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RESIDUAL HOLOCENE POPULATIONS IN BASSIANIA: ABORIGINAL MAN AT PALANA, NORTHERN FLINDERS ISLAND

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Introduction

Bassiania, that low lying plain surmounted by a chain of steeply-rising granite mountains linking Victoria and Tasmania during the Pleistocene, was one of the few extensive land areas of the Greater Australian continent lost as a consequence of the Flandrian transgression. Today, nothing of it remains but the Bass Strait islands. Flinders Island, Cape Barren Island and Clarke Island, comprising the Furneaux Group, together with the Hogan and Kent Groups, are found in the east of the Strait, while the western chain of islands comprises King Island and the Hunter Group (see Fig.1). The nature and chronology of Aboriginal occupation of Bassiania is a major issue in Australian prehistory. None of the islands was occupied when first visited by Europeans, yet surface finds of Aboriginal artefacts have been made in the Kent Group, and on Flinders, Cape Barren, and King Islands (see Jones 1977:335), and Bowdler (1974a, 1974b, 1975a, 1975b, 1977) has carried out field surveys and excavations in the Hunter Group (Fig.1). Jones (*op.cit.*) believes that the occupation evidence from all these islands, except for those in the Hunter Group, dates to the Pleistocene, and that as the seas rose during the Holocene, Greater Furneaux Island and Greater King Island were abandoned, their inhabitants retreating

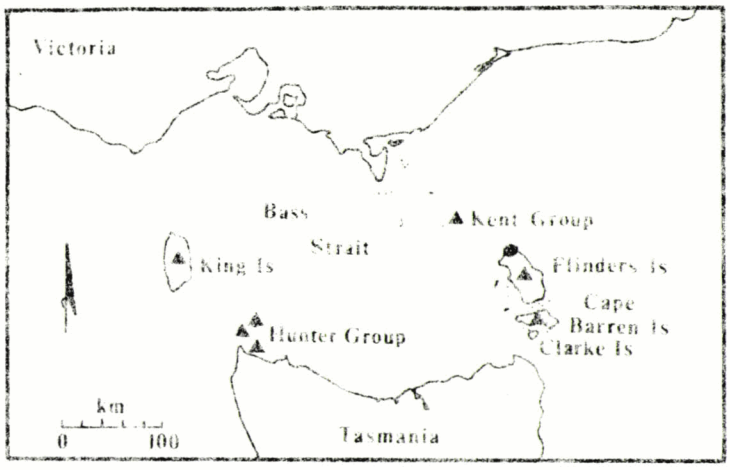

FIGURE 1

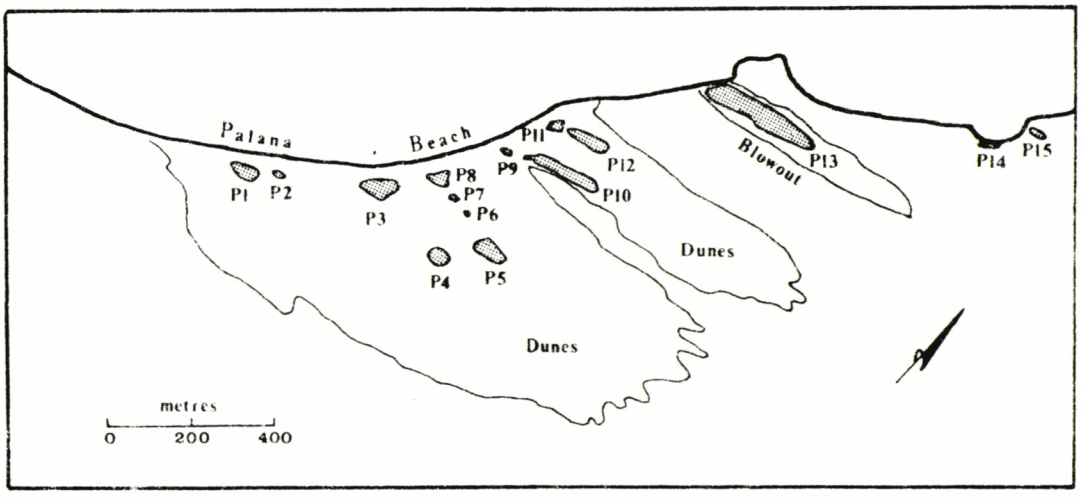

FIGURE 2

to Greater Tasmania. These islands therefore should lack any evidence of residual Holocene populations.

