AN ETHNOARCHAEOLOGICAL STUDY OF MABUIAG ISLAND, TORRES STRAIT, NORTHERN AUSTRALIA

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Abstract

In this thesis an ethnoarchaeological approach is applied to the study of past settlement and subsistence on the island of Mabuiag, one of the Western Torres Strait Islands situated midway between the continent of Australia and the continental island of New Guinea. This region of the world, and Mabuiag in particular, was selected for study on account of its methodological interest, i.e. the potential for interpreting archaeological remains on Mabuiag in relation to two additional non-archaeological sources of data: historical and contemporary ethnographic accounts, and information from present-day Islanders.

This study is an example of an ethnohistorical or direct historical approach to archaeological data because the most important ethnographic information studied is derived from middle and late nineteenth-century observations, and is culturally and geographically specific to the archaeological remains found.

The present-day environmental and cultural setting of the Torres Strait region is discussed before the history of European contact in the area is reviewed. Information on the lifestyle of the Islanders and Cape York Aborigines contained in the earliest European records provides views of Islander life prior to sustained contact with Europeans. The nature and effects of the subsequent 20 years of European contact in the area are then considered in order to establish the validity of the analogical use of the late-nineteenth century ethnographic accounts that relate most specifically to the archaeological research of this

thesis: *i.e.* the *Haddon Reports*.

The appropriateness of the use of the *Haddon Reports* is demonstrated and aspects of the ethnography most relevant to the traditional patterns of settlement and subsistence on Mabuiag are discussed in relation to the objectives and results of the archaeological reconnaissance, survey and excavation carried out on Mabuiag Island. Interpretations of the archaeological data are presented both with and without consideration of the ethnographic information, and in conclusion the nature of the archaeological interpretations that can be developed when relevant ethnographic information is available is highlighted.

Contents

List of Figures

[1] (geological decriptions by Jane Roberts, Institute of Archaeology, and artefactual definitions based upon discussions with Rhys Jones (1986 pers comm., Institute of Archaeology).

List of Tables

List of Plates

[1] + Photograph taken by D.R. Harris.
[2] * Photograph taken by B.Ghaleb

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PART A: ETHNOARCHAEOLOGY AND ITS APPLICATION TO MABUIAG ISLAND

Chapter 1 Ethnoarchaeological investigation of subsistence and settlement

Introduction

Archaeology is synonymous with study of the human past: a past demarcated conceptually into historic and prehistoric time. Archaeological research is not restricted to either category; the implementation of its central aim- the (re)construction of lifeways of past societies through study of surviving material culture- cuts across this temporal divide.

An archaeologist's work involves discovery, description, and analysis of cultural remains; processes that are all an integral part of interpretation: the archaeologist's attempt to attribute behavioural meaning(s) to the materials found. Herein lies the paradoxical nature of the discipline of archaeology. The understanding of past activities, events or societies rests entirely upon interpretations formulated in the present, even when historical documents form part of the archaeologist's evidence. Moreover, our conceptions of other peoples' pasts are usually developed in contemporary settings vastly different, environmentally, socially and politically, from those lived in by the past societies studied. Yet, in spite of any chronological and/or cultural differences (between themselves and the societies studied), archaeologists create detailed images of "other" peoples' pasts, and appear united in their attempts to portray past human life more vividly than "mere" description of cultural remains achieves. This process of putting "flesh on the bones" (postulating the behavioural meaning of archaeological assemblages) can be, however, no more than an inferential one, grounded in analogical reasoning. Therefore, the precise rationale(s) behind the choice of analogs used in archaeological interpretation are of utmost significance.

Two aspects of archaeological study are highly relevant to this analogical interpretive process: 1) the objectives of the study (<u>i.e.</u> the <u>kinds</u> of past behaviour that it is the archaeologist's aim to describe and understand; 2) the procedures followed to attain the research objectives (the methodology).

The methodological approach adopted in this study stemmed from a desire firstly to determine the past behavioural context(s) of an archaeological site, by applying archaeological techniques in association with the study of additional, non-archaeological sources of information; and secondly to consider the differences in the types of explanations of human behaviour arising from study of, respectively, the archaeological and non-archaeological sources of data. The field area which became the focus of this thesis was chosen prior to the identification of any archaeological deposits. However, the initial reconnaissance was undertaken with the knowledge that, if archaeological sites were found, there existed a rich body of ethnographic information (both historical and present-day) that was likely to be of direct value to the archaeological interpretation of past human behaviour in the area.

In the event, varied and abundant archaeological deposits were discovered which could also be shown to be, in part at least, documented ethnographically. In the light of this, the primary objectives of the thesis have been: 1) to establish the significance of the most detailed and geographically specific ethnographic accounts available and the appropriateness of their use in relation to the interpretation of the archaeological remains recovered; 2) to indicate how the ethnographic information influenced the archaeological reconnaissance, survey and excavation carried out in the course of the study; 3) to compare the interpretations of the results of the archaeological analyses with those suggested by a consideration of the relevant ethnography; and 4) to evaluate both the substantive and methodological contributions of this study within a regional context.

The sub-discipline that best denotes the methodological approach adopted here is ethnoarchaeology. The most important source of ethnographic information used in the preparation of this thesis is believed to be culturally and geographically specific to the archaeological remains uncovered, and is derived from nineteenth-century observations. Therefore, the thesis can be regarded as an example of an "ethnohistorical" (Orme 1981:22), or "direct historical" approach (Ascher 1961, Hodder 1982:35), applied, in combination with an archaeological one, to the investigation of a peoples' past patterns of subsistence and settlement.

1.1 The Research Focus

The work presented pertains to people who inhabited a small tropical island between approximately 600 and 100 years ago. The island is Mabuiag, the most northerly of the mid-western group of islands of Torres Strait, Far North Queensland, Australia (Fig.1). Views of past subsistence and settlement patterns on Mabuiag are afforded through the analysis of surveyed and excavated archaeological remains, and through study of historical and present-day accounts of Mabuiag Islander life.

An initial brief reconnaissance of the island (in 1984) revealed a variety of archaeological features. They were primarily accumulations of midden remains located close to the coast. An area of particular interest was discovered along a part of the southeast coast. Numerous midden features, of varied shapes and sizes, littered the surface of this area. It is known today, as it was ethnographically, as the old village and ceremonial site of Gumu.

The archaeological features discovered at the site of Gumu provided an opportunity to study different types of midden deposit in relation to ethnographic information specific to their location. This type of research seemed worthwhile for two main reasons: the two sources of data were closely connected, both culturally and geographically (and also possibly chronologically), and there existed striking contrasts between the types of information that

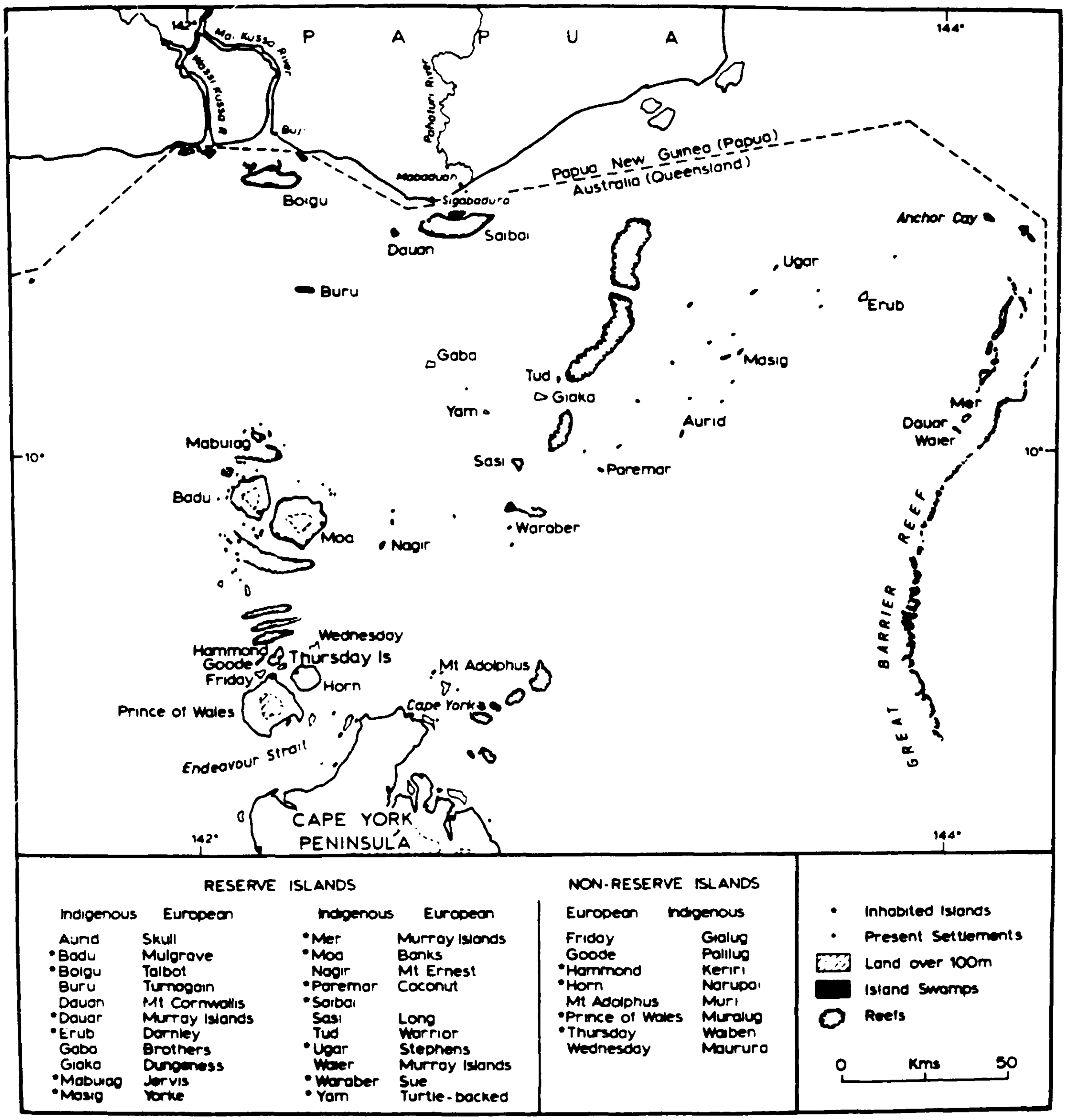


Figure 1. Map of Torres Strait with traditional and English names (from Harris 1975:102).

each provided.

Firstly, it appeared possible to link certain social behaviours (of a kind not usually detected archaeologically, e.g. ceremonial, totemic), to an area now strewn with piles of fragmentary bone, shell and stone. Secondly, working within this kind of methodological framework, it seemed appropriate to consider how archaeological data might limit the breadth of the interpretations made about past human behaviour, i.e. to ask what types of human behaviour is archaeological enquiry (especially when focused upon midden sites) best equipped to address?; and also to consider the extent to which ethnographic data may broaden or narrow our interpretive views. And lastly, ethnoarchaeological research on Mabuiag Island offered the possibility of providing substantive knowledge of significance beyond the island itself, in a region whose prehistory is little known, and also of making methodological contributions to the field of midden archaeology, and perhaps to the discipline of archaeology as a whole. It was with these objectives in mind that archaeological investigations and a literature review were begun.

1.2 Midden studies, a focus of archaeological research

The term midden in archaeology has generally come to imply a deposit comprised to some extent of the remains of shellfish species (most commonly represented by members of the classes *Bivalvia* and *Gastropoda*)[1]. Literally the word means rubbish or refuse heap. It derives from the Scandinavian term *myddyng* and its association with archaeology originates from the mid-nineteenth century when large shell mounds along the coasts of Denmark were recognized as cultural deposits and called *kjokkenmodding* (kitchen-midden) (Ceci 1984:63). Since then archaeological deposits described as middens have been discovered and studied from all parts of the world where marine, freshwater, and land species of mollusc formed part of the diet.

The discovery of midden sites within middle and late Pleistocene contexts in Europe, Africa and Australia, indicates that marine and freshwater resources have formed part of the human diet for thousands and thousands of millennia (*e.g.* Evans 1969, de Lumley 1969, Lampert 1971, Voight 1973, Volman 1978, Bowdler 1977, Jones 1977, 1990 pers.comm.). This sort of cultural deposit does not make a significant impact on the archaeological landscape, however, until early and mid-Holocene times. The relative increase of early Holocene sites in Europe and the Southwest Asian Levant that contain food resources derived from coastal or riverine habitats (*e.g.* birds, molluscs, fish), has been interpreted by archaeologists as representing part of a complex of cultural responses to terminal and post-Pleistocene environmental changes. Although attributed to a hunter-gatherer lifestyle, in these contexts and time periods, midden deposits have been

[1]Although the term is also used to refer to archaeological deposits that consist of any type(s) of fragmented animal remains, usually those found in areas of settlement sites.

viewed as representing a behavioural strategy (i.e. a broadening of the subsistence base) which helped to lay the cultural foundation for the development or adoption of plant and animal domesticates (e.g. Binford 1968, Flannery 1969, Harris 1977a). Midden sites also exist in abundance globally throughout much more recent millennia, and often represent the only remaining trace of coastal- or riverine-dwelling peoples whose cultural patterns bore little relationship to the origins of sedentary agricultural life (Perlman 1980:290-94). However, regardless of the context, chronological occurrence, or perceived cultural milieu of midden deposits studied, archaeologists' research objectives have tended to fall within a relatively narrow range.

Because midden deposits consist primarily of the kinds of remains implied by their name (rubbish), it is perhaps not surprising that archaeologists have consistently set out to determine the kinds of dietary patterns they represent. Interpretation of the excavated remains has largely been based upon what the identification and quantification of the animal species recovered might indicate (e.g. food preferences, percentage contribution to diet, range of habitats exploited, technology used, patterns of occupation, population density and environmental change; e.g. see Cook and Treganza 1947, Ambrose 1967, Shackleton 1969, Lampert 1971, Mellars & Payne 1971, Lampert & Hughes 1974, Bailey 1975,1977,1978, Sullivan 1976, Meehan 1977, Moore 1978, Botkin 1980, Grigson 1981, Thomas 1981, Oikawa & Koyama 1981, Rowland 1983, Claassen 1983, Jones et al. 1983, Wing & Scudder

1983, Ceci 1984, Feldman 1984, Shenkel 1984, Beaton 1983, 1985, Jones 1985, Shackleton & van Andel 1986, Waselkov 1987). Interestingly, estimates of the percentage contribution of shellfish to the diet based upon hypothetical deduction from the analysis of archaeological remains (e.g. Bailey 1975) and modern ethnographic work (Meehan 1982) fall within the range, c. 5%-30%, even though there is considerable variation in the size of the midden sites studied and in their geographical location. These results suggest that although shellfish may have been exploited throughout the year, their overall caloric contribution to the diet would have been minimal (see Meehan 1982:169-72 for a more thorough discussion).

Modern ethnographic work among shellfish gatherers (even though their diet rarely consists entirely of traditional foods) does, however, go some way towards providing information relevant to understanding rates of midden accumulation and the social context of their genesis (e.g. Thomson 1939, Peterson 1973, Voight 1975, Jones 1980, Meehan 1982). Ethnographic fieldwork (Meehan 1982, Hockey & Bosman 1986) and study of ethnographic literature (Bowdler 1976, Jones 1978, Colley 1983, Waselkov 1987) has also offered insights into gender- and age- related differences in practices of food procurement, processing, and consumption, which, together with information on the social context of midden accumulation, indicate that midden remains represent activities of nutritional and social significance beyond what a calculated % of their dietary contribution alone might suggest (see also Perlman 1980).

By virtue of the nature of archaeological data, particularly the kind generally recovered in middens, any information specific to the cultural context of midden accumulation is most likely to be found by reference to non-archaeological sources of data. There appears to be only one way to get beyond purely techno-economic interpretations of the materials discovered, and to develop a better understanding of the relationships between different social activities and the methods of "refuse" or "material-culture" disposal, i.e. by investigating ethnographically-studied peoples who create or created them. Ethnographic work or literature which contains information on the context and/or composition of midden accumulations is of considerable interest to archaeologists studying and interpreting ancient midden sites. However, the extent to which one can confidently apply ethnographic analogies across space and time must be carefully considered. The most wide-ranging and accurate interpretations of the significance of midden deposits in a given culture will be derived from ethnographic information that relates specifically, culturally and spatially, to the archaeological sites studied: a situation that rarely occurs. In Torres Strait, however, a detailed record of Islander life, recorded both at the time of and three decades after European contact, does exist, and it relates specifically to islands where abundant midden and other archaeological evidence is found today.

1.3 The Research Context

The Torres Strait Islanders, their environment, and the neighbouring peoples to the north and south, have attracted considerable research attention. This is due to a few key factors. The recent history of European contact in the region is relatively well documented and the accounts suggest that there were significant cultural differences between communities who were in frequent contact, living and trading within small geographical distances. In addition, the continuity of Islander presence in Torres Strait (from an as yet undetermined date prior to the seventeenth century) to the present, and its wider regional context (biogeographical and cultural), make it an important area for study.

The breadth of topics which have been the focus of research across Torres Strait within the twentieth century, illustrates this. Walker (1972) provides a good summary of much of the environmental and cultural work carried out before 1971. Loos (1974,1980,1982), Farnfield (1974,1975), and Chase (1981) consider aspects of early European contact and governmental administration on Islander life. Singe (1979) provides a general history of life in and around Torres Strait, and White (1971), Beckett (1972), Moore (1972,1979), Golson (1972), and Harris (1977b, 1979) focus on aspects of Islander and Australian Aboriginal interactions across the Strait, as recorded during the early periods of European contact. Other recent studies on the historic and current social and economic conditions of Islander life have been carried out by Beckett (1977,1987), Duncan (1974), and Sharp (1980). The history of the development of the Islanders' creole language has been studied by Shnukal (1983a,1983b,1984,1985), and Beckett (1984), with Islander folklore recorded by Laade (1968,1971), Lawrie (1970), and Beckett (1975).

Publication and synthesis of ethnographic information derived from nineteenth-century accounts has primarily been undertaken by Moore (1979,1984) and Allen and Corris (1977). Present-day ethnographic work has been carried out by Griffin (1977), Kitaoji (1978), Yabuucki and Ohshima (n.d.), and Nietschmann, B. (1976, 1977a, 1977b,1984), Nietschmann and Nietschmann (1977, 1981), Fitzpatrick-Nietschmann, J. (1978, Draft Typescript n.d.), and ethnobotanical work by Harris (1975, 1977b,1978, in press). The work of the Nietschmanns' and Harris are of particular importance to this thesis on account of their objectives and locations for study within the Strait.

Preliminary archaeological investigations in Torres Strait were carried out by Moore (1978, 1979:13-15), Vanderwal (1973), and Rowland (1985), Singe (Draft Typescript 1984) with more detailed studies by Rowland and Barham (in press), and Barham and Harris (1985). Barham and Harris (1983) have also undertaken palaeoenvironmental investigations of the Western Islands of Torres Strait over the past decade. This thesis is, in fact, part of a larger project investigating the prehistory and palaeoecology of the Western Islands of Torres Strait: The Torres Strait Research Project (TSRP), under the overall direction of D.R. Harris and A.J. Barham, Institute of Archaeology, University College London. Prior to the present study, no archaeological work (other than a very limited surface survey by Vanderwal (1973), had taken place on Mabuiag Island.

The primary aim of this thesis- to apply an ethnoarchaeological approach to the study of past human subsistence and settlement on Mabuiag Island- requires selective reference to the above studies and to nineteenth-century scientific journals and ethnographic accounts. The most detailed information that is directly relevant derives from research carried out in the late-nineteenth century by A.C. Haddon and his colleagues. The results of that research are contained in six volumes entitled Reports of the Cambridge Anthropological Expedition to Torres Straits (Haddon 1901-1935). These reports document the work of an interdisciplinary team whose primary objective was to record the then remaining knowledge of traditional Islander life (i.e. prior to sustained European contact). The research was conducted over two field seasons, in 1888 and 1898, primarily on two Torres Strait Islands, Mabuiag in the western group, and Mer in the eastern. A total of just over nine weeks was spent on the island of Mabuiag.

Before the details, relevance and application of the Haddon Reports are discussed, a brief review of the history of European contact in Torres Strait is provided. Its objectives are threefold. They are: firstly, to demonstrate the nature of the available knowledge of the lifestyles encountered in the Strait during the initial periods of contact (Dutch-Spanish: 1604-1756; British: 1770-1837), and prior to substantial contact (British:

1842-1860's); secondly, to evaluate the consequences of sustained European presence there (1870's to the time of the Haddon study, 1888 and 1898); and thirdly, to establish the significance of the Haddon Reports (the authenticity of the information obtained), and thus, the appropriateness of their use in this thesis.

In addition to fulfilling the objectives of particular relevance to the prehistory of Mabuiag Island, it is also hoped that with greater knowledge of the archaeology there, and closer consideration of the ethnographic sources, issues of regional significance will be touched upon. Little is known of the history of occupation of Torres Strait, and much less of the Islanders' original cultural affiliations to the indigenous Melanesian and Australian populations to the north and south. Mabuiag Island itself occupies a geographical position midway between the continental island of New Guinea and the continent of Australia, and can be shown to have historically held a pivotal position in relation to trade both within and across Torres Strait. So we may, perhaps, be able to attain a better understanding of the antiquity and development of Islander culture as it was observed by early European visitors, and its relationships to the cultures of the neighboring mainlands of New Guinea and Australia.

Chapter 2 The environmental and cultural context of research in Torres Strait

Introduction

In this chapter the environmental context of the Torres Strait Islanders is first described, in Section 2.1, with particular reference to biogeographical data. This is followed by discussion of the cultural context in Section 2.2. The discussion of aspects of Torres Strait Islander culture is based upon ethnographic information derived from primary written sources and from contemporary observations in Torres Strait. Hypotheses postulated (by the authors of the studies reviewed) to explain cultural differences that existed across the Strait in the recent past, are discussed in Section 2.3. This is followed by a review and discussion (in Sections 2.4-2.5) of previous and on-going archaeological and palaeoenvironmental research carried out in the region which is relevant to this study.

2.1. The Environmental Context

Torres Strait occupies a geographically pivotal position between the Australian continent and the continental island of New Guinea. Now a narrow (150 km at its narrowest point) and shallow (10-15m) island-studded channel, it periodically formed a bridge between these two land masses during the Quaternary as sea level fluctuated. Its present-day physiography reflects the most recent period of sea-level transgression which began at the onset of the Holocene period, (c. 10,000 years ago), and stabilized in this part of the world about 6000 years ago (Jennings 1972, Chappell 1983, Barham & Harris 1983).

The Strait contains over 100 islands and islets of which only 17 are permanently inhabited today. The islands are divided into four groups according to their location, physical make-up and relief. They consist of: an eastern group of high islands consisting of basic volcanic rocks; a central group of low sandy islands made up of coral-derived carbonate sediments; a western group of high islands of acid volcanic and granitic rocks; and, in the northwest adjacent to the Papuan coast, a group of low islands that rise no more than a few metres above sea level, where mangrove muds and peats overlie dead coralline platforms (Harris 1979: 76-77; Barham & Harris 1983:533).

The islands of the western Strait can be divided into three geographical groups: the northwestern islands (Boigu, Dauan, Saibai[1]); the midwestern islands (Badu, Mabuiag, Moa, Nagir); and the southwestern islands (Muralug and seven associated islands: Nurupai, Juna, Giralay, Peilalag, Waibene, Kerire, Maurura) (Fig.1).

Mabuiag Island, the focus of this study, is small (8km2) and triangular-shaped. Together with its associated offshore islands and islets, it forms the northern tip of the midwestern group of islands. Like most of the other islands in western Torres Strait (except for the low alluvial islands of Saibai and Boigu), Mabuiag is a remnant of the now flooded Sahul shelf, a peak of the partially submerged Cape York-Oriomo ridge.

[1] Traditional Islander names are used unless otherwise stated.

The climatic conditions of the Strait are, in general, governed by the alternation of wet and dry seasons, which extend, respectively, from December to April and from May to November. "Mean annual rainfall increases northward across the Strait from 1,768 mm at Cape York to 2,063 mm at Daru, and the dry season accordingly diminishes somewhat in length and severity towards the north" (Harris 1979:77). The soils of the western islands are mainly thin, acidic, and relatively infertile (in contrast to the more fertile, basic soils of the high eastern islands), and large granitic boulders, of Carboniferous age (Willmot et al. 1973), are a common feature of the landscape.

Although it seems certain that the vegetation of the western islands has been greatly modified by human action, open-canopy sclerophyllous woodland occupies uncleared parts and probably represents the dominant plant community in the past (Harris 1979:77). The islands support coastal communities of littoral thicket and woodland as well as mangrove vegetation which frequently fringes the shore. Grasslands also occur, which may be the result of the burning and clearance of woodlands (Harris 1979:77).

Torres Strait lies to the east of the zoogeographical region of Wallacea, which comprises the eastern Indonesian islands of Sulawesi, the Moluccans and Lesser Sundas, and it is described as "separating the world's richest vertebrate fauna, in South-East Asia, from its poorest in the Australian region" (Darlington 1957: 462-72, in Golson 1971a). Since the postglacial sea-level rise created the Strait, it has functioned as both a bridge and barrier to many plant and animal communities (Walker 1972, Barham & Harris 1983). The indigenous fauna of the Strait is typical of the zoogeographical Australian Region, which extends into the lowlands of Papua New Guinea, although more impoverished than that of either Australia or New Guinea.

The only non-domestic land mammals that inhabit Torres Strait today are fruit- and insect-eating bats of the suborders Megachiroptera and Microchiroptera, and rats, Muridae, of the subfamily Hydromyinae. The rats are found only within the Australasian region, and constitute a so-called "old endemic" element of the fauna which entered Australia up to 15 million years ago (Strahan 1983:365). Monotremes and marsupials are groups common and unique to the Australo-Papuan region, and some wallabies (Macropus spp.) and the cuscus (Phalanger spp.) may have inhabited the larger Torres Strait islands in the past. Domestic dogs and pigs are recorded in the ethnographic literature, and were introduced at some, as yet, undetermined time in the past, prior to European contact.

Land reptiles in the Strait are represented by seven families whose species' common names include: legless lizards, dragons, skinks, geckoes, monitors, a tortoise and a crocodile. Two families of frogs are the only amphibians found, and four families of snakes have been identified with over twenty species (poisionous front- and rear-fanged snakes, blind snakes and pythons) (Cameron et al. 1978, Cameron 1984: pers. comm.). Land molluscs and insects also inhabit the islands.

A greater diversity and abundance of indigenous animals, however, occupy marine and coastal habitats in the Strait. For example, the coast of Mabuiag provides a variety of intertidal habitats: mangrove communities, sandy and rocky foreshore areas, inshore lagoons and fringing reefs. Within these ecosystems live animals that can be exploited as edible resources throughout the year: a diversity of molluscs, crustaceans and fish. One large marine mammal lives within the intertidal and offshore zones, the dugong (Dugong dugon), and probably cetaceans, some 36 different species having been reported from Australian coastal waters (Strahan 1983:458). Marine reptiles are also abundant, particularly three species of sea turtles (Chelonia mydas, C. depressa, Eretmochelys imbricata, green, flatback and hawksbill turtles), although Caretta caretta (loggerhead), and possibly Lepidochelys olivacea (Pacific Ridley) also inhabit the waters of the Strait, and a crocodile (Crocodylus porosus). They can all also be exploited year round, with some species being more abundant and accessible on a seasonal basis (e.g. during periods of mating and egg-laying). In fact, the coastal waters of northern Australia are particularly abundant in marine turtles, as six of the seven species in the world nest in Queensland or other parts of northern Australia (Bustard 1972, Heinsohn 1978).

Numerous species of sea and land birds, together with their eggs, provide additional potential coastal food resources. Many species migrate between New Guinea and Australia, although only a few stop to breed (Draffan et al. 1983). During its yearly migration, the Torres Strait Pigeon (Ducula spilorrhoa) nests on some of the islands while feeding upon the seasonally abundant fruit of Manilkara kauki (a date-like plum). Of particular interest is a chicken-sized bird, the scrub fowl (Megapodius freycinet), which builds its nest by piling up large mounds (up to 3m high) of organic material and sand for the incubation of its sizable eggs. The scrub fowl is one of the so-called mound- builders (Megapodiidae) (Schodde & Calaby 1972), and they are resident on some of the larger western islands.[1]

Enumerating the potential edible plant resources poses a more difficult problem. There are various species of edible fruits, nuts, legumes, roots and tubers that grow on the islands today. Most of them are indigenous plants, although some are introduced. Quite a few of the species mentioned in the ethnographies are still present and are eaten today, but little modern botanical surveying and identification has been carried out in the western islands, Badu being the only island for which a comprehensive species list has been published (Garnett & Jackes 1983). The use of plant resources is, however, an area of great interest and relevance to this study, as is demonstrated in subsequent sections.

[1] For a comprehensive list of bird species and subspecies of the area see Kikkawa (1976:99-106).

2.2 The Cultural Context: hunter-gatherers and agriculturalists

Torres Strait has long been recognized as an area whose boundaries divide the hunter-gatherers of Australia from the agriculturalists of Papua New Guinea (Golson 1971b, 1972, White 1971, Walker 1972, Harris 1977b,1979). For scholars interested in explanations of the origins (pristinely or by adoption) of agriculture this represents an extraordinary case. In contrast to the known length of human occupation in New Guinea and Australia (c. 30-40,000 years), the separation of the two land masses by rising sea level was a relatively recent event (c. 6000 years ago). Research in the Highlands of New Guinea (Golson 1977) has produced inferential evidence of agriculture as early as 9000 years ago. However no evidence for the domestication (in the strict sense) or the cultivation of plants has yet been discovered anywhere in Australia. This was the situation found at the time of European contact, although the Aboriginal people in the northeastern tip of Australia (Cape York Peninsula) not only had frequent contact with people practising agriculture, but also lived in similar coastal habitats.

Study of the ecology and ethnographic history of the area suggested that the non-agricultural subsistence practices of the Aboriginal people of Cape York cannot be attributed to a lack of knowledge of the appropriate techniques or plants. "The naturally occurring plants traditionally used by Cape York Aborigines as sources of food contain a high proportion of genera, and some species, of Malaysian (including New Guinea) affiliation in a plant geographic sense" (Golson 1972:387). Still more striking is Golson's (1971b, 1972) estimate that of the food plants exploited by the Aborigines on the western and eastern side of the Peninsula (for roots, fruits, seeds and leaves), 88.5% of the species are of Malaysian origin. In addition, several of the plant species exploited by Aborigines in the Peninsula, are well known as domesticates in Malaysia, e.g. the tuberous plants Dioscorea bulbifera (a yam), Colocasia esculenta (taro), Alocasia macrorrhiza, and Tacca leontopetaloides; and the trees Terminalia catappa, (found in the western Cape), Aleurites moluccana (candlenut), and Manilkara kauki, none of which is recorded as having been cultivated in Australia (Golson 1972:387-8).

The accounts left by early European explorers (Beckett 1972, Moore 1972,1979, Harris 1979), indicate that even subsistence practices within the Strait incorporated strategies common to both the Papuan and Australian Aboriginal peoples. The extent of the Western Islanders' commitment to cultivation appears to have varied along a north to south gradient (Beckett 1972, Golson 1972, Harris 1977b). Evidently there were factors that influenced some of the Islanders to practise a certain degree of cultivation which did not similarly affect other Islanders or the neighbouring Aboriginal peoples of the Cape. This suggests that, instead of being a sharp cultural divide, Torres Strait functioned (at least by the nineteenth century) more as a cultural filter.

It is from the interest evoked by the role of Torres Strait as a cultural filter between economies conventionally described as "hunter-gatherer" and "agricultural" that the present thesis arises, although it does not focus specifically on that issue. It stems particularly from the work of David Harris who, pursuing his long-standing interest in the origins of agricultural practices, first turned his attention to the Strait in the early 1970's. His work initially combined ecological, ethnobotanical and historical research to try to determine what factors led to, and maintained, the observed variations in dependence upon tropical agriculture and hunting and foraging across the region (Harris 1975, 1977b, 1979). In addition he hoped to "contribute to specific knowledge of traditional patterns of plant-food procurement among Australian Aborigines, Torres Strait Islanders, and coastal Papuans" (Harris 1977b:423). His research later developed into a wider investigation of pre-European subsistence and settlement in the western Strait through the initiation of palaeoenviromental and archaeological investigations. The objectives - of what then became the Torres Strait Research Project in collaboration with A.J. Barham- were to establish a regional chronology of Holocene sea-level change, and to reconstruct palaeoenvironmental settings at a local scale, which would provide spatial and temporal contexts for the analysis of archaeological and ethnographic data (Barham 1981, Barham in press Barham & Harris 1983, Barham & Harris 1985, Harris, Barham, & Ghaleb 1985, Barham & Harris 1987).

2.3 The cultural context: unity and diversity

Before turning explicitly to the ethnoarchaeological research on Mabuiag which forms the core of this thesis, it is necessary to summarize the main features of Torres Strait society and economy as described by the few anthropological scholars who have studied the Torres Strait Islanders in recent years (Beckett 1972, 1987, Moore 1972, 1979, 1984, Golson 1972, Harris 1977b, 1979), with particular emphasis on explanations postulated to account for the cultural differences observed there during the initial phases of European contact. The literature discussed is primarily from the published version of a symposium held in Australia in 1971, which addressed the significance of Torres Strait as a bridge or barrier to the movements of plants, animals and human populations (Walker 1972). Beckett's work figures prominently in this section because he is the only social anthropologist who has worked extensively (for nearly thirty years) in Torres Strait in the twentieth century.

As Beckett (1972:307) aptly notes, when referring to the Torres Strait Islanders we are conforming to long established anthropological categories, which often delimit cultural boundaries in an arbitrary way. In this case, the culture under discussion is confined to an area defined by latitudes 9 20' and 10 45'S and longitudes 142 and 144 E. These geographical boundaries contain the most northeasterly extension of the Australian nation in Far North Queensland. The division of the Islanders into three general groups- Western, Central, and Eastern- corresponds to the geographical distribution of the islands. The Islanders did (and do) divide themselves into smaller communities within the three island groups, based upon their perceptions of where cultural divisions lay (Fig.2 and see Section 2.4).

Torres Strait is regarded as the area within which Melanesia confronts Aboriginal Australia, although the peoples living there at the time of European contact "were neither politically united nor culturally homogeneous" (Beckett 1972:307-8). Certainly by the time the first scientific expeditions entered the region, the lifestyles of the peoples encountered reflected a palimpsest of cultures. There were many material elements of Melanesian culture across the entire area (White 1971:187), but certain cultural traits appeared to vary along a gradient from north to south (i.e. from more Papuan to more Aboriginal Australian). This was superfically apparent in Islander and Aboriginal physical appearance, language, and particular subsistence strategies. Study of the ethnographic sources revealed a dynamic system of cultural interaction (Beckett 1972, Moore 1972,) which indicated that, whatever the precise chronology of past cultural intercourse, exchanges had been multi-directional (White 1971:188).

In overall physical appearance the Islanders resembled Papuans. However, accounts of the Islanders who lived near, or were in frequent contact with, the Aborigines of Cape York, indicate that a considerable amount of "genetic mixing" had taken place. Islander physical traits were also noted in Aboriginal groups much farther south along

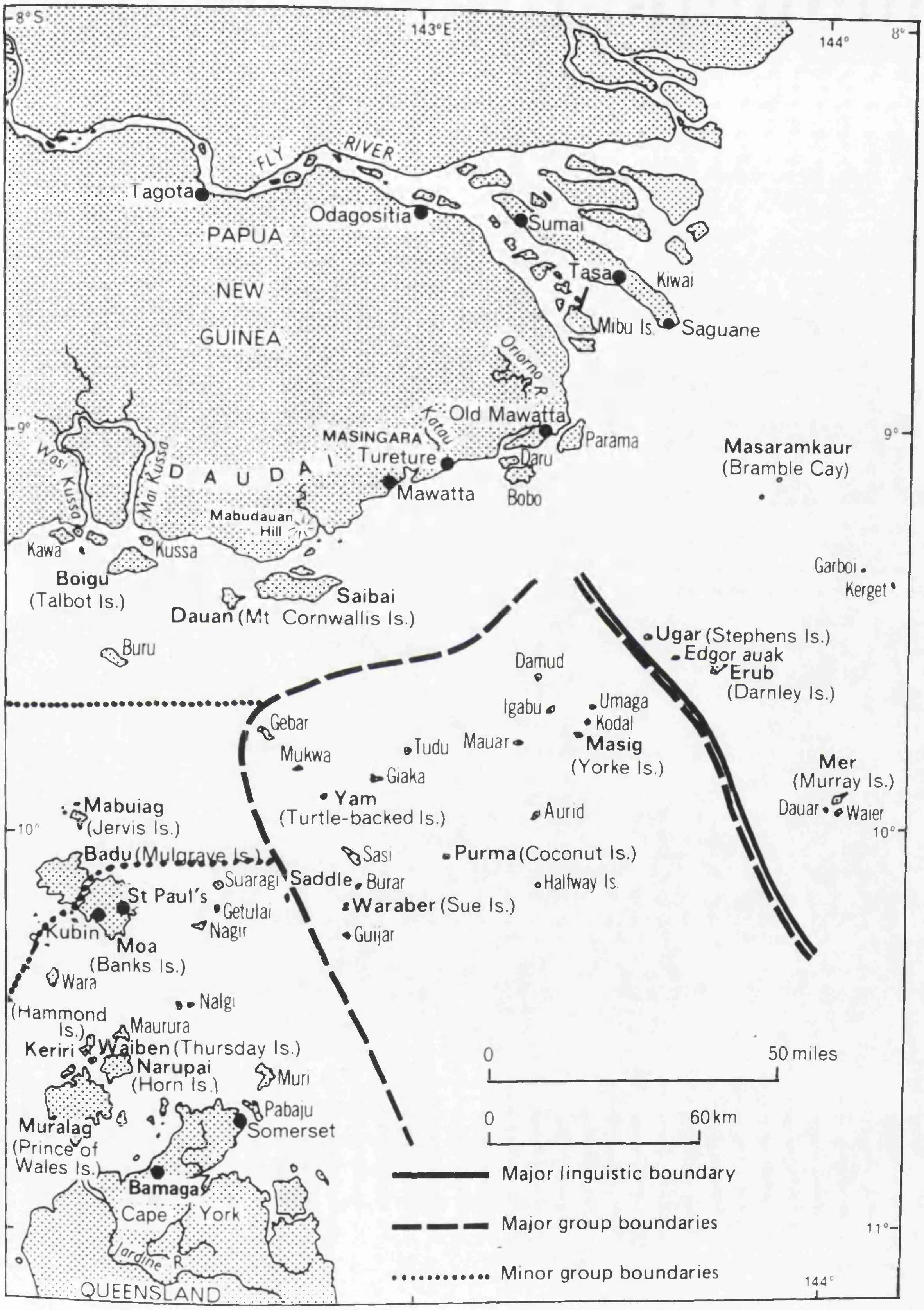


Figure 2. Map of Torres Strait showing major linguistic boundaries and major and minor group boundaries (after Shnukal 1983:27, and Haddon 1907:x).

the Cape's eastern coast (Moore 1972, Thomson 1934). Recent genetic studies have confirmed these observations (Kirk 1972).

Linguistically, the Strait is (and was) divided into two traditional language groups. The language of the Eastern Islanders is Miriam, which structurally is considered to be a typical Papuan language, a member of the Eastern Trans-Fly Family (Wurm 1972:349). Miriam is related to, but distinct from, Kiwai, the language spoken by the people of Daru and Parama Islands, just off the coast of Papua (Fig. 1), and on the islands in the mouth of the Fly River (Beckett 1972:307). The Central and Western Islanders speak Mabuiag, which is basically Australian in structure and vocabulary, although some features of its phonology are completely un-Australian (Wurm 1972:346). It is "an Aboriginal language which is, however, distinct from any spoken on the Australian mainland" (Beckett 1972:307). Wurm did, in fact, detect quite a strong Papuan influence on Mabuiag, in contrast to the negligible Australian influence on Miriam (1972:349).

It is estimated that at the onset of "effective" European contact in the mid-nineteenth century, the population within the Strait was between 4000 and 5000 (Harris 1979:83). The Islanders were divided into thirteen or fourteen kin-based autonomous communities, which occupied perhaps twenty islands. The basic components of their social system were exogamous patri-clans, although the clans in the western and central islands were organized within a totemic system, like those of Australia.

The Islanders' subsistence economy (and also that of the Aborigines at the Cape) was based upon local groups, with territorial attachment. The Islander clans were grouped into districts and ritual totemic moieties (Beckett 1972, Moore 1972). Both exploited the resources within their own territories, and also received food and goods from other areas through exchange.

The Islanders' diet consisted of animal foods, primarily marine, and both gathered wild and cultivated plants. Their dependence upon animals hunted, fished or collected, and the extent to which plants were gathered or cultivated, varied across the Strait. The Aborigines' diet on the Cape was derived solely from wild plants and animals. Beckett (1972) interprets the differences observed in Islander diet as a reflection of a) variation in the kinds of resources available, due to environmental differences in the islands, and b) variation in the size of the island communities.

Thus, cultivation was carried out extensively in the eastern islands, where the soil was of recent volcanic origin and fertile. Although turtle were abundant, there were no dugongs in the area, and the Eastern Islanders were less expert marine hunters than the Western Islanders (Beckett 1972:315). They had few of the western harpoons (primarily only single-pronged spears), and their canoes were probably "not very serviceable" (Beckett 1972:318), by the time they reached the islands through a relay system of trade which began in Papua New Guinea. Fish, however, were caught in abundance and with little effort by means of stone-lined fish traps, or simply from the shore. The Eastern Islanders maintained permanent villages with solidly constructed beehive huts, and high populations in relation to the size of their islands, e.g. in 1873 800-1000 people were recorded as living within the eastern group of islands, Mer, Dauar, and Waier (referred to by Europeans as the Murray Island group), the total land area of which was no more than 8 sq. km. Beckett also sees the emphasis of the Eastern Islanders on cultivation as fulfilling a need of the Central Islanders, who, because of the poor soils of their sandy islands, were obliged to obtain vegetables from elsewhere. "Thus the situation favoured a division of labour in which the Easterners specialized in gardening" (Beckett 1972:318).

This lifestyle was in marked contrast to that in the western islands. Infertile soils (particularly on barren Mabuiag, Beckett 1972:318), permitted little gardening. The Western Islanders depended primarily upon marine and wild plant foods, and became expert hunters due to the abundant dugong populations that inhabited their shallower coastal waters. Lower population densities (except on Mabuiag), were maintained, and they led a seasonally mobile life erecting "flimsy shelters along whatever stretch of foreshore they were currently making their base" (Beckett 1972:324).

The Aboriginal tribes of Cape York were described as leading a life very similar to that of the Western Islanders. Contrasts between the two were noted primarily in the size and decoration of canoes, and in the exploitation of plants. The Islanders had larger and more ornate canoes, and the Western Islanders, although to a lesser extent than the Easterners, did carry out some cultivation. Thus, in addition to the differences in plant exploitation between the Islanders and neighbouring Aborigines, there was also variation in the degree of dependency upon cultivated plants within the Strait. Similar variations in subsistence economies were also noted in the nineteenth century between groups that inhabited the Trans-Fly region of Papua (White 1971:185-6).

Papuan, Islander, and Aboriginal communities, were all formally linked through a trans-Strait network of trade. Large dugout double-outrigger canoes, an item of great significance in Islander culture, and other material goods from New Guinea, were traded south through an indirect (relay) system of exchange. Islander goods, together with a few of Aboriginal origin, and foods, traveled north along the same routes: one which ran through the western and central islands, the other through the eastern (Moore 1972:333).

Beckett and Moore are not wholly in agreement over the kinds of materials traded or from where they came. Beckett maintains that only the Islanders obtained canoes from the Papuans, as only they had the necessary commodity with which to trade: human heads[1]. However, he describes this "canoes for heads" trade as having been restricted to the Western Islanders, on account of their more warlike tendencies (Beckett 1972:317). The Eastern Islanders, instead, exchanged ground conus-shell armlets, and "the Central Islanders dealt in both commodities" (Beckett 1972:317). The Aboriginal communities, having neither

[1] It is ethnographically well attested that the Islanders and Papuans were head hunters and practised ritual cannibalism. However, tribes of the Cape York Peninsula also ritually ate human flesh (Thomson 1934).

item, were excluded from the canoe trade altogether. Moore (1972:342) found no evidence of a "canoes for heads" trade, although both double- and single-outrigger canoes were used on the western side of the Cape, as far south as the Archer River, and on the eastern side south to Princess Charlotte Bay. He mentions the contradictions in the early ethnographic accounts over whether or not the canoes within Cape York Peninsula were made, or obtained through trade, and refers to subsequent fieldwork which confirmed that canoes were made by the Aborigines, although some were probably imported (Moore 1972:333).

A number of other items of material culture were exchanged between the Islanders and Papuans as part of the canoe trade. The canoes originated from the Fly Delta of Papua, and were transferred south across the trade routes from island to island. To get canoes to their final destination it was often necessary for people on particular islands to act as intermediaries. Thus the process of purchasing a canoe could involve several trading transactions between communities before the "sale" was complete. However, the canoe trade was not the only medium through which different communities interacted; they were also linked through an inter-island system of exchange.

This is particularly well documented for some of the western islands in the mid-nineteenth century journal of O.W. Brierly, an artist who was a member of a surveying expedition to Torres Strait in the 1840's (the Rattlesnake expedition). The unpublished Brierly manuscripts were studied in detail and published by Moore (1972:335-42). Both direct exchanges of "island-made" and imported goods (food and other items), and the giving of gifts, were common occurrences between communities who were on friendly terms as well as between those with whom relations were more frequently hostile (Moore 1972:335-338). These systems of exchange brought about a considerable degree of material-culture mixing across the region, and they also extended into certain ideological realms of Islander and Aboriginal life.

Islander and Aboriginal societies were considered to be acephalous with "minimal political control by consultation between prominent men and cooperative secret ceremonies for initiation" (Moore 1972:329). Cults were the most prominent aspect of Islander ceremonial life, the purpose of which was to increase animal or vegetable foods or to ensure success in war. "The persons or objects which constituted the focus of a cult were always represented in the myth of origin as coming from somewhere else, beyond the kin of the cultists" (Beckett 1972:325). Kwoiam, a mythical figure believed to have come from the Australian mainland, was the focus of the Western Islanders' hero-cult worship. Malu and his brothers of the Malu-Bomai cult of the Eastern Islanders, are associated with the northwest, possibly Papua (Beckett 1972:325). However, the Kwoiam myth may have also extended to mainland Papua, west of the Fly River (Moore 1972:332).

On the Peninsula "cults seem to have contained Papuan features grafted onto basic Aboriginal totemic clan rites" (Moore 1972:331). Two cults of the Cape in particular, Siveri, the seagull, on the western side, and Iwai, the saltwater crocodile, on the eastern side, were believed to have been introduced from Torres Strait. In addition, material culture used in the cult-related ceremonies reflected Papuan influence (e.g. hourglass drums, masked figures with long grass costumes, and the type of intitiation grounds (areas enclosed by woven mats) used (Moore 1972:332). Mortuary practices on the Cape also indicated northern influence (Moore 1972:331-2).

In spite of these examples of cross-cultural assimilation and exchange, it is clear that plant cultivation did not extend across the southernmost boundary of the Strait. However, Beckett and Moore both conclude (especially in light of information provided by the Brierly manuscripts), that if a cultural boundary between Melanesia and Australia were to be drawn, it lies north of the southwestern group of Torres Strait Islanders, and not between them and the Aborigines of Cape York (Beckett 1972:325-6, Moore 1972: 342-3). As ethnographic accounts suggest that techniques of plant cultivation were known to the Cape York Aborigines, and were practised only on a small scale by the Western Islanders (minimally by those in the southwest), Beckett suggests that their degree of commitment to cultivation may reflect past low population densities rather than differences in culture (Beckett 1972:326). That is, without demographic stress, there may have been no "need" for either to have cultivated extensively. White also finds merit in this line of reasoning (White 1971:184). Interestingly, Moore notes that however similar the lifestyles between the two groups may have been, the Southwestern Islanders considered the mainlanders to be "a people both different and inferior to themselves" (1972:343).

2.4 Hypothetical explanations of patterns of settlement and subsistence in Torres Strait

The existence of the two traditional Islander languages, and of the particular characteristics of each, have been interpreted as directly related to the prehistoric occupation of Torres Strait (Wurm 1972, Golson 1972). Based upon the linguistic evidence alone, Wurm suggests that the islands were settled by Trans-Fly speakers during a period of southward migration, subsequent to the stabilization of the Holocene sea-level rise. This "southward thrust" (Golson 1972:385) of Papuan peoples would have had to have occurred sometime after the establishment of the Kiwai Family of languages in the region of the Fly Delta, because it is the ancestral family of the Miriam language. Wurm estimates that the Kiwai languages were established there fairly recently (2000-3000 years ago, or later), based upon the relationships between the ancestral language group of the Kiwai Family (the Central and South New Guinea Stock), and the Kiwai languages (Wurm 1972:363). He also suggests, however, that the western islands may have been settled by people from the same, or from a more westerly, Papuan linguistic area, and that they instead adopted an Australian language: the language that was probably already spoken on some of the western islands at the time of their arrival; and that they largely maintained "their

Papuan, more exactly Miriam-type phonology with only a few concessions to the Australian language" (Wurm 1972:364).

Golson puts forward an hypothesis (1972:348-9) to account for both the cultural and linguistic patterns observed in the region at the time of European contact. He suggests that the key to the explanation of the cultural differences within the Strait lies in the history of the maritime technology and the size and distribution of the islands. He considers the predictions of his model to be filled "precisely" by the linguistic evidence presented by Wurm, (Golson 1972:385).

Golson first summarizes and then supports the opinions presented by Beckett and Moore (1972), that the contrasts in reliance upon cultivated plants across the Strait were more a function of cultural differences than of environmental or technological deficiencies (1972:389). However, Golson's "cultural" explanations relate directly to the consequences of the mid-Holocene formation of the islands of the Strait.

In Golson's argument, it is essential to consider the characteristics (e.g. size and resource availability) of the islands created by sea-level rise. He suggests (on the basis of Jones' (1968) model for the prehistoric occupation of Bass Strait), that if an island cannot maintain a population of at least 500 the viability of the human group may not be assured (Golson 1972:384). The islands of Torres Strait are then viewed from this perspective. The eastern islands are considered too small to have maintained an indigenous population that might already have been living there, and thus, "in these circumstances any immigrant group equipped with a sufficient maritime technology, and a horticultural economy"..."would encounter little or no opposition to the firm establishment of its way of life" (Golson 1972:384). The immigrant group, in this case, consisted of the Trans-Fly speakers, who, Golson postulates, arrived in double-outrigger canoes, settled, and firmly established their horticultural way of life.

