



KON-TIKI FIELD REPORT SERIES **VOLUME 3/2000**
ARCHAEOLOGICAL EXCAVATIONS
- on Christmas Island, the Republic of Kiribati, Central Pacific

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Introduction

Christmas Island (Kiritimati) is situated in the centre of the Pacific Ocean c. 1°N of the equatorial line. This flat sandy atoll stretches over a c. 583 sq. km large area and thereby it composes the world's largest atoll. It is 53 km long from the Northwest Point to the Southeast Point and reaches 31 km wide. The main lagoon, 190 sq. km is situated in the Northwest. With a sand dune reaching c. 15 meters in height, it is also the highest atoll in the world. It belongs to a group of islands called the Line Islands, which stretch 2500 km Northwest from French Polynesia towards Hawaii and are therefore interesting strategically in relation to the prehistory of central Pacific colonisation. Since 1979 the Line Islands belong to the Micronesian State of Kiribati. Christmas Island is the first inhabited place on the planet that venture in to the next millennium, but virtually nothing is known about its prehistory. The Line Islands, and most other islands in the equatorial Pacific, were uninhabited at the European contact, although some contained remains of earlier settlement (Emory 1934) and belong to the "mystery" group of Polynesia (Bellwood 1978).

The purpose of the excavations on Christmas Island was to shed light on issues as;

when did man first arrive to this island and who were the initially settlers?

The excavations were carried out during the 17th of August to the 8th of September 1999. The excavation team consisted of Dr. Paul Wallin and Dr. Helene Martinsson-Wallin (archaeologists) from the Kon-Tiki Museum and Dr. Atholl Andersen (archaeologist) and Dr. Geoff Hope (geologist) from the Research School of the Australian National University (ANU). Ms. B. Worthwood and Ms. A. Gellerstig, and local wildlife officers Mr. B. Smith and Mr. U. Bukaireiti assisted us, as well.

Christmas Island was discovered, and named by Captain Cook on Christmas Eve 1777 (Beaglehole 1967). At that time the Island was uninhabited, but Cook mention that there were a number of coconut trees on the Island, which indicated earlier occupation by man. Captain Benson, who was shipwrecked there in 1836, reported that several platforms made by humans were to be found on the East Coast. He also estimated the number of coconut trees to be c. 2000 (Benson 1838). The British annexed the Island in 1888. At that time Mr. William Greig started a plantation on the north part of the island. He brought workers from Manahiki to work on the plantation. In 1913 the French catholic priest Father Emmanuel Rougier leased Christmas Island and he used it as a coconut plantation as well. He discovered and described several archaeological remains (Rougier 1914, 1917). In 1924 the Island was visited by the American archaeologist Kenneth P. Emory. He recorded 12 archaeological sites on the Island (1934). Between 1957-63 the Island was used for nuclear tests. British and American military have detonated c. 20 nuclear bombs in the atmosphere on the south tip of this remote. However, recent tests have shown that there are no high radiation values on the island. Today there are c. 4000

inhabitants on the Island and it is a constant flow of immigrants since the Island is and has the highest standard of living in Kiribati.

During our stay on the island we aimed at re-locating the sites that had been mentioned by Emory (1934). The geomorphology and geology of the island were studied as well, which included several core samples for pollen analyses and dating. We relocated four of the twelve sites mentioned by Emory and we found also several new sites. The military activities in 1957-63 probably have destroyed many of the sites and it is also indicated that Father Rougier destroyed several stone platforms when excavating them. We made a re-inventory of the sites and named them KKI (Kiribati, Kiritimati) followed by no.

Just prior to our arrival, another archaeological team, Anne Di Piazza from the University of Provence and Eric Pearthree from the University of Hawai'i, had carried out survey and some excavations of prehistoric sites. Since our team had no prior knowledge of their plans to work on the island, and our excavation permit from the central authorities in capital of Tarawa pre-dated the local permit given to the French team, we performed excavations in some of the same sites as them.

The results of the excavations are to be published in JPS during 2000; Anderson, A, Wallin, P. Martinsson-Wallin, H., Frankhauser, B. and Hope, G. *Towards a First Prehistory of Kiritimati (Christmas) Island, Republik of Kiribati*

Site Inventory

KKI-01 This site, which Emory referred to as a *marae* based on the descriptions of Father Rougier, is situated at the Northwest Point of the Island. Rougier described the structure as a 4 m long, 2 m wide and 2 m high platform of coral stones (Emory's site 1). On top of it stood a "large" up-right slab. Rougier excavated the structure and by doing so he completely destroying the site but he concluded that it was a marae and no tomb. Today the site is marked by a scattered pile of coral stones (15-50cm in size) in an area of 8x10 m, with an inner core pile of c. 6,5x7 m. Emory describes the same site as an area marked by a scattered pile of coral stones of 24x30 feet (c. 7,2x9 m) and that it's height nowhere exceeded 2 feet (0,6 m). We excavated some test squares at this site.

KKI-02 This site is reported by Rougier (1917:28) as a semi-circular group of seven structures, each about 4 x 1,5 m marked by upright stones. He referred them as *marae* sites as well as a village. This site is probably Emory's site 2, situated at the lagoon side, which he describes as a village site: "Eight rectangular enclosures ranged along two sides of square. Each marked by thin, roughly broken slabs of hardpan set on edge in lines which form three sides of a rectangle opening onto the lagoon bright". He mapped the site and "excavated one thoroughly", finding a bed of ashes at 25 cm (1934:37?). We could only re-locate two of the structures mentioned, but the area had been re-arranged by the activities of crabs and a road. Possible many of the slabs

have been eroded above the ground and were thereby impossible to find. We mapped and excavated a possible house, a *marae* structure and five ovens at this site.

KKI-03A,B This is probably the second village site reported by Rougier (1917:28). A *marae* structure with slabs on edge, an up-right and pavements as well as an undefined structure is located at the at the lagoon side c. 3 km to the south-east of site *KKI-02*. These features are them same ones that Emory describes as site 3 and he mapped the main features, but did not excavated because he regarded them as the occupation of William Grieg about 1880 (1934:21). We excavated some test square at the *marae* structure. Prior to our arrival, the French archaeological team had excavated some squares of different size and orientation in this area. In one of the squares close to the *ahu* they found remains of a fish (Trevally).). At *KKI-03B* c 25 m to the south of the *marae* structure a number of slabs were found. Some were upright, some were fallen, and it could have been the remains of a recent house structure. We did no excavation but the French team had excavated all around. The area was mapped

KKI-04, Emory (1934:21) records a find spot, where a *Tridacna* shell adze was found on the surface. The site was not visited by him, nor re-located by us.

KKI-05 This site was found c. 1.6 km miles N of the N.E Beacon. According to the description by Emory, site 5 was a shelter and a wall line, and close to this one grave. We found the shelter, and the wall, but not the grave. The grave was possible “excavated” by Rougier, and therefore destroyed. Emory never visited the place himself. The shelter and wall is situated c. 11 m south of the seashore on the coral stone beach area. The structures are built up by water worn flat coral stones c. 30-50 cm. The shelter is semi-circular and is 6x3 m with an opening on the inland side. C. 1 meter to the East of the shelter is the wall situated in E-W direction. It is 6 m long and has a s-curved shape.

KKI-06 Rougier (1914:120,129-130, 1917:29)describes finding two large tombs and, in excavating in a hole nearby, some human bones and ashes, amongst them a tibia and a patella. On the head of one grave lay a tangless, quadrangular-sectioned, black “flint” (basalt?) adze, 11 cm long. Described but not visited by Emory (1934:22), and not re-located by us.

KKI-07 Emory (1934:22) records Benson’s discovery of rectangular platforms. They may refer to *KKI-6* and other sites on the East Coast. This site was not re-located by us.

KKI-08 A small platform was reported at the 91 km mark, but not seen by Emory (1934:22), or by us.

KKI-09 Following directions by Rougier, Emory saw two stone cairns that were partly excavated. He restored the mounds and found a rectangular four-stone fireplace close by at the 95km mark. A “petroglyph stone” was found on one of the cairns (Emory 1934:fig. 10a). We could not find this site and we suggest that the “petroglyph stone” is formed from natural causes and not by man.

KKI-10 At the 100km mark Emory (1934:22-23) recorded two coral mounds, one with an upright stone, and a large artificial depression. He excavated one and found nothing. At approximately this location we found two small mounds (KKI-21) which do not fit Emory's description.

KKI-11 On Rougier's advice Emory expected to find two more "ruins" several km from KKI-10, but nor he or we found these ruins.

KKI-12 A cairn of coral stones by a lake at Oasis was excavated by Emory (1934:23). He found a fragment of animal bone and a small vertebra from a whale. This site was not re-located by us.

KKI-13 Six post-European tombs reported by Rougier (1917:29) were not seen by Emory or by us.

KKI-14 A, B, C This area was situated between c. 100-150 m west of the *marae* structure *KKI-03A*. In area A, three upright slabs were found. The French team had excavated the area, but additional excavations by us revealed a hearth and possible post supports, which may indicated a house structure. The French team had done several test-excavations of different form and sizes in the area *KKI-14 A, B, C*, and only one square was re-dug by us in area C since traces of basalt ships were found there. Area B was located 15 m south of *KKI-14 A*, several ovens were found and excavated in a 5x3 m large area. The well in area C is probably the same as Emory's site 3a (Emory 1934:20?). This structure and some other up-rights close by were mapped but not excavated by us since they probably are of more recent origin than the *marae* (*KKI-03A*) and habitation site (*KKI-14A*).

KKI-15 A, B These two areas, newly discovered and by our team, were situated 20 and 30m to the west of *KKI-14A*. They appeared on the surface as areas with several dark spots (area A was 6x3 m and area B was 4x3 m). East of area B a basalt core and a shell tool were found on the surface. We excavated the dark spots.

KKI-16 At Paris on the North Point of the southern arm of the lagoon we found a stone pavement extending inland from 12m to 32m from the shore and in right angle to it. Excavations showed that it consisted of two parallel lines of flat stones, evidently part of an old leading to a jetty. The road and jetty was probably built by Rougier who lived in Paris and exported copra from there.

KKI-17 On the beach at Artimea Corner on the N-E coast several ultra-basic volcanic pebbles/cobbles were found on the surface. They are possibly ballast stones from a shipwreck, but one had been used as a hammer stone. Near them lay a rectangular fireplace, outlined on three sides by slabs on edge were found. Part of the fireplace was excavated but it is probably recent since a tin lid was found among the charcoal and some of that appeared to be of Oregon plank.

KKI-18 About 50 m to the East of *KKI-03A* was patch broken up *Tridacna* shell found on the surface.

KKI-19 Close to military “A-site” on the NE coast c. 7,5 km SE of Joe’s Hill Collimes. Here we discovered shell adzes, a shell workshop and an oven with fire-cracked stones close to and on a sand dune c. 60-70 m south of the Seashore.

KKI-20 On the N-E coast c. 6,5 km south of the N.E. a stone paved path was situated. It was about 1 m wide and 28 m long nicely paved of flat coral stones, leading straight to the coast. The paving was interrupted in one place about 8 m. Here heavy bush vegetation was growing.

KKI-21 Two small mounds (both about 1x1m in plan size) were found in the approximate vicinity of the Emory site 10 and 11 (above). They are located c. 100m from the shore and 75 m from an old road and a kilometre marker cairn.

Excavation

Marae structure at the North West Point

KKI 01

The marae structure is situated 2.5-3 m inland from the edge of a sand-ridge, which is up-lifted c. 3 m above sea level. The seashore is c. 25 m to the west of the structure and it is situated in front of a pass in the reef.

