

A new assessment of site WK0013A of Xapeta'a (Lapita), New Caledonia

Christophe Sand, Stéphanie Domergue, Louis Lagarde, Jacques Bole, André-John Ouetcho and David Baret

Abstract

The eponymous 'Site 13' of Lapita on the west coast of New Caledonia's Grande Terre has a unique historical importance in the study of the Lapita Cultural Complex, being the first archaeological locality where dentate-stamped sherds were dated. It has also shown its richness, especially with the discovery of a series of complete pots, burial pits and preserved habitation features in the original sandy matrix. This chapter first summarises the different phases of archaeological study that have been undertaken at the site over the past century, highlighting the major damage that has occurred over the past decades. Second it presents a set of new archaeological data retrieved in early 2015, during the first phase of a cultural resource management project associated with road construction that risks leading to the destruction of a portion of the original Lapita occupation. A better understanding of the overall stratigraphic diversity of the site, as well as the presentation of a new set of radiocarbon dates and the main archaeological remains recovered, will highlight the spatial complexity of locality WK0013A and begin to provide a context for the large-scale excavations that may be conducted at the site in the near future.

Introduction

Despite their potential for spatial analysis identified for some decades, the Lapita sites of Near and Remote Oceania, and more widely the prehistoric and traditional sites of the Pacific region, have seldom been excavated with a focus on opening large areas (Kirch 1997; Spriggs 1997). Most sites have not seen the excavation of more than a few tens of square metres at best, often in a series of small, unconnected plots distributed on sites that cover thousands of square metres (Burley et al. 2001; Clark and Anderson 2009; Kirch 2001; Sand 2010; Summerhayes 2000). Our understanding of the diversity of spatial patterning, of the possible subtle differences in chronological extension of village settlement spread and of changes in use, remain basic at best (see Ravn et al. 2016 for a rare example of large-scale excavations, with nearly 500 square metres opened contiguously). In Europe, Asia and the Americas, it is mainly the development of large cultural resource management (CRM) projects that has allowed archaeologists over the last half-century to deploy adequate finances, large teams and the heavy equipment needed to take on very extensive excavations. This is unfortunately not yet the case in most parts of the Pacific, as large development projects are often completed without any significant archaeological impact study (see Richards et al. 2016 for an exception) except in American-controlled territories.

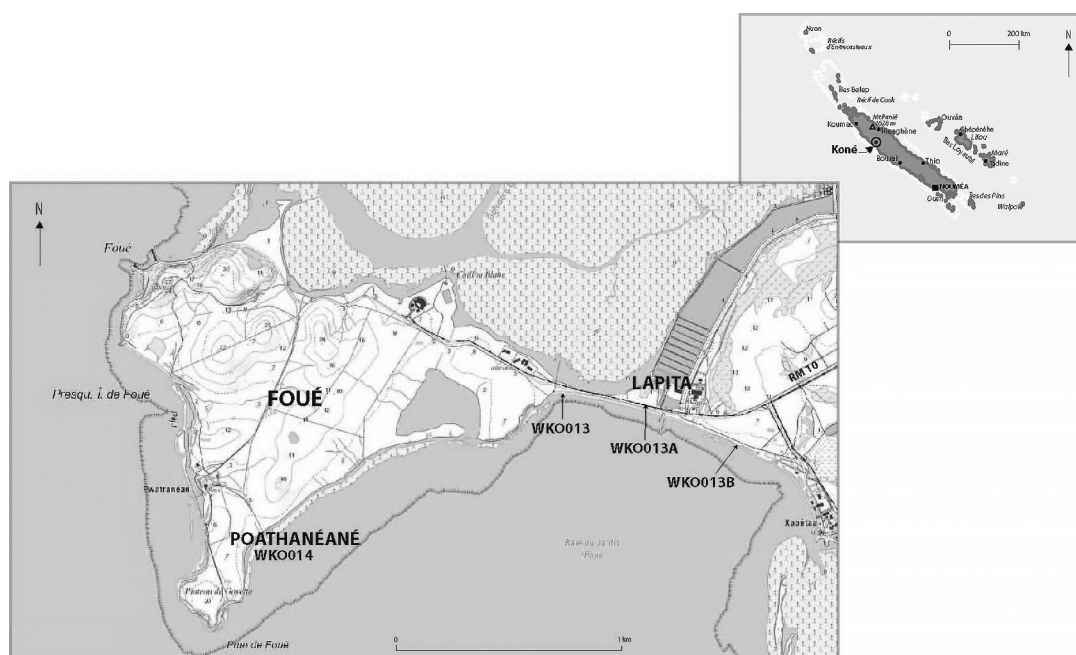


Figure 10.1. General map of the Foué area, positioning the different localities of the site of Lapita.

Source: Authors' illustration.

The New Caledonia archipelago stands out in the Melanesian region as a rare recent case in the development of CRM studies, with the excavation in some cases of thousands of square metres as part of impact studies before development (Sand et al. 2013). This paper presents the main results of a CRM archaeological excavation project undertaken in the early part of 2015 by the Institute of Archaeology of New Caledonia and the Pacific (IANCP) on the Foué peninsula, in the north-western part of mainland New Caledonia (Lagarde et al. 2015; Sand et al. 2015). This isthmus hosts the famous archaeological locality known as WKO013A or simply 'Lapita' (Figure 10.1). It was at this location in 1952 that an expedition led by Edward Winslow Gifford and Richard Shutler Jr first dated the age of the dentate-stamped ceramic tradition that is today identified as the iconic signature of the early Oceanic spread across Remote Oceania around 3000 years ago (Sand 2010) and coined the emblematic name (Sand and Kirch 2002). The 2015 excavation at locality WKO013A was part of an archaeological impact assessment in relation to a major extension of the seashore road leading from Koné town to the Foué peninsula and literally running over the site.¹ A first general understanding of the diversity of the stratigraphic layering was obtained in 1994 (Sand 1996a), but there have been multiple disturbances and landscape modifications at the site since that period. These necessitated an evaluation of the present state of the site in the zone of the planned seashore road in preparation for large-scale excavations of the impacted area. Mechanical excavation methods were used in conjunction with manual excavation to open a series of trenches, highlighting diversity in chronology, spatial occupation and material culture between sub-areas.

¹ The excavation was undertaken at the request of the City Council of Koné and of the Direction of Culture of New Caledonia's Northern Province.

The first part of this paper will summarise the history of archaeological research on 'Site 13' over the last century, especially to highlight the major impacts witnessed during the last 20 years, before focusing on the 2015 excavation results. After a brief introduction to the excavation methods, we detail the stratigraphic information recovered and a new set of radiocarbon dates obtained. The paper will then turn to the presentation of the main information recovered from the study of the ceramics, lithic artefacts, shell ornaments and faunal data recovered in early 2015. We discuss the identifiable links and differences observable with the archaeological data recorded during the 1994 excavations in the same area, as part of an effort to understand the changes that locality WKO013A has witnessed over the last two decades and what this can reveal about the impacts on archaeological deposits.

A brief history of archaeological research at the site of Lapita

The Kanak clans of the seashore area of the Koné river estuary occupied the Foué isthmus in the centuries before the European discovery of New Caledonia at the end of the eighteenth century, living in houses built on rounded house-mounds and cultivating tubers in alignments of long, raised planting mounds located between the beach and the mangroves. The name of the place in the Haveke language was *Xapeta'a*, which translates to 'the place where you dig, where you make holes' (Sand 2010). It was on the eroding talus slope of the Haapetra beach that in 1911 ethnographer Fritz Sarasin noticed the presence of unique-looking, dentate-stamped potsherds among a dense layer of shells used in a nearby lime oven (Sarasin 1917:122–123). A decade later, geologist M. Piroutet highlighted the uniqueness of the stratigraphic characteristics of the Foué beach and the distinctiveness of the ceramic decorations that he compared to the *roulette* used in the Etruscan *bucchero nero* (Piroutet 1917:260–261). The local amateur archaeologists of the post–World War II period were all aware of the existence of this site (see Avias 1950), and it was no surprise that during their archaeological expedition to New Caledonia in 1952, Gifford and Shutler visited the locality during their first survey of New Caledonia's Grande Terre, giving it the site number 13. Their excavation of about 3 m² at the coastal talus—locality 13—and of 13 m² on the back beach—locality 13A—led to the recording of an initial set of stratigraphic profiles, highlighting the existence of an in situ deposit in part of the back beach. The submitting of charcoal samples for radiocarbon dating from locality 13 provided for the first time the dating of the occupation of the site well into the third millennium BP (Gifford and Shutler 1956:89). In his diary for the date of 2 August 1952, Gifford wrote that 'the name of this site was Lapita' (Sand and Kirch 2002:146).