The situation encountered by Papuan peoples settling the western and central islands was somewhat different. It is assumed that the indigenous populations there maintained their traditions of hunting and gathering, by forming linked communities between the larger and smaller islands that were formed as sea-level rose. Under these circumstances Golson predicts both residential and seasonal occupation of islands. Any incoming group here would therefore have had "long- and well-established residents with whom to contend" (Golson 1972:385).

The unequal impact of the Papuan languages and subsistence practices in the Strait is thus explained by the different environmental - and "indigenous" cultural - situations met by the migrating settlers. In the eastern islands people <u>had</u> to cultivate plants to survive, so immigrants with the appropriate technology were met with little or no resistance and came to dominate culturally and linguistically. The pre-existing occupants of the larger but less fertile islands in the west were able to survive by practising a hunter-gatherer way of life. The influence of the cultural traits introduced from Papua was therefore not so strong, although it did affect the exploitation of plants (limited cultivation was practised), and some aspects of the indigenous language (as noted above).

The shores of Cape York remained free from the colonizing proclivities of the Trans-Fly Papuans, and in general their influence over the larger Aboriginal populations of the Cape were more dilute, as agriculture was never practised there (Golson 1972:394). Golson also stipulates that the Aborigines may have had no need (i.e. population pressure, or other stress) to adopt alternatives to their hunting and wild-food gathering subsistence strategies. He concludes that the problem of the Papuan settlement of the Trans-Fly region and their subsequent colonization of the islands of Torres Strait, which significantly affected the culture of the region, "becomes one for the archaeologist" (Golson 1972:397).

Harris' initial research objectives were concerned less with formulating hypotheses about the antiquity and chronology of settlement in Torres Strait than with developing a comparative framework, through empirical study, within which to attempt to explain the diversity of pre-European Islander subsistence strategies. His research, based upon a comparative ecological approach which combined ethnobotanical fieldwork (1975, 1977b) with detailed study of historical documents (1979), suggested that the regional pattern of subsistence would be more accurately described as representing "variation within a subsistence continuum" (Harris 1977b:455). He considered the agricultural practices of the western Strait and lowland Papua as "one of several trends towards resource specialisation that developed within the broad-spectrum subsistence economies of the Peninsula and the Strait" (1977b:455).

This line of reasoning was consistent with a handful of other studies (Allen 1974, Campbell 1965, Irvine 1970, Tindale 1974), which had the effect of diluting the concept of a sharp dichotomy between the subsistence strategies of the Australian "hunter-gatherers" and the Melanesian "horticulturalists" (Harris 1977b:421). What needed to be explained, according to Harris, was how the variation of subsistence systems within the region had evolved.

A "tentative" hypothesis was proposed which sought to account for the greater degree of resource specialisation represented by agriculture which was evident on some of the smaller western islands. Harris suggested that these patterns could perhaps be attributed to the spatially more restricted ecosystems of those islands, and to increases in population associated with a relatively more sedentary lifestyle compared with the larger, more ecologically diverse islands (1977b:455-56). He viewed the horticultural practices on the smaller islands as an intensification of food procurement which "occurred either internally on the islands, or as a result of emigration from Papua or elsewhere" (1977b:456); and that, however initiated, this intensification was unlikely to have been maintained unless a stress factor made it necessary or advantageous to continue. However, in the absence of an archaeological record, these subsistence patterns could not be traced back "beyond the limit of the historical record" (Harris 1977b:458).

Detailed study of the historical record by Harris (1979) yielded information on population densities and on the cultural alliances that existed between western island communities in the mid- to late-nineteenth century. The Western Islanders themselves recognized four island groups, the inhabitants of which were "distinctly allied" (Harris 1979:84), in ways contrary to what might have been predicted from the islands' geographical positions alone. The four communities were: the Muralug group, Moa and Nagir; Badu and Mabuiag; Boigu, Dauan, and Saibai; and the remaining western and central islands, principally Yam, Tud or Tutu, and Masig (Harris 1979:84, Fig.2). Calculation of the population density (based upon missionary and other records) for each allied community revealed very similar densities between communities, each having consisted of some 19 clans with approximately 50 people per clan, with the highest densities maintained on the small islands of Dauan, Mabuiag, and Nagir where cultivation was most intensive. Harris viewed the island populations as linked through a trans-Strait and inter-island exchange network of manufactured goods and agricultural produce, but as "dependent for their basic subsistence on the complementary exploitation of wild foods and cultivated crops in the physically contrasted islands of which each community consisted" (Harris 1979:103).

Whereas Harris' earlier study (1977b) of inter-island variation in subsistence practices had emphasized the need to maintain cultivation on the smaller islands (due to stress factors such as population pressure), this later study suggested, in addition, a correlation between enhanced horticultural production and the positions occupied by the three small islands in the long-distance trade network of the Strait (Harris 1979:104). Again, because this socio-economic reconstruction was based upon the historical record, it could not be extrapolated with any certainty to periods prior to 1800. But Harris argued that this kind of "synchronic analysis provides a foundation for diachronic study of the origins and evolution of subsistence systems through earlier, pre-European times" (1979:104)

Harris proposed that this "trade-horticultural hypothesis... should be testable if diachronic data could be obtained through archaeological and palaeoecological investigation, because it predicts that evidence for specialisation in horticulture and local manufacture will be clearest, and probably earliest, on the three small islands" (1979:105). The testing of this hypothesis by means of fieldwork in the western islands might help to explain the "differential development of horticulture in the islands", and would also be of "relevance to the wider debate about the emergence of agriculture in other parts of the world" (Harris 1979:104).

2.5 The archaeological and palaeoenvironmental dimension

Prior to Harris' ecological and ethnobotanical fieldwork little more than archaeological reconnaissance had been carried out in the Strait (Vanderwal 1973, Moore 1979:13-15). The radiocarbon dates obtained from charcoal taken from a test-pit excavation on the southwestern island of Muralug, (610± 90 BP: ANU-1364) and from three nearby sites on the Cape (610 ± 80BP: ANU-1366, 510± 70 BP: ANU-1367, and 1120± 430 BP: ANU-1365) (Moore 1979:14), suggested relatively recent occupation of the Strait and of Cape York. The cultural deposits were shallow (average 40cm) and the archaeological remains consisted primarily of fragments of bone and shell, with certain rocks interpreted as cooking stones, and pieces of pummice, of which some were interpreted as having been used as scrapers. Some quartz flakes, a few flaked stone artefacts, and part of an edge-ground diorite axehead were also found (Moore 1979:14).

Vanderwal's six-month archaeological survey of some of the western and eastern islands led to the excavation of only one site, on Pulu, an ethnographically well documented islet, off the southwestern coast of Mabuiag Island. The cultural deposit was similar in depth (45cm) and composition to those excavated by Moore, containing bone and shell fragments, but with a considerable quantity of quartz chips and some perforated shell (Vanderwal 1973). The deposit, however, was not dated by Vanderwal.

Vanderwal did find evidence of past occupation on most of the islands surveyed, but he interpreted this as indicating limited antiquity due to surface evidence of European presence (i.e. scatters of fragmented metal, glass and ceramics). However, a number of interesting stone flakes and a few ground-stone artefacts (two fragments of stone discs and an edge-ground adze) were surface collected from western and eastern islands (Vanderwal 1973:179). Although his primary objectives, which were to establish the antiquity of settlement on the high islands, and to document pre-European trade relations within and across the Strait, were not met, he suggested that synchronic study of the sites identified (in particular those on the eastern and western islands where differences in agriculture were most significant), might yield interesting results (Vanderwal 1973).

Both Moore and Vanderwal discussed the apparent lack of archaeological time depth, and emphasized the need to consider the potential environmental biases that might have affected the preservation of archaeological assemblages (e.g. erosion, sedimentation, storm or tidal action). Moore suggested that older sites might be found farther inland (presently concealed by vegetation and soil), on areas that would have been near the shore prior to the onset of coastal progradation (Moore 1979:15).

However recent, this initial evidence for human occupation of Torres Strait is consistent with that from sites in the coastal regions directly to the north and south. Sites on the western Cape, (Wright 1971, Bailey 1977, Cribb 1986), farther south on the eastern side (Beaton 1985), and those along the southern Papuan coast (Egloff 1979, White & Allen 1980), all date to within the last 2000 years. The striking feature, in fact, of archaeological sites studied from southern Papua to the southernmost parts of Australia's eastern coast, is their relative lack of antiquity -they consist of a few Pleistocene sites dated to between 15,000-20,000 years BP, and a majority of sites dated to between 6000-3500 years BP- and the dramatic increase in site density which occurs after c. 2000 BP (Rowland 1983:73, Lourandos 1983, Beaton 1983). The extent to which these coastal archaeological patterns reflect the "realities" of past human occupation, and/or biases in the preservation of material remains, has not been unequivocally determined. Conversely, inland sites of Pleistocene age do exist, and those nearest to the Strait (in the Cape York Peninsula, Rosenfeld et al. 1981, Campbell 1982:63, in Northwest Queensland, Hiscock & Hughes 1984, Arnhem Land, White 1971, and in New Guinea, White 1972, White & O'Connell 1982), strongly suggest the presence of human populations on the Sahul shelf by, at least, the late Pleistocene (Barham & Harris 1983:541).

By 1980 it had become apparent that any accurate assessment of the pre-European settlement of Torres Strait would require more detailed, local archaeological study and the reconstruction of palaeoenviromental settings (Harris 1979:105, Rowland & Barham in press). Therefore, Harris and Barham, in collaboration, extended the scope of research in the region by initiating the Torres Strait Research Project, the major methodological aim of which is to investigate pre-European subsistence and settlement in the western Torres Strait islands, by analysing and integrating on-site archaeological and off-site palaeoenvironmental and ethnographic data (Barham 1983, Harris, Barham & Ghaleb 1985, Barham & Harris 1987).

The palaeoenvironmental investigations of the project have operated at both regional and local scales. At the regional scale objectives have focused upon the study of long-term environmental change. This has included research to determine the date of the formation of Torres Strait by the post-glacial rise of sea level, and quantification of the rapidity of the rise prior to its stabilisation at close to present datum by 6000 BP, as well as the documentation of long-term vegetation change by means of pollen analysis. At the local scale, the aim of the palaeoenvironmental research has been to reconstruct environmental settings at spatial and temporal scales significant to the interpretation of archaeological sites, i.e. to acquire data that would facilitate the modelling of the coastal resources which would have been available to prehistoric populations in the area since the stabilisation of the sea level 6000 years ago (Barham 1983).

Research on these themes is still in progress, but preliminary results indicate that palaeoenvironmental reconstruction over the long term and at regional scales is proving most feasible from fieldwork on Moa Island, with past local settings in relation to archaeological sites most fully understood on the island of Saibai (Barham & Harris 1985,1987). On Moa Island, sediment cores from coastal mangrove swamps are providing data on pre- and post- transgression vegetation changes, and the analysis of cores produced by drilling through the island's fringing coral reefs is yielding evidence of the onset and subsequent stabilisation of Holocene sea-level rise. On Saibai Island, the discovery of extensive inland relict mound-and-ditch field systems led to an intensive program of sediment coring to determine the origin and antiquity of the fields (based upon sedimentological study of the cores and radiocarbon dating of their included organics), together with the excavation of midden deposits found in association with the fields (Barham & Harris 1985).

Harris' ethnobotanical and Barham's palaeoenvironmental fieldwork led to the discovery of a number of different types of archaeological site on the islands of Moa, Badu, Dauan and Nagir within the western Strait (Harris 1975; Barham 1981; Barham & Harris 1983). The sites recorded can be divided into those related to subsistence activities, such as surface scatters of bone and shell, stratified midden deposits, coastal fish traps, excavated wells, and relict fields; and those that represent Islander ceremonial or ritual life, such as rockshelter burials and rock-art locations (Rowland & Barham in press, Singe Draft Typescript 1984).

Test excavations were carried out on three islands: Moa, Nagir and Saibai. On Moa and Nagir thin, stratified midden deposits were sampled for composition and dating material. On Moa, the excavation strategy was designed to test Moore's hypothesis, which predicted that the oldest occupation sites would be farther inland from the coast, due to the processes of progradation that have affected the position of the shoreline since sea-level stabilisation (Rowland 1985, Rowland & Barham in press). The stratified archaeological deposits were clearly visible, exposed by the erosion of the beach-front sand ridges. A series of metre-squared test pits was dug across a 200m transect extending inland, orthogonal to the present coast. Deposits were sampled both on and between inland parallel beach ridges, although archaeological remains were found only within the first beach ridge. These remains consisted primarily of two species of shellfish (*Anadara antiquata* and *Mesodesma striata*), with some bone and charcoal, down to 50cm. A sample of charcoal from this level yielded a date of MODERN (ANU-3025), which suggests that the deposit is no more than 200 years old (Rowland & Barham *in press*).

On Nagir Island a one metre-square test pit was excavated from within an eroding beach/dune deposit, which yielded a charcoal date of 730$\pm$ 80 BP (ANU-3026) at a depth of about 65cm. As on Moa, limited animal food remains were found, although these deposits also contained fragments of quartz (Rowland 1985, Rowland & Barham *in press*). A small stone axe was found on the surface of the beach ridge, which may have been introduced, or manufactured there. Previous ground survey failed to reveal any conclusive evidence of past cultivation, though a large bamboo grove examined by Harris probably occupies an area known (from historical evidence) to have been cultivated in the mid-nineteenth century.

Test-pit excavations on Saibai Island were undertaken to try to determine the antiquity of occupation there, and to aid in the interpretation of the extensive systems of relict mound-and-ditch fields found inland on low claylands which are slightly higher than the seasonally inundated swamps of the interior. A midden deposit that underlay the edge of a mound was sampled, with the hope that it would provide a maximum age for the construction of the mound. Abundant remains of various shellfish species, some turtle, fish, and dugong remains were recovered, together with quartz fragments. Charcoal from the basal unit at 80cm produced a date of 780± 60 BP (Beta-6885), although cross-check dates on individual valves of <u>Anadara antiquata</u>, from the same stratigraphic unit, yielded dates of 1080± 60 BP (Beta-6934) and 2540± 60 BP (Beta-6885)[1]. Another midden deposit was sampled near the present-day village, and several old (<u>i.e.</u> pre-European settlement) village sites were identified (Barham & Harris 1987:65).

More extensive excavation was carried out at two stratified midden deposits on the eastern coast of Moa Island just to the north of Rowland's transect (Harris, Barham & Ghaleb 1985). Two areas of 6 x 4m were excavated. Both revealed cultural deposits which were, respectively, 3-15cm and 50- 60cm thick, and both of which appeared to extend a considerable distance horizontally. Limited time and resources excluded extensive lateral and vertical sampling to establish the full extent of these deposits. Charcoal from one of the sites yielded a date of 760± 60BP (Beta-13482), and preliminary analysis of the abundant, primarily, food remains recovered suggests extensive exploitation of nearby coastal areas (<u>e.g.</u> foreshore fringing reefs, lagoons, sand beaches, mud flats, rocky and mangrove habitats for various species of shellfish and fish, as well as offshore waters for turtle and dugong).

[1]For a thorough discussion of the validity of these shell dates see Appendix 1 (Barham and Harris 1985:274-77).

2.6 Discussion

Consistent with the results from the initial archaeological work in the region (Vanderwal 1973, Moore 1979), the sites discussed above suggest relatively recent occupation of coastal areas. (Saibai Island is somewhat of an exception, but the location of sites farther inland there must be considered in relation to the low muddy shoreline which is (today) colonized almost entirely by mangroves, and thus is dramatically different from the more topographically (and ecologically) varied coasts of the high islands Muralug, Moa and Nagir). At these sites food procurement centred on the exploitation of resources from nearby coastal habitats, and possibly offshore waters, accessible by canoe (as suggested by dugong and turtle remains, although both are documented ethnographically as also being caught without canoes from nearshore zones).

The kinds of pre-European archaeological remains found thus far, in fact, indicate little more than coastal "picnic" campsites which were also possibly habitation areas, occupied, in general, over undetermined lengths of time during the last one thousand years. Only the relict field systems on Saibai Island indicate a certain degree of commitment to agriculture. However, there is, as yet, no way of directly dating them, thus no way of determining over what periods of time they were used, or to what extent they might have been cultivated synchronously. It has been suggested that the lack of historical documentation of these fields may indicate that they were cultivated and abandoned at some time prior to European contact (Harris &

Laba 1982, Barham & Harris 1985).

The archaeological investigations carried out on Saibai produced evidence contrary to the predictions of Harris' "trade-horticulture hypothesis", which postulated that evidence for specialisation in horticulture and local manufacture would be clearest and most probably earliest on the small high islands of Nagir, Mabuiag and Dauan, due to their strategic positions in relation to the trans-Strait canoe trade (1979:105). However, this hypothesis is not necessarily disproved. Saibai was (and is) closely linked (by proximity and kinship) to Dauan, and if it played a larger role in the trans-Strait canoe trade than was historically recorded, that, according to Harris' hypothesis, would help explain the extent of the field systems, as would an element of perhaps physiological "need". The habitats on Saibai would not naturally have yielded abundant quantities of tubers (i.e. carbohydrate), and this situation was in striking contrast to the Saibai Islanders' access to dugong and fish (i.e. protein and fat), which were abundant in the offshore waters of that area. The extent of the Saibai field systems (5-10% of the inland area of low claylands, which comprise most of the island's surface which is not seasonally inundated or colonized by mangroves), and their abandonment, have suggested a process of intensification and disintensification to Barham and Harris which may have had significant social and economic implications (1985:248). In addition, more extensive archaeological survey of the small high islands, Nagir, Mabuiag, and Dauan might provide greater evidence of past areas of cultivation than has been previously found.

This discussion has shown that some of the initial questions raised about, and hypothesis proposed to explain, the lifestyles of Islanders and Aborigines observed during European contact, led various researchers to try to obtain empirical data from fieldwork to support or refute the ideas put forward. The preliminary results from the most extensive, recent, multi-disciplinary programme of research within the region (the TSRP) suggest that the potential for discovery and survival of archaeological remains may fall significantly short of what is required to confirm or refute theoretical predictions about past cultural patterns and environmental settings, and that the levels of integration of complementary sources of data (i.e. ethnographic and palaeoenvironmental) that can be achieved may be considerably lower than was anticipated.

Awareness of the discrepancies between the hypotheses postulated to account for cultural differences seen across the Strait, and the empirical evidence upon which interpretations must be based, as well as familiarity with the difficulties of obtaining palaeoenvironmental data of direct relevance to the archaeological sites under study, influenced the present author to try to integrate a different (i.e. ethnographic) type of "off-site" data with archaeological remains found within the western Strait, at a local scale of much greater spatial and temporal resolution than had previously been attempted.

Knowledge of the ethnography of the Strait indicated that, in the western islands, an interpretive integration of archaeological remains and ethnographic data might be most fruitfully achieved through fieldwork on the small (8km2) mid-western island of Mabuiag. Preliminary reconnaissance (see Chapter 4) provided evidence which justified a focus of research attention there to try to fulfill the objectives of this thesis. However, prior to fieldwork on Mabuiag, it was necessary to establish the quality of the available ethnographic information. This required knowledge of the historical context within which Europeans became acquainted with and documented Islander life, which consideration led directly to the work most relevant to this study of past Mabuiag Islander life: The Haddon Reports (Haddon 1901-1935).

To be properly critical of the information provided by the Haddon Reports, it is necessary to view the research which led to their publication in the general context of the chronology of European contact and its effect on Islander life, as well as with specific reference to Haddon's research objectives. The historical review (Chapter 3) is intended to validate the use of the Reports to provide a descriptive model for the interpretation of Islander life prior to European contact based upon the analysis of archaeological remains (Chapters 4 and 5). The relevance that this focused ethnoarchaeological approach to the reconstruction of past Western Islander life has to the broader cultural and environmental questions posed by earlier researchers is explored (in Chapter 6) after the results of the archaeological and ethnographic work which comprise this thesis have been presented (in Chapters 4 and 5).

PART B: SOURCES AND CRITIQUE OF PRIMARY DATA

Chapter 3 Literary sources: historical and ethnographic

Introduction

Written accounts document the nearly 400 years of European contact in Torres Strait, and they provide the earliest descriptions of the people who lived, and still do live, in the islands and adjacent areas. The history of European contact in Torres Strait can best be divided into three phases: 1) early European explorers (early 17th to early 19th century: 1606-1840); 2) British maritime surveys and ethnographic observations (mid- to late-19th century: 1843-1873); 3) early commercial, missionary, and governmental influences (mid- to late-19th century (1862-1888). Although Europeans had been visiting Torres Strait since at least the early seventeenth century, the first detailed descriptions of both the peoples and landscapes encountered are from the British expeditions of the 1840's. This chapter is divided into Sections (3.1-3.9) which provide summary descriptions and assessment of the historical accounts from all three phases of European contact in Torres Strait, with Sections 3.6-3.8 examining and assessing in greater detail the information found in the earliest detailed accounts of Islander life in the Strait.

3.1 Early European explorers (1606-1840)

The first 150 years of exploration in the area was primarily carried out by the Dutch, with some competition from the Portuguese and Spanish. By the early 16th century the islands of present-day Indonesia were becoming very valuable to Europe due to the commercial importance of the spice trade. First Portuguese, then Spanish, presence in the Molluccas, by 1512, prompted the Dutch to establish themselves as the "General United East India Company" in 1602 in Java, where they were to remain a power for over three centuries (Jack 1921:23).

There is fragmentary evidence to suggest that the Spanish and Portuguese navigators had, by the middle of the 16th century, become aware of a strait that separated New Guinea from a continent to the south, and it was the Dutch who carried out four surveying expeditions in the area between 1601 and 1756 (Jack 1921:6,23-75). However, the first recorded passage through, and recognition of, the strait is attributed to the Spaniard Luis Vaez de Torres, who sailed through it in 1606. Records of this voyage were well guarded by the Spanish Crown, and the strait did not appear on a map until 1756 (which was not published until 1772). The original charts of the voyage where published in 1878, after their discovery in Paris (Jack 1921:17).

In 1642 the Dutchman, Abel Tasman, was the first to circumnavigate Australia (then called New Holland), but it was not until 1770 during Cook's first voyage that the question of the insularity of Australia was finally settled. Cook, during that voyage, claimed the entire eastern coast of what he named New South Wales on behalf of King George III of England.

The earliest accounts of the European expeditions in the region provide some information about the indigenous Australians and Papuans, but very little about the Torres Strait Islanders. What contact did occur between the Dutch and the Australian and Papuan aborigines was primarily hostile, although "gifts" of iron, beads, clothing and biscuits were commonly given (Jack 1921:29). In the subsequent 70 years of British exploration in northern Australia (up until 1840), contact with the Islanders was sporadic, brief, and largely restricted to the Eastern Islanders. Contact throughout this period, as well, too often led to fatalities for both parties concerned. A considerable amount of "friendly" barter also took place, with Islanders vying to exchange bows and arrows and turtle-shell for iron goods, in particular knives.

3.2 British maritime surveys and ethnographic observations (1843-1873)

The middle of the nineteenth century saw the first sustained contact between Europeans, Torres Strait Islanders and Cape York Aborigines. Contact was intermittent, taking place over periods of weeks or months, as a result of the work carried out by two British expeditions commissioned to survey and chart the Strait's shallow and reef-laden waters.

The British Admiralty commissioned Captain F.P.

Blackwood in the "Fly" and Lieutenant C.B. Yule in the "Bramble" to undertake a thorough hydrographic survey of the Australian coast in 1843, which was intended to extend the surveys that had been carried out in northern Australian waters between 1802 and 1841 by the explorers Flinders, King, Wickham and Stokes (Jack 1921:172). In 1847, this work was continued by Lieutenant Yule in the "Bramble", under the command of Captain Owen Stanley in the "Rattlesnake". The journals kept, and subsequently published, by members of these expeditions (Jukes 1847, MacGillivray 1852, Allen & Corris 1977, Moore 1979), provide the first informative accounts of the Islanders and Cape York Aborigines (as well as of the geography of the Cape York Peninsula and the Strait), at the time just before European contact began to substantially affect Islander culture.

These expeditions surveyed and charted the central and northeastern islands and reefs of the Strait, Cape York and the surrounding islands and islets in Endeavour Strait, and also examined parts of the southern coast of New Guinea immediately north of the Strait. During the "Fly" and "Bramble" expedition (1843-1845) a total of approximately three weeks were spent anchored off the eastern islands of Erub and Mer and two weeks anchored in and around Cape York while surveying the areas. The accounts of this expedition provided by the naturalist Jukes on board the "Fly" (1847), and the clerk Sweatman on the "Bramble" (Allen & Corris 1977), are primarily of the Eastern Islanders and of some coastal groups at the Cape, although they do also contain the earliest descriptions of certain Central and Western Islander groups. However, the most detailed records of life in Torres Strait at that time, are of Islanders in the southwestern islands because of an extraordinary event which took place during the subsequent "Rattlesnake" expedition (1846-1850) (MacGillivray 1852, Moore 1979).

In 1849, while anchored off Evans Bay on the eastern coast of Cape York, a dark-skinned white woman was seen sitting among a group of Islanders. Her "rescue" by the "Rattlesnake" in October 1849 was documented by the expedition's artist O.W. Brierly, who, together with MacGillivray, interviewed her daily on their return voyage to Sydney. She was Barbara Thompson, a young Scots woman from Sydney, who had been living among the Kaurarega (the Islanders of Muralug and other southwestern islands) for nearly five years. She had been adopted as a member of the Islander community after having been found by Kaurarega men floating not far from Muralug on a wooden plank: the only person to have survived the shipwreck of her husband's boat. The Brierly manuscripts, first transcribed and published by D.R. Moore (1979), provide a sensitive and detailed portrait of Barbara Thompson's (<u>Gi'om</u> to the Kaurarega) life among the Islanders. Her testimony, particularly as recorded by Brierly (which was unknown to Haddon at the time of his study), provides the earliest detailed picture of the Western Islanders and is (anthropologically speaking) an example of an emic ethnographic account. The MacGillivray account (1852), (which Haddon does site frequently), also contains a considerable amount of information on the Western

Islanders, based primarily upon discussions with Barbara Thompson. In addition, both MacGillivray and Brierly include detailed descriptions of their interactions with Western Islanders and Aborigines which took place at Cape York and near, or on, the islands of Nagir (western) and Waraber (central), both of which were briefly visited.

The significance of the Brierly manuscripts (Moore 1979) and the accounts of Jukes (1847), Sweatman (Allen & Corris 1977), and MacGillivray (1852), is that they make possible a fairly detailed construction of life in the eastern islands and of life in areas on the Cape, as well as in the southwestern islands, before European influence became the dominant factor (superficially anyway) in the Islanders' lives. In relation to the methodology of this thesis, the information they provide is particularly important in relation to that recorded by the Haddon expedition between 40 and 50 years later. This is because these mid-nineteenth century accounts serve as a baseline against which the accuracy of the later, much more extensive accounts of the Haddon Reports can be considered. The importance of the existence of this "baseline" becomes clear (and is discussed in Sections 3.5-3.9) when the nature and degree of European contact that took place in the intervening decades is understood.

3.3 Early commercial, missionary and government influences (1862-1888)

Twenty years passed before the next British ship was commissioned to work in Torres Strait, and the nature and extent of European contact there is indicated by the expedition's objectives. John Moresby's instructions, as Captain of H.M.S. "Basilisk" between the years 1871-1873, were to continue the hydrographic survey work of the "Fly" and the "Rattlesnake"; to help establish a new site for the government post (which at the time was based at the tip of Cape York); to visit pearling and missionary stations and report on their conditions and management; and to enforce the "Kidnapping Act" of 1872 (which made the employment of natives illegal without license) by patrolling the Strait (Moresby 1876:120,167).

The original accounts of Moresby's two cruises (Moresby 1876), and reports from some of the earliest missionaries in the Strait (Murray 1876, McFarlane 1888), give "first-hand" glimpses of the initial effects of European commercial and religious activities on Islander life. Beckett has discussed the pattern of Islander-European interaction that resulted from the pearling industry (1977), and, more recently, has published a thorough analysis of the historical impact of colonialism on Torres Strait Islander life, tracing its effects into the present-day (1987).

By the time of Moresby's first voyage the realisation of the navigational dangers[1], the growing commercial importance[2], and the increasing lawlessness of the Strait (Harris 1979:81), had prompted the Queensland government to found a settlement at the northeastern tip of Cape York. Somerset was founded in 1863, under the direction of a Police Magistrate John Jardine. However, the location of Somerset was not conducive to maintaining effective control over European activity in the Strait[3], nor for providing a port of call for passing ships or protection for castaways (Beckett 1987:44). As sustained European presence increased, so did reports of the illegal tactics of the pearling industry[4] and of Islander clashes with missionaries[5]. It became clear that more forceful government intervention was necessary. However, located at the Strait's southernmost limit, without boats to patrol, and no legal jurisdiction over, the islands, there was little that Jardine could do throughout the 14 years of his residence to ameliorate Islander and European interactions. Colonial laws, and the location of the government settlement, needed to be changed to enforce control over the actions of the pearlers and to assist the first missionaries.

The colonial government did attain jurisdiction over the Strait, although perhaps primarily for reasons other

[1] "Between... 1791 and 1850 more than twenty ships were recorded lost in the Barrier Reef- Torres Strait- Coral Sea region, and the actual number certainly exceeded this" (Allen & Corris 1977:xvi).

[2] By 1874 the pearlshell trade was worth £30,000 p.a., and steadily increased to reach an export value of £130,000 by 1899 (Beckett 1977).

[3] For more detailed discussion of this initial period of colonial settlement in the Strait see Farnfield (1974,1975).

[4] Islanders (indigenous and foreign) were usually deceived into joining crews with promise of short service and good pay, but were "kept for years beyond agreements in veritable slavery" (Moresby 1876:24-27).

[5] Captain Moresby's accounts, in particular, provide details of the hardships encountered by the early missionaries (1876).

than humanitarian. "The Acts of Annexation...seem to have been prompted by a fear of rival colonial powers and a desire to get some grip on the burgeoning and increasingly lucrative marine industry" (Beckett 1987:45). In 1872 Britain approved of the extension of the Queensland state boundary to 60 miles from the Australian coast, which, however did not include the most northerly islands of Saibai, Tudu, and Erub, important pearlshell and missionary locations. In the same year the British passed the Pacific Islanders Protecton Bill, commonly known as the Kidnapping Act. This legislation made it mandatory for all vessels that employed Islanders to carry licenses obtainable from Australian or British consuls in the Pacific (Farnfield 1974:73-4, Haddon 1935:14). It was not, however, until 1879 that the Queensland Coast Islands Act was extended to include all islands of Torres Strait from Cape York to New Guinea, and from Bramble Cay in the northeast to Deliverance Island in the west (Farnfield 1974, 1975, Beckett 1977). This bill was passed two years after the government residence was re-established on a island within the Strait.

In 1877 the small southwestern island of Waibene (known today as Thursday Island) "became the headquarters of the industry, a commercial centre and a port of call" (Beckett 1987:45). But another decade passed before the government was to become more effective in relation to Islander affairs, and by then, as the following summary shows, it was too late to rectify many of the detrimental effects on Islander life which had been wrought by the first two decades of sustained European contact. And it was at this time that the first Haddon expedition entered the Strait (in 1888).

The earliest record of a vessel in Torres Strait (from Sydney) in search of the commodity trepang (much prized in China and elsewhere in the Orient), i.e. sea slug or beche de mer (Holotheria spp.), and also "tortoise-shell" turtle (Chelonia caretta), dates to 1846[1] (MacGillivray 1852 I:308). However, it was not until 1868 that pearlshell fishery stations were set up on the north-central islands of Gabba and Tudu for exploitation of the rich Warrior Reefs (Fig. 1) (Haddon 1935:14, Farnfield 1974, Beckett 1977). Stations were soon established on the central island of Paremar, and the western islands of Saibai and Mabuiag. The eastern island of Erub, which was out of the region of pearlshell, became the headquarters of the beche-de-mer fisheries (Moresby 1876:136).

The managers of the pearling stations did not initially employ many Islanders: "In the 1870s, when the price of shell was still high, whites were attracted to the work in which a skipper-diver could make as much as £500 in a year. But as shell became scarcer and prices fell, employers looked to Asia and the Pacific Islands for workers ready to accept less money. The skippers and divers of the 1880s were Rotumans and New Caledonians, Malays and Manilamen, until in the 1890s the Japanese arrived, ready to undercut and outwork them all" (Beckett 1977:82). But as the demand for labour increased, so too did the forceful recruitment of Pacific and Torres Strait

[1] The history of the Indonesian trepang industry dates back to at least the 17th century, and reports of Malay fishermen off the coast of Arnhem Land date to the beginning of the 19th century (Haddon 1935:15).

Islanders.

Missionaries entered the region a few months before the first pearlshell station was established. Two men were sent from the Society for the Propagation of the Gospel in London to Christianise the Aboriginal people at Somerset (Moore 1979:235-252). However, it was not until a few years later that the "light" was formally brought into the Strait by the London Missionary Society (Beckett 1987:39). In 1871 two teachers from the Loyalty Islands in the southwestern Pacific were stationed on the islands of Erub and Dauan. Later that year others were sent to Tudu, Saibai, and Mabuiag, and also to Bampton Island and Redscar Bay on the southern coast of New Guinea. On Mer, the Papuan Institute was established to prepare Torres Strait converts for missionary work in Papua and the Strait, whose graduates eventually replaced the Pacific Islander teachers (McFarlane 1888:81-91, Beckett 1987:39-40).

3.4 Effects of pearlshell stations and missions on Islander life

Within five years of the establishment of the first pearlshell stations in the Strait, Mabuiag Island had become one of the main bases of the fisheries, with three stations located there (Moresby 1876:130). It is not known to what extent the Mabuiag Islanders themselves were induced to collect shell initially, but, due to the abuses of the industry, by 1874 a missionary reported that the Mabuiag Islanders were no longer interested in working for, and were actively avoiding, the pearlshell fishery men

(Murray 4-5 1874:34, in Beckett 1987:37).

During this same period, which saw the arrival of the missionaries on Mabuiag, Moresby in 1873 (1876:164-5) reported that the churchmen were kept from starvation by the humanity of the pearlshellers, and appeared to be "wholly without influence of any kind" over the Islanders (Moresby 1876:165). He also provides one of the two earliest descriptions we have of the Mabuiag Islanders themselves, with reference to a "puzzling custom":

"The natives of Jarvis Island are black Papuans, quite uncivilised and unclothed. At their village I saw signs of a custom which will perhaps one day puzzle the naturalist. The huts were pitched under the shelter of some enormous banyan trees, in the massive trunks of which the bones of the dugong were so deeply imbedded as to seem one with the wood. Looking farther, I saw that many tender shoots, just drooping to root themselves, were twined round the bones of freshly killed dugong. They are placed thus as a propitiatory offering, and are never removed. The large teeth and ribs of the dugong are ivory of an inferior sort, and doubtless give the unfortunate animal a market value that will lead to its speedy extinction" (1876:131).

This bone-ornamented fig tree was also seen by the missionary W.W. Gill, who visited the Strait at the same time as Moresby (the early 1870's), and he observed Mabuiag Islanders feasting beneath it. His account includes descriptions of large shells piled around the tree, and of a similar arrangement on the central island of Tutu. Both features were said to have been shrines for success in dugong hunting, and Gill refers to the bone and shell "as propitiatory offerings" to a spirit which possessed the power of giving or with-holding success in dugong hunting" (1876:302). Gill also spoke of "dugong- and turtle-giving gods" which throughout the Strait were "merely round painted stones", and how Islanders appealed to the skulls of their ancestors for advice and luck in hunting (Gill 1876:293,302; Haddon 1912:171). He provides the earliest description of traditional graves on Mabuiag Island which were marked by forked posts ornamented with large shells and dugong skulls (Haddon 1904:256).

Moresby returned to Somerset in March 1873, having visited all the missionary posts, and presented a report to Mr. Murray (the then head missionary), in which he described the desperate state he found the missionaries in: "I gave him a full and true account of the unprovided and actually starving state of the Polynesian teachers placed on these Torres Strait islands by the London Missionary Society, and left alone to fight a losing battle against famine, sickness, want of knowledge of the languages required, and the contempt and hostility of fierce Papuan heathen" (Moresby 1876:163-4).

Although the Islanders may have succeeded initially in distancing themselves from both pearlshellers and missionaries, any hopes they might have had of longer-term resistance were relatively short lived. By the early 1880's the few communities that did not have missionary teachers "were begging for them" (Beckett 1987:39), and although the Torres Strait Islanders never comprised the largest percentage of labour, by the outbreak of World War II they provided 20% of the pearlshell industry's workforce (Beckett 1987:38).

The initial effects of sustained European contact were dramatic. It has been estimated that the indigenous populations of the western islands were halved through the introduction of diseases and the hazards of pearlshell diving[1,2] (Harris 1979:91). Harris' thorough study of historical accounts (1979) provided an estimate of the pre-European population density of the Strait as a whole, and a reconstruction, in outline at least, of the densities of each of the western islands (1979:90; see Table 1). A comparison of Harris' total population estimate of 4-5000 Islanders c. 1840, (supported by Beckett 1987:26), with the 2368 recorded in 1913 from the first official census taken (Beckett 1987:38), is a telling indication of the devastating effects of European contact in Torres Strait.

In addition to the effects of European contact on Islander demography, traditional socio-economic activities and ideology were eroded and replaced by the unyielding and determined tactics of the foreign commercial and religiously-minded men. However, the Islanders' first sustained exposure to the detrimental effects of involvement with Europeans can be attributed to employment in the pearling industry.

Poor pay and working conditions created a hostile and volatile atmosphere among many of the diving crews. Fights frequently broke out between the foreigners and Islanders (Haddon 1935:14). And, with the "recruited" men[3] required to spend most of their time living on the luggers away from home, traditional methods of plant- and animal-food procurement were neglected (e.g. cultivation of various

[1] Contraction of beri-beri, due to lack of fresh fruit and vegetables, and divers' paralysis, caused by rapid changes in pressure, were common (Moresby 1876:25-6, Beckett 1987:35-6), in addition, deep-water diving
[2] greatly reduced a man's working life, and "it was taken for granted that luggers' crews spend the last days of their lives as physical wrecks" (Beckett 1987:35-6).
[3] "When shell could be got by wading, women as well as men collected it" (Beckett 1987:37, from a report by McFarlane in 1884 to the London Missionary Society).

Table 1. Estimated pre-European (c.1840) populations and population densities of the Western Torres Strait Islands (from Harris 1979:90)

	Area	Pop.	Density /km2	Coast km	Density cst./km
Muralug	204.9	100	0.5	83	1.2
Other islands of the Muralug group	88.9	150	1.7	79	1.9
Muralug group	293.8	250	0.8	162	1.5
Nagir	1	200	200	4	50
Moa	170.5	500	2.9	52	9.6
Muralug-Moa-Nagir Community	*465.3*	*950*	*2*	*218*	*4.4*
Badu	104.4	670	6.4	47	14.2
Mabuiag	8.3	300	36.1	10	30
Badu-Mabuiag Community	*112.7*	*970*	*8.6*	*57*	*17*
Dauan	3	100	33.3	7	14.3
Saibai	106.4	500	4.7	61	8.2
Saibai-Dauan	109.4	600	5.5	68	8.8
Boigu	85.1	350	4.1	62	5.6
Saibai-Dauan-Boigu Community	*194.5*	*950*	*4.9*	*130*	*7.3*
Western Torres Strait Islands	*772.5*	*2870*	*3.7*	*405*	*7.1*

tubers, hunting of dugong and turtle, and fishing). A cash-based economy was introduced and Islander communities came to rely upon European staples such as flour, rice, sugar, biscuits and tobacco, and material goods (e.g. pots, knives, clothing).

Although the missionaries eventually helped to mitigate the atrocious methods of pearlshell recruitment and the deplorable working conditions, their influence also encouraged Islander reliance upon European food[1] and goods, and, not surprisingly, resulted in distancing Islanders to an even greater extent from their traditional life. To facilitate missionary teaching (i.e. the transformation of the ideological foundation of Islander society), the Islanders, who had previously lived in different villages around the island, were persuaded to gather together, without regard for clan distinctions, around a church, which was near good anchorage, and to live within one village[2] (Beckett 1987:42). The Islanders could then be kept under close surveillance and subjected to daily religious observance[3] (Beckett 1987:42).

The London Missionary Society exercised virtual control over the islands for more than a decade before the colonial government began to increase its effectiveness in administering the area. Increasing antagonism between the Society and the Queensland government led to their withdrawal and replacement by the Church of England in 1914

[1] However, in the beginning of the 20th century the Mabuiag Islanders were ordered by the teacher-supervisor to make gardens in case a crisis in the pearlshell industry should arise (Beckett 1987:48).

[2] The Islanders of Mabuiag, for example, were divided into seven clans, each with associated totems that were specific to village sites, which numbered aproximately eight prior to missionary settlement.

[3] For a detailed discussion of the initial phases of interaction between the Islanders and missionaries see Beckett (1987:39-60).

(Harris 1979:82, Beckett 1987:39). By this time a company had been established to encourage Islander-run commercial operations (marine-animal exploitation and the production of copra), and each island had its own store stocked with "basic" European goods (Harris 1979:82; Beckett 1987:48-9).

Thus, by the time of Haddon's first visit to the Strait in 1888, the populations of several of the islands were overtly Christianised (Harris 1979:82), and they varied in their reliance upon European goods. Although he was still able to record many aspects of traditional culture (as is demonstrated in this thesis), Haddon was acutely aware of what Beckett (1987:47) considers to be an "over commitment" by the Islanders of Mabuiag to a cash-economy, as it related to life on Mabuiag Island in 1898 at the time of Haddon's second visit:

"The advent of the white man has upset the former economic conditions on Mabuiag. The men now spend all their time "swimming diving" as it is called, that is, they go in parties in sailing boats, and dive by swimming for pearl-shell in shallow water. Some natives own their own boats, and make up crews on a system of sharing; others hire themselves out to white men. They generally start out on Monday and return on Friday or Saturday. All the time they are away they feed on tinned meat, biscuits, flour, and other white man's food. They get accustomed to this food, and as they are away from home so much, they cannot "make" their gardens. Thus it comes about that agriculture, as well as fishing, is greatly neglected, and a considerable portion - and in some instances the bulk - of their food has to be bought from the stores. Should the supply of pearl-shell fall off, or the price be lowered, the natives would suffer greatly; and if the storekeepers left the island, the people would practically starve. As it is many are considerably in debt to the traders, and often the traders have to advance supplies of flour and food to ward off starvation. With all their apparent prosperity, the people are really in a false economic condition, and their future may yet be temporarily deplorable" (Haddon 1901:121-2).

3.5 Discussion

In Chapter 2 "traditional" Islander society was sketched in a cursory way, based almost exclusively upon information derived from primary ethnographic sources. The degree to which Islander society changed in the second half of the nineteenth century due to sustained European contact has been explored, but it is necessary now to look more closely at the few historical accounts of Islander life that were recorded at the start of what was to become permanent contact; i.e. to the original descriptions of the time when Islander life was little affected by Europeans.

Fortunately the two earliest extensive surveying expeditions to Torres Strait (the "Fly" and the "Rattlesnake") included officially designated naturalists and artists: men fascinated by the peoples they saw, who recorded their observations with scientific thoroughness (whether scientists or not). The main purpose of these expeditions, however, was hydrographic survey, and therefore the places and peoples visited were those encountered along the survey routes. The contact that resulted was primarily with Eastern Islanders and Cape York Aborigines. Accounts of the Western Islanders derive from brief contact with them at the Cape and at the western island of Nagir and the central island of Waraber, but they derive predominantly from the interviews of the rescued Scots woman (MacGillivray 1852, Moore 1979). Although Barbara Thompson's descriptions provide unparalled firsthand detail of aspects of Islander life, they primarily pertain to the southwestern islands, with only a few references to the people of Mabuiag.

The Haddon Reports (1901-1935) are, thus, the first detailed accounts of life on Mabuiag Island. Haddon's ethnographic fieldwork was carried out after 15 years of Islander involvement in European commercial and missionary activities. Much of the information he and his team recorded is based upon oral accounts given by elderly men, with some derived from direct observation of traditional practices. The accounts of Jukes (1846) and Sweatman (Allen & Corris 1977), MacGillivray (1852) and Brierly (Moore 1979), however, primarily describe observed Islander behaviour, but also include knowledge obtained through dialogue with the Islanders themselves.

Because Mabuiag Island and the nearby reefs and islands were not charted thoroughly until after permanent European contact was established, it is only possible to form an impression of what "unaffected" life on Mabuiag might have been like through study of the mid-nineteenth century accounts. This information can be used (as previously suggested) as a foundation against which to compare the information provided by the more detailed, although (significantly) later, Haddon Reports, and it helps us to evaluate a) the similarities and differences of life on Mabuiag and other islands, b) the accuracy of the information provided by the Reports, and c) the appropriateness of their use in the interpretation of archaeological remains from Mabuiag.

The following Sections (3.6- 3.9) present summaries and discussion of the information pertinent to this thesis contained in the accounts of the first hydrographic expedition to Torres Strait, carried out between 1842 and 1846 (Jukes 1846, and Sweatman in Allen & Corris 1977), and the second one, which took place from 1846 to 1850 (MacGillivray 1852, and Brierly in Moore 1979), before aspects of the Haddon ethnography, and their relation to archaeological work carried out on Mabuiag Island, are discussed in Chapters 4, 5 and 6.

3.6 The mid-nineteenth century accounts of the naturalist Jukes (1847) and the clerk Sweatman (Allen & Corris 1977) of the "Fly" and "Bramble" survey expedition to Torres Strait (1843-1846)

In 1844 Captain Blackwood in the "Fly" carried out a six-week survey of the area between Endeavour Strait and Raine Island, approximately 100 miles to the southeast of the Cape (from the 14th of August to the 25th of Septmeber), while Lieutenant Yule in the "Bramble" was surveying Endeavour Strait (Jukes 1847:267). After a two-month survey of central and northeastern parts of Torres Strait (which resulted in nearly three weeks of anchorage off of the eastern islands Erub and Mer), the "Fly" was ordered back to England, leaving the "Bramble" to continue surveying. The "Bramble" was then joined by the "Castlereagh", and in 1846, as well as surveying the south coast of New Guinea, spent four weeks (5th-31st October) extending the previous survey of Endeavour Strait (Allen & Corris 1977:151-161). In 1848, Lieutenant Yule returned to the Strait in the "Bramble", this time under the command of Captain Owen Stanley in the "Rattlesnake", to continue the survey started by the "Fly" and the "Bramble". Between the years 1848 and 1850, the "Rattlesnake" expedition spent a total of twelve weeks at Cape York (primarily anchored off its southeastern tip), and between one and three days each at the islands of Nagir, Waraber, Erub and Mer.

The four men whose accounts of mid-nineteenth century life in Torres Strait are discussed, had contact with one another and to varying extents worked together. There is a considerable degree of corroboration between the information presented within their respective accounts, although, in general, Jukes and Sweatman provide more detail on the Eastern and Central Islanders, whereas MacGillivray and Brierly present greater detail on the Cape York Aborigines and Southwestern Islanders. Because the "Fly" expedition took place slightly earlier than the "Rattlesnake", and the ethnographic accounts from each provide information of somewhat different regional focus, discussion of the earlier two accounts (Jukes 1846, and Sweatman in Allen & Corris 1977) here precedes discussion of the latter two (MacGillivray 1852, and Brierly in Moore 1979). However, the accounts from these two voyages are not wholly distinct because MacGillivray, the principal naturalist on board the "Rattlesnake" and "Bramble" expedition, also spent some time (with Jukes and Sweatman) as a member of the earlier "Fly" and "Bramble" expedition (Jukes 1847:136).

Allen and Corris (1977:xiii-xiv) point out that before they published Sweatman's Journal, published accounts existed for each year of the surveying work carried out in Torres Strait from 1837-1850, except for 1846. As well as filling in this "gap", Sweatman's accounts of his experiences on the "Bramble" are very informative, and add a significant amount of information to that provided by Jukes, particularly of the Western Islanders and Cape York Aborigines.

Sweatman's and Jukes' descriptions of the Eastern and Central Islanders are very similar, and this suggests to Allen and Corris (1977:xxii-xxiii) that Sweatman may have been guilty of plagiarism because Jukes' journals had already been published in England before he had completed his manuscript. But, as they also state, Sweatman's observations are "frequently more perceptive, fuller and more interesting" than Jukes' (though as a naturalist his provide more geographical and geological information). However, Sweatman's possible plagiarism is not a major issue here, because two-thirds of his journal documents the "Bramble's" work after the departure of Jukes in the "Fly". And, of greater importance, the accuracy of many of Sweatman's observations is confirmed by comparisons with later, more detailed studies (Allen and Corris 1977:xxiv-xxv).

The journals of Jukes and Sweatman indicate that by the completion of the surveys of the "Fly" and the "Bramble" (1843-46), they had a good general knowledge of how the Eastern Islanders lived, and were familiar with some aspects of Cape York Aboriginal, Central and Western Islander life. It is also clear from their accounts that they took considerable interest in the Islanders and Aboriginal people they met, and had developed friendships.

The greatest amount of their time in the eastern islands (c. three weeks) was spent among the Islanders of Erub (Darnley), and Mer (one of the Murray Island group)(Allen & Corris 1977:24). Of the few central islands that were visited, their most frequent contact was with the people of Massied, whose island was believed to be the headquarters of the central islands. The Eastern and Central Islanders were described as representing two distinct tribes, with distinct languages, but who understood each other's tongues, and had very similar customs (Allen & Corris 1977:23-24). They also recorded frequent contact between the two, as they commonly met parties from Massied, Tudu, Damud and other central islands on Erub, while anchored there (Jack 1921:181; Allen & Corris 1977:23-24).

In reference to the Western Islanders, Sweatman states that little was known of them in the Strait, "but from what I could collect from those we saw at C.York and from the reports of people who have visited there, they appear to be, if not of the same tribe as the Massied people, at all events intimately connected with them" (Allen & Corris 1977:24). Observations made of life at Cape York, while the expedition surveyed there, indicate that there was a considerable amount of contact between the Central and Western Islanders and the Aborigines of the Cape.

Sweatman's accounts of the "Bramble"'s four-week survey of the Cape York region in October 1846, provide some of the first and most detailed descriptions of the Western Islanders. He described a gathering of up to 90 people at York Bay, Cape York, of whom he believed at least half were Islanders (Allen & Corris 1977:24 & 153).

"They were a very mixed race, some being like the Erubos with frizzled hair growing in tufts and others true Australians, all were however a far finer set of men than we had been accustomed to see; they spoke a language very like that of Massied, and had bows and arrows and the women wore petticoats like those of Erub..." (Allen & Corris 1977:153). The women and men were described as "infinitely superior in personal appearance to the natives of other parts of the island" [Australia], with some of the girls nearly as light as the Erub Islanders (Allen & Corris 1977:153).

