

The lost oasis: Archaeology of a ‘forgotten’ *mikiri* well in the Simpson Desert

Don Rowlands^a, Mike Smith^{b,c,*}, Ingereth Macfarlane^d, Duncan Wright^e and Max Tischler^f

^a Queensland Parks and Wildlife Service, Birdsville, QLD 4482, Australia; ^b College of Humanities, Arts and Social Sciences, Flinders University, GPO Box 2100, Adelaide, SA 5001, Australia; ^c National Museum of Australia, GPO Box 1901, Canberra, ACT 2601, Australia; ^d Aboriginal History Inc., Australian Centre for Indigenous History, Research School of Social Science, The Australian National University, Canberra, ACT 2600, Australia; ^e College of Arts and Social Sciences, The Australian National University, Canberra, ACT 2600, Australia; ^f Australian Desert Expeditions, 222A Barry Parade, Fortitude Valley, QLD 4006, Australia

* Corresponding author mike.smith@nma.gov.au

Abstract

This paper describes a previously unknown *mikiri* well in the Simpson dune field. This site was abandoned about 500-600 years ago and does not feature in ethnographic records for this region. We argue that its abandonment was most likely due to failure of the well caused by a fall in the local watertable. The Simpson Desert is one of the major sand-ridge deserts of the world, but current views of the chronology of human use of this vast dune field rest on only a handful of radiocarbon ages (n=12). The radiocarbon ages for this *mikiri*, and its surroundings, add to this limited dataset. We plot all available radiocarbon ages from archaeological sites in the dune field showing that occupation of this *mikiri* coincided with a widespread increase in use of the dune field during the last millennium, at about the time the Wangkanguru people in the dune field were becoming linguistically distinct from the Arabana to the west.

Places die, just as men do (Joubert, cited in Thesiger et al. 2000:102).

Introduction

The Simpson Desert is one of the great sand-ridge deserts of the world. Linear dunes run for more than 300km in a roughly SSE-NNW parallel alignment, with individual dunes up to 26m high. This vast dune field covers 176,500km² and is the driest part of the Australian arid zone. With mean annual rainfall around 100mm per annum it is the only part of the Australian landmass that is hyper-arid. Wangkanguru occupation of this dune field was underpinned by a series of small desert wells, known as *mikiri*. Typically, these involved a narrow sloping shaft 6–7m deep to reach local ground water. The hydrology of these wells is not known in detail but they appear to depend on shallow local aquifers, where small bodies of potable water are present, perched above folds in a substrate of impermeable clay, gypcrete or calcrete.

In 1886, explorer David Lindsay visited nine of these wells with an Aboriginal guide (Lindsay 1886) at a time when people were still living in the dune field. Lindsay also recorded the names of several other *mikiri* that he did not visit. As the Wangkanguru left the dune field between 1890 and 1901 (Hercus 1985), other *mikiri* are known only by name, references in mythology (Hercus and Clark 1986; Reuther 1906; Strehlow 1970), or from an account given to Norman Tindale in 1934, that describes a walking route across the dune field from Pandie Pandie on Eyre Creek to Dalhousie Springs (a journey of >14 days with several waterless stages) (Tindale 1962). Altogether some 16–18 *mikiri* are known by name although not all have been relocated. For any others that are present in the dune field, we do not even have a name, and they have slipped from memory. The nine wells visited by Lindsay were relocated by Denis Bartell in the 1980s (Bartell 2012). Since then the locations of a further three *mikiri* – Madlu, Puramaana and Yalkiri – have been determined.

