric analysis. The two dates on charcoal from test-pit 1 returned modern estimations. The charcoal sample from test-pit 2 resulted in an age estimation of 380 ± 80 BP and the surface baler shell sample an estimation of 810 ± 80 BP. When compared to the dates from test-pit 2 and the surface, the estimations from test-pit 1 appear anomalous. Notwithstanding this problem
with test-pit 1, the dates from test-pit 2 and the surface suggests relatively recent use of the shelter (Table 1).

Discussion
The age estimations from Yirra (CME-A-31) suggest relatively intense occupation over the LGM, and during subsequent periods. It is not clear at present whether the data from this site demonstrate relatively continuous use from the end of the LGM to the later Holocene, or reflect sample size phenomena (cf. Jerardino and Yates 1997; Lyman 1987; O’Neil 1993). It is hoped that further excavation, dating and analysis at this site will clarify these matters.

In addition there is an abundance of material from other sites covering the period from approximately 2000 BP to the last few hundred years. Further detail and analysis on these excavations will be provided in a more comprehensive article to follow.

References
Veitch, B. and Di Lello, A. 2000 The report of the test excavation of five Aboriginal archaeological sites in the proposed pit 4 and 6 extension areas situated within the Brockman Mine, Pilbara, Western Australia. Hamersley Iron Pty Ltd and Archea-Aus.

INDIGENOUS ARCHAEOLOGICAL SITES AND THE BLACK SWAMP FOSSIL BED: ROCKY RIVER PRECINCT, FLINDERS CHASE NATIONAL PARK, KANGAROO ISLAND, SOUTH AUSTRALIA

Keryn Walshe
School of Humanities, Flinders University, Adelaide, SA 5001, Australia. Email: kerynw@internode.on.net

Introduction
Fossil evidence for extinct megafauna at Black Swamp, Rocky River in the Flinders Chase National Park, Kangaroo Island was first noted in 1908 by C.J. May, then caretaker of the Rocky River Reserve (Tindale et al. 1935). Formal palaeontological investigation of the fossil area was initiated during a visit to the former Flinders Chase Flora and Fauna Reserve by Norman Tindale in late 1934 (Tindale et al. 1935; Tindale 1937a, 1937b). Further interest was not rekindled until the late 1970’s (Hope et al. 1977). Since 1995 however, palaeontological investigations have been intensely focused on the Black Swamp fossil site (Wells et al.1997; Thamnakhantry 1998; Dalgaarns 1999).

Archaeological evidence from Kangaroo Island, South Australia generally suggests occupation by Indigenous people between about 16,000 and 4000 years ago (Lampert 1981, 1983). Archaeological sites and objects have been recorded at Black Swamp, Rocky River and the intriguing question of coalescence between megafauna and Indigenous people was initially posited by Tindale in the 1930’s (Tindale 1937a, 1937b). This same question has ‘shadowed’ later palaeontological investigations at Black Swamp, Rocky River but irrefutable physical evidence remains as elusive here as it does for the vast majority of megafaunal sites on the mainland.

Archaeological finds on Kangaroo Island have been reported since 1903 (Howchin 1903) but investigations were concentrated principally on the eastern part of the island. It was not until the 1980’s that archaeological investigations were undertaken, albeit brief in time at Black