Archaeological research in the Eneabba area

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Abstract

The caves of the coastal plain north of Perth, like those of the Leeuwin-Naturaliste region, provide excellent opportunities for archaeologists to better understand the ways in which Aboriginal people used the land and its resources. The remains of fires, animal bones, and artefacts are often not preserved outside of the caves, making the caves important resources for this research. The purpose of the archaeological research trip to 6E-30 was to excavate a couple of small test pits within the cave to look for stone artefacts and bones, so that we can begin to understand how Aboriginal people were using these sites and the surrounding environments over the last 5,000–10,000 years. This presentation details the initial search for suitable sites, the excavation, and the results to date.

Paper

Carly is a PhD candidate at the University of Western Australia who was referred to WASG for advice by one of her supervisors, Joe Dortch.

As an aside, Joe's father Charlie Dortch is an internationally renowned archaeologist, an American who settled in WA and worked at the WA Museum; he is known here primarily for his work on Devil's Lair cave in Margaret River, where human occupation has now been dated to nearly 50,000 years ago. Joe Dortch shared in his father's interests and work and completed his PhD at UWA, where he went on to become an Associate Professor and is currently a Research Fellow. He has overseen research projects investigating archaeological evidence for fauna extinctions in the Late Pleistocene; past Aboriginal burning and landscape management in south-western Australia; and sampling archaeological sites for ancient DNA extraction and analysis. He has also consulted widely to communities and industry.

Both Joe and Carly were keen to extend the cave-related research from the Leeuwin-Naturaliste region to the caves of the coastal plain north of Perth. (I for one was surprised to learn how little had been done in this region: some small-scale work on fossil fauna, but no investigation of, for example, the ways in which Aboriginal people used the land and its resources.) So Carly came to a WASG meeting at the start of 2014 to explain what she was looking for; she joined the club, and on Anzac Day weekend a few of us (Ian Collette, Ian McCann, Brett Wiltshire and myself) accompanied her on a trip to the Eneabba area (fig. 1) to look at possible 'rock shelter' type sites likely to have been occupied or used in the past by Aboriginal people.

We started our 'quest' at Stockyard Gully, a steep-sided gully leading into a well-known stream cave system. The name no doubt derives from the relative ease of penning cattle overnight in the gully while droving on a nearby stock route. Carly had visited this site previously and noted some minor rock shelters high on the gully slopes which she felt could have been used as shelter from the midday heat and to watch for wildlife (fig. 2). These were duly photographed and measured, and the remainder of the Stockyard cave system investigated, before we enjoyed a recreational interlude abseiling into ANU cave to admire the view of the heavily pierced roof.

