EXCAVATIONS AT **GANGA MAYA CAVE** (Abydos 07-12)

in Atlas Iron Limited's Abydos Project.

In April 2013 Njamal Traditional Owners and archaeologists from Big Island Research (Photo 1) excavated Ganga Maya cave (Abydos 07-12, Photo 2), Chalka Burda Cave (Abydos 16-12), Mardu Maya cave (Abydos 18-12) and Bilyardi Cave (Abydos 21-12). These sites are located within Atlas Iron's Abydos Project, some 100 km south of Port Hedland, Western Australia (tenement M45/1179, Map 1).

Photo 1: Photo of the excavation team (L to R): Thomas Geary, Wendy Reynen, Brendan Jeffries, Therese Sundblad, Richard Cameron, Tracin Geary, Anys Price, Darren Geary, Kurtis Geary, Deirdre Gleeson. Traditional Owner Kevin Geary Snr and Big Island archaeologist Kate Morse not present.

Ganga Maya cave (Abydos 07-12)

Named by Njamal Traditional Owners "Ganga Maya" or house on the hill, this is the largest cave discovered so far in the Abydos region. Facing W-NW and with an entrance some 10 m high and 12 m wide, this well lit cave, located 20 m up a gentle slope leading to the base of a tall cliff, extends inside some 40 m. Four large grindstone bases, one of which was flaked, were recorded on the floor surface at the dripline and at the back of the cave (Photo 3).

Photo 5: View south into back of chamber of Ganga Maya cave (Richard Cameron)

Photo 6: Traditional Owner Darren Geary excavating test pit two with Deirdre Gleeson in Ganga Maya cave

Photo 9: The team at work in Ganga Maya Cave (L to R): Kurtis Geary, Tracin Geary, Wendy Reynen, Anys Price, Darren Geary, Therese Sundblad, Brendan Jeffries.

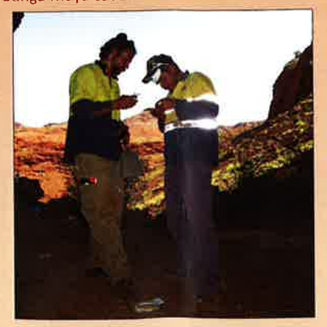


Photo 10: View out of Ganga Maya Cave (Richard Cameron and Traditional Owner Kurtis Geary checking pH levels).

Ganga Maya Cave Excavation

Three test pits have been excavated in Ganga Maya. The first Square (Square 1), located 10 m inside the cave was excavated to baserock, a depth of 139 cm below the floor surface. Square 2 was located adjacent to the dripline, however excavation had to be abandoned at a depth of only 70 cm below the floor surface as extensive slabs of roof fall were uncovered. A third smaller square, Square 3, located immediately adjacent to Square 1 was only able to be excavated to a depth of 33 cm below the floor surface, in the time available.

Photo 2: Traditional Owner Tracin Geary excavating test pit 1 with Anys Price in Ganga Maya cave.

Excavated archaeological material was sieved and sorted on site by Njamal Traditional Owners and Big Island archaeologists. Stone artefacts, charcoal and bone were collected and have since been analysed. Samples of charcoal collected from the excavation were sent to the University of Waikato radiocarbon dating laboratory in New Zealand. The results have been surprising!

Radiocarbon Dates

This table (Table 1) shows radiocarbon dates obtained from charcoal samples collected from Squares 1 and 2. The photograph below shows Square 1, excavated to baserock 139 cms below the surface, and clearly illustrates the grey, charcoal rich layers . Figure 1 shows one of the walls of the trench and the location of the dated charcoal samples.

SITE	SQ	XU	Depth Below Surface (cm)	Lab No.	Method	^{14}C Age (years BP)	Calibrated Age BP (68.2% Probability)	Calibrated Age BP (95.4% Probability)
Abydos 07-12 Ganga Maya	1	5	38.5	Wk 37318	Standard	12406 ± 64BP	14556 - 14103 (68.5%)	14915 - 14029 (95.4%)
		7	47.6	Wk 37319		12,593 ± 56BP	15022 - 14546 (68.2%)	15109 - 14231 (95.4%)
		9	67.6	Wk 38071	AMS	19,981 ± 72BP	24112 - 23875 (68.2%)	24240 - 23746 (95.4%)
		11	76	Wk 37320	AMS	20,259 ± 95BP	24290 - 23954 (68.2%)	24435 - 23834 (95.4%)
Abydos 07-12 Ganga Maya		16	93.4	Wk 38072	AMS	29,531 ± 234BP	33906 - 33794 (68.2%)	34101 - 33168 (95.4%)
		20	113	Wk 37321	AMS	39,819 ± 711BP	44360 - 43250 (68.2%)	44950 - 42760 (95.4%)
		23	127.2	Wk 38073	AMS	40,442 ± 906BP	44775 - 43226 (68.2%)	45704 - 42682 (95.4%)
Abydos 07-12 Ganga Maya	2	2	25	Wk 37322	AMS	1798 ± 25BP	1700 - 1614 (68.2%)	1720 - 1560 (95.4%)
		5	40.8	Wk 37323	AMS	1905 ± 25BP	1822 - 1734 (68.2%)	1866 - 1714 (95.4%)

Table 1. Radiocarbon dates for Ganga Maya cave

Photo 11: Ganga Maya cave Square 1 during excavation

So what does this tell us?