The archaeology and mythology of the *mikiri* wells was subsequently described by Hercus and Clarke (1986) and by Smith and Clark (1993). Typically, the wells are surrounded by an arc of occupational debris, within 200–300m of the well. This debris field commonly includes chipped stone artefacts, fragments of grinding stones and stone axes, and occasionally pieces of exotic baler shell. Most sites also have extensive scatters of faunal remains, including the bones of macropods and reptiles, pieces of freshwater mussel shell and of emu and bustard eggshell. It is also not uncommon to find wooden implements – such as corkwood shields, spear shafts, digging sticks and fragments of unidentified wooden implements as well as the remains of bough shelters. Post-contact items have been observed at several *mikiri* in the area, including a tea tin, steel chisel and a clay pipe (Hercus and Clarke 1986). The appearance of relatively recent occupation (c.1890–1901) is reinforced by the number of intact fireplaces, the relatively good condition of bone fragments, the presence of rabbit bones, and of ash (presumably prepared for consumption with bush tobacco) surviving on several of the grindstones.

Only two of the *mikiri* have previously been radiocarbon dated (Marapadi and Palkura) (Smith and Clark 1993) and there are few dates for occupation of the dune field or its immediate margins (Table 1). Current knowledge of the archaeology and human past of the dune field rests on a handful of studies (Barton 2003; Hamm et al. 2019; Hercus and Clarke 1986; Napton and Greathouse 1996; Ross and Smith 2009; Silcock et al. 2012; Smith 1988; Smith and Clark 1993; Smith and Ross 2007). The paucity of radiocarbon ages is a major impediment to reconstructing a detailed picture of human occupation in this vast dune field. The remoteness and difficulty of access of much of this area necessarily means that accumulation of radiocarbon data is a piecemeal process rather than the outcome of systematic field survey. In this context, serendipitous finds continue to play an important role.

Table 1. Consolidated list of all radiocarbon dates currently available for the Simpson Desert. Dated material was charcoal from hearths, except in the case of Therreyererte where detrital wood charcoal from an archaeological deposit was dated. $\delta^{13}\text{C}$ values are not reported for these samples.

Site	Lab. No.	Context	Sample Type	Conventional ^{14}C Age (years BP)	Reference
Marapadi	ANU-7683	<i>mikiri</i> hearth	charcoal	2710±130	Smith and Clark 1993
Palkura	ANU-7684	<i>mikiri</i> hearth	charcoal	200±80	Smith and Clark 1993
Kuncherinna	ANU-7520	hearth on dune flank	charcoal	1250±160	Smith and Clark 1993
Kuncherinna	ANU-7521	hearth on dune flank	charcoal	1000±70	Smith and Clark 1993
Oolgawa WH	ANU-2838	hearth on dune flank	charcoal	1900±200	Smith and Clark 1993
Oolgawa WH	ANU-2836	hearth on dune flank	charcoal	2220±100	Smith and Clark 1993
Oolgawa WH	ANU-2837	hearth on dune flank	charcoal	2840±80	Smith and Clark 1993
Therreyererte	SUA-2520	occupation deposit	charcoal	400±50	Smith 1988
Therreyererte	SUA-2519	occupation deposit	charcoal	1830±110	Smith 1988
Atnetye	Wk-30216	occupation deposit	charcoal	202±25	Smith 2010
Simpson Desert 275	GX-14608	buried hearth	charcoal	1260±170	Napton and Greathouse 1996
Simpson Desert 275	GX-14607	buried hearth	charcoal	275±70	Napton and Greathouse 1996

In 2018, an Australian Desert Expeditions camel team exiting the dune field encountered a ‘lost’ *mikiri* about 100km southwest of Birdsville, deep in the dune field 40km west of Eyre Creek (Figures 1–2). This *mikiri* seems to have slipped from memory before Lindsay, Strehlow, Reuther, Tindale or Hercus made their records (see also Macfarlane 2010). In 2019, large floods along Eyre Creek and the Diamantina River interfered with the logistics of further scientific surveys by Australian Desert Expeditions in the dune field. This made it necessary to re-route several planned transects. At short notice, one of the redirected camel strings provided the opportunity for an archaeological team to record this lost *mikiri* (in June 2019), under the direction of DR – a senior Wangkankuru man.