A large coral slab c. 75x45 cm is situated at the north side of the scattered pile. This slab may be the up right mentioned by Rougier as standing on the platform and maybe it was placed well to the side before he “excavated” the marae.

The French team had recently excavated two or three trenches of c. 40 cm’s width. They were running from the edges of the pile in towards the middle from two sides. The outline and orientation of these trenches seem to be very haphazard.

A north-south grid-system was outlined in the rear of the structure. This was done to search for the original base-foundation of the rear edge and to investigate if cultural deposits were to be found on the seaside or below of the structure. A total of 5 ½ sqm. was excavated (B4, B5, B6, C4, C5, C6). From the surface and down to 10 cm the fill between the stones consisted of brown beach sand mixed with coral and shell, no finds were recovered. In level 2 (10-20 cm) at about 20 cm depth a line of stones in N-S direction were found. This is probably the foundation stone (20-25 cm) of the rear wall construction. In level 2 carbon, some bird and fish bones and cracked shell, were found. The filling between the stones in level 2 consisted of brown beach sand mixed with some coral and shell. In level 3 (20-35 cm) the stones became less frequent and smaller and no more indications of foundation stones were seen. In this level carbon, bones and cracked shell were found as well. At 35 cm below the surface the sand changed in colour to light brown-beige and no more finds were recovered. A test pit

was dug c. 40-50 cm below level 3 and it was concluded that no more cultural activities were indicated.

Possible house site, marae and ovens at the North lagoon side KKI 02 A, B, C

KKI-02A (Possible house site)

A stone-line of thin slab set on edge extending c. 4,5 m in north-south direction is situated about 100 m east of the present shoreline of the lagoon. Visible above surface overgrown by bushes were three thin hardpan stone slabs. The largest is about 80 cm long and 18 cm high and next to this is c. 40 cm long and 10 cm high slab placed. About 2 m further to the north, the third slab is situated. It is about 50 cm long and 35 cm high. The soil surrounding the structure is light beige fine-grained coral sand. The ground is heavily re-arranged by crabs digging holes.

When cleaning the area from the bush vegetation 3 small upright slabs were found in addition to the others. They were about 10-15 cm long and 5-7 cm high. Two of them were close to the centre of the line and situated in an east-west orientation. One was found close to the northernmost upright slab.

In the southern part of the stone line was one square-meter. At a depth of 10-20 cm a layer of old hardpan was discovered. This hardpan had been cut through to secure the slabs on edge. The bottom of the slabs was found at a depth of about 40 cm from the present surface or c. 25 cm under the old hardpan. The total height of the slabs was c. 50-58 cm. We also carried out minor excavations to the south and north of the square to find out if there were remains of other slabs present. The remains of three slabs were found c. 5-10cm below the surface. The largest of them was about 45 cm long and it was found c. 10 cm south of the southernmost slab that was visible above the surface. The smaller ones were c. 10 cm long. They were situated in the same line as the others and one, which has an east-west orientation.

This small test-excavation showed that the slabs have eroded heavily above the surface. This may indicate that several prehistoric sites on the Island may not be visible on today's surface and thereby difficult to discover.

No find material of any kind was found during the excavation of this site. The excavation went down 30 cm below the old hardpan but only sterile fine-grained sand (silt) was found.

KKI-02B (Marae site)

This site consists of hardpan slabs set on edge, pavements, a beach-rolled limestone upright and a burnt spot. The structure covers about 6,2x3m and the stone line is oriented in east-west direction. The marae is located c. 50 m from the shoreline at a base of a small peninsula projecting into the lagoon. The house site KKI 02 A is situated c. 100 m to the East. When discovering the site only three upright

stone slabs were visible on the surface. The site was also partly covered by bush vegetation. The soil consisted of fine beige coral sand (silt) and the ground had been re-arranged by crabs digging holes. A pavement c. 1x0,5 m in size situated at the west end of the stone-line was also visible above ground before the excavation. When cleaning the area from some of the bushes we found the top of another up-right stone. A test trench 1x 1m was excavated in the west part of the stone-line and thereby more slabs on edge were revealed at a depth of 5-10 cm from the surface. The excavation was thereby extended and the stone-line of up-right slabs proved to be c- 4,5 m long. An area of 17 sqm was excavated to a depth about 10 cm. A couple of deeper test-pits were also excavated to make sure that no cultural deposits were to be found below the structure. The bases of the up-right slabs were not placed deeper than about 15-25 cm below the present surface. The beach-rolled limestone up-right c. 35 cm long, was today almost covered by sand. It was found in an almost up right position but leaning a little towards the east. It is probable that its original position was that the base was dug down c. 15 cm and that it later has been totally covered by sand.

When excavating the area, which probably had been the courtyard, we uncovered another pavement. It was oval in shape and 70x180 cm in size. The excavation also uncovered a couple of up-right stones on the courtyard. A burnt area and a scatter of broken up pavement stones were also found on the Southwest part of the courtyard. These stones might originally derive from the pavement in the west corner and the fire seems to be secondary and activities in connection to this action may have re-arranged this pavement.

The stones at the east side of the beach-rolled up right may be indications of post-holes. Several carbon samples were recovered but the most promising one was found at a depth of 20 cm c. 10 cm north of the beach rolled up-right slab. No other find material was recovered except some nice shell, which may have had some significance at a ceremonial site.

KKI-02C (Ovens)

Five ovens or fireplaces are situated in an area in between site KKI 02 A and KKI 02 B and one oven is located c. 25 cm west of KKI 02 B. These features are visible on the surface as rounded dark spots c. 2-3 m in diameter. Test-excavations were carried out and carbon was collected from oven KKI 02 C1. The depth of this oven was c. 34-40 cm. It is however uncertain if these ovens may be recent. A radiocarbon dating will give us the answer to this question. The ovens were all located in light beige silty coral sand.

Marae at the North lagoon side (KKI-03A)

KKI-03A (Marae)

This structure consists of an *ahu* c. 2,5x0,5 m outlined by thin coral slabs on edge 10-42 cm high in a north to south direction, vertical to the sea-shore (Emory's site 3 c). Several stone slabs are scattered

in the area and they may have fallen from their original position. About seven m to the east in a central position facing the *ahu* a small stone pavement with an up-right slab and a fallen beach-rolled limestone up-right c. 41 cm long and 15,5 cm wide (Emory's site 3 d) In the area in-between the *ahu* and this pavement there are a small concentration of stones (50x50cm) and three rounded dark spots (F1, F2 and F3). The dark spots are remains of small fires that have been lit here. Feature 1 (F1) was a rounded dark spot c. 35x35 cm ø with a depth of 7 cm. It contained carbon and the sand was mixed with ash. F2 was a rounded dark spot c. 45x40 cm ø with a depth of 7 cm. The sand was mixed with ash and contained a few small pieces of carbon. F3 was a rounded dark spot c. 40x40 cm and 9 cm deep. The sand contained ash but only a few small carbon fragments were found. In F3 some bones of fish and bird were found. East of the small pavement with the up-right beach-rolled stone there were three pavements situated and oriented in e-w direction, c. 2 m apart from each other. The largest (2x0.7 cm) is situated about 14 m to the east of the *ahu* (Emory's site 3 e?) The two others are about 1,5x0,7 m but they seem to be more fragmented than the larger one. One of the pavements was partly covered by sand and one side of it was furthermore a small heap of sand located, which looked as traces of an earlier excavation (Rougier or Emory?) To the south and Southeast of the largest pavement there were seven scattered stone slabs (Emory's site 3 e?). C. 50 m to the east was an area with broken up tridecana shells found (KKI 18).

Excavations were carried out behind to the W of the *ahu* (sq 1) and behind one of the *ahu* slabs (inside the *ahu*) (sq. 2). Other excavations were carried out under the east slab of the easternmost large pavement (sq. 3) and in the features 1, 2 and 3 (sq. 4 and 5).

Square 1 contained some bones, but they belong to a recent intrusion of crab-holes. The stratigraphy showed a 2-5 cm layer of grey fine soil/sand on the surface and further down small shell and molluscs mixed with fine sand. No carbon was found.

Square 2 showed the same stratigraphy as sq. 1 and there were no finds except a very small piece of carbon.

Square 3 was excavated by first removing 4 of the pavement slabs. The surface and stratigraphy under the pavement consisted of small shell, molluscs mixed with sand, and a carbon sample suited for AMS dating was found. After the excavation the stone slabs were put back in original position and the pavement restored. Squares 4 and 5 contained the earlier described F1, F2 and F3. One good carbon sample was found in F1.

Ovens and a possible house foundation at the North lagoon side (KKI-14 A, B and KKI 15 A, B)

KKI-14A (House structure?)

On the surface this area was indicated by three thin slabs on edge placed in northwest-southeast direction and one slab placed in right angle to the former. The surface consisted of a thin layer of grey

soil/sand and below this was a layer of fine brown-beige sand. The French team had excavated this area but it was re-excavated by us to be able to get an indication of if the other team's interpretation of the site as a canoe house seemed correct. At a depth of 5-10 cm from the surface several small concentrations of flat stones were found at different locations. They may be interpreted as supports for posts. A small hearth was also found. We were told that close to the hearth the French team had found a basalt adze wrapped in bark cloth as well as a pearl-shell harpoon. C. ten meter to the Northwest of the Southeast corner of the slabs on edge was a concentration of flat stones found. It is however uncertain if they belong to the same structure. The suggested post-supports and the line of slabs on edge seemed to be displaced in relation to each other as well. The hearth also seemed to have a strange location if the mentioned structures are interpreted as remains of a canoe house. The area clearly show settlement activities but we found it difficult to re-confirm that the remains found to be interpreted as a canoe house. To further investigate the original stratigraphy, seven square meters were excavated in areas not previously excavated. No finds were recovered during the new excavations but a few post-supports were uncovered. Carbon for dating was recovered from the hearth.

KKI-14B (Ovens)

This area is situated c. 15 m south of KKI 14 A and on the surface it appeared as a 5x3 m large area sandy/soil mixed with grey ash with darker spots where carbon pieces were found. This area had also been partly excavated by the French team and a few squares (probably 4), of different size and direction, had been investigated by them. They had found bones of turtle. To be able to get information on the stratigraphy and the outline of the ovens as well as a carbon sample for dating we excavated 1 square meter in a place not previously excavated. The upper layer consisted of ash and grey sandy/soil with finds of carbon and some bones. This layer reached from the surface and was 5 cm thick in the western part and 25 cm in the eastern part of the square. Below this was a layer of fire effected grey shells/molluscs of 8-10 cm's thickness. This layer was not present in the Southeast corner of the square. Next layer consisted of brown shell/mollusc of 6-16 cm:s thickness. This layer was not present in the east and Southeast part of the square. Below this was a layer of light-brown beach/mollusc sand layer of 4-10 cm:s thickness. In the bottom of the trench a very hard brown compact sand/shell/mollusc layer was found.

KKI-15A (Ovens)

In an area of c. 6x3 m was several dark spots found under a thin layer (1/2-1 cm) of grey fine sand/soil. A grid in north-south orientation encompassing of 18 square meters was set up over the area. Excavations were performed in 5 squares (A4, B2, B5, B6, and C6). Below the upper grey sand soil was a layer of beige to brown sand mixed with shell and molluscs, which in some parts contained ash and carbon pieces. Several features of different size, shape and depth (c. 35 cm at the deepest) that had

served as ovens/fireplaces were excavated. A few bones and lots of carbon samples were recovered as well as a piece of pearl shell.