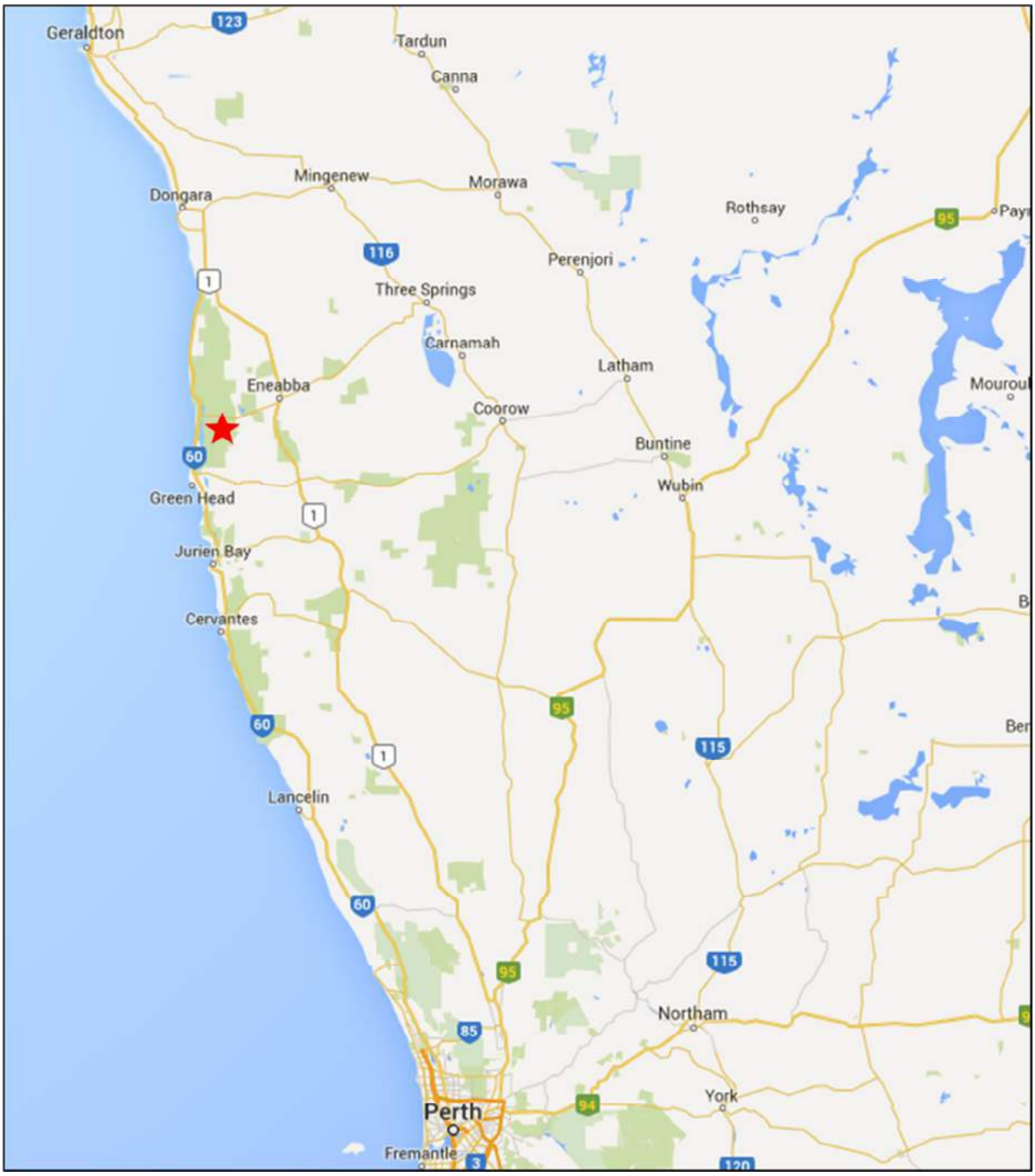

Figure 1: General location map, with the research area starred in red

We then undertook a cross-country circuit to check the numerous features to the north. These were all relatively shallow dolines into which one could walk, most with an obvious area of exposed rock and a number of blocked shafts but no entry. A couple, however, had a chamber or rock shelter, as noted below.

E-12, Seismic Cave or Facts-of-Life Cave, was the most likely prospect from today's caves. A boulder-filled doline slopes steeply down at one side into a fairly considerable rock shelter (fig. 3). Carly and Brett seemed unconcerned by the ferocious bees hanging off the overhang (fig. 4) and spent quite some time measuring and photographing in the sandy floor of the cave. Ian Collette and I were not game to brave them; Ian McCann was moving into the cave but beat a hasty retreat when he heard the bees fire up.

Figure 2: Carly Monks taking measurements in a rock shelter above Stockyard Gully. Image Ian McCann

On Saturday we headed for E-30 Drip Cave, where we clearly hit the jackpot from Carly's point of view. This is a wide rock shelter (fig. 5) with a large, flat covered area (fig. 6), dropping several metres to a chamber in near-darkness at the back. Evidence shows that it has been used by random campers/drinkers over a considerable period – not to mention goats, bees and swallows. There are also many deposits of small bones, several of which appear to be from owl roosts, including some tiny bones cemented on to the rock surface (fig. 7). Many measurements and photos were taken.