Description of the ‘Lost’ *mikiri*

The dominant feature of this site is a stand of large Corkwoods (*Hakea eyreana*) in a grove extending for 100m along the western side of a swale. Corkwoods are associated with many of the known *mikiri*. In this open landscape this band of tall mature trees is highly unusual and is visible for some distance. Inter-dune swales more commonly support single-age groves of Gidgee (*Acacia georgina*) (up to 3–4m height) interspersed with claypans and areas of slope-wash. Altogether there are 26 large mature Corkwood trees at this site, which have a mean height of 6.58m (±0.71) with circumferences at chest height and canopy widths of 1.29m (±0.23) and 7.11m (±1.37) respectively. The size and persistence of these trees – which must be several hundred years old – indicates the presence of a pocket of local groundwater into which these trees have got their roots. On the margins of this zone, several other Corkwoods have seeded but then died because of the arid conditions. The presence of three recently dead red kangaroos (*Megalia rufus*) in this grove reflects the mobility of this species and its ability to disperse widely in search of forage. No actual well depression survives at this *mikiri*, although there are several depressions that may represent an old silted

up well. This Corkwood grove is also notable for the presence of shrubs such as *Acacia victoriae* (a species widely used for its hard, edible seed), *Senna artemisioides filifolia* (known to host edible grubs in its roots), *Enchlyaena tomentosa* (known to have fleshy, edible fruits) and *Eremophila longifolia* (a plant known for its ritual importance in Central Australia (Latz 1995:176-177)).

The main archaeological remains are on a sandy bench (100m x 50m) immediately to the west of the Corkwoods. This relatively dense archaeological unit is a surface veneer above clean laminated sand. In this area chipped stone artefacts are abundant (10 lithics/m²) and heavily reduced – with most flakes <10mm and most cores <10g. Amorphous retouched artefacts are common but there are few formal flaked tools, other than two unworn semi-discoidal adzes in one location. Worn tula slugs – one of the most common artefacts in desert assemblages – are rare or absent at this site. No red ochre was found.

There is no local stone in this sector of the dune field so all stone must have been imported from some distance. The lithology of the flaked artefacts is varied and includes raw materials at the site from a variety of sources. The most common raw material is desert chalcedony – apparently from a worked outcrop 100km to the northwest near Eyre Creek – and a fine-grained grey/yellow silcrete, possibly from a gibber source just east of Eyre Creek, a minimum of 50km away. Highly glossed – but unworked – pieces of brightly coloured red or yellow stone (5–20mm long) are common at this site. These sometimes occur in piles, and are most likely gizzard stones from a bird (see Cane 1982).

Fragments of grindstones <10cm (mainly fragments of millstones and topstones with occasional pieces of mortars) are abundant. All are broken. A range of indeterminate lithologies are present. Some are of the medium-grained pale sandstone characteristic of the famous Palthirri-pirdi quarry on Anna Creek in Arabana country on the western side of Lake Eyre (Hercus 2005).



Figure 1. Map showing location of dated sites in the Simpson dune field. (1) Atneye-Mt Knuckey, (2) Therreyererte, (3) Simpson Desert 275 and 276, (4) Oolgawa WH, (5) Marapadi, (6) Palkura, (7) Kuncherinna, and (8) The 'lost' *mikiri*.

A single flake from a ground edge axe was noted but local evidence for the presence of these artefacts on the sandy bench is minimal. However, an intact 'greenstone' axe, of the dark igneous stone from the Mt Isa-Cloncurry axe quarries, was found on the flank of the dune to the west of the main site. Like other stone axes found in the dune field this axe had suffered major damage to the ground edge, which had been repaired by flaking as there is no local stone for regrinding the bevel.

Bleached and heavily fragmented animal bone is ubiquitous on the main site. Burnt bone is present but rare. Identifiable elements were rarely preserved and we found only two very fragmented mandibles. One is a right dentary fragment of *Bettongia* sp. (cf. *lesueur*) on the basis of m1–m3 and the alveoli of m4. The other is a dentary fragment (possibly RHS) of *Dasyurus geoffroii*, with roots of m2 and m3. The bettong is no surprise, as there appears to be an old warren system made up of low mounds of calcrete, to the south of this *mikiri*. The presence of the western quoll is unusual as there are relatively few records of this species in the Simpson dune field. Intact and relatively unabraded dentaries of agamid lizards, and mandibles of rabbits, form a modern surface float both among the grove of Corkwoods and on the archaeological surface.