KKI-15B (Ovens/fireplaces)

This is a 3x4 m dark area with charcoal found under a thin layer (1/2-1 cm) of grey fine sand/soil situated c. 12 m east of KKI 15 area. A north-south grid 6x3 meters was set up over the area but only 2 squares were excavated (B2, B3). We excavated 5 to 10 cm's and we found a lot of fish bones in B2 and some in B3. The fish bones in B2 were concentrated to the SW corner. We also found charcoal pieces so we got a good sample. It seemed as if there have been fires on the surface to grill some fish. In sq. B2 was also a long pointy shell without its tip found. The fire had also effected it. Square **B2** can be described in the following way: In the N part of the square was an irregular pit about 25 cm deep filled with ash grey loose sandy soil. This oven continues in square B1, (not excavated). In the W section of B2 a small pit was discovered, it was circular and had a diameter of c. 35 cm. The filling consisted of dark grey soil with pieces of carbon. This oven-pit continued to the west. Square **B3** can be described in the following way: the surface of square B3 consisted of dark grey ashy soil with pieces of carbon. This layer was deepest in the S part of the square where it was c. 12 cm deep, otherwise this layer was about 5-10 cm all over the square. This indicates no real pit, just a fire placed on the ground of the surface. The shell layer underneath is furthermore clearly effected by the heat of the fire. Many fish bones were found in the SE corner of this square. This place has obviously been a cooking place.

Shell workshop at the East Coast

KKI-19

The workshop found on the sandy surface close to the military A-site, contained an almond shaped tool (scraper) and several shell flakes. C. seven meters south of this place a worked tridecana shell (possible adze blank) was found. Previously we had found a whole shell adze of tridecana shell and parts of two adzes on the surface in the area. We excavated one square meter at the site where we found the complete adze but found nothing else there. We also excavated two square meters close to the workshop. Here we recovered some more flakes and some bones but the bones came from a crab hole and could not be tied to the workshop activity. An oven with fire-cracked stones situated c. 65 m. to the W of the workshop area was also excavated. It contained a lot of carbon and C14 datings showed it to be prehistoric. An overview map was made. The heap of stone that at a first glimpse could be interpreted as a possible *marae* structure, was formed by military activities in the 1950's. A bulldozer probably made the stone walls and the cleared areas of circular shape among the coral beach stones could have been made for installation of some instrument, or covers etc.

Radio carbon dating and lithic analysis

Five conventional and four AMS dates have been carried out on carbon samples for different prehistoric contexts on Christmas Island. (Wk= Waikato lab. New Zealand, Ua= Ångströmslab., Uppsala, ANU=Australian National University lab)

Conventional dates;

Wk 7746	modern	(KKI-01 Marae, sample 15)
Wk 7747	580±70 BP	(KKI-14B oven, sample 31A)
Wk 7748	690±80 BP	(KKI-15A oven, sample 39)
Wk 7749	570±80 BP	(KKI-15B oven, sample 42)
Wk 7750	520±50 BP	(KKI-19 oven/shell workshop, sample 61)
Wk 7751	modern	(KKI 02 C oven, sample 55?)
ANU-11194	modern	(KKI-01 Marae, sample 099)
ANU-11176	4140±70BP	(KKI-18, shell sample)
ANU-11173	490±60 BP	(KKI-19, oven, sample 61)
ANU-11175	1200±60BP	(KKI-19, worked shell sample)

AMS dates;

Ua-15388	485±75	(KKI 03 Marae, sample 49)
Ua-15389	535±75	(KKI 14A hearth? sample 23)
Ua-15390	640±75	(KKI 14A oven, sample 26)

The lithic material has been analysed by Dr Barry Frankhauser, ANU. The basalt core found W of KKI 14 (find no. 32) closely resemble basalt from Samoa. The basalt flake found in area KKI 14C (find no. 22) closely resemble basalt from a quarry on Molokai, Hawai'i.

A discussion of origin

There are two types of prehistoric structures on Christmas Island that can be interpreted as ceremonial sites:

- 1) KKI-01 is situated at the coast of the NW point. This structure has been described as a rectangular platform 4x2x2 m, built of coral pebbles collected from the sea, with one upright stone on top. Today only a heap of stone c. 10x8 m large, can be observed at the site.
- 2) KKI-02 and KKI-03 are situated on the N lagoon side. They are both constructed of thin coral slabs set on edge (*ahu*), and each structure have one water-polished upright limestone placed on the court yard, as well as pavements of flat coral slabs.

The analysis of the lithic material, found close to site KKI-03, indicated contacts with Samoa and Hawaii. The shape of the ceremonial structures of Christmas Island do not suggest a direct contact with Samoa, since such ceremonial structures are not to be found there. The structures on Christmas Island clearly resemble the East and Central Polynesian ceremonial structures, the *marae*. The two different types described above, furthermore indicate different areas of contact in Polynesia.

The rectangular platform with an upright on top resembles some of the Society Islands rectangular *ahu* platforms. The building material and the location on the NE point, facing the opening in the reef, also fits into the East and Central Polynesian pattern of how and where to build a *marae*. The other type with an *ahu* constructed of coral slabs, and a selected upright stone on the court is similar to the Tuamotu Islands *marae* type, and to *marae* sites found in the Cook Islands (Emory , Buck).

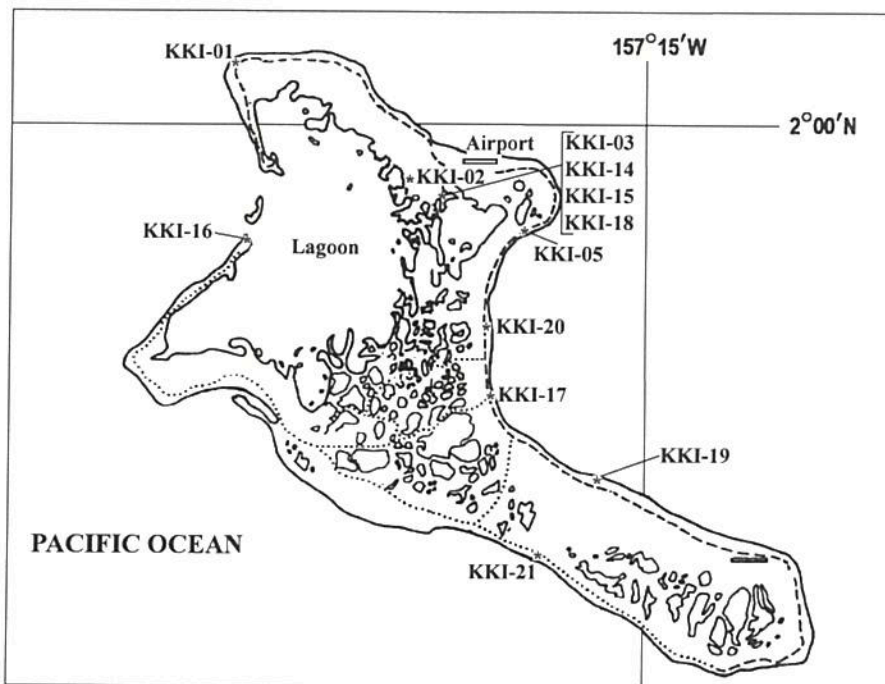
The presence of a Samoan basalt core, may suggest an indirect introduction of this stone material via the Northern Cook Islands. Peter Bellwood mentions: “The Northern Cooks are all atolls, basically eastern Polynesian in culture apart from Pukapuka, which on linguistic grounds would seem to have been settled from Samoa. These Northern islands have few archaeological remains, although Penryhn [Tongareva] has many *marae* similar to those on the Tuamotus” (1987:89). The basalt chips that originate from Hawai’i, furthermore indicate that there has been a wide range of contacts within Polynesia in prehistoric times. Simple *marae* structures of East Polynesian type are also found there, especially on Nihoa and Necker (Emory 1928)

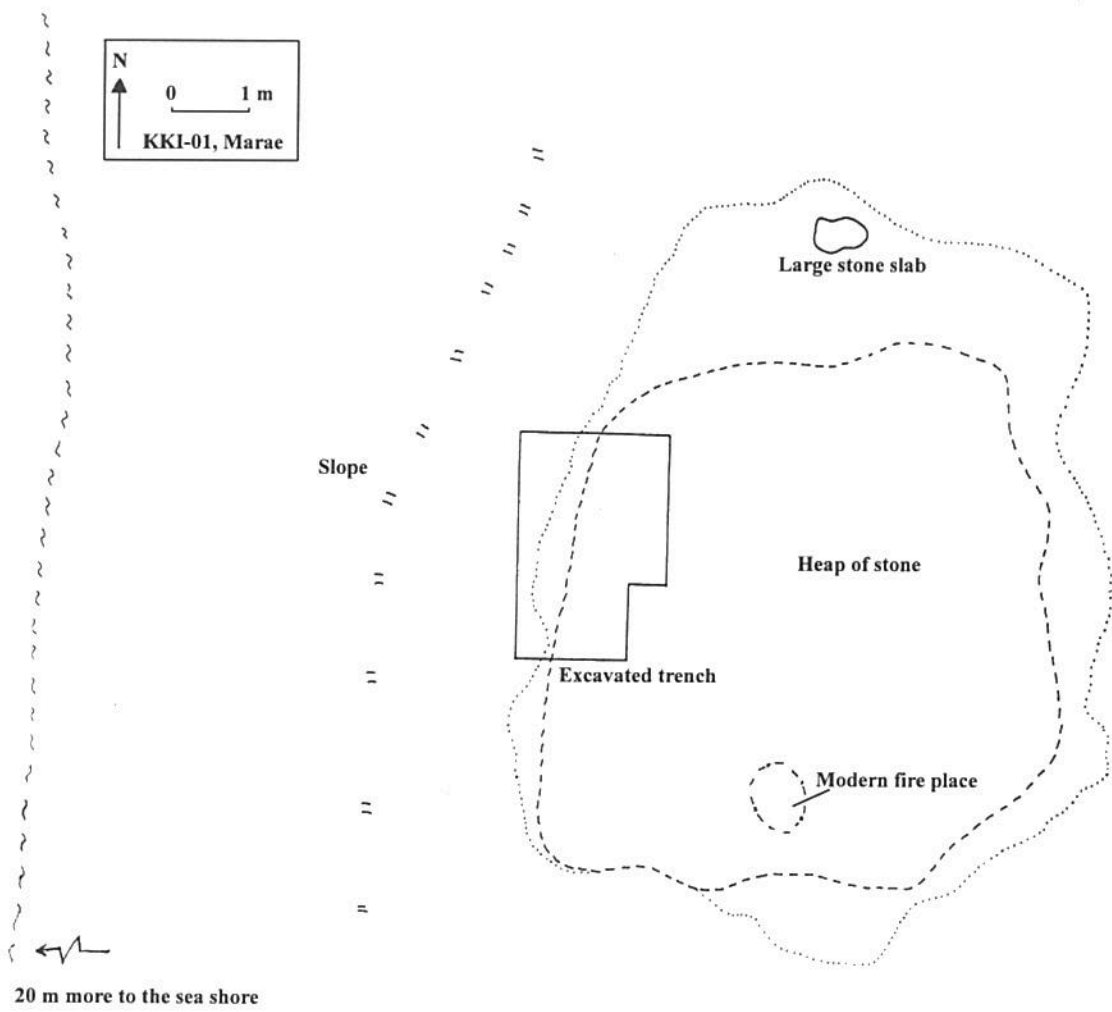
However, we suggest that the most likely origin of the Christmas Island *marae* types are to be found within the area of the Northern Cooks, Tuamotus and the Society Islands.