Carly's next task was to request permission for a dig from the Department of Aboriginal Affairs and the Department of Parks and Wildlife, which naturally took some time, but by late October she was ready to begin fieldwork. The rest of this report is given in Carly's words.

The purpose of the archaeological research trip to E-12 and E-30 was to excavate a couple of small test pits within the caves to look for stone artefacts and bones, so that we can begin to understand how Aboriginal people were using these sites and the surrounding environments over the last 5,000–10,000 years.

The research trip involved a large team including archaeologists and archaeology students from UWA and Curtin University[3], and Amangu Traditional Owners Thomas Cameron and Buddy Edwards. Some people joined us for the whole trip, but most just helped out where they could, for a few days between other commitments. We planned to dig test pits at the two caves, E-12 and E-30, which had been visited earlier in the year and showed the most promise as archaeological sites.

Unfortunately, this plan hit a snag on the first fieldwork day, when we reached E-12 only to find that the bees at the entrance had increased in number and ferocity since the previous visit. The decision was made not to attempt fieldwork at E-12 on this trip, so we trudged back to the cars… only to find we had staked the sidewall of a tyre. With our spirits as deflated as our tyre, we ended the first day on a bit of a low note. Fingers and toes crossed for the following day we tried to boost our moods with a discussion of the many ways in which the other cave, E-30, would be better.

Figure 3: Exterior view of E-12. Image Ian McCann

Figure 4: An earlier composite interior shot of E-12, showing clearly the descent route past the feral bees' nests. Image Paul Hosie

Figure 5: External view of E-30 from its broad doline

Thankfully, we were right. Our first test pit in E-30 was positioned in the northern end of the entrance; about four metres back from the dripline in an area with smoke staining on the roof (fig. 9). It was flat, dry, and just out of the reach of the afternoon sun: all the hallmarks of a good spot to make a fire. We strung out a small test pit (1 m^2), and started to dig… and before we'd even removed three buckets of sediment (mostly comprised of goat hair, goat manure, and goat bone), we'd found our first artefact. It's not an exaggeration to say that this small quartz flake buoyed everyone's spirits (particularly mine) instantly: we had an Aboriginal site!

Figure 6: Internal view of E-30 showing the extensive sandy floor, with (at the centre) the passage down to the inner chamber. Image Ian McCann

Over the next few days, the finds kept coming. We soon found a hearth pit, full of ash, charcoal, emu eggshell and bone. Three more hearths followed in quick succession, along with many artefacts made from a variety of stone types – quartz, basalt, silcrete, chert and limestone. The graffiti on the northern wall was photographed and recorded (fig. 10), and Thomas and Buddy told us about their uncles, who had lived rough in the area in the 1930s and 1940s, making use of caves like E-30 during harsh weather. Both Thomas and Buddy were very happy with the excavations, and would like to give E-30 an Amangu name reflecting its use by Aboriginal people. They are currently discussing possible names with senior Amangu elders.

Figure 7: Tiny bones cemented on to a vertical rock surface. Image Ian McCann

Later in the first week, Alex Baynes joined us to lend his expertise. He and Tess (a PhD candidate at Curtin) began to sort through small samples of the bone to collect tiny fragments for ancient DNA analysis (fig. 11). Tess will analyse these samples later in 2015, to search for traces of some of the species that are more difficult to identify.

The weekend of 1 and 2 November was particularly busy, with more people able to join the research team. This gave us an opportunity to open a second 1 m^2 test pit in a different part of the cave. Test Pit 2 was positioned towards to rear of the front chamber, next to a shallow channel created by water erosion. Joe began the excavation, and within moments he had uncovered a small fragment of marine shell!

We were joined over the weekend by WASG member Danny Wilkinson, who was quickly co-opted into helping with the excavations, as well as the survey of the front chamber. The finds kept coming, including complete mandibles of kangaroos and possums. Danny, Alex, and others identified several bones and partial skeletons within the cave, including the jaw of a dingo pup and most of a fox.

