NEW ZEALAND
ARCHAEOLOGICAL
ASSOCIATION

ARCHAEOLOGY IN NEW ZEALAND

DEVELOPING OCCUPATIONAL CHRONOLOGIES FOR SURFACE ARCHAEOLOGICAL DEPOSITS FROM HEAT RETAINER HEARTHS ON PINE POINT AND LANGWELL STATIONS, FAR WESTERN NEW SOUTH WALES, AUSTRALIA

Justin Shiner
University of Auckland
Waikato Radiocarbon Dating Fund recipient 2000

Introduction

The archaeological record of arid Australia is dominated by deflated distributions of stone artefacts and heat retainer hearths covering many thousands of square metres. These deposits have often been over-looked by archaeologists in preference for stratified deposits, which are regarded as more appropriate for investigating temporal issues. In recent years this situation had slowly begun to change with the large-scale dating of heat retainer hearths from surface contexts. The work of Fanning and Holdaway (2001) and Holdaway *et al.* (2002) in Far Western New South Wales has demonstrated that through the dating of large numbers of hearths it is possible to develop occupational chronologies for surface deposits. At a wider landscape scale these chronologies reflect the timing and tempo of the occupation of different places. A major component of my doctoral fieldwork on Pine Point and Langwell Stations, 50 km south of Broken Hill in Western New South Wales, aimed to establish occupational chronologies from hearths for surface archaeological distributions. This paper reports on radiocarbon results from this investigation.

Results

The study area is situated on the confluence of Rantyga and Pine Creeks. Stone artefacts were recorded at two locations along both Creeks. Five charcoal determinations are available for Pine Creek and three for the smaller Rantyga Creek system. The eight radiocarbon determinations are presented in Table 1. The

determinations are sorted in chronological order from youngest to oldest in both alluvial systems.

Table 1. Radiocarbon determinations on charcoal from heat retainer hearths on Pine Point and Langwell Stations.

Hearth ID	Alluvial System	Wt (g)	Lab ID	$\delta^{13}C‰$	CRA + se (BP)	Cal 68% (AD)
CN H 42	Pine Ck	5	Wk-9994	-23.8 ± 0.2	261 ± 49	1520-1580 1620-1680 1770-1800 1940-1950
CN H 55	Pine Ck	18.4	Wk-10282	-23.9 ± 0.2	886 ± 47	1040-1090 1120-1140 1150-1220
CN H 23	Pine Ck	6.7	Wk-10280	-23.0 ± 0.2	910 ± 52	1030-1190
CN H 32	Pine Ck	34.3	Wk-10281	-23.2 ± 0.2	1653 ± 52	260-280 320-440 450-470 520-530
CN H 7	Pine Ck	7	Wk-9993	-23.5 ±0.2	1747 ± 76	210-410
KZ1 H 2	Rantyga Ck	4.1	Wk-9995	-23.4 ±0.2	848 ± 69	1060-1090 1120-1140 1150-1270
KZ1 H 7	Rantyga Ck	7.7	Wk-10832	-22.1 ± 0.2	959 ± 51	1020-1070 1080-1160
KZ1 H 3	Rantyga Ck	4	Wk-10831	-23.2 ± 0.2	2004 ± 73	110BC-80AD

Discussion

The radiocarbon results from the Pine Point and Langwell Stations point to some interesting temporal patterns. First, all give dates in the Late Holocene. Archaeological deposits extending into the Pleistocene have been recorded on lake lunettes in the Menindee Lakes system approximately 70 kilometres to the east. Whether the current absence of older dates in the Pine Point–Langwell sample represents an archaeological reality, or is the product of hearth attrition and geomorphic change requires confirmation through further determinations from hearths. Second, radiocarbon determinations from two hearths at Stephens Creek, approximately 50 kilometres north of Pine Point-Langwell, have been dated to 5830 ± 90 BP and 600 ± 50 BP (Martin and O'Donnell 1995). Clearly