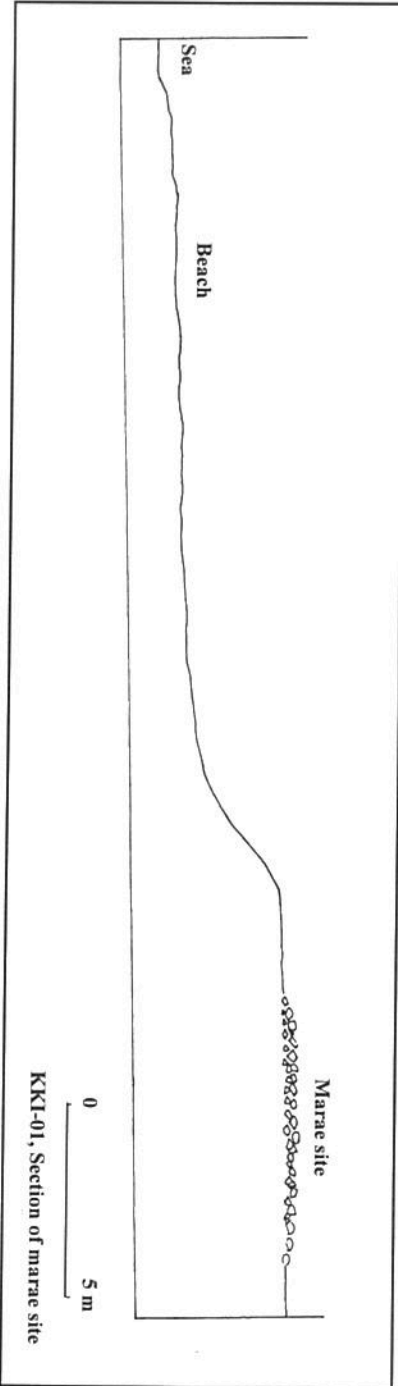
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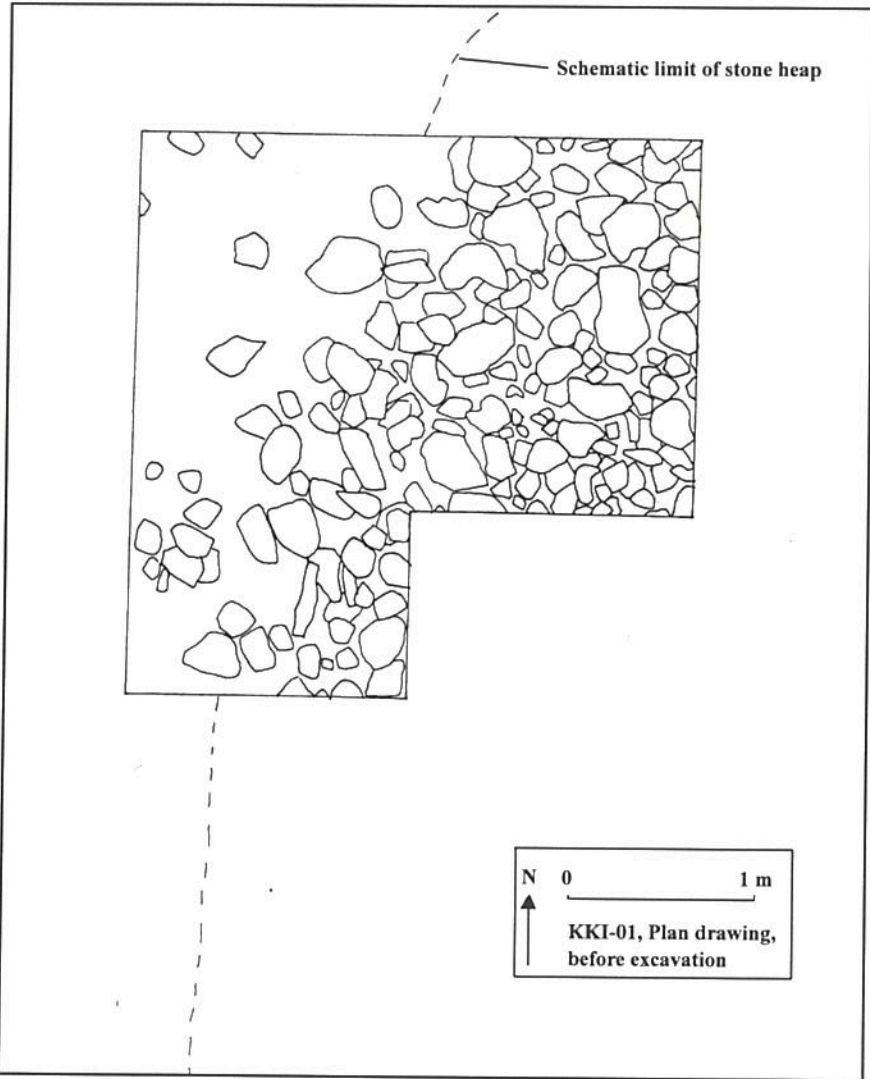