In the following decade, Shutler returned to Foué, excavating at locality 13C and uncovering a burial (see Valentin and Sand 2000:17–26). Other discoveries were made in the 1970s by Frimigacci (1975) who recorded the general profile of the beach front, while Coudray and Delibrias used shells to date the beach-rock underlying the Lapita layer to about 3300 BP (Coudray and Delibrias 1972). Due to its rising cultural significance, Lapita was registered as a protected cultural heritage site under New Caledonian law. In the mid-1980s, a more detailed set of stratigraphic profiles was recorded by Galipaud along the 850 m length of the Foué beach (Galipaud 1988), identifying a diversity of deposits depending on the location. A new burial was excavated at locality WKO013B (Dédane and Kasarherou 1988; Pietruszewsky et al. 1998). In the early 1990s, the creation of the local Department of Archaeology allowed many more visits to the site, leading to the discovery of a nearly complete Lapita pot at WKO013B and prompting an excavation of 3 m² in this locality (Sand 1996a:23–24, 1998, 2010:82–84). More importantly, the main locality of WKO013A excavated by Gifford and Shutler was relocated, a test pit excavation showing the existence of a well-preserved and rich in situ layer of Lapita age.

In 1994, the Kanak features (house-mounds and horticultural mounds) of locality WKO013A were mapped and 11 test pits of 1 m² each were excavated randomly across the 20 000 m² area of the Lapita settlement. Recording of the stratigraphy highlighted a significant diversity of preserved deposits, ranging from thick in situ layers to faint horizons of Lapita age in some test pits. The set of ¹⁴C dates that was obtained showed the occupation of the isthmus starting c. 3000 cal. BP and ending c. 2700 cal. BP, with little apparent reoccupation until the last 1000 years (see Sand 1998, 2010:84–88).

The preservation of the iconic Lapita site, comprising well-preserved layers, was largely unchallenged up to the middle of the 1990s. Unfortunately, the next decade was to be catastrophic for the site's integrity. In October 1995, the surface layers of a portion of locality WKO013A were removed by bulldozers for the construction of a nearby prawn farm. In the eastern part of the locality, over 4000 m² of a compact shell layer—filled with potsherds, stone artefacts and bone remains—was unearthed. A large pool was dug in this shell stratum, to reach a clay layer below. An archaeological rescue operation allowed recovery of an unprecedented number of decorated potsherds from this area (Sand 1996b), although at the same time the site was also subject to scavenging. It was during this time that a survey on the seashore led to the discovery of a large pit filled with Lapita vessels, comprising both whole and large pieces of pots, which led to the first excavation of complete Lapita pots in the Pacific (Sand et al. 1998). At the insistence of the local archaeologists, clay extraction was terminated and the shell fill of Lapita age was covered by a layer of soil, to prevent further looting. Unfortunately, in March 1996, New Caledonia experienced the destructive effects of Cyclone Beti, the heavy rain filling the prawn ponds. The massive amount of clay sediments that had filled the ponds was dumped on the isthmus of locality WKO013A, leading to the percolation of saturated salty waters and acidic particles into the stratigraphy of the former Lapita settlement for the next six months. These sediments were ultimately pushed by bulldozers to the side of the isthmus into the mangrove area only in early September 1996, to facilitate the start of a large-scale excavation at the site. The excavation was located in the centre of locality WKO013A, comprising a set of six 3 by 3 m squares separated by 1-m-wide walls, a total area of 54 m². Although only a relatively small overall surface area of the site was examined, the stratigraphy showed massive differences, in part due to the severe mixing associated with late Kanak horticultural practices in all the areas where there was no significant density of shell. The new ¹⁴C dates confirmed the chronology detailed previously and the sherds showed a large diversity in motif patterns (Chiu 2003). The areal excavation also allowed identification of a possible long building with rounded ends (Sand 2010: Figure 141).

In 1998, after another cyclone, part of the site was used again as a dumping area for unwanted fill. This was in the end simply spread across the site surface, adding a new layer of clay onto the stratigraphy. In the early 2000s, a ditch was dug at the edge of the dirt road to bury electrical cables and water pipes, without an archaeological impact study. This was followed by the grading and filling of the dirt road, with bulldozers and heavy trucks driving on the Lapita site and stocking material on the surface during a period of regular rain. This led to sediment mixing in the areas where the large truck wheels got stuck in the clay matrix. In the meantime, the improvement of the dirt road quality allowed for its use by larger trucks and more cars, multiplying on a daily basis the vibrations in the soil. Large loads of stone blocks were placed on the talus slope edge to prevent ongoing marine erosion, damaging what remained of the in situ Lapita layer in the seashore profile. However, despite this relentless damage, the Lapita site still has much archaeological potential. During the last decade alone, local archaeologists have discovered two other complete Lapita pots (Sand et al. 2003, 2004) and a pit enclosing at least four partly complete human skeletons dated to c. 2950–2800 cal. BP (Beta-179504 and 179505) (Sand 2010:209–210).

New excavations at locality WK0013A of Lapita

CRM excavation methods employed in the 2015 field season

The multiple disturbances that the Lapita site of locality WK0013A has experienced over the past 20 years meant we could not rely on stratigraphic data collected in 1994 and 1996 to get a precise picture of the preservation of the site in 2015. We decided to use two associated excavation methods for the first part of a wider CRM project, which should ultimately lead to the excavation of the whole section of the coastal strip impacted by new road construction. A total of 55 trenches were opened over a four-week period using a mechanical backhoe, allowing us to open pits generally about 5 m long and 1.5 m wide on an east–west axis, covering a total surface of 550 m² (Figure 10.2). In 38 of the trenches, excavation was carried out by digger down to the sterile substratum (Figure 10.3), as cultural deposits in these zones were ephemeral or very mixed. Mechanical excavation of the 17 remaining trenches was stopped beneath the upper layer of humic soil, at the point where the first sign of archaeological evidence was noticed. In these trenches, 1 m² test pits were manually excavated by artificial 10 cm deep spits, within recognised stratigraphic layers. The choice of placing test pits inside trenches allowed us to minimise impact on the site, as well as providing the possibility of evaluating the changes in archaeological material concentrations while maintaining only a brief excavation phase.

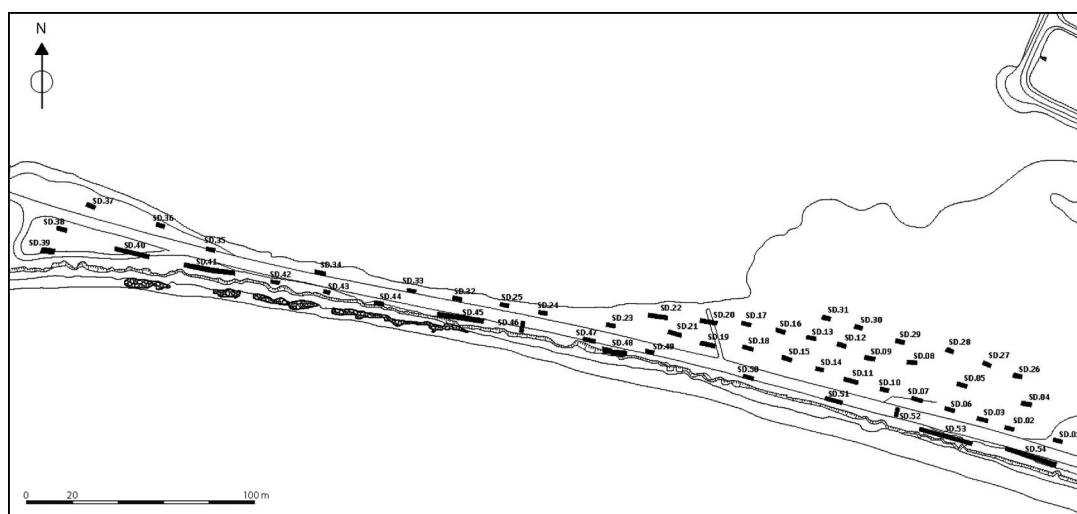


Figure 10.2. Position of the archaeological pits excavated in February 2015 at locality WK0013 and WK0013A.

Source: Authors' illustration.



Figure 10.3. The backhoe removing a thin layer of archaeological fill in square SD.14.

Source: Authors' photo.

Stratigraphic and chronological data

Log	Description
0	US.49.1 Mixed modern layer
18 cm	US.49.2 Black sandy horticultural layer
50 cm	US.49.3 Gray sandy Lapita layer
58 cm	US.49.4 Brown sandy sterile substratum
65 cm	
100 cm	

Figure 10.4. The general stratigraphy identified in the seashore area of locality WK0013A.

Source: Authors' illustration.

