NEW ZEALAND ARCHAEOLOGICAL ASSOCIATION

ARCHAEOLOGY IN NEW ZEALAND

EXCAVATION OF POROPORO CAVE, NEW GEORGIA, SOLOMON ISLANDS

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INTRODUCTION

The Poroporo Cave excavation was undertaken as part of the 1996 field programme of the New Georgia Archaeological Survey (N.G.A.S.). The N.G.A.S. is a joint archaeological research programme of the Centre for Archaeological Research at the University of Auckland, the National Museum of the Solomon Islands, the Ministry of Culture, Western Province Solomon Islands and the Anthropology Department of the University of Otago.

The long - term goals of the N.G.A.S. programme are:

1. To develop a baseline culture history for New Georgia with particular emphasis on establishing the position of New Georgia in the wider developmental sequence of island Melanesia
2. To document the development of terrestrial and marine food production systems
3. To look at patterns of long distance interaction through ceramic analysis and sourcing studies
4. To investigate the development of the late prehistoric Roviana chiefdom system
5. To develop an inventory of cultural resources including the documentation of traditional information on archaeological and traditional sites

Poroporo Cave was excavated during the second field season of Year 1 of the N.G.A.S. programme. The objectives of Year 1 were to survey and carry out test excavations along the offshore islands of the Roviana Lagoon in order to define a baseline culture history sequence from which more specific research problems could be addressed in later years. Additional reconnaissance surveys of several inland regions on the mainland of New Georgia were also

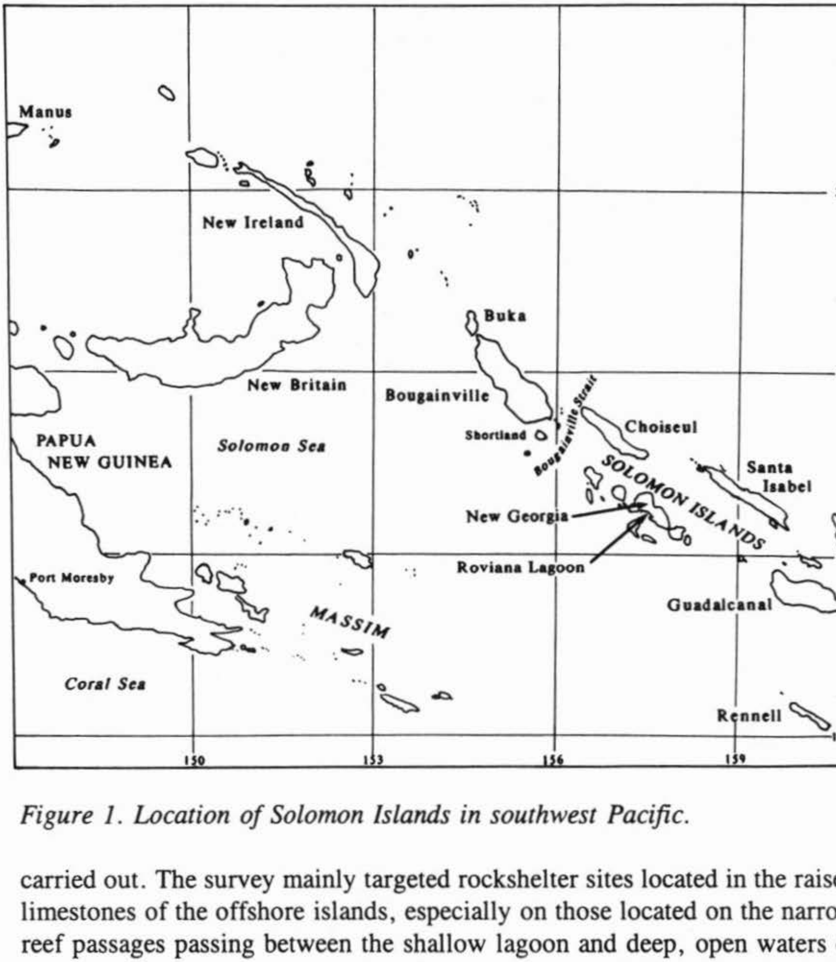

Figure 1. Location of Solomon Islands in southwest Pacific.

