

# **An Archaeological Survey of Inland Madang, Northeast Papua New Guinea**

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## **Introduction**

Northeast New Guinea is strategically situated to have facilitated a number of key population dispersals in the human past (Figure 1). The first dispersal, during the Late Pleistocene, involved coastally adapted hunter-gatherer groups moving along northern Sahul into the Pacific Islands for the first time (Summerhayes et al. 2017). Some of these Pleistocene groups made foraging forays into the interior of the island (Gaffney et al. 2015a; Summerhayes et al. 2010), while others made deliberate island hops from the northeast coast into the Bismarck Archipelago, and later to the Solomon Islands (Walter and Sheppard 2017: 37). In the Late Holocene, the northeast coast was host to a number of different migrations that brought new technologies such as pottery-making into the region. Austronesian-speaking potting communities were active around the Sepik-Ramu Inland Sea, trading ceramics into the montane interior by about 3000 years ago (Summerhayes in press), while at a similar time Lapita potters had reached the Siassi Islands in the Vitiaz Strait (Lilley 1988), bringing with them a suite of domesticated animals (pigs, dogs, and chickens) along with the Pacific rat (Summerhayes et al. in press). These Lapita peoples would go on to colonise much of Remote Oceania for the first time, and whose descendants would eventually reach New Zealand.

Despite its critical location for Pacific archaeology, northeast New Guinea has received limited attention compared to major research programmes on the Sepik north coast (e.g. Terrell and Schechter 2011; O'Connor et al. 2011), in the Bismarck Archipelago (e.g. Allen and Gosden 1991), and on the south Papuan coast (e.g. Allen 2017; Bulmer 1978; Richards et al. 2016). To redress this, we here describe preliminary archaeological survey of the inland region of northeast New Guinea. Here, at Wapain, near Amele in Madang province, several ceramic sites indicate connections with red-slipped pottery makers on the Madang coast, while an extensive cave system has the potential for much older habitation. This survey will provide a platform for more intensive investigations in the future.

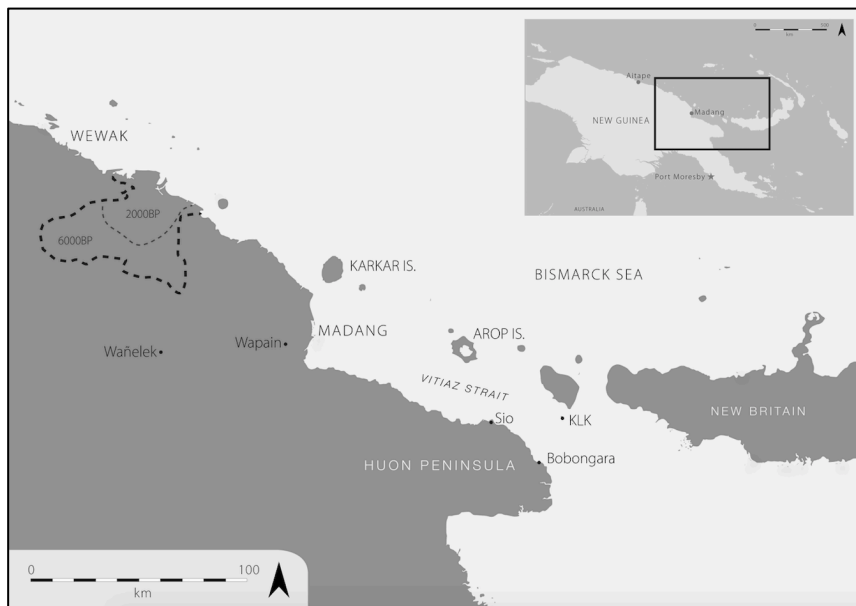


Figure 1. Northeast New Guinea with sites mentioned in text. The extent of the 6000BP and 2000BP Sepik-Ramu Inland Sea are marked in dashed lines.