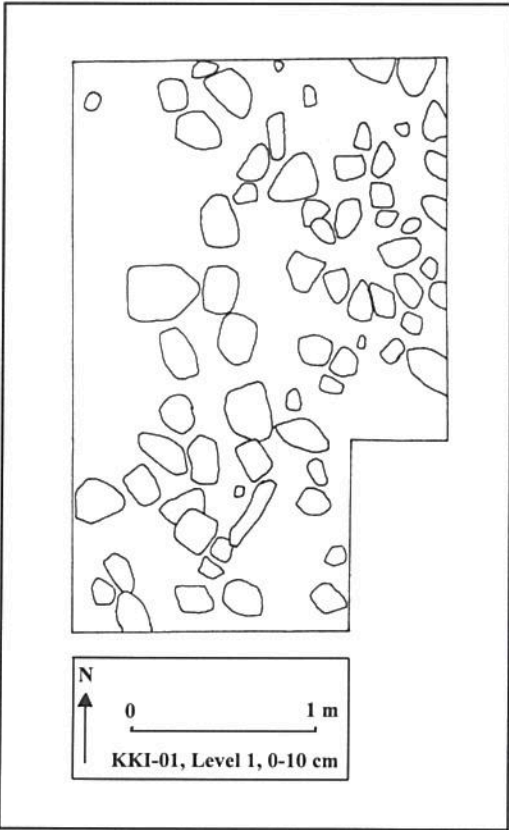


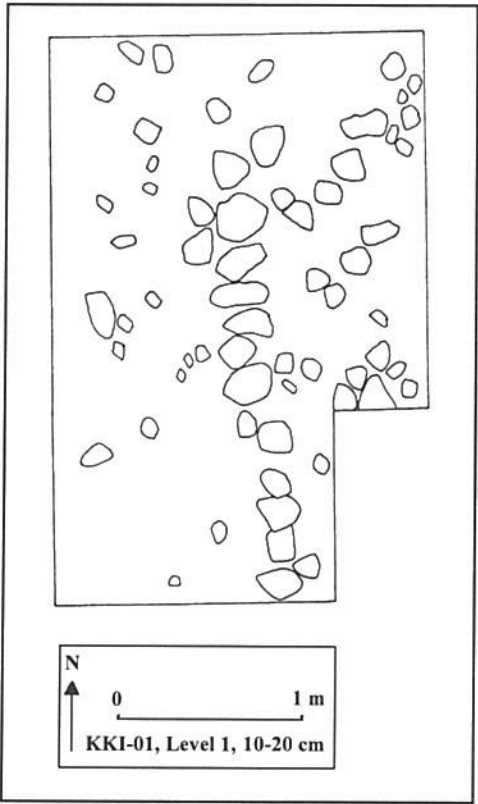


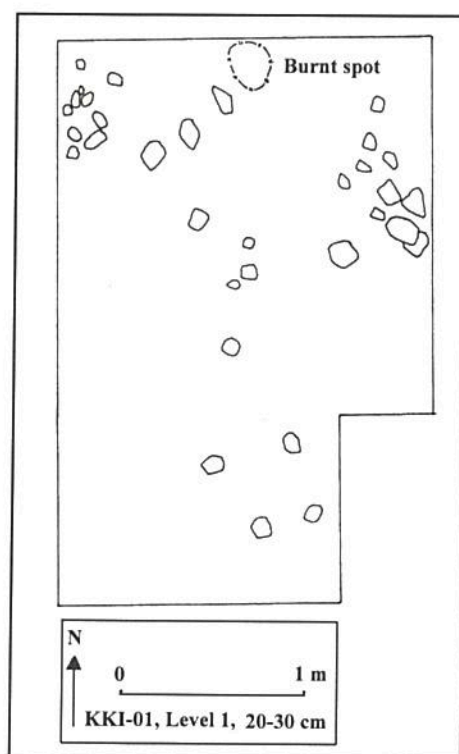


KKI-01, Section of marae site



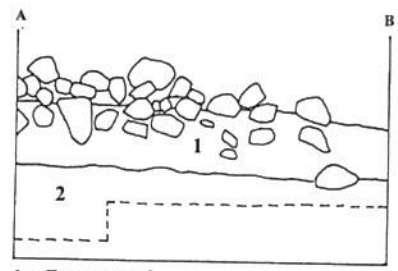






0 1 m

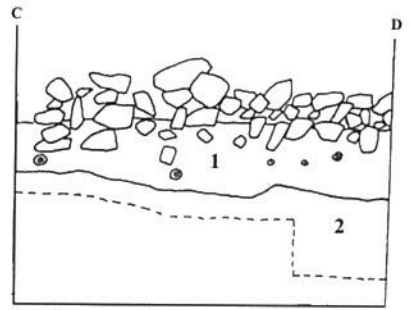
KKI-01, E-W section



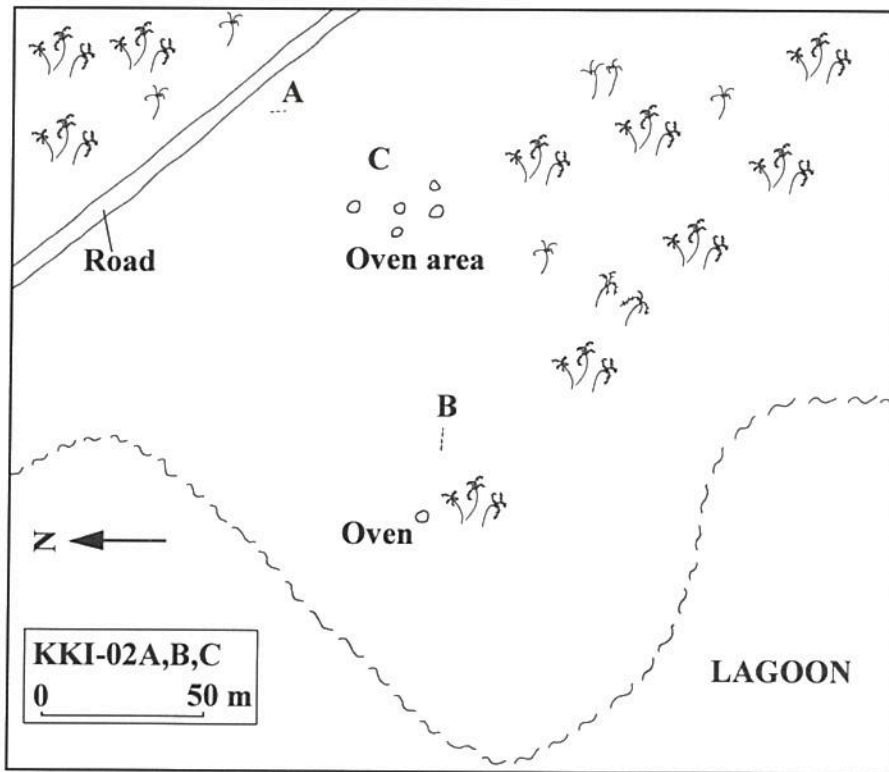
1 = Brown sand
2 = Beige sterile sand

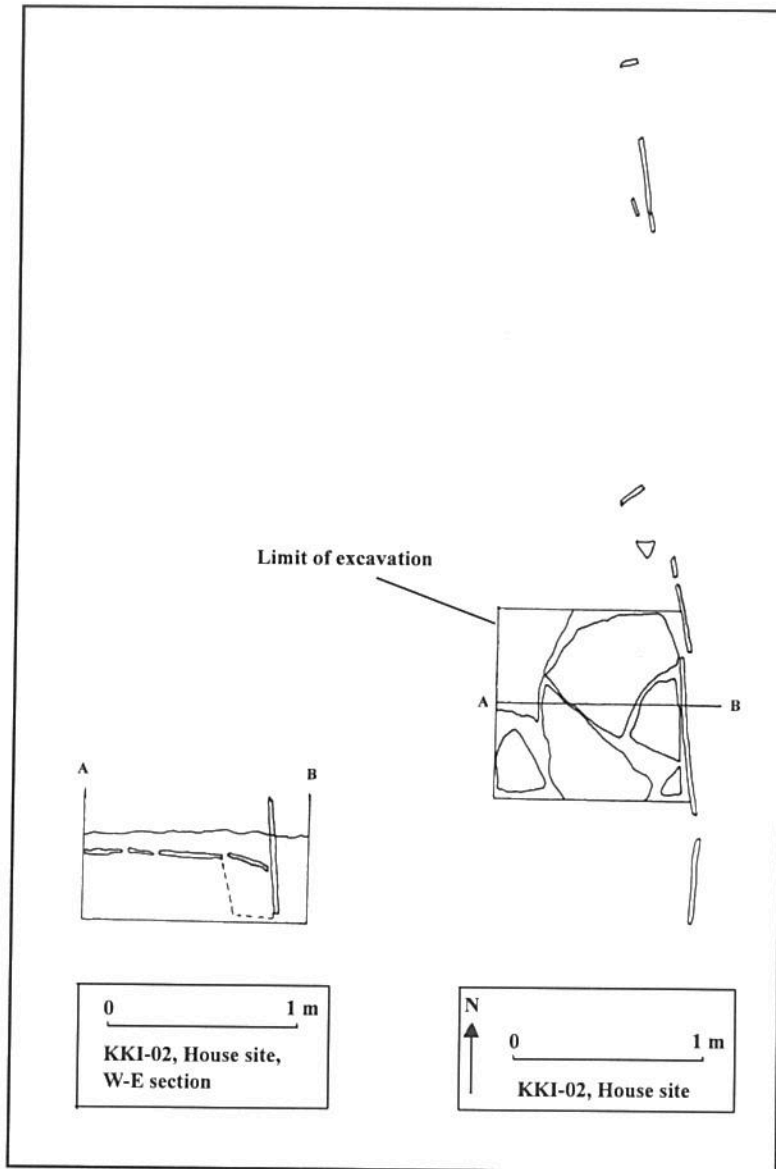
0 1 m

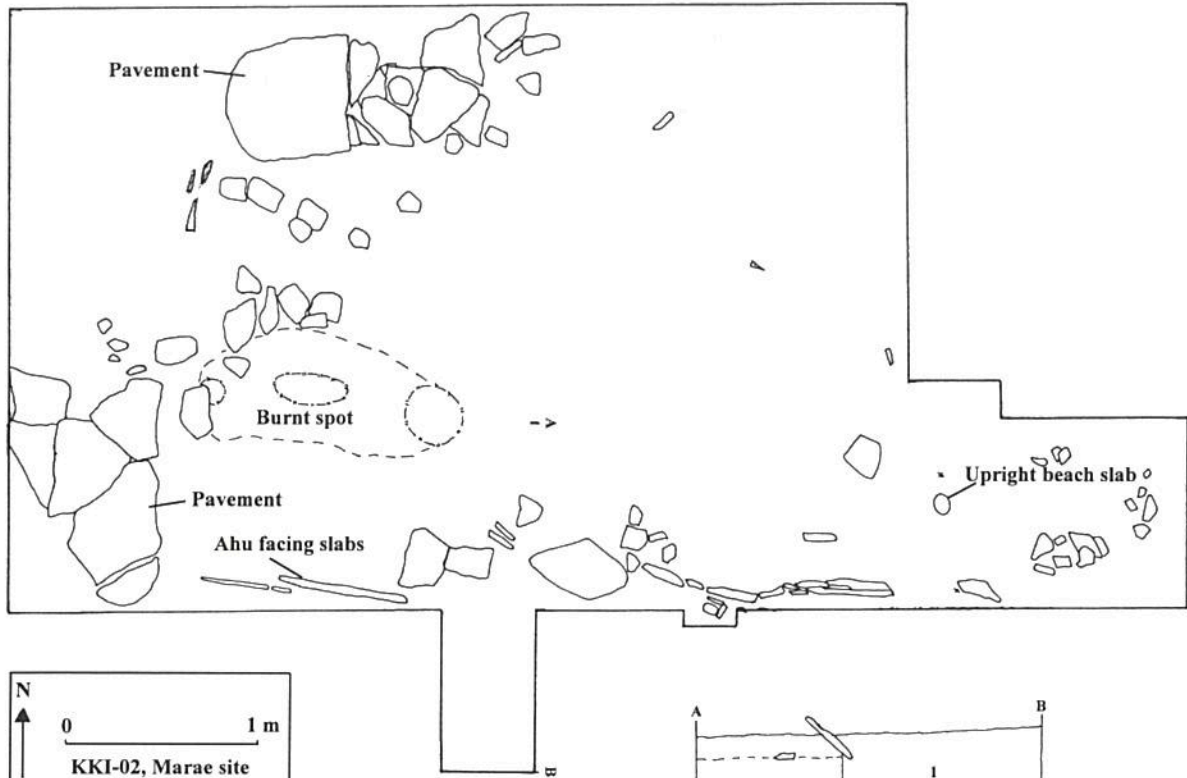
KKI-01, N-S section



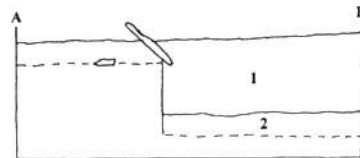
1 = Brown sand
2 = Beige sterile sand





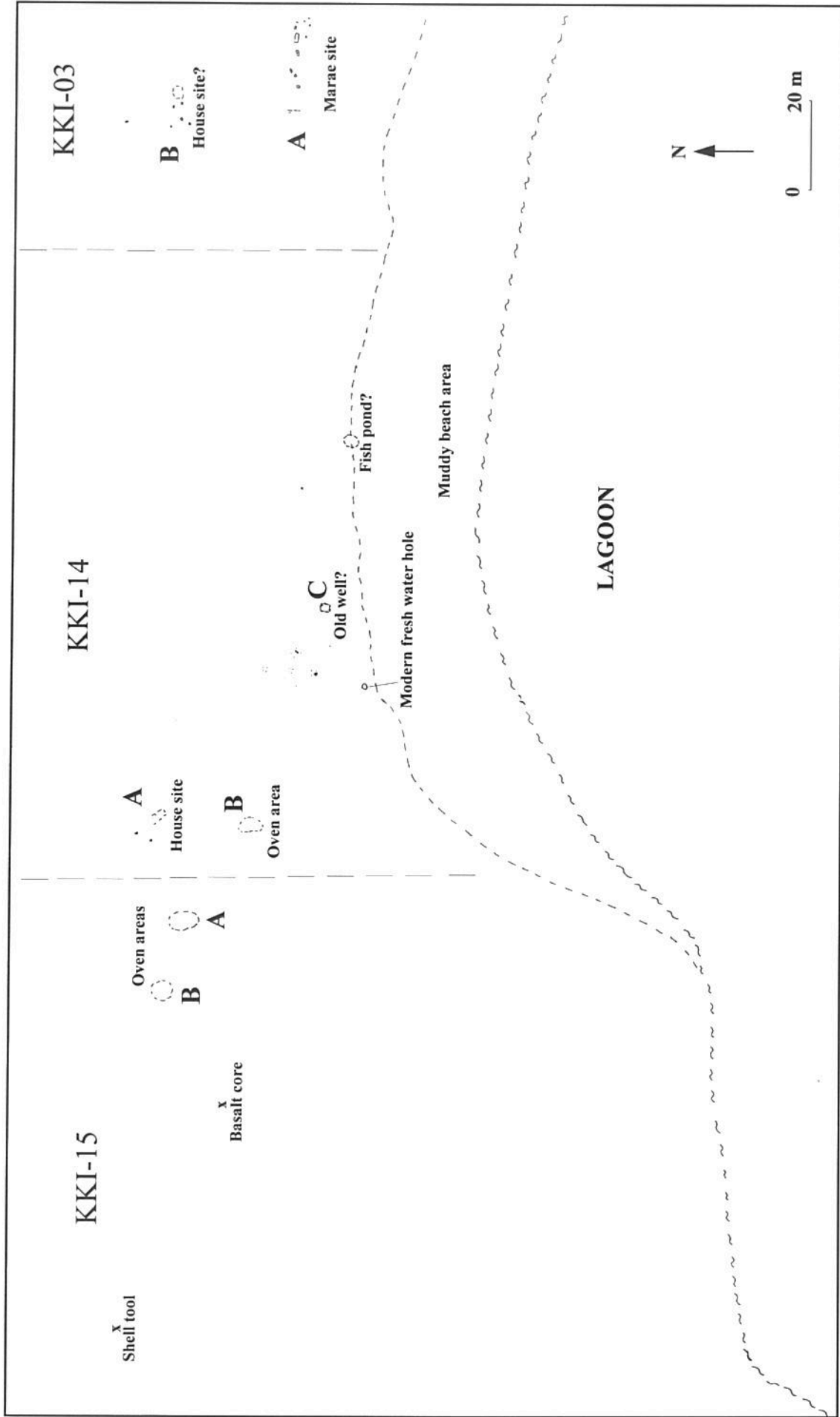


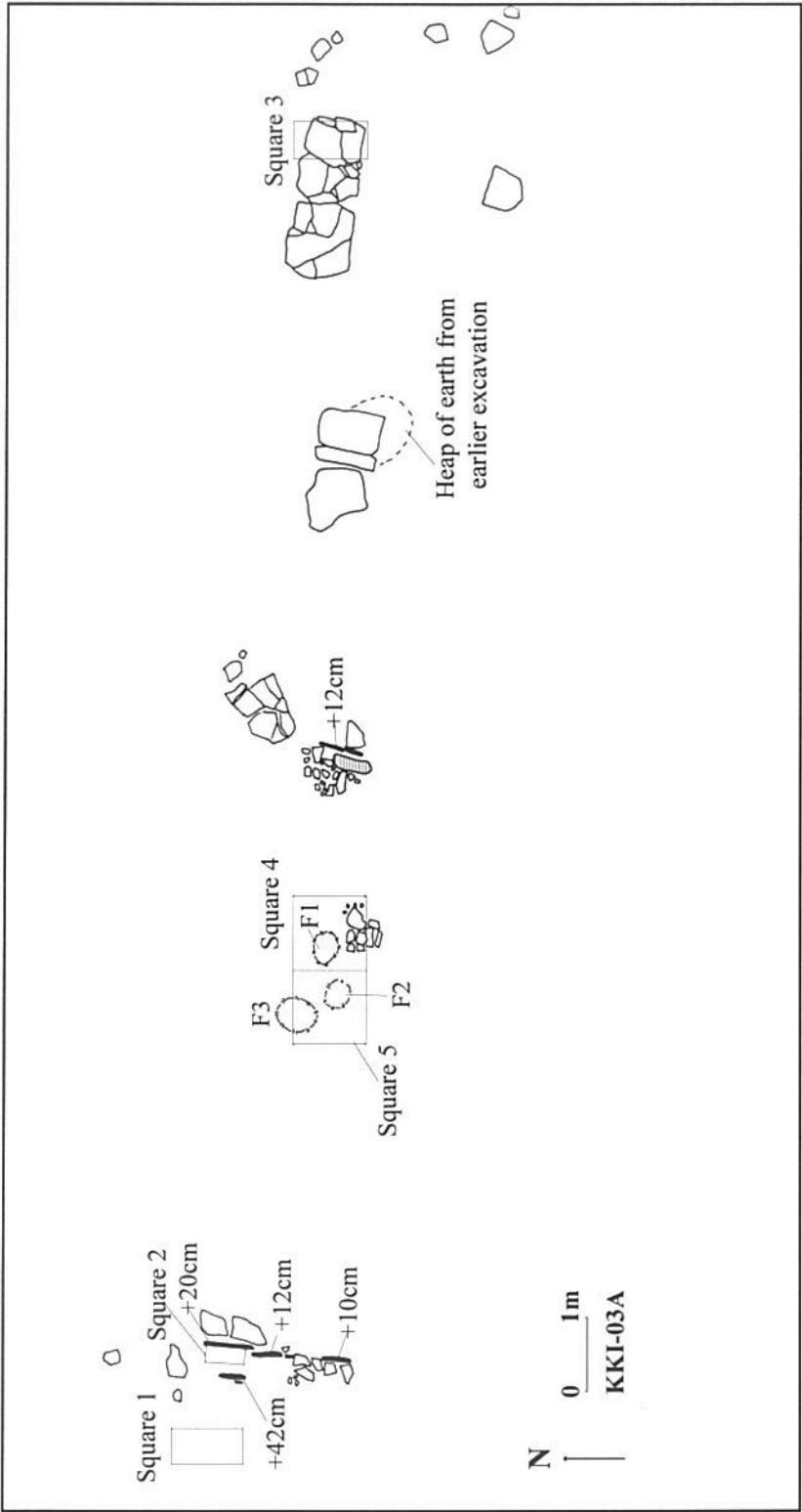
N
0 1 m
KKI-02, Marae site



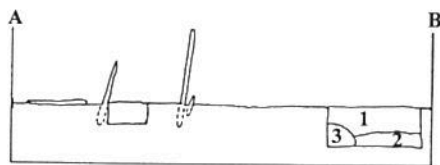
1=Light beige sand
2= Beach sand mixed with shells

0 1 m
KKI-02, Marae site,
N-S section

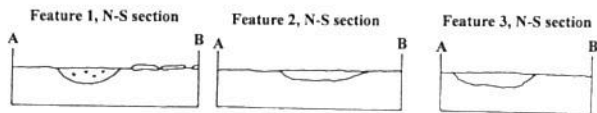