carried out. The survey mainly targeted rockshelter sites located in the raised limestones of the offshore islands, especially on those located on the narrow reef passages passing between the shallow lagoon and deep, open waters of the ocean and adjacent bays. These locales are currently the prime focus for village settlement since they provide greatest access to the various inshore and deep water fishing zones as well as being the most advantageously placed locations in respect of the local interaction networks. Rockshelter sites in these locations should thus provide a good record of long term settlement history in the lagoon. In addition, we were interested in establishing the possibility of New Georgia having received colonising parties during the late Pleistocene as has been already demonstrated from rockshelter excavations in Buka and New Ireland to the north of New Georgia (Allen, Gosden, and

White 1989). Again, rockshelter sites in the raised limestones along the lagoon passages seemed ideal locations for this type of investigation based on the experiences of the New Ireland teams.

ENVIRONMENTAL SETTING

Roviana Lagoon is located along the south coast of the island of New Georgia in the Western Province of the Solomon Islands (Fig. 1). It is approximately 30 km long and is comprised of a stretch of shallow water lying between the mainland and a strip of raised coral reef barrier islands situated about 2.5 km offshore (Fig. 2). The coral cliffs of the offshore islands, and a patch of similar cliffs along the eastern end of the mainland, are heavily weathered and contain a number of well defined wave notches which are especially visible on the seaward end of the reef passages. There is an airstrip at the settlement of Munda at the western end of the lagoon. Outside Munda all transport in the lagoon area is via boat, although unsealed logging roads give access to parts of the mainland interior. During the July 1996 fieldseason the N.G.A.S. team worked from a base at Patmos village on Ndora Island and carried out surveys of the offshore islands using a 4 m canoe with outboard motor.

Figure 2. Location of Poroporo Cave in Roviana Lagoon.

THE SITE

Poroporo Cave is located about 80 m inside Ararosa Passage which runs between the mainland of New Georgia and Petani Island. Poroporo is on the mainland side of the passage at a point where the passage is about 50 m wide. Poroporo Cave is best approached from the sea as the raised limestone cliffs behind the site make access from the mainland difficult. A flat coral platform lying about 40 cm below the high waterline runs parallel to the coast and this provides good canoe access to the site. From a narrow beach line the land slopes up 15 m to a raised coral cliff which is approximately 25 m high (Fig. 3). This cliff angles gently out so that at a height of about 10 m there is a drip line running 9 m out from the cliff face. This overhang provides excellent shelter from the rain but because the cliff slope is very gentle, there is also a high light level throughout the site.