## Archaeology in Northeast New Guinea

Pleistocene sites in northeast New Guinea are rare. At Bobongara on the Huon Peninsula, waisted tools perhaps used ring-barking trees or for grubbing date to around 40,000 years ago (Groube et al. 1986). Further inland in the Madang Highlands, the Wañelek site indicates sparse occupation during the Last Glacial Maximum and in the terminal Pleistocene. At this site, occupation continues into the Late Holocene, with the earliest evidence for ceramics on mainland New Guinea around 3000 years ago (Gaffney et al. 2015b). These ceramics are a proxy for the arrival of pottery making groups active along the northeast coast and foothills, trading their wares along established exchange conduits linking the interior to the coast.

Similar early pottery was discovered at KLK site on Tuam in the Siassi Islands (Lilley 1988). This marks the introduction of Austronesian-speaking Lapita pottery makers into the area, and surface finds on nearby Arop/Long Island may suggest Lapita occupation or trading throughout the Vitiaz Strait (Gaffney et al. in press). Later post-Lapita ceramic sequences from the Strait and on the New

Guinea mainland at Sio indicate a ceramic hiatus followed by increasing fragmentations and rearrangements of pottery exchange networks leading up to ethnographic observations in the nineteenth and twentieth centuries (Lilley 2017).

Around Madang itself, Jim Allen (1971) and Brian Egloff (1975) described red-slipped pottery from one of these exchange networks, at a number of sites around the Madang coast and offshore islands in Madang Lagoon and on Karkar Island. These ceramics were characterised by globular bodies, everted and direct rims, and appliqué and incised decorations. In 2014, two of the authors (DG and GRS) carried out follow up excavations at Tilu, Malmal village, and Nunguri, Bilbil Island, providing the first chronostratigraphic sequences for the area and dating the initial red-slipped pottery making to about 650 BP (Gaffney et al. 2017; Gaffney and Summerhayes 2017). These archaeological ceramics are directly ancestral to present-day paddle and anvil pottery manufacture still practiced at Bilbil village, just south of Madang (Gaffney 2018), and may represent a recent pre-colonial migration of pottery makers from the Bismarck Sea to the northeast coast (Gaffney 2016).

Geomorphologically, the northeast New Guinea coastline is gradually emergent with massive quaternary reef exposures present in a number of locations. These uplifted reef exposures preserved the Pleistocene waisted tools evident at Bobongara on the Huon Peninsula. However, around Madang intermittent uplift and subsidence caused by large earthquakes has been proposed to account for much of the present-day topography and the lack of such reef exposures (Tudhope et al. 2000). Around 3000 years ago, a handful of offshore islands within Madang Lagoon probably raised out of the sea, while a more recent uplift event, perhaps dating to about 550 years ago, created the archipelagos of coral islands we see today (Morgan et al. 2005). On top of this, Mid-Late Holocene isostatic sea-levels were several metres higher than they are today and so the palaeoshoreline was likely further inland (Dickinson 2003). Therefore, to look for archaeological deposits dating prior to the last millennium before present, we need to turn our attention inland.

## **Inland Madang Survey**

In February 2018, a one day ground survey was completed inland of Madang town, near Amele village, northeast Papua New Guinea. Deposits dating to earlier than the recent uplift events should be located inland from the present coastline. Brian Egloff (1973) had described uplifted coral limestone caves inland from Madang while conducting preliminary archaeological survey and artefact collecting for the National Museum and Art Gallery of Papua New Guinea (NMAG-PNG), but he did not have time to undertake intensive survey. These

caves included JBH between Gumalu and Efu village, Scirababai Cave (JBI), and Ord Cave (JBJ). We attempted to relocate these caves, but were advised that these areas are currently unsafe to work in. We instead focused our attention on another limestone outcrop around Wapain village at the foothills of the Adelbert Ranges. Wapain village is located 1.4 km W of the larger Amele village and 1.6 km WNW of Moilsehu village. This is just northwest of the Gogol River and accessible from a dirt road connecting Madang town to the inland villages (Figure 2). The 2018 survey identified three caves and two overhangs with good archaeological potential for future excavation, along with three pottery surface find spots, which are described below.