It seemed that these propositions warranted testing, especially in the case of Flinders Island, for which a wealth of artefactual evidence was already on record. The first documented find of artefacts here was made in 1939, during the Harvard-Adelaide Bass Strait Expedition (Tindale 1941), and seven years later an expedition from the University of Melbourne spent two weeks exploring the coast and inland areas on the northern half of the island and succeeded in recovering nearly 100 artefacts and manuports (Mackay 1946). Much later, Littlewood found an artefact at Palana, on the northern coast of the island, in an extensive area of eroding dunes. But all of these were surface finds. What was required was a site with occupation evidence in a datable stratigraphic context. In September 1975, one of the authors (R.C.G.) succeeded in finding several such sites at Palana, and thus the 1975 University of Melbourne Archaeological-Geological Expedition was born. As a result, the authors and 12 undergraduate and post-graduate students from Monash University and the University of Melbourne spent two and a half weeks at Palana in December, and during that time examined Aboriginal occupation evidence exposed in the dunes, excavated two of the sites recorded, and carried out a variety of geological investigations. Further information was obtained in December 1977, when both authors made a short return trip to the area. This paper summarises the initial results of the archaeological investigations; a fuller account is in preparation (Orchiston n.d.).

A brief description of the Palana region

The archaeological sites at Palana are situated in a small area of Quaternary dunes, flanked inland by a discontinuous arc of Palaeozoic granite hills (Sutherland and Kershaw 1971). Directly offshore, between Palana and the West Sisters Island, is an unusual marine depression which reaches a maximum depth of 155 m (Jennings 1959:66). The Pratt's River meanders its way into Bass Strait at the southwestern end of the Palana dune system, and is emponded at its mouth by semi-mobile dunes and the beach. Direct outflow is restricted, except after heavy rain or following extreme tides, and consequently the waters of the narrow estuary are usually brackish.

The Palana dunes comprise two chronologically-distinct series. The older series, which Kershaw and Sutherland (1972) refer to as the 'Palana Limestone Dunes', are composed of calcareous sand (i.e. an unlithified aeolian calcarenite). In some places these linear dunes rest disconformably upon fluviatile quartz sand, and elsewhere they unconformably overlie the granitic basement rocks. The upper sections of these dunes are of Middle Pleistocene age, while the lower units may be older. Remains of at least seven different linear dunes, orientated east-west (i.e. obliquely to the present coast), outcrop at Palana. They reach their greatest height, of around 20 m, at the northern end of Palana Beach (see Fig.2), and decrease as one proceeds southwards. The coastal margins of all of these dune ridges are truncated, and a modern vegetated foredune skirts their base.

In places the surface of the older dunes carries a thin *terra rossa* remnant, associated with solution pipes and duricrusts. This is thought to be an Upper Pleistocene deposit. Resting disconformably on the *terra rossa* in places and directly on the Palana Limestone Dune surface elsewhere is a thin, sandy, charcoal-impregnated palaeosol bearing Aboriginal artefacts and faunal remains.

Developed on top of the occupation palaeosol are unconsolidated calcareous dunes of the younger series (the Lughrata Sand Dunes of Kershaw and Sutherland 1972), which are of Holocene age. They are also oriented east-west, and contain a number of palaeosol horizons. While some areas of the younger dunes are fixed with vegetation, other areas are mobile, and blowouts are common. Indeed, it is to this wind erosion that we owe the exposure of most of the prehistoric occupation evidence at Palana.

Evidence of prehistoric occupation at Palana

Systematic surface surveys of the different palaeosol exposures and calcarenite surfaces within the Palana dunes and of the adjacent coast to the northeast in 1975 and 1977 revealed the existence of 15 localities with occupation evidence (Fig.2). As Table 1 indicates, this took the form of shell scatters and/or stone implements (including manuports), and burnt calcarenite hearth stones were also present at most sites. At sites P5, 6, 7, 10, 12, and over part of P13 the artefacts were embedded in the palaeosol, whereas at all the other sites they lay directly on the surface of the palaeosol or the calcarenite. Clearly, the basal levels of this occupation palaeosol were formed prior to the arrival of the Aborigines at Palana.