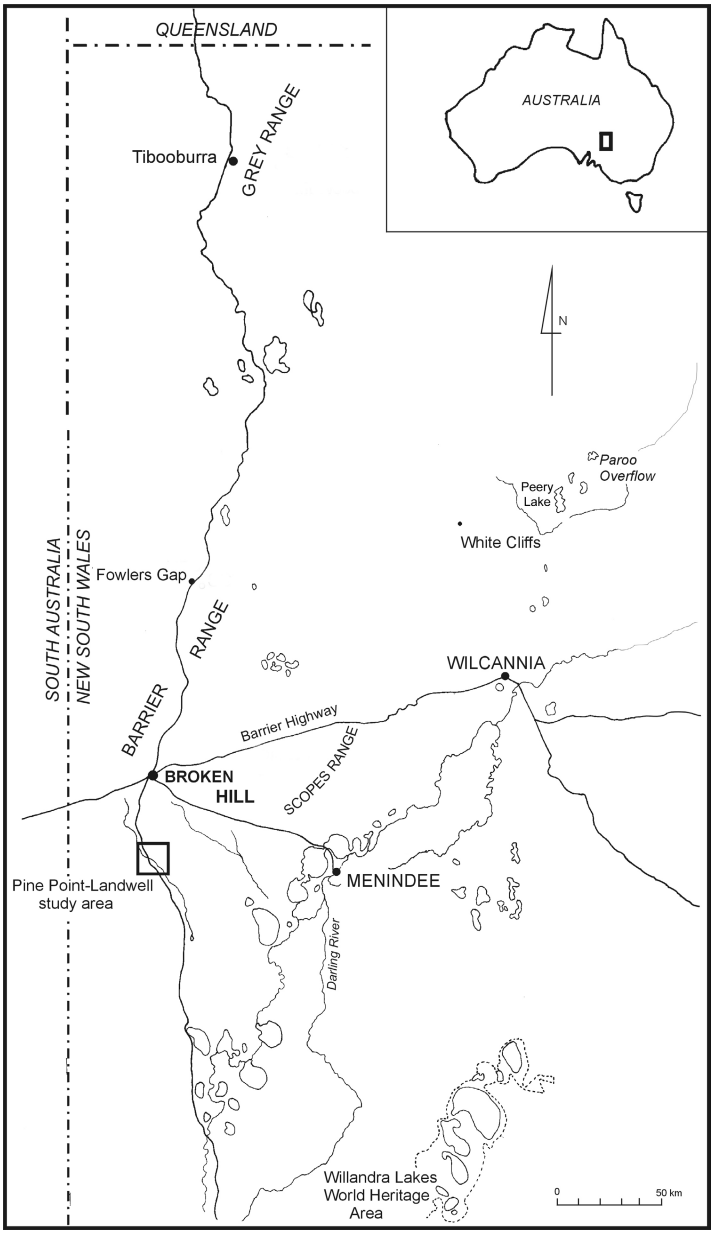

Figure 1. Map showing location of places mentioned in the text

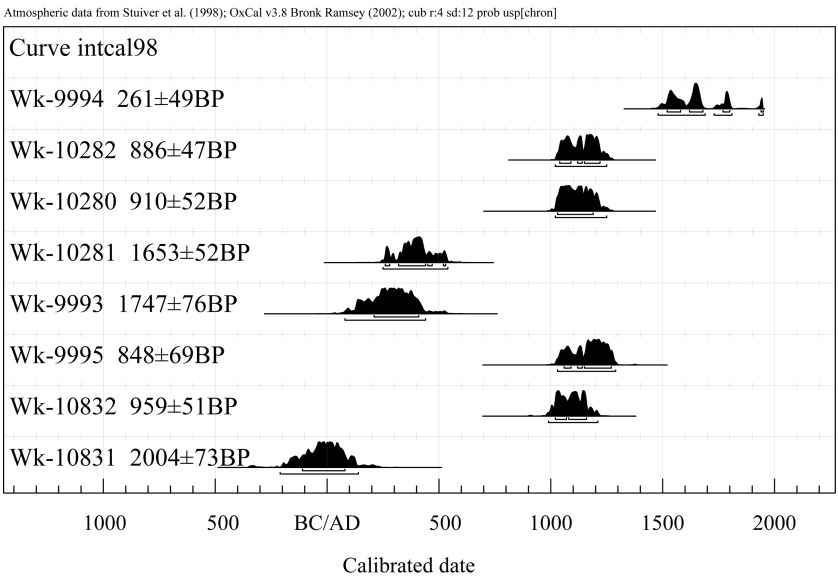

Figure 2. Calibrated radiocarbon ages for dates mentioned in text. All determinations were calibrated using the terrestrial calibration curve of Stuiver et al. (1998). Error bars denote 1 and 2σ deviations

hearths older than the Pine Point/Langwell examples do exist in areas of Western New South Wales away from the Darling River and associated lakes systems. Therefore the gaps in the occupational chronology do not represent wide-scale regional abandonment. Third, large-scale hearth dating programmes from other areas of Western New South Wales (e.g., Holdaway *et al.* [2002] for Stud Creek) have also identified gaps in late Holocene occupational chronologies.

Holdaway *et al.* (2002) tentatively suggested a link between increasing aridity and the 300 year gap in the Stud Creek occupational chronology. Cupper (1998) has highlighted the variable nature of the environment in southwestern New South Wales during the last 2000 years. At present, palaeo-environmental records are too coarse and there are not enough dated hearths to draw any firm conclusions as to the relationship between archaeological chronology, environment and geomorphic preservation of different aged surfaces. What can be said is that the dating of hearths provides one method of investigating the temporal character of Aboriginal occupation of the arid zone. As the database of dated hearths

grows, it will be possible to investigate notions of abandonment and re-occupation at different spatial and temporal scales across Western New South Wales.

Conclusion

Patterns in occupation chronologies from surface contexts only emerge with the dating of large numbers of hearths. Previous research has pointed to both continuity and discontinuity in occupational chronologies. The eight radiocarbon determinations discussed in this paper further demonstrate the complex temporal characteristics of occupation across the arid zone.