Figure 8: Carly's plan of the front chamber of E-30, showing the locations of the test pits

Figure 9: Test Pit 1, with a detail of one of the hearths. All images not otherwise credited are by Carly

Early in the second week, we reached our maximum depth of 1.5 metres in the first test pit and closed it off. We placed green plastic along the base and walls of the pit, and backfilled. The excavation of the second test pit continued for the rest of the week with a steady stream of bone and artefacts being noted. We reached a depth of 1.5 metres on our last afternoon, and finished backfilling in the late afternoon.

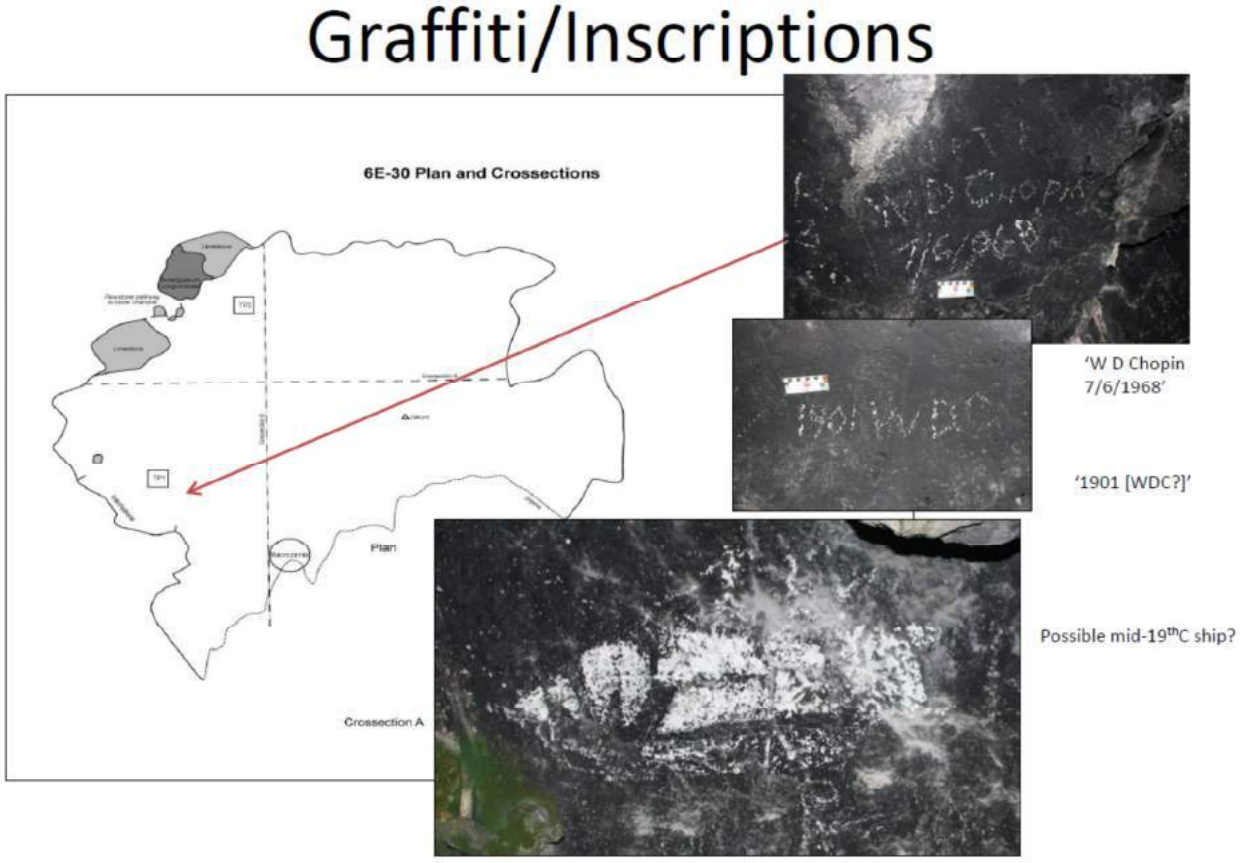

Figure 10: Details and location of the inscriptions

Overall, the trip was a resounding success, with the site showing excellent archaeological and palaeontological potential. The material brought back from the cave (fig. 13) will be cleaned, sorted and analysed this year. Carbon-14 dates will be available after mid-year, but the deposit is estimated to be up to 7,000 years old, covering the period