Apart from this, there was an unexpected amount of burnt bird eggshell and fragments of freshwater mussel shell. The former is from a medium-sized bird presumably bush turkey (Australian Bustard) (*Ardeotis australis*) as the tracks of this bird were often noted during transects of the dune field. There was also at least one piece of emu eggshell (*Dromaius novaehollandia*) though this eggshell was rare at this site. The mussels are *Velesunio* sp. The quantity of mussel shell suggests that these were food items, which is not unlikely as Eyre Creek is only 40km (one day's walk) away. Alternatively, they may have been brought in as tools (though no use-wear was observed) or as containers (though we did not detect any traces of pituri or ochre on any of the pieces). Samples of burnt bustard eggshell and of *Velesunio* sp. shell, were collected for radiocarbon assay, and gave almost identical ages (ANU-20936 and ANU-20937) (Table 2) indicating that the latest phase of occupation at this *mikiri* was around 600 years ago (534–634 and 547–644 cal BP). Survey with a metal detector confirmed that there were no European items on this site.

We noted several features in the vicinity of the Corkwoods, though none survived on the bench itself:

1. A claypan dam. This is a linear feature, now no more than an earthen bank 10–15cm-high, 20cm-wide, and 4m-long. This bisects a claypan, intersecting surface flow on a pan with a gentle slope.
2. A human burial is present within 100m of the main occupation surface. This is a young adult, buried in a supine position, with head to the south.
3. We also noted an isolated hearth at the base of a neighbouring sand ridge 500m east of the site. This was a large patch of charcoal (60cm x 40cm) on a low residual of indurated sand, with finely cominuted charcoal and burnt bone.



Figure 2. Australian Desert Expeditions camel string, June 2019, Simpson dune field (Photograph: M.A. Smith).

The Surrounding Debris Field

The paucity of artefacts in the dune field contrasted with their abundance in the vicinity of the *mikiri* (Figure 3). The Australian Desert Expeditions camel transects allowed ~14km² to be searched in a large arc of dune field surrounding the *mikiri*.

At >5km from the *mikiri*, there is a low background density of stone artefacts (<1/200m²). These were mostly small heavily reduced artefacts of grey/yellow silcrete or of desert chalcedony.

At <5km from the *mikiri*, we found many more stone artefacts (~1/50–100m²) in an arc of debris mostly in the same dune swale north of the *mikiri* and with lower densities to the southwest and east (Figure 3). This scatter of debris included another ground-edge axe, with its edge repaired by flaking, as well as large fragments of millstones, complete mullers and other topstones, and several mortars on quartzite blocks. The artefacts north of the *mikiri* include many pieces of broken grinding base plates, much larger than the fragments surviving on the *mikiri*. Many of the grindstones were either intact mullers or pieces of broken millstones that had been recycled as base plates in their own right. Most were of the distinctive pale Anna Creek sandstone. In all cases, the original blanks had been extensively hammer-dressed.

To the east of the *mikiri*, in the next swale, we found a discrete scatter of much larger lithics than was usual in this dune field, or at the *mikiri* itself. These included silcrete flakes up to 4cm long and a relatively large platform core ~400g. Apart from this there was relatively little material to the east of the *mikiri*.

Table 2. Radiocarbon ages in this study. Calibrated age spans are reported at 95.4% probability using the southern hemisphere calibration curve (Hogg et al. 2013) and CALIB REV7.1.0 (Stuiver and Reimer 1993). An AMS derived $\delta^{13}\text{C}$ was used by the ANU radiocarbon laboratory to calculate the age estimates.