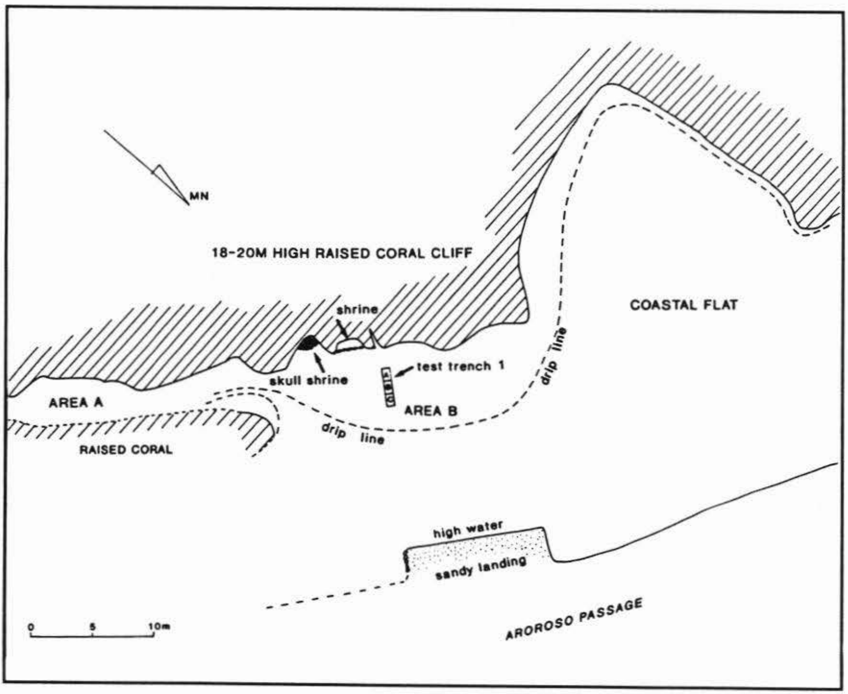

Figure 3. Site plan of Poroporo Cave.

The site is divided into two areas, Area A and Area B. Area A is an open sandy area lying partly beneath the rocky overhang and sloping gently down to the coast. The surface of Area A contains pockets of ashy soil and is generally stained from the construction of hearths and ovens. The highest point on Area A is about 3.5 m above high tide mark. Area B lies in a crevice between the main cliff face and a large section of cliff which has broken off from the main face. Here the ground is up to 1 m lower than in Area A and is covered by lagoonal sediments including marine shell and coral detritus.

The site and immediate environs contains abundant evidence of late prehistoric and early historic period activity. A number of small shrine are located on the cliff face about 100 m north of the site and a skull deposit containing about 12 skulls is located at the base of the cliff several metres to the north of the site datum (Fig. 3). These features are associated with the late period Roviana chiefdom system and headhunter complex which was centred on Nusa Roviana at the western end of the lagoon (Sheppard *et al.* n.d.).

The excavation of Poroporo was designed to address two main issues:

- To locate deep stratified deposits which would assist the construction of a culture history sequence for New Georgia. To this end we were particularly interested in locating ceramics in stratigraphic position.

- To investigate site function with a view to establishing the role of rockshelters within the wider settlement pattern of Roviana Lagoon.

A single trench (T 1) was excavated through the site to a depth of 135 cm (Figs. 3 and 4). The results of the excavation failed to fully address the intended culture historical objectives, but they did provide invaluable insights into some more general issues regarding the archaeology of coastal New Georgia.

RESULTS

Trench 1 was 150 cm long and excavated to a depth of 135 cm. Excavation proceeded by natural stratigraphy but soils were removed by 7 cm spits within layers. All soils were wet sieved through 5 mm screens. The site contained two layers (Fig. 4). Layer 1 was a cultural material with strong patterns of micro-banding. It contained many lenses of charcoal and ash, and