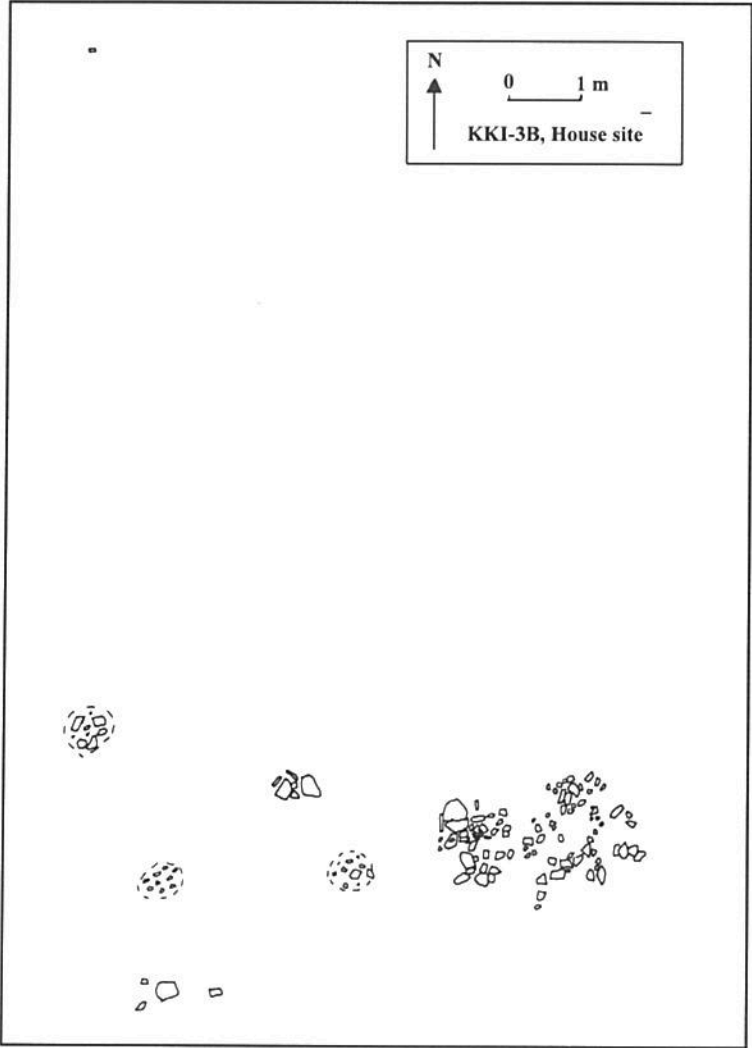
0 1 m
KKI-03A, Section of ahu

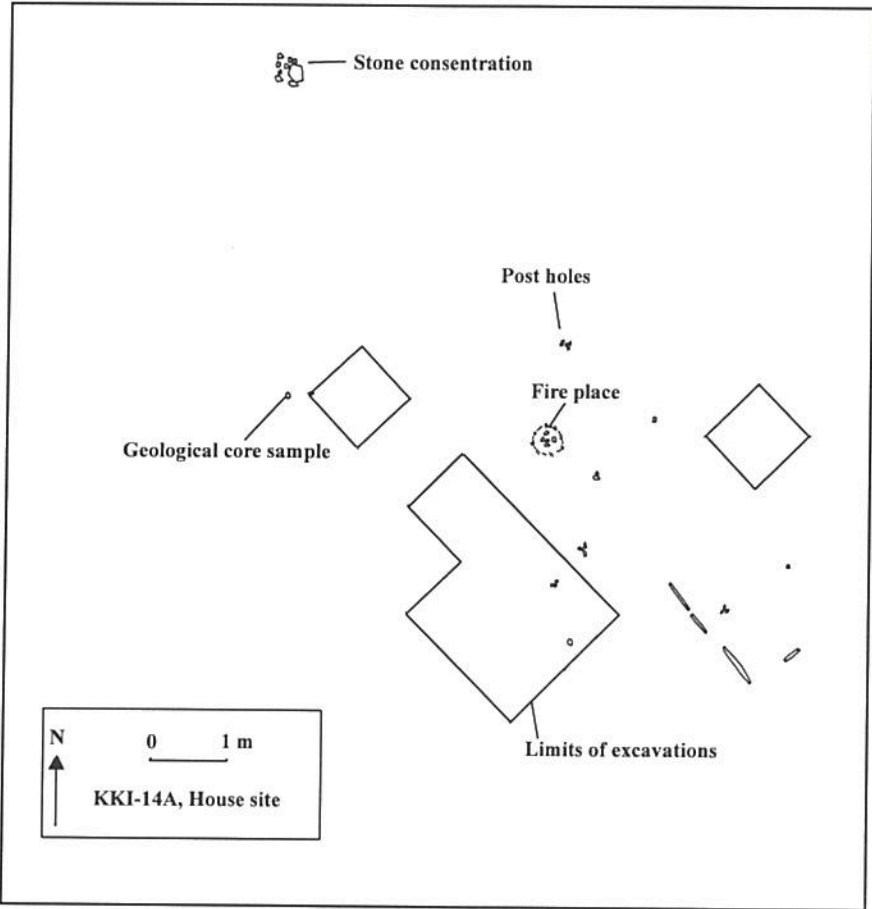


1= Gray fine sand with shell
2= Brown sand with shells
3= Shell layer with sand

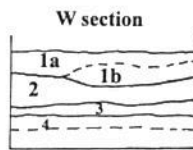
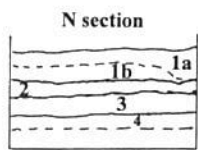
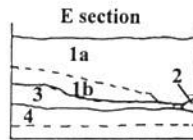
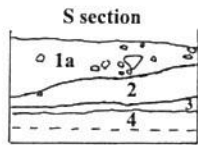
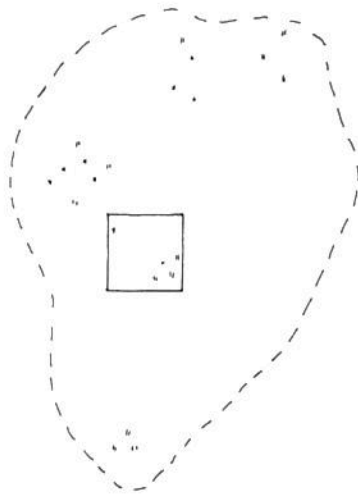


F1 contained brown sand with ash and pieces of carbon.
F2 contained brown sand with ash.
F3 contained brown sand with some ash and pieces of carbon and bones



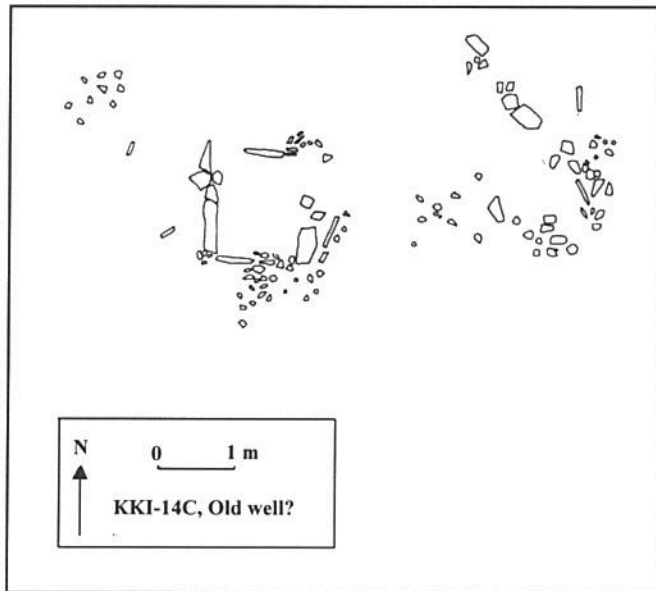


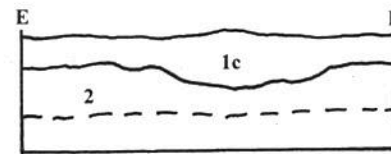
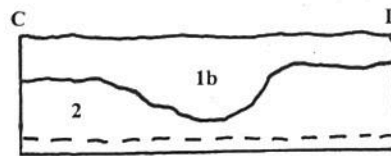
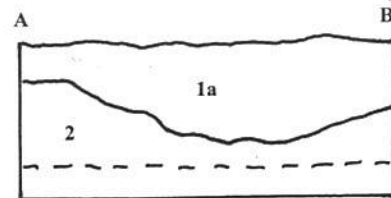
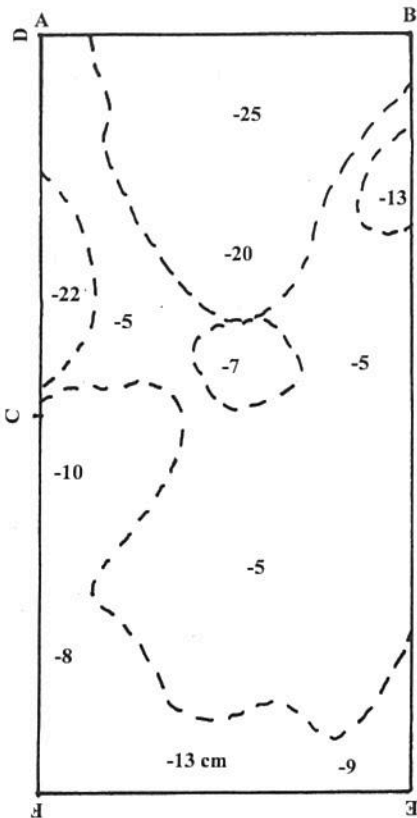
N
 0 1 m
 KKI-14B, Oven area