Excavations were carried out at two sites, P12 and P13, in order to investigate the stratigraphy; to obtain material for radiocarbon dating; and hopefully to recover artefacts and faunal remains in a stratigraphic context within the palaeosol. At P13, a 70 m strip along the northern margin of the site was pegged out in 2 m squares, and seven squares were excavated. The following stratigraphic succession was recorded in square A7 and in an adjacent geological test-pit:

1. ground surface
2. sterile white sand
3. occupation palaeosol
4. *terra rossa*
5. calcarenite bedrock

In those squares where the occupation palaeosol rested directly on the underlying calcarenite, the *terra rossa* took the form of a thin crust. No faunal material was recovered during the excavation, but a solitary quartz flake, bearing retouch, was found in square A7 seated directly on the surface of the occupation palaeosol. Charcoal from the centre of the palaeosol, in this square, gave a date of 9890 ± 175 BP (SUA-640), thus providing a *terminus a quo* for occupation at site P13.

TABLE 1 The Palana archaeological sites

Site	Site setting*	Stone implement(s)	Shell midden
P1	P + C	x	x
P2	C	x	
P3	C	x	
P4	P + C	x	
P5	P + C	x	x
P6	P	x	x
P7	P	x	x
P8	C	x	
P9	P + C	x	x
P10	P + C	x	x
P11	P + C	x	x
P12	P	x	x
P13	P + C	x	x
P14	P		x
P15	C	x	

At site P12, 136 square metres were pegged out in 2 m squares, and 17 squares were excavated (see Fig.3). The stratigraphic succession was identical to that recorded at P13, except that the *terra rossa* was not present. No artefacts were recovered during the excavations, but a recently-exposed discrete shell midden at the western end of the excavation area was subjected to intensive investigation. The area in question was further subdivided into 1 m squares, and all surface shells which were embedded in the palaeosol, were collected. Additional shells were recovered during excavation of the area. This midden showed separate limpet and chiton concentrations, with mussels present in both areas. The mussel shells were numerically far less abundant than those of the other two species, reaching a maximum density of only eight shells per square metre. By contrast, limpets and chitons attained peak densities of 35 and 100 shells per square metre, respectively. Calculation of edible meat weight values is in progress, and examination of shell growth rings will be undertaken in order to establish the season of exploitation. When these analyses are complete, some of the shell will be submitted for radiocarbon dating. Meanwhile, two charcoal samples from the occupation palaeosol at this site gave dates of 7150 ± 135 BP (SUA-641) and 6520 ± 130 BP (SUA-642); the former is from square C6, and relates directly to the midden areas, while the latter date derives from square A19.