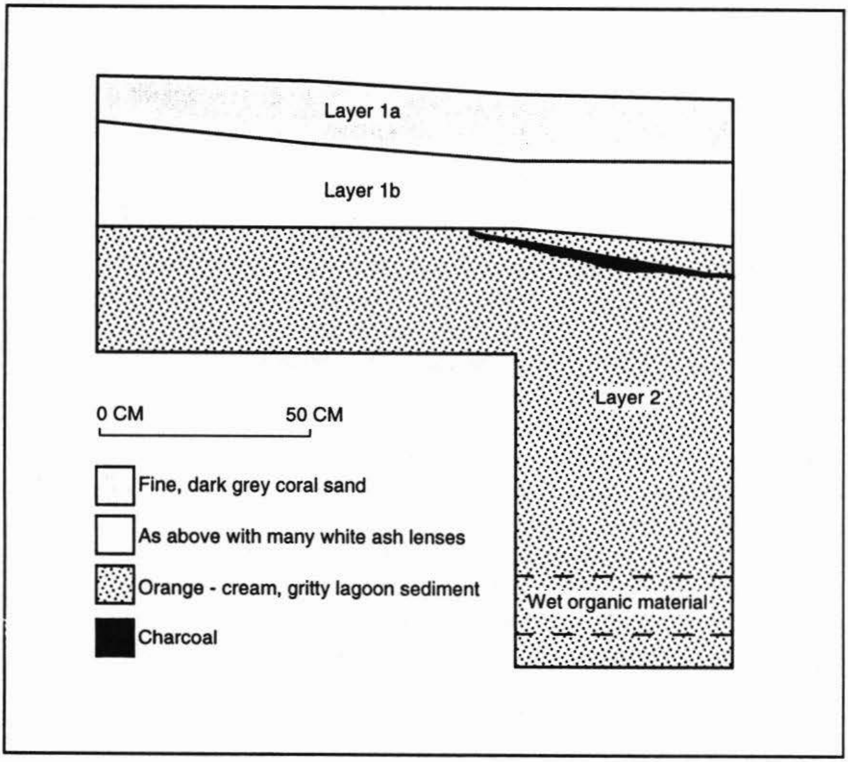

Figure 4. Section of Trench 1, Poroporo Cave.

there was a high concentration of bone throughout the layer. Layer 1 is divided into two sub-layers. Layer 1a was fine, loose and dark grey to black in colour, Layer 1b was very similar but contained a higher proportion of white ash lenses and was much more compact. Layer 2 consisted of a lagoon sediment which was orange - cream in colour and comprised of coral sand and pebbles with naturally deposited shell fragments. In a 15 cm deep band occurring between 115 - 130 cm below ground level, a sparse band of organic material including wood fragments and canarium nut shell was located. At this depth the site was wet.

The numerous thin lenses of Layer 1 suggest that this material accumulated gradually from a long series of short occupation events. Layer 2 appears to be a marine sediment deposited on a former lagoon floor. The organic materials at 115 cm may represent a former beach line; identical materials occur in the strandline of the current beach.

Faunal remains

The faunal remains from Layer 1 of Poroporo Cave consisted of fishbone, marine shell and a small quantity of bird bone. The bird bone and shell has not yet been fully identified but the former consists of 11 broken sections of long bone and one cranial fragment and the marine shell sample is made up mainly of highly fragmented specimens of lagoon shore bivalves with a total washed weight of 312 g. The fishbone has all been identified to element and where possible to Family using the Pacific Fishbone Reference Collection in the Anthropology Department at the University of Otago. As the Otago collection is not yet set up to identify the full set of elements, most taxonomic identifications were made using mouth parts and a few other highly diagnostic bones. A summary of the fishbone analysis expressed in terms of N.I.S.P. (number of identified specimens) is shown in Table 1. Table 2 shows identified families by stratigraphic level. A full analysis using a wider set of elements will appear in the final New Georgia reports. The current analysis provides sufficient information to look at the ecological aspects of fish exploitation at Poroporo and through this to address the question of site function. On the basis of these findings we make some suggestions about the role of these passage rockshelters in the settlement pattern of Roviana Lagoon.

The reef passages are prime locations for fishing, which is no doubt one of the reasons why the lagoon rim villages are mainly located in these places. However, the fishing resources of these areas are quite specific and the Poroporo Cave midden does not fit easily into the type of exploitation strategies we have observed from similar locales elsewhere within the lagoon. Today, the passages are important fishing zones for two main reasons. First, they give immediate access to the important fishing zones of the outer shore where bonito (*Scombridae sp.*) school and are caught in large numbers up to several kilometres offshore. Second, the passages are important because the large Bluefin Trevally and other *Carangidae sp.* pass through the passages each day on the incoming tide to feed in the lagoon. At these times they can be caught with lures or baited hooks in the passages. The Bluefin and other *Carangidae* species, particularly the Rainbow Runner, can also be taken along the outer edges of the passages and adjacent ocean reefs. Thus we would expect *Carangidae* and *Scombridae* to be the most important target families from a location such as Poroporo. Instead, while both these families are well represented, there is a very high relative proportion of coral reef fish such as *Serranidae, Labridae, Lutjanidae, Lethrinidae, Scaridae, Acanthuridae* and *Balistidae* in the site. All these families would be present off the Poroporo reef but we would not expect any to have such high abundance values relative to *Scombridae/Carangidae* in a reef passage assemblage from Roviana. For example, in a month's residence on the reef passage at Patmos we did not see any *Scaridae, Acanthuridae* or *Balistidae* caught and *Carangidae* and *Scombridae* made up at least 95% of the observed catch either by weight or number of specimens.