While a series of differences in the detail of fill and in the depth of the archaeological layers was noticed between the different parts of locality WK0013A excavated in 2015, the stratigraphy found in the trenches and test pits is generally quite continuous (Figure 10.4). The modern upper layer, which results mainly from the different recent transformations of the site detailed earlier, rests on a layer of dark, sandy-loamy soil. The thickness of this

stratigraphic layer varies significantly between trenches, ranging up from a minimum of 10 cm in depth (trenches SD.04, SD.34, SD.36, SD.46) to 45–50 cm (SD.24, SD.28, SD.32, SD.40). This layer contains the vast majority of the archaeological material uncovered during the excavation, in particular most of the Lapita potsherds. However, irregular positioning of the artefacts and the absence of any well-defined occupation surface highlight the disturbed nature of this layer. This upper layer is the remains of the traditional Kanak horticultural raised yam field structures that were still visible on the surface of the site two decades ago. Dated mainly to the last millennium BP, they showed evidence of intense crop cultivation, leading to regular soil mixing. Six charcoal samples from this mixed horticultural layer have been dated, with two groupings of results. The youngest date comes from SD.15, with a result of 645–585/575–540 cal. BP (Beta-412421), well in line with the general use of the yam fields during the period of the traditional Kanak Cultural Complex. All the others are the result of the mixing of older layers that have served as the soil matrix for the planting

fields. They calibrate at the end of the third millennium BP (Table 10.1), from 1890–1735 cal. BP (Beta-412415), 2300–2240/2180–2055 cal. BP (Beta-412416) and 2325–2150 cal. BP (Beta-412414) for SD.22 to 2005–1885 cal. BP (Beta-412418) for SD.20 (20 cm) and 2350–2305/2225–2210 cal. BP (Beta-412423) for SD.19 (US2). These dates clearly do not relate to the vast majority of the archaeological material uncovered in the layer, but the homogeneity of the second set of dates may indicate an initial use of the Lapita area as a planting ground about a half-millennium after the end of the Lapita settlement phase. The occasional Post-Lapita use of the seashore area had already been identified at the nearby locality of WK0013B (Sand 2010:82–84) and is demonstrated by the dating of an earth oven in SD.55 to 2695–2590/2535–2355 cal. BP (Beta-412420), an imprecise age due to the flattening of this part of the calibration curve.

Two different types of deposit were identified underneath the horticultural layer, depending upon location. The first is a light brown, archaeologically sterile sand, whose presence prompted the end of the excavation in the associated pits. In 25 of the 55 trenches, a thin, hardened grey cultural sandy sediment was identified, with thickness ranging from a mere 3 cm in SD.34 and SD.49, to as much as 20 cm in SD.40, resting on a sterile fill. This layer is what remains of the in situ Lapita and immediate Post-Lapita period deposit, preserving flat-lying artefacts and some structures, such as postholes in SD.08, SD.20, SD.38 and SD.54. The samples (one shell, two charcoal) dated from this layer show a general coherence, while not completely avoiding possible mixing/contamination in the interface between the grey and the dark sandy fill. The results are 2940–2770 cal. BP (Wk-43041) on a shell sample from SD.19 (US.3), 2880–2765 cal. BP (Beta-412422) for SD.40 (US.3) and 2735–2465 cal. BP (Beta-412417) for SD.19 (interface between US.2 and US.3). An in situ Lapita and immediate Post-Lapita horizon is, however, still present throughout the part of locality WK0013A studied in 2015, corresponding to the seashore area, although in numerous instances it has been heavily disturbed by later activity. These results will allow us to put in place the proper excavation strategy for the planned large-scale excavation of the site.

Table 10.1. New ^{14}C dates from site WK0013A issued after the 2015 CRM excavations.

Trench number	Layer	Number	Conventional radiocarbon age	Calibration at 2 sigma
SD.15	US.2/3	Beta-412421	640±30 BP	645–585/575–540 BP
SD.22	20–30 cm	Beta-412415	1920±30 BP	1890–1735 BP
SD.20	20 cm	Beta-412418	2030±30 BP	2005–1885 BP
SD.22	10–20 cm	Beta-412416	2190±30 BP	2300–2240/2180–2055 BP
SD.22	30–40 cm	Beta-412414	2250±30 BP	2325–2150 BP
SD.19	20–30 cm	Beta-412423	2330±30 BP	2350–2305/2225–2210 BP
SD.55	oven	Beta-412420	2470±30 BP	2695–2590/2535–2355 BP
SD.19	26 cm	Beta-412417	2540±30 BP	2735–2465 BP
SD.40	US.3	Beta-412422	2780±30 BP	2880–2765 BP
SD.19	US.3	Wk-43041	3083±20 BP	2940–2770 BP

Source: Authors' data.

Material culture

The 2015 excavations led to the recovery of a large collection of artefacts, although it must be stressed that only the sediments from the 1 m² test pits excavated by hand were dry-sieved with 3 mm mesh screens. The archaeological objects present in the pits excavated with a backhoe were only randomly collected, especially potsherds and shells. The largest amount of material by weight is composed of shell remains, followed by potsherds. The main characteristics of the different items are presented by type, starting with ceramics.

Ceramics

A total of 4429 potsherds were recorded in 2015 at locality WKO013A. About 80 per cent of these were collected in the reworked horticultural layer, 18 per cent came from the underlying grey in situ layer and only 2 per cent from surface collection or from the upper deposits. Significantly, the vast majority of the sherds are of small size, with a surface of less than 5 cm² for 70 per cent of the collection, 30 per cent of which were less than 2 cm². This high fragmentation is largely related to the characteristics of the main horticultural layer but can also be ascribed to the changes witnessed by the site over the past 20 years. Consequently, the sherds are often friable, with partial erosion of the outer surfaces for half of the collection and severe erosion for 22 per cent.

The typological study has identified a total of 1396 diagnostic sherds (about 30 per cent of the collection) bearing a morphological distinctiveness and/or decoration. Among these, 1234 sherds show the presence of decoration, 820 having Lapita-type dentate stamping, 154 with paddle impressions, 116 with incised motifs, 66 with non-dentate stamps and 26 with shell impressions. The dentate-stamped motif diversity of the 2015 collection was clearly less rich than has been recorded in previous excavations at locality WKO013A (Chiu 2003; and see Figure 10.5). Most of the motifs identified are friezes, mainly of simple zig-zag patterns, with a low proportion of more complex motifs (Figure 10.6). Only 5 per cent of the fairly small decorated sherds present clearly recognisable central motifs. These range from successions of triangles or squares to labyrinth and face motifs, the latter mostly of the stylised type, although some sherds clearly hold faces with earplugs. Among the best-preserved potsherds must be highlighted the rare presence of a carination with a three-dimensional anthropomorphic/zoomorphic figure with dentate-stamped decoration (Figure 10.7). On over 50 per cent of the decorated sherds the motif was not identified due to the small size of the sherds, which in most cases show only dotted parallel or crossed lines.

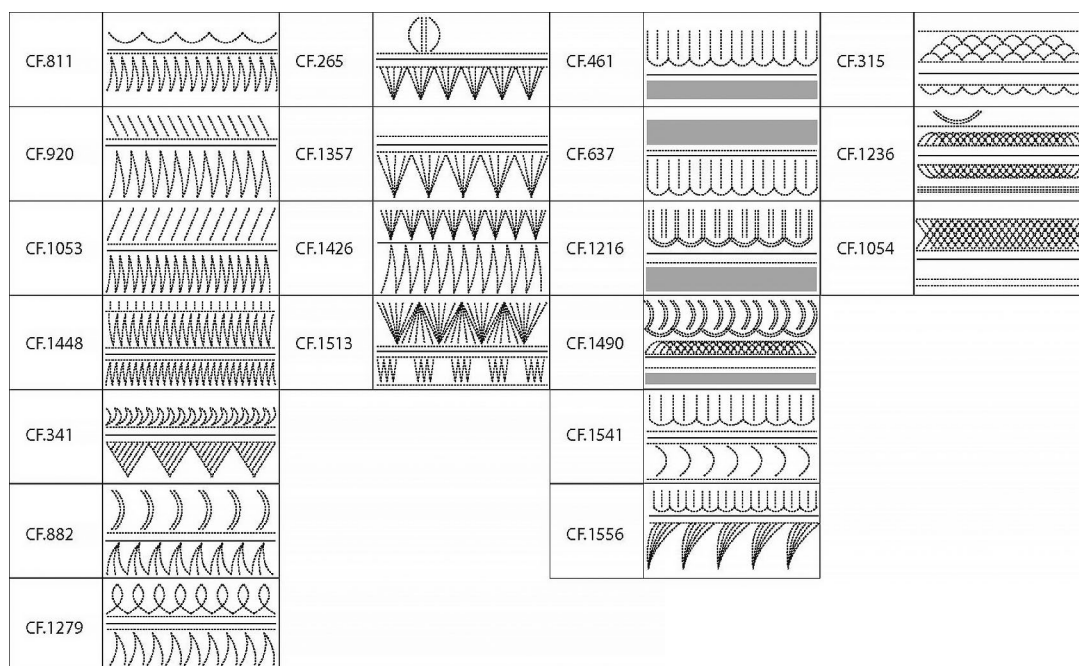


Figure 10.5. Motif diversity on carinations of Lapita ceramics recovered in 2015.