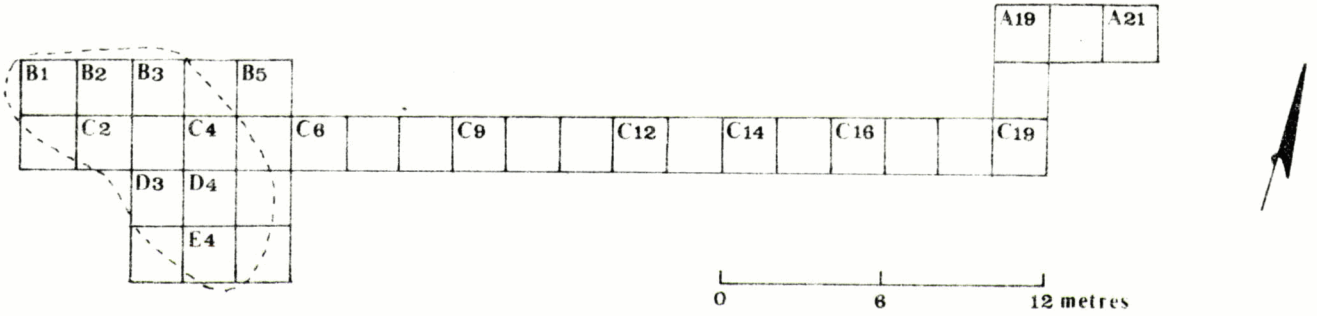

FIGURE 3

During surface surveys, stone implements and manuports were found at all of the Palana sites except P14 (which is simply a cliff-face palaeosol exposure with limpet shells). Most abundant were angular blocks of petrologically heterogeneous granite of varying shapes and sizes, but typically subrectangular in plan and side elevation. All those present at site P13 were examined petrologically, and were found to comprise both local (Palana) and non-local stone. Other granite artefacts recovered at Palana included cores, hammerstones, a large water-worn boulder which had served as an anvil stone (cf. Casey's 1973:212 'Emu Egg Stones'), and part of a grindstone, with concave dorsal and ventral surfaces. Quartz was the next most abundant artefact material. As is to be expected, given the intractibility of the raw material, most of the flaked and fractured pieces were amorphous in form, but surprisingly, the assemblage included a number of steep-edge scrapers (Figs 4a,b, c) and flat scrapers (one with obvious retouch - see Fig.4d), as well as several large extensively-flaked cores, and the usual implement shown in Figure 4e. Quartzite implements were less common, but included two cores, a large retouched flake (Figure 5a), and the bifacially-flaked pebble 'chopper' shown in Figure 5b. Amongst the few hornfels artefacts found at Palana was a large, sand-blasted, profusely-flaked 'chopper' with a triangular cross-section (see Fig.6). Other artefacts were manufactured in basalt, calcrete, porcellanite and sandstone.

Table 2a shows the occurrence frequency of artefacts manufactured in different stone materials at the six sites containing $\geqslant$ 11 surface artefacts. When a χ^2 analysis is carried out of the proportion of granite, quartz, and 'other' artefacts at these sites, significant differences are found between all sites except P1 and 8 and P11 and 12 (see Table 2b). It is yet to be determined whether the differences noted are a result of differential site function, the non-contemporaneity of sites, sampling bias (given that the current areal extent of each site is determined by wind erosion), or a combination of these factors.

A feature of all the materials used for implements at Palana is that each of them was available locally from within the northern half of the island, thus eliminating the need for those complex trading networks that are supposed to have developed on the Australian continent, and possibly in Tasmania, during early Holocene times (Jones 1971:448; Lampert 1976:24-6).

Another interesting aspect of the total Palana lithic assemblage is its small size, once we discount the granite manuports, and the virtual absence of material that could be classed as debitage. Manufacturing activities therefore were performed elsewhere, and the Aborigines mostly brought completed artefacts with them on their visits to the area. The relative paucity of 'quarried' cores also reflects this.

Typologically, much of the artefact assemblage from Palana is typical of the Australian Core Tool and Scraper Tradition, but with the 'choppers' and bulky cores illustrating Kartan affinities. The existence of these Flinders Island specimens, taken together with distinctive artefacts from Gippsland (currently housed in the office of the Victoria Archaeological Survey; see, also, Mitchell 1949:129-30), and from Phillip Island (now in the Leonhard Adam

