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Stone Mortar and Pestle Distribution in New Britain Revisited

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ABSTRACT. This is the first of a series of regional studies on the distribution of stone mortars and pestles in Papua New Guinea (PNG). The pan distribution of these artefacts in New Britain, in conjunction with preliminary results from other parts of PNG, supports the view that there is a positive correlation in the distribution of stone mortars and pestles and taro cultivation. This result raises the possibility that these artefacts provide a signature of where people were growing taro in PNG from about 7,000 to 3,500 years ago.

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By using the distribution of stone mortars and pestles in Papua New Guinea, it may be possible to track the geographic extent of human settlement dependent on taro from about 7,000 to 3,500 years ago, the age range for dated mortar finds. This paper is the first of a series of regional studies that aims to test this hypothesis by examining the distribution of these artefacts and the subsistence potential of each study area.

The possibility that most mortars and pestles might be quite old was first proposed by White & O'Connell (1982: 192). Four mortars have been dated; they all come from the highlands. Two dated respectively at c. 4,560 B.P. and 7,000–7,500 B.P. are from Warrawau and Kuk, both swamp sites near Mount Hagen in the Western Highlands (Golson, 2000: 231–248). The third dating to <4,500 B.P. is from Nombe cave site in Simbu (Ambrose, 1996–1967: 1087; White, 1972: 134). The fourth dating to c. 3,500 B.P. is from NFB, an open site just south of Kainantu in the Eastern Highlands (Ambrose, 1991: 462; Watson & Cole, 1977: 193). What was initially identified as a mortar fragment from Wanelek is now confirmed as being a potsherd (S. Bulmer, pers. comm., 2000). No pestles have been dated. Some mortars may have been made in the recent past until the 1970s for use in ritual purposes in the Southern Highlands. Mortars were also made for pounding puddings in the 1960s at Mbiche village on Nggatokae Island in the Solomon Islands (Swadling, 1981: 52–53).

Pretty (1965) was the first to attempt a PNG wide distributional study but, apart from regional studies such as that by Specht (1966), there has been little attempt to update his work until now.

Results and discussion

Jim Specht's comprehensive article on stone mortars and pestles in New Britain was published in 1966 in the *Journal of the Polynesian Society*. After the passing of more than three decades it seems fitting to revisit this topic in a volume produced in his honour.

Specht (1966) listed 11 mortars and pestles for what is now West New Britain province, 15 for East New Britain (Tables 1 and 2), as well as large rocks with mortar-like

Table 1. Documentation history of mortars and pestles in West New Britain.

item	year	reported or acquired by	location	first published or illustrated
pestle*	<1899		Unea	Parkinson, 1899
pestle	1910–1912	Capt. Voogdt	French Islands	
mortar*	1926		SepSep†	Chinnery, 1926: 22
mortar*	<1933		SagSag	Sherwin & Haddon, 1933
mortar	1939	Louis Searle	Airagilgua area	
pestle	1939	Louis Searle	Airagilgua area	
pestle*	<1946–1949		Kandrian	Bühler, 1946–1949: fig. 3n–o
pestle*	<1946–1949		Gasmata	Bühler, 1946–1949: fig. 3i
pestles* (3)	<1952		Talasea	Goodenough, 1952
mortar*	1952		Talasea	Goodenough, 1952
mortars (2)	1959	J.K. McCarthy	Talasea	
mortar	1967	A. Gerbrands	Wankute, near Kilenge	
mortar*	<1955		Unea	Riesenfeld, 1955
mortar*	<1966	W.H. Goodenough	Hoskins Peninsula	Specht, 1966: 381
mortar	1970	A. Gerbrands	Kilenge	
pestle	1973	A. Gerbrands	Kilenge area	
mortar	1979	Joseph Goru	Dami, Talasea	
pestle	1979	O. Kaiku	Avalgin	
pestle	?1970s	Morris Young	?Gloucester	
pestle	1980a	John Namuno	Gilnit, (Gilinit) Gloucester	
pestle	1980b	John Namuno	Gilnit, (Gilinit) Gloucester	
pestle	1981	Jim Specht	Sangkiap, Passismanua	
pestle	1981	Mathias Baki	Ganeboku, (Ganemboku) Talasea	
mortar	1981	Marsha Berman	Pililo Island (Pileo)	
pestle	1981	Marsha Berman	Pililo Island	
pestle	1981	Elsie Marlissa	Valoka, Hoskins	
mortar	1982		Valoka, Hoskins	
pestle	1982		Igi	
mortar	1985	John Namuno	Dami, Talasea	
pestle	1980s	John Namuno	Gilnit, Gloucester	
pestle	n.d.	John Namuno	Asalmepua (Asilimapua)	
pestle	n.d.	John Namuno	SagSag	
pestle	n.d.	John Namuno	Umbili, Central Nakanai	
pestle	n.d.	John Namuno	Gilnit, Gloucester	
pestle	n.d.	John Namuno	Asalmapeo (?Asilimapua)	
mortar	1990s	John Namuno	Bitokara	
pestle	1990s	Robin Torrence	Ruango	
mortar	1999	Robin Torrence	Beremone (Talasea)	
mortar	2000	Peter Nuli	Morokea, (Morokia) Talasea	
mortar	2000	Robin Torrence	Garua	