The important conclusion to be drawn from this observation is that the Poroporo Cave assemblage is unlikely to represent the fish catch of resident groups specialising in the exploitation of the rich fishing grounds around the site. Instead it represents specimens taken from a much wider range of ecological niches. A likely explanation is that the site served as a stopping off point for people moving into or out of the eastern end of Roviana. People stopping off at Poroporo might cook fish which they had brought with them from other parts of the lagoon thus mixing bones from many of the reef edge grazers and benthic feeders commonly taken with nets and spears along sheltered reefs, with the pelagic predators which are the main target species of the passages and adjacent ocean reef zones.

DISCUSSION

A continuing problem of the N.G.A.S. has been the inability to locate deep stratigraphic sequences in the cave and rockshelter sites along the lagoon edges. We have currently recorded and sampled nine ceramic sites along the shorelines of the offshore islands and adjacent mainland but while stylistic attributes indicate that these ceramics represent a long time span, the sites from which they derive are all submerged in the inter-tidal zone and so far, we have no pottery from stratigraphic position. Many of the rockshelter sites we have excavated are located within 5 m of the current high tide line and, like Poroporo, the top cultural horizons are shallow. Rockshelter sites on the back terraces which are higher above sea level have not so far produced any cultural deposits.

The stratigraphy of Poroporo Cave provides some insight into the nature of this problem, and its possible solution. The wave notches of the limestone cliffs in Ararosa passage and elsewhere attest to long term processes of sea-level retreat; probably as a result of tectonic uplift. However, the Poroporo stratigraphy suggests that there may also have been a recent sea-level rise. The banding at 115 cm is either from an early beach deposit or represents a sub-marine deposition on a shallow lagoon floor. Above this there is 80 cm of accumulated lagoon sediment indicating a rising high water stand subsequent to the deposition of the organics. Following this, sea levels again fell exposing the marine sediments and it was on these levels that human settlement of the cave site occurred. Thus the cultural materials of Layer 1 were deposited after a period of oscillating sea levels. While these terraces may have been exposed and suitable for occupation from as early as the beginning of the Holocene if there was a high water stand 1 - 1.5 m higher than present between 4000 and 2000 B.P. as Kirch (Kirch 1997) has reported from Mussau then the shelter may have been scoured of these earlier deposits. The submergence of the ceramic sites along the lagoon edge indicates that the dynamics of the sea-land interface are still active and understanding the coastal geomorphology now becomes the central issue in defining the prehistory of Roviana and the New Georgia coast.

The faunal assemblage from Poroporo is also helpful in understanding the role of rockshelters in the late settlement patterns of the lagoon edge. It was argued above that the fishbone assemblage points not to the specialist exploitation of the rich local resources of Ararosa passage and immediate environs, as we might expect to see if we were investigating the refuse of local resident groups. Instead, it suggests that Poroporo Cave was visited many times for short periods by people who were passing into and out of the Lagoon and who processed, consumed and discarded fish taken from a diversity of ecological zones. This is consistent with the stratigraphy of the site where Layer 1 consists of numerous shallow bands and sub-layers, but contains no evidence for long term or continuous occupation. It is consistent too with the oral traditions of the region which describe Poroporo as being used as a stopover point for coastal travellers and fishing parties when sea conditions were too rough. There was no evidence for manufacture at Poroporo and the artefactual remains were meagre. The only artefact recovered was a single trolling (bonito) lure in pearlshell, the first such artefact recorded from the Western Province.

On the basis of our observations of Poroporo and the archaeological record of other lagoon passages we are now in a position to put forward some very tentative propositions regarding settlement pattern change in the region which will guide our future research activities. For a number of reasons it appears evident that the rockshelter deposits on the lagoon passages of Roviana span the last 2000 - 2500 years (see below). For most of this period there is no strong evidence of large scale occupation of the passages and one reason for this might be that the priorities of agricultural production led settlement away from the reef passages towards the flat bays of the offshore islands and the mainland. During most of this period the passages were mainly used as stopover points for people travelling into or out of the lagoon. The establishment of the reef passage villages occurred in the last couple of hundred years and is likely to have been a result of an increase in political tension in the region, especially the growth of the headhunter complex; the reef passages are strategically advantageous and easily defended. This hypothesised change in settlement patterns might also relate to changing exchange and interaction patterns in the region. These are amongst the issues which we will address in upcoming field seasons.