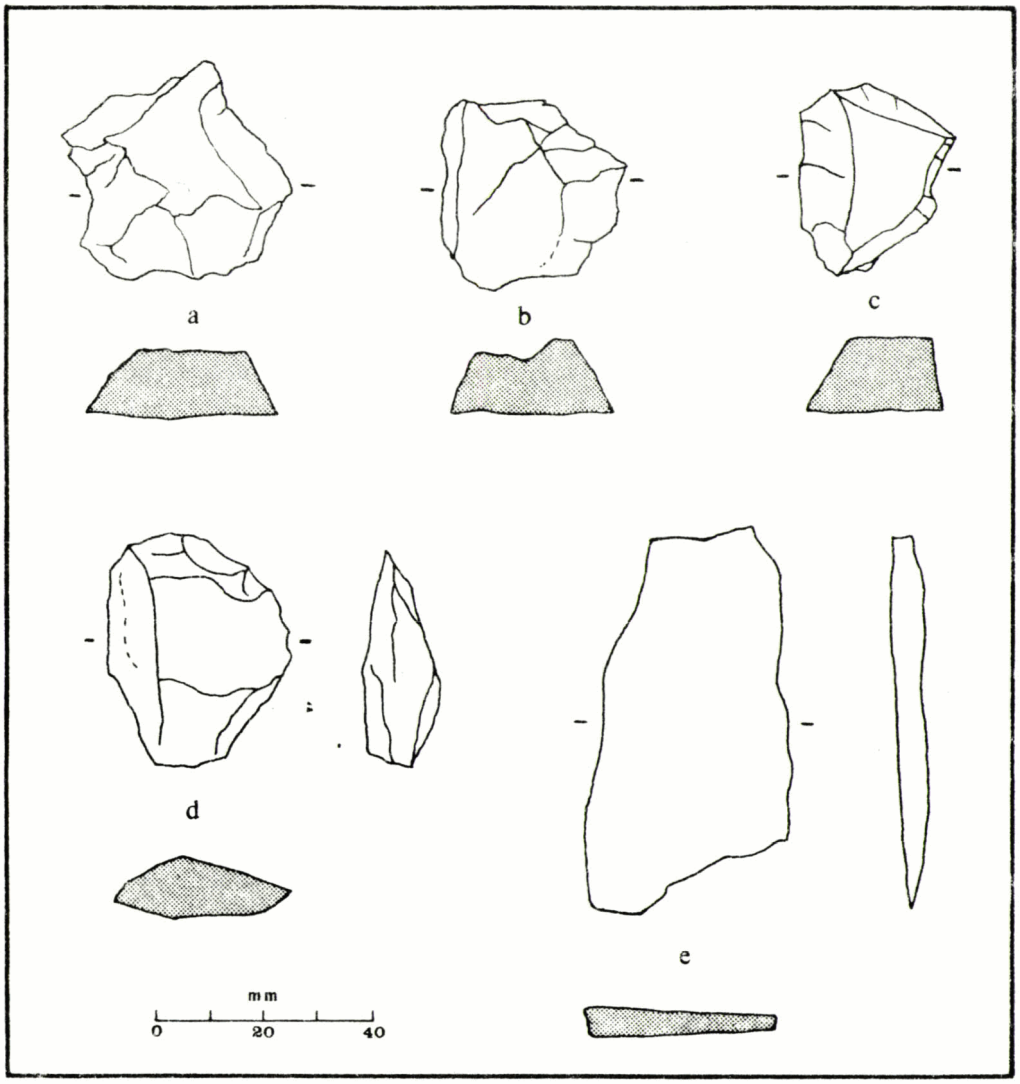

FIGURE 4

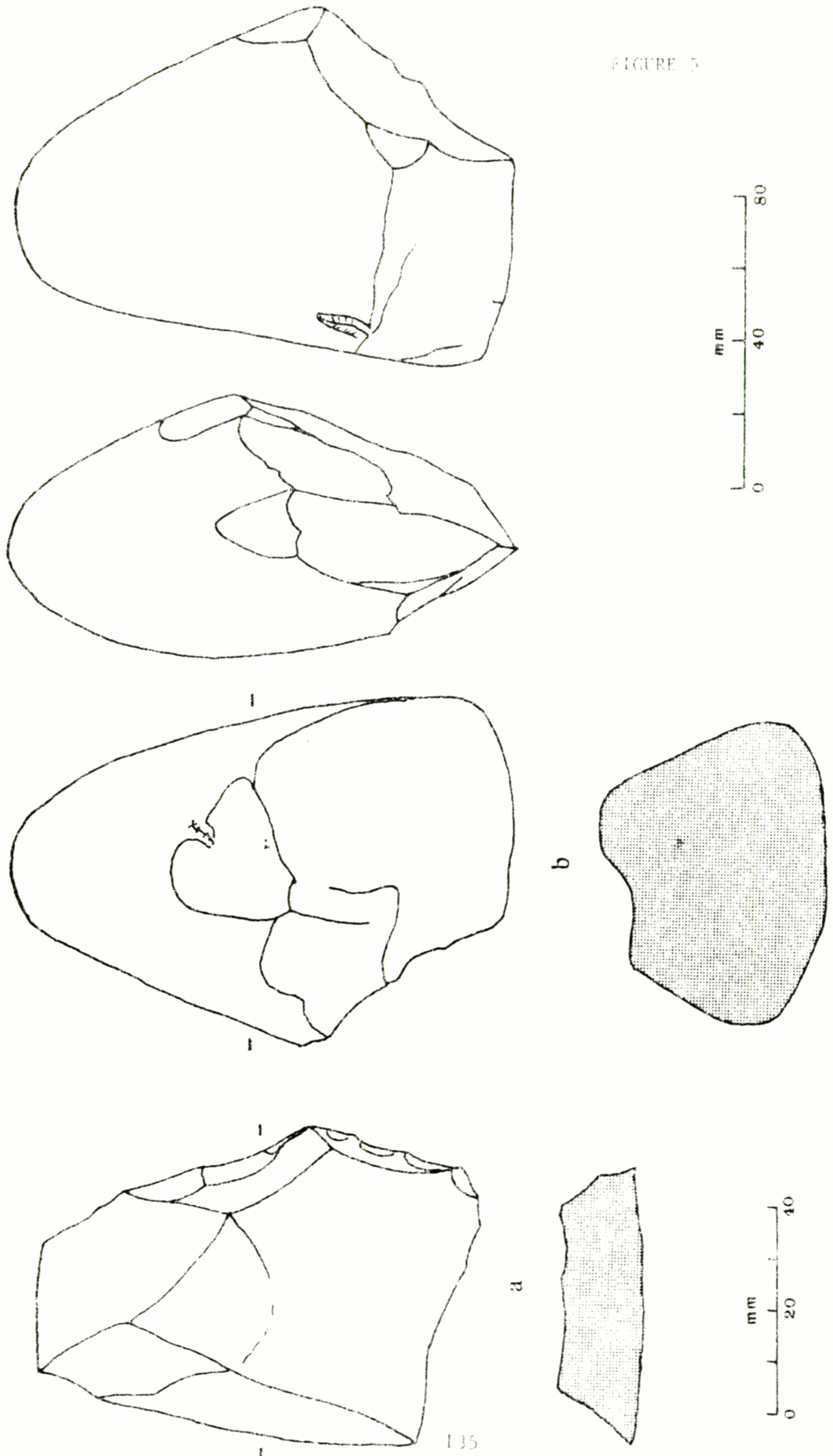

FIGURE 5

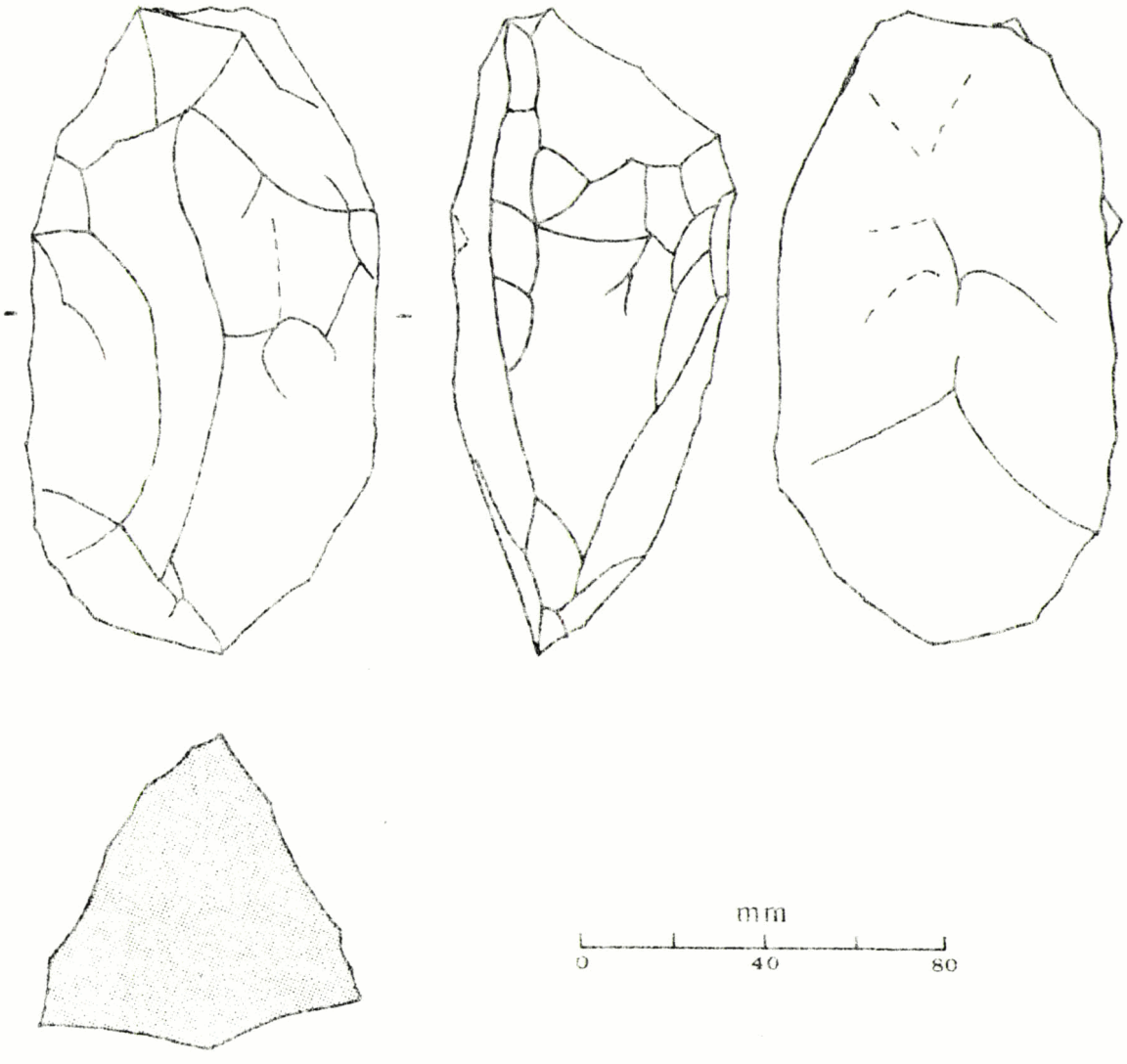

FIGURE 6

TABLE 2a Occurrence frequency of artefacts in different stone materials at Palana

Material	Site						Totals	
	P1	P8	P10	P11	P12	P13	Number	Percent
Basalt	2	0	0	0	0	3	5	2.0
Calcarenite	0	0	0	0	0	1	1	0.4
Granite	7	4	12	3	3	132	161	65.8
Hornfels	1	0	0	0	0	2	3	1.2
Porcellanite	0	0	0	0	0	1	1	0.4
Quartz	5	2	6	8	8	35	64	26.1
Quartzite	0	6	1	0	0	1	8	3.3
Sandstone	2	0	0	0	0	0	2	0.8
Total	17	12	19	11	11	175	245	100.0

TABLE 2b Correlation matrix

Site	P1	P8	P10	P11	P12	P13
P1		o	x	xx	xx	xxx
P8			xx	xxx	xxx	xxx
P10				x	x	xx
P11					o	xxx
P12						xxx
P13						

o: n.s., at P = 0.05
x: s.d., at P = 0.05
xx: s.d., at P = 0.01
xxx: s.d., at P = 0.001

Collection at the University of Melbourne), raises the possibility of a Kartan tradition with a more widespread geographical distribution than has been advocated by Lampert (1976, but see Lampert 1977:8), which may have persisted in Bass Strait, and possibly in Victoria and northeastern Tasmania, long after its disappearance in South Australia.