Subsequent encounters during that October included contact with Western Islanders, as well as with some people from Massied and possibly Erub Islands. While anchored off Mount Adolphus Island, in Blackwood Bay, a party was seen collecting turtle and fish (Allen & Corris 1977:152). The crew traded iron and tobacco for "tortoiseshell, bows and arrows etc" and were supplied with fish for two days (Allen & Corris 1977:152). Sweatman suggested that the party consisted of some Western Islanders, as only one of three who approached the schooner spoke "Erub language", and five days later he noted their two canoes sailing westward, with one crossing over to Endeavour Strait. A week later, while negotiating with knives and axes for turtle meat from Islanders in Erub-looking canoes, Sweatman witnessed the butchery of a turtle. He expressed his displeasure at the scene, as he describes the Islanders "busy devouring the raw eggs", after just having separated the upper and lower shells, while the animal was still alive and struggling (Allen & Corris 1977:157-8).

Later accounts confirm that there were frequent contacts between the Central and Western Islanders, and the Cape York Aborigines in the northernmost bays of Cape York and surrounding small islands (Macgillivray 1852; Moore 1979). Evidence of contact was noted superficially in the distributions of certain items of material culture and in the sharing of genetic traits.

The extent of "genetic exchange" between the Islanders and Aborigines seemed so great at Cape York that both Sweatman and Jukes (1847:142) were inclined to think that parts of the Cape's coast either had been colonised by Torres Strait Islanders, or;

"(as Jukes thinks) [the Islanders] drive the natives inland or else, which is more likely, that a decided mixture takes place between the two races; the majority of the women appeared to me to be islanders while the men were pretty equally divided, by "islanders" meaning the frizzled-tufted-haired race. Their manners, habits etc. however were <u>all</u> more those of the islanders and their language was nearly the same as that of Massied, they smoked tobacco and used pipes of the same construction, many also had wigs..." (Allen & Corris 1977:156)[1].

Prior to contact with people at Cape York, Jukes and Sweatman had definite impressions of the physical characteristics that differentiated Australians from the Torres Strait Islanders. The Islanders were said to "differ widely from the Australians, being members of the Papuan race and as such bearing a greater resemblance to the natives of New Guinea, New Britain and other groups to the Eastward, though even between these and the former there are many points of difference" (Allen & Corris

[1] Accounts of the "Rattlesnake" expedition confirm that marriages between the Southwestern Islanders and Cape York Aborigines did take place, although some of the people seen at the Cape probably were Islanders.

1977:20). The distinguishing traits of each group were listed: the Islanders' skin colour was described as being reddish or yellow versus black; their hair type as "wooly, frizzled, in small tufts or pencils" (Allen & Corris 1977:20) instead of fine, straight or waved; and their general physique as being taller and better built (Jukes 1847:106-7,142-3). There was, however, a tatoo, in the shape of a large oval mark, on the shoulder of men, which was found to be universal in Torres Strait from the Possession Islands to Erub, also at Cape York, and along the northeastern coast of Australia as far south as Cape Direction (Jukes 1847:106-7; Allen & Corris 1977:20-22).

The distinctiveness of some of the physical characteristics of the two groups made "genetic mixing" easy to detect. The greatest differences in appearance and language of the different communities, (i.e. between the Northeastern Islanders and some of the Cape York Aborigines), seemed to reflect the greatest geographical distance across the Strait. And although the Central and Western Islanders bore a greater resemblance to the peoples of Cape York, with whom they also shared a similar language, their customs "appeared to be very similar" to those of the Eastern Islanders (Allen & Corris 1977:23-24).

The discussion presented thus far prompts three questions: 1) Could the region from the northeastern tip of Cape York Peninsula across the entire Strait be considered as one "cultural unit" within which there existed varying degrees of human physical and linguistic differentiation?, or 2) did these physical and linguistic characteristics represent distinct differences of "culture"? and if so, 3) were the Central and Western Islanders more like the Eastern Islanders or the Aborigines of Cape York?

As already indicated, the similarities and differences between the material culture of the Islanders and the peoples of Cape York, observed by Sweatman, Jukes, and MacGillivray, were not always clear cut. Both had a similar form of transport, the double-outrigger canoe, although the Islanders' canoes were substantially larger, up to 18m long, and more elaborately decorated than those found on either side of the Cape (Jukes 1847:160; Golson 1972:391; Allen & Corris 1977:35). The Islanders' two principal weapons appear to have been the bow and arrow and ground-stone clubs, but they were also observed with the spear thrower of the Australian Aborigines. Some of the Cape York Aborigines also had bows and arrows similar to the Islanders, and both groups referred to them by the same name, "gaga" (Allen & Corris 1977:155).

Similar burial practices were also observed within the Cape York region and across Torres Strait. Bundles of human bones wrapped in bark, some covered with red ochre, were observed in huts at the Cape, on the western island of Nagir, and on Erub (Jukes 1847:208-9, 139-141, 155; Allen & Corris 1977:23-24). Cairns of stone, bone (turtle, dugong, and sometimes human), shell, and occasionally bamboo, were observed both on precipices (Jukes 1847:137) and on the shore of small islands around the Cape (Pabaju, Albany, Cape York, Eborac) and on Muralug (Jukes 1847:136-8, 149-50; Allen & Corris 1977:158, see Plate 1a). The cairns were all initially interpreted as human graves, but during MacGillivray's second visit to the Strait in 1848 he was

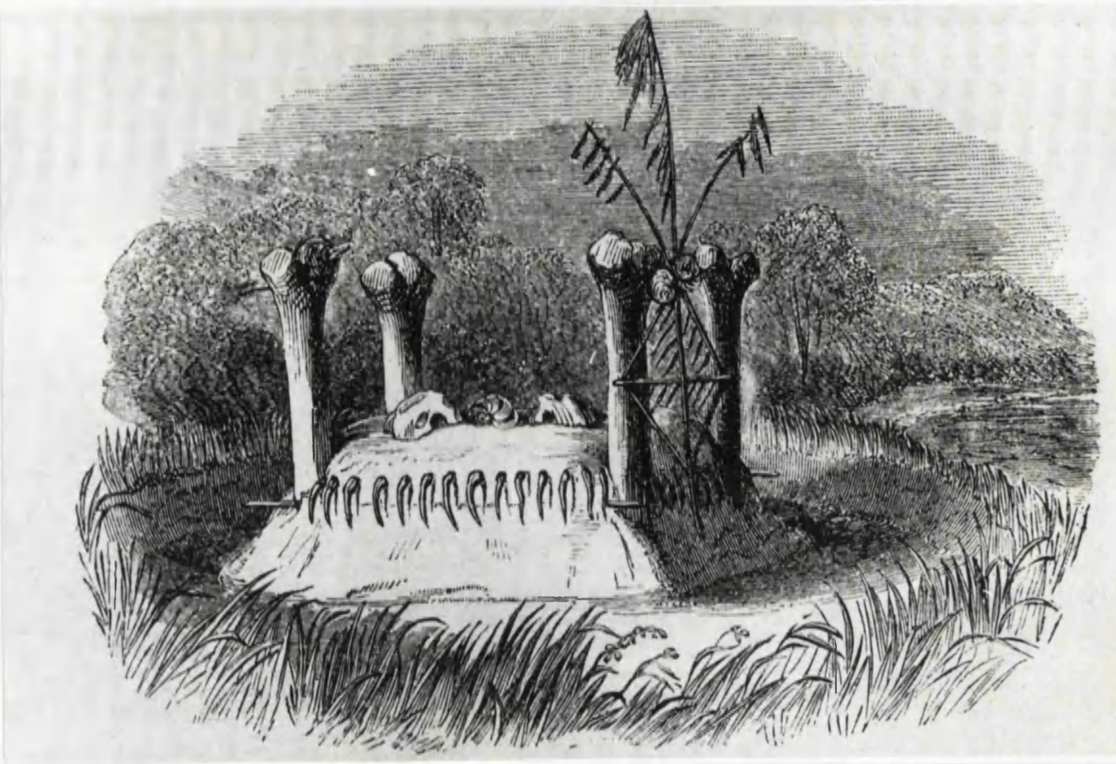


Plate 1a. Grave on Muralug (1844), Port Lihou (Haddon 1904:260, from Jukes 1847 I:149).

Plate 1b. Aboriginal camp, Evans Bay, Cape York Peninsula (watercolour by O. Stanley, November 1849, in Moore 1979:155, Plate 8).

informed that those located on high ground marked favourite lookout stations for turtle and dugong hunting. One cairn, in particular, was covered with a particular plant (identified as Flagellaria indica) which was said to ensure hunting success (MacGillivray 1852:22).

Other unusual features of bone and shell were observed on the central islands of Damut and Massid, and the eastern islands of Erub and Mer. On Damut, Jukes describes having seen an ...

"open place of meeting on the other side of which, against an old tree, was a semi-circular pile or wall of dugongs' skulls about three feet high, many of which were quite fresh, but others rotting with age; in the middle of this was a conical heap of turtles' skulls in a similar state. There must altogether have been some hundreds of skulls of each kind of animal" (1847:162).

Large murex shells (Syrinx sp.) and human skulls were recorded as decorating centre poles of huts and fences on the islands of Damut, Massid, Erub, and Mer (Jukes 1847:167,197; Allen & Corris 1977:24). On Erub Island, near one of the village huts, Jukes noted a stump of wood carved "rudely" like a woman around which had been placed a number of large old murex shells and halves of coconut shells; and on Massid he saw a 2-3 foot high fish and bird ornament of wood and pearlshell inlay beside a hut (1847:184-5, 168-9).

All three groups were observed eating fish and turtle, with fish considered as the most important meat, at least on Erub (Allen & Corris 1977:25-26), but Jukes and Sweatman were taken by surprise at certain differences seen in subsistence and settlement patterns across the Strait. The most striking contrasts observed were in the types of villages, shelters and canoes constructed (Plates 1b,2a,2b,3a,3b), and in the exploitation of plants.

The Eastern Islanders lived in villages frequently enclosed within a bamboo fence, with three different types of shelter: "beehive" and platform huts (raised on stilts), and low sheds (Plate 2b). Beehive huts were also seen on the central islands of Massid and Daumut (Jukes 1847:166-7), and although not observed on Nagir and Yam Islands, the shelters there were described as, "groups of huts much superior to any on the Mainland" (Jukes 1847:155), constructed of bamboo and thatched with grass and leaves (Plate 2a). These were in significant contrast to the small hut at the centre of the beach, described by Jukes as a "low tunnel-shaped frame of sticks" (Jukes 1847:139-141), seen at Evans Bay on the Cape (Jukes 1847:208-9; Allen & Corris 1977:24-25, Plate 1b).

However of greater surprise to Jukes and Sweatman, having just sailed the entirety of Australia's eastern coast, was to find plants under cultivation on eastern (Erub, Mer, Dauar, and Waier), central (Yam, Damut) and western (Nagir) islands. They also noted differences in the kinds and quantities of plants grown on these islands. On Erub and Mer the Islanders cultivated bananas, yams, sweet potato, sugar cane, tobacco, and a broad-leafed plant used to make women's petticoats, and bamboo and coconut groves were also abundant. On the central island of Yam, bananas, yams, coconut palms and bamboo were observed, as was a yam growing on Damut, and Jukes recorded having seen a grove of coconuts and one of bamboo on the western island of Nagir (1847:155). Jukes also noted that coconuts

Plate 2a. Western Islander camp, Nagir Island (from H.S. Melville: "Sketches" Plate XVI, in Haddon 1912:Plate XXIV, Fig.2).

Plate 2b. Village on Darnley (Erub) Island (from H.S. Melville: "Sketches" Plate XXXII, in Allen & Corris 1977:26, Plate 4.

Plate 3a. Contrasts in Islander and Cape York Aboriginal double-outrigger canoes (watercolour by O. Stanley, November 1849, in Moore 1979:194, Plate 10).

Plate 3b. "Accurate sketch of a large canoe, Darnley Island (Mer); monstrous mouth at bow" (from H.S. Melville: "Sketches" pl. XIX, in Haddon 1912:Plate XXIV, Fig.1)

were growing on the islands which were permanently inhabited at a distance of 30 miles or more from the coast of Australia (Jukes 1847:145), although none was seen on the Mainland, nor was any other kind of cultivation observed.

The islands which were most heavily cultivated also appeared to have the largest populations. According to Jukes about 200 men, women and children lived on Erub (half of which were men), with perhaps 250 on Mer (Jack 1921:180; Allen & Corris 1977:44). It was difficult to form an impression of the population of Massied and of the western islands, as little time was spent there, and because most of the Islanders appeared to frequently be away in canoes. However, Sweatman's impression was that the central islands were less densely populated than those in the east (Allen & Corris 1977:44), and Captain Blackwood reported not more than 30 people on Massied during a visit there, and about 20 on Damud (Allen & Corris 1977:44).

Having witnessed Islander and Aboriginal contact, Jukes and Sweatman attributed what they considered to be substantial contrasts seen in lifestyle to differences in intellect or degrees of "cultural advancement". Sweatman elaborates upon the differences, which indicated to him that the Torres Strait Islanders were more intelligent than the Australian Aborigines: the Islanders' cultivation of the ground, their use of stone-walled fish traps, the quality of the exterior and interior of their huts (distinct sleeping places, raised and covered with mats), their greater variety of weapons, hunting gear and domestic utensils, more elaborate canoes (Plates 3a and 3b) and artifacts (e.g. masks, pipes), a more complex language, and more hospitable, cheerful, and especially intelligent women and children... (Allen & Corris 1977:22). Certain comments indicate that Sweatman is, in fact, primarily speaking of the Eastern Islanders, with whom he spent the greatest amount of time.

A quote taken from Jukes' journal seems to encapsulate his overall impression of the differences of the two groups:

"Houseless and homeless, without gardens or any kind of cultivation, destitute of the coconut, the bamboo, the plantain or yam, as of almost all useful vegetables, they pass their lives either in search of food or in listless indolence. Instead of associating with us on something like terms of equality, bartering with us... and exchanging words, laughing, playing sports with the crew... like our Erroobian friends, these Australians sat listlessly looking on, ...with a complete want of interest or curiosity..." (Jukes 1847:CH.X).

Similar views were expressed in the journals that document later expeditions (MacGillivray 1852 II: 4,22-3, Jardine 1866, Moresby 1876:17-18, Jack 1921:181). Although some of Sweatman's descriptions of his interactions with Cape York Aborigines virtually contradict Jukes' sentiments, their testimony does nevertheless appear to confirm that there were marked contrasts across the Strait in settlement patterns and in some of the subsistence strategies practised.

3.7 Discussion

This summary of some of the information provided by Jukes and Sweatman highlights the differences and similarities in the physical appearance, language, material goods, and cultural practices of the indigenous peoples of the Torres Strait region which were observed in the middle of the nineteenth century. The regional cultural similarities noted were perhaps not surprising in light of the interaction recorded between Islander and Aboriginal communities. But significant differences in patterns of settlement and in certain types of subsistence activity existed, which appeared to vary along a north to south gradient, from more Papuan to more Australian-like.

Of the Western Islanders we learn that they spoke a language similar to that of the Central Islanders, and differed little from them and the Eastern Islanders in material culture. In physical appearance they had both Papuan and Australian traits, although some were described as almost indistinguishable from the Cape York Aborigines. Western, together with Central and some Eastern Islanders were encountered among Aboriginal peoples at the Cape, as part of large social gatherings and small turtle-hunting and fishing parties. Huts that were described as "much superior" to any seen on the Mainland were observed on one of the two western islands visited (Nagir), along with planted coconuts and bamboo.

The Islanders of Mabuiag are not mentioned in either account, nor did MacGillivray or Brierly have any direct contact with them during the subsequent expedition. The latter two did, however, record references to them made by Barbara Thompson, which suggest that in relation to Western Island interaction the Mabuiag Islanders may have held a position of some importance. No information about their subsistence or settlement patterns is given; thus it is not possible, based upon any of the mid-nineteenth century accounts, to determine what position they may have occupied along the north-south gradient across the Strait from more Papuan to more Australian cultural practices. As previously mentioned, this cannot be established without consideration of the Haddon (1901-1935) ethnographic accounts which report observations made in the late-nineteenth century.

However, it is necessary to summarise particular aspects of the MacGillivray and Brierly accounts because this enables one to reconstruct in a more detailed way (than can be achieved from Jukes' and Sweatman's accounts) Western Islander life at the stage of _initial_ European contact, which makes the information most relevant to later discussion of material within the Haddon _Reports_.

3.8 The mid-nineteenth century accounts of the naturalist MacGillivray (1852) and the artist Brierly (Moore 1979) of the "Rattlesnake" and "Bramble" survey expedition to Torres Strait (1846-1850)

The amount of time spent in the region of Cape York between 1848 and 1849 by the "Rattlesnake" expedition (nearly three months) provided MacGillivray and Brierly with ample opportunity to record information both from their direct observations of the indigenous peoples of Cape York and of the Islanders then visiting the region, and from conversations with Barbara Thompson. During this expedition only a few days were spent at the eastern island of Erub, with brief visits to Muralug, Nagir, Waraber and Arden Islands, while en route from the Cape.

MacGillivray stated that there were at least five aboriginal tribes at the Cape, only one of which (the Gudang) was on good terms with the Islanders. The tribes of Cape York were described as unquestionably of the Australian race, in contrast to the Islanders of Torres Strait who belonged to the "Papuan or frizzled-haired race" (MacGillivray 1852 II:1-2). This applied to all except one islander tribe (the Southwesterners) whom MacGillivray found difficult to classify into one group or the other. He identified this Islander tribe as the Kowraregas, who, he said, inhabited the southwestern islands, and were one of a total of eight Torres Strait tribes (MacGillivray 1852 II:1-2). The other seven Islander tribes he listed as follows: the Muralegas and Italegas who divided Moa Island between them[1]; the Badulegas of Badu Island; the Gumulegas of the islands between Badu and New Guinea; the Kulkalegas of Nagir and Waraber Islands and (Waraber's) two surrounding islets; the Massilegas of Massieg and the other nearby central islands; and the Miriam of the northeasternmost islands of Torres Strait (MacGillivray 1852 II:2-3).

[1]The Muralegas (Morolaga) were identified as the hill people of Moa Island by Barbara Thompson, and the Italegas (Eetalaga) as the coastal people (Moore 1979: 174,203).

3.8.1 Two tribes of the western islands: the Kowraregas and the Kulkalegas

Unlike the other Islanders, the Kowraregas were considered by MacGillivray (primarily on the basis of their physical appearance) to be a Papuanized colony of Australians. But the Kowraregas considered themselves as Islanders, who in constrast to the Aborigines cultivated, fought with bows and arrows, and cooked more carefully (Moore 1979:211). Brierly described the Kowrarega as men who "were in every respect superior to any other natives" seen (Moore 1979:46), and Barbara Thompson's description of the differences between the two (after having spent almost five years among the Kowraregas) emphasizes cultural differences between the two rather than similarities: "The difference is remarkable at so short a distance from shore and islands, between Cape York peoples [and the Islanders] - habits, canoes, mode of living etc. A house in winter, the handsome canoes with fine men and better features" (Moore 1979:160).

The cultural traits that united the Islanders were undoubtedly reinforced by the system of trade (described by MacGillivray and Brierly) that existed from New Guinea across the western Strait, and which, to some extent, excluded Aboriginal participation (MacGillivray 1852 II:4, Moore 1979:171, 301-6). The trade north from Muralug consisted of spears (some of which may have come from Cape York; Moore 1979:171,204), throwing sticks, and pearlshells (*Pinctada* sp.), which were highly sought after and worn as breast plates (*marries*), in exchange for bows and arrows, ground-stone headed clubs, bamboo pipes and knives, small shell ornaments called dibi-dibi, and feathers of the cassowary (MacGillivray 1852 II:4, Moore 1979: 171). Skins of a bird with beautiful plumage also came occasionally from New Guinea, as did a pig during Barbara Thompson's last year on Muralug Island (Moore 1979:171).

Goods arrived south from the north through a relay system of exchange which restricted the Kowraregas' direct contact to the Islanders of Badu, who received goods from the Gumulegas (Islanders of Mabuiag) which had first travelled south from the northwestern island of Saibai. The Kowraregas knew indirectly of (and occasionally confronted) both the Gumulegas and the peoples of New Guinea, the latter whom they described as living chiefly upon pigs and sago (MacGillivray 1852 II:4; Moore 1979:171,210-11). However, contact between the Kowraregas and the Western Islanders of Nagir, the Kulkalegas, was common and included less formalized exchange (i.e. generalised reciprocity) of material goods and food (Moore 1979:161,202-4,212,223-4). On two occasions the communities sought canoes from each other through exchange of goods, although there is no mention by either MacGillivray or Brierly of the trans-Strait system of trade for double-outrigger canoes which Haddon describes in detail (1904: 296-7). Barbara Thompson mentions a visit during her stay by people referred to as Sibilie (Saibai Islanders), who were described as well made, lighter, and with longer hair than the Islanders of Nagir. They had arrived in the canoes of the Kulkalegas, and she believed that their island was just beyond Nagir (Moore 1979: 212);

(it is actually just off the southern coast of Papua New Guinea). The Kowraregas also had contact with the Islanders of Moa, which was described as generally hostile in nature, and on one occasion they were visited by some Gumulegas (who Barbara Thompson did not see) with a party of Badulegas during Barbara Thompson's stay (Moore 1979:162, 203-4,208-9, 211).

At the time of her rescue, Barbara Thompson said that the population of the Kowrarega was around 50, but added that there had been many deaths since she had first landed there (Moore 1979:145). However, the total of men, women, and children named in her testimony is closer to 100 (Moore 1979:260). She also mentions the practice of infanticide, more often carried out on girls than boys, and almost always on children born out of "marriage" (Moore 1979:149-50,154).

Although the territory of the Kowraregas included eight islands, Muralug (Prince of Wales Island); Nurupai (Horn Island); Juna (Entrance Island); Giralag (Friday Island); Peilalag (Goode Island); Waibene (Thursday Island); Keriri (Hammond Island); and Maurura (Wednesday Island), together with many small rock and coral islets (Moore 1979:260), the people appear to have spent most of the year on Muralug Island. Barbara Thompson does describe visits that they made to other islands for special events (e.g. exchange of goods), or for obtaining food (Moore 1979:204,206,219-223), but large gatherings with other island tribes appear to have taken place more frequently on Muralug than on other nearby western islands (Moore 1979:202-204).

The wet season camp on Muralug was described as always being located at the same spot near the mangrove creeks on the south coast. A kimoodtha or kilug (large house) was built, which was long but low (approximately 1.2 metres high). It was dismantled every year, except for the foundation, with certain materials saved for construction in the next wet season. However, Barbara Thompson commented that the foundation rarely lasted throughout the following year (Moore 1979:155-6,228). There is no specific mention of huts built during the dry season or of a dry-season camp location on Muralug, although Barbara Thompson does refer to going into huts at times other than in the wet season (Moore 1979:213,216).

The only other Western Islander tribe that Barbara Thompson knew a significant amount about, and with whom the "Rattlesnake" expedition had direct contact, was the Kulkalegas of Nagir Island. Encounters with them, by MacGillivray and Brierly, did not occur until 1849, after the "Rattlesnake" had completed its nine-week survey of the Cape York region (from 1st of October to 3rd of December). While en route to the eastern islands brief visits were made to Nagir, and the small central islets of Waraber and Arden (traditional name unknown). A few of the Kulkalegas were also encountered on Nagir Island and near Waraber Island (MacGillivray II:33-43, Moore 1979:128-141).

The island of Nagir is one of the small high western islands, "little more than a mile in greatest length, of a somewhat triangular shape" with a peak rising to an elevation of 751 feet (MacGillivray 1852 II:35). On the days of the "Rattlesnake's" visit (December 3rd-6th, 1849), the Kulkalega were "absent on one of their periodical migrations" (MacGillivray 1852 II:35) either (MacGillivray believed) on account of the turtling season or because of lack of water (1852 II:38). However, one man, Zoga, and his family were there.

The headquarters of the Kulkalega was said to be Nagir Island, and their territory included the islet of Getulai (Pole) just to the north, Saddle (traditional name?) islet to the northeast, and Waraber Island, farther east with its two islets (MacGillivray 1852 II:35, Moore 1979:138). Brierly was told by Zoga's family that many of the people were away at Getulai Island. A few days later, while anchored near Waraber, almost the entire tribe was spotted on the island's beach in front of a village which looked very similar to the one they had seen at Nagir (MacGillivray 1852 II:40-2, Moore 1979:137-9).

Kulkalega men were described as distinctly brown (in contrast to the black of the Aborigines), well made with straight noses, and adorned with large, glittering, shell breast plates (Moore 1979:137). The few that approached the "Rattlesnake" in a canoe near Waraber, according to MacGillivray, "differed in no material respect" from the Southwestern Islanders on the one hand, and those of Erub on the other (1852 II:40). They were well acquainted with Barbara Thompson with whom they conversed freely (MacGillivray 1852 II:40, Moore 1979:137).

While anchored off Nagir, MacGillivray and Brierly spent three days exploring the island, and were provided, together with T.H. Huxley (of later Darwinian fame), with a guided tour by the man who appeared to be the only

Kulkalega there, Zoga. Village sites, areas of cultivation, and ceremonial grounds were visited, and both Zoga and Barbara Thompson described the significance of certain of the features observed (which had been constructed by the Islanders).

The population of the Kulkalega was estimated to have been between 100-150, as judged by the number of huts seen on the northern side of Nagir, described as their "summer" or dry season village (MacGillivray II:35, Moore 1979:135). Brierly was also informed by Zoga that the "skeleton" of a large house observed near the beach on the island's western side was all that remained of the kookie (wet-season) camp (Moore 1979:135). Located near the dry season village were ceremonial grounds (kwods) marked by two "curious" bamboo screens (wouse) and a feature called golgotha, a hunting (increase) shrine called agoola, a small well, and a cultivation patch (Moore 1979:129). Brierly described the village as consisting of:

"A number of low grass covered buildings about four feet from the ground with bamboo enclosures round them. On the beach near them were several small, little stages for drying fish and turtle. Although there appeared to be accomodation for upwards of a hundred natives and the heads of bones and husks of roasted fruits that were were thrown up near showed that a number of people must at one time have lived in them..." (Moore 1979:135).

3.8.2 Ceremonial features of the Kowrarega and Kulkalega

Characteristics of the ceremonial features and hunting shrine (as so defined by Zoga and Barbara Thompson) were reminiscent of, but more elaborate than, those of Islander "graves", hunting look-out points, shelter or house decorations, and a meeting place, as described by members of the preceeding "Fly" and "Bramble" expedition (Section 3.6), and also of the earliest recorded descriptions (1872-1873) of a bone "shrine" (and graves) on Mabuiag and Tutu Islands (Section 3.4).

MacGillivray and Brierly's descriptions together provide a detailed picture of each of these features. One of the two screens seen was located "...in a beautiful opening among the trees behind the village..." (MacGillivray 1852 II:37), and extended 56 feet in length by five and a half feet in width. Bars of the screen were decorated with rows of large spider shells (Murex sp.), painted red, and painted jaws of dugong and large Syrinx shells (the shells were said to have been totems) hung upon bamboo poles which projected above the others. Numerous other dugong bones and shells were scattered all along the front of the screen, and a row of stones at the foot of the screen had been painted and fashioned into human heads, which, according to Zoga, represented persons who were dead (MacGillivray 1852 II:37, Plate 4a). This screen, a second one seen, and the golgotha, were described by both Zoga and Barbara Thompson as kwods, not burial places, "where the men sat and the warroops- drums were beaten on particular occasions" (Moore 1979:130). Barbara Thompson described these occasions as the marki kabobs [literally ghostdances], or corroborees, when men celebrated the killing of their enemies (Moore 1979:130,135; MacGillivray 1852 II:37).

The golgotha was also located near the village, at the

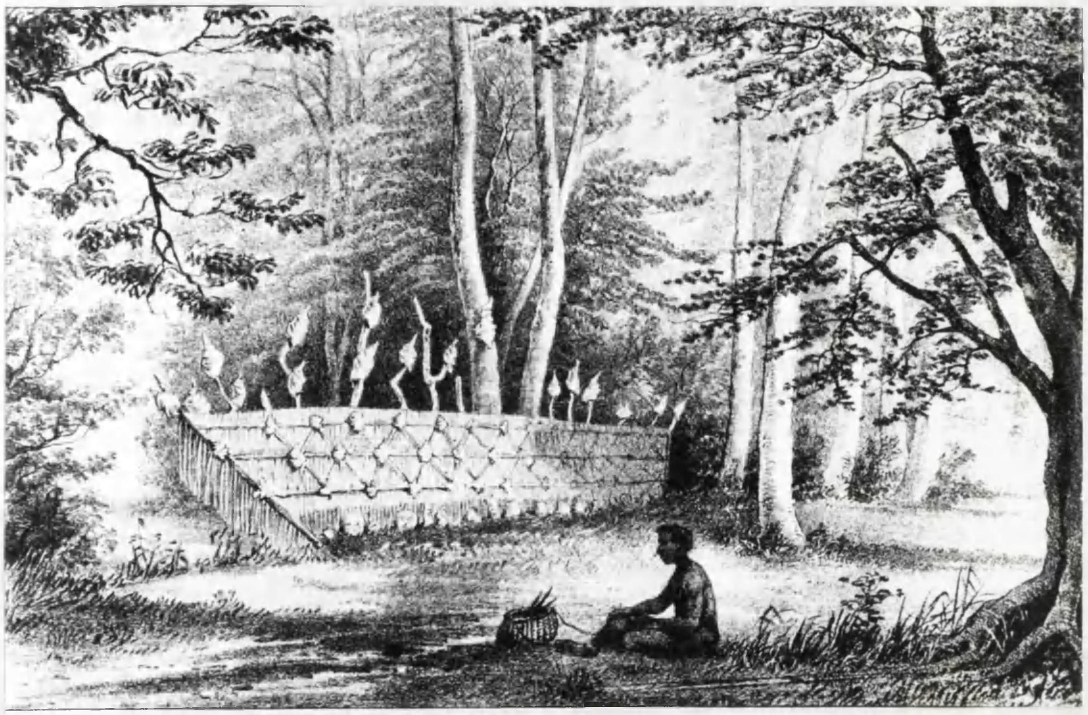


Plate 4a. Ceremonial screen (waus) on Nagir Island (drawn by T.H. Huxley (1849) in MacGillivray 1952 II:36, from Haddon 1904:Plate XIX, Fig.2).

Figure 1. A. C. Haddon (seated) with members of the 1898 Cambridge Anthropological Expedition to Torres Straits: (*left to right*) W. H. R. Rivers; C. G. Seligman; S. H. Ray; Anthony Wilkin.

Plate 4b. A.C. Haddon (seated) with members of the 1898 Cambridge Anthropological Expedition to Torres Straits; left to right: W.H.R. Rivers, C.G. Seligman, S.H. Ray, Anthony Wilkin (from Moore 1984:20, Fig.1).

back of the beach under the shade of thick foliage of large spreading trees which formed a complete canopy. Eleven human skulls were placed on a six foot long, six inch wide board, which was raised from the ground by turtle heads. This "skull board" formed the base of a triangle, completed by parallel rows of turtle heads, in the centre of which were four stones and three dugong skulls. In the front of the board were placed more human skulls with a large stone (c. two and a half feet high, and one foot wide) whose top was irregularly smooth, rounded and decorated by designs of red and black paint and ornamented with white feathers. Human bones and half of a large mangrove bivalve (Geloina coaxans), painted brilliant red, were also resting at its base (Moore 1979:135). Barbara Thompson recounted that the human skulls placed within the golgotha were those of enemies that had been killed, because the skulls of their own people were "never exposed in this manner" (Moore 1979:135).

The feature referred to by Zoga as agoola, was observed near the golgotha, and consisted of a large bamboo stage, six foot wide, 15 feet long and four feet in height, on top of which were placed three shells of recently caught turtle, together with two others on the ground. Zoga said "it was to bring the turtle about" (Moore 1979:135).

Arrangements of bone, shell and stone were also observed on another island within the Kulkalegas' territory, Waraber, and upon the central islet of Arden, during brief stops made as the expedition sailed towards the eastern Strait.

An agoola was seen near the village on the beach at

Waraber, of similar construction to the one on Nagir, as well as a cooking shed completely covered with recently caught turtle carapaces (c. 30) (MacGillivray 1852 II:41; Moore 1979:139).

On the east side of Arden islet Barbara Thompson identified a place where a baby had been born, which was marked by a wind break of driftwood and fireplaces. Posts eight feet in height were sticking up with turtle heads (all turned eastwards) placed on the ground. She described to Brierly how women on Muralug sometimes made these on the beach where a child was born. A bu (Melo sp.) shell was put on the ground, and turtle heads were placed all around it with flat stones placed upright around the turtles' heads. Then a certain type of plant, called makari, was planted on either side to grow and shade the spot (Moore 1979:139-140).

From the west side of the islet Brierly describes another feature of turtle bone (skulls and plates of carapace), which was located under a tree in a "beautiful situation" (Moore 1979:141). Fourteen turtle heads (with traces of red paint) were arranged in parallel rows, placed close together and enclosed by flat irregular-shaped upright stones. In front of this were two rows of flat bone [turtle carapace] and four shells, the same as those seen at the kwod on Nagir, which had been placed on top of the turtle skulls (Moore 1979:140-41).

The Kowrarega method of burial consisted of interring the post-cranial skeleton (after putrefaction of the corpse on a bamboo platform, the head being given to the eldest wife) in a shallow grave over which a mound was raised and demarcated by wooden posts which were ornamented with nautilus shells and dugong and turtle skulls (Jukes 1847:149; MacGillivray 1852 II:31-32; Moore 1979:217-18, Plate 1a). This description is very similar to that provided by the missionary Gill of the traditional graves observed on Mabuiag (Section 3.4). In addition, Barbara Thompson described how on the spot where a man died "they lay down turtle and dangal, dugong bones"..."to make what they call his lu or mark" (Moore 1979:219).

3.8.3 Kowrarega and Kulkalega subsistence

Barbara Thompson referred to the Kulkalega as great friends of the Kowrarega, who came to Muralug because they liked the koti (yams) that grew there (Moore 1979:161). Her descriptions of the Kulkalegas' visits to Muralug Island also suggest a seasonally mobile lifestyle maintained through hunting (turtle), fishing, gathering (mainly tubers with some fruits), and agriculture (tubers, bamboo, coconut, sugar cane, banana, and "tobacco"). Canoes full of people and goods were said to have arrived every year on Muralug, sometimes staying many months, from the end of one season to the beginning, or through part of, the next (Moore 1979:161). Barbara Thompson believed that the entire Nagir population was transported to Muralug (estimated by her to be about 300), and stayed throughout the dry season (Moore 1979:203,206). According to Barbara Thompson when they came they carried with them:

> "nookie marappi- bamboos for water; sagooba marappi- bamboos for tobacco; the pretty mats they call mamalli; dibi-dibis; bows and arrows; upis- bamboo knives for cutting off heads; koosoos- coconut shells scraped out and carried together in twos for getting water; yegalli- a kind of line they make from coconut fibre and our people use for securing the gapu [sucker fish, *Echeneis* spp.] when they catch turtle with it; wakaus- plaited bands worn by the men around their waists; sugarl- neck ornaments. They brought over also a good deal of bisi [sago]; it was made up in hard lumps about as big as a man's fist. They have a great deal of bisi floated onto their island. It is not so much under the lee as our island.
>
> Sometimes they bring over sugar cane plants, they have plenty of bananas and coconuts, and quantities of dried turtle. Their dried turtle is made from the oosoo [loggerhead] which they catch in the kuki [wet] season. They also brought over some kind of yams which our people have not got- a purple kind which they call sagooba. The sagooba is long and narrow; bitzar is another kind, shorter and rounder and of a lighter colour than the bizar [sagooba?]. They bring over small leaves of tobacco which

they grow. They dry it over the fire. They bring over coconuts and pretty baskets" (Moore 1979:203).

MacGillivray and Brierly's accounts of the few days spent on Nagir add significant detail to the information provided by Barbara Thompson. They also confirm Juke's description of the bamboo and coconut groves found there, and provide the earliest details of cultivation in the western Strait which indicate clearly that tubers were cultivated (MacGillivray II 1852:36, Moore 1979: 130-1, 133). MacGillivray refers to "many patches of rude cultivation"..., which were located on the northern side of the island, "on the slope of a hill in good soil" (1852 II: 36), and states that "the chief plant is a broad-leaved species of yam", and that "a species of Calladium[1] with an esculent root is also much cultivated" (1852 II:36). Each plant was cultivated differently, the yam "trained upon tall poles kept in position by cross bamboos, forming a framework divided into little squares, each of which contains a plant" (MacGillivray 1852 II:36), and the "Calladium" was planted in regular rows of earth heaped up into ridges. A herb used as tobacco was also observed growing in small plots of prepared ground, protected from the sun with pieces of matting (MacGillivray 1852 II:36).

Brierly's observations of planted areas on the western side Nagir Island (not seen by MacGillivray) provide additional details of the Kulkalegas' cultivation practices, and include estimates of the quantities of tubers planted (Moore 1979:130-1, 133). The area under cultivation was described as "...a large flat of eight

[1]The identification of MacGillivray's "Calladium" is uncertain, although it is possibly a taro (Harris 1985, typescript).

separate plantations of yam (koti). The largest of these was 31 and the smallest 25 paces round. Rods in centre with flat carved fish dangling to rods" (Moore 1979:130-1). On average there were 30 yam plants to a plot, with the ground inbetween plants cleared perfectly of weeds, and each plant with its own stick (Moore 1979:133). Brierly was told by Zoga that this plantation belonged to a number of people (17 were mentioned), and that a similar area under cultivation (seen by another member of the expedition) was located elsewhere on Nagir (Moore 1979:133-4).

Although these descriptions suggest that cultivated plants formed an important part of the Kulkalegas' subsistence on Nagir, the exact extent of the Kowraregas' commitment to cultivation is difficult to ascertain from the information in the mid-nineteenth century accounts. MacGillivray states that "a great variety of yam-like tubers" were cultivated in Torres Strait, and contrasts the small, but frequently encountered, patches of land under cultivation on the eastern islands with the cleared spots "few in number and of small extent" on the southwestern islands, where neither the coconut, bamboo, nor banana were cultivated (MacGillivray 1852 II:25).

Barbara Thompson's references to the areas cultivated on Muralug and nearby islands (Moa and Badu Islands; Moore 1979:162-3,206) suggest less elaborate field systems than those of the Kulkalegas. However, the detail and extent of her knowledge of the Kowraregas' methods of collection, ground preparation, planting, and harvesting of tubers (Moore 1979:148-9,178-9,198) indicate that it was more than a casual activity. Six different tubers were described as types grown: a big yam - koti or coti; a large red yam - bizzar; a small root, rough outside, dry stringy inside - mopate or mopeat; a root like potato, size of a large apple - booak or boa; a root like sweet potato, small - rigaboo; and a yam- bore (Moore 1979:149,178-79). She mentions the planting of sugar cane (which was brought over by the Kulkalegas; Moore 1979:184), and that there were some coconut trees on Muralug Island (Moore 1979:225,228), and she lists bananas and possibly papaya (paw-paw) as plants that the Kowrarega cultivated (Moore 1979:149)[1]. Barbara Thompson also describes how, for the first time since her arrival on Muralug, Kowrarega men planted wild tubers (collected by the women) in a new area referred to as garricoop. Four varieties were planted (koti, mopate, bore and boa), but the Kowrarega would "let them remain in the ground as standby if the kotis should get scanty in the rocks" (Moore 1979:179). She adds, however, that before this year (1849) five men had gardens in other areas of Muralug in which they planted varieties of yam collected from other islands.

MacGillivray, Brierly and Barbara Thompson all describe certain wild fruits, nuts and other plants seasonally eaten and used to make articles such as canoe sails, mats, baskets, rope, fishing line, skirts, belts, and arm and leg ornaments (MacGillivray 1852 II:20,26-7, Moore 1979: 37-8,149,170).

MacGillivray's discussion of the foods eaten on the

[1] However, Moore (1979: 278) interprets this list as referring to plants that Barbara Thompson knew were cultivated in the islands in general, not specifically to ones cultivated on Muralug.

Cape and in the southwestern islands is prefaced by this general view of the Aborigines' and Islanders' diet:

"The food of these blacks varies with the season of the year, and the supply is irregular and often precarious. Shell fish and fish are alone obtainable all the year round, - collecting the former is exclusively a female occupation, but fishing is chiefly practised by the men" (1852 II: 20).

Barbara Thompson listed the principal foods of the Kowrarega as a root like a yam or sweet potato, koti, coti or ketai, found in the dry season (approximately June-November), and the long pods of the mangrove, biyu or beu, eaten when coti was not available in the wet season. Wild fruits such as obarr (like a plum), nonda (a round yellow fruit), and apeegee (red like an apple), uzu (a fig) and nuts called leara (a cashew), and abul (Pandanus spp.) were also eaten during the dry season (MacGillivray 1852 II:27, Moore 1979:146). The animal foods were listed as fish, turtle, a lizard like the iguana, and large grubs which the Kowraregas found in the trees. And she specifically adds, that there were no snails on "her island" (Moore 1979:146). Crabs found in mangroves and bats are also mentioned as having been eaten (Moore 1979:153,185).

Tubers and turtle were available throughout the dry season. Tubers were found in the hills, the pod, and dug out from underneath stony places (Moore 1979:146,167). The green turtle (Chelonia mydas) was particularly abundant toward the end of the dry season (throughout October and into November), as it was during this period that they paired and mated, and were most frequently caught (by rope, spear, or harpoon) while floating together on the surface. They were also occasionally caught at night on the beaches. "Look-out" points, marked by cairns (as described in Section 3.6) were used throughout the region, to alert hunters of animals (turtles and dugong)[1] in the vicinity (MacGillivray 1852 II:22; Moore 1979: 153,168,226).

The period towards the end of the dry season was known as Sulangi, after the green turtle, sulur or soolah, which was also described by Barbara Thompson as "the egg turtle" (MacGillivray 1852 II:21, Moore 1979:37-8,112,167). MacGillivray states that three other types of turtle were exploited in the area, the hawksbill (Eretmochelys imbricata), the loggerhead (Caretta caretta), and a third one which he never saw (MacGillivray 1852 II:21). This unidentified one was smaller and called gapu waru, because it was caught with the help of the gapu (the sucker fish, Echenseis sp.), and kuki waru, because it was caught in the wet season (Moore 1979:112, 167). The hawksbill, oonow, was known by Europeans as the tortoise-shell turtle because its shell was an item frequently used in trade by the Islanders, both with the Europeans and among themselves, and was also used to make fish hooks and masks. The hawksbill was sometimes speared or caught with the sucker fish, although, on account of its sharp-edged shell (carapace), it was more commonly captured at night while laying its eggs in the sand. It was caught later in the season than the green turtle, and was comparatively scarce (MacGillivray 1852 II:23, Moore 1979:167-8). Oosoo or oorza, was another type of turtle caught by the Kulkalegas

[1] Whales, porpoises, and sharks were also known to the Islanders, but were said to be ogood (taboo), and not eaten (Moore 1979:35,151).

(but not, Barbara Thompson believed, by the Kowrarega) in the wet season (Moore 1979:138,203,225), and may have been the loggerhead according to Moore (1979:269). Although the green turtle was the turtle species most heavily exploited for food throughout the year, Barbara Thompson stated that the Islanders did not care for the males on account of their having no eggs and containing little fat (Moore 1979:175).

MacGillivray states that dugong (Dugong dugon) was a much relished food, but that it appeared to be very scarce. His impression was that they were most frequently caught in the wet season with their young, and that only a few were killed every year (1852 II:24). Once harpooned the dugong was then towed and rolled up on shore to be butchered (MacGillivray 1852 II:25, Moore 1979:162). "The flesh is cut through to the ribs in thin strips, each with its share of blubber, then the tail is removed and sliced with a sharp shell as we would a round of beef" (MacGillivray 1852 II:25). Preparations were meanwhile made for a grand feast. The Aborigines of the Cape also celebrated their success in catching one with a corroboree (Moore 1979:151). Barbara Thompson infrequently mentions hunting or eating dugong in relation to the Kowrarega, but their bones were frequently described as part of the bone and shell features mentioned above (Moore 1979:162,186).

When the rains of the wet season set in the principal plant food was biyu, the "pods" (hypocotyl) of the mangrove (MacGillivray 1852 II:26, Moore 1979:37-8, 149, 170). Once cooked they were sometimes mixed with large quantities of a leguminous seed (kalapi) the size of a chestnut (Entada scandens), and rolled into balls known as sam, or mixed with the tuber of a bitter wild yam (MacGillivray 1852 II: 26-7, Moore 1979:206), or possibly with turtle oil called mabouchie (Moore 1979:108). One type of bitter yam (darib) was described as "an inferior kind of tuberous root eaten in the kuki when the kotis and other kinds of yams are out of season" (Moore 1979:226), and Barbara Thompson recounts how it was collected abundantly towards the end of the wet season. Darib was eaten only after being ground, leached and cooked (Moore 1979: 214-15, 219-223).

Barbara Thompson described herself as having managed "very well in the ibu" (dry season), when there was plenty of turtle and fruit, but not in the kuki (wet season), which was "very bad" (Moore 1979:206), and which she referred to as "the worst most hungry time" (Moore 1979:149). Although MacGillivray and Brierly both refer to aspects of Islander life during the wet season, Barbara Thompson's descriptions are unique, because they were based upon actually having lived through it.

She described the winds and heavy sporadic rains of the kuki as lasting over two months, of which the first fortnight tended to the worst, on account of continual rain (Moore 1979:205). Whenever the winds settled the men would go out to catch "a turtle or two" with the gapu fish. The winds were so strong one wet season that the men could not go out, and for a couple of weeks they ate nothing but biyu (Moore 1979:205).

Although MacGillivray stated that shellfish and fish were "alone obtainable all year round" (1852 II:20), there is little mention of the collection of shellfish in the

Brierly accounts (Moore 1979:151,161,211). Brierly does, however, frequently record Aboriginal women collecting and carrying different types of shellfish at Cape York, and shellfish were also observed there as one type of canoe "cargo" within baskets on the outrigger platforms (Moore 1979:28,31,36,39,41-2,50). Fish are referred to more often than shellfish and are listed as one of the principal animal foods eaten (Moore 1979:146,150-1,179-80,192,219).

Women and children are always mentioned as the collectors of shellfish, and only once does Barbara Thompson indicate at what time of year they were collected. This is in a description of Cape York Aboriginal women collecting mangrove shellfish and spearing fish in the wet season (Moore 1979:151). However, Brierly's descriptions of women and shellfish were all made in October, i.e towards the end of the dry season. The collection of rock oysters is mentioned elsewhere with no reference to the season (Moore 1979:161,211).

Women are mentioned twice as spearing or collecting fish on the reefs "under rocks and in shallow places" (Moore 1979:151,219), but it appears to have been predominately a male activity which took place primarily during the dry season (MacGillivray 1852 II:20, Moore 1979: 146,112,150-1,179,192,204). Fish are described as being speared, caught by hook and line, or, on Muralug, through the use of mats and branches to block the mouths of streams at high tide. When the water receded as the tide went out the fish were collected and loaded into the canoes (MacGillivray 1852:20, Moore 1979:150-1). Barbara Thompson also added that the Kowraregas did not use nets although other Islanders did (Moore 1979:151). The only references to specific types of fish caught are by Barbara Thompson who describes a large catch of "mullet" at the end of the wet season (Moore 1979:204), and by Brierly who mentions a type of "bream" caught near the Cape in the dry season (Moore 1979:55).

The consideration of food-procurement activities as having taken place either solely within the wet (kuki) or the dry (ibu and sulangi) season may be slightly misleading as there is mention of two "intermediate" periods, one called malgui, which was at the end of the wet just before the dry season, and the other called traapanoolie, which was at the end of the dry just before the beginning of the wet season (Moore 1979:212,219).

References to the preparation and cooking of wild and cultivated plants and animals, as well as descriptions of the preservation of food (fish and turtle meat) are common throughout the Brierly accounts (Moore 1979:33, 37-8,108,164,169,172,200-1,206), and are also discussed by MacGillivray (1852 II:22-7). The various Islander cooking methods are described in considerable detail. Women are consistently referred to as in charge of food preparation and cooking (Moore 1979: 152,169-70,191,201-2,206, 214-19,221,225-6). However, the men cooked when involved with certain "exclusive" ceremonies (e.g. initiation, head hunting, ghostdances) (Moore 1979:135,164,166,157-9). Barbara Thompson listed certain foods as taboo to women but not to men (known as adzarr), (i.e. stingray, a type of fish, the Torres Strait pigeon, and the first turtle caught in a new canoe, with whales, sharks, and porpoise taboo to both sexes) (Moore 1979:35,150-51,156), and MacGillivray states that,

> "many kinds of fish, including some of the best, are forbidden on the pretence of their causing disease in women, although not injurious to the men. The hawksbill turtle and its eggs are forbidden to women suckling, and no female, until beyond child bearing, is permitted to eat of the Torres Strait pigeon" (1852 II:10).

However, neither of them mention if these restrictions applied to the cooking of these foods by women.

Tubers, mangrove "pods", the seed of Entada scandens (matchbox bean) which was mixed with it, and "fruits" of Pandanus, as well as turtle and dugong, were all cooked in an earth oven, the ami. Heads of enemies were also cooked in special amis, and certain parts were eaten (Moore 1979:166). To make an ami a shallow pit was dug in the sand, and then lined with many stones over which a fire was started. Once the fire had burned down, coarse grass was placed on top of the heated stones. The desired vegetables or meat were then cooked completely or partially between the grass, additional hot stones, and a covering of leaves and sand (Moore 1979: 37-8,169,200).

After having been partially cooked in the ami, both the mangrove pods and the matchbox bean had to be ground, and then placed in baskets and steeped over night in water, to wash out the bitterness (Moore 1979:169-70,225). Various "bitter" tubers were also eaten and they too needed to be cooked and leached in water before eating (Moore 1979:108,181,212). "Sweet" tubers[1] were simply cooked in the ami or roasted in ashes, and during traapanoolie (the

[1] Although ethnobotanical fieldwork has been carried out in the region, the taxonomy of these tubers is little known (Harris 1985). Thus, many ethnographic "types" can only be identified to the genus Dioscorea.

beginning of November, i.e. the end of the dry season), any roots that the Kowrarega collected then were only cooked in ashes and not in the _ami_ (Moore 1979:212).

The Kowrarega went to "a great deal of trouble" (Moore 1979:181) to eat the roots of a certain small palm by first having to pound it with stones and soak it within dilly bags before baking it in an _ami_ or roasting it. Shoots of another type, _mooroo_, the "cabbage palm" (identified in Moore 1979 as _Livistonia australis_), were eaten raw, and the pith of a third "very large palm tree" was mixed with turtle fat and water, wrapped in coconut leaves and baked in the _ami_ or boiled in the _alup_ with turtle (Moore 1979: 173-74, 181). The pith of this large palm was called _beesee_ (or _bisi_) and the Kowrarega and Kulkalega made it into a "farina". When they were first introduced to European biscuits they believed them to be made of _beesee_ and called them _beeseekari_ (Moore 1979: 211). Barbara Thompson clearly states that the _beesee_ palm did not grow on either Nagir or Muralug but was washed up upon the islands' shores by the tides, _although_, much more frequently on Nagir than on Muralug. Brierly (and Moore) refer to _beesee_ as sago, although Harris (1985 _in press_) questions this, unless it reached the islands through trade with New Guinea or as the result of capsized Papuan outrigger canoes that might have been carrying sago.

