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Pleistocene human occupation of the Solomon Islands, Melanesia

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Pleistocene dates from a rockshelter on Buka Island at the northern end of the Solomons Chain demonstrate human settlement by 28,000 b.p., some 25,000 years earlier than previously reported for this island group.

Dates have recently been published for human occupation of New Ireland, northern Melanesia, back to 33,000 b.p., demonstrating an antiquity of settlement for this area of the same order as the Greater Australian continent (Allen *et al.* 1988). It was suggested in that paper that the Solomon Islands to the southeast may also have been colonized in the Pleistocene, given that no greater water crossings would have been involved than those previously traversed to settle the continent of Sahul (Australia and New Guinea) from Southeast Asia. Patterns of human genetic diversity in the Solomons have also been said to require a time depth of at least 10,000 years for their development, according to a recent human biological study (Friedlaender 1987).

Pleistocene occupation of the main Solomon Islands is now confirmed by radiocarbon dates from a rockshelter on Buka Island at the northern end of the Group (FIGURE 1). Kilu, a limestone rockshelter on the east coast at *c.* 8 m above the shore near Malasang Village contains up to 2.2 m of stratified deposits including mammal, lizard and fish bone, marine shell debris and flaked stone material throughout the sequence, and fire hearths in the upper deposits (FIGURE 2). Three square metres were excavated. Radiocarbon assays (TABLE 1) indicate occupation beginning at greater than 28,000 b.p., although the majority of the deposit built up during intensive occupation from the early to mid-Holocene period. Previously the earliest dated sites from the Solomons were of the order of 3000 b.p. (Green 1979: Spriggs 1984).

The three shell dates are on marine gastropods deposited as midden in the shelter. Two of the shell dates (ANU-5990, Beta-26149) used *Nerita undata* while the third (Beta-26150) used *Turbo crassus*. The remaining four dates were on dispersed charcoal collected from 10-cm excavation levels by water-screening the

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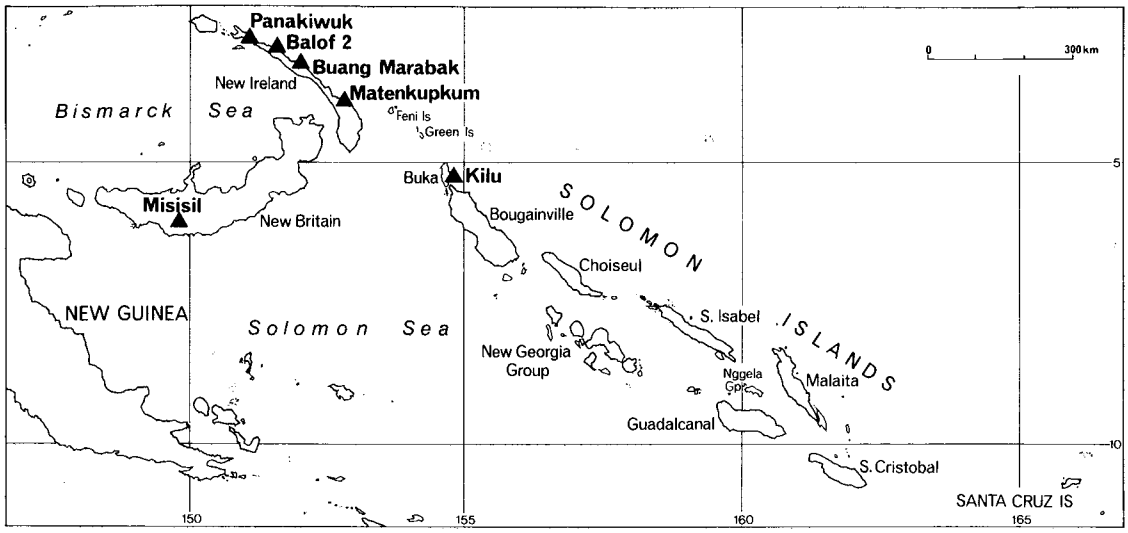