The only markedly anomalous element in the Palana lithic assemblage is the ubiquitous granite block. These were most common at site P13, where they tended to occur in discrete geographical clusters, their positioning unrelated to specimen size or weight. Specimen size, *per se*, was extremely variable, but the great majority of granite blocks were manufactured under conditions where a 'correct' relationship between length (L) and maximum width (W_m) was recognised. This is revealed upon plotting a scatter diagram of L vs W_m: there is a positive linear correlation between the two variables, and the regression equation is:

$$W_m = 0.65L$$

Granite blocks, therefore, were modelled on very definite *cognitive modes*, and there can be no doubt of their human association. There remains the problem of their function. Undoubtedly, some could have served as grindstones or anvil stones, and others may have been employed as projectiles during food quest activities, but it is unreasonable to try to accommodate all specimens in these ways. At present the function(s) of most of these granite manuports is an enigma.

Faunal remains were recorded at almost every site at Palana. Notwithstanding the proportions of the different shell species present at site P12, mussels (*Mytilus planulatus*) were present at every shell midden site listed in Table 1, except P14. In contrast, limpets (*Cellana solida*) were only found at P1, 5, 7, 12 and 14, while chitons (*Poneroplax albida*) were present at P7 and P12 only. No other shell species were found at any of the Palana sites. Because shell middens were subject to rapid wind erosion, they were most conspicuous at those sites in which the occupation palaeosol was still preserved. At sites containing two or more shell species, different species usually exhibited differential geographical distributions. At two different midden areas at P5, individual limpet shells and mussel shells, respectively, were found carefully packed one inside another.