Turtle meat was sometimes cooked partially in the _ami_, and then shared out so that each family could cook it in their own way (Moore 1979:181). Occasionally the carapace of the turtle was placed upside down directly upon the hot stones and used as a large bowl within which the chunks of meat were cooked (Moore 1979:215). Barbara Thompson also provides specific detail on how the turtle was cut up and arranged within the ami, and later divided between the Islanders (Moore 1979:200-2). Her descriptions confirm Sweatman's earlier account of the technique of turtle butchery which he observed near Cape York; i.e. cutting the shell off of the belly while the turtle was still alive (Moore 1979:181).

In addition to food being cooked in the ami, and tubers and fish roasted within the ashes of fires, turtle meat was frequently boiled in large shells, alup, (Fucus sp.) over fires, and the fat skimmed off with a large mangrove shell, akul, and the liquid treated as soup (MacGillivray 1852 II:23, Moore 1979:172,185,190,206). The oil was saved in turtle bladders and morappes (pieces of bamboo) and sometimes mixed with yams and eaten. Turtle meat was dried, like fish, over bamboo racks placed over a fire, or dried in the sun after having been dipped in salt water (Moore 1979:172,179-181). MacGillivray comments on the "usual improvidence" of the Australian Aborigines who, when they caught a turtle would eat it all immediately, in contrast to the Islanders who were "accustomed to dry the flesh to supply them with food during their voyages" (1852 II:23). However, this may not have been equally true for all of the Islanders, because, according to Barbara Thompson, the Kowrarega frequently dried fish, and occasionally used large quantities in exchange of goods, although they only dried turtle meat when they had a great deal, and then proceeded to "eat it from the frame until it is all done" (Moore 1979:179, 181). In addition, there is no mention of dried meat being eaten during the lean periods of the wet season. Other references to storage (or lack thereof) by the Kowrarega relate to the coconut and beesee (sago). Coconut was said to always be eaten green as the Islanders could "never let the nuts get ripe" (Moore 1979:225). Beesee was one of the foods Barbara Thompson described as transported by the Kulkalega to Muralug on their yearly seasonal visit, and she commented that:

> "The Kulkalaga have much more of it than our people and they take care of it and put it past for a rainy day. Our people have no thought for the [rainy?] day and take no care but eat it all whenever they get it" (Moore 1979:174).

3.9 Discussion

This summary of aspects of the accounts of the naturalist MacGillivray and the artist Brierly from the "Rattlesnake" expedition, has shown that a substantial amount of detailed information was recorded concerning the mid-nineteenth century subsistence and settlement patterns of two of the tribes of Western Islanders: the Kowrarega of the southwestern islands, and the Kulkalega of the mid-western island of Nagir, several nearby islets, and some of the central islands. This information is complemented by the slightly earlier accounts of the naturalist Jukes and the clerk Sweatman whose ethnographic descriptions focused upon the Miriam of the eastern islands, and the Massilegas of some of the central islands. The accounts of the 1846 "Fly" expedition, however, do not provide as much information on Western Islander subsistence practices as do those from the 1848 "Rattlesnake" expedition, nor do they contain as much detail of the "curious" bone, shell, stone, etc. arrangements seen[1].

Although contact between the Islanders and the Aborigines of Cape York may have occurred frequently (in particular between the Kowraregas and Gudang tribes), and led to biological and cultural exchange, descriptions of the differences of the two groups suggest that Endeavour Strait continued in certain ways to mark a cultural as well as a geographical divide. However, the differences were, perhaps, the least distinct (superficially) between some of

[1] Similar features were also noted, and their functions recorded, approximately 25 years later by Europeans visiting Mabuiag and some of the central islands (as noted in Section 3.4).

the Aboriginal groups and their closest islander neighbours, the Kowrarega.

The Kowrarega and Kulkalega were in relatively frequent contact with one another, and shared a similar lifestyle maintained through reliance upon a "mixed" subsistence economy of hunting, gathering, and agriculture. Life, in general, in the western islands appears to have been strongly influenced by the alternating seasons of wet and dry. The principal foods eaten were those available in abundance during either the wet season (biyu, kalapi and darib), or the dry season (koti and sulur, and various fruits), as well as those (fish and shellfish) that were obtained throughout the year. The "staples" may not, however, have always been the foods most highly esteemed, such as dugong, the only animal whose capture was described as marked by a celebration or "corroboree" (MacGillivray 1852 II:25; Moore 1979:151).

The Kowrarega appear not to have cultivated plants to the same extent as the Kulkalega, and neither did so to the degree noted in the eastern islands. However, cultivated plants were certainly an important part of Western Islander subsistence and inter-island exchange. The extent to which turtle meat formed a part of the diet, on the other hand, seems to have been the converse of the Islanders' commitment to cultivation; turtle having been more commonly exploited by Western Islanders than by the Easterners, with dugong eaten relatively rarely by each.

Although MacGillivray's impression of the seasonal variations in the food supply of the Cape York Aborigines and the Southwestern Islanders may have been somewhat overstated, it is clear from Barbara Thompson's testimony that (at least) the Kowrarega did suffer nutritionally from seasonal fluctuations in resource availability. It is, however, interesting to note that although the Kowrarega were familiar with methods of animal and plant preservation, did dry meat, and planted tubers in prepared soil as security against bad "crops", storage of food for use during stressful periods does not appear to have been part of their subsistence strategies. This, it seems, was in contrast to their allies, the Kulkalega, who did "save food for a rainy day" and although the island they were based upon was a much smaller island it supported a considerably higher (c. two to four times) population density.

The technology developed to exploit plants and animals was not particularly elaborate or complex, with the exception of the ornately decorated and seaworthy canoes. Wood, plant fibre, and shell were the predominate raw materials used to make implements, with bone and stone used in relatively small quantites. Worked bone and stone (particularly the latter) appear to have formed only a minor part of the tool assemblage, probably because of the limited availability of suitable raw materials.

The ethnographic descriptions of all four mid-nineteenth century authors suggest that the role of plants and animals extended into aspects of Islander life beyond subsistence and technology. Parts of certain plants and animals were worn as adornments and exchanged between Islander communities and across the western Strait. Specific types of bone (turtle, dugong and human), shell

(*Syrinx*, *Murex* and *Melo* spp., and a mangrove bivalve), and plants (a vine and a tree) were part of features that marked areas of "special" meaning. The construction of features with plants and animal remains in contexts that were related to hunting, birth and death, and ceremonial activities, suggests that these materials were also significant symbolically to the Islanders. A question of utmost relevance in the context of this thesis is what aspects of Islander subsistence, economic or ceremonial life might be detected archaeologically?

Two implications of this question must be addressed: a) what aspects of these behaviours might be preserved in an archaeological record?, and b) if preserved, to what extent would the remains be visible archaeologically? (see Tables 2 and 3). If animal, plant, or material remains were discarded within contexts that developed into stratified middens, the archaeologist might expect to find indications of past diet, such as turtle, fish, shellfish, dugong, or charred plant remains; or indications of animal procurement and processing technology, such as fragments of, or entire, bone points or barbs, turtle-shell fish hooks, stone flakes, charred stones (from cooking within an *ami*), *akul* (a mangrove bivalve used as a scooping and cutting implement), and *aloop*, or *alup* (the cooking shell, *Melo* sp.). Trade might be indicated if such items as pearlshell fragments (worn as pendants), *dibi-dibi* (ground-stone shell pendants), ground-stone club discs, or the remains of certain animals (*e.g.* cassowary or bird of paradise) were found. Locations that were associated with ceremonial activity (related to, for example, mortuary,

Table 2. The archaeological visibility of food procurement and preparation: Southwestern and Central Islanders (mid-nineteenth century).

FOOD PROCUREMENT	RAW MATERIALS	ARCHAEOLOGICAL VISIBILITY
spear & throwing stick	wood shafts, ground bone point, shell handle	bone point, shell handle
fishing spear	wood shaft, sometimes bone points	bone point
fish hook & line	turtle shell & plant fibres	turtle shell
harpoon	wood shaft, (to smooth: boar tusk, sting-ray skin, pummice) barbed-bone point	barbed-bone point boar tusk, pummice
gapu (sucker fish)	fish, plant-fibre rope	fish bones
canoe	wood	-------
cultivation	mound & ditch fields	mounds & ditches
digging stick	wood	-------
baskets	plant leaves	-------
look-out points	bamboo, shell, bone, stone	shell, bone, stone
trapping fish	mats & branches in the mouths of creeks	-------
FOOD PREPARATION		
ami (earth oven)	stones, wood, leaves meat & vegetables	charred stones, plant & animal remains
aloop/ bu (cookings "pots")	large Melo & Syrinx shells with stones as support over fire	shell, stones, charred?
akul spoon, "knife"	large mangrove bivalve Geloina coaxans	shell
drying racks	wood, branches	charred-plant remains
stones, grinding, pounding for dried turtle, plants	large flat stone, smaller pounders	stones with grinding striations or pounding marks

Table 3. The archaeological visibility of fighting and ceremonial activity: Southwestern and Central Islanders (mid-nineteenth century).

FIGHTING	RAW MATERIAL	ARCHAEOLOGICAL VISIBILITY
bow & arrow	bamboo, wood, bone point	bone point
spears	bone and sting-ray spine points	bone point, sting-ray spine
stone club (Papuan)	ground-stone disc, wood handle	ground-stone disc
upi (beheading knife)	bamboo	-------
ami (earth oven)	stones, wood, leaves, human heads	charred stones, plant remains
CEREMONIAL		
KWOD features: screens, cairns	bamboo, stone, dugong & turtle bone,Syrinx, Melo, Pinctada & Geloina molluscs	stone, dugong & turtle bone, various molluscan species
dibi-dibi (pendant)	ground apex of conus shell	ground conus shell
marrie (pendant)	Pinctada bivalve half ground edges, designs (shark-teeth awls)	ground or etched pearlshell shark teeth
scarification medicinal bleeding	flint "chips"	flint framents
pierced nose	bone point	bone point
ochre container	bivalve halves	ochre-stained ? shells

initiation, or hunting practices) and marked by the cairns of bone, shell, and stone, such as those described ethnographically, might be identified if these features were found.

Discussion in Chapter 2 of the previous archaeological work carried out in Western Torres Strait indicated that the limited surface survey, excavation, and analysis of archaeological remains predominately provided information about pre-European subsistence behaviour, together with some evidence of, if not settlement duration at least settlement location. The archaeological evidence suggests relatively recent occupation of the western islands with habitation sites, or camping areas, established on the beach front, and (animal) subsistence strategies that focused on the exploitation of the near-shore zones. With little evidence to suggest inter-island trade (other than a ground stone adze and disc fragment) or ceremonial life (except, perhaps rock art), there thus exists a considerable "gap" between a view of Islander life that might be inferred from the archaeological data discussed thus far from the western islands, and one based upon the available ethnographic information.

The Islanders of Mabuiag have in the previous pages figured minimally in attempts to reconstruct Western Islander life prior to European contact, based upon either archaeological or ethnographic data. The one previous archaeological survey of the island (Vanderwal 1973:178), led to a brief description of "two large rubbish mounds" at a location (unclear exactly where) on the southeastern coast, with many European goods on the surface, and a few interesting artefacts and stone flakes. One of two earliest impressions of the Mabuiag Islanders was recorded after only a few years of their contact with pearlshellers and missionaries by Captain Moresby in 1873 (Moresby 1876:131). At that time, according to Moresby (see Section 3.4), they were unclothed and uncivilised, and used dugong bones in curious ways within their landscape. They were to become, however, as a result of the Haddon Expedition, the Western Islanders for whom there exists the most extensive and detailed ethnographic information.

As previously explained, the Islanders of Mabuiag were not studied until the last two decades of the nineteenth century, and by then much had happened to change their traditional way of life on account of sustained European contact. However, there was still a small group of elderly Islanders in 1888, during Haddon's first visit, who had been young men and women on the island at the time of the British surveying expeditions which had on board Jukes, Sweatman, MacGillivray, and Brierly. Thus, the eldery Islanders were able to provide Haddon and his research team with information of traditional ways that are potentially comparable to that recorded in the mid-nineteenth century accounts.

Some detailed study of the ethnographic information obtained by Haddon and his colleagues in 1888 and 1898 on Mabuiag Island has been undertaken (see Nietschmann & Nietschmann 1977,1981, Nietschmann 1976, 1977a, 1977b, 1982, 1983, and Fitzpatrick (formerly Nietschmann) 1979,1980,1981, in press). However, little other ethnographic work has been done, and, until the present study, there had been no archaeological exploration of Mabuiag subsequent to Vanderwal's brief survey (1973).

Study of the Haddon Reports (1904-1935), by the author, indicated that if additional archaeological remains were discovered on Mabuiag there was a good chance of interpreting them in direct relation to aspects of past subsistence and settlement, and possibly also to other socio-economic as well as ceremonial activites documented in the ethnography. It was with these objectives in mind that a six-week programme of reconnaissance and survey on Mabuiag was initiated in 1984 and continued in 1985.

An introduction to the Haddon Reports and their use by the author is presented in Chapter 4, Section 4.1. Aspects of the Haddon ethnography, and of present-day Islander knowledge which are related, in particular, to former patterns of settlement on Mabuiag are discussed in Sections 4.2-4.4. The results of the reconnaissance and survey work carried out in 1984 and 1985, and discussion of the relationship of the archaeological finds to the ethnographic information, are presented in Sections 4.5-4.10.2. This is followed in Chapter 5 by presentation of the results of the archaeological excavations carried out in 1985, after which further discussion of information on traditional patterns of settlement and subsistence from the Haddon Reports and its significance to the interpretation of the archaeological remains discovered on Mabuiag is presented in Chapter 6.

Chapter 4 Ethnographic and archaeological classification and description of the archaeological sites of Mabuiag Island

4.1 The Haddon Reports

In any discussion of the material within the Haddon Reports, four issues must be borne in mind: 1) there exist very few accounts of, or references to, life on Mabuiag Island prior to Haddon's first visit in 1888; 2) by 1888 pearlshell stations had been established on Mabuiag for nearly twenty years, and the Islanders had, to some extent, been employed by them; 3) missionaries had been living there for almost as long; and 4) the Reports consist of ethnographic information obtained by men, based upon their observations and dialogue primarily with male informants.

Haddon's objectives were "to record the purely native conditions rather than to describe the present modified ones" (Haddon 1912:5). However, this objective was realised only after Haddon arrived in Torres Strait (as a marine zoologist) in 1888 and unexpectedly discovered that much of the traditional life of the Islanders of Mabuiag and Mer still remained. According to Haddon, the Europeans who were living or had lived in the islands since the British survey expeditions of the mid-nineteenth century appeared to know little about the traditional customs of the Islanders. He also discovered that there had been little further documentation of the Islanders since the publication of the accounts of Jukes (1846) and MacGillivray (1852) (he was unaware of Sweatman's journal or the Brierly manuscripts). He thus felt compelled to record any remaining traditional knowledge during his four-week stay on Mabuiag in October 1888. In the introduction to the Reports he describes his ethnographic work:

"I therefore considered it my duty to record as much as was possible in the circumstances, so I induced the old men to come in the evenings and talk about old times and tell me their folk-tales. In this way, without any previous experience or knowledge, I worked single-handed among the Western islanders and amassed a fair amount of information" (1935:xi).

His stay on Mabuiag was then followed by a five-month visit to the eastern island of Mer, where he continued to carry out both zoological and ethnographic work.

On Haddon's return to Ireland, inspired by his work among the Torres Strait Islanders, he turned his attention to the study of anthropology. In 1893 he resigned the Chair of Zoology at the Royal College of Science in Dublin, to move to Cambridge, England, in order to commit his time undividedly to anthropology. By 1898 he had organized a multi-disciplinary team to accompany him on a return visit to Torres Strait to collect more ethnographic information. In that year a further five weeks were spent on Mabuiag (September into October) with the research team, and another month by Haddon on Mer, while the others remained (on Mer) for an additional three months after Haddon's departure (Haddon 1935:xi-ii).

The Cambridge team consisted of six specialists in addition to Haddon, described as: a linguist, S.H. Ray; an archaeologist-anthropologist, A. Wilkin; a medical doctor, C.S. Seligmann; and three psychologists, Drs W.H.R. Rivers, C.S. Myers, and W. McDougall (Plate 4b). Of the six volumes eventually published as a result of the Cambridge expedition (Haddon 1901-1935), three are of primary importance here: Volume IV, Arts and Crafts (1912), Volume V, Sociology, Magic and Religion of the Western Islanders (1904), and Volume I, General Ethnography (1935). Volume IV documents the material culture of both the Western and Eastern Islanders, and was primarily written by Haddon, and Volume V, which is more anthropological, was partly written by Haddon, with contributions from Ray, Seligmann, and Wilkin. Volume I was the final volume of the Reports consisting primarily of summaries of the information provided in Volumes II-VI, with additional comments written entirely by Haddon. All the volumes present information under conventional categories such as "Houses", "Hunting and Fishing" and "Transport and Canoes" in Volume IV, and "Genealogy", "Kinship", and "Magic and Religion" in Volume V. The Reports are essentially comprehensive catalogues of detailed descriptive information whose organization does not reflect theoretical themes.

As explained earlier (Section 3.4), Haddon was well aware of the extent of change that had taken place in traditional Islander life on Mabuiag (and Mer), and he stated that since 1888 he had consistently tried to recover the past life of the Islanders "not merely in order to give a picture of their former conditions of existence and their social and religious activities, but also to serve as a basis for an appreciation of the changes that have since taken place" (1935:xiv).

Modification of the traditional lifestyle on both islands was very apparent, but there were elders in each community whose genealogical knowledge stretched back over five generations, to a time when the islands were virtually untouched by European influence (Haddon 1904:122). More importantly, because the most dramatic changes in Islander life had started to occur on Mabuaig only 15 to 20 years before Haddon's study, the senior informants were adolescents and young adults at the time of the first effective European contact. Thus, it is not surprising that certain Islanders retained much traditional knowledge.

The Reports indicate clearly that although by 1888 much of the traditional way of life had changed superficially, the Islanders of Mabuiag were still strongly influenced by pre-European patterns of social interaction (in relation to, for example, kinship ties, marriage negotiations, and funeral ceremonies) and they still engaged in traditional subsistence strategies (e.g. turtle and dugong hunting, fishing, and collecting shellfish, and some agriculture (Haddon 1908:xix).

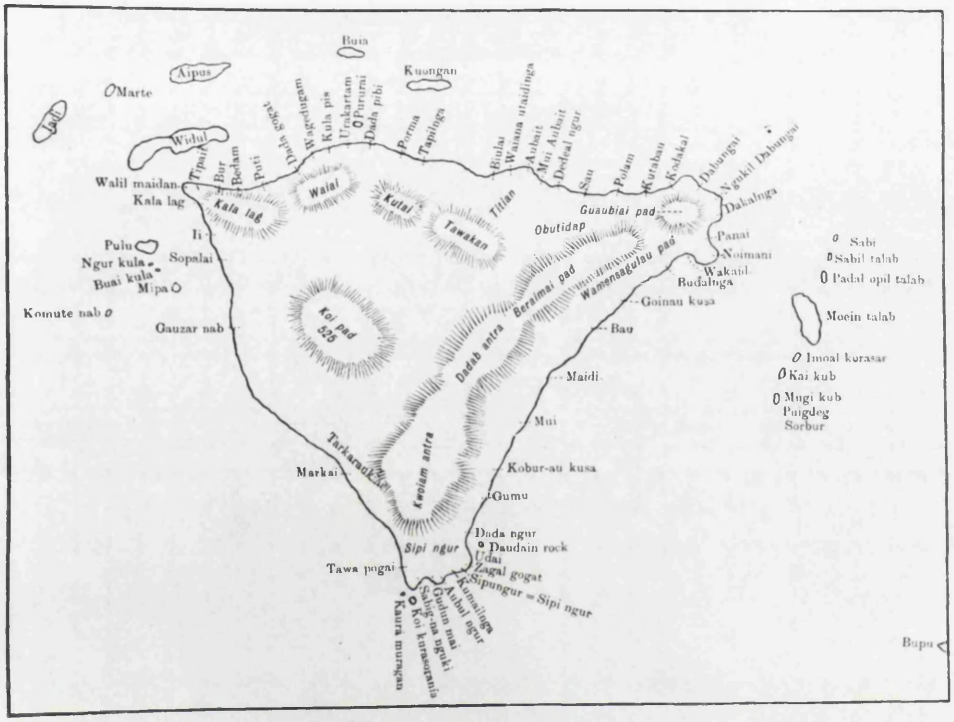
Ethnographic work carried out approximately 80 years later (during the 1970's) on Mabuiag Island, demonstrated a high degree of cultural continuity in Island practices associated in particular with death ceremonies (Fitzpatrick- Nietschmann 1977), and turtle and dugong hunting (Nietschmann 1977,1984). The Nietschmanns' research on Mabuiag led them to conclude that although much had changed during the eight decades since the Cambridge expedition, many old social and economic patterns remained. "For Islander society, and dugong and sea turtle populations, not only is the past not past, it's not dead"

(Nietschmann & Nietschmann 1977).

The remainder of this Chapter presents information from the Haddon Reports and present-day Islanders that is directly relevant to the archaeological reconnaissance and survey work carried out in 1984 and 1985 on Mabuiag Island by the author and other members of the Torres Strait Research Project. Past and present-day ethnographic information which relates primarily to former settlement on Mabuiag is discussed first (in Sections 4.2-4.4), followed by presentation and discussion of the results of the reconnaissance and survey work (in Sections 4.5-4.10.2).

4.2 The ethnography of settlement on Mabuiag Island

The archaeological reconnaissance of Mabuiag Island was, from its onset, influenced by ethnographic information in the Haddon Reports. Of particular significance was a sketch map of Mabuiag drawn by Haddon (1904:7), which identifies by their traditional names topographic features, past settlement sites (some of which are now referred to as "old villages"), garden sites, and areas where ceremonial activities took place (Fig.3). Many of the traditional locations and place names are known to the Mabuiag Islanders who now live on the northeastern coast in the village of Bau. Within the first few years of their arrival (the early 1870's) the missionaries induced the Islanders "who had formerly lived scattered over the island" to congregate in one village (Haddon 1904:172, Harris 1979:98). Bau was the second village site established by the missionaries, after their first



SKETCH MAP OF MABUIAG.

Figure 3. Sketch Map of Mabuiag Island by Haddon (1904:7) with traditional Islander placenames.

settlement at Dabungai was abandoned (Fig.4).

Haddon's sketch map of Mabuiag provides traditional names for 84 locations on Mabuiag and the surrounding islets. These place names have been relocated on an accurately drawn outline of Mabuiag Island (after Harris 1987, Fig.4). Forty-eight names refer to areas along Mabuiag's coast, 14 to inland locations, and 22 to offshore islets. Fifteen of the coastal names on Mabuiag refer to formerly cultivated garden areas, eight to locations of particular totemic clans, five of which were major "old village" sites, and five to areas with a ceremonial ground or kwod[1] (four of which were also old village sites), each having belonged to a particular clan or clans (Haddon 1904:3). One place name refers to the presently inhabited village of Bau. The topographic names refer to streams (five along the coast), and to areas on the coast (29), or just inland of the coast (four), to inland hills or hilly areas (nine, one of which was also a garden site and a location associated with the western island cult-hero Kwoiam, referred to as Kwoiam antra). No specific information was found for 29 of the coastal names in the Reports. Although 22 offshore islets were named, only three were referred to by Haddon, Pulu, Widul, and Kwoikusigai (Redfruit). All three were described as having had a ceremonial ground (kwod), and one as also having had a garden (Widul). The kwod at Pulu, an islet off the southwest coast of Mabuiag (and today connected to it at low tide), was described by Haddon as the meeting ground

[1] Kwods were used as the meeting place of men, tabooed to women and to the uninitiated. They corresponded to the club-houses of Melanesia,and were the socio-political and religious centres of men (Haddon 1904:3).

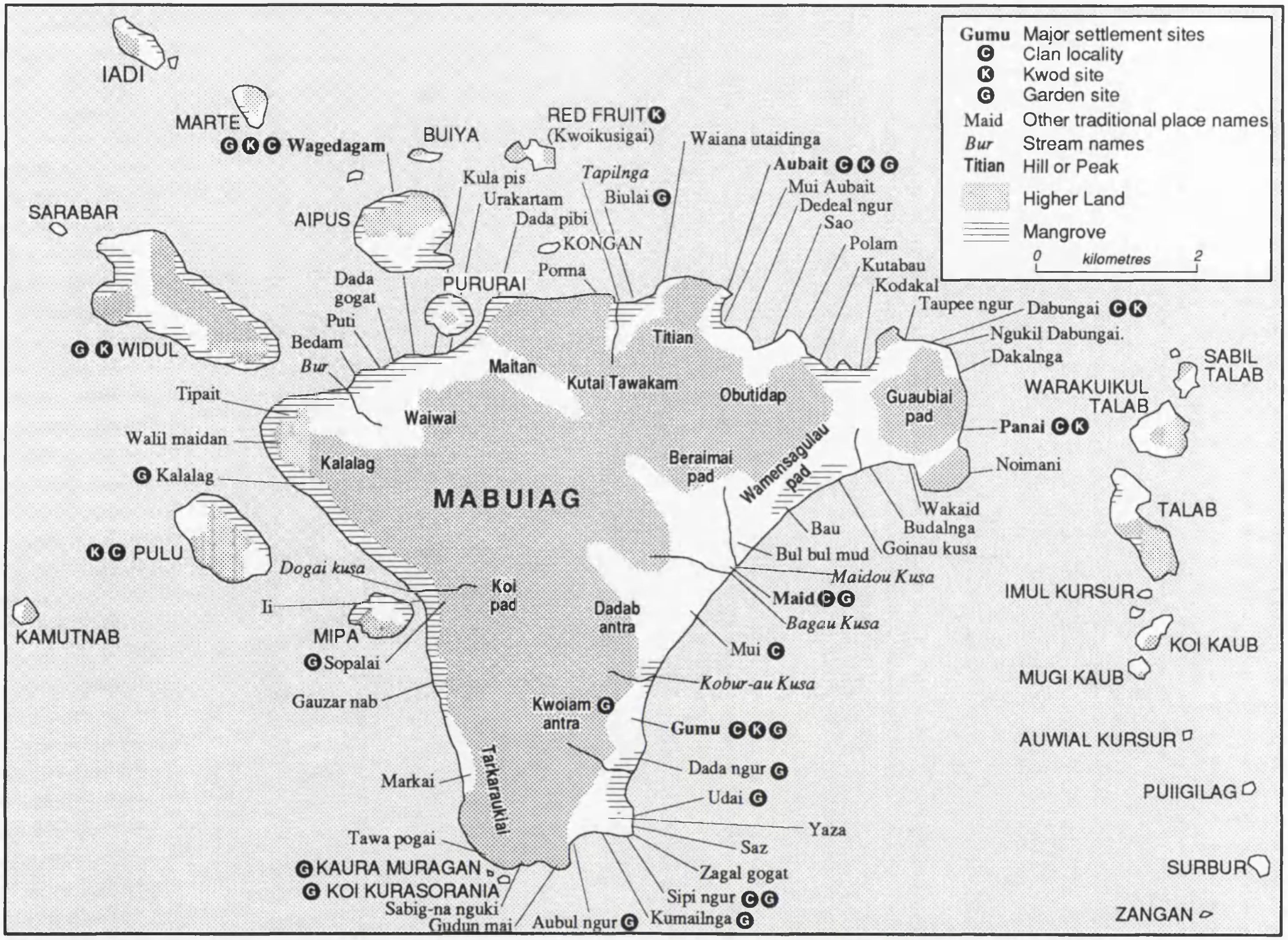


Figure 4. Mabuiag Island: traditional Islander place names (Haddon 1904:7) and present-day additions.

for the head men of the five chief clans, or the "national kwod of the Gumulgal" (which included the clans of Badu) (Haddon 1904:3), where turtle and dugong increase ceremonies, initiation and victorious warfare ceremonies, in particular, were held (Haddon 1904:3-4).

Before discussing in greater detail aspects of the nineteenth-century ethnography of settlement on Mabuiag, information obtained from present-day Mabuiag Islanders on the traditional place names collected by Haddon is presented.

Discussions were held with six Mabuiag Islanders in 1985 about the sketch map of Mabuiag drawn by Haddon. When shown a copy of the map, Michael Hankin, the first informant, stated, "right map, nothing wrong here". One other man, Kame Pai Pai, and four women, Raba Yellub and her mother Mrs Yellub, Mrs Ware, and Mrs Hankin (Michael's mother) also provided information about the map. Kame Pai Pai, Mrs Yellub, and Mrs Hankin were among the oldest members of the Mabuiag community (aged between 65 and 75), and had spent most of their lives there. They were familiar with the locations, and many of the place names, recorded by Haddon, but they identified an additional six locations: Saz and Bulbul mud on the east coast, Taupee ngur and Maitan on the north coast, and Dadakul and Yaza, inland locations in the north and southeast respectively (Fig.4). Their descriptions of the various place names can be divided into information on: 1) topographic features such as hills, creeks or streams, water holes, mangroves, coastal rocky areas and points, beaches and bays (of which some of the latter three were considered as choice fishing spots); and 2) former locations of settlement (or old-village sites), garden sites, ceremonial grounds, and fishtraps, as well as an old cemetery and a well.

The areas of settlement referred to by the present-day Islanders were described as inhabited during one or more of four divisions of time: the past, during missionary establishment, during the First and Second World Wars, and today. Many of the sites described as areas lived in prior to the arrival of the first missionaries, in 1871, were re-inhabited during the World Wars as a precaution against bombing attacks (Wagedagam during World War I, and Sao, Gumu, Udai, Saz, Maidi, and Mui during World War II). Of the 15 settlement sites mentioned (11 on Mabuiag, four on offshore islets) two are lived at today, Bau and Panai. Bau, Panai and Dabungai are close to one another on Mabuiag's northeastern tip, and were the sites chosen for settlement by the pearlshellers (Panai on account of its deep bay) and the missionaries (Dabungai and later Bau where the first brick church was built). The island of Widul and the islet of Pulu were described by some of the Islanders as having been inhabited, as well as Redfruit and Aipus islets, which were said to have only been occupied on a permanent basis during the 1870's, by Islanders who did not want to live with or near the missionaries. Of the remaining eight settlement sites defined on Mabuiag, three were those described by Haddon as major settlement sites, Maid and Gumu on the east coast, and Wagedagam on the north coast (the Islanders specified that the Wagedagam settlement area extended from Kula pis to Bur). The other five were described as smaller areas of former settlement: Saz, Udai, and Mui on the east coast, Sau, or Sao, on the north coast, Kalalag, Dadakul/Maitan and Ii/Sopolai on the west coast. Some of these smaller settlement areas were described by Haddon as either clan territories, (Sipi ngur, next to Saz and Udai, and Mui), or garden sites (Udai, Kalalag, and Sopolai). The Islanders described three areas as having had a kwod: Gumu, Dabungai, and the islet of Pulu.

Although the past and present-day ethnographic descriptions of the former locations of settlement, garden and ceremonial activity differ to some extent, the Islanders appear to have used the island extensively prior to European contact, and still maintain detailed knowledge of it. The present-day Islanders' definitions of place names, in general, reflect activities (especially living, gardening, and fishing) of their recent past and present-day life on Mabuiag which were or are specific to the locations. Many of the Islanders living at Bau today, as mentioned above, lived at different village sites during the First and Second World Wars and still frequent areas of the coast or offshore islets and reefs to fish, hunt turtle and dugong, collect shellfish, yams, or turtle eggs, or to obtain bamboo and coconuts; and their descriptions of the place names reflect some of these activities.

Since the arrival of the missionaries, the Islanders have been taught that Island life prior to 1871 was a period of "darkness", in contrast to the present (or post-1871) period of "light" that dates from their acceptance of Christianity. Thus, for over a century, it has not been "acceptable" to openly discuss many aspects of traditional knowledge or ceremonial behaviour. It is therefore not surprising that the Islander informants in 1985 identified few sites as kwod areas, in contrast to the larger number (eight) described by Haddon, and the extensive information on ceremonial practices recorded in the Reports which was collected after only 15 years of effective missionary influence. Also, the number of "ceremonial grounds" identified by the Islanders today may reflect an unwillingness to discuss all they know. However, of the three locations that are described by Haddon as having been major settlement sites with gardens and as areas of past ceremonial significance, there is only one that is still so described by present-day Islanders. This is the site of Gumu.

Descriptions in the Reports of the place names shown on Haddon's map refer primarily to past locations of settlements, gardens, kwods, and clan territories. The most detailed descriptions of activities that took place at former clan localities and areas of settlement concerns the ceremonies carried out in or near the kwods. Agricultural practices are described in some detail and the type of traditional houses built are discussed and drawn, but there are no references to precisely where kwods, gardens or houses were located within clan localities, to the size of the settlements, or to the density of the pre-European population on Mabuiag. However, each settlement is described as having been inhabited by a particular clan or clans. Clans were defined by their totemic affiliations, and a clan's totem, or totems, in turn dictated adherence to certain ceremonial observances which were carried out at specific areas within clan settlement or territorial sites.

A summary of the information in the Reports relevant to past settlement on Mabuaig, which includes discussion of aspects of past totemic affiliations and ceremonial activities, is provided in Section 4.3, together with a hypothetical estimate of the population size of the pre-European clans (after Harris 1979). This is followed, in Section 4.4, by a brief discussion of the archaeological significance of the ethnographic information, prior to presentation of the results of the 1984 and 1985 archaeological reconnaissance and survey work on Mabuiag Island in Sections 4.5-4.10.2. The reconnaissance of Mabuiag Island (Sections 4.5-4.9), which led to the decision to focus archaeological survey and excavation on the old village site of Gumu, was carried out by the author and D.R. Harris, who were subsequently assisted in the Gumu survey and excavation by two other archaeologists. The results of the survey are discussed in Section 4.10 and those of the excavation in Chapter 5.

4.3 Totemism, settlement, and aspects of ceremonial life on Mabuiag Island

According to Haddon (1890:301, 1904:1-2), the Islanders of Mabuiag and Badu were referred to as the Gumulgal, because "Gumu was the place of Kwoiam", and were considered as one of four allied communities in the western Strait (Haddon 1904:2). The Mabuiag Islanders on their own were referred to as the Gumulaig, after the site of Gumu on the island (both the "home" of Kwoiam and his family and his "burial" place), and the people of Badu as the Badulgal or Badulega. However, the Reports contain little information on the Badulega or on the precise nature of their interaction with the Gumulaig, so it is difficult to ascertain how this "allied" relationship may have affected patterns of settlement and subsistence on Mabuiag.

As discussed in Chapter 2, the Western and Central Islanders were totemic societies. Haddon defines a totem (augud) as "a class of objects that is reverenced by a body of men and women who acknowledge a definite relationship to that class of objects. The group of men and women united by common totem is known as a clan or kin, and there are social obligations that are binding on the fellow clansmen" (1904:153). All the 14 totems of the Islanders of Mabuiag were animal with the exception of two: the two "magical crescents" of turtle-shell, the sacred emblems of Kwoiam. Of particular relevance here is Haddon's discussion of the Mabuiag Islanders' totemic affiliations in relation to their former patterns of settlement, and to certain of their ceremonial activites which were associated with subsistence practices.

The five major settlement sites on Mabuiag (from west to east: Wagedagam, Aubait, Panai, Maidi, Gumu) were described as formerly inhabited by particular clans. In addition to the settlement sites, clans were associated with four other localities (three on Mabuiag, and one on Pulu) (Fig.5). The clans of Mabuiag were grouped into one of two divisions; those of the land-animal moiety and those

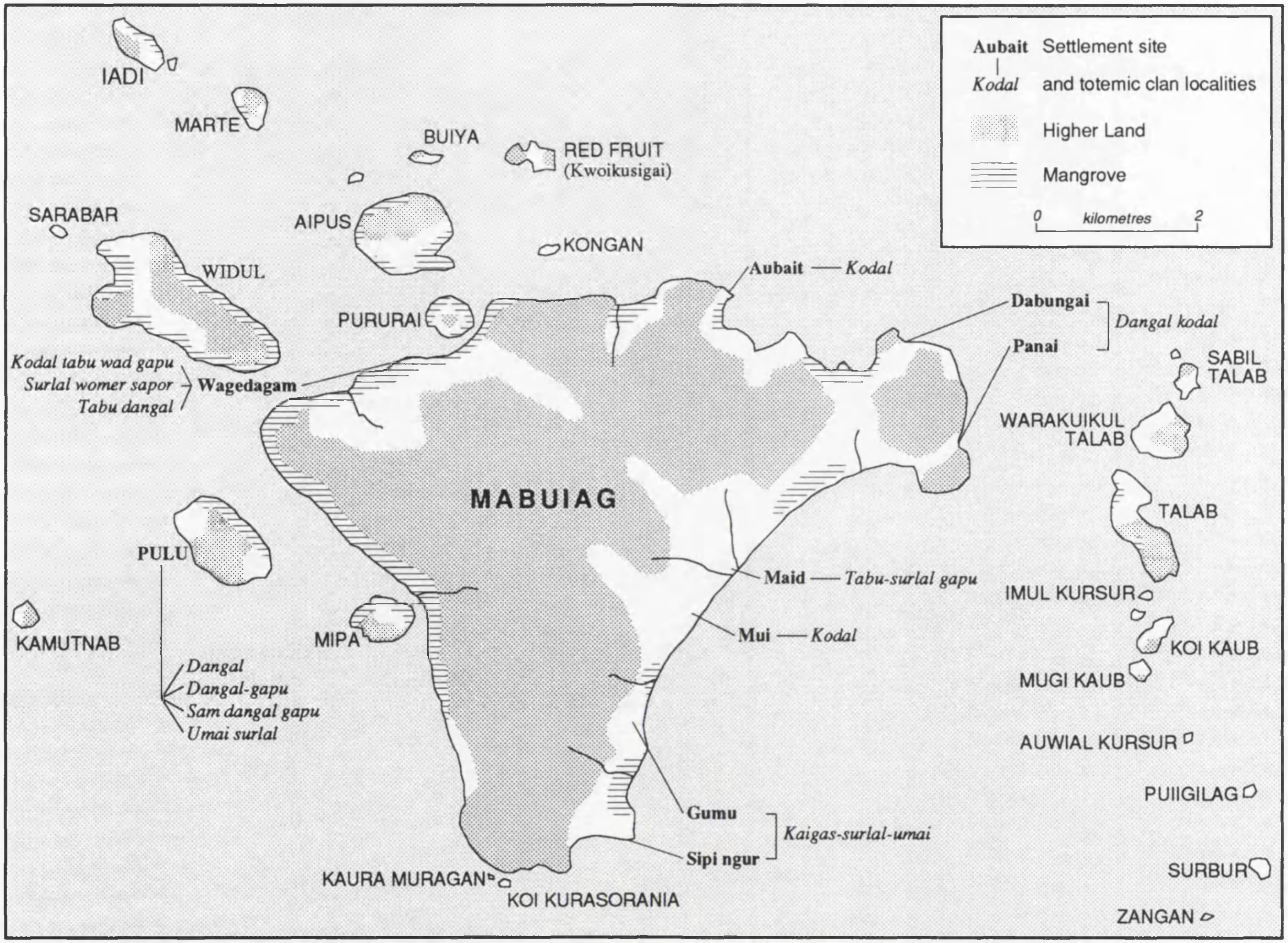


Figure 5. Mabuiag Island: major settlement sites and clan localities indicating totemic affiliation.

of the marine-animal moiety, and all but one clan was associated with subsidiary totems that cut across the dual-clan classification (Haddon 1904:172). The two clan divisions were known as 1) Kai augudan kazi, the children, or people, of the Great Totem who were associated with three principal totems: Kodal (crocodile), Sam (cassowary), and Tabu (snake) with its subsidiary totem Umai (dog); and 2) Mugi augudau kazi, the children, or people, of the Little Totem who were associated with four principal totems: Dangal (dugong), Kaigas (shovel-nosed skate) with its subsidiary totem Baidam (shark), Tapimul (various kinds of rays), and Surlal (green or edible turtle). In addition to the principal totems associated with the two moieties, each had a "collective" totem, i.e. one of Kwoiam's turtle-shell crescents referred to as kutibu and giribu. The "people of the Great Totem" were named after their association with the kutibu emblem, and those of the "Little Totem" were named after the giribu emblem.

Six of the seven principal totems, with their various subsidiary totems, comprised 11 different clans (some of which were believed to have split and moved to different locations, e.g. Kodal) and were associated with the five major settlement areas (from east to west along the coast: Gumu, Kaigas-Surlal-Umai clan; Maid, Tabu-Surlal-Gapu clan; Panai, Dangal-Kodal clan; Aubait, Kodal clan; and Wagedagam, Kodal-Tabu-Wad-Gapu clan, Surlal-Womer-Sapor clan, and the Tabu-Dangal clan); and four other localities (Sipi ngur, Kaigas-Surlal-Umai clan; Mui, Kodal clan; Dabungai, Dangal-Kodal clan; and Pulu islet, Dangal clan, Dangal-Gapu clan, Sam-Dangal-Tabu clan, and the Umai-Surlal clan) (Haddon 1904:7,163-4,172) (Fig.5).

The 14 animal totems recognised by the Mabuiag Islanders consisted of three mammals, three reptiles, two birds and six fish (other Western Islanders had plant, star, and stone totems as well as animal ones) (Haddon 1904:154). In addition to the totems associated with the clans mentioned above, there was _sapor_ (flying-fox, _Pteropus_ sp.), _womer_ (frigate-bird, _Fregata_ sp.), _gapu_ (sucker-fish _Echeneis_ sp.), _wad_ (a fish with blue spots, probably a blenny), and _kursi_ (the hammer-headed shark, _Sphyrna_ sp.), some of which were subsidiary clan totems.

The clans of Mabuiag lived within one of four districts, with the eastern-coast districts dominated by the clans of the marine-animal moiety, and those of the western coast dominated by the clans of the land-animal moiety (Haddon 1935:57). Haddon believed that formerly the two clan groups, or phratries, may have been completely separated geographically, and that the dual-clan division regulated marriage (_i.e._ by means of exogamy) (1904:172,177).

Each moiety was described by Haddon as having had a main function or functions, and as having been associated with one or more particular mythological cult-heroes. The function of the Great Totem, or land-animal moiety, was warfare, and it was associated with the cult-heroes Waiat and Kwoiam as "the cult of Kwoiam was essentially a cult of war" (Haddon 1935:58). The main functions of the Little Totem, or marine-animal moiety, were said to have been "to secure success in catching dugong and turtle", and it was associated with the mythological Sesere, the great fisherman and dugong hunter (Haddon 1935:58). Ceremonies related to each of the moieties' "main functions" were carried out at specific clan settlement sites or localities. For example, the offshore islet Widul was considered as the home of Waiat and the settlement site Gumu as the home of Kwoiam (see Section 6.5).

Haddon concludes that the evidence he collected on clan localities was not wholly satisfactory, because the subject did not seem very clear in the minds of the Islanders, although they were very certain of many of the locations where ceremonies were held. He attributed this to the changes in settlement that had taken place since the arrival of the missionaries (1904:173). However he also mentioned, based upon what he considered incomplete information, that there may have been an additional nine clans on Mabuiag at some time in the past, although not necessarily overlapping in time or space with the eleven clans described in 1888.

Haddon offers no estimate of the pre-European size of the Islander clans, or of the population density of Mabuiag as a whole. The earliest estimate of the population comes from the missionary A.W. Murray on his second voyage in the Strait in 1872 (Harris 1979:88), one year after Moresby had described the Gumulaig as unclothed and uncivilised (see Section 3.3). Murray stated that the population of Mabuiag was "300 or more" (LMS I: 2/8-11, in Harris 1979:88). This was, however, after four years of contact with the pearshellers, when the population had probably already been reduced by disease and recruitment. Harris (1979:91), basing his conclusion upon the few additional mid- to late-nineteenth century population estimates available for other western islands, suggests that the population on Mabuiag by this time may have already been halved. Thus, he postulates a possible pre-European population size of 600 people for Mabuiag. However, if one calculates the density of people on Mabuiag, based upon the minimal estimate of 300 Islanders, the pre-European population density per square kilometre of coast on Mabuiag (36) is second only (among the western islands) to that calculated for Nagir (Harris 1979:90-1, Table I, first mentioned in Chapter 2). If we divide the population estimates for Mabuaig of 300 and 600 by the number of clans recorded there by Haddon (eight), we get 38 or 75 people per clan respectively (the median being 56 per clan with a total population of 450). Regardless of the actual pre-European clan size, the earliest mid-nineteenth century comment on the size of the population of Mabuiag indicates that it was very dense in comparison with the estimated populations of other western islands (Harris 1979:90, Table 1).

In addition to a paucity of information on clan size, there is little specific information about the seasonal movements of Mabuiag Islanders, or about the appearance of their former settlement sites. Haddon considered the Mabuiag Islanders to have always been "essentially a settled people", in contrast to the more mobile central and southwestern island groups (1912:1-3), which, perhaps, suggests that the Gumulaig villages were occupied continuously throughout the year. Haddon also referred to them as "agricultural fisher-folk" who once "lived in hamlets scattered over the island" (1935:82). There are descriptions and drawings of the traditional house types observed across the Strait in the Reports, and Haddon states that the houses on Mabuiag were very similar to those described by MacGillivray for Nagir and the central islands; i.e. built on the ground (rather than on stilts), generally not higher than 1.8 metres and varying in length. The frame was made from thick branches and the roof and walls constructed with tea-tree bark and grass, with a fire placed in front of each entrance, some houses having as many as ten entrances (Haddon 1912:95-98, see Plate 2a).

As already noted, the most site-specific information in the Reports relates to rituals which were associated with marine hunting and warfare and held at settlements or other areas associated with particular clans. Descriptions of the turtle- and dugong-hunting ceremonies, in particular, illustrate how patterns of settlement, subsistence, and ceremonial life on Mabuiag Island were all intimately connected, and exemplify the difficulty of studying them as independent categories of human activity.

For example, totem taboos existed which restricted the consumption of the totem animals. A clan member was not allowed to kill or eat the totem of his or her clan. There were, however, two exceptions to this rule: Dangal and Surlal, because of the importance of their meat as food. "In all the islands flesh-meat, excluding fish, is very scarce, and it would be too much to expect the members of these clans to abstain entirely from eating their respective totems" (Haddon 1904:186).

Although the Islanders whose principal or subsidiary totem was Dangal or Surlal could eat dugong and turtle because they were regarded as "exceptions" to the totem taboo, men of each clan had to first carry out specific ceremonies every year before the animals could be eaten. These ceremonies were performed with the first turtle and dugong caught at the beginning of the hunting season[1] (mid- October) at the kwods of the Surlal (Gumu and possibly Wagedagam) and Dangal (Dabungai) clans, and required the use of "medicine" in the form of special plants (Haddon 1904:182). Only these two clans had medicine, and in adherence with the totem taboo, after the ceremonies were performed, the first turtle caught was given to the Dangal clan to be eaten, and the first dugong caught to the Surlal clan. These ceremonies were also to ensure success on subsequent hunts together with other "increase" and "display" rituals that were carried out at the kwods of Dabungai, Gumu, and the islet of Pulu.

4.4 Discussion

Totemism was clearly a belief system that pervaded Mabuiag Islander life (for further discussion of totemism and its influence on social interaction see Haddon 1904:162-70, 179,184). The totem-taboo rituals and other turtle and dugong increase and display ceremonies may be of significance archaeologically because they were site-specific. Haddon also adds that it was "evident that

[1] There was a definite turtle season, Surlal, but it was not clear to Haddon if the same was true for dugong, although the "taboo" ceremonies both took place during the "season" Aibaud (1904:186, & Table 14).

there were several ceremonies connected with turtle and dugong-hunting, as well as ordinary fishing" (1904:341-2), which he was unable to record, and that it was "most probable" that the ceremonies would have occurred "only in definite places" (1904:342). (Haddon was, in fact, present at a fish-increase ceremony called the saw-fish dance, on Waibene (Thursday) Island in 1888, and describes it as having taken place in front of a screen or waus similar to the one seen on Nagir Island by MacGillivray (1852) and Brierly (Moore 1979, and Section 3.8). Haddon also describes a number of western island ceremonies related to ensuring good crops of wild fruit or cultivated plants (see Section 6.6).

Because the ceremonies were described as having taken place reccurrently at specific times of year and at specific locations, one would expect to find, at the settlement sites at least, animal and possibly charred-plant remains from past meals, as well as clues to former patterns of settlement, e.g. post-holes or hearths. Haddon does, in fact, comment on the archaeological potential of Mabuaig by stating that: "Kitchen middens are not formed now [in 1888], nor did I come across traces of ancient refuse-heaps (1890:311), and "I consider it improbable that much will ever be found to illustrate the former condition of the people" (1890:303). With these late-nineteenth century predictions in mind, it seems highly appropriate to present next the results of the archaeological reconnaissance and survey carried out on Mabuiag Island in the late-twentieth century.

4.5 Archaeological reconnaissance and survey of Mabuiag Island: 1984 and 1985

Archaeological investigations on Mabuiag were begun in 1984 when one week of the Torres Strait Research Project's field season was devoted to a reconnaissance of the island. During this initial survey a wide variety of sites was found including midden deposits, fish traps, relict-field systems, stone-edged trackways and circles, shell arrangements, and pictographs (Harris, Barham & Ghaleb 1984:44-50). Due to the diversity and abundance of archaeological sites observed on Mabuiag, and also on a few of the offshore islands visited (Redfruit, Widul and Pulu), in combination with the directly relevant and detailed ethnographic record of the Mabuiag Islanders (Haddon 1904-1935), a further three weeks were spent on reconnaissance of the island in 1985, together with two weeks of detailed survey of one area, before any archaeological excavation was begun.

The results of the two field seasons of reconnaissance confirmed the past and present-day ethnographic accounts which refer to the existence of main villages and smaller settlements, primarily along the northern (northwestern) and eastern coasts, in pre-missionary times. The five main villages described in the Haddon Reports were visited: three on the north coast, known as Panai (and its associated ceremonial site Dabungai), Aubait, and Wagedagam, and two on the east coast, known as Maid and Gumu, and also the smaller settlements described by Haddon and the present-day Islanders, known as: Mui and Udai on the east coast, Sao on the north coast, Ii/Sopolai on the west coast, and Dadakul/Maitan on the northwestern coast and interior (Fig.4). Brief descriptions and a discussion of these sites are presented in Sections 4.6-4.9. One site was chosen for detailed surface survey and archaeological excavation, and the results and discussion of the survey are presented in Sections 4.10.-4.10.2. The significance of the archaeological reconnaissance and survey work in relation to the ethnography is also addressed in these Sections.