FIGURE 1. *Pleistocene archaeological sites of the Bismarck Archipelago (Allen* et al. *1988) and the northwest Solomon Islands.*

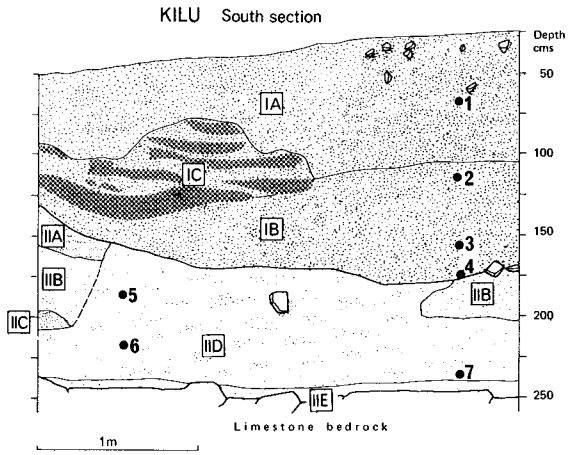

FIGURE 2. *Stratigraphic section of Kilu, showing the location of the seven radiocarbon dates reported in this paper.*

deposit. The charcoal samples included *Canarium* spp. endocarp fragments like those of *C. indicum* and *C. salomonense* (Douglas Yen, pers. comm.), tree species which produce edible nuts eaten in the area today.

The deposits consist of structureless fine silts, layers I and II being distinguished by field colour more than textural changes. Finer divisions within the layers are also based on colour differences. Stone flakes, of both fine siliceous and coarser volcanic material, are concentrated in Layer II, while the largest weights of bone tend to occur near the base of Layer I. Peaks for marine shell weight occur in both Layers I and II. Charcoal fragments occur only in Layer I.

Plain calcareous-tempered pottery is found down to 60–70 cm below datum and belongs to the previously defined 'Buka style' dated elsewhere at approximately 2500 b.p. (Specht 1969). Apart from this and a more recent episode of further use, two main phases of occupation are indicated with a hiatus in occupation between them, one c. 28,000–c. 20,000 b.p., and one from approximately 9000–c. 6500 b.p.

Kilu was first occupied when sea level was at –46 m and just starting its rapid fall to reach a low stand of –130 m at 17,000 b.p. (Chappell & Shackleton 1986). The east coast of Buka appears to be rising, but whatever the local rates of tectonic uplift may have been, Kilu would have been many tens of metres above the shoreline during the glacial maximum. The shelter may not have been well-situated for habitation and shoreline access at that time and appears to have been abandoned. It was occu-

square	level below datum (cm)	material	date b.p.	laboratory number
1	60–70	charcoal	6670±80	Beta-25617
1	110–120	charcoal	7900±110	Beta-25618
1	150–160	charcoal	9430±150	Beta-25619
1	170–180	charcoal	8950±230	ANU-6178
3	180–190	marine shell	20,140±300	Beta-26149
3	210–220	marine shell	23,820±290	Beta-26150
1	230–240	marine shell	28,740±280	ANU-5990

TABLE 1. *Uncalibrated radiocarbon determinations for Kilu. The dates quoted here are in radiocarbon years using the Libby half life of 5,568 years. The marine shell dates have not been corrected for oceanic reservoir effect. All dates have been corrected for $^{12}C/^{13}C$ ratios, except Beta-26149 and Beta-26150.*

pied again as sea level rose towards its present position at the end of the Pleistocene. Matenkupkum rockshelter, the only New Ireland site known with occupation evidence prior to 15,000 b.p., also appears to show minimal use if not abandonment during the glacial maximum (Allen *et al.* 1988). There are few further published details yet available about this or the other early New Ireland sites.