* Listed by Specht (1966).
† Riesenfeld (1950: 276) wrongly attributes the SepSep mortar to neighbouring Bungi Island.

depressions and three pestles on Umboi Island in Morobe province. In 2000 my database[1] had expanded this list to 43 mortars and pestles in West New Britain and 29 in East New Britain. The located provenances for these finds are shown on Fig. 1. As the specific locations for both mortars and pestles are given in Tables 1 and 2 they are not discussed separately in this paper. None of the finds come from dated contexts in archaeological sites. Some were surface finds and others were unearthed by gardeners and bulldozers.

In 1966, Specht reported more finds from East New Britain than West New Britain. The opposite was the case in 2000. The difference reflects the efforts of John Namuno and other staff of the West New Britain Cultural Centre in Kimbe and the research interests of staff and associates of the Australian Museum in the Talasea and Kandrian areas. The main researchers involved have been Jim Specht in both areas and Robin Torrence in the Talasea area. It should be noted that no systematic field survey has been made of these artefacts in either province.

Jim Specht found he could not draw any conclusions from the distribution of recorded finds (Specht, 1966: 379). Working with a larger sample my paper examines how the current distribution of finds relates to the distribution of agricultural land and the main subsistence crops that were grown before 1870.

In 1993 John Saunders published the results of his agricultural land use survey of Papua New Guinea based on interpretation of aerial photographs (Saunders, 1993). His map of agriculturally used land provided a spatial basis for a national survey of agricultural systems which was carried out from 1990 to 1996 by staff from the Department of Human Geography, RSPAS, at the Australian National University, the PNG Department of Agriculture and Livestock, and the University of Papua New Guinea. The

Table 2. Documentation history of mortars and pestles in East New Britain.

item	year	reported or acquired by	location	first published or illustrated
mortar*	<1907		Varzin Plantation	Parkinson, 1907: fig. 99
pestle*	<1907		Watom	Parkinson, 1907: fig. 100
mortar*	<1909		Baining Mountains	Bley, 1909: 525
pestle*	<1909		Nambung river	Bley, 1909: 525
mortar*	<1913		Vunagalip	Burger, 1913: pl. 1
pestle*	<1913		Vunagalip	Burger, 1913: pl. 1
pestle*	<1913		Cape Lambert	Burger, 1913: pl. 1
pestle*	<1913		Bandarungum	Burger, 1913: pl. 1
pestles* (2)	<1949		Jacquinot Bay	Bühler, 1946–1949: fig. 3d–e
mortar*	<1950	Mr E.D. Clarke	Rabaul	Specht, 1966: 379
pestle*	1950	Mr E.D. Clarke	Rabaul	Specht, 1966: fig. 2
mortar	1960	S.G. Simpson	Livua, Bainings Mts	
pestle	1960	S.G. Simpson	Livua, Bainings Mts	
pestles (2)	1963	D. Maclean	Doilene Plantation	
mortar*	1965	Mr Garrett	Varzin Plantation	Specht, 1966: pl. 1
mortar*	1965	Mr Vale	Vunairoto	Specht, 1966: pl. 2
mortar*	1965	Jim Specht	Vunairoto	Specht, 1966: fig. 1
pestle	1966	Brother Dent	Vuvu near Kokopo	
mortars	1980		forest behind Kerevat	
pestles	1980		forest behind Kerevat	
pestle (7)	1987	L. van Bussel	Maso	

* Listed by Specht (1966).

two volumes on East and West New Britain were edited, respectively, by Bourke and colleagues (1996*a*,*b*).