The archaeological sites observed were grouped into seven categories which are described briefly below:

1) midden deposits, primarily of two types: discontinuous surface scatters of bone, shell, and stone, and discrete circular or ovoid mounds averaging 1.0-1.5 m in diameter and sometimes bordered by large stones;

2) fish traps consisting of semi-circular or rectangular alignments of large rocks in shallow water immediately offshore;

3) stone-edged trackways, rectangles and circles associated with areas that the present-day Islanders recognise as former settlements ("old villages");

4) stone arrangements, linear and circular, sometimes with associated shell, and animal effigies;

5) ditches separating rectangular areas that were formerly cultivated, i.e. relict fields;

6) surface arrangements of large shells.

7) rock-art designs painted on large granitic boulders and consisting of human, animal, and abstract motifs.

4.6 Archaeological reconnaissance of offshore islands

Redfruit Island (Kwoikusigai)[1]

This small island is located c. 1.5 km off the north coast of Mabuiag. A linear midden deposit was found that had accumulated between rock outcrops in the centre of the island, and a circular dugong-bone mound 1m in diameter which was surrounded by stones and situated at the eastern end of the linear midden. This island was described by Haddon as one of the locations with a ceremonial ground or kwod.

Widul Island

This island is located c. 0.5 km off the northwest coast of Mabuiag. A large oval dugong-bone mound measuring 11 x 7m was found 50 m inland of the back of the present beach at the northern end of the island. Widul was also reported by Haddon as having had a kwod, and a garden.

Pulu Islet

Pulu is located c. 0.75 km off the west coast of Mabuiag. On the surfaces of some of the huge granitic boulders which surround a grass-covered sand flat, just inland of the beach on the west side of Pulu, are painted designs of animals, humans and abstract patterns now partially obscured by mineral and organic staining. This area is described in detail by Haddon (1904:3-5; Plates I,II) and was said to have been the "national" ceremonial ground or kwod for the clans of Mabuiag and Badu. The

[1] Although Kwoikusigai is the traditional name for this island, it is today only referred to as Redfruit Island.

arrangements of large _bu_ shells (_Syrinx_ sp.) described by Haddon are still _in situ_, and a "dugong mound" still partly surrounded by upright stones as shown in his photograph (1904; Plate I, Fig.1, see Plate 5a) was also located in 1985 (Plate 5b). The _kwod_ at Pulu was the only location visited that had deliberate arrangements of large shells (_Syrinx_ sp.) and a midden mound (covered with dugong bones and fragments of shell and stone) in association with rock art (Plates 6a and 6b although see the later description of Gumu). This was also the one area in the western islands where a test pit was excavated by Vanderwal (1973) (Section 2.4).

4.7 Archaeological reconnaissance of Mabuiag Island: areas of former settlement[1]

Dabungai

This area forms the northeast headland of Mabuiag and consists of a high rocky promontory on the western side of the headland and a lower hilly area to the east, separated from each other by a broad valley which ends in a gently shelving beach. The archaeological features found at Dabungai consist of stone-edged trackways; rectangular stone alignments which may represent either old settlement areas or former fields; discrete round and ovoid mounds of stone, bone and shell; relict mound-and-ditch fields; a double fish trap; and a stone arrangement in the form of a

[1]The site descriptions in this section partly reproduce, but also expand, the brief descriptions previously given in Harris and Ghaleb (1987:27-30).

Plate 5a. Kwod on Pulu Island, Mabuiag, with members of the Cambridge Anthropological Expedition standing at the locations of the Gumulaig clan fireplaces (Haddon 1904:Plate I, Fig.1).

Plate 5b. Present-day view of Pulu kwod with author standing by "dugong mound" (1984).

Plate 6a. "The stone that fell" mythologically significant rock at western edge of Pulu kwod with pictographs (Haddon 1904:4,22, Plate II Fig.1).

Plate 6b. Arrangement of Syrinx shells (bu) at Pulu kwod (1984).

crocodile. The latter was made very recently on the initiative of the village school and is mentioned here because it reproduces, on a large scale in an accessible location, a crocodile stone arrangement of unknown age which was found on a low ridge west of Dabungai between Kodakal and Sao (Fig.6). Kodakal is referred to by present-day Islanders as a former settlement area on the bay west of the Dabungai headland, but this area was levelled during construction of the Mabuiag airstrip and no surface signs of former occupation are apparent. However, there is a double fish trap at Kodakal immediately northwest of the Dabungai headland. Two stone-edged trackways, each 1 m in width, are visible on the grass-covered slopes below the summit area of the headland, from which they descend for distances of _c_. 100-125 m to the inland base of the hill where they join another track that is partly traceable, and may have connected the Kodakal fish-trap area to the Dabungai beach where a large midden mound was found. This large oval-shaped mound, measuring 12 x 9 m and 31 m in circumference, was littered primarily with fragments of dugong bone and various types of shellfish (_i.e._ _Geloina_, _Nerita_, _Hippopus_, _Syrinx_ spp.), and a range of modern materials (_e.g._ iron, plastic bottles, food tins, glass, teabags). At its southeastern end was a large stone, shaped (naturally) like a dugong and measuring 2.25 x 1 m. This area and the nearby smaller mounds (described below) were referred to by our Islander informant as past ritual or sacred grounds. At the base of the hill just inland of the beach the track passes an area divided by lines of stones into several (?4) rectangular

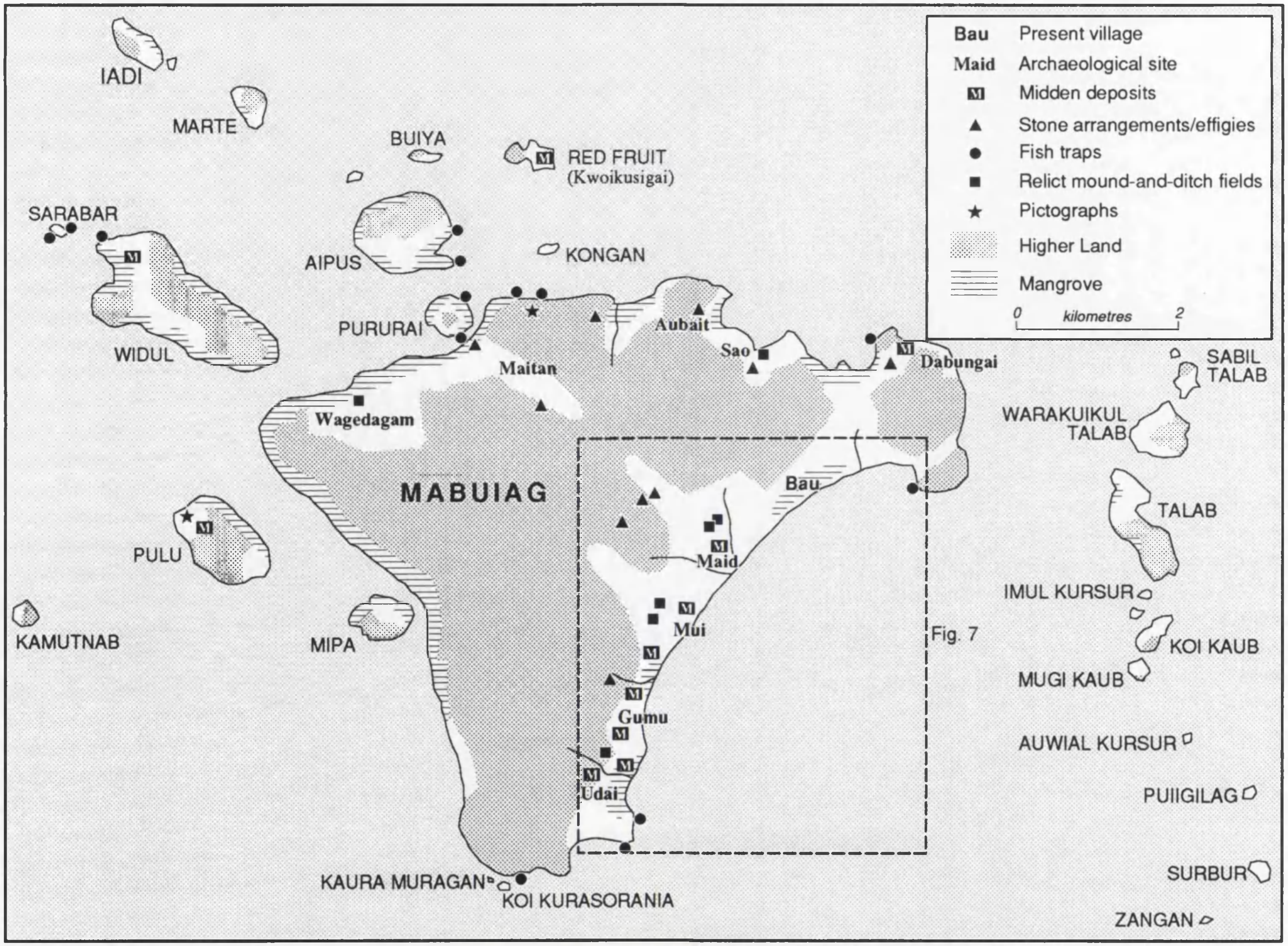


Figure 6. Mabuiag Island: archaeological sites and types of surface archaeological features.

units which may represent old occupation areas or, possibly, former fields.

Closer scrutiny of an area on the eastern side of the central valley, where the grass cover had recently been burned, revealed a cluster of stone-bone-shell mounds closely associated with a complex of relict agricultural mound-and-ditch fields. Some 30 discrete mounds were also found, five of which are in the form of cylindrical, turret-like stone "cairns" without surface bone and shell, while the remainder closely resemble, in form and surface materials, mounds found at the site of Gumu. The relict fields vary in size and shape and form an integrated system, with transverse and longitudinal ditches orthogonal and parallel to the slope of the valley, which ends downslope at the top of the beach. It is of particular interest that parts of some of the field mounds and ditches appear to underlie the edges of some of the stone-bone-shell mounds, suggesting that they pre-date the latter. A small-scale test pit dug at one of these locations did not produce any datable material, but it is clear that the apparent superimposition of the one type of mound on the other deserves more thorough investigation.

Aubait/Sao

On the north coast of Mabuiag a low ridge separates two small bays from which valleys extend inland. The eastern inlet and valley is known as Sao, and the broader western bay and valley as Aubait (Fig.6). Both areas are said by the Islanders to have been settled in the past, Aubait being regarded as one of the five "old villages" of

Mabuaig in the Haddon Reports. At the northwestern end of Aubait bay there is a small sandy beach - the only one on the north coast west of Dabungai - which is a favoured fishing location. The reconnaissance of the Aubait/Sao area revealed relatively few archaeological features. At Sao a small patch of ditch-and-mound relict fields in the northeastern corner of the valley just inland of the coastal mangroves was found. A few fragments of quartz were also found at the same location. In the Aubait valley the only archaeological features discovered were two stone circles: a complete one 1m in diameter next to a three-quarters complete one, 1.5 m in diameter, with two stones placed at its centre. On top of the high ridge which forms the western boundary of the Aubait valley there are some other, lichen-encrusted stone arrangements: a circular one about 25 cm high, and two others which may be animal effigies but which are not clearly identifiable as such (Fig.6).

Dadakul/Maitan

The hills that form the interior of Mabuiag narrow in the northern half of the island where a low col gives access from the east-coast lowland inland of Bau and Maid to the west coast between Aubait and Pururai Island. A path connecting the east and west coasts passes over the col and descends the west-facing slope, first through a dense grove of trees known as Dadakul and then along a gently sloping valley known as Maitan (Fig. 6). The grove is distinctive because it includes a cluster of a large mango trees, beside the rocky stream bed in the valley floor. Beneath the tree canopy there are rectangular stone alignments, linear stone piles up to 8 m long and 2 m wide, and a buttress-like stone wall along part of the stream bank. Present-day Islanders said that people used to live in the Dadakul/Maitan area and that crops were formerly cultivated there. The Maitan valley extends from the downslope edge of the "mango grove" at Dadakul to the back of the shore mangrove opposite Pururai Island. It is grass-covered, with Pandanus trees established along the stream channel, but despite considerable search no traces of former field systems were found on the valley floor. Extensive stone alignments, which may represent old field boundaries, were found on the rocky slopes of a side valley which enters the upper Maitan valley from the south.

Wagedagam

Along the northwest coast of Mabuiag a broad, gently sloping valley descends to the shoreline facing the shallow bay between Pururai and Widul Islands (Fig.6). This is the Wagedagam valley, reputed by the Islanders to have been one of the most important of the "old villages". It was almost certainly the main settlement area on the northwest coast, but the reconnaissance survey of Wagedagam yielded little positive archaeological evidence of former occupation, despite the fact the most of it is grassy "parkland" with scattered trees rather than woodland. The only conclusive evidence of former occupation is the existence of several relict mound-and-ditch fields in the northeastern quarter of the valley, downslope from the woodland edge where trees give way to grassland. In this same location, upslope of the relict fields at the edge of the woodland, is a large grove of tall bamboo growing around a water hole. Two of the oldest women in the village said that the bamboo at Wagedagam was the thickest and straightest on Mabuiag and was known as merap, as opposed to the more slender bamboo known as upiyus which grows at Udai south of Gumu. The botanical identity of both these types of bamboo has not yet been established, but the grove at Wagedagam has proved to consist of the introduced "giant" Southeast Asian bamboo *Bambusa arundinacea*, which has been shown to be a marker of former areas of cultivation elsewhere in the western islands, *e.g.* on Nagir. Nothing definite is known about the time or means of introduction of *B. arundinacea* to Torres Strait, but it is likely to pre-date at least the mid-nineteenth century.

Ii/Sopolai

This area lies just inland of the strip of dense mangrove vegetation which fringes the southwest coast of Mabuiag about 1 km east of the small offshore island of Mipa at the lower end of a small valley (Fig.4). Ii is identified by a large freshwater pool which persists through the dry season, and Sopolai, "where the water runs down at Ii", is said to have been cultivated in the past, although no mound-and-ditch fields were observed there. Ii is a site of mythical importance which still has well-remembered legendary significance.

Udai

Between the low rock ridge that forms the southern boundary of Gumu and the rocky headland of Sipi Ngur there is a small alluvial lowland known as Udai (Fig.6). It forms a pocket of alluvium crossed by the stream bed which debouches from the interior hills at Kwoiam's pool (yaza). There, a stone-edged trackway was discovered, with side branches, which ran c. 200m inland from the beach across the grass-covered lowland (of Udai) to the stony stream bed, where, in thick woodland, 6-8 circular stone arrangements each c. 1 m in diameter were found. Closer examination of the lowland (facilitated by the fact that much of the grass cover had been burned off by young villagers out pig hunting) revealed more side branches to the trackway system and several rectangular stone alignments which resemble house foundations. Many large linear and circular stone piles in the woodland on the rocky slopes adjacent to the stream bed were also found, and wild yams were observed growing in association with small stone piles and the remains of several types of shellfish. Around the western and southern margins of the grass-covered lowland there are stands of bamboo, coconut palm and "almond" or "mekei" Terminalia catappa: all useful plants which would have been deliberately planted at Udai. The bamboo, known as upiyus, is less robust than the merap variety which grows at Wagedagam, and it is said to have been particularly valued in the past for making "beheading knives".

Lack of time prevented detailed survey of the Udai area, but it is clearly an area of considerable archaeological and ecological interest, particularly if account is also taken of its close proximity both to Gumu and to fish traps and mangrove at Sipi Ngur. Two of the oldest surviving Islanders said in 1985 that five families lived a Udai during the the Second World War, but also that the stone-edged trackways at Udai (and the one between Gumu and Kwoiam's pool) were in existence before the First World War. It was not possible to determine if the trackways also pre-dated the arrival of the missionaries in the 1870's, although, as their policy was to encourage the Islanders to abandon their "village" settlements and relocate at Bau, it seems unlikely that the missionaries would have encouraged the building of (labour-intensive) systems of stone-edged trackways at Udai and elsewhere on the island. This inference has far-reaching implications for the reconstruction of the pre-European population and settlement pattern of Mabuiag.

There is no mention of stone-edged trackways in the Haddon Reports, however the extent to which Haddon and other members of the team visited areas outside the main village is never stated in the Reports. Haddon's sceptical comments on the likelihood of ever finding remains that would "illustrate the former condition" of the Islanders (1890:303), suggest that other areas were not visited, or if so, not studied thoroughly, even though one member of the 1898 team (A. Wilkin) was described as having been trained in archaeology and anthropology.

Gumu

This area (in addition to Wagedagam) was reputed to be one of the most important "old village" sites on Mabuiag. The site of Gumu lies at the southern end of the lowland which extends along the east coast of Mabuiag between the rocky headlands of Panai and Sipi Ngur (Fig.6). This coastal area - between the rocky hills of the interior and the present-day shoreline - is the most extensive lowland on the island. It is divided by transverse creeks into four main sections, each of which bears the name of a present (Bau) or former (Maid, Mui, Gumu) settlement area (Fig.6). At its southern end, south of the creek known as Kuburau Kusa, the lowland narrows to a sandy, mainly grass-covered flat between the beach and the rocky hill slopes of the interior. This is the Gumu area, which is itself divided by minor, seasonally flooded, channels into three sections of unequal size called by us, from south to north, Gumu I, II and III (Fig.7).

During the 1984 reconnaissance abundant surface scatters of shell were noticed beneath the grass cover on the sand flat at Gumu, and several stone-bordered mounds, about 1m diameter, one of which was cleared and shown superficially to consist of an accumulation of large stones, large mollusc shells, and bones (principally of dugong). This mound was also "dissected" in 1984 to get an idea of its contents, and to establish whether or not it was a human grave[1]. On returning to Gumu in 1985, the surface midden deposits were found to be more diverse and extensive than at any other site visited, so it was decided to clear as much of the area (of grass) as possible in order to determine more precisely the nature and extent of the archaeological features. The results of the initial

[1]Certain ethnographic descriptions had led us to believe that this was a distinct possibility (Jukes 1847 I:149), and because we did not have a permit to study human remains, it was necessary to "test" this idea.

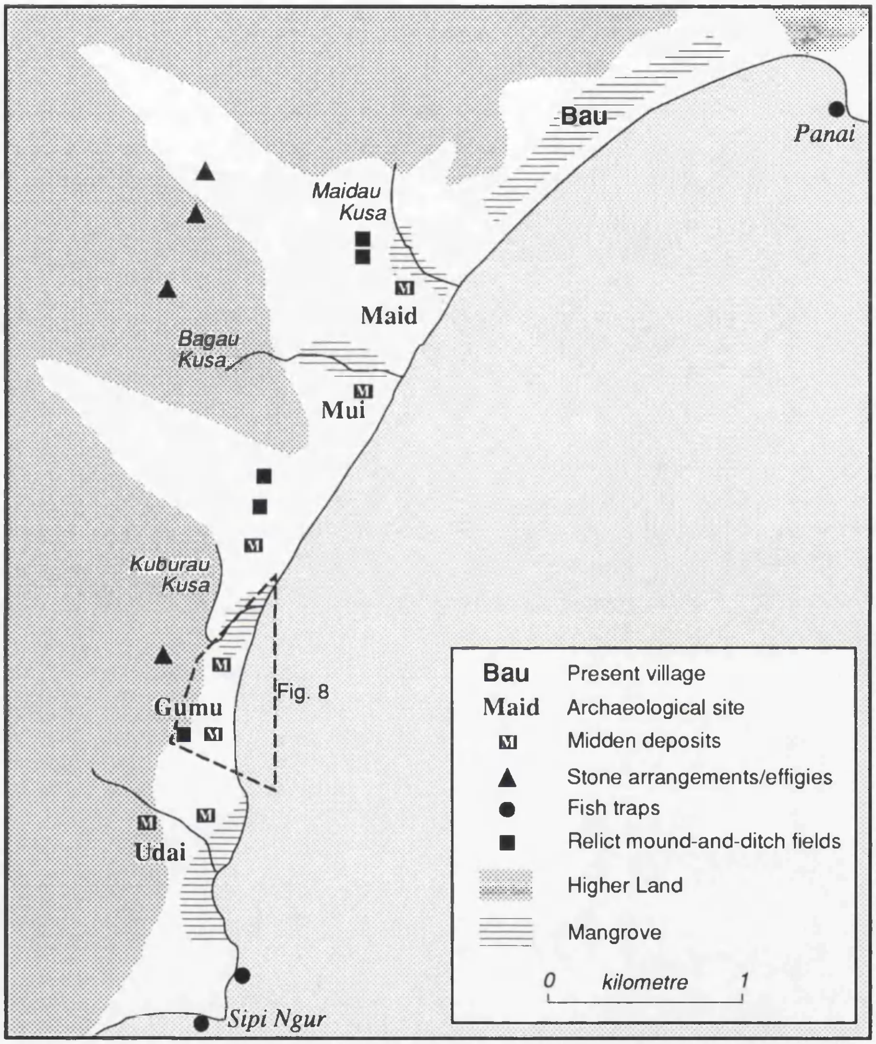


Figure 7. East-coast lowland of Mabuiag Island showing location of the Gumu area and surface archaeological features.

clearance were such that the entire Gumu area was chosen for detailed surface survey and mapping (described in Section 4.10), and test excavation (see Chapter 5).

Mui

This area consists of the section of the east-coast lowland which lies between the creeks known as Bagau Kusa and Kuburau Kusa (Fig.6). It is an area of former settlement, although considered (both in the Haddon Reports and by present Islanders) not to have been as important in the past as the "villages" of Maid and Gumu to the north and south of it. Today the coastal sand flat is grass covered with scattered coconut palms. Thorough survey would have required burning off the grass cover, and in the time available for reconnaissance no archaeological features were found on the sandy surface. However, prospecting inland along the seasonal creek beds and upslope into patches of woodland, several clusters of stone piles were found as well as circular and rectangular stone alignments and short sections of stone-edged trackway. These features are located on the lower hill slopes bordering the southern side of Mui in an area said to have been cultivated in the past, and the stone piles may be the result of clearing the rocky slopes for planting.

Maid

This former "village" area occupies the part of Mabuiag's east-coast lowland that lies between the creeks known as Maidau Kusa and Bagau Kusa, just south of the present-day village of Bau (Fig.6). It consists today of grassland, with scattered trees established on moist alluvial soil, and, towards the seaward edge, a few ageing coconut palms, at the base of which midden deposits were observed. Relict ditched fields were located at the northern margin of the area and more extensive traces of former mound-and-ditch cultivation were recognised on the alluvium towards the inland edge of the Maid lowland. It was not possible, however, in the time available, to survey the field systems in detail, nor to dig test pits, in hope of finding datable organic materials which might provide information on the age of the fields (which has been attempted by members of the Torres Strait Research Project on other western islands in the past without success).

4.8 Archaeological reconnaissance of Mabuiag Island: additional surface features[1]

Fish traps

One of the distinctive features of the archaeology of Mabuiag is the abundance of relict fish traps relative to the small size of the island. In 1984 eight traps were located, two of which are double trap structures, one at Kodakal just west of the Dabungai headland and one at Sipi Ngur. All of these traps are located on the north and east coasts of the island, and were constructed as semi-circular or rectangualr alignments of large rocks in shallow water immediately offshore, on rocky foreshores often close to stands of mangrove. When questioned, the

[1]This section is based on the summary account previously given in Harris and Ghaleb (1987:30-34).

Islanders appeared to have no folk memory of the traps being used.

In 1985 the survey of the fish traps of Mabuaig was completed, principally by means of a low-level helicopter reconnaissance of the coastline. Kame Pai Pai, one of the oldest Islander men, told us that the traps were known as _graz_ and that fish trapped in them (as the tide fell) used to be (though not in his lifetime) speared, knifed or caught by hand, but not poisoned. However, he said that a fish poison known as _itamar_ was used in coastal pools among the rocks (until its use was made illegal), and that he and others used to plant it, _e.g._ at Saz "across the creek" south of Udai and on the "old mounds" at Maid. The identity of _itamar_ is uncertain, but it is referred to by Haddon (1912:159) as the leguminous plant _Indigofera australis_.

The helicopter reconnaissance of the coast in 1985 revealed four new fish-trap locations in addition to the eight found in 1984. The most remarkable of the four new locations is a cluster of three separate traps. The distribution of all the fish-trap locations now known is shown in Fig.6 (and see Plates 7a and 7b), and it is possible that all existing traps have still not been recorded, particularly on the offshore islands, not all of which could be surveyed by helicopter or dinghy. The absence of traps along the southwest coast of Mabuaig, which was noted in 1984, was confirmed by our 1985 survey, and their distribution on the east and north coasts (and associated offshore islands) suggests - as might be expected - a close connection with former areas of

Plate 7a. Two fish traps at Sipi Ngur headland, looking north along the eastern coast of Mabuiag.

Plate 7b. Three fish traps on the islet of Sarabar off the northwest coast of Mabuiag.

settlement, particularly with the "village" areas of Gumu, Dabungai-Panai, Aubait and Wagedagam. The identification of this number of fish traps was particularly interesting in light of Haddon's reference to them as much more common in the eastern islands, and his remark that none had been found near or on the coast of Mabuiag (1912:158-9).

Stone arrangements

During the reconnaissance of Mabuiag in 1984 the only stone arrangement found (apart form the numerous stone-edged trackways and associated rectangles and circles which are not included in this category of archaeological features) was the recently constructed crocodile arrangement or effigy at Dabungai, to which reference has already been made. In 1985, however, several apparently old stone arrangements were discovered, by chance, in the interior of the island. They are characteristically placed on relatively smooth rock surfaces at vantage points overlooking areas of coastal lowland. In addition to the crocodile effigy of unknown age on a ridge between Kodakal and Sao, already referred to, several small linear and rectangular stone arrangements were found on low rock outcrops overlooking the grassland and mangrove at the seaward end of the Maitan valley. Other circular and rectangular arrangements, and three turtle effigies, were discovered on high rock outcrops overlooking the east-coast lowland; and two arrangements which may be animal effigies were found on a ridge overlooking the Aubait valley (Fig. 6).

The most distinctive of the linear arrangements in the

Maitan valley is an alignment of rocks, 1.75 m long, with a large clam shell (Tridacna sp.) at one end and several halves and fragments of "bu" (Syrinx sp.) and "akul" (Geloina sp.) incorporated in it (Plate 8a). The best preserved of the turtle effigies, which measures 2.17 m from head to tail, 1.42 m at its maximum width between the rear flippers, and 0.35 m to its maximum (dorsal) height, rests on a smooth outcrop of rock below the skyline overlooking the southern end of the east-coast lowland and directly above Gumu III (Plate 8b). The other two turtle effigies, are placed within 8 m of each other on a high rock outcrop farther north, overlooking the Maid lowland. The better preserved of the two is 2.3 m long and 1.8. m wide (across both the front and the rear flippers) and the dimensions of the other (which could not be measured precisely) are very similar. On rock outcrops at the same elevation and a little farther south other stone arrangements were found: stone circles about 1 m across, a rectangle about 1.5 by 2.5 m and several stone piles resembling small cairns (possible turtle look-out points?). All these features, together with the turtle effigies, are heavily encrustd with lichens and do not appear to have been either made, or disturbed, recently. They are of unknown age and are not familiar to the present-day Islanders, nor are they mentioned in the Haddon Reports[1]. Their former significance remains a matter for speculation, but it is possible that the turtle effigies (and perhaps the crocodile effigy near Sao) had totemic significance

[1]However, on account of the "mystic affinity" that existed between members of a clan and their totem, "when a Kaigas man died his relatives made a heap of earth shaped like a kaigas" (Haddon 1904:184-85).

Plate 8a. Stone arrangement at the Maitan clan locality, northwest coast of Mabuiag Island.

Plate 8b. Stone animal effigy (turtle?) on hill slope above low-lying coastal area of Gumu III, east coast of Mabuiag Island.

because Surlal was one of the clan totems of the "Gumulag" or people of Gumu, and Kodal was the totem of the people of Aubait.

Pictographs

As mentioned in the description of archaeological remains on Pulu Island, pictographs on granitic boulders were observed at the ceremonial ground or kwod there, which were first described by Haddon (1904:3-5, Plates I & II, see Plate 6a). Although no other group of pictographs has been discovered, the Islanders mentioned, in 1985, that there was a white painting of a crescent moon on a relatively inaccessible rocky hillslide overlooking the north coast between Aubait and Pururai Island (Fig.6). It is very difficult to visit the spot on foot, but the existence of a crescent moon design in white on a rock face was confirmed by binoculars from Red Fruit Island in the expected location. Without closer examination, however, no further comment can be made on the nature and possible antiquity of this feature which was not referred to in the Haddon Reports. However, it is of interest to note that one of the western-island folktales recounts how the cult-hero Kwoiam made cresents like the moon out of turtle shell which had magical powers and were considered as augud (sacred/totem) by the Gumulaig (Haddon 1904:70-71, see also Section 4.3).

4.9 Results of the archaeological reconnaissance of Mabuiag

The relative archaeological richness of Mabuiag Island was not wholly unexpected because Harris' reconstruction of the mid-nineteenth-century population distribution in the western islands had revealed that it had an atypically high population density: 36.1/km2, compared with 4.7/km2 on Saibai, 2.9/km2 on Moa, and 0.5/km2 on Muralug (1979:90). However, in the light of the results of Vanderwals' archaeological survey of Mabuiag (1973), and of the fieldwork carried out by members of the Torres Strait Research Project on other western islands in the Strait (Muralug, Nagir, Moa, Badu, Dauan, and Saibai), the archaeological surface finds on Mabuiag are extraordinarily rich. The extent and diversity of the archaeological features found also contrast strikingly with Haddon's pessimistic view on the likelihood of finding any "ancient" remains there.

The spatial distribution of archaeological features across Mabuiag Island and the occurrence of certain plant communities (e.g. bamboo, mango), broadly confirm the patterns of former settlement documented by Haddon and the present-day descriptions of the Islanders. The archaeological patterns found also lend support to Haddon's statement that in pre-missionary times the Islanders lived "scattered all over the island" (1904:172). However, archaeological remains were not always found where, according to the ethnography, they might have been expected (e.g. Wagedagam, Aubait, although the low-lying parts of these areas were not burned and no subsurface reconnaissance was attempted).

Three stone features were found that could be related to former clan- totemic affiliations: the turtle effigy above the site of Gumu (within the territory of the Kaigas-Surlal clan), the midden mound and associated dugong-shaped stone at Dabungai, where the Dangal clan held their ceremonies; and the crocodile effigy near the site of Aubait, where the Kodal clan lived. European material such as glass and iron fragments across the surface of many of the sites suggests that people have lived at (e.g. Gumu I) or visited them since the mid-nineteenth century.

The results of the archaeological reconnaissance of Mabuiag provide evidence related to past Islander subsistence. The midden deposits, identified as surface scatters and variously-shaped "mounds", suggest the consumption of primarily dugong and shellfish, with some turtle. The absence of fish remains may have more to do with taphonomic factors in relation to skeletal and element size and robusticity, than actual subsistence practices. However, the evident lack of fish remains on the surface of the midden features described contrasts with the indication from the numerous fish traps that the exploitation of fish, shellfish, and crustaceans was important. A reliance upon cultivated plants is suggested by the number of mound-and-ditch fields recorded (seven plots within five areas), and by the areas bordered by stone, small stone circles and variously-shaped stone piles, found commonly along lower hill slopes and throughout wooded hillsides. Although it has not yet proved possible to directly date this kind of evidence, discussion in the Reports of agricultural practices, with a total of 36 place names recorded as former garden sites (although not all on Mabuiag itself) (Haddon 1912:144-151, and see Section 6.1-6.6), in addition to Islander comments on the subject today, suggests a substantial past commitment to the growing of crops which may be of considerable antiquity.

As we have seen the ethnography of Mabuiag provides information on past Islander ceremonial life that was related to clan totemic affiliation, settlement location, and subsistence practices. In addition to activities that can be expected to have taken place at settlement sites and which might leave archaeological traces (e.g. sleeping, eating, tool manufacture), the question arises as to whether, given this kind of site-specific ethnography, it may also be possible to detect aspects of ceremonial behaviour in the archaeological record. Accordingly, one site on Mabuiag was chosen for detailed study with the hope of being able to interpret the archaeological remains discovered there in relation to the ethnography of ceremonial life as well as traditional patterns of settlement and subsistence.

The old-village and ceremonial site of Gumu on the southeastern coast of Mabuiag therefore became the focus of archaeological enquiry in 1985. The reconnaissance of the area revealed both surface scatters of midden deposit and discrete midden-mound features (littered abundantly with dugong remains) in close proximity. The results of a preliminary investigation of one of the mounds proved very interesting. Due to the limited time available on Mabuiag in 1984, the mound (approximately 1 m in diameter, 7.8 m in circumference, and surrounded by large stones, the largest of which when upright measured just over a metre in length) was simply "dissected" to get an idea of its composition (Plates 9a and 9b). The interior consisted primarily of dugong bones (skull and rib fragments, which produced a minimum number of six dugongs) and angular chunks of stone of varying size (derived from the island bedrock), with seven shellfish species represented, a few fish bones, pieces of turtle carapace, six smooth stones, (some with "pecked" ends which may indicate their use as hammerstones), fragments of quartz, and a number of large stones. There was also an additional feature that appeared to be unique: a large (14.6 cm x 13.2 cm) cranium-shaped coral "head", resembling the top of a human skull, surrounded by a circle of dugong ribs (Plates 10a and 10b). No human remains were found. A bulk sample of the mound deposit taken for laboratory seiving to test for the recovery of small-animal and plant remains proved to be relatively sterile. Four more similar mounds were recorded close to the one studied, although locating them proved difficult because of the tall, dense stands of grass which covered the entire area, and it seemed likely that clearance of the grass might reveal other features.

The following day, back at the village of Bau, another interesting discovery related to Gumu was made. In front of the side of the church that faces the sea, a large spherical stone of red granite was noticed. Upon enquiry, the Islanders described it as an important ceremonial stone, from the time before the missionaries, that had been brought from Gumu by the missionaries and placed beside the

Plate 9a. Mound 57 at Gumu I (1984) with standing stone (<u>adil</u>).

Plate 9b. Close-up of standing stone (<u>adil</u> at Gumu I (one of three originally described by Haddon, 1904:334-36).

Plate 10a. In-situ top view of coral "head" within Mound 57, Gumu I, Mabuiag.

Plate 10b. Interior of Mound 57 showing dugong ribs that encircled coral "head", Gumu I.

church. They gladly gave us permission to measure and photograph it (Plate 11a).

Familiarity with the various subsistence-related ceremonies recorded as traditionally held by the Gumulaig brought one, in particular, to mind: the "wiwai" stone ceremony. A large spherically-shaped red granitic stone, the description and measurements of which given in the Reports precisely fit those of the stone placed in front of the church, had been the centre piece of a turtle-increase ceremony, around which dances were performed prior to turtle hunts. The ceremony was carried out at Gumu, under a komak tree (mango), during the green-turtle breeding season to ensure hunting success (Haddon 1904:334-36, see Plate XXI, Fig.2, and Plate 11b).

Reference to a copy of Volume V (1904) of the Haddon Reports, Sociology, Magic and Religion of the Western Islanders (the only volume on the island, presented to the Islanders as a gift by the Nietschmanns'), which contains Islander drawings and an in-situ photograph at Gumu of the boulder, convinced us that this was indeed the "wiwai" stone. In addition, most extraordinarily, the one mound that had been studied the previous day at Gumu, appeared to be precisely where the ceremony was held. This conclusion is based on the location and on the morphology of the large stones remaining around the mound today, i.e. the shape and position of the three upright stones, adil, pictured by Haddon (Plates 9b and 11b). Thus, while the rest of the "Wiwai turtle-shrine" (Haddon 1904:335) remained at Gumu, the wiwai stone itself had been transported to the church site at the village sometime

Plate 11a. The Wiwai stone by the entrance to the Anglican church, Bau (1984), Mabuiag Island.

Plate 11b. The Wiwai shrine at Gumu, Mabuiag (Haddon 1904:Plate XXI, Fig.2).

after 1888 or 1898.

The archaeological results of the reconnaissance survey and mound "dissection", in combination with the detailed ethnography relating to past subsistence practices and ceremonial life at Gumu, and the "discovery" of the "wiwai" stone in the present-day village, were enough to recommend this area for more detailed study during the 1985 field season.

4.10 Archaeological survey of the Gumu area[1]

As described in Section 4.8, the site of Gumu lies at the southern end of the lowland which extends along the east coast of Mabuiag. The area itself is divided by minor, seasonally flooded, channels into three sections of unequal size which are referred to here, from south to north, as Gumu I, II and III (Fig.7).

The only feasible method of clearing the site prior to survey was by burning the dry grass that covered most of the area. Accordingly, it was necessary to seek the permission of the Chairman of the Mabuiag Community Council to burn the area south of the Kuburau Kusa creek. This was readily granted - the Islanders themselves commonly burn grassy areas in the dry season, especially when hunting feral pigs - and two days were then spent burning off the surface cover of vegetation (Plate 12a). Eventually most of the Gumu sand-flat area was cleared of its cover of dry grass, and this revealed dense and extensive midden

1 ..tion is based on the summary account previously given in Harris ana Ghaleb (1987:7-12,19-20).

Plate 12a. Gumu area 1985 (I, II, III), looking north prior to burning of grass cover with Bau in distance.

Plate 12b. Discrete accumulation of dugong bones, Gumu I.

deposits, including a surprisingly large number of discrete mounds.

The midden deposits proved to be so widespread and varied in surface form and composition that it was decided to map the entire area in detail. The only practicable way of carrying this out was by tape-and-compass survey, supplemented by sketch maps of the more complex parts. This task took four team members ten days to complete, and in the course of the survey other archaeological features were discovered in addition to the midden deposits, notably a small area of relict mound-and-ditch fields comparable in form to those found at other sites on Mabuiag (Wagedagam, Sao, Maid and Mui), and on some of the other western islands studied by members of the Torres Strait Research Project (Moa and Saibai). The plan of the Gumu area that resulted from the tape and compass survey is presented as Figure 8.

4.10.1 Types of archaeological feature discovered at Gumu

The 1985 survey of the Gumu area revealed that archaeological features are present on a surface area of approximately 20,000 m2 (2 ha), which extends 325 m north-south parallel to the coast and between 140 m and 20 m east-west, the width varying according to the distance from the beach ridge to the base of the rocky hill slopes (Fig.8).

The most extensive types of archaeological feature at Gumu are midden deposits which superficially consist of

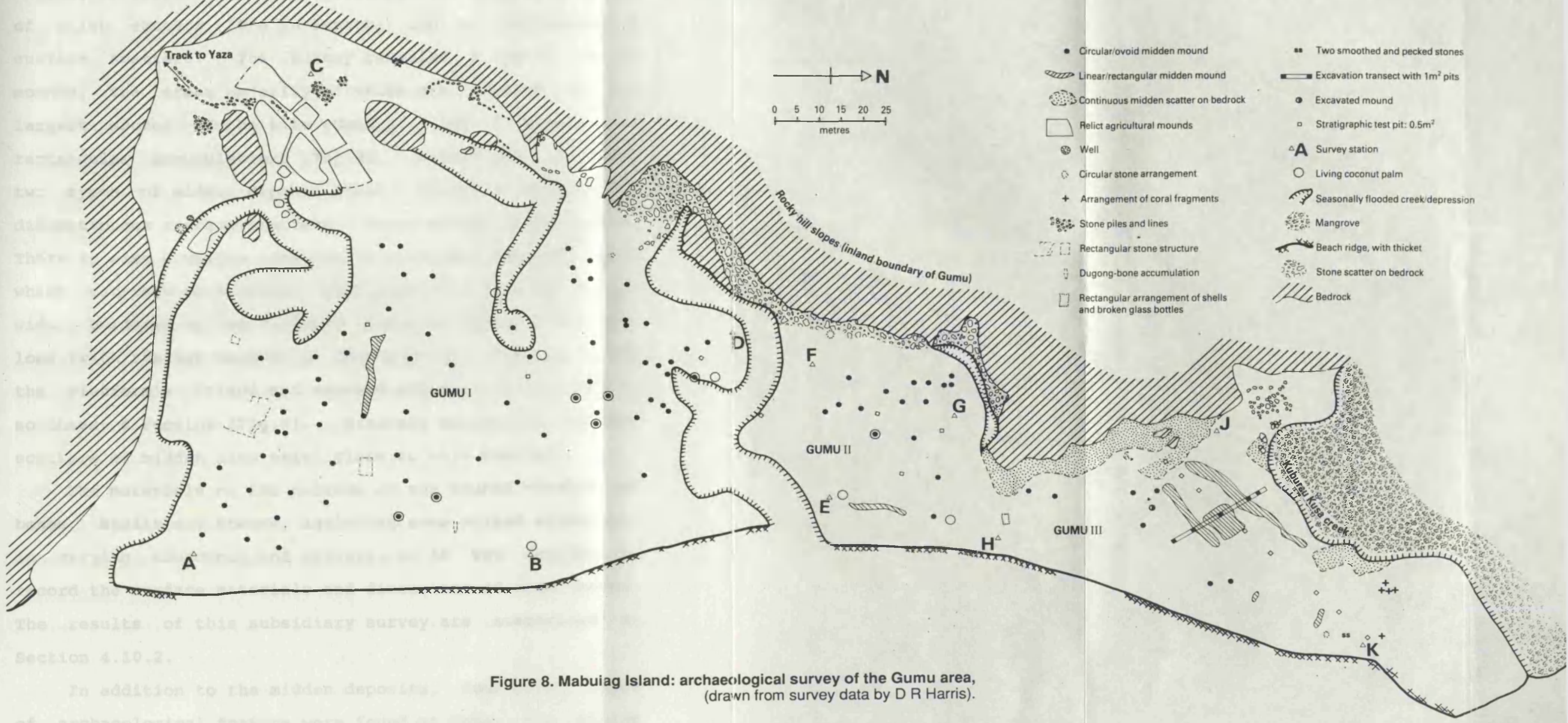


Figure 8. Mabuiag Island: archaeological survey of the Gumu area,
(drawn from survey data by D R Harris).

bone (primarily dugong), angular chunks of stone, and shell. They exist in three forms: as discrete circular or ovoid mounds averaging 1.0-1.5 m in diameter and 30 cm in height, sometimes bordered by large stones or Syrinx shells; as larger linear and rectangular accumulations, one of which exceeds 30 m in length; and as discontinuous surface scatters. The survey revealed a total of 95 mounds, the great majority of which are located in the largest sector of the site (Gumu I), and 7 linear and rectangular accumulations (Fig.8). Within Gumu III, the two types of midden deposit found - discrete mounds and discontinuous surface scatters - occur across large areas. There is also a unique combination of midden features there which consists of a midden "platform", 8 m long by 5-7 m wide, bordered by two "ridges" respectively 35 m and 20 m long (with average heights of 18 and 28cm), running along the platform's inland and seaward edges in a northeast-southeast direction (Fig.8). Discrete mounds and surface scatters of midden also exist close to this feature.

The materials on the surface of the mounds consist of bones, shells and stones, including some worked artefacts, in varying abundance and mixture, so it was decided to record the surface materials and dimensions of each mound. The results of this subsidiary survey are summarised in Section 4.10.2.

In addition to the midden deposits, four other types of archaeological feature were found at Gumu: the relict agricultural mounds already referred to, 12 of which were located and mapped; a stone-edged path or trackway leading from the fields over the boundary ridge at the southwest corner of Gumu I; two wells at the southern boundary of Gumu I near the agricultural mounds; four circular stone arrangements; several discrete piles of stones; and two rectangular stone structures resembling house foundations (Fig.8). The largest of the rectangular stone structures, adjacent to the southern boundary of Gumu I, is associated with several scattered fragments of rusted metal (evidently the remains of corrugated iron roofing and of a large drum used as a water container). Enquiry in the present village established that this was the site of a house built in 1947 and occupied for five years by one of the Islander families traditionally associated with the Gumu area (the Pai Pai family). The second, smaller stone rectangle, about 25m northeast of the first, is also probably a recent house foundation. The stone-edged path, about 1m across, which leads upslope out of the southwest corner of Gumu I, crosses a rocky ridge just inland of the small alluvial lowland of Udai (see Fig.4 and Section 4.7) and continues as far as a ravine where fresh water can be obtained from rock pools throughout the dry season. This area, like Gumu itself, is associated with the cult-hero Kwoiam, and the water source is referred to as Kwoiam's pool, Yaza, or Kuikuyaza, (created, according to Islander mythology by Kwoiam's spear, which, to quench his thirst, he thrust into the stone and created a pool which has since "never ceased to flow": Haddon 1904:82). We were informed that when people lived at Gumu, and at Udai, water was carried in containers from the pool by way of the stone-edged path and also along a similar path which crosses Udai. This water supply may have been used to water crops, as well as for domestic purposes, because the path to Gumu I leads directly to the small area of mound-and-ditch fields which we surveyed (Fig.8). Kame Pai Pai recalled that he and his father used to plant sugar cane, taro, banana and manioc in these mounds.

The Gumu survey revealed several unique archaeological finds as well as the main type of feature already mentioned. Individual finds include, at Gumu I, a surface accumulation of dugong bones which is not part of a mound (Plate 12b), one mound surrounded by 28 Syrinx shells (Plate 13a), a second by nine, and a third by five (upon two of which were also found the ground Conus-shell ornaments known as dibidibi), and, at Gumu III, a rectangular arrangement of bu and alup shells (Syrinx sp. and Melo sp.) (see Section 3.8.2) and of broken glass bottles (which may mark a recent grave), two arrangements of coral fragments, and a pair of smoothly rounded stones lying on the sand surface, one of which is pecked (Plate 13b).

4.10.2 Summary and discussion of the surface midden features recorded at Gumu

After completion of the tape-and-compass survey of the Gumu area data sheets were devised to record the presence of any artefacts or animal remains on the surface of each midden feature. When bone was present, the type of animal and element was recorded if identifiable. All shellfish taxa were recorded, and unknown types collected for

Plate 13a. Discrete accumulation of bu shells (Syrinx aranus) and stones, Gumu I.

Plate 13b. Pair of rounded stones, Gumu III.

identification (Table 4). All artefacts were collected (primarily stone and shell), as well as all the different types of stone found (Table 5). Summary descriptions of each feature were made, noting the occurrence of the different kinds of remains, and photographs were taken. The areas surrounding the midden features were also examined and significant finds mapped and collected. Figures 9, 10, 11, and 12, and Tables 4 and 5 summarise the occurrence of the surface materials observed on the 95 mounds recorded at Gumu.

The surface of the midden scatters and particularly of the raised (mound) features at Gumu appeared to predominantly consist of two types of marine-animal remains (dugong and species of shellfish) and angular fragments of the island's bedrock. Fragmented dugong bones and shellfish were recorded from the surface of every feature studied (i.e. 100% occurrence). Fragments of rib and skull (i.e. cranium, ear ossicle, mandible) were the most frequent dugong elements found (present on 98% and 75% of the mounds respectively), with four other elements represented to varying extents (vertebrae 23%, humeri 14%, phalanges 9%, scapulae 6%) (Fig.11). The 59 shellfish species identified are today found in four nearshore habitats (all occurring close to the site, and listed in order of abundance): sandy, coral reef, rocky, and mangrove, and one off-shore habitat: deep water. Thirty-three of the species are gastropods, 25 are bivalves, with one cephalopod (Table 4). However, only seven species were found on 50% or more of the mounds.

Fish bones were recorded infrequently (12%), and

Table 4: Marine mollusc taxa identified from the surface survey of Gumu I,II, III.

Superfamily	Family	Genus	Species	Authority
1. SANDY HABITATS (foreshore, bars and lagoons)				
Bivalves				
Arcacea	Arcidae	Anadara*	antiquata@	(Linne 1758)
Cardiacea	Cardiidae	Acrosterigma	elongatum@	Bruguiere 1789
		A.	rugosa	Lamarck 1819
Lucinacea	Lucinidae	Codakia	tigerina	(Linne 1758)
	Fimbriidae	Fimbria	fimbriata	(Linne 1758)
Mactracea	Mesodesmatidae	Mesodesma	striata@	
	Mactridae	Mactra	alta@	?Deshayes
Tellinacea	Tellinidae	Scutarcopagia	scobinata@	Linne 1758
		Quidnipagus	palatum@	Iredale 1929
		Tellina	remies	Linne 1758
		T.	crucigera@	Lamarck
	Psamnobiidae	Asaphis	violascens@	Forskal 1775
Veneracea	Veneridae	Garfrarium	tumidum@	Roeding 1758
Gastropods				
Cerithiacea	Cerithidae	Rhinoclavis	vertagus	Linne 1767
		Cerithium	nodulosum	Bruguiere 1792
		C.	aluco	(Linne 1758)
		C.	columna	Sowerby 1834
Naticacea	Naticidae	Polinices	tumidus	(Swainson 1840)
		P.	flemingiana@	(Recluz 1844)
Strombacea	Strombidae	Strombus	luhuanus	Linne 1758
2. ROCKY HABITATS (foreshore and headlands)				
Bivalves				
Chamacea	Chamidae	Chama	pulchalla	Reeve
		C.	iostoma@	Conrad 1837
Ostreacea	Ostreidae	Saccostrea	echinata@	Quag. & Gaimard
Pectinacea	Spondylidae	Spondylus	nicobaricus@	Schreibers 1793
		S.	ducalis	Roeding 1798
Tellinacea	Tellinidae	Asaphis	violascens@	Forskal 1775
Gastropods				
Cerithiacea	Planaxidae	Planaxis	sulcatus@	(Born 1780)
Neritacea	Neritidae	Nerita	albicialla	Linne 1758
		N.	polita	Linne 1758
		N.	plicata	Linne 1758
		N.	undata@	Linne 1758
Trochacea	Trochidae	Monodonta	labio@	Linne 1758
3. CORAL-REEF HABITATS (outer edges, flats and rubble)				
Bivalves				
Arcacea	Arcidae	Anadara*	antiquata@	(Linne 1758)
+Pteriacea	Pteriidae	Pinctada	margaritifera	(Linne 1758)
		P.*	maxima@	(Jameson 1901)
+Tridacnacea	Tridacnidae	Hippopus	hippopus	(Linne 1758)
		Tridacna	crocea@	Lamarck 1819
		T.*	maxima	Roeding 1798

Table 4 continued

Gastropods				
+Buccinacea	Fasciolariidae	Fasciolaria	filamentosa@	(Roeding 1798)
Cypraeacea	Cypraeidae	Cypraea	moneta@	Linne 1758
		C.	annulus	Linne 1758
Muricacea	Muricidae	Chicoreus	brunneus	(Link 1807)
		C.	permaestus	(Hedley 1913)
		Vitularia	miliaris	(Gmelin 1791)
Strombacea	Strombidae	Lambis	lambis	(Linne 1758)
Trochacea	Trochidae	Angaria	delphinus@	Linne 1758
		Trochus	niloticus@	Linne 1767
		T.	pyramis	Born 1778
	Turbinidae	Turbo	squamosus@	Gray 1847
		T.	bruneus	(Roeding 1798)
		T.	cinereus	Born 1778
Volutacea	Volutidae	Melo*	amphora@	Solander 1786
4. MANGROVE HABITATS (outer zone, inner zone and landward edge)				
Bivalves				
Arcacea	Arcidae	Anadara*	granosa	
Corbiculacea	Corbiculidae	Geloina*	coaxans@	
Gastropods				
+Buccinacea	Melongenidae	Syrinx*	aruanus	(Linne 1758)
Cerithiacea	Potamididae	Telescopium	telescopium	(Linne 1758)
		Terebralia	sulcata@	(Born 1778)
Neritacea	Neritidae	Nerita	planospira	Anton 1839
+Volutacea	Volutidae	Melo*	amphora	Solander 1786
		M.	umbilicatus	Sowerby 1826
5. DEEP-WATER HABITATS (>8m)				
Cephalopods				
Nautiloidae	Nautilidae	Nautilus*	pompilius@	Linne 1758

@Species also found in excavation;*possible ceremonial significance; +also found at depths >8cm

Table 5. Categories and types of artefacts found on midden features and adjacent areas, surface survey, Gumu I, II, III.