Lab. No.	Context	Sample Type	Conventional ^{14}C Age (years BP)	Calibrated Age BP 95.4% (probabilities)
ANU-20936	<i>mikiri</i> occupation deposit	<i>Velesunio</i> sp.	622±25	534-634
ANU-20937	<i>mikiri</i> occupation deposit	eggshell (possibly <i>Ardeotis australis</i>)	644±23	547-644
ANU-63309	hearth on dune flank (IM-1)	charcoal	1253±27	1028-1259



Figure 3. Distribution of stone artefacts (lithics, grindstones and ground-edge artefacts (pink dots) in this part of the Simpson dune field showing a concentration of artefacts around the *mikiri* (blue dot) and a scatter of artefacts in a corridor to the north. Scale: width of this image is ~15km.

Dated Hearth

We found a more ancient hearth (IM-1) 7–10km southwest of the *mikiri*. This was on a low residual in indurated clayey and calcareous dune sand on the lower flank of a sand ridge, where it was exposed by sheet wash and local erosion.

IM-1 was a diffuse oval feature 40cm x 30cm with abundant finely comminuted charcoal and many larger pieces of charcoal. Sampling showed it was some 10cm deep and possibly plano-convex, though the pace of travel with the camel teams did not allow more detailed investigation of its structure. No micro-fragments of any

cultural material were present (such as baked clay, shell, burnt bone, fine stone chips) but the absence of detrital charcoal in this landscape made it an unusual find. Downslope, on the eroded area, there was a localised scatter of lithics, mostly of fine-grained grey/yellow silcrete, including two tula adze slugs. The apparent association with these lithics suggested that this hearth was a late Holocene feature, but its stratigraphic context indicated somewhat greater antiquity than the majority of material at the *mikiri*, or elsewhere in the transect. Radiocarbon assay of the hearth (ANU-63309) gave an age of 1253 BP (1028-1259 cal BP) (Table 2).

Discussion

Our evidence indicates that the last use of this ‘lost’ *mikiri* dates around 600 years ago, well before the colonial period, and somewhat earlier than the last phase of occupation at the known *mikiri*. At this *mikiri*, the surviving traces of occupation are more weathered compared with those at other *mikiri*, with highly reduced and fragmented artefacts, poor preservation of surviving bone fragments, few intact features such as hearths, no surviving wooden implements or huts, and no clear well depression.

There is also no memory of its name or (as far as we are aware) an associated mythology. Despite its proximity to Eyre Creek, there are no pieces of metal artefacts. This is a *mikiri* that was abandoned well before the 1870s. Although such a prominent copse of large trees must have some place in a contemporary totemic landscape we could detect no evidence of recent Wangkangurru visits to the site. Whatever the case, our radiocarbon ages support the interpretation that this is a fully pre-European site and that the well has not been used for some 600 years. This *mikiri* seems to have slipped from memory before Lindsay, Strehlow, Reuther, Tindale or Hercus made their records.

Our investigation of the surrounding landscape suggest that the major seed stands and seed-grinding areas were along the swale just to the north of the *mikiri*. This proposition is corroborated by the relative abundance of grasses in this locale (including *Eragrostis* spp.).

The pattern of debris in the dune field, and the prevalence of desert chalcedony amongst the lithics, also suggests that people primarily accessed this *mikiri* from the north. This supports a pattern of movement in which people travelled from other *mikiri* – such as Yalkiri and Puramana – that are within a couple of days walk to the north. The discard of relatively large artefacts, in one locality east of this *mikiri*, also suggests that its inhabitants occasionally travelled due east directly to Eyre Creek where they could replenish their supply of silcrete.

The wide range of lithologies – particularly Anna Creek sandstone and Mt Isa-Cloncurry volcanics – testifies to the long-distance exchange links of people in the dune field, whether or not they acquired these materials by down-the-line exchange or by trade or direct procurement.