Source: Authors' illustration.

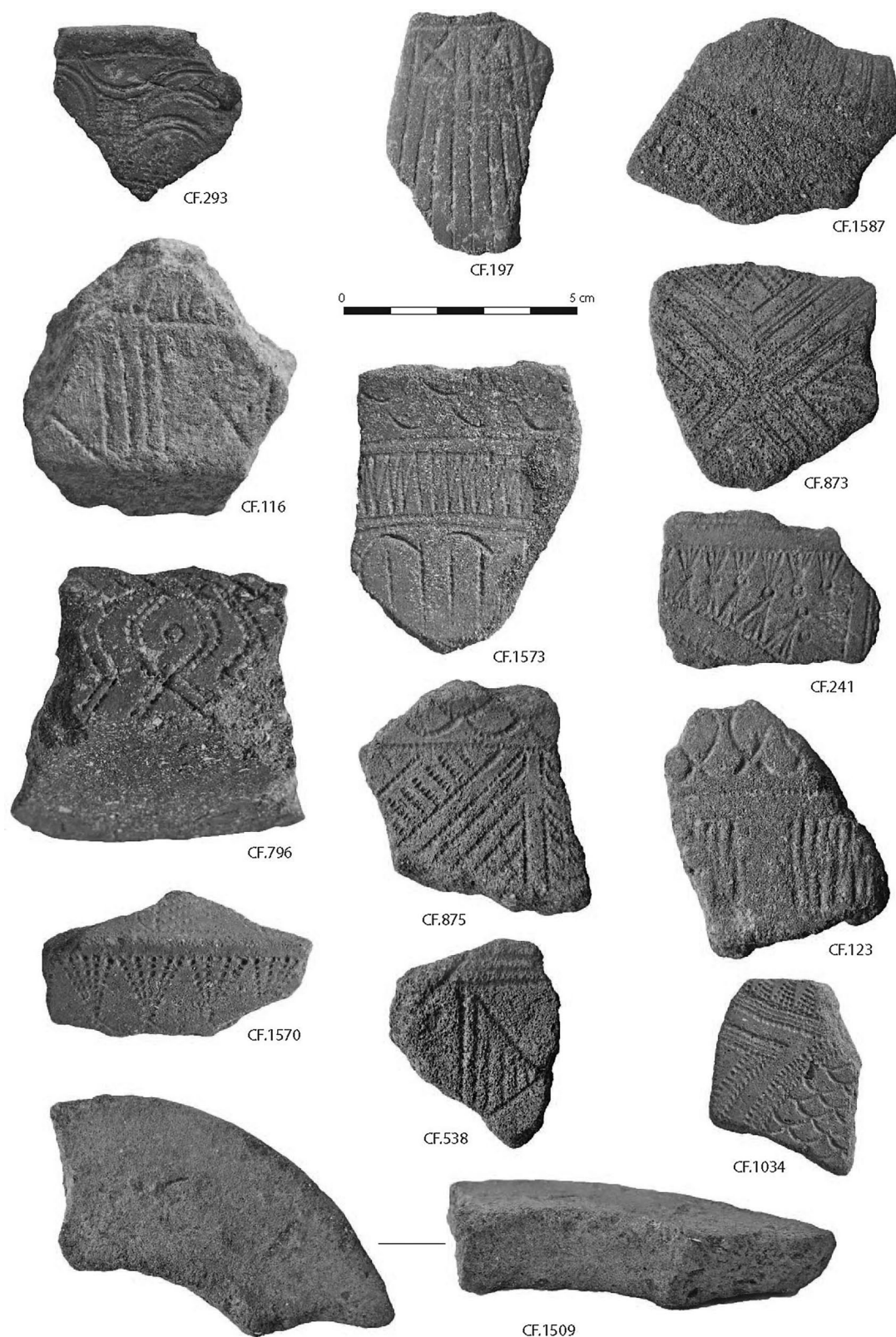


Figure 10.6. Set of Lapita decorated sherds from the 2015 excavation.

Source: Authors' illustration.



Figure 10.7. Three-dimensional Lapita ceramic item, with the form of an owl head.

Source: Authors' illustration.

The pot forms also appear to be of a fairly restricted typology. The main type is the carinated pot with an out-curved rim, with only two fragments of flat-bottomed dishes and one base of a pedestal stand having been identified. Unique sherd types have also been recorded, among them two possible handles and one large nubbin with dentate-stamped decoration. Four sherds with restricted outer diameters (between 40 mm and 60 mm), two of them decorated, have been defined as possible necks or as parts of small footed vessels (Figure 10.8).

The main rim profile is out-curved, mostly undecorated or with non-dentate impression on the lip, which is flat in 80 per cent of the collection (Figure 10.9). Interestingly, this type of lip decoration is usually present on incised pots, although only two sherds show a direct association with incised vessels. Incised sherds account for only 10 per cent of the non-diagnostic decorated sherds in the 2015 collection, and only nine out of the 183 carinated

sherds were incised. This low percentage of incised sherds allows us to conclude that most of the decorated rims are part of the otherwise non-decorated Lapita pot series, which account for nearly half of the corpus. About a third of the carinations are undecorated, confirming the significant amount of plain carinated pots for this site (see Sand 2010:107–109) and possibly highlighting chronological significance (see Spriggs and Bedford 2013 and David et al. 2013 for other regional cases). The dentate-stamped decorations are mostly present on carinated pots with an out-curved rim and a flat lip, although the motif repertoire is fairly restricted and mostly in the form of triangles and zigzags. Only the straight rims, mainly characterised by a flat lip, bear more complex motifs and successions of friezes, but they were unfortunately difficult to recognise.

All the characteristics identified in the ceramic corpus of the 2015 excavation suggest mainly Late Lapita typological forms, with a restricted range of pot profiles and decorative motifs. These data fit well with the pool of ^{14}C dates obtained for the Lapita layer. The conclusion is that we can start distinguishing discrete chronological differences between the areas of locality WKO013A occupied during Lapita and immediate Post-Lapita times, with an early settlement phase at the back of the flatland between 3000–2800 cal. BP, and a later beginning for occupation towards the active beach in the following century.

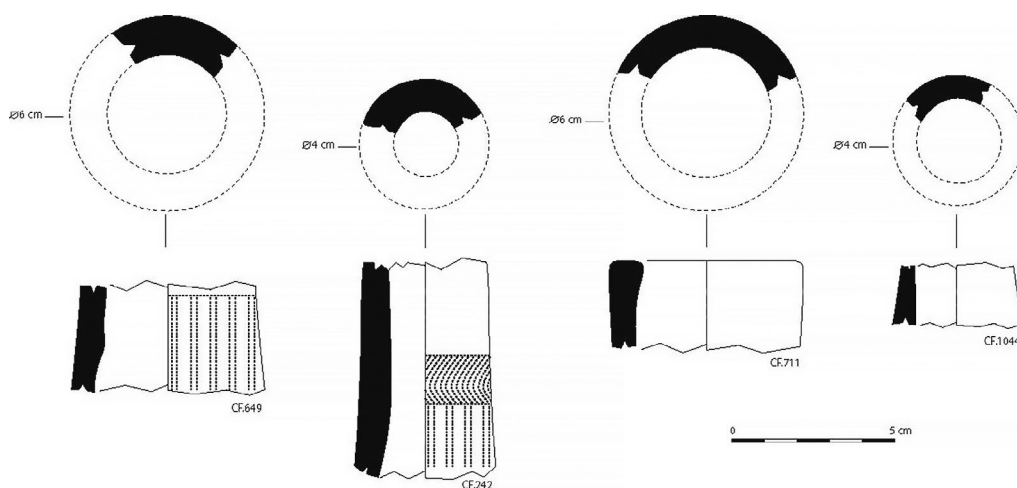


Figure 10.8. Narrow necks of Lapita vessels.

Source: Authors' illustration.