Since about 1870 new subsistence crops have been introduced to New Britain. The new crops originated from South America and Asia. They are the sweet potato, cassava, Chinese taro (*Xanthosoma*) and triploid bananas. Some of these replaced traditional crops as the most important food grown in gardens. This commenced in the 1950s and in more isolated areas took place in the 1970s. Taro declined in significance on the Gazelle Peninsula in the 1950s (Bourke, 1976). A marked decline in taro production in West New Britain began in about 1960 when taro blight reached there (Chowning, n.d. cited in Bourke *et al*., 1996*b*). The main subsistence crops grown in both provinces before the post-1870 introduction of Asian and South American cultivars is shown on Fig. 2. With few exceptions, *Colocasia* taro was the main food grown throughout New Britain prior to 1870, with a varying complement of minor staples like banana, yam and *Alocasia* taro (M. Bourke, pers. comm., 2001).

To assess the relationship of the current mortar and pestle finds (Tables 1 and 2) with the distribution of agricultural land across New Britain, I have plotted the finds against the agricultural systems map produced by Bourke and colleagues (1996*a*,*b*) and included the plantation land plotted by Saunders (1993). Taking into account the serendipitous nature of the finds reported here, there is a pan New Britain distribution of mortars and pestles (Fig. 1). Taken alone this would not seem significant, but from a larger perspective this is an interesting finding as this pattern is not the case across Papua New Guinea. For instance, mortars and pestles are absent from the densely settled Wosera-Abelam area of the East Sepik and also the Markham valley of Morobe province. Unlike most areas of New Britain, the dominant subsistence crops grown in the Wosera-Abelam area and the Markham valley are, respectively, yam and banana.

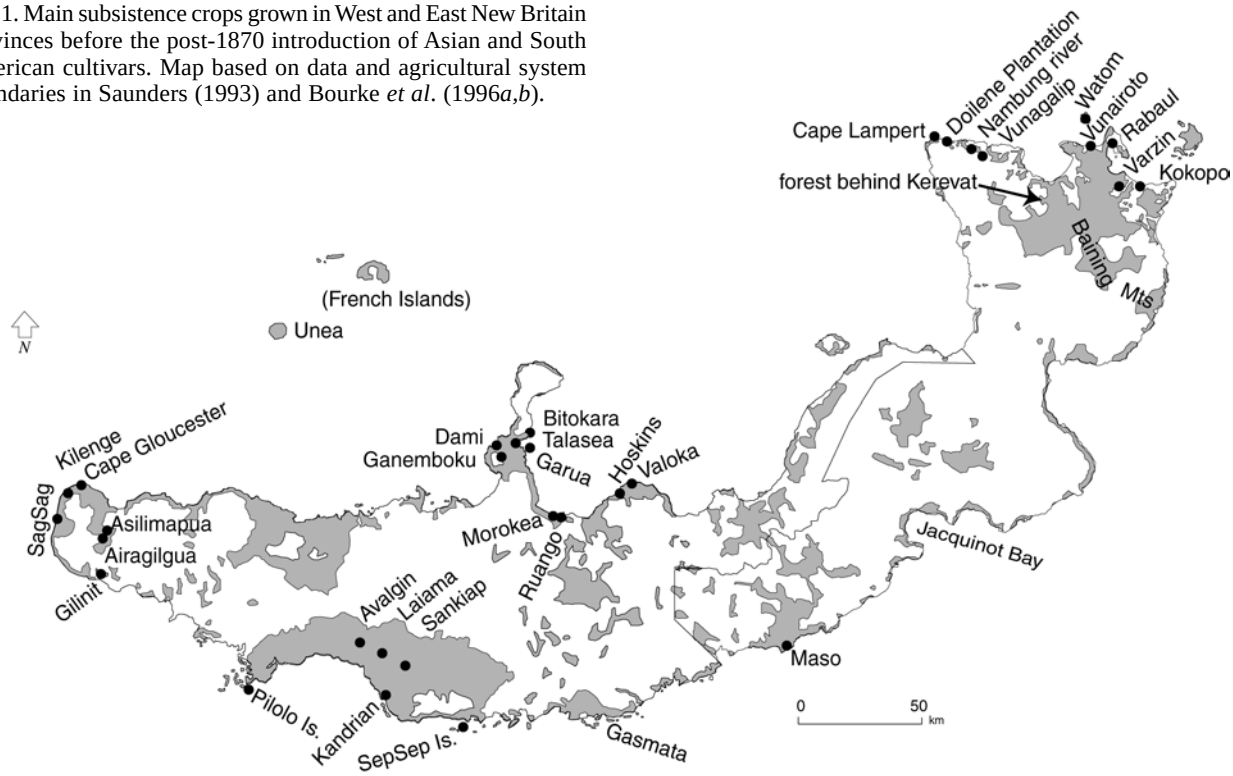

Fig. 1. Main subsistence crops grown in West and East New Britain provinces before the post-1870 introduction of Asian and South American cultivars. Map based on data and agricultural system boundaries in Saunders (1993) and Bourke *et al*. (1996*a*,*b*).