Equally early occupation of the rest of the main Solomon Islands chain as far as San Cristobal can be expected, as the islands are all intervisible and separated only by short and relatively shallow sea gaps. At the glacial maximum the islands from Bukà south to Nggela (excluding the New Georgia Group) may have formed a single landmass. Guadalcanal would have been separated from it by a narrow strait, with Malaita and San Cristobal somewhat further away.

The pattern of economic exploitation during both main phases of occupation of Kilu is similar, with gathering and hunting of both marine and lowland rainforest resources. The flaked stone from the site falls within the 'core tool and scraper' tradition common throughout Sahul and the Bismarck Archipelago from the Pleistocene to the mid-Holocene (White & O'Connell 1982: 64–7). It consists of 'scrapers', *ad hoc* tools where a usable edge was the requirement rather than production of a clear morphological type. Studies of residues on the tools by Tom Loy of ANU are under way and have shown that some of the flakes in the lower layer were used for scraping and cutting root vegetables. Well-preserved starch grains, potentially identifiable as to species, have been found on these tools. They provide the most direct evidence so far from the Australasian region for plant food exploitation prior to 20,000 b.p.

Human occupation for the island of New Guinea in excess of 40,000 b.p., though long suspected, has only recently been established (Groube *et al.* 1986). The Huon Peninsula site at Bobongara contained waisted axes and a single chert flake of the usual *ad hoc* form sealed beneath volcanic ash to at least 40,000 years ago. The waisted axes have been interpreted by Groube (1986: 175) as pioneering forest-clearing tools, part of a technology developed to promote the growth of forest-fringe food plants in an early pre-agricultural system of 'forest manipulation'. While no such tools have yet been found at Kilu, they are noted by Groube as surface finds in the Solomon Islands and were commonly in use in polished form up to the recent past in the northern Solomons (Specht 1969: 271–82).

The Huon Peninsula faces the Bismarck Archipelago, the crossing to New Britain not requiring an open-sea voyage of more than about 50 km. The strait separating New Britain from New Ireland is even shorter. A crossing from New Ireland to Buka via the Feni Group and Green Islands involves open-sea distances of 50–60 km. The Green Islands (Nissan, Pinipir) are raised atolls of probable Pleistocene formation, but if they were not emergent at the time of settlement, then crossings of 130 km via Feni or 180 km direct from New Ireland would have been necessary.

Once the southern end of the main Solomons chain was reached, sea gaps would have been much larger (in excess of 300 km) and target islands much smaller. A Pleistocene occupation of the Santa Cruz Islands and of Vanuatu

further to the south would have represented a much greater challenge to navigational skill and boat technology, one which may not have been met before the mid Holocene. Even if marine technology was up to the task, however, there is an important biogeographical boundary at the end of the main Solomons. Beyond, to the south and east, is Remote Oceania, a region with no naturally occurring terrestrial mammals except bats, and a progressively depauperate flora and fauna (cf. Pawley & Green 1973: 5). It may well have been the case that a non-agricultural economy could not have been sustainable beyond the Solomon Islands. On present evidence, agricultural groups associated with the spread of the Lapita culture (Spriggs 1984) and carrying with them a full complement of crops and domestic animals appear to have been the first successful colonists of Remote Oceania at about 3000 b.p. They were the first to cross what may have been an absolute barrier to hunter-gatherer settlement.

Conclusion

The new dates from the Kilu cave at the northern end of the Solomons are consistent with the developing picture of a rapid spread of modern humans out from Asia and into the New Guinea and Australian region at 40,000 b.p. or before (Jones, in press). There is no reason to believe that the earliest habitation sites in the Solomons or the Bismarcks have already been located and it is likely that humans were reaching the southern end of the Solomons chain at the same time they were attaining the southern margin of the Australian continent. Once these margins were reached, the outward expansion of Asian hunting and gathering peoples was halted. Population movement and ecological adjustment in the region thereafter took a different course.

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