from the establishment of the modern coastline up to the historic era. The many thousands of bones and artefacts show evidence of Aboriginal use of a wide range of resources, including marine resources, and I have high hopes that they will provide insights into how Aboriginal people occupied the coastal plain, and how they altered the plant and animal communities.

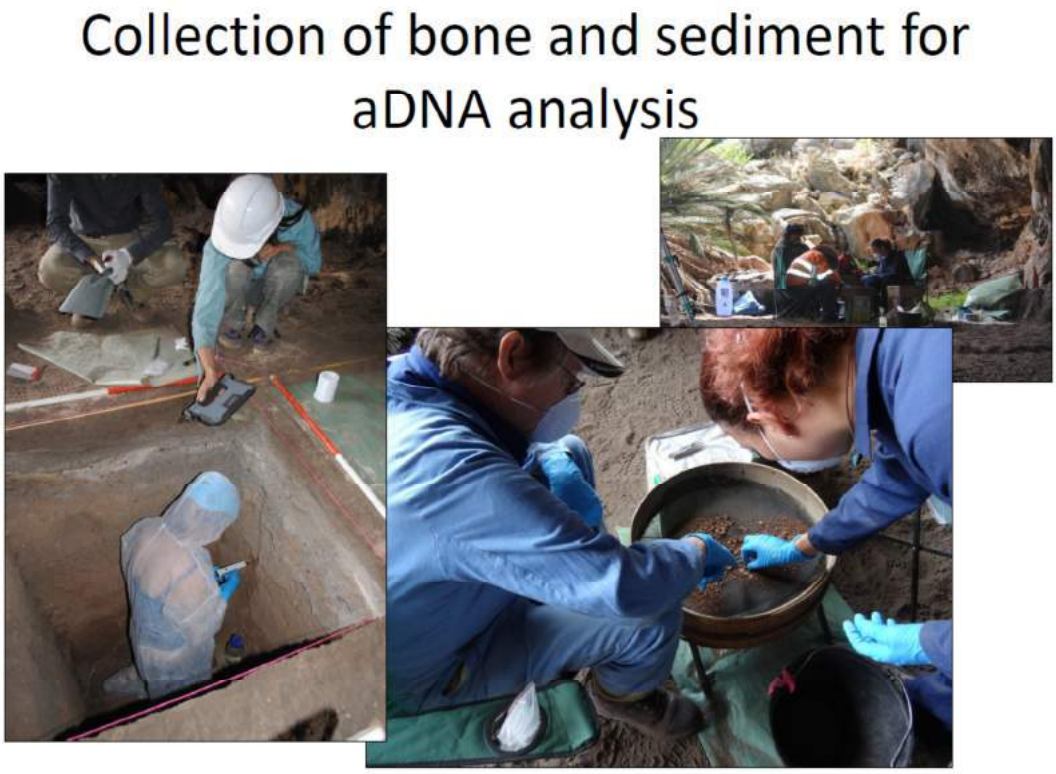

Figure 11: Collecting bone and sediment for ancient DNA analysis: plant (pollen) DNA is sought in addition to animal DNA. Tess Cole from Curtin University (in the pit) wears a full painter's suit while taking samples to prevent contamination by current human DNA (skin flakes, etc). Other researchers record temperature and humidity for a further PhD project to establish the kind of site where ancient DNA is best preserved, and the best way extract it. Amangu TO Thomas Cameron, seen in the top right picture, is very engaged with cultural projects, and currently aims to have the old people's stories recorded on Mingenew Station, where he works.