At Palana we have the first documented instance of coastal Aboriginal shell middens on a Bass Strait island (Jones 1976, 1977). Because of the ferocity of the prevailing winds, the molluscan evidence is subject to rapid exposure and even more rapid disappearance, and it is apparent that the original areal extent of midden deposits here was very substantial. The accumulated evidence would indicate that the Palana region was an important source of rocky shore molluscs, and was visited regularly, probably on a seasonal basis, by small groups of Aborigines over some period of time. On present indications, the initial coastal exploitation of this region began between 7300 and 7000 BP, and coincided with the establishment of the present shores of Flinders Island. As Jones' map (1977:335) illustrates, similar dates have been obtained for the earliest coastal sites on Tasmania and Hunter Island. But

perhaps the most significant aspect of the Palana evidence is that it documents the existence of an isolated Holocene Aboriginal population on Greater Furneaux Island. The land bridge linking Clarke Island with the northeastern shores of Greater Tasmania was severed between 8500 and 8000 BP (see Thom and Chappell's 1975 sea-level curve), and by 7000 BP the watercraft possessed by the Furneaux Island Aborigines would not have been capable of making the hazardous crossings to the 'mainland'.

Finally, there remains the problem of the bones. While no examples were recovered during the excavations at sites P12 and 13, severely leached bones were present at most of the Palana sites, and species identified earlier by Hope (1973:173, 177-84) include:

Brown bandicoot (*Isoodon obesulus*)
Potoroo (*Potorous apicalis*)
Tasmanian devil (*Sarcophilus harrisii*)
Tiger cat (*Dasyurus maculatus*)

plus unspecified birds. Because these are surface finds, in a deflation context, it is by no means certain that they can be associated with the prehistoric Aboriginal occupation, though the presence of the Tasmanian Devil, which has not been recorded on the island in historic times, would seem to indicate that at least some of the surface bones at Palana are of prehistoric vintage (but see Hope's comments, 1973:188). If, indeed, some of these faunal remains do relate to Aboriginal occupation, then it raises the interesting question of the relative importance that was assigned to local terrestrial versus littoral resources during the food quest.

Conclusion

Recent field surveys and excavations have revealed the existence of a number of Holocene coastal camp sites at Palana on northern Flinders Island, relics of an Aboriginal population isolated on Greater Furneaux Island by the Flandrian Transgression. The implications of this discovery in relation to correlations between population size, group territoriality, and resource exploitation strategies will be spelt out in another paper (Orchiston and Glenie, n.d.).

Another period of fieldwork on the island is planned, so that we may investigate the total chronological span of occupation evidence at Palana; the relationship between this site area and others at Killiecrankie Bay and Boat Harbour, also on the island's northwestern coast; the chronology of inland exploitation, as witnessed by the numerous scattered artefacts found in the northern half of the island in 1946 and subsequently; and the consequences of Aboriginal 'fire-stick farming' activities.

With the repudiation of such statements as, 'No shell middens nor any other debris definitely referable to the postglacial prehistoric period, have ever been found on any of the Bass Strait islands...' (Jones 1977:349), we are exposed to a whole new field of island archaeology and biogeography.

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Without the able assistance of our 1975 field team, comprising Chris Bennett, Bill Carr, Julie Carter, Penny Hueston, Peter McGoldrick, Andrew Mackie, Andrew Perry, Julia Plomley, Bill Snoek, Peter Sutherland, Merryl Wright, and Kate Young, this report would not have been possible. They have our sincere thanks for long hours of hard work, often in appalling conditions. Roger Blake (Victorian Department of Minerals and Energy) accompanied one of us (R.C.G.) on the initial visit to the island that led to the discovery of the extensive, recently-exposed occupation evidence at Palana, and Richard McCutcheon (also from the Department of Minerals and Energy) made up the third member of the 1977 expedition.

We wish to thank our fieldteam geologists (B.C., P.M., A.M., and K.Y., above) and Gus Ferguson (Geology, University of Melbourne) for assisting with the petrological analyses of the artefacts and manuports; Angus Martin (Zoology, University of Melbourne) and Greg Parry (Zoology, Monash University) for discussing the shells and shell middens; and John Whinray of Flinders Island, who provided us with invaluable assistance and advice during our 1975 fieldwork.

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