Description	No.	Average dimensions		Probable function
		Length	Width	(based upon Haddon)
SHELL				
Shaped fragments of Hippopus hippopus*	2	8 cm	3.5 cm	Adze
Ground and perforated apexes of Conus sp.*	2	5.5 cm	5.5 cm	Ornament, neck *(dibi dibi)*
Perforated valve of Anadara antiquata*	1	6 cm	4 cm	Ornament, belt, or instrument, rattle
Shaped and perforated fragment of Hippopus or Tridacna sp*	1	5 cm	1.3 cm	Ornament
Perforated fragments of Pinctada sp.*	3	3 cm	3 cm	Ornament
Ground-hinge fragment of Pinctada sp.*	1	6 cm	3.5 cm	Scraper to soften leaf strips for basketry
Cresent-shaped hinge fragments of Pinctada sp.*	6	7 cm	4 cm	unused scraper?
Ground-cylindrical fragment of unidentified shell*	1	2.7 cm	1 cm	Ornament, nose pin?
Ground-edge fragment of Hippopus or Tridacna sp.*	1	5 cm	4.5 cm	?
STONE				
Rhyolite ground cobble fragment with bifacially battered edge*	1	13 cm	9 cm	Axe
Basalt (thick) cobble flake with bifacially battered edge*	1	10 cm	9 cm	?
Rhyolite (thick) flake with bifacial retouch	1	10 cm	9 cm	?
Rhyolite ground spatulate*	1	7.5 cm	2.3 cm	file?
Basalt flake with possible edge damage	1	4.5 cm	4 cm	?
Basalt hinge flake with possible edge damage	1	10 cm	6.5 cm	?
Granite elongated riverine cobble with battered edge	1	12 cm	6.5 cm	Axe
Half of granite riverine cobble with pecked edge	1	6.5 cm	4.7 cm	Pounder

Table 5. continued

Obsidian fragment	1	2.2 cm	1.3 cm	?
Unidentified ground fragment with battered edge*	1	4.5 cm	3 cm	Adze
Vein quartz multi-platform core	1	6.5 cm	6 cm	Stone-tool manufacture
Vein quartz large-core fragment	1	7 cm	7 cm	Stone-tool manufacture
Vein quartz large-core flake*	1	4.5 cm	4.5 cm	?
Vein quartz fragments	?	1.2 cm	0.05 cm	Cutting tools or debitage
FIRED CLAY				
Clay pipe stem from Glasgow, Scotland c. 1863-1910*@	1	7.6 cm	1 cm	Smoking
GLASS				
Fragments on surface of 28%	-	---	---	- - -
METAL				
Fragments on surface of 5%	-	---	---	- - -

*Artefacts drawn, see Figures 13-19.
@(Dane & Morrison 1979:50)

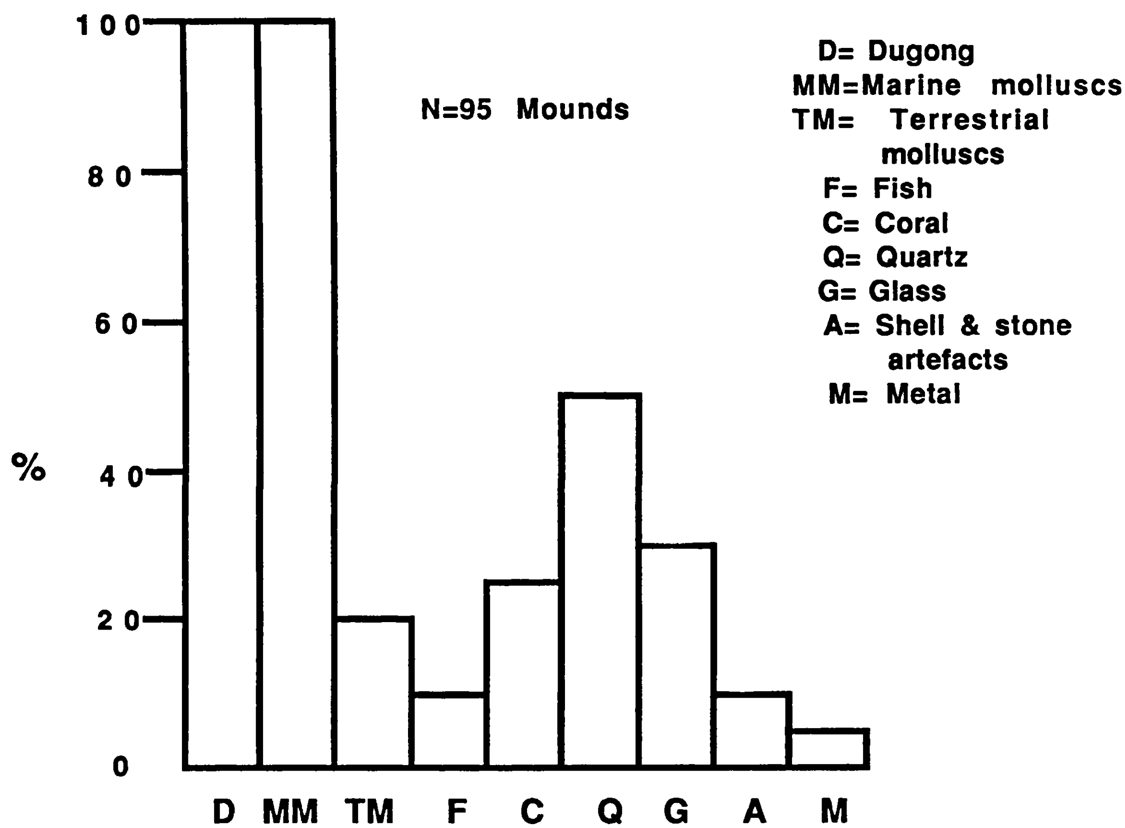


Fig. 9. Percentage occurrence (presence\absence) of material remains on surface of midden mounds, Gumu I,II,III.

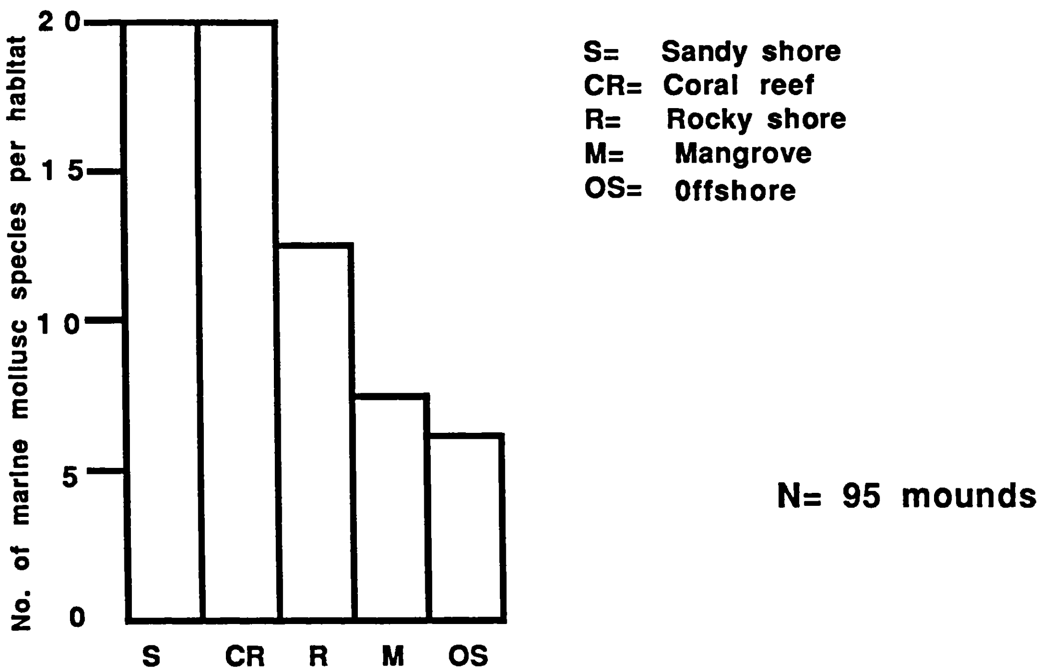


Fig. 10. Number of species of marine mollusc on surface of midden mounds by habitat, Gumu I,II,III.

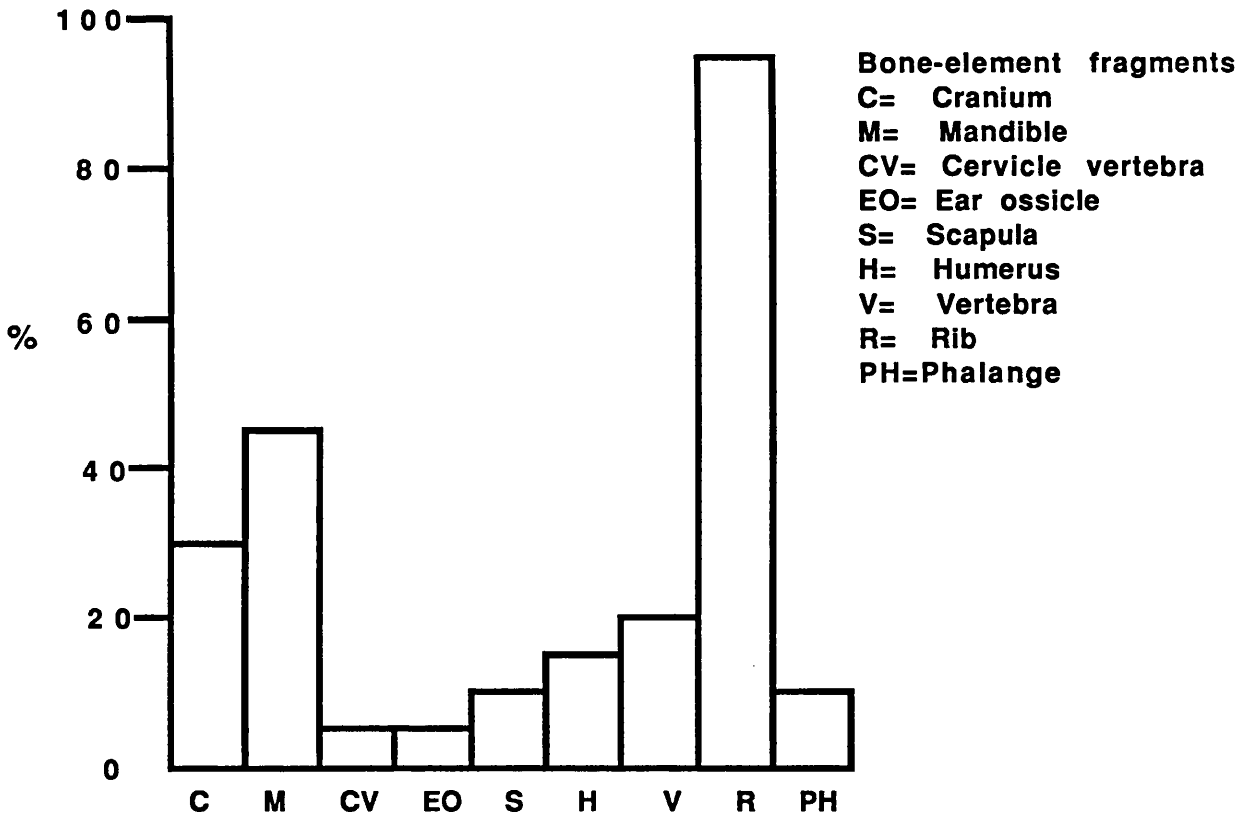
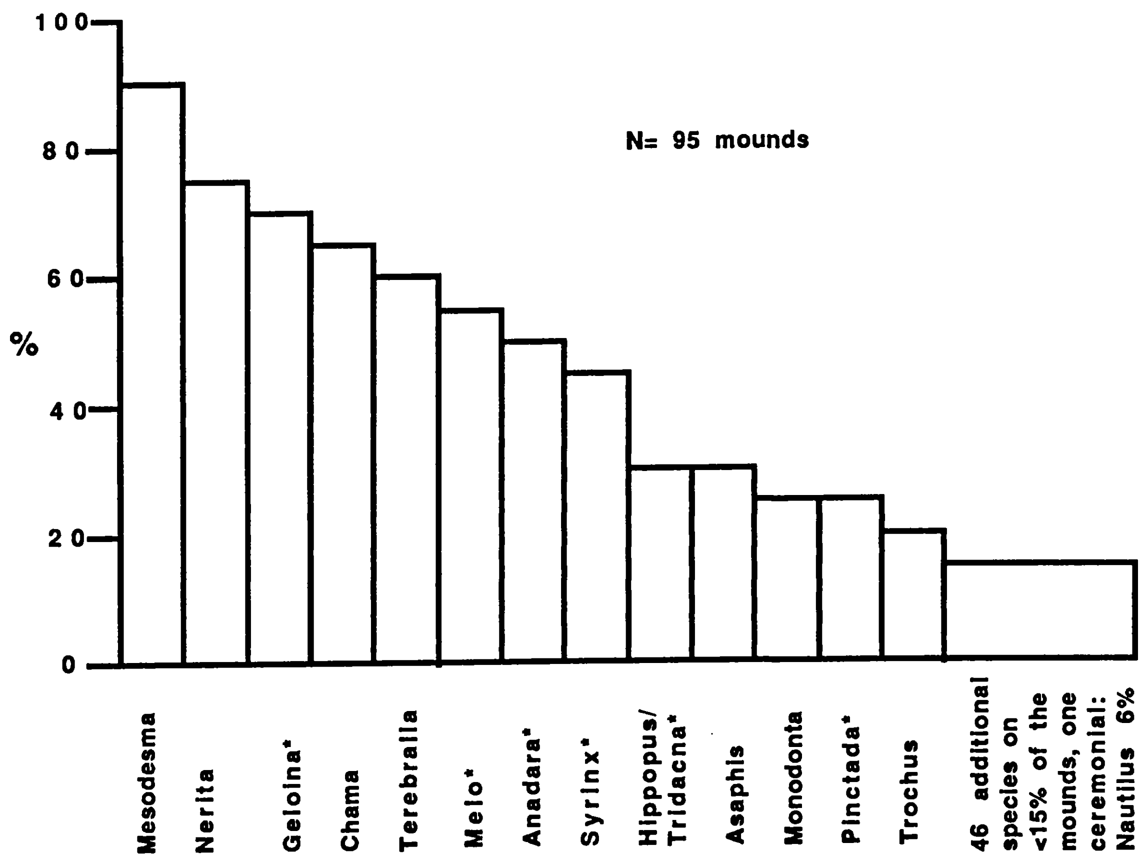


Fig. 11. Percentage occurrence (presence/absence) of dugong elements on surface of midden mounds, Gumu I,II,III.



*Species of known ceremonial significance

Fig. 12. Percentage occurrence (presence/absence) of genera of marine mollusc on surface of midden mounds, Gumu I, II, III.

fragments of turtle bone were found (superficially) only on the unique "platform and ridge" feature in Gumu III (although a few carapace fragments had been identified from the within the one "dissected" mound at Gumu I in the 1984 field season).

Fragments of vein quartz were found on 49% of the mound features, in addition to seven pieces of stone which (unlike the quartz fragments) show clear signs of human modification. In addition, one fragment of a small ground-stone axe and a few small shell axes were found, as well as ground fragments of a large clam shell (Tridacna or Hippopus sp.) and pearlshell (Pinctada sp.). Ground and perforated apexes of conus shells (Conus sp., the dibi-dibi), perforated Anadara antiquata bivalves, and perforated fragments of pearlshell and giant clam were found, as well as cresent-shaped hinge fragments of pearlshell (Table 5 and Figs 13-19). Three pieces of basalt and one of obsidian were the only inorganic materials found (other than European items such as fragments of glass, iron and part of a clay pipe) which do not occur naturally on the island.

The results of the surface survey and mapping of Gumu clearly indicate extensive past activity across the whole of the surface area of approximately two hectares. Identifying exactly how the area was used, however, is not as straightforward. There are no apparent areas of former habitation, except perhaps on the level sand areas between the mounds, the largest of which occur along the beach front and just inland of it (Fig.8): a location which would be consistent with the mid-nineteenth century descriptions

Figure 13. Ground-stone artefacts: a. unidentified ground-adze fragment with battered edge; b. rhyolite ground spatulate file(?); c. rhyolite ground cobble axe(?) fragment with bifacially battered edge.[1]

Figure 14. Shell adzes of _Hippopus hippopus_: a and b.

Figure 15. Basalt cobble flake with bifacially battered edge.

Figure 16. Ground-shell artefacts: a. shaped and perforated fragment of _Hippopus_ or _Tridacna_ sp.; b. ground-cylindrical fragment of unidentified shell; c. half of ground and perforated apex of _Conus_ shell (_dibi-dibi_); d. ground and perforated apex of _Conus_ shell (_dibi-dibi_).

Figure 17. Shell artefacts: a. perforated valve of _Anadara antiquata_; b,c,d. perforated fragments of _Pinctada_ sp.; e. edge-ground fragment of _Hippopus_ or _Tridacna_ sp.

Figure 18. Worked fragments of _Pinctada_ sp.: a,b,c,d,e,g; f. worked and ground-edge fragment of _Pinctada_ sp.

Figure 19. Worked stone and fired clay artefacts: a. vein-quartz large-core flake; b. ground pummice scraper(?); c. clay-pipe stem from Glasgow, Scotland _c._ 1863-1910 (Dane & Morrison 1979:50).

[1](geological decriptions by Jane Roberts, Institute of Archaeology, and artefactual definitions based upon discussions with Rhys Jones (1986 pers comm., Institute of Archaeology).

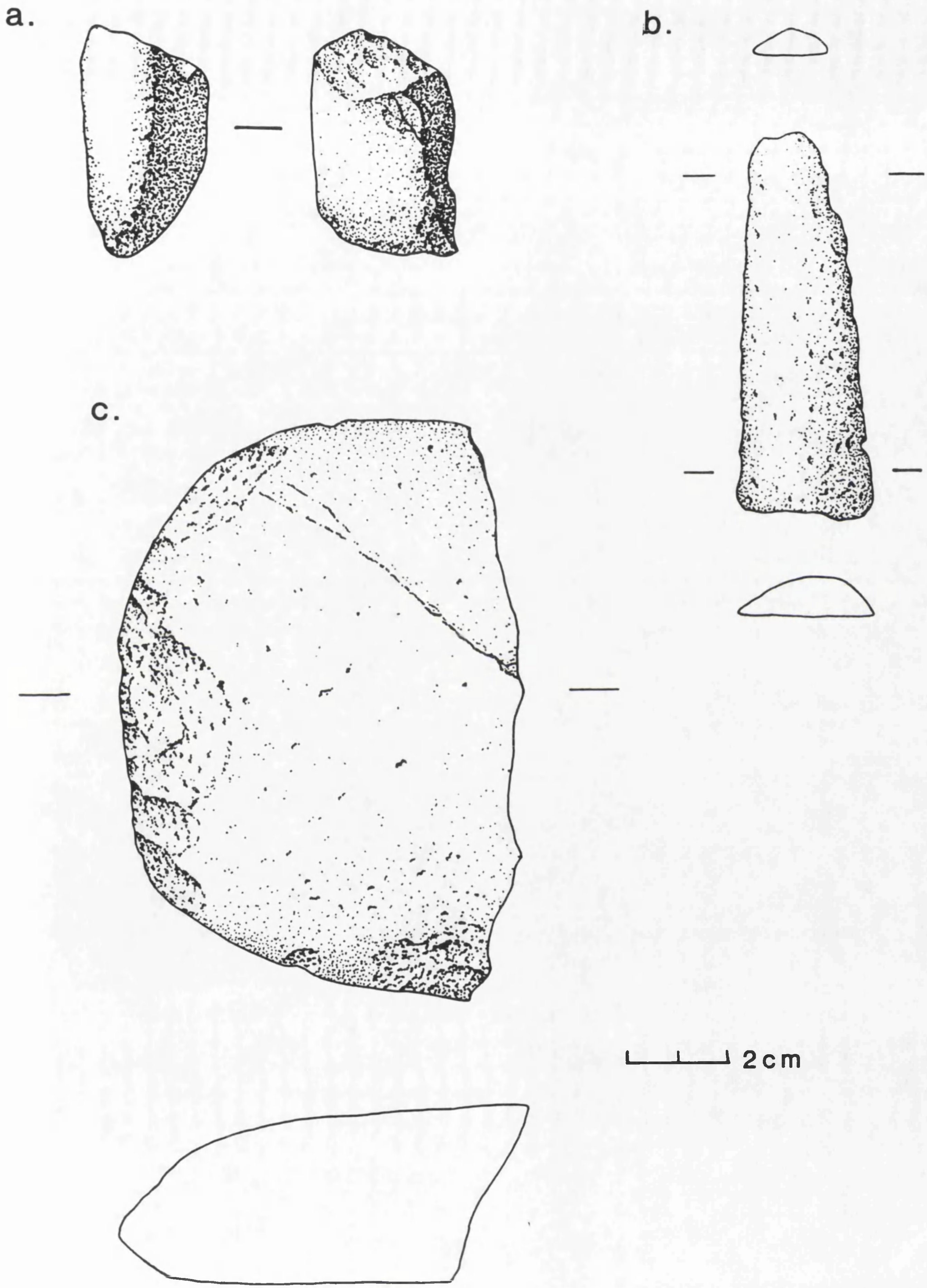


Figure 13.

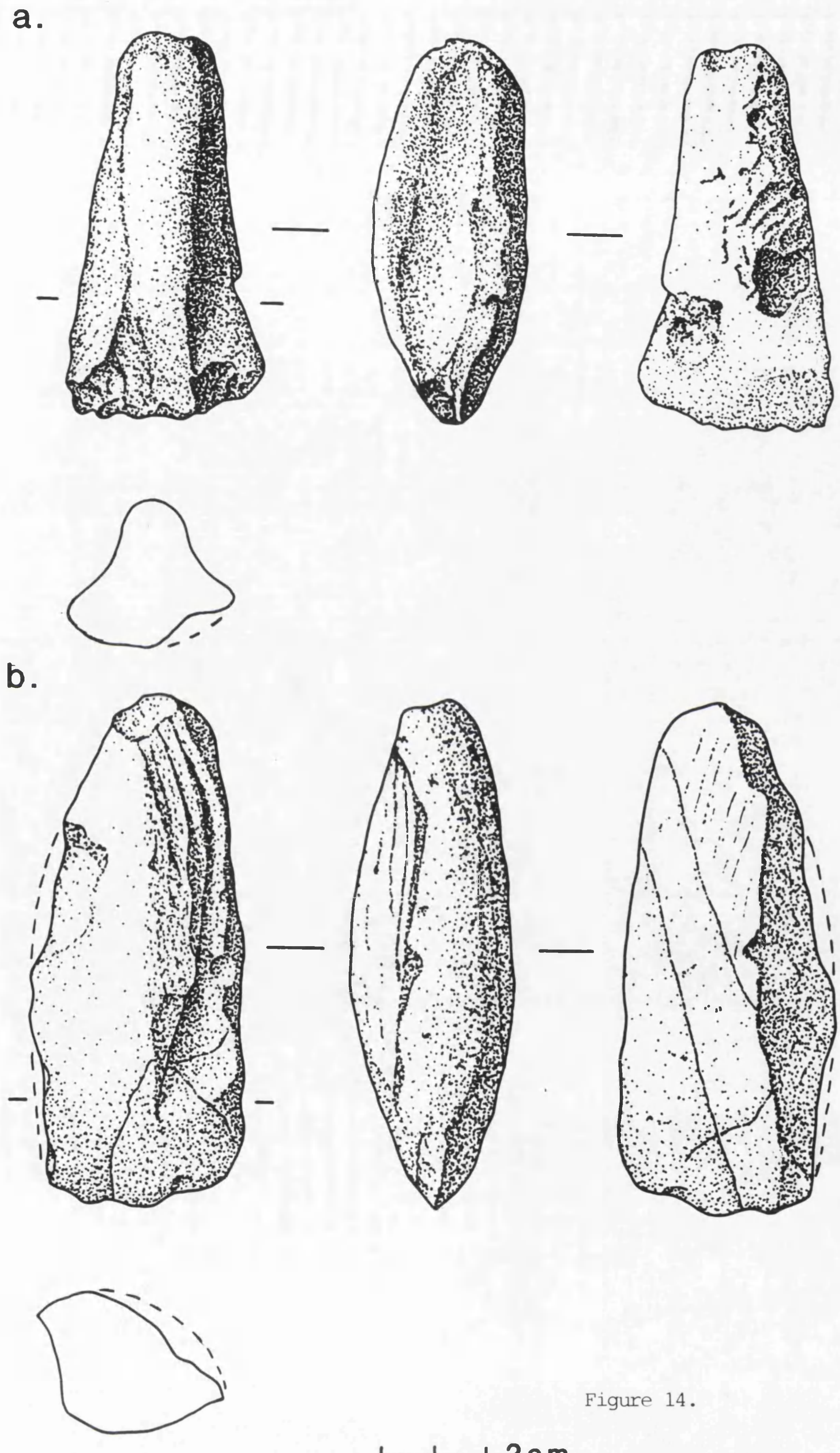
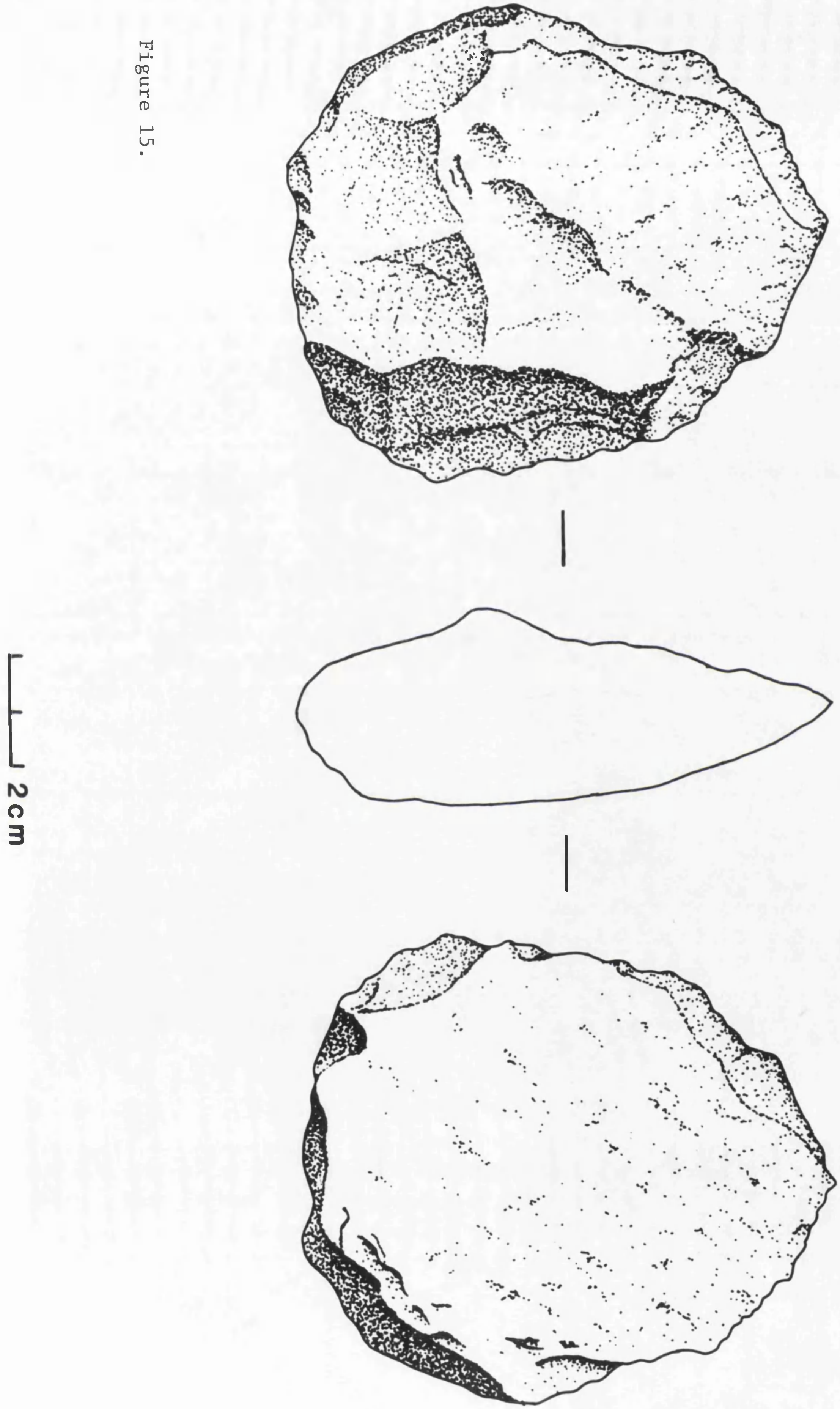


Figure 14.

Figure 15.



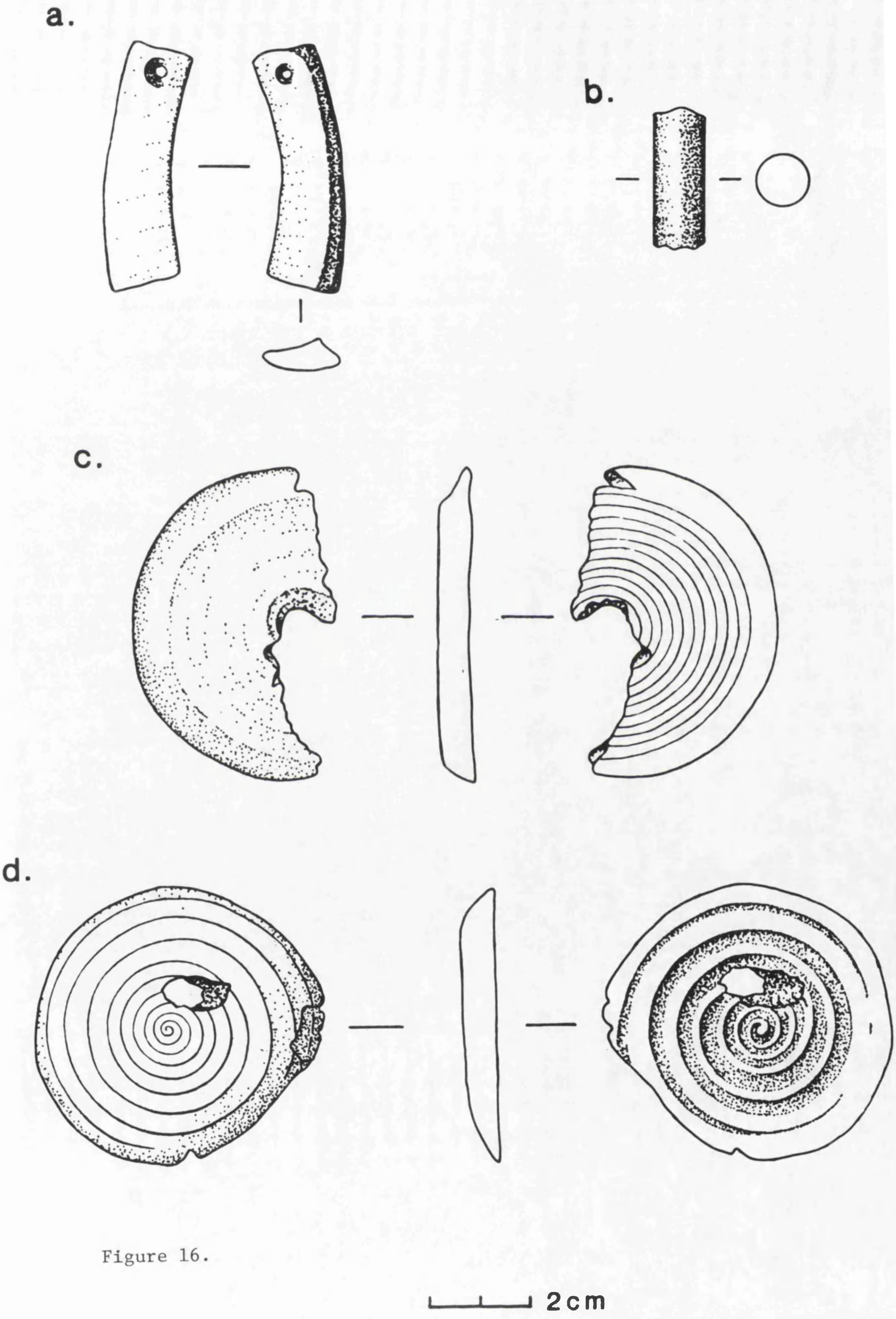


Figure 16.

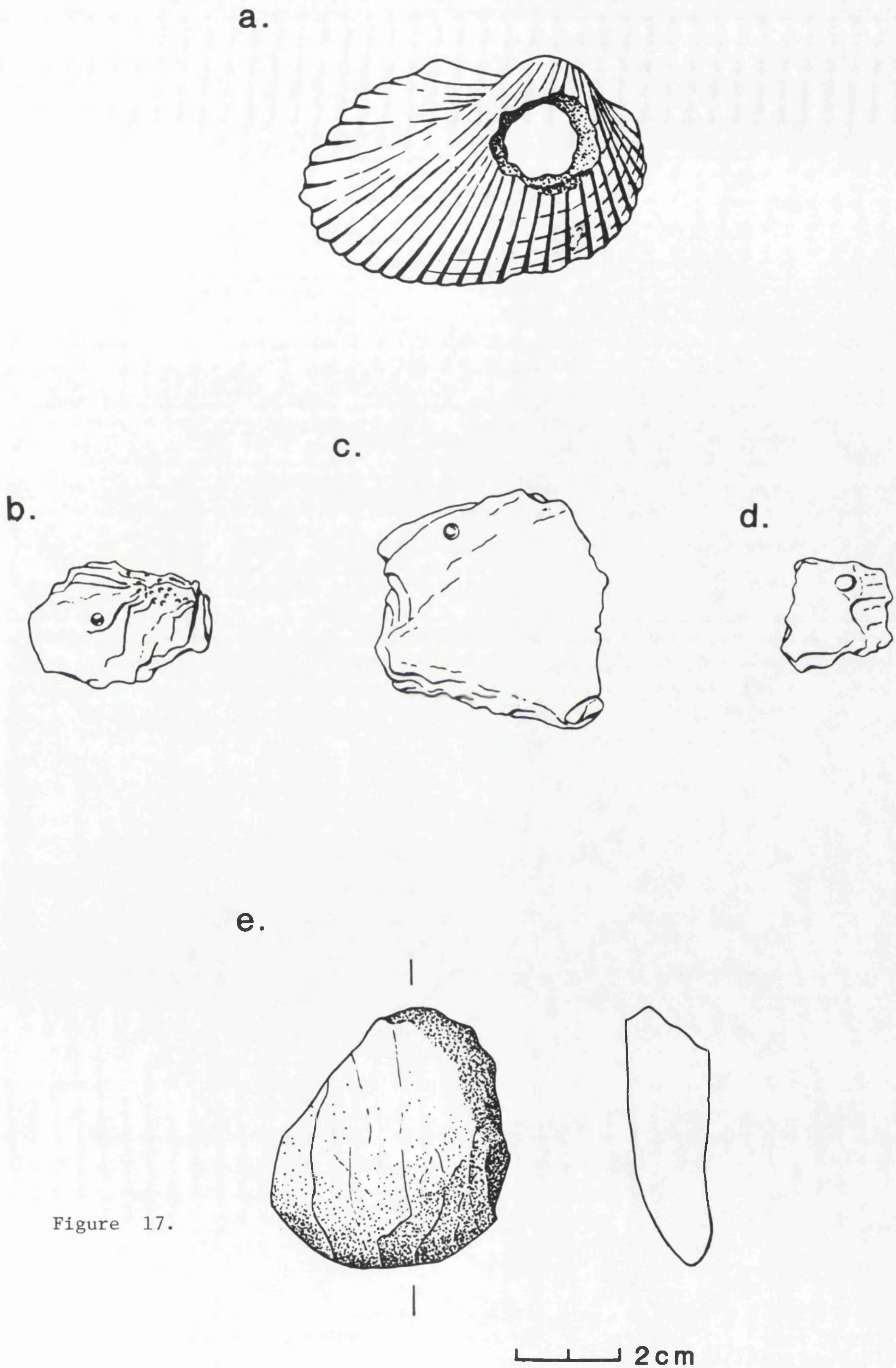


Figure 17.

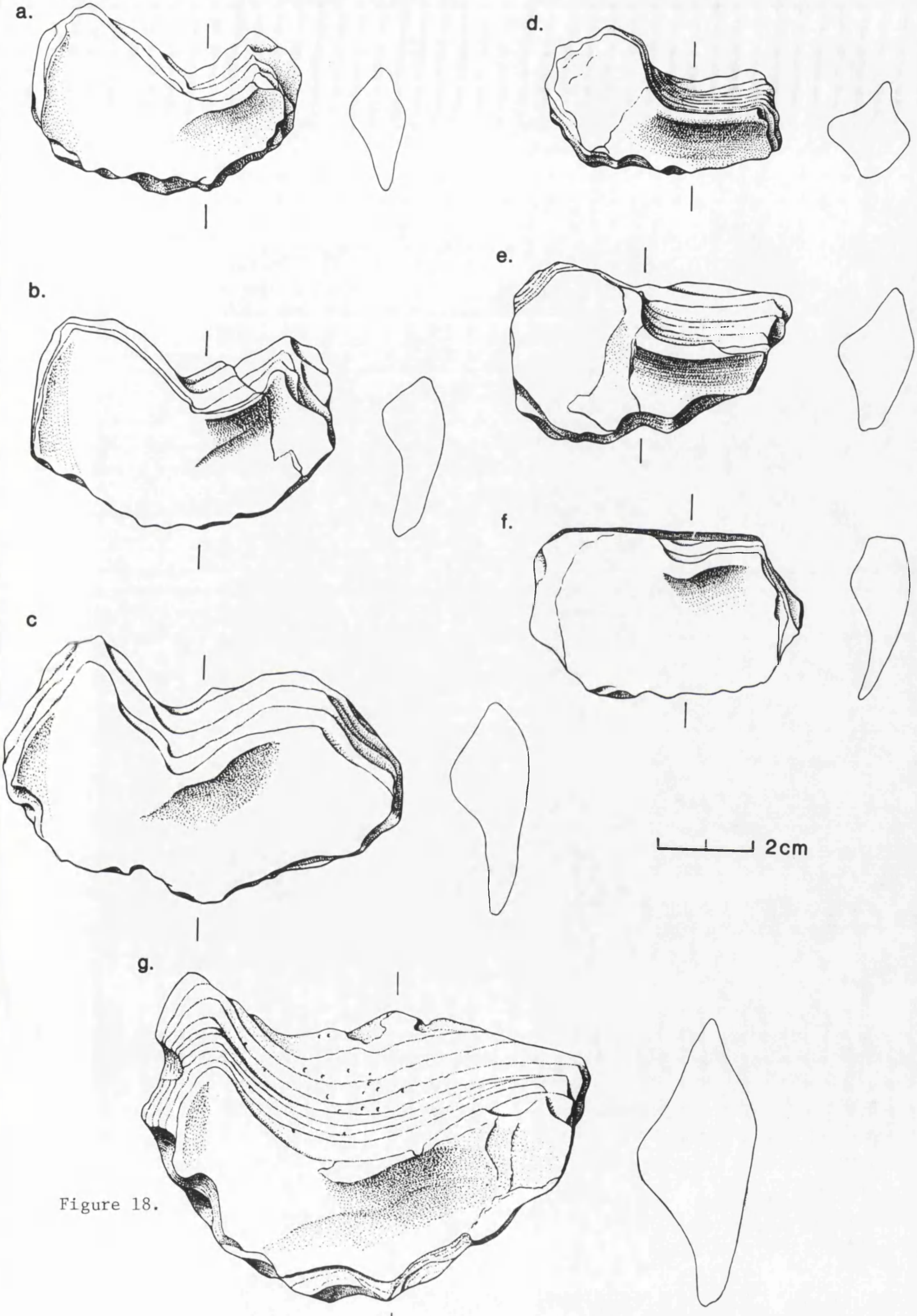


Figure 18.

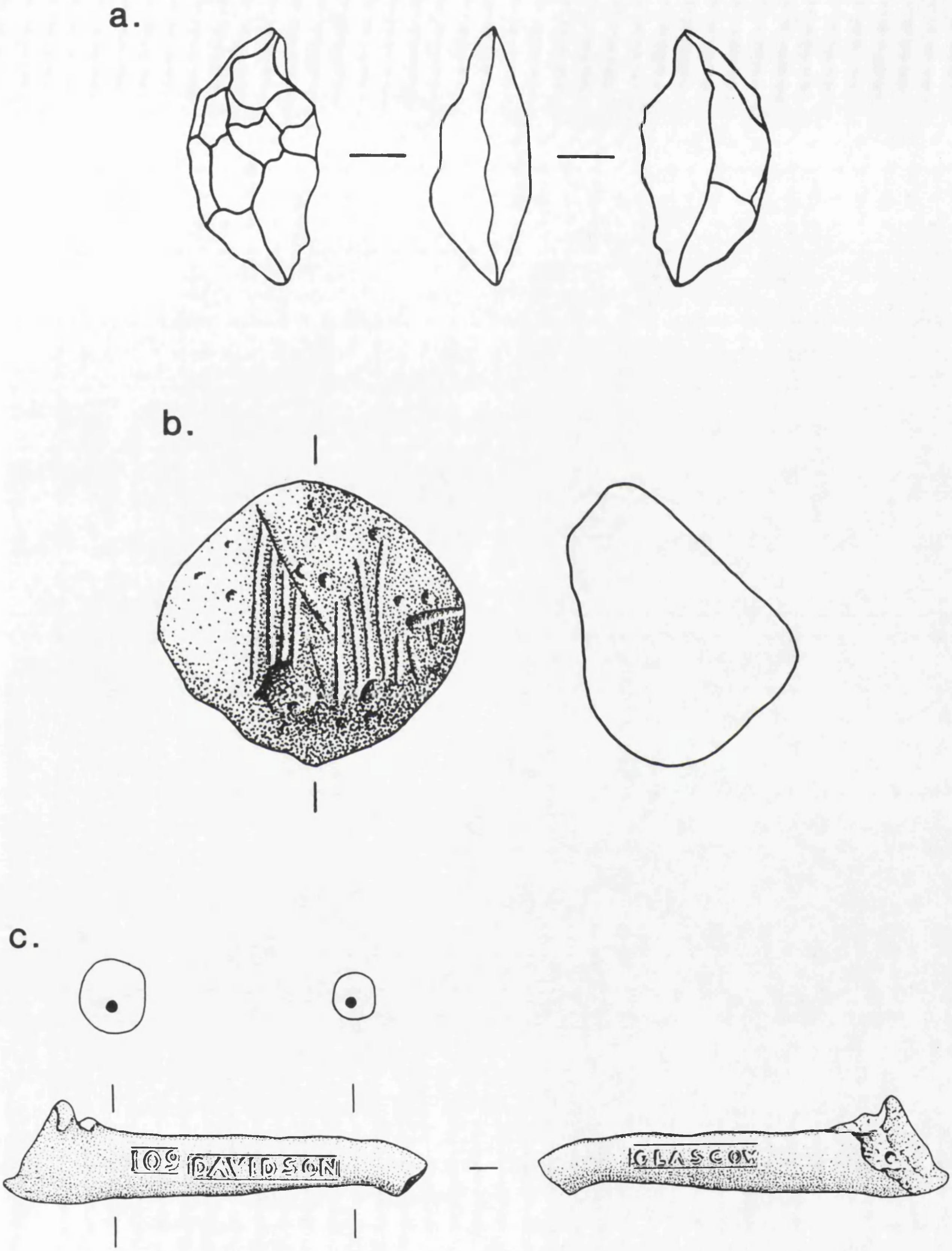


Figure 19.

2cm

and drawings of habitations (Plates 1b, 2a and 2b). There is no indication of the time period over which this site may have been inhabited, although shell adzes and ground conus-shell ornaments, for example, may be indicators of pre-European patterns of subsistence and exchange. The occurrence of European materials in many areas of the site certainly indicate post-European Islander activity at Gumu.

Although the animal remains noted were only quantified in relative terms (based upon visual surface inspection) they probably give some indication of past Islander diet. Dugong bones (with most parts of the skeleton represented) are the most abundant remains found, and a wide range of shellfish. The highest species diversity relates to three coastal habitats (coral reef, sandy and rocky foreshore), all in close proximity to Gumu (Fig.12). Although the diversity of mangrove species identified is lower than that from the above three habitats, the main edible mangrove species are present, and thus the number of shellfish identified may be more a reflection of mangrove ecology (i.e. fewer indigenous shellfish species) than cultural preferences. Three shellfish genera could have come from depths greater than 8 m (Melo, Syrinx, Nautilus), and one certainly did (Nautilus). However, nautilus shells are today frequently found on the shore, having been washed-up during high tides.

Certain shellfish species, described in the mid-nineteenth ethnography as having been associated with ceremonial contexts, were found either fragmented or whole on 28 of the midden features at Gumu. The percentage occurrence of each type varied (Syrinx sp. 42%, Hippopus and _Tridacna_ spp. 31%, _Pinctada_ sp. 25%, _Nautilus_ 6%). As noted in Section 4.10.1, a few of the mounds at Gumu I were considered to be unique features on account of the number of whole _Syrinx_ shells associated with them (28, 9 and 5 shells respectively), in addition to ground-conus shell artefacts (_dibi-dibi_) found on two of them (Plate 13a and Fig.16). Two _Syrinx_ shells were also found in association with a stone mound discovered after a low-lying grassy area at Gumu I had been partially cleared. A small (_c_. 100cm by 60cm) red and yellow coloured stone was found standing upright in the centre of this mound. This depressed patch of grass (which stays green even throughout the dry season) is known today by the Islanders as the "landing place" of the mythological cult-hero Kwoiam (Plates 14a and 14b).

A result which was wholly unexpected was the abundance of dugong remains on the surface of the 95 mounds, to the virtual exclusion of turtle. Turtle was, however, noted on the unique "platform" and "ridge" midden feature at Gumu III, as well as five carapace fragments identified from within the one mound which was "dissected". The low percentage (12 %) of fish remains found on the mounds may well reflect relative invisibility or taphonomic biases.

Agricultural practices are indicated by the mound-and-ditch field system located at Gumu I, and possibly by the three shell adzes found. Although neither type of evidence has been directly dated, Haddon describes the use of shell axes prior to the introduction of iron in the Strait (1912:125-6). However, he states that the only agricultural implement used in the western islands "was the

Plate 14a. "Kwoiam's landing place": grass cut over mound in centre, Gumu I.

Plate 14b. Close-up of red and yellow coloured stone on the surface in centre of the mound in "Kwoiam's landing place", Gumu I.

pointed stick, used in planting and digging yams" (1890:354). The ethnographic evidence of agriculture is discussed further in Chapter 6.

The evidence of past Islander stone technology is minimal (Table 5 and Figs 13, and 15). The diversity of types of stone found that may have been worked, and the rarity of such "artefacts", suggests opportunistic selection for use. However, stone is present on the surface of all the midden features recorded, and consists of both igneous and metamorphic types. The igneous rocks are divisible into extrusive acidic, intrusive acidic, extrusive basic and mixed sedimentary-pyroclastic types. The rocks identified as extrusive basics (e.g. basalt and obsidian) are the only type which appears not to occur on Mabuiag, and which may possibly have come from the geologically younger eastern islands of Torres Strait (Willmot et al. 1973). All of the above types of rock were found on either the surface of the midden features or in the intervening areas, and came to a total of 17 igneous and two metamorphic specimens. Of these, seven appear to have been clearly modified by man (Table 5 and Figs 13 and 15). The tools are all made of rock types which occur on Mabuiag, but the three flakes of basalt, and the one fragment of obsidian, are most unlikely to be of local origin. The fragments of vein quartz found on 49% of the mounds may represent a quartz technology, comparable to others studied elsewhere in the world (e.g. Flenniken 1981, Sussman 1985), or they may possibly be by-products of local granitic erosion.

The mixed sedimentary-pyroclastic type is the most abundant rock found. It occurs widely as bedrock on Mabuiag, and angular fragments of various sizes are ubiquitous in the landscape today. They appear to be a dominant feature of the mounds studied. Today such rocks are used for various purposes: bordering village paths, encircling gardens or individual plants, and as a major constituent of the earth ovens (kap mauri or ami) which are built for cooking foods, in particular turtle and damper (bread) (as described by Barbara Thompson, see Section 3.8.3). Additional uses of this type of stone have been recorded in other archaeological contexts, e.g. stone-edged trackways, rectangles and circles, rectangular and linear alignments, stone arrangements including effigies, and fish traps (see Sections 4.5-4.8).

As already mentioned, three small shell adzes were found and possibly one other type of shell that was used as an implement (pearlshell scraper) (Figs 14 and 18). A number of fragments of different types of ornaments were found (Figs 16 and 17) for which the mid-nineteenth century ethnography provides possible interpretations (Table 5). The two ground conus-shell discs found (dibi-dibi) and some of the fragments of pearlshell (Pinctada sp.) may symbolize power or wealth and represent pan-Strait exchange, as well as the flakes of basalt and the piece of obsidian.

In the light of the information in the mid-nineteenth century accounts about features constructed of bone, shell and stone, which were associated with rituals related to hunting, warfare, birth and mortuary practices, and the discovery of "dugong-bone" mounds today in five of the traditional Gumulaig kwod areas (Redfruit, Widul and Pulu islets, and the clan localities of Dabungai and Gumu) it does not seem unreasonable to view (some of) the midden features of Gumu (as well as Dabunga, Pulu, and perhaps Redfruit and Widul islets) as representing loci of past ceremonial activity in addition to economic activities.

However, if the ethnographic information is disregarded, is there anything from the results of the surface survey at Gumu to suggest past Islander activity other than the consumption and disposal of food remains and some associated technology? The surface composition of the raised midden features does suggest that they primarily represent refuse of past Islander meals, but the quantity, distribution, and diversity of shapes of the deposits seem unusual and enigmatic. In addition, the only subsurface investigation of one of the discrete midden mounds revealed (in its centre) an arrangement of dugong ribs encircling a spherically-shaped coral, which precisely resembled the cranium of a human head (Plate 10a). From a "subjective" perspective the raised midden features suggest more than the remains of meals, but do they do so from an "objective" perspective?