Although it is not certain as to why this desert well was abandoned, we speculate that a falling water-table after 600 BP placed local ground-water at a depth beyond the reach of a narrow well shaft. The presence of single-age stands of Gidgee and Corkwood (both possibly several centuries old, with no recent recruitment of saplings) suggests some decline in local rainfall around this time. If this did occur it would have changed the extent to which the local aquifer was replenished. This was clearly only a local impact – and

not a widespread general decline in desert groundwater in the dune field – as other *mikiri* wells continued to be viable and were occupied into the contact period. The presence of an earth dam at this *mikiri* might point to attempts to extend the availability of water at this site even as the well failed.

A summed probability plot of all available radiocarbon dates (n=15) for the Simpson dune field (Figure 4) shows that occupation of this *mikiri* occurred during a widespread increase in use of the dune field during the last millennium, at about the time the people in the dune field were becoming linguistically distinct from the Arabana to the west (Hercus 1994). ANU-63309 (1028-1259 cal BP) indicates that people were visiting this locality around 1200 years ago. However, several dates also show there was some use of the dune field, its *mikiri*, and the western margins of the dune field closer to the flood-out of the Finke River, as early as 2000–3000 BP (Table 1), well before classic Wangkangurru occupation of this region took shape. At present there are too few data to indicate the nature of this earlier use, although localities with *mikiri* were sometimes targets for these visits. We could reasonably expect to find evidence of earlier use of this arid dune field region during the wetter climate of the early Holocene 6–10 ka (Hesse et al. 2004), and we expect that current data incorporate a strong taphonomic signal, as these landscapes are too active geomorphically to make the search for earlier sites a straightforward task. For example, we note that there are few exposures of the older consolidated sediments that make up dune-cores in the Simpson dune field.

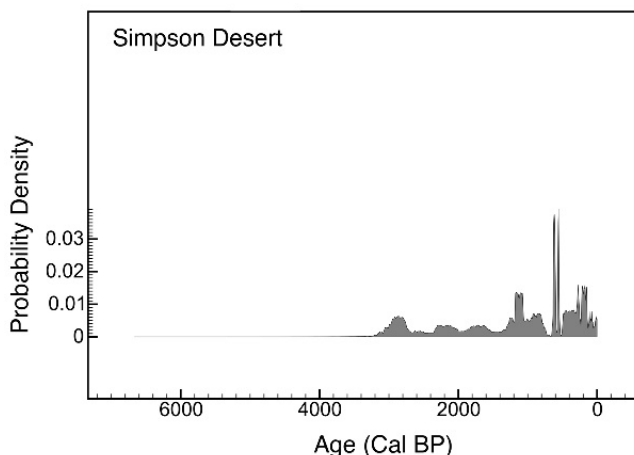


Figure 4. Summed probability plot of ^{14}C age frequencies for the Simpson Desert (n=15 radiocarbon ages). Occupation of the ‘lost’ *mikiri* coincides with an apparent peak in occupation of the dune field during the last millennium.

Conclusion

Whenever use of this 'lost' *mikiri* was initiated, it seems likely that failure of the well after 600 BP led to its abandonment several centuries before the impact of European activities in the Eyre Creek area on the margin of the dune field. The story of this *mikiri* adds to the sparse corpus of archaeological data about the human history of the vast Simpson dune field.

Acknowledgements

Our title is a reference to the desert classic by Ahmed Hassanein Bey, *The Lost Oases* (1925), a book that deals with a forgotten oasis, and its archaeology, in the Saharan dune field, west of the River Nile. This was also finally relocated during a long camel trip. Our work was undertaken as part of a program of scientific and ecological surveys by Australian Desert Expeditions. The authors thank Andrew Harper for the opportunity to walk the dune field with his camel strings. Radiocarbon dates were supported by the Australian National University and DW. No other funding was involved in this work. We thank our travelling companions who assisted in transect recording, and our calm, unflappable cameleers – Daniela Bradley, Ann Hamilton and Sam Pincott. MAS, IM, DW and MT also thank Don Rowlands for his encouragement of this venture and his deep interest in the history and geography of the dune field. We thank Alex Baynes for expert identification of the two mandibles, Alan Williams for assistance with Figure 4, and Nicholas Skopa for constructing the artefact plots shown in Figure 3.

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