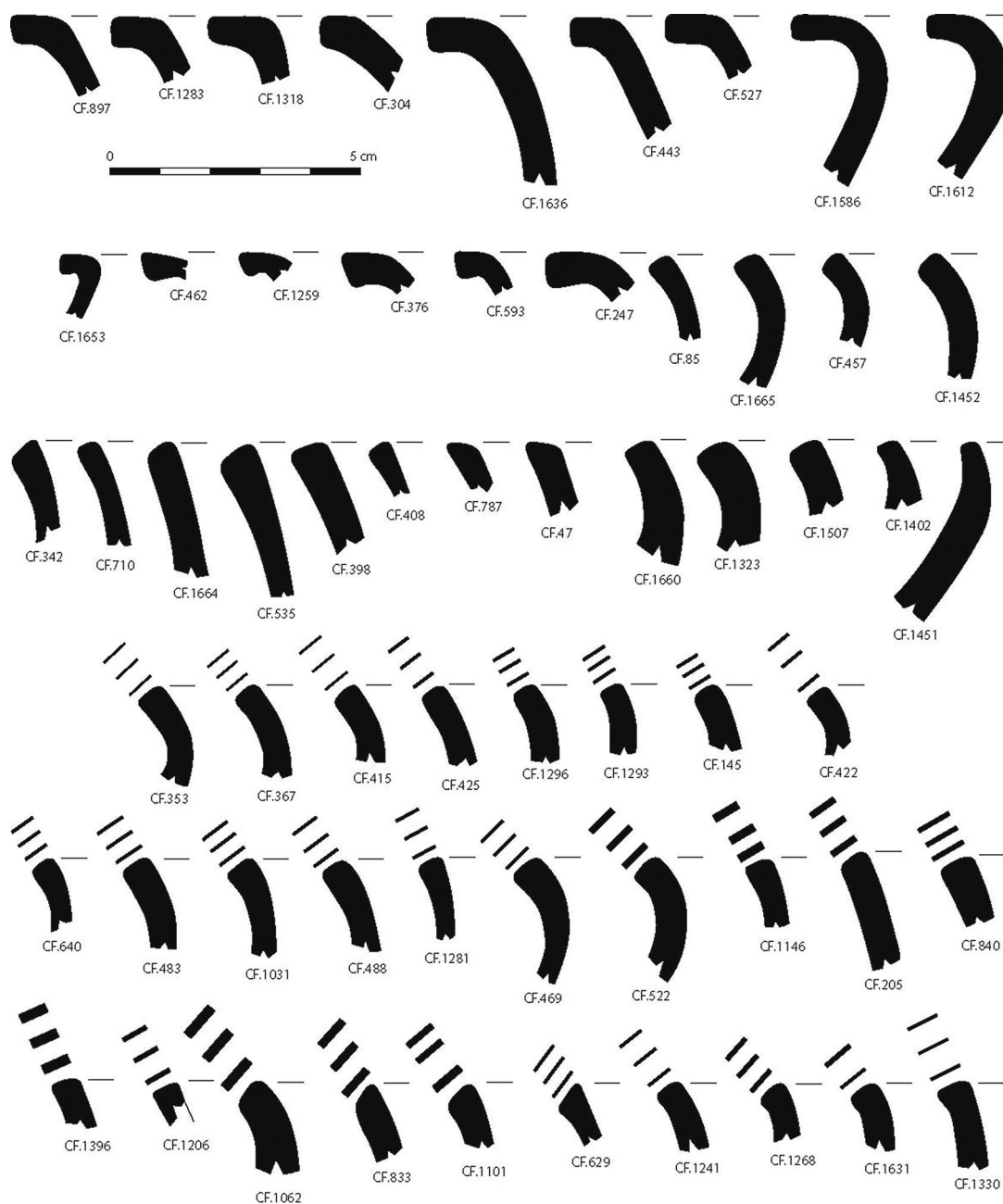


Figure 10.9. Diversity of Lapita rim forms from the 2015 collection.

Source: Authors' illustration.

Lithics

A total of 480 lithic artefacts were recorded during the 2015 excavation, the vast majority (462) being debitage, exhausted cores and small, unidentifiable adze fragments. Only 19 pieces can clearly be identified as finished tools, produced from three different lithic materials: chert (16 tools), greywacke (2) and obsidian (1). Chert was used to produce retouched and unretouched flakes 2–4 cm in length (Figure 10.10). The small-sized scrapers are of triangular form, the larger flakes being quadrangular. This typology had already been identified through detailed studies published on New Caledonian lithic material (Forestier 1999; Lagarde and Sand 2013). It was produced

using a discoid *chaîne opératoire* (Leroi-Gourhan 1964:164), with a manufacturing sequence producing larger quadrangular flakes in its early stage, as part of a circular and revolving flaking sequence around a core that progressively gained a conical or biconical shape.² The detailed study of the scrapers has identified retouched faces on 11 out of 18 flakes. The small obsidian flake is an unretouched pseudo-Levallois point (Boëda 1993). Interestingly, one retouched quadrangular scraper is made from greywacke, probably made from a broken adze fragment, although greywacke does not flake as well as chert. The only polished adze blade found during the 2015 excavation is also made out of greywacke (Figure 10.11). The small, smoothly polished adze bears traces of the production sequence. Its plano-convex section and flattened sides are characteristic of Lapita and immediately Post-Lapita adzes produced during the first half of the third millennium BP (Sand 2010:173–177).

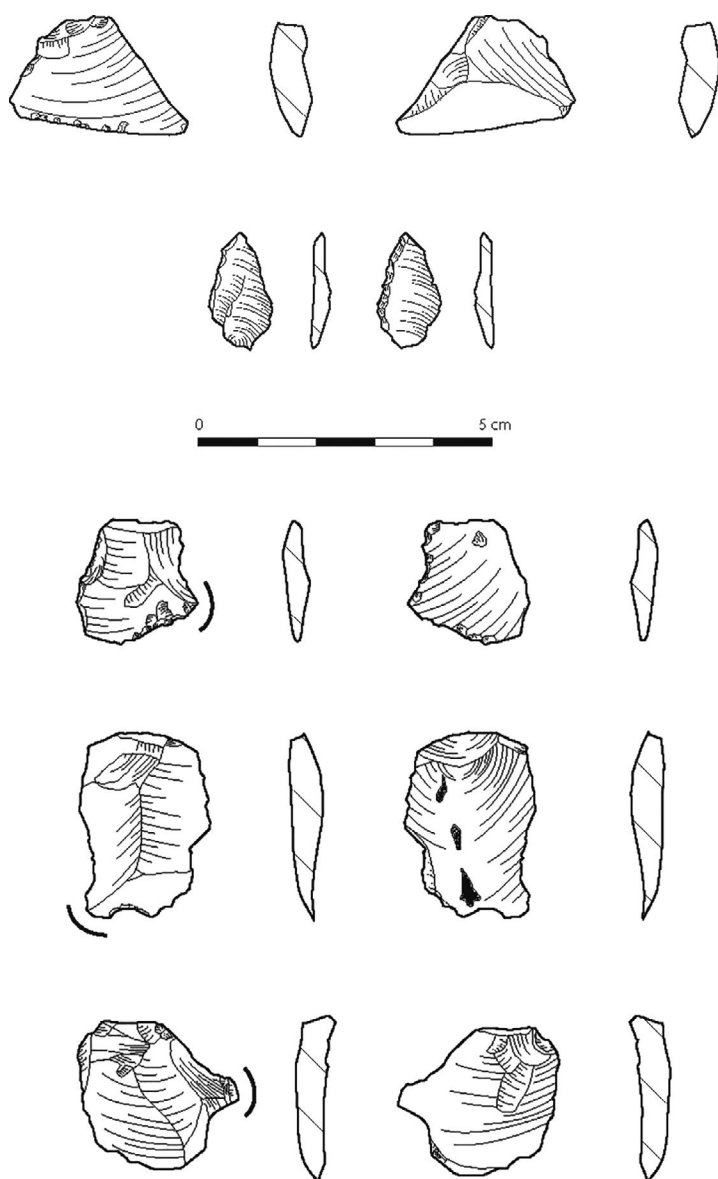


Figure 10.10. Diversity of stone flakes, some with retouched points.

Source: Authors' illustration.

² No preparation of a striking platform is needed with this simple method, but the flakes produced are irregular in shape, mostly small and triangular, with a morphological axis that diverges from its debitage axis.



Figure 10.11. Lapita adze found in square SD.40.
Source: Authors' illustration.

Shell ornaments

Among the large amount of shell remains uncovered during the 2015 excavation, 59 fragments show evidence of modification. Only 22 have been identified as broken finished artefacts (Figure 10.12), 14 being found during sieving of the sediments retrieved from the manually dug test pits, five identified during the mechanical digging phase and the remaining three through surface collection. Of these 22 artefacts, 18 are fragments of *Conus* sp. shell rings that can be mainly classified as armbands or bracelets of varying widths (10–25 mm) and diameters (80–105 mm). Some have been decorated with incised/polished grooves on the outer surface, either in two parallel lines or assembled in boxed geometrical motifs. This tradition of decoration is well known on shell artefacts of the Lapita period in Island Melanesia (see Sand 2010:183–187; Szabó 2004; Szabó and Summerhayes 2002).

Smaller-sized items are classified as pierced disks and were probably used more as pendants, breastplates or exchange shell money, being too small to be used as bracelets. One of these pierced *Conus* pendants is decorated with

two parallel grooves of the same type as those identified on Lapita armbands/bracelets. Two large rings (110 mm and 125 mm diameter) were produced from giant clam shell (*Tridacna maxima*), a shell type only used for the manufacturing of ornaments during Lapita times in New Caledonia (Sand 2001; Sand et al. 2013).