The strategy of test excavation was designed to sample some of the morphologically distinct midden features at Gumu, to see if we could reach a better understanding of their past significance (based upon a more "objective" approach) in relation to patterns of settlement, subsistence- and ceremonial-related behaviours. The aim was to attempt to answer a series of questions relating to past activity within the area, i.e.: 1) how representative are the surface remains of the underlying deposits?; 2) will excavation and the quantification of the remains provide new kinds of evidence and help to clarify the significance of the areal extent, morphology and surface composition of the deposits?; 3) will investigation of the vertical depth and horizontal extent of the level surface scatters of midden deposit indicate, more clearly, the nature and extent of former settlement use?; and 4) can a chronology of settlement occupation be established based upon the direct radiocarbon dating of remains from within the deposits?

With these questions in mind, we now turn in Chapter 5 to the methodology and results of the archaeological excavations at Gumu, including discussion of their significance in relation to the above questions; and in Chapter 6 their significance is further discussed, particularly in relation to the traditional patterns of seasonal and daily life on Mabuiag as recorded in the Haddon Reports.

PART C: ANALYSIS AND INTERPRETATION OF ARCHAEOLOGICAL DATA

Chapter 5 The "old village" and ceremonial site of Gumu: archaeological analysis and interpretation

Introduction

The regional overview afforded by the initial archaeological reconnaissance of Mabuiag Island and some of the surrounding islets was considered an essential step prior to selection of one area for more focused study. The reconnaissance revealed that one of the two richest archaeological areas (based upon the relative abundance of visible surface remains) was located just inland of the present-day coastline at the southernmost end of the extensive lowland which stretches along the southeastern coast of Mabuiag. The physiography of this sandy, mainly grass-covered flat area, which extends from the beach to the rocky hill slopes of the interior (Fig.8), seems well suited today to occupation, and thus may have been in the past. It is well above high tide level, is made comfortable by the prevaling trade winds, and is close to a perennial source of water, to mangrove, and to fringing coral-reef communities. The location was also advantageous for archaeological survey and excavation (e.g. close enough to the present-day village to allow hand transport of equipment and collected samples, but not so close as to be visited often by Islanders). As mentioned previously, the area was formerly and is still known as the old settlement and ceremonial site of Gumu. However, the main reason for selecting the Gumu area was that the results of the archaeological reconnaissance suggested that, regardless of any ethnographic information on past Islander activity there, it appeared to have great potential for more detailed archaeological study.

5.1 Archaeological excavation in the Gumu area

5.1.1 Methodology

The survey of the Gumu area revealed that archaeological features are present on a surface area of approximately 20,000 m2 (2 ha), the width varying according to the distance from the beach ridge to the base of the rocky hill slopes (Fig.8; Section 4.10.1). Across the entire area of Gumu (i.e. I, II, and III) there are two types of midden deposit: discrete mounds varying in shape, and discontinuous surface scatters. However, as explained previously, in addition to these two types, in Gumu III there is a unique combination of midden features which consists of a "platform", 8 m long by 5-7 m wide, bordered by two "ridges", respectively 35 m and 20 m long, running along the platform's inland and seaward edges in a northeast-southwest direction (Fig.8). In view of the existence of this unique complex of features, and its proximity to discrete mounds and surface scatters, it was chosen as the focus of the excavtion carried out in the 1985 field season.

The primary objective was to understand the past function of the midden deposits through analysis of excavated samples and stratigraphic testing, and to study the spatial relationships between the midden features and surrounding areas. The excavation strategy was designed to explore the relationship between the surface morphology and composition of the midden and the underlying composition by sampling i) all the superficially different features of the platform-ridge complex, and ii) the two other types of midden deposit in its proximity, i.e. "level" surface scatters and a discrete mound. We also wanted to explore how representative surface scatters of midden remains are (in whatever form) of what lies beneath them. Thus, in addition to the sample excavations mentioned above, 16 test pits were dug along north-south transects across the entire Gumu site (Fig.8), to try to gain a better understanding of this relationship and to provide stratigraphic information on the site as a whole. The locations of the pits were chosen to include areas both with and without midden remains visible at the surface. Prior to digging each pit, a photographic record and written description of the materials at the surface was made. A photographic and written record was also made of the stratigraphy and content of each pit and samples of the stratigraphic layers exposed in each pit were taken. The results of the 16 stratigraphic pits dug are discussed in Section 5.2.1.

5.1.2 Platform-ridge transect excavation

The platform-ridge complex and the surrounding surface scatters were sample-excavated along a 25 x 1 m transect which extended across both types of deposit (Plate 15a). Between two and four 50cm2 quadrants of five m2 pits were excavated from within the transect. Three of these were located on the platform-ridge complex (Squares GH, M, and T), in order to sample both areas on the platform and the ridges on either side. The other two were located on "level" surface scatters, one inland (Square E), the other seaward (Square Y) of the platform-ridge (Fig.8 and Plates 15b,16a,16b). Prior to excavation, photographs were taken, descriptions made, and the surface materials collected. Excavation was carried out with fine picks and brushes in 5cm spits unless a change in the deposit was detected. Because of the density of bone, shell and stone, and the compactness of the deposits, it was not possible to use trowels without damaging the remains, and excavation was therefore slow.

Photographs and detailed notes were taken throughout excavation. To ensure the complete recovery of remains, fine-sieving was carried out on site. All excavated material was first passed through 4 mm-mesh sieves and then 2 mm-mesh sieves. Samples of the 2mm residue from each spit were then examined for smaller remains. The total volume of material from each spit was weighed to determine the bone/shell/stone ratios throughout the deposit. The different types of remains were sorted and bagged separately in the field. The rocks uncovered (primarily angular fragments of island bedrock), due to their quantity and weight, were counted, measured, weighed and left on site except for a small sample kept for

Plate 15a. Platform-ridge transect excavation, looking west, Gumu III.

Plate 15b. Platform-ridge transect excavation, surface of Square E, Gumu III.

Plate 16a. Platform-ridge transect excavation, surface of Square GH, Gumu III.

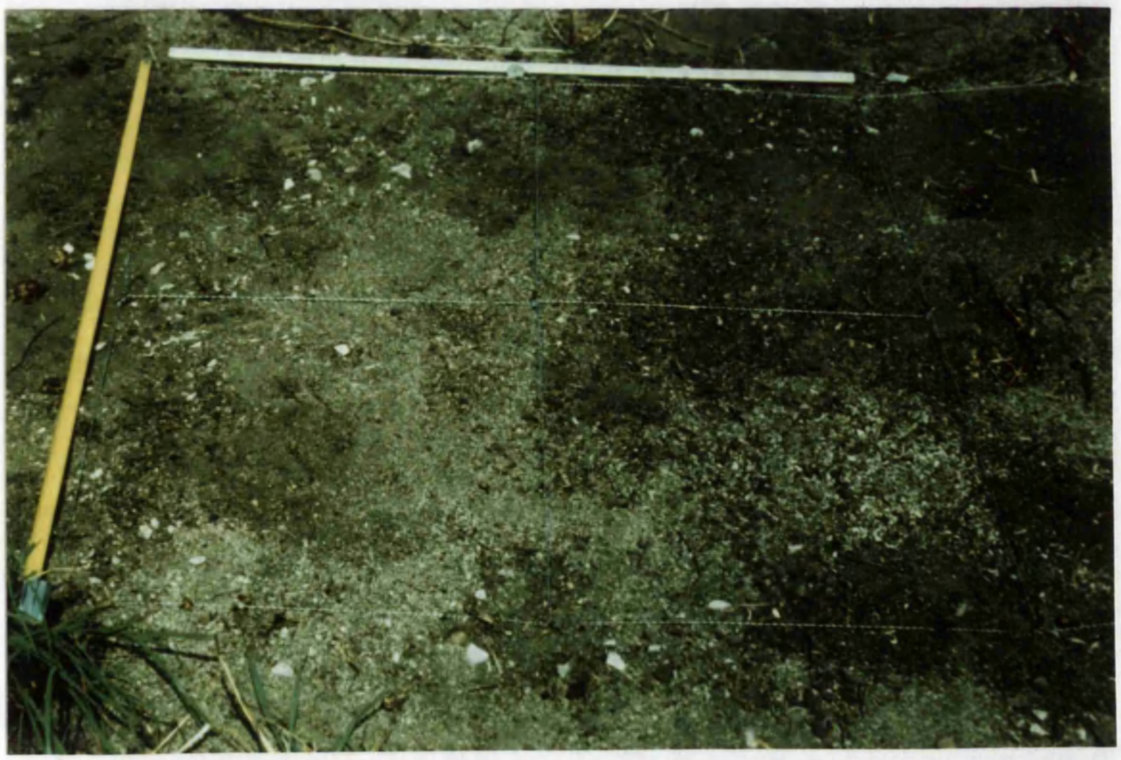


Plate 16b. Platform-ridge transect excavation, surface of Square Y, Gumu III.

identification. Excavation proceeded until sterile deposits were reached, on average at a depth of between 35 and 40 cm (Plate 17a). Stratigraphic descriptions were made of each pit, and samples were taken of the levels at which colour changes occurred in the stratigraphy. These were determined by eye and by reference to the Munsell soil-colour chart. A full photographic record of each pit was made, although due to time constraints it was not possible to document each spit excavated with detailed drawings. At the conclusion of the excavations, a large proportion of the excavated material and all of the soil samples were packaged and shipped to London where they have been further sorted, identified and analysed.

5.1.3 Mound excavation

The discrete mound excavated was chosen on account of its relatively small size and proximity to the platform-ridge complex (Fig.8 and Plate 17b). However, due to lack of time, we were only able to excavate half of it. Prior to excavation, a detailed surface description was made, photographs taken, and the surface materials collected. The mound was then divided into four wedge-shaped sections, and the two inland-facing ones were excavated. Because of the density of the remains and the shape of the mound it was not possible to excavate in 5 cm spits, and a different excavation strategy was adopted. Each excavated layer consisted of a) all of the exposed remains (angular rocks and some bone and shell), which were

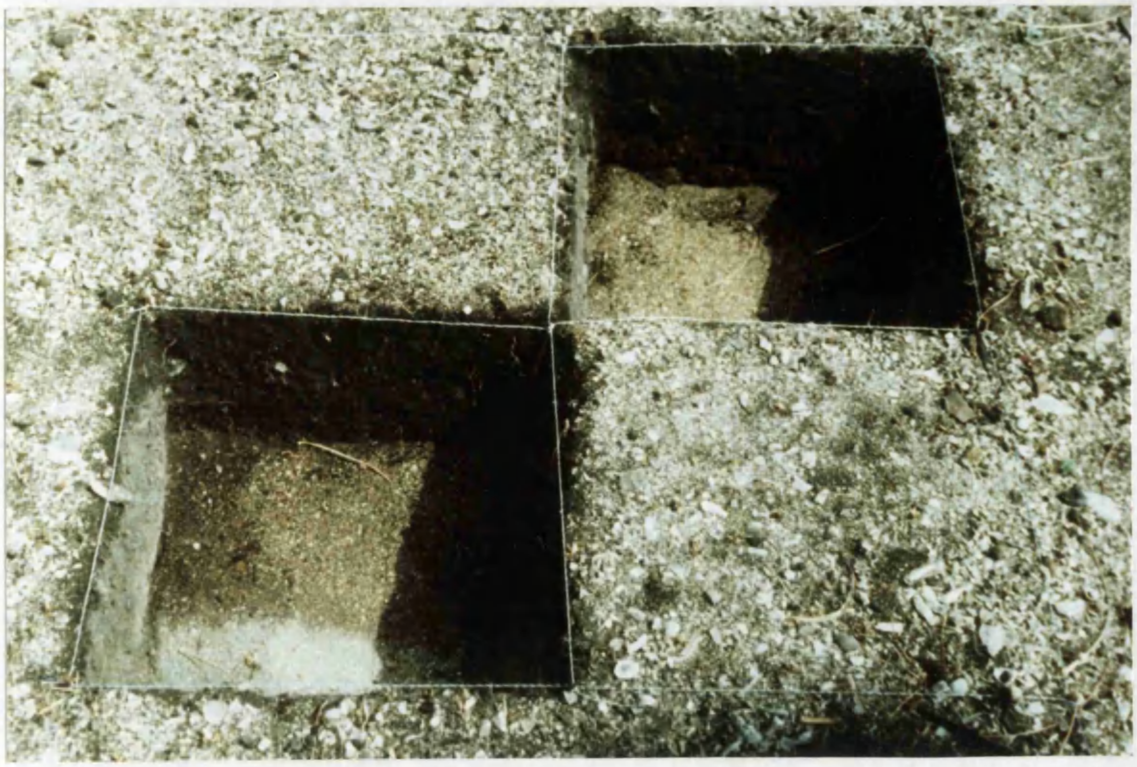


Plate 17a. Platform-ridge transect excavation, Square E excavated to sterile beach sand at 25 cm depth, Gumu III.

Plate 17b. Mound 87, one-half excavated, Gumu III.

removed by hand, and b) the remaining loose matrix, which was then removed until the next layer of rocks and other remains were clearly exposed. Heights were taken from four fixed points at the top and bottom of each layer, as well as photographs. The larger remains were bagged separately in the field, and the deposit sieved and weighed as described for the transect excavation. The rocks were also counted, measured, weighed and left on site as before. Excavation continued until the bottom of the last layer was level with the ground surface. At this junction there were no visible rocks or animal remains although the deposit was still dark. To determine the depth and content of this dark deposit two small pits were dug: one in the middle of the level surface where the two excavated wedges had met, and the other at the northern edge of the north-western wedge excavated, at its boundary with the surrounding ground surface. In both pits the dark matrix continued to a depth of 25-30 cm. Few midden remains were present, and the underlying deposit was a beach sand. Stratigraphic samples and photographs were taken. A large proportion of the excavated material was shipped to London for analysis.

5.1.4 <u>Radiocarbon dating of samples from the Gumu area</u>

A major disappointment of the 1985 season of excavations was the general lack in the midden deposits of charred-plant remains (charcoal) of sufficient size and structural coherence to be radiocarbon dated by the conventional technique. A few small deposits of charcoal were found which contained sufficiently large fragments to be treated conventionally. Two of these have now been dated. The first came from one of the stratigraphic test pits, i.e. no. 7, situated 12.5-13.0 m southwest of the centre of the transect excavation in Gumu III (Fig.8). The charcoal was recovered from an intact pocket of deposition at a depth of 42 cm in the pit, at the junction of the lower, lighter brown midden soil and the basal beach sand which underlies the midden deposits at Gumu III. It might therefore pre-date the accumulation of the overburden of midden materials (bone, stone and shell in a brown soil deposit which gets progressively lighter in colour with depth down to 42 cm). It may represent the remains of an earth oven (ami) or camp fire on the surface of the basal sand; or, alternatively, it may date the beginning of midden accumulation at this location.

It is likely that the charcoal from this deposit derived from a man-made fire rather than from one that occurred independently of human activity. It is highly improbable that natural fires caused by lightning or other means would have occurred in the beach environment before humans occupied the island, and the fact that the charcoal was found at the transition from the beach sand to the (lighter) brown midden soil reinforces the case for it being derived from a man-made fire.

The sample consisted, after pre-treatment, of 1.30 g of structurally coherent charcoal fragments and it gave an uncalibrated radiocarbon age of 1050 ± 100 BP (Beta-21386). This result not only indicates considerable time depth for human activity at Gumu, but it is currently the oldest charcoal-based radiocarbon date we have obtained for human occupation on any of the Western Islands of Torres Strait (for discussion of two shell dates from a midden context on Saibai Island, one of which appears anomalous and gave an uncorrected radiocarbon age of 2540 ± 60 BP (Beta-6885), see Barham & Harris 1985:274-277).

The second charcoal sample dated by the conventional method was obtained from one of the five pits excavated along the platform-ridge transect in Gumu III. It came from the northeast quadrant of the central pit (Square M) at a depth of 35 cm within the dark brown midden deposit which contains abundant bone, shell and stone. The sample consisted of a single fragment of charcoal which, after pre-treatment, weighed 1.80 g, and it gave an uncalibrated radiocarbon age of 600 ± 70 BP (Beta-21385). This clearly demonstrates pre-European occupation of the site and is consistent with other dates we have obtained from midden deposits on the islands of Moa (760 ± 60 BP), Nagir (730 ± 80 BP) and Saibai (780 ± 60 BP) (for discussion see Section 2.4).

In addition to the samples already discussed, we have had a third charcoal sample dated by the conventional method. This came from the southwest quadrant of the same pit (Square M) as the second sample, but it consisted not of a single fragment of charcoal from a given depth but of a collection of small charcoal fragments that were dispersed through 10 cm of the midden deposit between 30 cm and 40 cm depth. The sample weighed 2.17g after pre-treatment and gave an uncalibrated radiocarbon age of "modern" (101.3 ± 1.6% modern:Beta-21384). This result suggests that the small fragments of charcoal may have been washed down the soil profile (probably during successive wet seasons), and it highlights the undesirability of combining dispersed fragments from a bulk sample in order to get enough charcoal for a conventional radiocarbon date. This conclusion is reinforced by the presence of modern grass roots and rodent droppings uncovered throughout the stratigraphy of the excavated deposits (Fig.20).

In future, it may be possible to obtain some dates on very small (<10 mg) in-situ charcoal samples by the new accelerator mass spectrometric (AMS) technique of radiocarbon dating (Harris 1987), but this is precluded at present on grounds of cost. Conventional radiocarbon dates on shell samples are another possibility which may, in the future, be explored.

5.2 Results of the transect and mound excavations and of the stratigraphic test pits at Gumu III

Introduction

The excavation strategy was predicated upon the existence of various types of midden accumulations at Gumu, and was designed to sample the range of deposits that are superficially distinct in composition and morphology. The cultural remains recovered were analysed quantitatively, with the hope that the resulting information would provide details related to the features' past function(s). A transect was laid across each area of Gumu (I, II, & III)

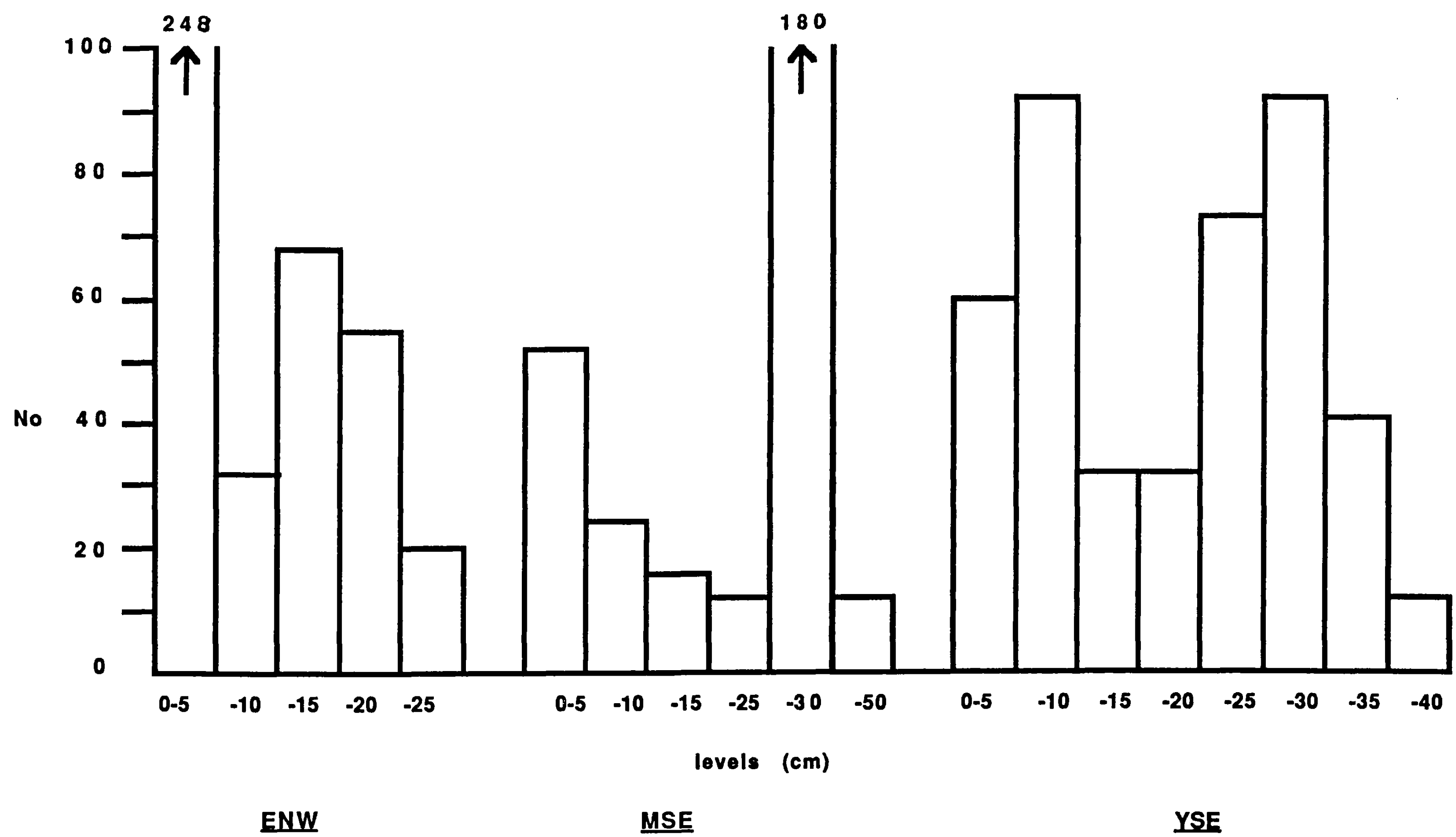


Figure 20. Modern rodent droppings per quadrant level, transect excavation, Gumu III.

from within which a total of 16 test pits were dug (4, 4 and 8 respectively), to provide additional information on the horizontal and vertical extent of the midden deposits, and on the relationship between the nature of the surface remains and their subsurface composition.

The types and frequency of material remains recorded from the surface survey of Gumu (summarised in Section 4.10.2), indicated that dugong and diverse shellfish species (c. 59) were the dominant components, together with some fish and marine turtle. Angular pieces of bedrock (mixed-sedimentary pyroclastics) were ubiquitous across the midden features, surrounding areas, hill slopes and other inland regions (i.e. across almost the entire island). Possible interpretations of their abundance in archaeological contexts are discussed in Section 4.10.2. Islander technology is represented by artefacts made of various types of shell (usually ground or perforated) and fragments of stone (primarily from small cobbles of vein quartz and larger cobbles of rhyolite, granite and basalt), some of which may derive from exchange between Islander communities. Contact with Europeans is indicated by fragments of glass and metal found over some of the area and a clay pipe stem. The presence of these materials may also represent inter-island exchange or trade with Europeans. Having briefly recapitulated the objectives of the Gumu excavations and the results of the surface survey, we now turn to a discussion of the results of the excavation carried out at Gumu III and to the results of the sequence of test pits dug which afforded glimpses of the stratigraphy across the entire Gumu area.

5.2.1 The stratigraphy of the transect and mound excavations and of the 16 test pits

5.2.2 Transect excavation

Two or more 50 cm x 50 cm quadrants were excavated in each of five m2-trenches that were a part of the 25-metre transect laid across the platform-ridge midden complex and the surrounding level areas to east and west at Gumu III. Only one quadrant each from three of the squares excavated was studied quantitatively when it became clear that there was not sufficient time for the author to analyse all of the excavated remains to the same level of detail. The three quadrants chosen for analysis appeared to provide the optimal cross-section of the variation noted in the transect-midden deposits during excavation and in the course of a preliminary sort of the material remains.

The quadrants were chosen from the squares E, M, and Y and were located: 1) west, or inland, of the platform-ridge complex (ENW); 2) in the middle of the platform feature (MSE); and 3) east, or seaward of, the platform-ridge (YSE). The two squares excavated which were not studied in detail sampled parts of midden-ridge I (GH) and midden-ridge II (T), on the western and eastern side of the midden platform respectively. Although morphologically distinct from the midden platform, the density and composition of the midden-ridge deposits did not appear to vary as markedly from MSE as did those from either ENW or YSE.

The excavation of each of the five transect squares revealed a relatively shallow stratigraphy of midden deposit overlying beach sand (Plate 17a). There were, however, differences between the stratigraphy of the platform-ridge midden feature and the surrounding level areas that merit consideration. Firstly, both of the ridges and the platform are raised midden features. The average heights of midden ridges I (c. 30m long and 3 wide) and II (c. 20m long and 2m wide), above the surrounding level area, are 28cm (average of 15 measured heights), and 18cm (average of 10 measured heights) respectively. The average height of the midden platform (c. 8m long and 5-7m wide) is 15cm (average of 4 measured heights). When the average heights above the ground surface of the ridges and platform are subtracted from the total thickness of the excavated deposit, the depth of the midden deposit from Squares GH, M and T is similar to the midden depth from the two level surrounding areas (E and Y). In other words, the differences in the subsurface thickness of the midden deposit across the transect (determined in the five m2 excavated), is not great; it has an average depth of 26cm. Some degree of post-depositional disturbance is indicated in all the squares by the occurrence of modern rodent droppings and roots throughout the levels excavated.

Before discussing the stratigraphic information obtained from the 16 test pits dug across the Gumu area, and their relevance to the transect stratigraphy revealed by the transect excavations, details of the stratigraphy of the three transect quadrants and of the one mound studied are presented.

The surface of quadrant ENW consisted of a scatter of shellfish remains (Mesodesma and Chama) of moderate density[1] and small fragments of dugong rib and turtle carapace, with a few small fragments of quartz and pummice and chunks of island bedrock. The upper 10 cm was a tightly compacted dark-brown deposit (Munsel 10 YR 3/2), consisting of a moderate density of fragments of bone, shell, and pummice. Just below 15 cm there was a change to a lower density of the fragmented remains and the deposit became sandier and lighter in colour (Munsel 10 YR 5/2). Larger pieces of pummice were found between 22-23 cm and grass roots were still apparent when sterile beach deposits were reached at 25 cm.

The surface of quadrant MSE was covered by a dense scatter of comminuted bone (dugong rib and skull fragments, turtle carapace, skull and one phalange), shellfish (Mesodesma), and large and small pieces of island bedrock. The upper 15 cm was a tightly compacted dark-brown deposit (Munsel 10 YR 3/1) with a dense accumulation of bone and stone, some shell, and dense root infiltration. At 15 cm there was a change to a slightly lighter matrix (10 YR 3/2) although the density of the bone did not change and the shellfish remains increased. The deposit became lighter between 20-25 cm (10 YR 4/2) and the bone less dense below 30 cm. The deposit became sandier with less bone and shell between 30-40 cm, and lighter (10 YR 4/1). By 48 cm there was little midden material, an increase in pummice, and the deposit was lighter (10 YR 5/2) and sandier. Sterile beach sand was reached at 50cm.

[1]All the surfaces of squares excavated or sampled for stratigraphy were described as covered with either a light, moderate, or dense scatter of midden remains without quantification in the field (e.g. Plate 15b).

The surface of quadrant YSE was covered with very few remains: one large piece of island bedrock, two valves of *Mesodesma*, and a number of small unidentifiable fragments of bone. The excavated deposit was light grey (2.5 YR 3/2) with a low density of small fragments of bone, shell and stone throughout the upper 25 cm. Excavation continued to 45 cm, although the deposit was almost sterile between 25-35 cm, lighter (10 YR 4/2), and contained some pummice and grass roots. The transition to sterile beach sand (10 YR 6/3) occurred at 40 cm below the surface.

5.2.3 Mound excavation

One of the two quarter sections that were excavated from Mound 87 (NW) was analysed in detail. Mound 87 is located approximately eight metres southwest of the eastern end of the transect and three metres to the east of part of midden-ridge II (Fig.8). From its surface composition, the mound appeared to be a pile (*c*. 23.5cm high, 3m in circumference) of chunks of island bedrock, a variety of shellfish species, and fragments of dugong skeleton (Plate 17b). The surface of the NW section, or quadrant excavated, was made up of many chunks of island bedrock, ten types of shellfish, one species of chiton, and fragments of dugong skull, rib and a humerus. The shellfish consisted of five rocky-habitat species (*Nerita* sp., *Monodonta* sp., *Chama* sp., *Asaphis* sp., *Spondylus* sp.) and a chiton (*Acanthozostra* sp.); two coral-reef species (*Turbo* sp., *Melo* or *Syrinx* sp.); one sandy-habitat species (*Mesodesma*), and one mangrove species (*Geloina*). A few small land snails (Torresitrachia torresiana), fragments of coral, and a quartz flake were also found.

The mound was excavated in seven layers. Each consisted primarily of chunks of bedrock and dugong removed by hand, and the remaining deposit which was collected and sieved to reveal the next layer of stone and bone. The first layer was the most densely packed with stone and bone, with a substantial decrease in material below layer three. There was an increase in stone in layer 5 and fragments of glass were found in layer 4 and layer 6. The layer just above the level ground surface (7) had very few remains, and the two small test pits dug into that ground surface revealed approximately 25 cm of dark brown deposit with few midden remains.

The most conspicuous differences in mound and transect composition is the number (indicated by weight) of chunks of island bedrock within the mound (Table 6), the relative abundance of dugong-bone fragments compared with the other types of remains, and the high diversity of shellfish species recorded on the surface.

Table 6 shows the amounts (in kilograms) of the residue (matrix without artefactual material) and its relation to the changes in quantity of island bedrock throughout the transect and mound levels. The total amount of deposit excavated in each sample is different, so it is not possible make an absolute comparison between the results. However the patterns do indicate (when the relative density of midden remains per quadrant is also taken into account) that: a) there is an abundance of stone from the mound deposit with little matrix; and b)

	Residue weight (kilogram)	Rock weight (kilogram)	Quadrant (50 x50 cm) Depth
ENW	58	1.1	25 cm
MSE	70	5	50 cm
YSE	132	4	40 cm
M87	7	19.5	------

Table 6. Summary of weight of excavated matrix (without artefactual material) and rocks with quadrant dimensions, transect-mound excavation, Gumu III.

MSE and YSE have similar rock weights with a significant difference in residue weight. When the overall density of midden remains (other than stones) in each deposit is taken into account, it is clear that the variation in residue weight relates to the amount of animal remains found within each level, the midden remains being nearly four times greater in MSE than YSE (Sections 5.1.7.-5.1.12).

5.2.4 Stratigrapic test-pit sampling

The aim of digging 16 test pits across the Gumu area (four in Gumu I, four in Gumu II, eight in Gumu III), was to explore the relationship between the surface of level areas (both with and without visible midden remains) and their underlying composition, and to provide some stratigraphic information on the site as a whole.

Midden deposits were found in all but two of the test pits dug. The two exceptions were one located in Gumu I and one in Gumu II. The average depth of midden deposit in the remaining 14 pits is 28 cm. The relative abundance of midden remains noted on the surface (as either light, moderate, or dense) was in accordance with the subsurface abundance in 69% of the test pits, i.e. 11 (Fig.21). In Gumu I there was one test pit with dense midden remains on its surface and few within it; in Gumu II there were two test pits with a moderate density of surface remains and very few within the pits; and in Gumu III there was one moderate surface scatter with few subsurface remains, and one light surface scatter with abundant subsurface midden

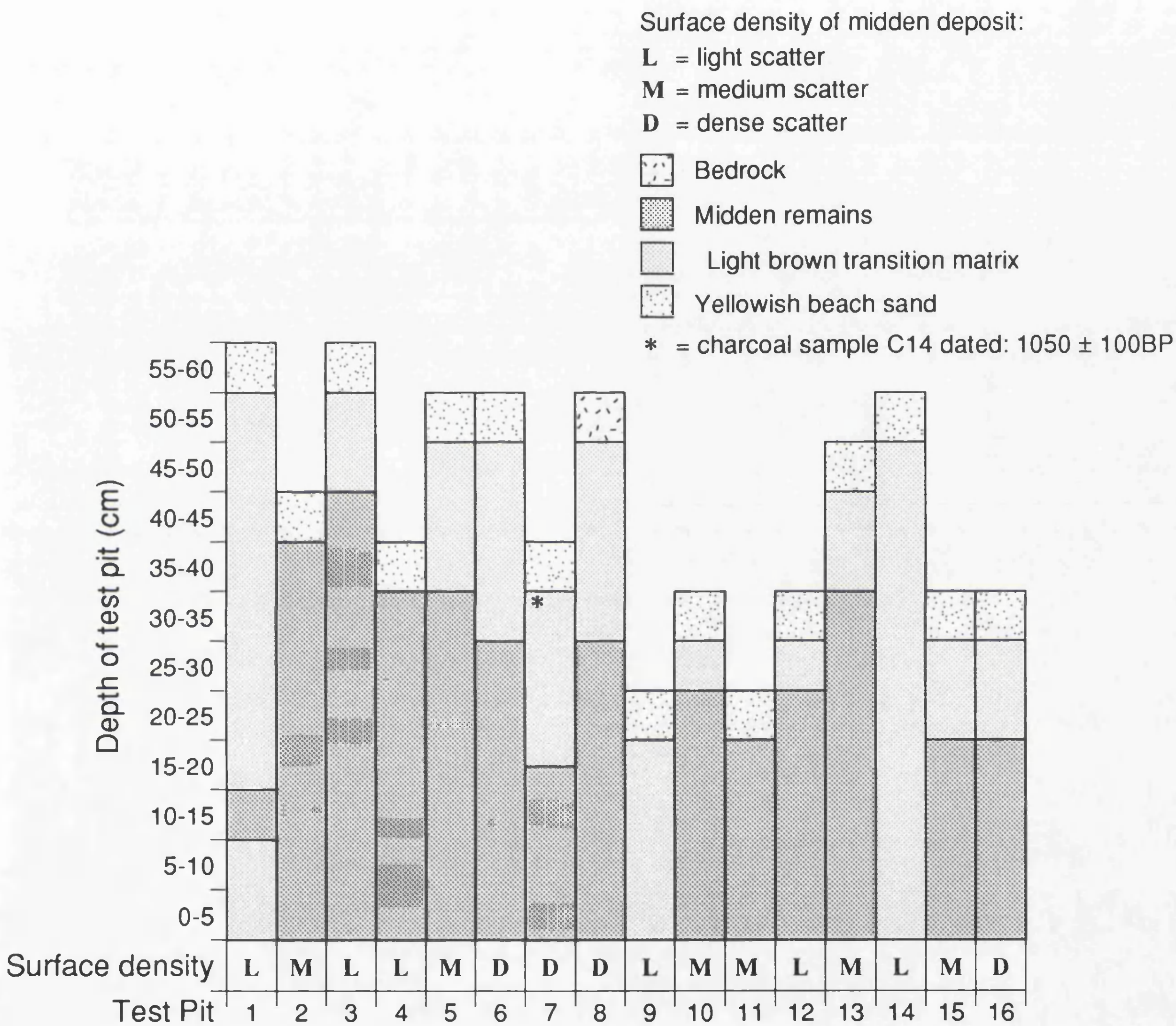


Figure 21. Generalised view of the test-pit stratigraphy, Gumu I, II, III.

remains. Of the 14 test pits dug with midden deposits, seven contained a low density of remains, one a moderate amount, and six an abundant amount. Twice as many test pits were dug in Gumu III because this area was the focus of excavation, and five of the eight test pits dug contained a high (four of the five) or moderate density of midden remains.

The overall impression gained from the test-pit stratigraphic sampling is that midden deposits are widespread across the Gumu area. They are, in general, shallow deposits (none greater than 50 cm depth) that grade into a light-brown deposit, which does not contain midden remains and overlies a yellowish beach sand. The only midden deposit found above bedrock was the test pit dug closest to the junction of the beach flat and the inland hill slope, which also overlay a transition layer of light-brown deposit 20 cm thick (see Fig.21). Although no quantitative work was carried out on the remains recovered from these 14 deposits, the superficial appearance of the midden composition and the range of thickness was similar to the variation seen within the transect quadrants excavated. The most apparent difference between the excavated and test-pit deposits is the density of midden remains within the upper 15-30 cm of the platform-ridge complex (i.e. the amount of midden above the level surface), which is more a difference of degree than of kind.

The extent of the midden remains across the Gumu area and the underlying type of deposit discovered suggest that Islanders occupied the area by camping directly inland of the beach on level sandy areas. The only absolute indication of the amount of time over which these cultural deposits might have accumulated comes from the results of the two charcoal samples that were radiocarbon dated. The two dates (c. 1000 BP and c. 600 BP), one from a test pit within the transition deposit at 42 cm, below midden remains, and the other at 35 cm within the excavated midden deposit in Square M, suggest that human activity was taking place at Gumu, either continuously or episodically, between c. AD 990 and c. AD 1390 and thereafter. Historical records document Islanders living in different villages along the coast of Mabuiag when the pearlshellers and missionaries arrived during the second half of the nineteenth century. Thus, people may have been occupying areas of Gumu for a minimum period of 460 years and probably for at least 860 years.

The horizontal extent of the shallow midden deposit that appears to exist across most of the Gumu area, may represent either activity over an extensive area during periods of widespread occupation, or more discrete and patchy use of areas that spread out laterally over time. If the deposits represent the cumulative spread of settlement across the area over time there might be evidence of this in the material culture recovered. The only stratified material remains of European origin found were fragments of green bottle glass in the lower layers of the mound. This may imply that the mound was built after the platform-ridge feature, when glass had become accessible to Islanders through trade with Europeans or from shipwrecks; or, alternatively, that it was built in the same time period as the platform ridge but with different materials. Internal mound composition was only studied at one other mound, located in Gumu I, which did not contain European materials (Section 4.10.1). Excavation and radiocarbon dating of charcoal samples would have to be carried out on a much larger scale if an attempt were to be made to determine the temporal relationships of the varied surface archaeological features at Gumu. However, even if this were attempted, it might prove impossible to date the features reliably on account of the difficulty of finding coherent charcoal samples both adequate in quantity and secure in their stratigraphic position.

5.3 Analysis and interpretation of the excavated remains

5.3.1 Summary of patterns of composition of the excavated deposits

The diversity of types of material remains found within the deposits excavated is similar to that recorded from the surface survey. Fragments of dugong, shellfish, turtle and fish, with almost no bird or rodent remains, were found in addition to pieces of quartz, island bedrock, pummice, and charred-plant remains.

The quantification of the excavated remains, however, affords a somewhat different view of the relative importance of the finds, particularly in relation to the animal remains. The only additional evidence of Islander technology was the small fragments (on average between one and eight mm in length) of quartz found from the sorting of the 2 mm mesh-size sieve remains, but the quantities recovered do not suggest that (if they are the debitage of stone-tool manufacture) they represent the debris of in-situ knapping practices.

The densest (per 5 cm level excavated) and deepest midden deposit of the three quadrants studied is from MSE. The midden deposit in quadrant ENW was overall denser than that of YSE. These findings were in accordance with the relative abundance of midden material noted on the surface of the squares prior to excavation (Plates 15b,16a,16b). However, in spite of significant differences in the total number of fragments found within each of the different categories of remains in the three quadrants, the types of the categories (e.g. dugong, shellfish, fish) and the diversity of components within each one (e.g. element type or species), as well as their relative abundance, did not, in general, vary greatly. This statement can be exemplified by a consideration of some of the results of the analysis of the shellfish remains. The minimum number of individuals (MNI) of shellfish identified per quadrant (combining the MNI for all the shellfish species per quadrant) is approximately four times greater in MSE (810) than ENW (204) and YSE (197). However the diversity of the species present is high in each (between 70% and 78% of the total species identified) and their relative abundance within each sample is fairly constant (with two species in the smaller sample of ENW not found in MSE).

Study of the fish remains, on the other hand, suggests that sample size may be more closely tied to taxonomic diversity, at least at the family level. The maximum number of fish families identified, eleven, is from quadrant MSE where the total sample of fish bones equals nearly 16,000. This compares with four families identified from ENW, with fewer than 2,000 bones, and three families from YSE which had a total of approximately 1,500 bones. However, the types of cranial elements- both those that were (e.g. dentary, premaxilla, pharangeals) and were not (e.g. teeth, jaw, skull) identified to family), and their relative abundance, however, do not vary significantly, even with such large differences in sample size.

Similar consistencies in assemblage composition to those discussed above for the fish remains were revealed by the analysis of the dugong- and turtle-bone remains. In each of the three quadrants, fragments of three dugong elements (rib, skull, and vertebra) comprise, on average, 93% by weight of the total assemblage. Quadrants ENW and YSE have few remains of turtle, but fragments of three elements are present in each which are also found in MSE: carapace, phalanges, and vertebrae. However, on average, carapace fragments by weight comprise 91% of the assemblages.

The above examples, taken from the analyses of the animal remains indicate that although the actual amount of midden material from each quadrant varies considerably, with the greatest variation between the sample of "platform" deposit (MSE) and those from either of the two surrounding level surface scatters (ENW, YSE), the overall diversity of the types of remains, diversity of element type, and species, and the relative abundance of each, are fairly constant. The extent to which both turtle and fish remains were visible on the surface of the excavated quadrants, was, however, a poor indication of their subsurface presence or abundance. In the next section we turn to more detailed discussion of the results revealed through the analysis of the material remains from the three quadrants excavated, and to a comparison with the results from the mound (M87) deposit excavated.

5.3.2 Processing of the excavated animal remains

All the remains were initially sorted and analysed in accordance with the excavated 5 cm-thick levels. Data-scoring sheets were designed to record a range of attributes of the dugong, turtle, fish and shellfish remains recovered by excavation. The remains studied are from two separate samples (which were initially excavated and weighed together); one consists of the larger bone and shell fragments (or more complete specimens of the latter) that were removed and bagged separately after being weighed and sieved on site; the other consists of the smaller fragments recovered from the laboratory sorting of the 2 mm sieve remains. The second sorting process produced the majority of the fish remains studied, a large proportion of the shellfish samples, and many bits of dugong and turtle bone, much of which had to be classified as mixed (i.e. dugong and turtle) unidentifiable bone fragments.

Once sorted, the large animal remains were washed, dried, and, as with the smaller ones, identified[1] to type of animal and family, and to species and element where appropriate. Fragments of bone and shell that could not be placed in either category were classified as unidentifiable. All the large animal-bone fragments (complete specimens comprised 4% of the total sample of the dugong and turtle remains studied), were measured, counted, weighed, and sided when possible. All the fish and shellfish remains were counted, weighed, and sided when possible, with measurements taken of only one type of shellfish (Mesodesma) on account of its abundance and completeness. Four types of superficial damage were recorded on all the animal remains: a) animal teeth marks (dog or rodent); b) (possible) butchery marks; c) discolouration believed to be due to exposure to fire, i.e. charring; d) visible marks which did not look like any of the above, i.e. unidentifible. The degree of natural weathering was recorded from one type of element only, dugong-rib fragments (see Section 5.3.3), in three stages (0: bone surface shows no sign of cracking or flaking due to weathering, 1: bone shows cracking parallel to fibre structure, 2: outermost concentric thin layers of bone show flaking and perpendicular cracking (after Behrensmeyer 1978).

The variation in the colouration and state of preservation of the shellfish remains noted on the surface of Gumu and within the excavated deposits was too great to justify recording types of superficial damage for this

[1] Much of the identification of the animal remains was at the Institute of Archaeology, London, by reference to modern comparative specimens that were collected in Torres Strait by the author and colleagues.

category of material remains (other than perforations). The degree of comminution (size range) of the most abundant dugong and turtle elements (rib and carapace) was also noted.

5.3.3 Superficial bone damage: natural weathering of dugong rib fragments and effects of human and animal activity

To try to assess the degree to which natural weathering processes and/or human activities affected the condition of the archaeologically recovered bone, the dugong, turtle and fish remains were studied closely for superficial signs of alteration. The types of damage noted fell within the following four categories: natural weathering (in three stages), non-human animal alteration (dog and rodent gnawing), human-related alteration (charring and butchery), and unidentifiable. It was hoped that the degree of weathering noted on one type of bone found throughout the excavated deposits (dugong rib) might give an indication of the relative period of time over which the deposits accumulated, i.e. whether or not the remains were buried rapidly or left exposed on the surface. If rapid burial took place this could imply either that the remains were covered up within a "primary" context (the location where the bone-related activity was carried out, e.g. butchery or consumption), or that they were covered rapidly within a "secondary" context, i.e. if transported some distance away from the "primary" area of activity. Thus, rapid burial of bone remains (indicated by minimal signs of weathering) would not necessarily imply a particular behavioural context which led to their deposition. High frequencies of weathered animal remains might suggest a slow rate of midden accumulation. This, coupled with the horizontal extent and limited depth of midden deposit across the Gumu area, might support the view that camping across the area was widespread (whether continuously or episodically), unless weathering of animal remains occurs (relatively) rapidly when exposed to wet-dry season tropical climatic conditions.

Questions of the precise behavioural context or rate of midden accumulation aside, the degree of weathering on the bones, and their abundance within these kinds of midden deposits, is more likely to indicate whether many or few agents might have affected them (potentially many if exposed for a long period of time, few if buried rapidly). However, it is important to have an idea of the relative length of time that the bone may have been exposed if one is interested in determining the range of agents that could have contributed to producing the characteristics of the bone assemblage, and thus inferring to what extent the patterns may or may not be related to human behaviour. In the light of these considerations, it was hoped that other types of superficial damage, if identified (e.g. butchery marks or charring), might provide some information on the behavioural context associated with their deposition, or at least might provide evidence for types of bone alteration which are more clearly related to human behaviour.

To try to assess the length of time over which the midden deposits might have accumulated, and thus to gauge the likelihood of bone destruction arising from exposure to a variety of natural weathering and/or human-related agents, one type of bone element was chosen for more detailed taphonomic study. Dugong-rib fragments were selected on account of their robusticity, their abundance throughout the excavated deposits, and the existence of a control sample of weathered ribs collected on Moa Island in 1984. (Two complete skeletons, one mature and one immature, were deposited in 1978 at the back of the beach just south of St. Pauls village on the eastern coast of Moa, and left there until 1984 when an Islander offered to show them to us and allowed us to collect the remaining bones. As much as possible was recovered of the immature skeleton, and representative elements were taken of the mature one). The degrees of surface weathering (0: no cracking or flaking; 1: parallel cracking; 2: parallel and perpendicular cracking and flaking) recorded from the archaeological rib fragments were noted by level throughout the quadrants. The results are summarised in Table 7.

It is important to note, however, that the degree of weathering on both the modern and archaeological specimens was rarely consistent across the surface of a particular complete bone (modern) or fragment. The majority of the surfaces of the modern ribs collected displayed all three stages of weathering. This appeared to be due to differential exposure of the bones' surface to natural weathering processes (e.g. sun, rain). For example, most of the bones were partially buried within the soil, and/or were infested or covered by grass roots. There were also extreme differences in weathering between the side of the bone which had been exposed to the sun and its underside which had remained resting on the ground. Due to the implications of the variety of surface weathering observed on the modern bone, the weathering stage of the

	Total No. of Fragments	Stages: Unweathered (0)	Weathered (1) & (2)
MSE	127	47%	53%
ENW	40	25%	75%
YSE	18	44%	56%
M87	95	15%	85%

Table 7. Percentage occurrence of stages of weathering on dugong-rib fragments per quadrant, transect-mound excavation, Gumu III.

archaeological bone was determined by the most extreme damage noted.

In all four quadrants a higher percentage of the bone fragments were weathered (combining categories 1 and 2) than not weathered. Moderate to heavily weathered bones were found throughout most of the midden levels. In MSE, the quadrant with the greatest number of rib fragments (127), twice as many weathered than unweathered fragments were present in the top 5 cm of the deposit. Weathered bones dominated until about 20 cm below the surface when there was a slight increase in unweathered bones. A few fragments with some degree of weathering continued throughout the deposit (to -45 cm), but there were very few highly weathered fragments below 10 cm. Finding moderately weathered bones throughout the deposit suggests that the remains were exposed as the deposit built up. If there had been much post-depositional mixing between the levels closest to the surface and the deepest ones, one would expect a greater number of highly weathered bones below 10 cm, and not the increase in the relative number of unweathered fragments found between 20-35 cm below the surface (unless, of course, the higher number of unweathered fragments below 20 cm represents greater fragmentation of ribs with both weathered and unweathered sections). However, these are the only levels excavated within which an articulated part of an animal skeleton was found (immature vertebral column). The vertebrae were also studied for signs of weathering, and all 91 were classified as 0, i.e. showing no signs of surface damage. So, perhaps in this part of the quadrant the levels were deposited and covered within a relatively short period of time.

In ENW (sample-size 40), only the upper 15 cm of deposit contained dugong-rib fragments, within which there were three times as many weathered as unweathered bones. (The top 15 cm is also where the majority of all the midden remains in this quadrant were found.) All but one of the unweathered fragments occurred within the top 5 cm, as well as the majority of highly weathered fragments. With almost all of the unweathered bone in the top 5 cm of the deposit, and significantly higher numbers of weathered fragments between 5 and 15 cm, the deposit would appear to have been mixed subsequent to deposition, unless the remains in the upper level were covered more quickly than those below.

In YSE there were very few dugong remains in general, the ribs totalling 18, with two more of these weathered than unweathered. The rib fragments were found primarily within the top 20 cm and were distributed fairly evenly throughout the levels with the same number of weathered fragments (4) in the uppermost level as in the lowest (15-20 cm) (in both cases at least twice as many than the unweathered ones). The bones of this sample may have been exposed in the process of being buried, or they may - after having been weathered on the surface - been subsequently mixed into lower levels.

In the mound quadrant excavated there were six times as many weathered as unweathered dugong-rib fragments, and they dominated all levels. This suggests either that the bone was exposed for considerable lengths of time as the mound built up, or that it was collected from the surface already highly weathered if the mound was built over a shorter period of time. Without having recourse to a series of absolute (radiocarbon) dates on samples taken throughout the quadrants' stratigraphy, it is difficult to decide if weathered bones found throughout the deposit are in-situ or scattered within it due to post-depositional mixing. Even if a sequence of radiocarbon dates were available, there would be problems of chronological interpretation on account of the relatively short period of time over which the deposit accumulated (400-800 years), and the effect of rodent and root activity on the movement of charred plant remains throughout the midden stratigraphy (Fig.20) (assuming that the material dated was charcoal rather than shell).

All of the identified bone was studied carefully for types of superficial damage that might indicate particular types of pre- or post-depositional human and non-human activity. The results of the recording of possible butchery marks, charring, dog and rodent gnawing, and of marks that could not be associated with any of the above (i.e. unidentifiable) are summarised in Table 8. The percentage occurrence of each type of damage is shown both for dugong and turtle remains separately and together.

Only seven percent of the total sample of dugong bones studied was identified as having (possible)[1,2] butchery marks: 1% from MSE, none from ENW, 4% from YSE, and 2% from M87, and an even smaller percentage from all the turtle remains (2%). On the other hand, the total

[1] The butchery marks were identified based upon the author's knowledge of superficial damage to archaeological bone from previous research (Ghaleb 1983).