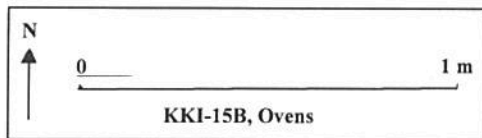
0 1 m
 KKI-14B, Sections

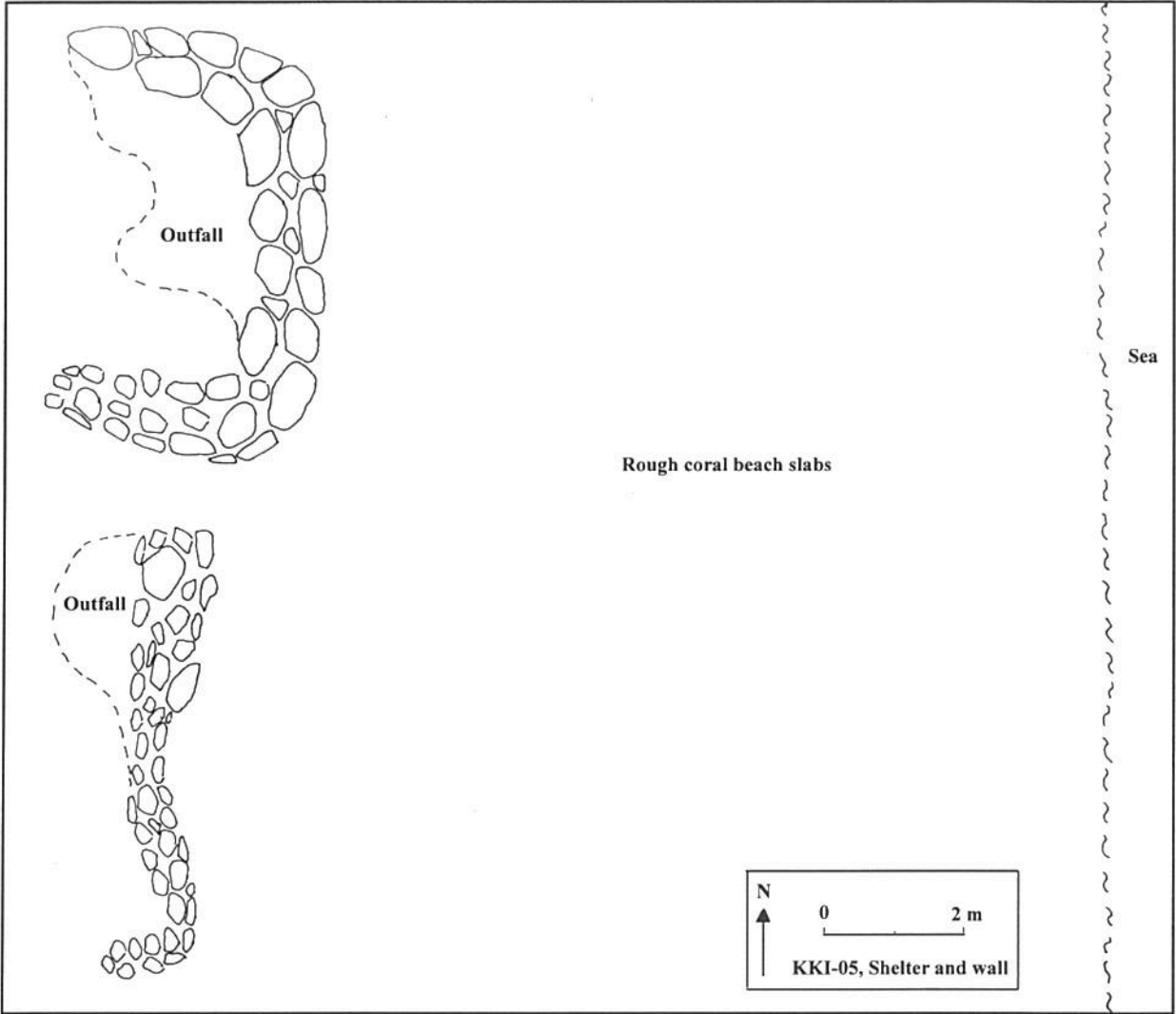
1a= Gray sandy ash layer.
 1b= Orange brown sand/shell layer effected by fire.
 2= Brown shell layer.
 3= Shell and sand layer.
 4= Hard compact shell layer.