Flat-sectioned *Conus leopardus* rings are typologically similar to examples found in previous excavations at locality WK0013A (Sand 1998: Figure 9) and belonging to the immediate Post-Lapita tradition at site WBR052 in Deva (Central West Coast) (Sand et al. 2013). A small *Cypraea moneta* shell, with its dorsum sawn off, was probably used as part of a pendant. *Cypraea* beads have also been recorded in the Lapita assemblage of the St Maurice-Vatcha site in Isle of Pines (Sand et al. 1996:63). Two square plates of *Conus leopardus* shell bear purposefully made perforations in their corners. This type of artefact is well known in the local and regional Lapita repertoire (Bedford et al. 2010: Figure 11) but appears to be archaeologically absent from the Post-Lapita occupations in New Caledonia.³

The majority of shell ornaments (16 out of 22) were found in the reworked horticultural layer, thus questioning their chronological connection with the Lapita period on stratigraphic grounds. Typology as well as the overall Lapita-related artefacts present in the deposit, identified through the ceramic study, nonetheless allows refutation of any Post-Lapita assignment of the collection and to tie at least the majority of this corpus of shell ornaments to the earliest settlement period of New Caledonia.

³ A written testimony by Jules Patouillet mentions that in the nineteenth century, when the Kanak *Conus* armbands came to break, the pieces were pierced and tied together in order to be worn again, even though the finished object was not highly prized (Patouillet 1873:224–225). The museum examples of Kanak-era arm-bands clearly show that these are repairs, contrary to the Lapita-era *Conus* square plates, which were purposefully cut and drilled before being assembled with strings.

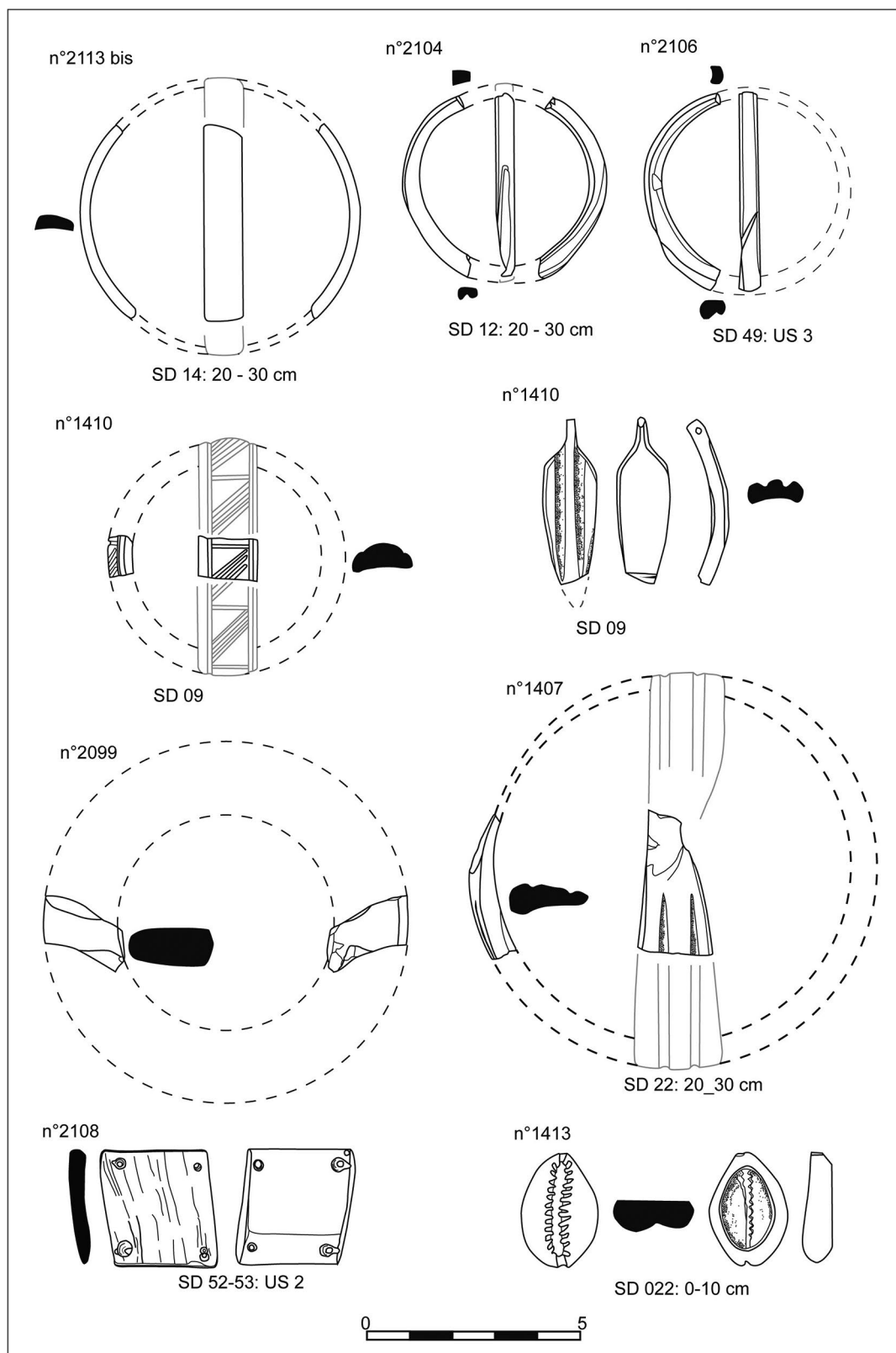


Figure 10.12. Diversity of shell ornaments from the 2015 excavation.

Source: Authors' illustration.

Subsistence data

Shell remains have been identified in all excavations, but have been studied in only 17 pits, where the density of remains was significant. In all, near to 100 kg of shell was collected for study, some 1 m² pits providing over 10 kg (SD.02, SD.10, SD.12, SD.28), roughly representing about 2 kg per 10 cm spit. As with the archaeological material, the great majority of the shells were found in the dark horticultural layer, especially in the southern part of locality WKO013A. The mixed nature of the deposit is highlighted by the diversity shown through the analysis of spit variability, some pits having more shell in the upper part of the layer than in the lower part, others showing the reverse amount. Six bivalve and 15 gastropod species have been identified in total. Among these, eight species account for 75 per cent of the total collection, with a higher presence of bivalves by weight. The four highest-ranked bivalves are *Saccostrea cucullata*, *Anadara* sp., *Gafrarium pectinatum* and *Tridacnidae* sp., the four main gastropod species being *Terebralia palustris*, *Trochidae* sp., *Strombidae* sp. and *Lambis* sp. In seven of the 17 pits, the rocky mangrove oyster *Saccostrea cucullata* is the most numerous, with the gastropod *Terebralia palustris* appearing as the most common in six pits. These two shell species are followed in rank order by *Anadara* sp. and *Gafrarium pectinatum*. The favoured natural biotope of these shell species, accounting for two-thirds of the total shell weight of the 2015 excavation, is characterised by a muddy, sandy and/or mangrove environment, not significantly different from the seashore of Foué today. Shells relying on coral substrates, spatially located at a distance from the archaeological settlement of Lapita, are rare overall. The only other type of food remains recovered from the 2015 excavation was a small amount of shell from the terrestrial snail *Plascostylus* sp.

One of the most unexpected results from the 2015 program was the total absence of fish bones, which were present in the collection of Gifford and Shutler (1956: Tables 13 and 14) and had been systematically recovered from the sieves during the screening of sediments in 1992, 1994 and 1996 (Davidson et al. 2002). This important difference is probably due to the leaking of large amounts of salty water from the spoil heaps dumped on the locality in the 1990s, which have dissolved the fragile bones. This rapid and irreversible deterioration of the archaeological integrity of the deposit will prevent the recovery of new data on fishing habits and hunting of endemic fauna for this site in the future.

Analysis

The 380 m² excavated at locality WKO013A at the beginning of 2015 has allowed a more precise picture of the state of preservation of the archaeological layers covering the 17 000 m² surface to be affected. These data can be compared to the information gathered from previous excavations, especially the 1994 set of 11 test pits scattered on the back beach triangle of locality WKO013A (Sand 1998). The sections positioned at that time in the southern part of the locality, which were located in the same zone as the main 2015 excavations, were only tested through the excavation of four 1 m² test pits (Sand 1995). In 1996, an additional 54 m² was excavated in the rich central sections located inland from the 2015 project. Consequently, only the central part of the site had been thoroughly excavated before 2015, some pits displaying a highly complex stratigraphy, with numerous layers (11 layers for pit 11 K22 and 8 for 18 Y12, for example). Compared to these deep and diverse archaeological deposits observed in the north-eastern part of the locality in the 1990s, the stratigraphy identifiable in the trenches surrounding the present seashore road are relatively simple, with a maximum of three to four layers, comprising mainly a recent upper layer, a mixed horticultural layer, sometimes a shallow flat in situ Lapita level and a sterile sandy beige-coloured substratum.