The entire area sits on the Wandokai Limestone, consisting of uplifted coral limestone, which is clearly visible in various creeks and rivers. Creeks in the local area contain predominantly coral limestone and coral blocks; however, small nodules of red jasper or cherty argillite can also be found, probably having been transported downstream from the Gusup Argillite in the Adelbert Ranges. These nodules could make viable flaking raw material, and similar stone has been reported from lithic assemblages around coastal Madang (Gaffney and Summerhayes forthcoming).

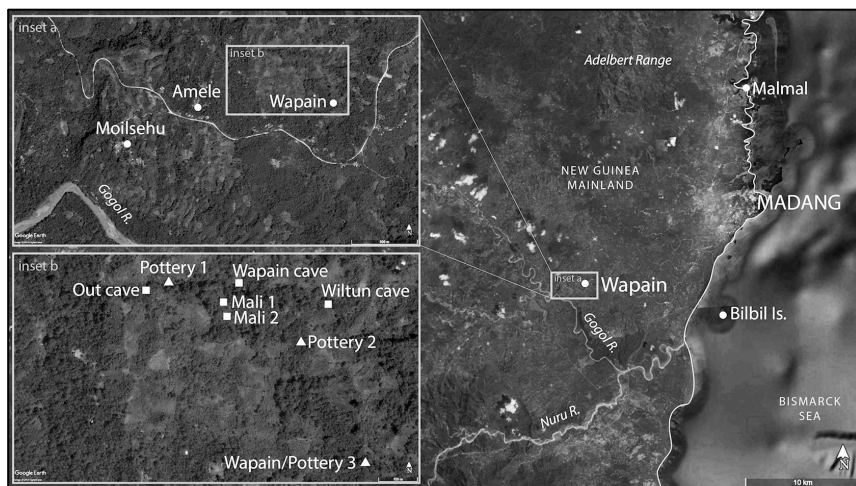


Figure 2. Location of new sites recorded in the inland Madang survey.

### ***Wiltun Cave***

Wiltun Cave (0352977, 9416709)<sup>1</sup> sits 140 m above sea level (asl) across from a small creek named Wapain. During survey, water was outflowing from the cave mouth, which was approximately 1 m wide by 2 m tall, with speleothems hanging from the roof. Beyond the entrance, a narrow passage continues a few hundred metres into the cave and at the end of this passage is a larger passage inundated with water. Above the in-filled passage, it is possible to climb into a larger internal chamber. This has a lot of promise as the local informants state there is good deposit and some artefacts have been found in there. The team was not able to inspect this chamber during the survey as the bamboo access ladder had rotted (Figure 3).

### ***Wapain Cave***

Wapain Cave (0352737, 9416756) lies further upstream of Wapain creek. This consists of a large chamber totally inundated with water, along with a smaller adjacent cave just to the southeast. This cave includes an open mouth (3.6 m high x 3.9 m wide), with a small passage (2 m high x 1 m wide) connecting it to an inner chamber (6 m high x 2 m wide), which overlooks the larger water filled cave (Figure 4). The cave mouth contained a modern fire and charcoal at time of survey, and it appears to be collecting sediment wash from inside the cave. As the creek flows very close to the cave mouth, any flood events could have washed away substantial sediment. The passage and internal chamber have more promise as they are dry and there is no sign of sediment wash into these areas. Modern charcoal and a jasper pebble (possibly a manuport) were found on the surface of the chamber.