Finally a word on dating. We have not submitted radiocarbon samples for Poroporo but on geomorphological grounds it is very likely that the basal layers, lying as they do just above high water level, are similar in age to the basal layers of other rockshelters on the lowest reef terrace of the Roviana Lagoon. At Kinda Hite Rockshelter on Patmos we have a single conventional radiocarbon age (WK-4586) of 2510 ± 50 B.P. from marine shell (Mangrove Clam). This site is just over 4 m above sea level and so we would expect this date to be earlier than any from the basal layers of lower sites such as Poroporo.

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Table 1. Fishbone identified from Layer 1, Poroporo Cave, Roviana Lagoon, New Georgia.

FAMILY	ELEMENT	NISP
Acanthuridae	Pterygiophore	9
Acanthuridae	Total	9
Balistidae	Dorsal sp	5
	Dorsal sp/ pterygiophore	2
	Pterygiophore	4
Balistidae Total		11
Carangidae	Articular	1
	Dentary	1
	Maxilla	1
	Pterygiophore	16
	Quadrate	2
	Scutes	31
	Supracleithrum	2
Carangidae Total		54
Labridae	Dentary	1
	Inferior Pharyngeal	2
	Cluster	
	Premaxilla	3
Labridae Total		6
Lethrinidae	Maxilla	1
	Palatine	2
	Quadrate	1
Lethrinidae Total		4
Lutjanidae	Articular	1
	Premaxilla	2
	Quadrate	2
Lutjanidae Total		5
Monocanthidae	Dentary	1
Monocanthidae		1
Total		
Muraenidae	Dentary	2
Muraenidae Total		2
Scaridae	Articular	1
	Dentary	4
	Inferior Pharyngeal	6
	Palatine	2
	Premaxilla	2
	Quadrate	2

FAMILY	ELEMENT	NISP
	Superior Pharangeal	6
	Unidentified toothed	1
	Bone	
Scaridae Total		24
Scombridae	Dentary	1
	Quadrate	8
Scombridae Total		9
Serranidae	Articular	1
	Dentary	4
	Maxilla	2
	Premaxilla	4
	Preopercular	1
	Quadrate	5
Serranidae Total		17
Unidentified	Articular	1
	Basioccipital	7
	Basipterygium	7
	Branchiostega	8
	Ceratahyal	11
	Cleithrum	8
	Coracoid	3
	Dorsal sp	16
	Dorsal sp/pterygiophore	23
	Ectopterygoid	3
	Epihyal	8
	Hyomandibular	30
	Hypohyal	3
	Hypural	8
	Inter-opercular	2
	Misc spines and rays	121
	Opercular	8
	Otolith	1
	Palatine	3
	Parasphenoid	1
	Pharangeal	6

FAMILY	ELEMENT	NISP
	Scapular	5
	Supracleithrum	5
	Urohyal	1
	Vertebra	171
	Vomer	6
	Unidentified fragments	70g
Unidentified Total		598
GRAND TOTAL		740

Table 2. Identified Fish Families by site level (all measurements below ground level).

FAMILY	DEPTH	N.I.S.P.
Acanthuridae	14-21cm	6
	28-35cm	3
Balistidae	0-7cm	1
	7-14cm	2
	14-21cm	5
	28-35cm	3
Carangidae	14-21cm	54
Labridae	14-21cm	6
Lethrinidae	14-21cm	4
Lutjanidae	14-21cm	4
	28-35cm	1
Monocanthidae	14-21cm	1
Muraenidae	14-21cm	2
Scaridae	0-7cm	3
	14-21cm	21
Scombridae	14-21cm	9
Serranidae	0-7cm	1
	14-21cm	12
	28-35cm	4
Grand Total		**142**