Figure 10.13. Summary of the density of artefacts in the different parts of locality WKO013A excavated in 2015.

Source: Authors' illustration.

The geo-referencing of locality WKO013A as part of the 2015 excavation program has allowed us to reposition the 1994 test pit excavations 34 J22 (not far from SD.01), 42 J5 (close to SD.07), 44 U5 (between SD.09 and SD.11) and 45 Y5 (close to SD.18), scattered throughout the southern section of the project described here. Comparing the stratigraphic profiles has highlighted the overall close parallels between the data sets from 1994 and 2015. The 1994 test pits had identified the presence of the mixed horticultural layer (50 cm thick in 34 J22, 40 cm in 45 Y5, 15 cm in 42 J5, 10 cm in 44 U5) (Sand 1995), mostly without the recent top layer present in 2015, which results from the modern disruptions by machinery and the dumping of soil deposits removed from the nearby shrimp farm pools. The grey sandy Lapita-age layer, 5 cm thick in 42 J5 and 20 cm in 44 U5, was also previously identified on top of the sterile beige-coloured sand.

When compared to the broad set of results from the 1990s, which showed an occupation of locality WKO013A during the time period 3000–2700 cal. BP (Sand 2010), the new set of radiocarbon dates processed in 2015 from the earliest occupation layer present in the seashore area highlight a calibration range positioning it at the central and late end of the Lapita period. Only one date was run for this part of the locality after the 1994 excavations, with a result of 2960–2750 cal. BP (Beta-74600) for test pit 34 J22. The three samples run on the oldest layer in 2015 for the seashore part of the locality fall within the calibration of 15 out of the 21 dates previously recorded for locality WKO013A and 8 of the 12 dates for nearby locality WKO013B (see Sand 2010). The apparent absence of very early dates is possibly the result of a temporally significant spatial patterning, illustrating an expansion of the settlement during the Lapita period (Figure 10.13). The north-eastern part of locality WKO013A, excavated in the 1990s, appears to have preserved the oldest set of remains, with rich stratigraphy, thick shell deposits, the presence of postholes and hearths, and large, intricately dentate-stamped sherds. The Lapita deposit in the southern part of the locality, near the seashore, appears to have formed later in the Lapita occupation, with a lesser density of artefacts and shells. In this area, the Lapita motifs present on the sherds analysed are less complex and intricate, with a significant amount of possibly

undecorated pots and only the occasional presence of features like postholes. The expansion or shift in the settlement area at that time might have been related to social processes in the Lapita community of Foué and/or to progradation of the peninsular seashore. This still needs to be better analysed and understood, and would certainly be one of the major areas of investigation as part of the large-scale CRM excavation project to be run before the construction of the new road of Foué in the years to come. This would allow an extensive spatial understanding of the settlement pattern of a Lapita settlement for the very first time in the Pacific, something that is still desperately missing in our approach to the characteristics of the Lapita Cultural Complex.

Conclusion

Excavating a world-famous archaeological site like locality WKO013A of Lapita on the Foué peninsula is always a highlight for a research team. However, to see over one lifetime the severe damage to a key location of the first Oceanic settlement phase of Remote Oceania is also very frustrating. To envision in the near future the possibility of having part of the site definitively destroyed due to modern road construction for the development of the Foué peninsula is painful. Locality WKO013A unquestionably still holds major archaeological information for a better understanding of the past of Island Melanesia. With a few other sites in New Caledonia, it can certainly contribute to solving the new challenge set by the dating of the first settlement of Remote Oceania at no earlier than 3000 cal. BP (Nunn and Petchey 2013; Petchey et al. 2015; Sheppard et al. 2015). The 2015 excavation program provides hints that might question this assumption, by showing that the seashore area occupation, dated between around 2900 and 2650 cal. BP, characterised by Lapita ceramics with simple designs, contrasts with the backshore area excavated between 1992 and 1996, which returned earlier dates associated with intricately decorated pots. New dates on identified charcoal samples from these previous excavations (see Sand et al. 2002) are required to confirm the first set of results. As can be highlighted by our 2015 results, archaeological studies on locality WKO013A must continue, as the 'Lapita site' still has a large part of its story to tell.

Acknowledgements

The excavations fulfilled on the site of Xapeta'a (Lapita) by our team since 1992 were commissioned by the Northern Province of New Caledonia. The funding for the CRM project in 2015 was provided by the Northern Province and the Government of New Caledonia to the Institute of Archaeology of New Caledonia and the Pacific (IANCP). All figures were produced by the authors.

References

- Avias, J. 1950. Poteries canaques et poteries préhistoriques en Nouvelle-Calédonie. Contribution à l'archéologie et à la préhistoire Océanienne. *Journal de la Société des Océanistes* 6:11–139. doi.org/10.3406/jso.1950.1660.
- Bedford, S., M. Spriggs, H. Buckley, F. Valentin, R. Regenvanu and M. Abong 2010. A cemetery of first settlement: The site of Teouma, South Efate, Vanuatu. In C. Sand and S. Bedford (eds), *Lapita: Ancêtres Océaniens/Oceanic ancestors*, pp. 140–161. Musée du quai Branly and Somogy, Paris.
- Boëda E. 1993. Le débitage discoïde et le débitage Levallois récurrent centripète. *Bulletin de la Société Préhistorique Française* 90 (6):392–404. doi.org/10.3406/bspf.1993.9669.

- Burley, D.V., W.R. Dickinson, A. Barton and R. Shutler 2001. Lapita on the periphery: New data on old problems in the Kingdom of Tonga. *Archaeology in Oceania* 36(2):89–104. doi.org/10.1002/j.1834-4453.2001.tb00481.x.
- Chiu, S. 2003. Social and economic meanings of Lapita pottery: A New Caledonian case. In C. Sand (ed.), *Pacific archaeology: Assessments and prospects. Proceedings of the conference for the 50th anniversary of the first Lapita excavation, Kone-Nouméa, 2002*, pp. 159–182. Les cahiers de l'archéologie en Nouvelle-Calédonie 15. Département Archéologie, Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Clark, G. and A. Anderson (eds) 2009. *The early prehistory of Fiji*. Terra Australis 31. ANU E Press, Canberra. doi.org/10.22459/TA31.12.2009.
- Coudray, J. and G. Delibrias 1972. Océanographie: Variations du niveau marin au-dessus de l'actuel en Nouvelle-Calédonie depuis 6000 ans. *Compte-rendus de l'Académie des Sciences de Paris* (série D) 275:2623–2626.
- David, B., I.J. McNiven, H. Jones-Amin, S.P. Connaughton, C. Parkinson, C. Rowe, T. Richards, M. Leavesley, B. Barker, H. Mandui, G. Campanelli and N. Flood 2013. Three reconstructed Lapita pots from Caution Bay, south coast of mainland Papua New Guinea. In G.R. Summerhayes and H. Buckley (eds), *Pacific archaeology: Documenting the past 50,000 years*, pp. 157–170. University of Otago Studies in Archaeology 25. University of Otago, Dunedin.
- Davidson J., F. Leach and C. Sand 2002. Three thousand years of fishing in New Caledonia and the Loyalty Islands. In S. Bedford, C. Sand and D. Burley (eds), *Fifty years in the field: Essays in honour and celebration of Richard Shutler Jr's archaeological career*, pp. 153–164. New Zealand Archaeological Association Monograph 25. New Zealand Archaeological Association, Auckland.
- Dédane, S. and E. Kasarherou 1988. La sépulture du site WKO013B, Koné. *Fouilles de sauvetage en Nouvelle-Calédonie 1988*, pp. 2–5. Service des Musées et du Patrimoine et Office Culturel, Scientifique et Technique Canaque, Nouméa.
- Forestier, H. 1999. Concept and method in lithic production during Lapita period in New Caledonia: A technological analysis. In J.-C. Galipaud and I. Lilley (eds), *The Western Pacific, 5000 to 2000 BP: Colonisations and transformations*, pp. 345–361. IRD Éditions, Paris.
- Frimigacci, D. 1975. La préhistoire Néo-Calédonienne. Unpublished thèse de troisième cycle, Université Paris 1, Paris.
- Galipaud, J.-C. 1988. La poterie préhistorique Néo-Calédonienne et ses implications dans l'étude du processus de peuplement du Pacifique Occidental. Unpublished PhD thesis, Université Paris 1, Paris.
- Gifford, E.W. and D. Shutler Jr 1956. *Archaeological excavations in New Caledonia*. Anthropological Records 18(1). University of California Press, Berkeley and Los Angeles.
- Kirch, P.V. 1997. *The Lapita peoples: Ancestors of the Oceanic world*. Blackwell, Oxford.
- Kirch, P.V. (ed.) 2001. *Lapita and its transformations in Near Oceania: Archaeological investigations in the Mussau Islands, Papua New Guinea, 1985–88. Volume I: Introduction, stratigraphy, chronology*. Archaeological Research Facility Contribution No 59. University of California, Berkeley.
- Lagarde, L., S. Domergue, A.-J. Ouetcho, H. Rouvonne, L. Sarvanu and C. Sand 2015. *Rapport de synthèse sur le traitement post-fouille de l'opération de diagnostic archéologique sur l'emprise du projet d'aménagement de la Route de Foué – Tranche 2 (Commune de Koné)*. Institut d'archéologie de la Nouvelle-Calédonie et du Pacifique (IANCP), Nouméa.