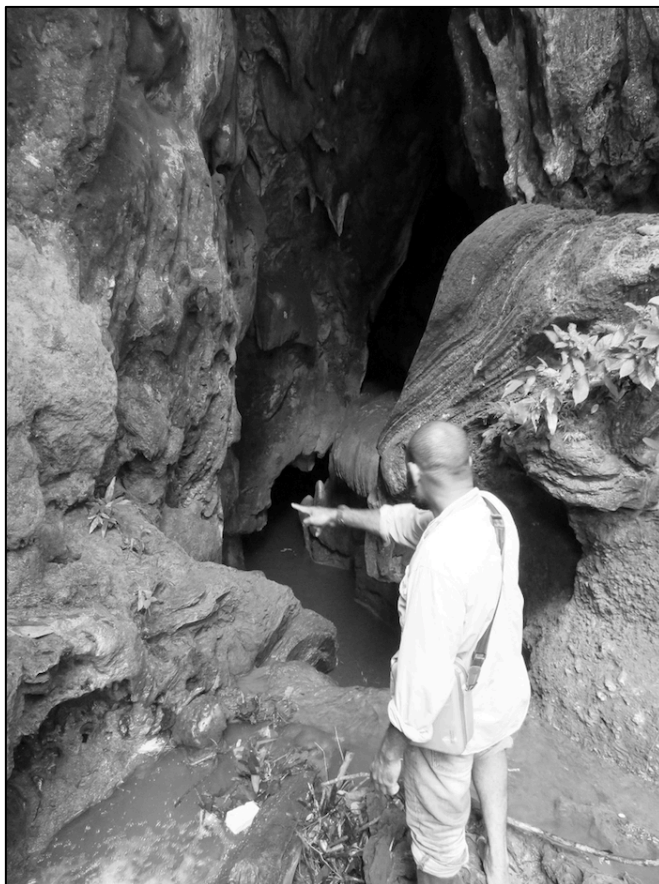
*Figure 3. Wiltun Cave. Top left: Busybee (Madang Resort) outside entrance to Wiltun Cave. Top right: Entrance to Wiltun Cave with water outflowing. Below left: end of narrow passage opening into larger passage with water and rotted bamboo ladder leading up to internal chamber. Below right: inside narrow passage looking towards the cave mouth.*



*Figure 4. Wapain Cave. Top left: Entrance to Wapain Cave. Top right: KM in internal chamber of Wapain Cave. Below left: looking out from internal chamber into larger cave filled with water. Below right: looking towards larger cave filled with water.*

### ***Out Cave***

Out Cave (0352503, 9416742) lies at 151 m asl and has a small creek flowing into a large chamber. Above this large chamber is an upper chamber with deposit (Figure 5). Some of this deposit appears to be washing into the below chamber filled with water. This could not be accessed as the bridge across to it had rotted and it was unsafe to attempt to climb to it. The cave may hold promise, as deposit is visible from the outside of the cave.



*Figure 5. Out Cave. KM points to chamber filled with water from the inflowing creek. Above is the upper chamber with deposit.*

***Mali 1 & 2***

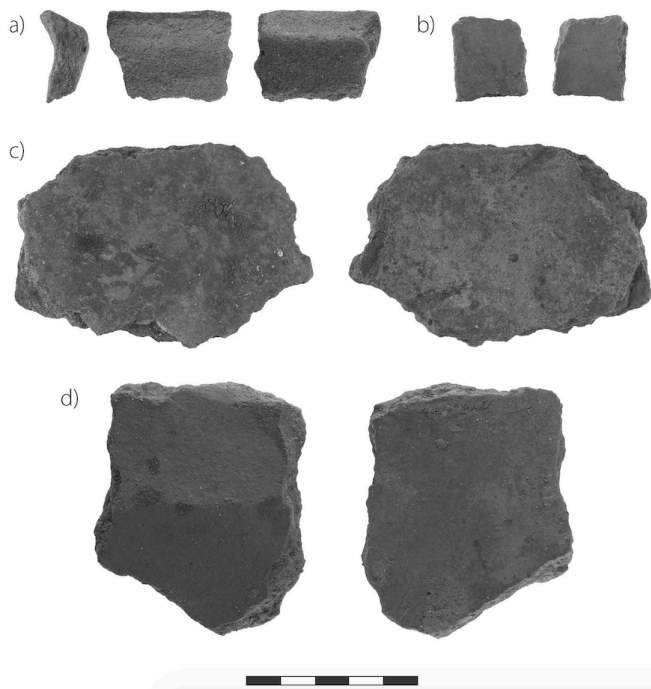
Along with caves, the Mali area of uplifted limestone contains numerous rock overhangs, which could have functioned as rockshelters. Deposit underlies these overhangs however no archaeological material was located in the vicinity. Mali 1 (0352689, 9416709) lies next to a walking track, near Wapain creek. Mali 2 (0352700, 9416673) lies at the top of a steep taro garden (Figure 6).