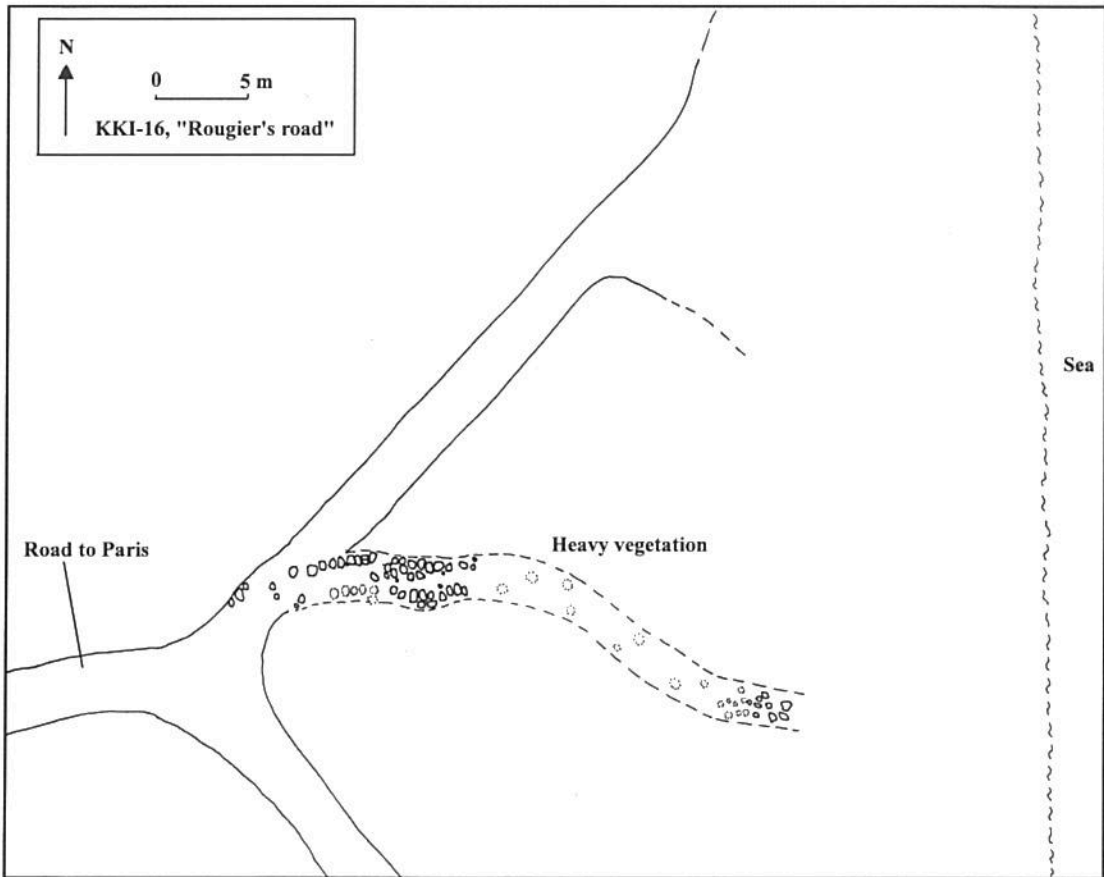


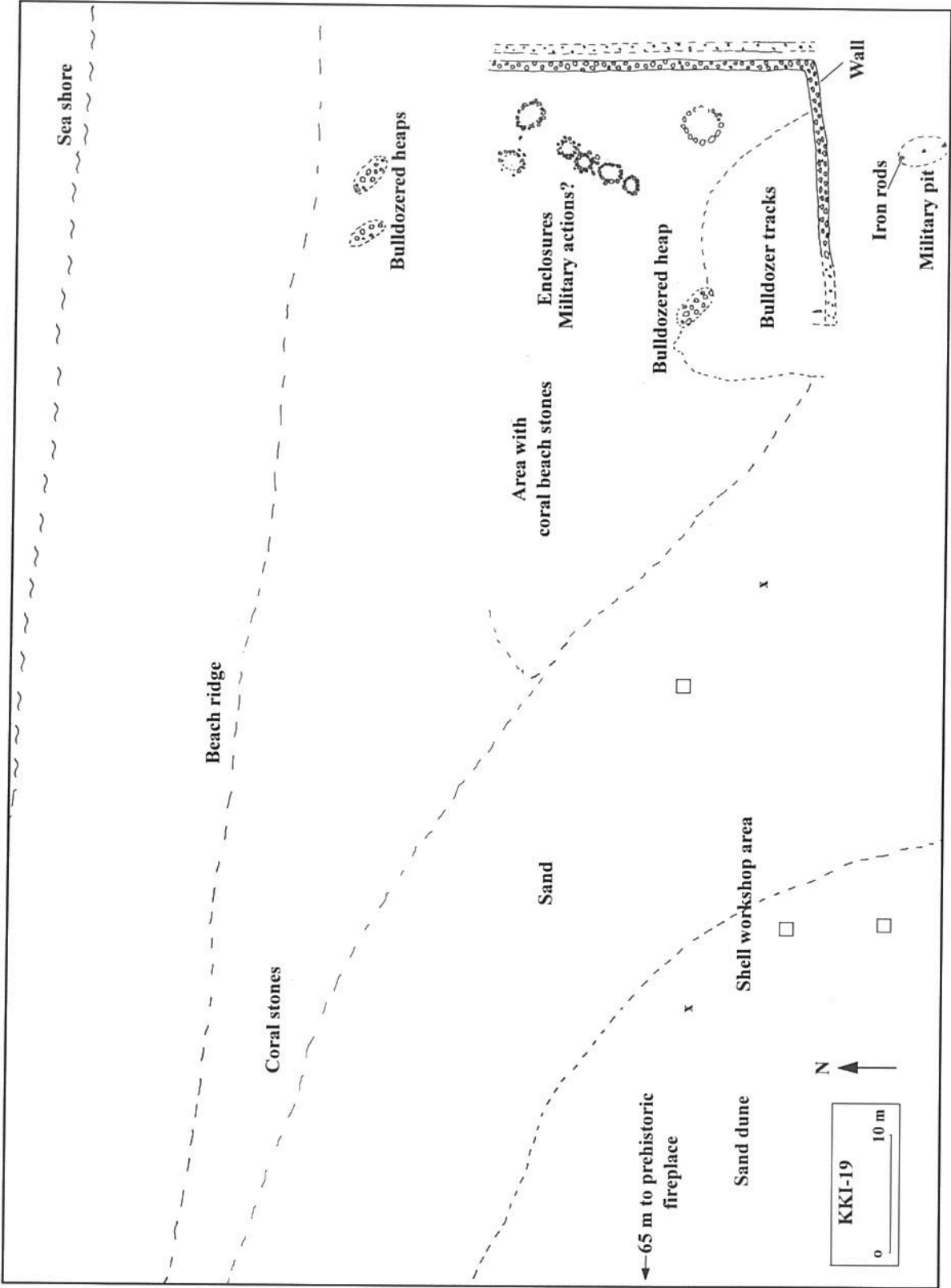


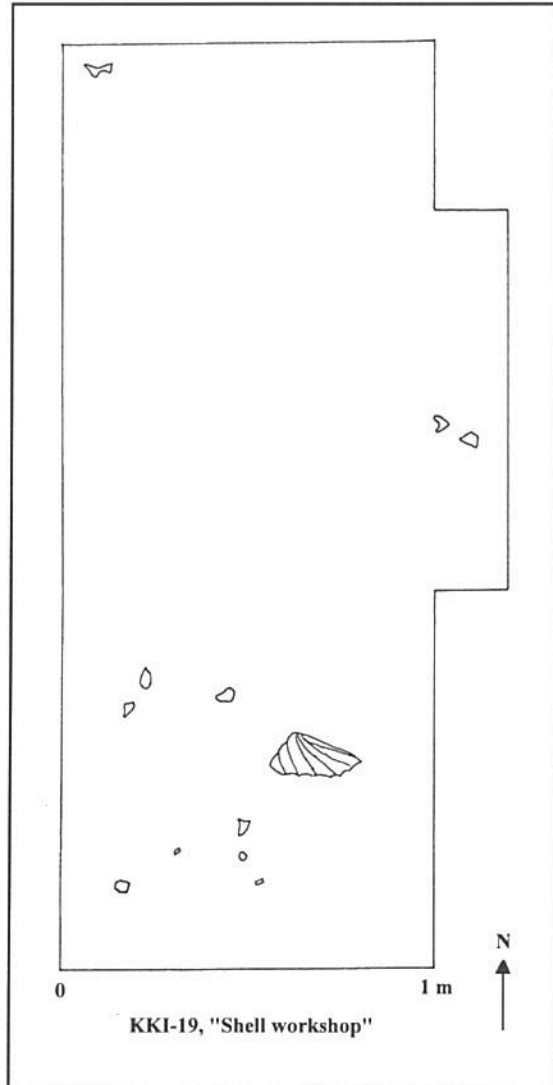
1a= Gray brown ashy sand
 1b= Dark gray brown ashy sand
 1c= Dark gray brown ashy sand
 with pieces of carbon
 2= Light brown sand with shells
 - - - = Limit of excavation

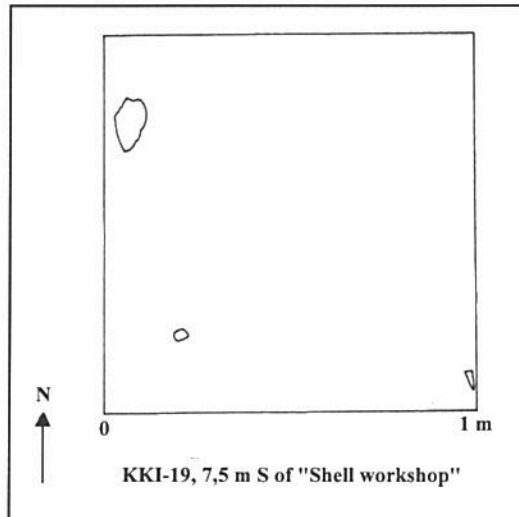


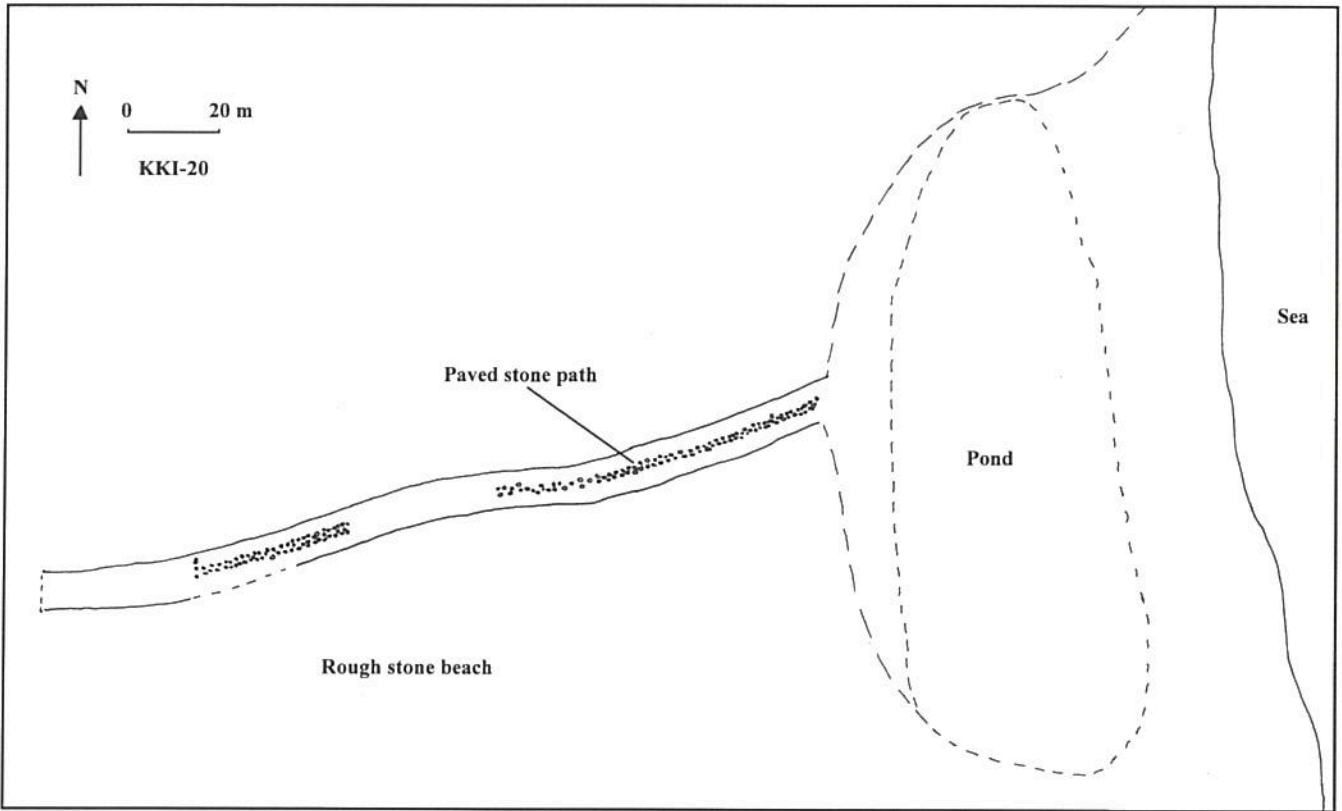












NOTES

Contn. KKI-15 Area B Bone + shell B3 43

KKI-18 Findspot 50m east of KKI-03 - Tridacna pieces 44 One bag

KKI-03	Marae site	Square 1	Bone/shell	45	} One bag
KKI-03	" "	Square 1	" "	46	
"	" "	"	" "	47	
"	" "	Square 2	carbon	48	
"	" "	" 3	"	49	
"	" "	" 4	Feature 1 carbon	50	
"	" "	" 5	Feature 2 carbon	51	
"	" "	" 5	Feature 3 shell/bone	52	

KKI-02	Village site	Area B	Square 1 carbon/bone	53
"	" "	Area B	Square 1 carbon	54
"	" "	Area C	Oven 1 carbon	55
Additional:	" "	Area B	Marae Square A2 Carbon	67
"	" "	" "	" " " " A3 "	68
"	" "	" "	" " " " A5 Carbon	69
"	" "	" "	" " " " A5 Carbon shell slabs	70
"	" "	" "	" " " " B1 Carbon	71
"	" "	" "	" " " " B4 Shell	72
"	" "	" "	" " " " C3 Shell tools?	73
"	" "	" "	" " " " D2 Bone	74
"	" "	" "	" " " " A6 Shell	76

~~KKI-02 67-76 Shell workshop site~~

KKI-19	Shell workshop site	Square 1	Shell adze	56	} One bag
"	" "	Surface find	1/2 shell adze	57	
"	" "	Surface find	SE of (56) Shell core	58	
"	" "	Surface find	Shell adze blank	59	
"	" "	Surface find	over area <u>Tridacna</u>	60	} One bag
"	" "	Carbon sample	from oven	61	
"	" "	Square 2	shell scraper	62	
"	" "	Square 2	shell flakes	63	
"	" "	Square 2	bone 0-5cm	64	
"	" "	NW of "	surface shell	65	
"	" "	Square 3	surface shell all	66	

KKI-16 Paris pavement/road excav near sea 75

nds InventoryBag Number

KKI-17 Antemia — Stone collection
 " " " — Bone
 " " " — Charcoal
 " " " — Charcoal

01
 02
 03a
 03b

KKI-01 NW Point marae — bone B4
 " " — shell + bone B4
 " " — shell B5
 " " — shell B5
 " " — carbon B5
 " " — carbon B5
 " " — carbon B5
 " " — Tridacna shell B6
 " " — shell + bone C4
 " " — shell + bone C4
 " " — carbon C4
 " " — carbon C4
 " " — shell + bone C5
 " " — shell + bone C5
 " " — shell C5
 " " — iron C6
 " " — carbon + shell C6
 " " — bone + shell C6

04
 05
 06
 07
 08
 09
 10
 11
 12
 13
 14
 15
 16
 17
 18
 19
 20
 21

} One bag

} One bag

KKI-14 "Canoe House" + Ovens — Basalt + shell Area C — 22
 " " — Carbon + shell Area A — 23
 " " — Carbon Area A E2 24
 " " — shell + bone Area A E3 25
 " " — carbon Area A H3 26
 " " — shell Area A E2/E3 27
 " " — carbon Area B — 28
 " " — shell + bone Area B — 29
 " " — carbon Area B — 30
 " " — carbon Area B — 31a
 " " — pearl shell Area B surface 31b

} One bag

KKI-15 Ovens + find spots W. of KKI-14 — basalt core 32
 " " — shell artefact 33
 " " — blade/burnt stone 34
 " " — carbon, feature 03 35
 " " — Area A B5 carbon/shell 36
 " " — Area A B6 Feature 01 37
 " " — Area A B6 carbon 38
 " " — Area A C6 Feature 02 39
 " " — Area B B2 Carbon/bone 40
 " " — Area B B2 Carbon 41
 " " — Area B B3 Carbon 42

} One bag

} One bag

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