- Lagarde, L. and C. Sand 2013. Simple technique, elaborate tools: Lapita flaked stone tools in New Caledonia. In G.R. Summerhayes and H. Buckley (eds), *Pacific archaeology: Documenting the past 50,000 years*, pp. 58–66. University of Otago Studies in Archaeology 25. University of Otago, Dunedin.
- Leroi-Gourhan, A. 1964. *Le geste et la parole. Tome I: Technique et langage*. Collection Sciences d'aujourd'hui, Editions Albin Michel, Paris.
- Nunn, P.D. and F. Petchey 2013. Bayesian re-evaluation of Lapita settlement in Fiji: Radiocarbon analysis of the Lapita occupation at Bourewa and nearby sites on the Rove Peninsula, Viti Levu Island. *Journal of Pacific Archaeology* 4(2):21–34.
- Patouillet, J. 1873. *Voyage autour du monde. Trois ans en Nouvelle-Calédonie*. E. Dentu, Paris.
- Petchey, F., M. Spriggs, S. Bedford and F. Valentin 2015. The chronology of occupation at Teouma, Vanuatu: Use of a modified chronometric hygiene protocol and Bayesian modeling to evaluate midden remains. *Journal of Archaeological Science: Reports* 4:95–105. doi.org/10.1016/j.jasrep.2015.08.024.
- Pietrusewsky, M., J.-C. Galipaud and B.F. Leach 1998. A skeleton from the Lapita site at Koné, Foué Peninsula, New Caledonia. *New Zealand Journal of Archaeology* 18(1996):25–74.
- Piroutet, M. 1917. *Etude stratigraphique sur la Nouvelle-Calédonie*. Imprimerie Protat Frères, Mâcon.
- Ravn, M., S. Bedford, M. Spriggs, S. Hawkins, I. Philip and F. Valentin 2016. Pottery spatial patterns at the Lapita site of Teouma, Central Vanuatu—Some preliminary refitting results. In F. Valentin and G. Molle (eds), *Spatial dynamics in Oceania/La pratique de l'espace en Océanie*, pp. 163–173. Séances de la Société Préhistorique Française 7. Société Préhistorique Française, Paris.
- Richards, T., B. David, K. Aplin and I.J. McNiven (eds) 2016. *Archaeological research at Caution Bay, Papua New Guinea. Cultural, linguistic and environmental setting*. Caution Bay Studies in Archaeology 1. Archaeopress, Oxford.
- Sand, C. 1995. *Fouille de sauvetage sur le site WKO013A de Lapita, Koné (Juin-Juillet 1994)*. Département Archéologie du Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Sand, C. 1996a. *Le début du peuplement Austronésien de la Nouvelle-Calédonie: Données archéologiques récentes*. Les cahiers de l'archéologie en Nouvelle-Calédonie 6. Département Archéologie, Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Sand, C. 1996b. *Intervention d'urgence sur le site WKO013A de Lapita—Octobre 1995 (Province Nord)*. Département Archéologie du Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Sand, C. 1998. Archaeological report on localities WKO013A and WKO013B of the site of Lapita (Koné, New Caledonia). *Journal of the Polynesian Society* 107(1):7–33.
- Sand, C. 2001. Changes in non-ceramic artefacts during the prehistory of New Caledonia. In G.R. Clark, A.J. Anderson and T. Sorovi-Vunidilo (eds), *The archaeology of Lapita dispersal in Oceania: Papers from the Fourth Lapita Conference, June 2000, Canberra, Australia*, pp. 75–92. Terra Australis 17. Pandanus Books, The Australian National University, Canberra.
- Sand C., 2010. *Lapita Calédonien. Archéologie d'un premier peuplement insulaire Océanien*. Collection Travaux et Documents Océanistes 2. Société des Océanistes, Paris. doi.org/10.4000/books.sdo.1128.
- Sand, C. and P.V. Kirch 2002. 'Lapita was name of village at this Site'. Edward W. Gifford and Richard Shutler's Archaeological expedition to New Caledonia in 1952. Les cahiers de l'archéologie en Nouvelle-Calédonie 13. Département Archéologie, Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.

- Sand, C., J. Bolé and A.-J. Ouetcho 1996. *Le debut du peuplement Austronésien de la Nouvelle-Calédonie. Données archéologiques récentes*. Les cahiers de l'archéologie en Nouvelle-Calédonie 6. Département Archéologie, Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Sand, C., K. Coote, J. Bolé and A.-J. Ouetcho 1998. A pottery pit on locality WKO013A, Lapita (New Caledonia). *Archaeology in Oceania* 33(1):37–43. doi.org/10.1002/j.1834-4453.1998.tb00399.x.
- Sand, C., P.V. Kirch and J. Coil 2002. Old sites, new insights: A reanalysis of the 1952 Gifford and Shutler New Caledonia Collections. In S. Bedford, C. Sand and D. Burley (eds), *Fifty years in the field: Essays in honour and celebration of Richard Shutler Jr's archaeological career*, pp. 173–188. New Zealand Archaeological Association Monograph 25 New Zealand Archaeological Association, Auckland.
- Sand, C., J. Bole, A.-J. Ouetcho and D. Baret 2003. *Nouvelles découvertes sur les différentes localités du site WKO013 de Lapita (Presqu'île de Foué, Koné)*. Département Archéologie du Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Sand, C., J. Bole and A.-J. Ouetcho 2004. *Découverte d'une nouvelle poterie sur le site WKO013B de Lapita (Koné, Province Nord) en Mars 2004*. Département Archéologie du Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.
- Sand C., M. Terebo and L. Lagarde (eds) 2013. *Le passé de Déva. Archéologie d'un Domaine Provincial Calédonien*. Archeologia Pasifika 2. IANCP, Nouméa.
- Sand, C., S. Domergue and L. Lagarde 2015. *Rapport de diagnostic archéologique sur l'emprise du projet d'aménagement de la Route de Foué – Tranche 2 (Commune de Koné)*. IANCP, Nouméa.
- Sarasin, F. 1917. *La Nouvelle-Calédonie et les Iles Loyauté*. Georg, Basle. doi.org/10.5962/bhl.title.10209.
- Sheppard, P., S. Chiu and R. Walter 2015. Re-dating Lapita movement into Remote Oceania. *Journal of Pacific Archaeology* 6(1):26–36.
- Spriggs, M. 1997. *The Island Melanesians*. Blackwell, Oxford.
- Spriggs, M. and S. Bedford 2013. Is there an incised Lapita phase after dentate-stamped pottery ends? Data from Teouma, Efate Island, Vanuatu. In G.R. Summerhayes and H. Buckley (eds), *Pacific archaeology: Documenting the past 50,000 years*, pp. 148–156. University of Otago Studies in Archaeology 25. University of Otago, Dunedin.
- Summerhayes, G.R. 2000. *Lapita interaction*. Terra Australis 15. Department of Archaeology and Natural History and the Centre for Archaeological Research, The Australian National University, Canberra.
- Szabó, K. 2004. Technique and practice: Shell-working in the Western Pacific and Island Southeast Asia. Unpublished PhD thesis, The Australian National University, Canberra.
- Szabó, K. and G. Summerhayes 2002. Lapita worked shell artefacts—New data from Early Lapita. In S. Bedford, C. Sand and D. Burley (eds), *Fifty years in the field: Essays in honour and celebration of Richard Shutler Jr's archaeological career*, pp. 153–164. New Zealand Archaeological Association Monograph 25 New Zealand Archaeological Association, Auckland.
- Valentin F. and C. Sand 2000. *Archéologie des morts. Etudes anthropologiques de squelettes préhistoriques de Nouvelle-Calédonie*. Les cahiers de l'archéologie en Nouvelle-Calédonie 11. Département Archéologie, Service des Musées et du Patrimoine de Nouvelle-Calédonie, Nouméa.

This text is taken from *Debating Lapita: Distribution, Chronology, Society and Subsistence*,
edited by Stuart Bedford and Matthew Spriggs, published 2019 by ANU Press,
The Australian National University, Canberra, Australia.

doi.org/10.22459/TA52.2019.10