Conclusion

Initial results from this study and preliminary results from other parts of PNG give a positive correlation in terms of the distribution of mortars and pestles and the cultivation of taro. This raises the possibility that mortars and pestles provide a signature of where people were growing taro in PNG from about 7,000 to 3,500 years ago.

Studies are now required to see if taro starch residues, possibly along with nuts, are present on the work surfaces of mortars and pestles. Those from New Britain would make a good pilot study. If taro starch residues are present, these artefacts can then be associated with a particular subsistence crop and seen as a marker of a particular cuisine which, like the smoking of tobacco, crossed language and other cultural boundaries.

Notes

[1] This database was started when I was working at the PNG National Museum. Filemaker Pro is used for catalogue data and images, and MapInfo for distributional data. Once the project is completed the data will be returned to the Museum on CD and copies also deposited at the Australian Museum and Australian National University. Anyone interested in contributing information to this database please contact the author.

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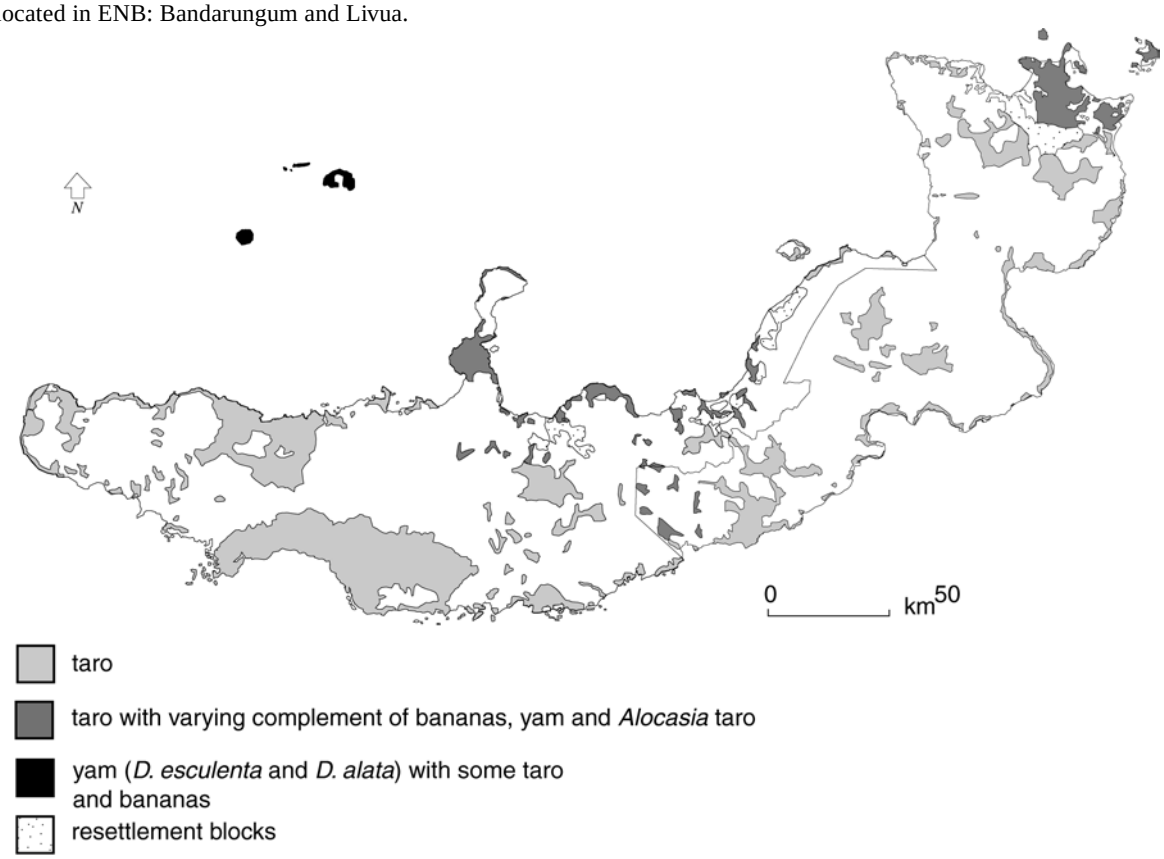
Fig. 2. Agricultural land in West and East New Britain provinces and mortar and pestle provenances (agricultural land based on Saunders, 1993 and Bourke *et al*., 1996*a*,*b*). Provenances not located in WNBL: Igi and Umbili (central Nakanai); provenances not located in ENB: Bandarungum and Livua.



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