*Figure 6. Mali rock overhangs. Above: Mali rock overhang 1.  
Below: Mali rock overhang 2.*

### *Ceramic sites*

Around nearby gardens various pottery and stone artefacts were also recorded during survey. Pottery Findspot 1 was made along a walking track in the Muli area (0352562, 9416767). Pottery Findspot 2 was made in gardens at Wul area (0352895, 9416609). Pottery Findspot 3 was in Wapain village (0353065, 9416308). All of these sherds fit within the Madang-style, produced at nearby Bilbil Island and Yabob Island in the last half-millennium before present. Figure 7 illustrates a representative sample of the surface ceramics, showing redslipped exteriors and everted rims. At Wapain village, a community leader Ronnie Kaka had also found a small stone axe in the nearby gardens (Figure 8). This is lenticular in cross section and made from a non-local material, possibly basalt. Due to its elevated position overlooking gardens below, Wapain would be a productive open site for sub-surface investigations (Figure 9).



*Figure 7. Pottery surface finds collected during survey: a) everted rim from Wul (Findspot 2); b) plain body sherd from Wul (Findspot 2); c) red-slipped body sherd from Wapain village (Findspot 3); d) plain body sherd collected from Muli (Findspot 1). Photography: Les O’Neill.*



*Figure 8. Stone axe found near Wapain village. Photographed on-site, artefact remains with village.*



*Figure 9. KM discussing archaeology at Wapain village.*

## **Conclusions and Future Directions**

Northeast New Guinea will be an important area for future archaeological research, in modelling both Pleistocene and Late Holocene migrations into the Pacific Islands. To make some initial steps towards redressing a relative absence of archaeological fieldwork in the region, we undertook ground survey around Wapain in inland Madang, locating a number of promising sites. Three caves and two rockshelters have the potential to yield deep time sequences, which could inform our understanding of Late Pleistocene and Early Holocene occupation, and the technological and subsistence behaviours underpinning these occupations. Given that many of the offshore islands around Madang were not uplifted until the recent past, and because the sea-level highstand in the past was several metres higher than today, such caves could also be within the purview of Mid-Late Holocene palaeoshorelines and coastal populations. This is especially the case given the close proximity to the Gogol River, which ethnographically acted as a conduit facilitating movements into the interior. Targeting sequences around 4000-3000 years old will be essential to untangling the nature of Austronesian-speaking migrations around northeast New Guinea and the possible interactions and integrations between these groups and extant mainland populations.

Ceramic samples from the survey also give clues into the more recent pre-colonial past and suggest links between the coastal Madang-style potters who have been collecting local clays and tempers around the Bilbil area for about 650 years. Austronesian Proto-Bel speaking groups migrated inland to the Gogol River area within the last millennium (Z'Graggen 1975), and oral traditions suggest this was from Bilbil Island (Mennis 1980). Their language is now called Ham, closely related to the Bilbil and Gedaged languages of the Madang coast, and these people recently produced untempered and unslipped coil-made vessels. In this instance the dynamics of language and technology replacement and innovation are unclear. It is unclear if the initial people who moved inland originally produced red-slipped paddle and anvil pottery and later adopted the coil technique from neighbouring groups. It is also unclear if the Proto-Bel/Ham languages represent a large incursion of coastal groups into the interior or the gradual diffusion of the language along new trade or marriage linkages. Although such questions cannot be answered based on current evidence, future investigations into the later ceramic sequences of the inland Gogol area will shed light on these questions.

## **Notes**

1. All coordinates reported in text were recorded using a Garmin handheld GPS ( $\pm 3\text{m}$  accuracy) using the AGD66 datum, which relates to the Madang

topographic map (Ed. 1. AAS, Series T683) published by the National Mapping Bureau 2002.

## Acknowledgements

Our thanks go to Busybee of Madang Resort for transport and contacts at the sites, and Sir Peter Barter for facilitating our stay in Madang. We also thank Ronnie Kaka and the people of Wapain village. Les O'Neill photographed the sherds in Figure 7. Brian Egloff helpfully provided his unpublished survey report. The research was funded by a University of Otago Research Grant and carried out in collaboration with the National Museum and Art Gallery of Papua New Guinea.

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