In brief we now know that Aboriginal people first visited Ganga Maya from about 45,000 years ago to recent times. Since then, they have visited and lived in the cave on many occasions until about 1700 years ago. In human terms this is the equivalent to the lives of about 1760 generations.

The graph below shows the distribution of stone artefacts, bone and charcoal excavated from Square 1 as well as the dates and the depth below the surface that archaeological material was found. Interestingly the greatest number of artefacts (n=69, 70.4 %) were found in layers dating between 15,000 - 25,000 calBP. This is a period in the Ice Age, the Last Glacial Maximum (LGM), when climate changed as sea level became lower, and in Australia, it was cooler, drier and windier.

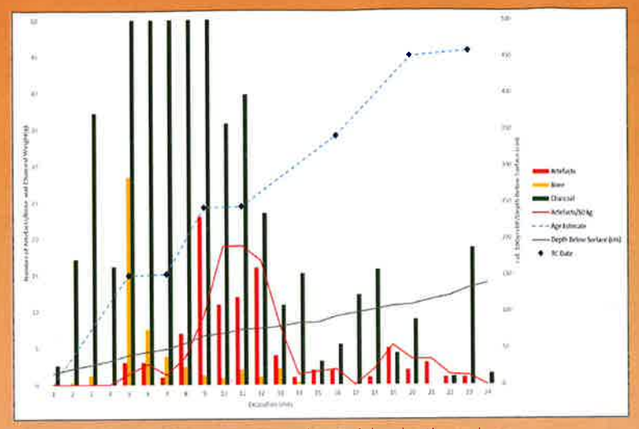


Figure 2: Ganga Maya cave – excavated material and estimated age.

Australian archaeological evidence indicates that during the LGM, occupation of many rockshelter sites became increasingly erratic and many sites appear to have been abandoned as the climate deteriorated. In the Pilbara very few sites are considered to provide convincing evidence of LGM occupation. All are located in the Hamersley Ranges. Ganga Maya may be only the fourth known site with evidence of occupation during the Last Glacial Maximum, and so far the only site in Njamal country.

Ganga Maya is certainly one of the oldest dated archaeological sites in the Pilbara. Perhaps more significantly, it shows a long securely dated and undisturbed occupation sequence.

Significantly bone, both burnt and unburnt, and charcoal as well as stone artefacts are found in the deposit, enabling us to find out more about what people were doing in the cave. Some of the bone, including kangaroo is probably the remains of meals.

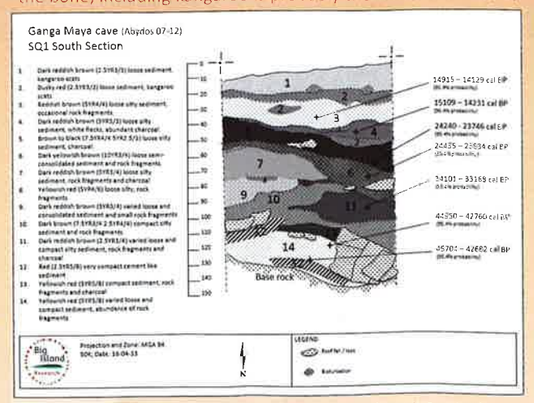
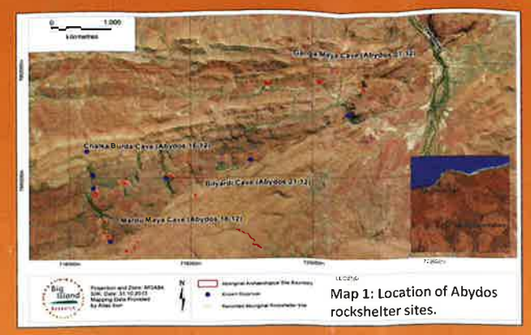


Figure 1. Ganga Maya cave: SQ1 Section Drawing (South Section).



Map 1: Location of Abydos rockshelter sites.

Photo 3: Lower grindstone recorded in Ganga Maya cave.

Photo 4. Rock pool located 500m southwest of Ganga Maya cave.

Photo 7: Broken chalcedony flake identified 18 cm below surface at Ganga Maya cave.

Photo 8: Complete BIF flake identified 40 cm below surface at Ganga Maya cave.

What Next?

The top layers of pits excavated so far have been disturbed by animals living in the cave. Further excavation will perhaps tell us about more recent activities at the cave and if the cave was still occupied when European settlement in the Pilbara began.

To date less than 1% of the deposit in the cave has been investigated. Excavation and collection of a bigger sample of material from Ganga Maya has the potential to make a significant contribution to our understanding of the early human occupation of Australia, as well as showing how people lived as climate changed during the last glacial period.

We know that stone artefacts were only a part of Aboriginal technology. Tools, decorative ornaments and other items were made from wood, fibre, skin, resin, shell, seeds, and bone. This material is rarely preserved in archaeological sites in the Pilbara. The preservation of bone throughout much of the deposit at Ganga Maya means however, that there is potential for some of this organic material to be preserved.

The story of Ganga Maya cave lies beneath the surface. Further excavation will open a window into the lives of some of Australia's earliest inhabitants.

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Yamatji Marlpa ABORIGINAL CORPORATION

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