Figure 12: Test Pit 2, where many of the larger bones were found

Postscript: as you know, PhD research funding is quite limited. Last year's field work used almost all the funds available to me from my university and other sources. As a result, Joe Dortch and I have decided to try something a little different: we've turned to crowdfunding in a bid to raise money for a second field trip and radiocarbon dating. We launched the campaign in mid-May and have already had an excellent response[4].

Figure 13: A sample of the finds from E-30

References

UWA: Carly Monks (PhD candidate, WASG), Joe Dortch (PhD supervisor), Rebecca Stewart, Rebecca Foote, Shannon Henderson, Callum Forsey, Andrew Horn, Tania Phillips, Jacquie Brisbout, Daniel Monks; **Amangu Traditional Owners:** Thomas Cameron, Buddy Edwards; **WA Museum:** Alex Baynes, Cassia Piper; **Curtin University:** Tess Cole, Mike Bunce; **WASG:** Danny Wilkinson

In fact, by the time the campaign closed on 26 June 2015 it had raised $5825 from a total goal of $6800, which means that the next phase of the research will definitely be going ahead. Excerpts from the crowdfunding 'bid' are included as an Appendix to this paper.

Appendix: The crowdfunding bid

How nature and nurture created biodiversity in south-western Australia

Carly Monks

Our ecosystems are in danger

Over millions of years, extraordinary biodiversity evolved in Australia. And over many thousands of years, Aboriginal Australians met all of their food needs from our rich environments. But when Europeans arrived, more than 50 bird and mammal species disappeared within two centuries. Today, an astonishing 1700 species are at risk of extinction.

Foxes and cats are the main threats, but their effects are far worse where fire regimes have changed and land has been cleared. Our project proposes to understand the impact of humans on the environment before Europeans came to Australia. With this knowledge, we can identify the best ways to promote environments that protect native wildlife.

Exploring the past helps us plan for the future

Before Europeans came to Australia, Aboriginal people had developed sophisticated practices for managing their food supply, through social controls and through burning the landscape. Our aim is to determine whether these practices impacted the native fauna. We focus on the area between Jurien Bay and Leeman on the Western Australian coast, where cave environments preserve archaeological and palaeontological remains in the form of campfire ash beds, stone tools, and animal bones. The mega-diverse vegetation around these caves is the famous *kwongan*, harbouring thousands of endemic plants and unique animals like the honey possum, the only mammal that lives entirely on nectar. By identifying changes in animal species from their bones and DNA preserved in their bones, and the changes in human activity, we can understand how people hunted certain species and what impact hunting had. We can also understand the impacts of burning, by studying records of environmental change. Many animals require environmental conditions that can be altered by firing, so change in these conditions can be ascertained by studying changes in animal populations over time.

Your support is vital

In the first year of our project, 2014, we worked with local Aboriginal custodians and excavated a sample from a cave deposit that is full of animal bone and cultural material. We now hope to excavate at another cave nearby, to provide a "control" site where hunting was not a factor. But due to the time we had to devote to exploring the rich remains from the first site, we have few funds left to test the control site. We seek funding to return to the field and complete our study.

Join us!

Our largest expense is the engagement of two Aboriginal Traditional Owners, who represent the Amangu people who speak for the Country on which this research is undertaken. $2400 will be used to cover their employment, daily travel and accommodation expenses.

We're also expecting to transport, house and feed four researchers and students. We're seeking funding for vehicle fuel - $250, food - $450, and accommodation - $450.

Radiocarbon dating is an expensive and essential part of archaeological research. To answer our research questions, we need to be confident of the timing of changes and events. Radiocarbon dating is undertaken at dedicated laboratories, and costs about $650 per date. We would like to date 4 to 6 samples within the site to establish a chronology of change through time. Any funds raised beyond the target costs will be used to pay for additional dates, and other laboratory costs associated with analysis of the excavated material.