Acknowledgements

I would like to acknowledge the assistance of Simon Holdaway, Trish Fanning and Melinda Allen, also the University of Waikato Radiocarbon Laboratory Graduate Dating Fund for funding four radiocarbon determinations. Thanks also to Mr. Raymond O'Donnell and the Broken Hill Local Aboriginal Land Council for supporting this work and the Harvy Family of Pine Point Station and the Harrison Family of Langwell Station.

References

Bronk-Ramsey, C., 2002. OxCal program v3.8. Oxford Radiocarbon Accelerator Unit.

Cupper, M., 1998. Casuarinuceae: Chenopodiaceae pollen ratios and soil salinization in the Murray-Darling Basin. *Quaternary Australasia*, 16(2): 28–34.

Fanning, P., and S. J. Holdaway, 2001. Temporal limits to the archaeological record in arid Western NSW, Australia: lessons from OSL and radiocarbon dating of hearths and sediments. In, M. Jones and P. Sheppard (eds.), *Australasian Connections and New Directions: Proceedings of the 7th Australasian Archaeometry Conference*. Research in Anthropology and Linguistics, 5: 85–104.

Holdaway, S. J., P. C. Fanning, M. Jones, J. Shiner, D. C. Witter and G. Nicholls, 2002. Variability in the chronology of Late Holocene Aboriginal Occupation on the arid margin of Southeastern Australia. *Journal of Archaeological Science*, 29: 351–363.

Martin, S., and D. O'Donnell, 1995. Stephen's Creek Archaeology Salvage near Broken Hill, Western NSW. In, I. Davidson, C. Lovell-Jones and R. Bancroft

(eds.), *Archaeologists and Aborigines Working Together*, 73–75. Armidale: University of New England Press.

Stuiver, M., R.J. Reimer, E. Bard, J.W. Beck, G.S. Burr, K.A. Hughen, B. Kromer, F.G. McCormac, J. van der Plicht, and M. Spurk, 1998. INTCAL98 Radiocarbon age calibration, 24 000–0 Cal AD. *Radiocarbon,* 40: 1041–1083.