[2] Without experimental replication of butchery marks on dugong or turtle bone (with tools of stone and shell, and metal), or SEM work on the (possible) butchery marks, their identification must remain tentative.

	Butchery Marks	Charred	Dog/Rodent	Total No. Bones (dugong & turtle)
MSE	1.30%	7.50%	3.10%	1517
ENW	1%	16%	1%	161
YSE	4.40%	43%	6.40%	296
M87	2%	11%	3%	255
Total	6.90%	77.50%	13.50%	2227

Table 8. Percentage occurrence of superficial marks on dugong and turtle remains per quadrant, transect-mound excavation, Gumu III.

percentage of bones with signs of charring is high (78%): 54% of the dugong and 24% of the turtle remains. However, the percentage of charred dugong remains may be artificially high due to the small size of the sample from YSE (28 fragments), which resulted in nine charred fragments representing 32% of the assemblage.

Dog and rodent teeth marks were identified on bone fragments from each assemblage, although in relatively small quantities. The combined percentage occurrence (of both types of teeth marks) for all the dugong remains was just over 10% of the assemblage, and for the turtle remains it was 3%.

5.3.4 Summary of the patterns of superficial bone damage

With higher totals of weathered than unweathered dugong-rib fragments within each quadrant, as well as throughout most of the levels excavated, there is little evidence to suggest rapid burial of the midden deposits. The one exception is in MSE, where 20 cm in the middle of the deposit (-15-35 cm) appears to have been deposited over a relatively short period of time, due to the articulation of part of a dugong vertebral column and the absence of signs of weathering. Therefore, if the midden remains were left exposed one would expect a significant amount of bone loss due to natural weathering agents and the "trampling" activities of humans (walking and site-clearance) and other animals (e.g. dog and rodent consumption and gnawing). Both the patterns of element-type frequency and quantity and the size of unidentifiable fragments (in addition to the high percentage of weathered bone from each deposit excavated), suggest biases in the archaeological bone assemblage that could be attributed to factors other than intentional human alteration. However, a range of human activities might also produce similar effects (see discussion of the fish remains in Section 5.3.8). The low percentage of (possible) butchery marks may be related to a range of bone-altering agents both human (e.g. burning areas for clearance, throwing bones into the fire) and non-human (e.g. dog and rodent damage), and exposure to natural elements, which would have acted to obscure or destroy traces of cut marks.

5.3.5 Analysis and interpretation of the excavated dugong and turtle remains

Fragmented remains of dugong and marine turtle were found throughout all the excavated deposits. The greatest amount of dugong and turtle bone and the highest element representation were found in MSE, followed (in order of decreasing abundance) by the mound deposit (M87), quadrant ENW, then YSE for dugong remains, with the patterns of abundance reversed (YSE, ENW, M87) for turtle remains (Figs 22 and 24). In general, the dugong and turtle bones, together with the other types of remains found, appeared to be randomly distributed throughout the deposits, the main differences being in density of material both within and

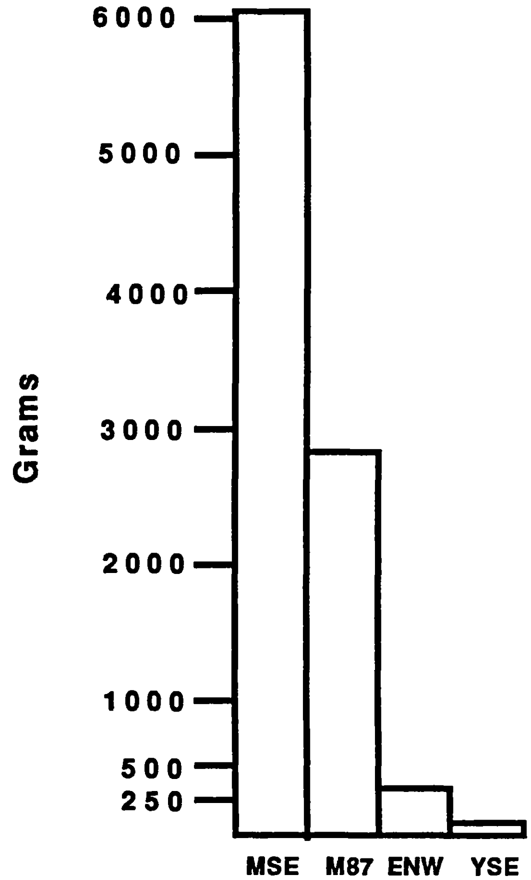


Figure 22. Dugong remains per quadrant (by weight), transect-mound excavation, Gumu III.

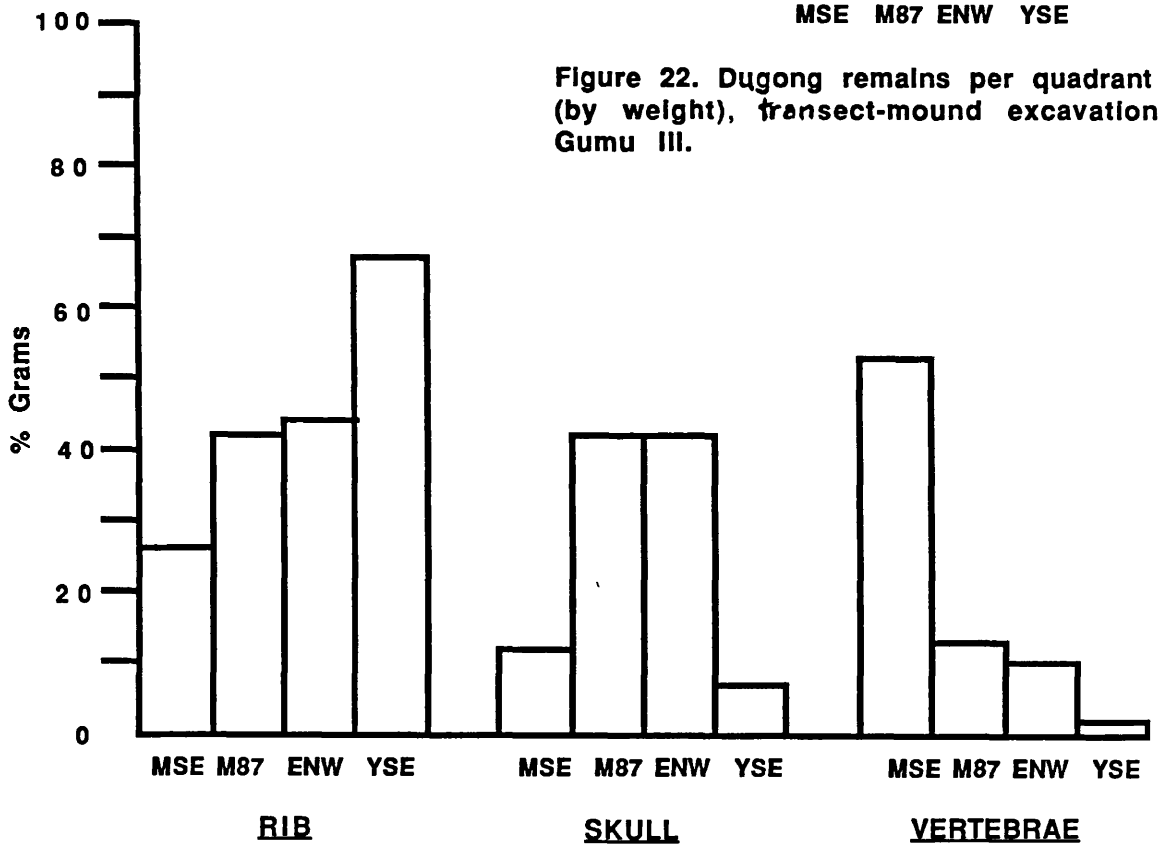


Figure 23. Percentage occurrence (by weight) of the three most abundant dugong elements, transect-mound excavation, Gumu III.

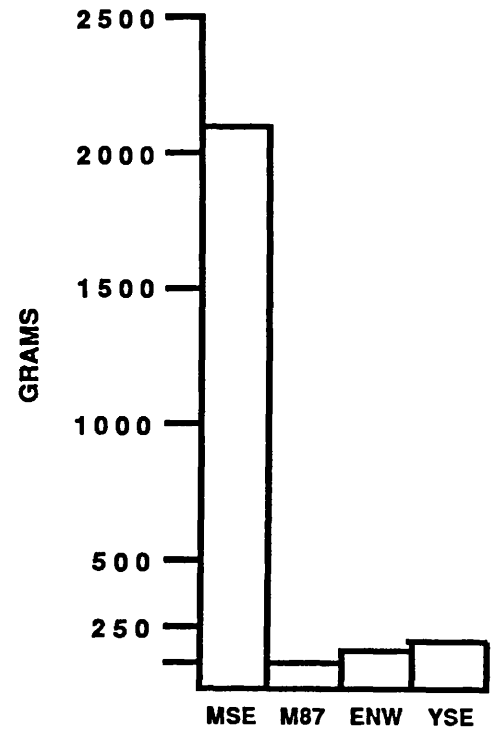


Figure 24. Turtle remains per quadrant (by weight), transect-mound excavation, Gumu III.

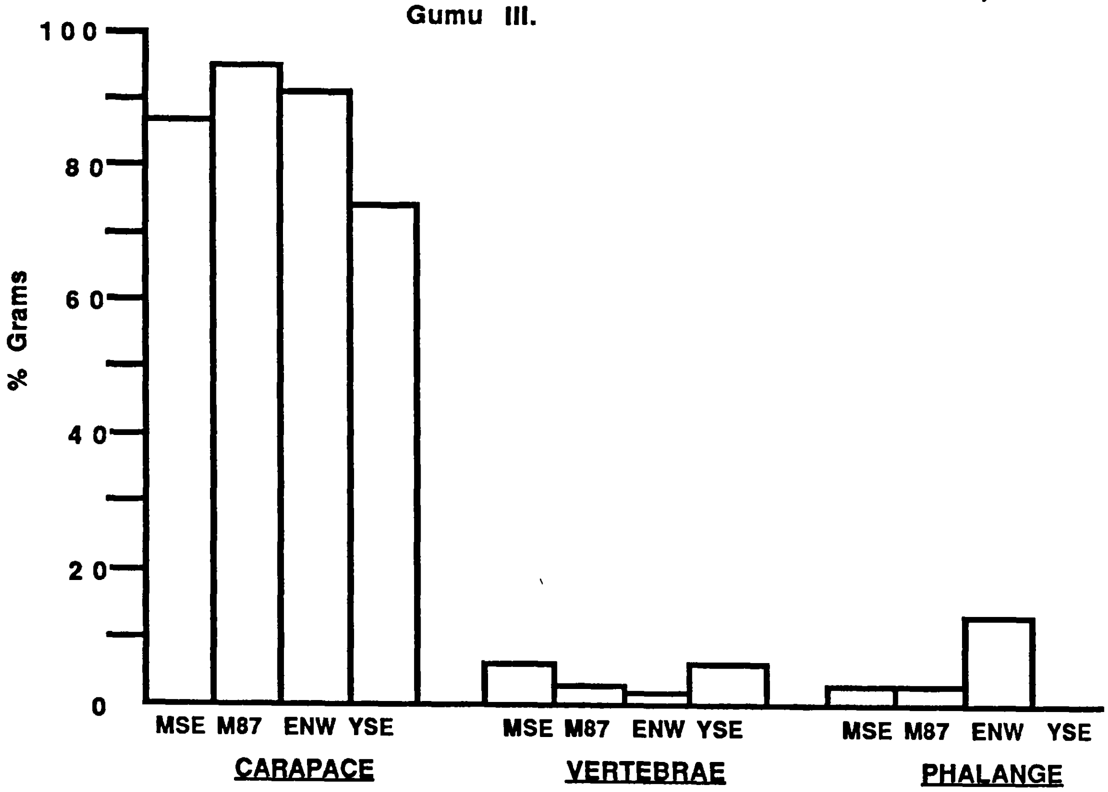


Figure 25. Percentage occurrence (by weight) of the three most abundant turtle elements per quadrant, transect-mound excavation, Gumu III.

between quadrants. In quadrant MSE the high concentration[1] of bone, shell, and stone fragments started to decrease below 25 cm, and below 15 cm in ENW and YSE. Midden remains were recovered to approximately 45 cm depth in MSE, down to 25 cm in ENW, and between 30 and 35 cm in YSE.

As mentioned above (Section 5.3.1), by far the most abundant elements representing dugong and turtle were fragments of dugong rib and turtle carapace (Figs 23 and 25). Disregarding the abundance of vertebral fragments in MSE, fragments of dugong skull (cranial and mandibular) were overall the second most abundant type of dugong element found (Figs 26,27,28). The high percentage of vertebral fragments in MSE is due largely to the only (apparently) non-random distribution of bone found. This consists of part of an articulated immature vertebral column (unfused centra and processes), between 15 and 35 cm below the surface. Bones of the forelimb were present in three of the four samples (all but ENW), but comprised only 2% by number of the total dugong remains. The second most abundant element of the turtle are forelimb and hindlimb phalanges, found in the three transect quadrants comprising 3% of the total turtle remains, and 3% of the turtle remains solely from MSE, which contained 30 phalanges (Fig.25).

The most abundant single category of bone remains in the transect quadrants by weight and number (e.g. MSE: 4,400 grams and 10,892 in number), is the "mixed" (either dugong or turtle) category of unidentifiable fragments

[1]This part of the midden deposit is best described as an agglomerate; i.e. tightly packed bits of bone, shell and stone, so much so that it was not possible to trowel; instead fine picks and brushes were used.

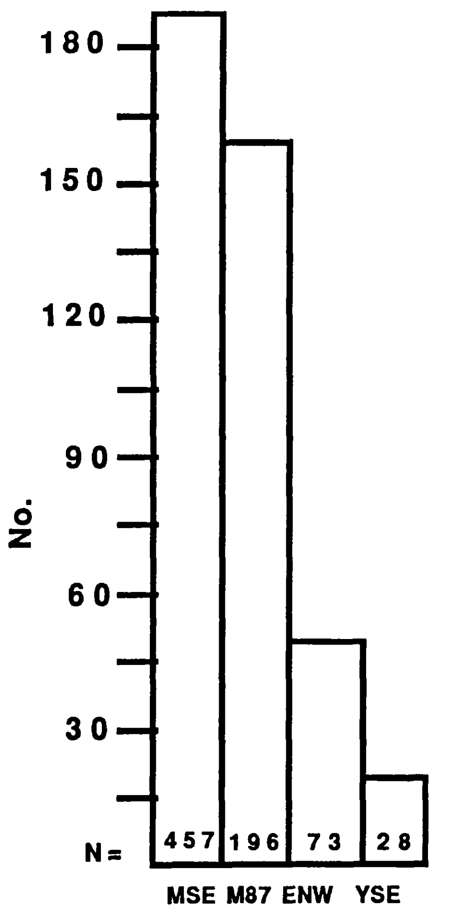


Figure 26. Dugong rib and skull fragments, transect-mound excavation, Gumu III.

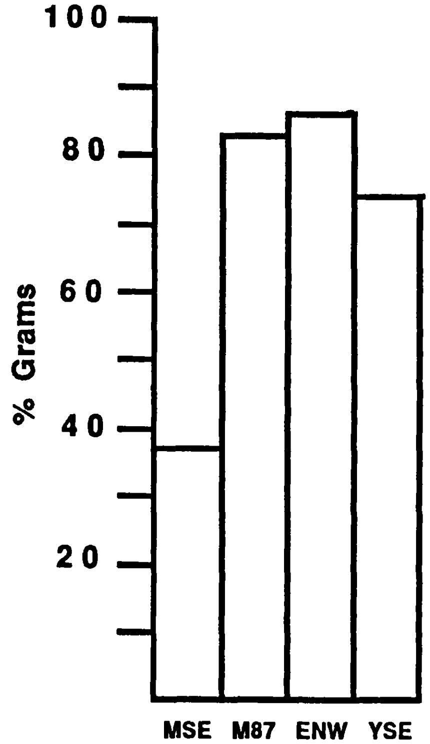


Figure 27. Percentage occurrence (by weight) of dugong rib and skull fragments,transect-mound excavation, Gumu III.

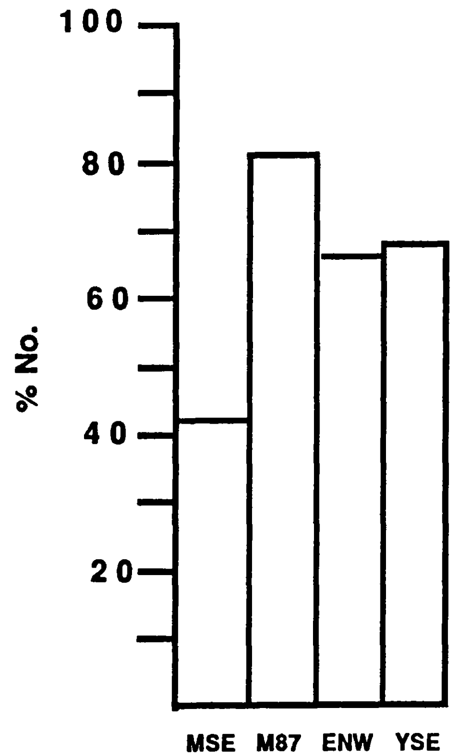


Figure 28. Percentage occurrence (numerically) of dugong rib and skull fragments, transect-mound excavation, Gumu III.

(Table 9). Eighty percent of the fragments in MSE are 1-2 cm in size (greatest length or width), and the quantity of this size increases with depth (i.e. greater fragmentation at lower levels). In the mound deposit dugong rib and skull fragments by weight are three and a half times greater than the mixed unidentified fragments, but there are more of the unidentified fragments by number. Dugong rib and skull fragments are the densest bones of the skeleton, so it is not surprising that they outweigh the category of fragments that are generally small and structurally amorphous. However, the dugong rib and skull fragments are relatively more abundant in M87 than in the other three deposits (Figs 26,27,28). The range of turtle elements identified from the transect-mound excavaton and the range of dugong elements identified from the transect-mound excavation and surface survey are summarised in Figures 29 and 30.

The age, sex and minimum numbers of individuals (MNI) were calculated from the analysis of both the dugong and turtle remains. The dugong is one of four related extant species of "sea cow", the only herbivorous marine mammals[1] in the world, all endangered species. Over a decade of research focused upon Australia's northeastern coastal waters has produced data on the behaviour and physiology of the dugong that is of relevance here (Heinsohn & Birch 1972, Heinsohn & Spain 1974, Spain & Heinsohn 1973, 1974, Heinsohn et al. 1976, Heinsohn 1977,1978, Marsh 1980, Marsh et al. 1978, 1982). However, as no definitive

[1] The other three related species each inhabit a different part of the world: the Caribbean manatee (Trichechus manatus), the African manatee (T. senegalensis), and the Amazonian manatee (T. inunguis).

	Weight (grams)	Number
MSE	4397	10892
ENW	868	2120
YSE	440	1772
M87	329	156

Table 9. Summary of the unidentified bone fragments per quadrant by weight and number, transect-mound excavation, Gumu III.

Figure 29. Summary of turtle elements identified, transect-mound excavation, Gumu III.

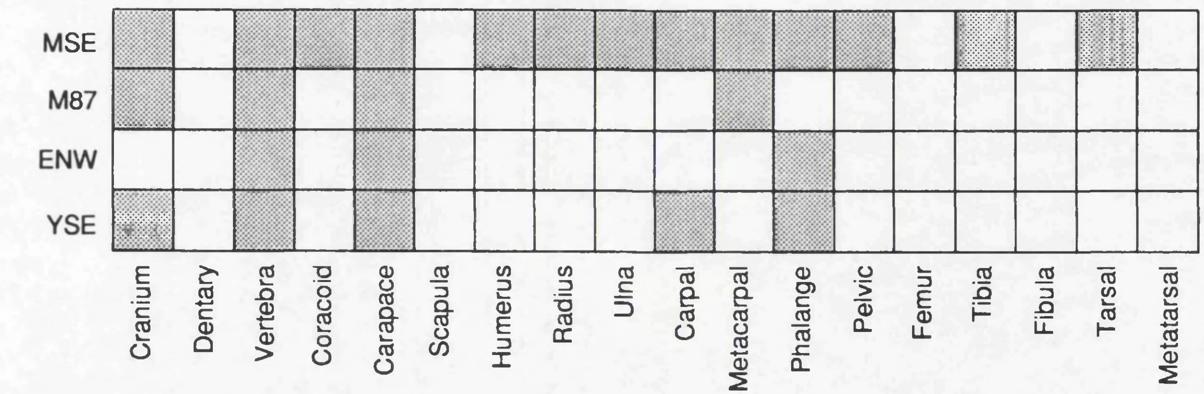
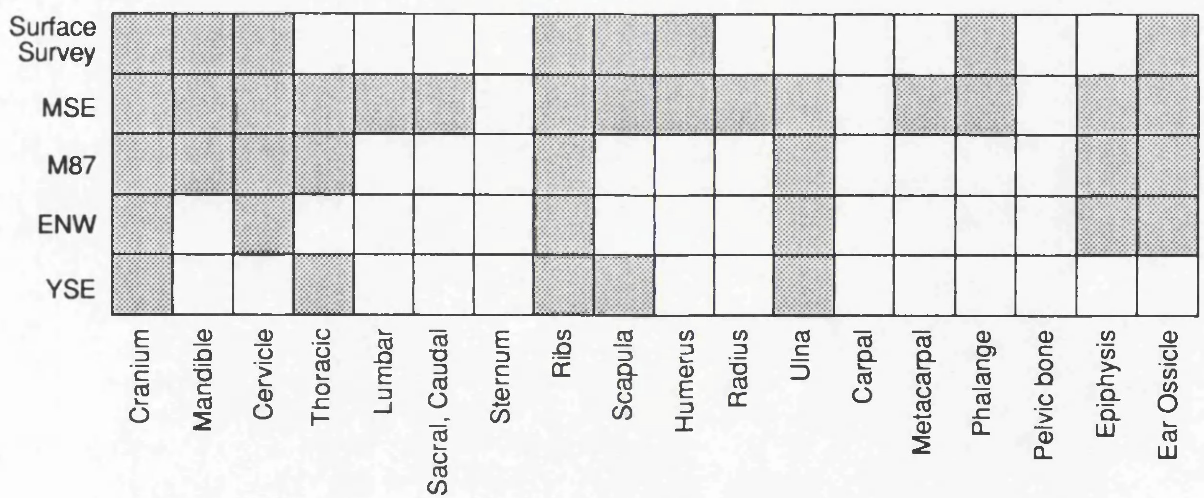


Figure 30. Summary of dugong elements identified, surface survey, Gumu I, II, III, and transect-mound excavation, Gumu III.



life-history information is available, little is known with certainty about the movement, reproduction, growth, and ageing of dugongs (Heinsohn 1977, Marsh 1980:181). With this in mind, results of the research cited above (if preliminary), are discussed in relation to the archaeological remains of dugong recovered.

The total minimum number of dugong from the excavated deposits is seven (three in MSE, two from the mound, and one each in ENW and YSE). Of these, five were identified as immature, based upon the presence-absence of articular ends with signs of incomplete epiphysial fusion, or the epiphyses themselves, and unerupted tusks. The age of sexual maturity of the dugong is not known with certainty and is thought to be related to the region it inhabits, with estimates ranging from two to three years to between five and fourteen. Research also indicates (Marsh 1980:191) that tusks erupt in male dugongs after puberty at 12 or 14 years of age, or possibly later, and only rarely in females. Thus, based upon the recovery of unworn (i.e. unerupted) tusks from one of the excavated deposits (MSE), in addition to bone fragments with unfused epiphyses, this immature dugong could have been between two and 14 years of age. There appears to be no information on the timing of epiphysial fusion in the dugong, but it probably falls within this pre-puberty range of years. Of perhaps greater significance than determining the precise age of the dugong when captured, is having an idea of their approximate size, and hence the amount of food that would have been provided.

Heinshon (1972) suggested that sexual maturity in both males and females occurred at a body length of approximately 2.4m, and that this length could be attained by two years of age (Marsh 1980). Thus, although there is a greater number of immature than mature dugong represented in the MNI's from the excavated quadrants, the animals may have already attained the average adult body size and weight when caught (i.e. 2.4 to 2.7 metres in length and from 230 to 360 kg. in weight (Husar 1974, in Nietschmann 1984)). The usable meat on a dugong is estimated to be 20% to 26% of the total body weight, with a yield of up four to five gallons of oil (Heinsohn 1978), hence Nietschmann's estimate of 35% body weight of usable meat and fat (1984). (These estimates compare with 30-35% usable meat from cattle).

The sexing of dugong based upon skeletal remains can be ambiguous, as it appears that the only element which allows one to distinguish between the two sexes is the tusk. An erupted, or worn tusk, is most likely to represent a mature male dugong, because they erupt only occasionally in females (Marsh 1980:181). However, unerupted tusks could be from either an immature male or female or a mature female dugong. Parts of four individual tusks were found in the excavated bone assemblage, all from MSE. Three are fully erupted, and probably represent a minimum of two mature male dugong. The fourth one is unerupted and is therefore either one immature male or female, or a mature female.

In both ENW and YSE the remains studied do not suggest more than one dugong, and in each the individual is immature. The MNI of dugong in the mound deposit was two, one immature and one adult, based upon the identification of two (nearly complete) fragments of left mandible and two left ulnae fragments, one of which had an unfused epiphysis.

The MNI's calculated for turtle in the three quadrants is the same as that for dugong. A minimum of three individuals were present in MSE, based upon the identification of three left ulnae, with no indication of more than one each in ENW and YSE. The turtle remains of M87 also do not indicate more than one animal. Although fairly extensive ecological research has been carried out on marine turtles (Carr 1952, Bustard 1972), and on the green turtle in particular, the studies provide little information of relevance to the interpretation of turtle skeletal remains.

Four genera (five species) of sea turtle inhabit the coastal waters of northeastern Queensland: Chelonia (C. mydas and C. depressa); Eretmochelys (E. imbricata); Caretta (C. caretta); and Lepidochelys (L. olivacea). These are commonly known as the green, flatback, hawksbill, loggerhead and Pacific ridley respectively and they are distinguished from each other primarily on the basis of phenotypic variations (e.g. differences in head and body shape, size and colouration). Certain differences in skeletal morphology, i.e. in skull and lower jaw (dentary), can help to distinguish between species. However, this work has been carried out on complete specimens with attention focused upon differences in the overall morphology (Carr 1952:342-3). No research has been carried out, apparently, on distinguishing species by differences in the most abundant (fragmented) turtle skeletal elements found archaeologically: carapace and plastron.

In this thesis it is assumed that the majority of turtle remains found archaeologically represent the green turtle. This assumption is based upon information from contemporary ecological and ethnographic work carried out in Torres Strait (Bustard 1971,1972, Nietschmann 1984), and nineteenth-century scientific and ethnographic accounts, which all indicate that of the five turtle species found in the region only three were and are exploited by Islanders: Chelonia mydas, Chelonia depressa, and Eretmochelys imbricata (green, flatback and hawksbill turtles respectively). The green turtle is consistently recorded as both the most common and the most highly prized for food, whereas the hawksbill was said to have been caught primarily for its shell which was used as a raw material for artefacts, with its flesh only sometimes eaten[1].

The excavated turtle bone consists primarily of fragments of carapace (the convex upper "shell" made of 38 bony plates) and plastron (the flat lower "breast" plate made up of nine bony plates). Measurements of size and weight recorded from a sample of 54 green turtles caught by Torres Strait Islanders in the 1970's, indicate that carapace length may range from 70 to 114 cm, the width from 60 to 90 cm, and plastron length from 60 to 90 cm. Weights for the entire animal ranged between 50 and 200 kg, with an average size of 130 kg (Nietschmann 1984).

Marine turtles' bones grow incrementally without

[1] The palatablity of the hawksbill is still debated. Some accounts claim that all its flesh is poisonous, while others state that as long as the gall bladder is removed the rest is safe to eat (Bustard 1972:90).

epiphysial fusion, and there is little information on the relationship between size and age in sea turtles. The archaeological remains are, thus, considered as representing immature or adult (or small and large) turtles based upon how the measurements of the complete forelimb and hindlimb bones recovered compared with measurements taken on similar elements of a small and large green turtle caught and butchered on Mabuiag Island during the 1985 field season.

The size range of the three complete intermedium carpals of the turtle bone in MSE suggests an adult and immature individual, and at least one male was identified (due to the presence of a strongly curved forelimb first-digit distal phalange)[1]. The length of two complete forelimb third proximal phalanges from YSE suggests an adult turtle, and a strongly curved first-digit distal phalange, as in MSE, represents a male. The two phalanges from ENW are fragments, but the projected lengths suggest an adult.

The turtle remains of M87 do not appear to represent more than one turtle and the projected sizes of some of the small and relatively numerous (17) fragments of metacarpals/tarsals, and one complete phalange, suggest an adult turtle. The mound deposit contained the second highest quality of total fragments of dugong and element types represented, but fewer turtle remains than any of the three transect quadrants. Hypothetical implications of the minimum number of both dugong and turtle, calculated

[1]The marked curvature of this particular phalange reflects part of the adult male's reproductive behaviour; they are used to maintain a hold on the female's carapace while mating (Carr 1952:348, Bustard 1972:19).

from the excavated remains, are discussed in Section 5.3.6.

Particular elements of both dugong and turtle were consistently the most abundant types identified from within the four quadrants studied, irrespective of the variation in the overall abundance of bone remains in each sample. In addition, the elements were generally those with the highest frequency in each skeleton (dugong rib and turtle carapace/plastron) and those that are also structurally the most robust. And, as indicated by the average size of both the green turtle and dugong, one complete skeleton of either could potentially generate a large amount of fragmented bone.

The dugong and turtle remains were, almost entirely (as with the other types of midden remains) highly fragmentary. The only exception to the generally comminuted state of the bone excavated was the articulated portion of the vertebral column of an immature dugong which occurred throughout approximately 20 cm of midden deposit in MSE. Upon close examination, the bone was found to be in a "fresh" unweathered state, with no types of superficial damage apparent (e.g. butchery marks or animal gnawing). Based upon these findings, it is not clear why this part of the animal was discarded articulated. It is, however, certain that the remains were treated in a manner different to the rest of the other excavated animal remains, which were disposed of (or subsequently altered) in such a way as to result in deposits of jumbled mixtures of fragmented animal remains and stone of varying density.

The most abundant type of bone recovered, by weight and number, is the category described as mixed-unidentifiable. The surfaces of these fragments of dugong and turtle bone were so corroded that it was not possible to determine to which animal they belonged. The characteristics of the fragments (their average size, abundance throughout the deposits' levels, and extent of surface corrosion), suggest that they were exposed to pre- or post-depositional destructive agents, related either to natural weathering processes and/or to human activites. If the bone remains do represent refuse from past Islander meals, which was discarded within areas of habitation, it is likely that they would have been exposed to a variety of agents capable of altering their morphology, as a result of both human activity and natural processes. In fact, there is little in the internal composition of the excavated deposits, or in the nature of the remains themselves, to suggest that the midden material may represent anything other than accumulations of past Islander refuse. Although there are some differences in the relative abundance and types of the remains within each deposit, the most striking contrast between them is in their surface morphology. Possible interpretations of the differences in midden surface morphology and the types of remains present at Gumu are discussed in greater detail in Section 6.7.

5.3.6. Discussion

The minimum number of dugong and turtle was the same in each of the transect quadrants (three each from MSE, one each in ENW and YSE), but differed in the quarter of the mound excavated (which had an MNI of two dugong and one turtle). With some indication of the extent of the midden deposits across the Gumu area (as revealed by the stratigraphic test-pit sampling), it is clear that the excavated deposits represent a very small percentage of the total amount of midden remains present there. Without more extensive excavation and quantification of the remains recovered, it is difficult to say how representative the excavated deposits are of all the midden deposits at Gumu. Analysis of the excavated deposits did, however, indicate that the differences in midden composition were, in general, related more to the quantity than to the diversity of the remains recovered. To understand the significance of dugong and turtle in past Islander diet, it is necessary to have some idea of the total quantity represented by the midden deposits.

To produce a hypothetical estimate of the amount of dugong and turtle within all the midden deposits at Gumu, the MNI figures of the three different types of excavated midden deposit (level, platform, and mound), must first be "accepted" as representative of the same types of deposit which were not excavated. Estimates of the total surface area of each type of midden deposit (in square metres) can then be multiplied by their respective MNI's to provide numbers of dugong and turtle that might be represented within the midden deposits of the entire site. Thus, to calculate the MNI of dugong and turtle for the midden platform feature at Gumu III, a MNI of 12 for each animal (per square metre) was multiplied by the platform's total surface area (c. 48 m2), to give a total of 576 dugong and 576 turtle.

To continue with this line of reasoning, the MNI's of dugong and turtle were calculated for the ridges that bordered the platform, the two other smaller ridges (one located in Gumu I, the other in Gumu II), all the midden mounds within the Gumu area, and the entirety of the level area (which is assumed to have contained midden remains throughout). Although the ridge deposits associated with the platform in Gumu III were sample excavated (Squares GH and T), they were not studied quantitatively. But because the deposits appeared to be very similar in composition and density to the platform quadrant MSE (for the purposes of hypothetical extrapolation), an estimated MNI of ten dugong and turtle each has been used in the total MNI calculation for these and the other two midden-ridge features. Although two of the 16 test pits dug produced no midden remains, and it therefore may be unjustified to assume that all the level areas of Gumu contained midden deposits, the author decided to initially use the higher estimate of minimum numbers of dugong and turtle present. However, it should also be mentioned here that the estimated number of dugong and turtle could possibly be up to four times too high because only one quarter of the metres excavated was analysed.

The resulting estimate of the number of dugong and turtle represented within the midden deposits across Gumu was, respectively, 22,676 and 22,076. These figures are based upon total surface areas of approximately 19,600 m2 of level midden deposit, c. 180 m2 of mound, c. 170 m2 of ridge, and c. 48 m2 of platform deposit. If these estimates are at all accurate, they suggest that more than 20,000 dugong and turtle each were eaten over a maximum period of 860 years or a minimum period of 460, based upon the two radiocarbon dates from Gumu.

Although this estimated total number of dugong and turtle within the midden deposits may seem high (c. 20,000 each), when averaged over a 460 to 860 year period of occupation by the Kaigas-surlal clan of Gumu consumption of these animals would have been between 26 and 49 dugong and 25 to 48 turtle per year[1,2].

If these hypothesized numbers of dugong and turtle represented at Gumu had been eaten solely by the Kaigas-surlal clan, and if it consisted of c. 56 people (the average clan size calculated for Mabuiag based upon Harris' estimates (1979), see Section 4.3); and using an average dugong weight of 250 kg (35% edible meat and fat) and average green turtle weight of 130 kg (50% edible meat and fat), with the higher of the two yearly hunted estimates (i.e. 49 dugong and 48 turtle); then the total amount of meat/fat consumed per person per year would have been approximately 77 kg of dugong and 56 kg of turtle. By month, this represents 6.4 kg of dugong, and 4.6 kg of

[1]Although now hunted from dinghys powered by motors, total catches of 310 turtles and 227 dugong from Mabuiag and 432 and 192 (respectively) from Badu were recorded over a two-year period (Nietschmann 1984:644).
[2]According to Barbara Thompson, 300 turtles were caught by the Kowrarega in one year, although two subsequent seasons passed without any (Moore 1979:210).

turtle per person, or, if converted into pounds c. 3 lbs of dugong and 2 lbs of turtle per week.

It is worth noting here that at any one time in a community (whatever the population size) meat is unlikely to have been eaten in equal amounts by all people, on account of age differences (e.g. babies and the elderly) and social customs (e.g. restricted access to meat related to status and/or gender). Thus, the amounts of protein and fat provided by the estimated yearly catches have also been divided by a reduced clan estimate of 36 people, which produces totals of 10 kg of dugong and 7 kg of turtle per person per month; or 5 lbs of dugong and 3.5 lbs of turtle per week. Therefore, based upon these two projected clan sizes, the combined average intake of protein and fat from dugong and turtle would have totalled between 5 and 9 pounds per person per week.

These calculations suggest that the exploitation of dugong and turtle led to the consumption of a substantial amount of meat by the clan of Gumu. However, these calculations are based upon the assumption that the hypothesized quantities of dugong and turtle represented by the midden deposits of Gumu were consumed by the one clan described ethnographically as having lived at the site.

If the total amount of meat per person per year (4,312 kg from an average of 49 dugong, and 3,120 kg from an average of 48 turtle caught per year) is recalculated based upon the estimate of Mabuiag's pre-European population (c. 450), we arrive at a figure of 9.6 kg of dugong and 7 kg of turtle; or, if the total amount of meat was consumed by a population of 300, c. 14 kg of dugong and 10.4 kg of turtle per person per year. The difference in the amounts of meat eaten is approximately eight times greater if consumed by one clan instead of the entire population of Mabuiag. Therefore, an accurate assessment of the role of dugong and turtle in past Islander diet (and of the other animals identified as eaten) is highly dependent upon knowledge of the social context of their consumption. The social context of eating is a topic which is extremely difficult to assess from the study of archaeological data alone, but one that can be, and is, discussed in greater detail (in Section 6.6) by further reference to the ethnographic data available.

5.3.7 Analysis and interpretation of the excavated shellfish remains

As expected from the results of the surface survey of Gumu, shellfish remains were present throughout the excavated midden deposits. The number of shellfish species identified from the excavated remains (28: 16 bivalves, 11 gastropods, 1 cephalopod) is, however, less than half of the total identified from the surface survey (59: 25 bivalves, 33 gastropods, 1 cephalopod). Excavated remains of bivalve and gastropod species were found from all the five habitats represented by the surface remains: sandy, rocky, coral reef, mangrove, and deep water; with a smaller range of species in each. The largest difference in diversity between the surface and excavated samples is in the number of gastropod species, with twice as many, or more, identified in the surface survey from each of the five habitats (Table 10). However, the five habitats are represented (according to species' abundance) in the same order in both the surface and the excavated samples, *i.e.* sandy, coral-reef, rocky, mangrove and deep-water habitats (see Table 4).

Consistent with the relative overall abundance of the other types of animal remains, almost three times as many fragments of shellfish were found in MSE than were recovered from ENW and YSE, and nine times as many as from the mound deposit (the total number of fragments consisting of 3,279, 1,170, 1,071, and 324 respectively). Even with this large variation in the total number of fragments, the number of species (all habitats combined) in each of the

	Surface	%	Excavated	%
SANDY		34%		36%
Bivalves	13		9	
Gastropods	7		1	
ROCKY		19%		25%
Bivalves	5		4	
Gastropods	6		3	
CORAL-REEF		33%		29%
Bivalves	5		2	
Gastropods	14		6	
MANGROVE		14%		7%
Bivalves	2		1	
Gastropods	6		1	
DEEP-WATER		2%		3%
Gastropods	1		1	
Total	59		28	

Table 10. Summary of diversity of marine mollusc species by habitat, surface survey, Gumu I,II,III and transect-mound excavation, Gumu III.

transect quadrants was similar (19, 21, and 19, respectively), with diversity fairly high (on average 70% of the 28 species identified were found in each). The total number of species represented in the mound quadrant was less than the three transect quadrants (15), which is 54% of the total (28) species possible (Figs 31 and 32).

The single most abundant species of shellfish found throughout each deposit is a small (c. 12mm x 15mm) bivalve which inhabits sandy shores, not far below the surface and just above the daily mean tide level: Mesodesma striata. The total number of fragments of Mesodesma per quadrant is consistent with the order of the overall abundance of shellfish remains per quadrant: MSE-1,256; ENW-241; YSE-207; M87-130. The second most abundant sandy-habitat species are in the genus Tellina. Because the individual totals of fragments of the three species of Tellina identified (Tellina palatum, T. scobinata, and T. crucigera) were low, they were analysed together and totalled 176, 39, 74, and 10 respectively. The number of species from sandy habitats is slightly higher than those from rocky or coral-reef habitats, but the number of fragments of Mesodesma remains (1,834) completely overshadows the other sandy-habitat species, which together, from the four quadrants, total 368 fragments. The number of species representing rocky habitats and coral reef are the same (eight), but the total number of fragments from the rocky-habitat species (1,022) is far greater than the total number of fragments from the coral-reef species (180), and almost three times greater than the total fragments of sandy-habitat species, when

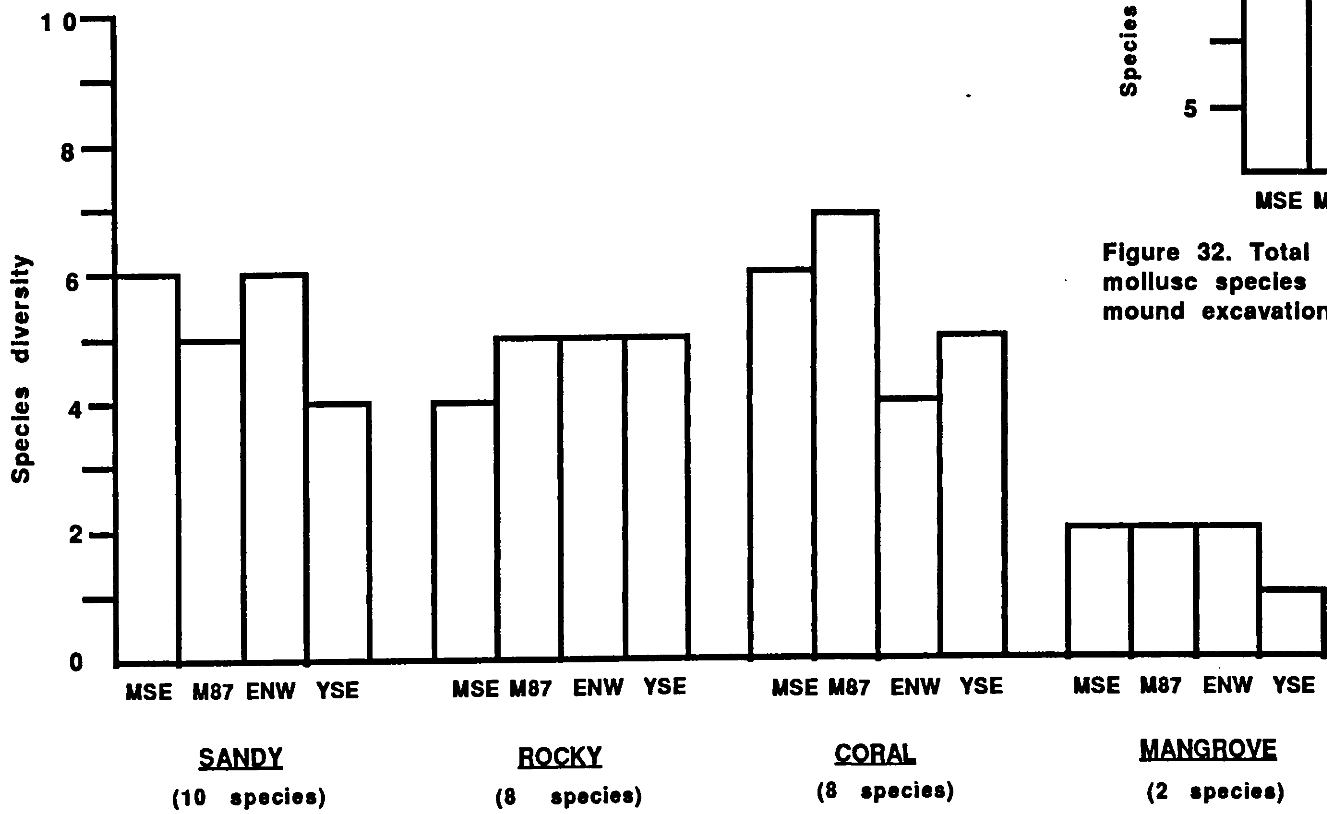


Figure 31. Total number of marine mollusc species by habitat, per quadrant, transect-mound excavation, Gumu III.

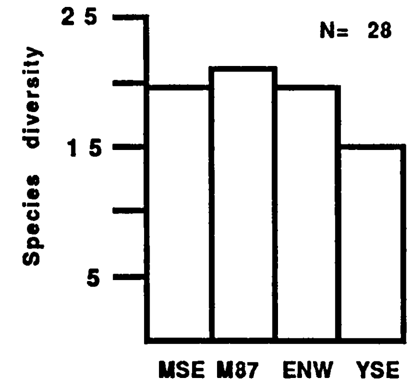


Figure 32. Total number of marine mollusc species per quadrant, transect-mound excavation, Gumu III.

Mesodesma are excluded. The total number of fragments from the mangrove habitat is less than half of those from the coral-reef habitat (70). Fragments of the deep-water dwelling Nautilus were only found from YSE (20 fragments), and four fragments of sea urchin (Echinodermata) were found in ENW. Crustaceans were represented by a total of 416 fragments of crab claw (primarily from MSE (343), and none from M87), which on account of their size are probably from the small species that inhabit the coral reefs, although some may belong to mangrove species. The number of unidentified fragments of shellfish varies across samples, comprising 33% of MSE, 20% of ENW, 18% of YSE, and 10% of M87, with an average of 20%.

Of the total number of shellfish fragments (5,832), 40% are unidentifiable primarily because of their small size and condition. The minimum number of individuals was recorded in addition to the total number of fragments for each species. The combined MNI total for all species (1,392) is less than one quarter of the total number of shellfish remains (5,832), and two and a half times less than the total number of identified shellfish fragments (3,491). Nearly 60% of the minimum number of individuals identified came from MSE, with an average of 14% from ENW, YSE, and M87 (Table 11).

Remains of three of the types of shellfish mentioned in connection with ceremonial features from the mid-nineteenth century ethnographic records were found in some of the excavated deposits. A combined total of 73 fragments (MNI-21) of Pinctada sp. (pearlshell) were found; some from each of the four quadrants (35, 18, 18, 2). One

	MNI	TOTAL	% MNI OF TOTAL	% TOTAL OF TOTAL
MSE	810	3279	58%	56%
ENW	204	1170	15%	20%
YSE	197	1071	14%	18%
M87	181	324	13%	6%
TOTAL	1392	5832		

Table 11. Summary of marine mollusc fragments per quadrant (total and minimum number of individuals), transect-mound excavation, Gumu III.

species of Pinctada in particular (P. maxima), is described ethnographically as having been worn as breast-plates across the Strait and as an important item of exchange between Islander and neighbouring mainland groups. Fragments of Tridacna sp. were found in MSE (12) and ENW (one) (total MNI four) and Nautilus pompilius (20; MNI 12) in YSE, both described as part of the ornamentation of the "funeral" screens seen on Nagir Island by MacGillivray (1852) and Brierly (Moore 1979). However these species were not found throughout the deposits, nor are they very abundant, and two of them could have been collected for food (Tridacna and Pinctada). It is also interesting to note that the only remains of ethnographically "symbolic" shellfish found in the mound were two fragments of pearlshell (Pinctada sp.). Fragments of pierced shell were, however, found on the surface of mound features (Figs 16 and 17).

The relative percentage occurrence of the shellfish species identified from the surface survey affords a somewhat different view of the most abundant types of shellfish exploited in the past. Mesodesma remains were the most frequent shellfish species found on the midden features (87% occurrence), which is consistent with the excavated results, but two mangrove species, Geloina and Terebralia, which were hardly represented within the deposits were found on 73% and 61% of the mounds respectively. Two rocky-habitat species were found frequently (between 60%-80%), which is consistent with the excavated remains, but four species which were not found in abundance in the quadrants occurred on between 40%-60% of the surface midden features: Melo sp., Anadara spp., Syrinx sp., and Tridacna and/or Hippopus sp. Fragments of Pinctada were found on 25% of the mound surfaces, three of which are pierced (see Fig.17) . Only one shell artefact was found in the excavated deposits, a ground cylindrical piece of shell from the eastern wall of YSE, compared to 17 found during the surface survey (Table 5 and see Figs 14,16,17,18).

5.3.8 Discussion

As explained previously (Section 4.10.2), most of the shellfish species identified can be found today in four nearshore habitats which are all located close to the site. Species of Tridacna and Melo can be found in either shallow or deep water coral-reef habitats, but the Nautilus only inhabits deep waters. However Nautilis shells today commonly wash up onto the shore during high tides, and thus may not have been collected alive in the past.

Although the sample sizes vary, the diversity of shellfish species from each quadrant is fairly constant. Species diversity may not, however, be the best indicator of the species most heavily exploited. The sandy-habitat species are the greatest in number (10, with the 3 species of Tellina combined for analysis), but, only one species is present in abundance. The species that are the most consistently abundant are from rocky habitats. The total number of fragments from rocky-habitat species is five and a half times greater than the total from coral-reef habitats, fourteen and a half times greater than the fragments from mangrove species, and three times greater than the total number of sandy-habitat fragments if Mesodesma are excluded.

The overall condition of the shellfish remains was good, if fragmentary, with the smallest average percentage (20%) of unidentified fragments of the four most abundant types of animal remains. In addition, the quantities of remains originally discarded may be more accurately represented for shellfish than the other types of animal remains, because of the robustness of the parts upon which the calculation of MNI's are based (bivalve hinges and gastropod apexes).

Today the four habitats represented by the species identified from the midden deposits are all within a few minutes' walk of the site of Gumu, so if the coastal morphology has remained constant over the past six to eight hundred years (and we have no reason to believe that there has been significant change) it is difficult to suggest why one small sand-dwelling species and four rocky-habitat species would have become the focus of Islander shellfish exploitation. That is, of course, if the deposits studied are considered as representative of the midden remains across the entire area or of the variety of shellfish exploited by the Gumulaig. The differences noted in species diversity and relative abundance of species between the surface and excavated samples might suggest that the excavated samples are not large enough to be representative of midden composition across the Gumu area as a whole. However, the range of species identified in both contexts seems to indicate eclectic patterns of shellfish exploitation, and the overall low abundance of shellfish remains may suggest that they were a supplementary food in the diet rather than a staple, at least in terms of the amounts consumed (rather than the frequency of consumption).

5.3.9 Analysis and interpretation of the excavated fish remains

The impression of the importance of fish remains in the midden deposits gained throughout excavation was similar to that gained from the surface survey, *i.e.* that they were of minimal significance. The results from the sorting of the 2-mm sieve deposit, however, indicated otherwise. Fish remains were present throughout the transect midden deposits excavated, and totalled just over 19,000 (19,186). The mound quadrant excavated produced virtually no fish remains; just a few fragments of spines and vertebrae. But there is a large discrepancy in sample size from the three transect quadrants, with 82% of the fish remains recovered from MSE.

Although the number of fish bones in the total assemblage is relatively high, it is difficult to gauge how many fish might be represented due to the overall poor condition of the bone, which rendered 77% (or slightly more) of the fragments unidentifiable, and because one fish skeleton can potentially decay into many fragments of bone. Thus, it did not seem feasible to try to calculate minimum numbers of individual fish as was attempted from the remains of dugong, turtle, and shellfish.

MSE

A total of 15,647 fish bones were analysed from the quadrant MSE. The remains were found throughout the ten excavated levels and occurred in greatest number between 15 and 30 cm (the levels throughout which the articulated portion of dugong vertebral column was also found) (Fig.33).

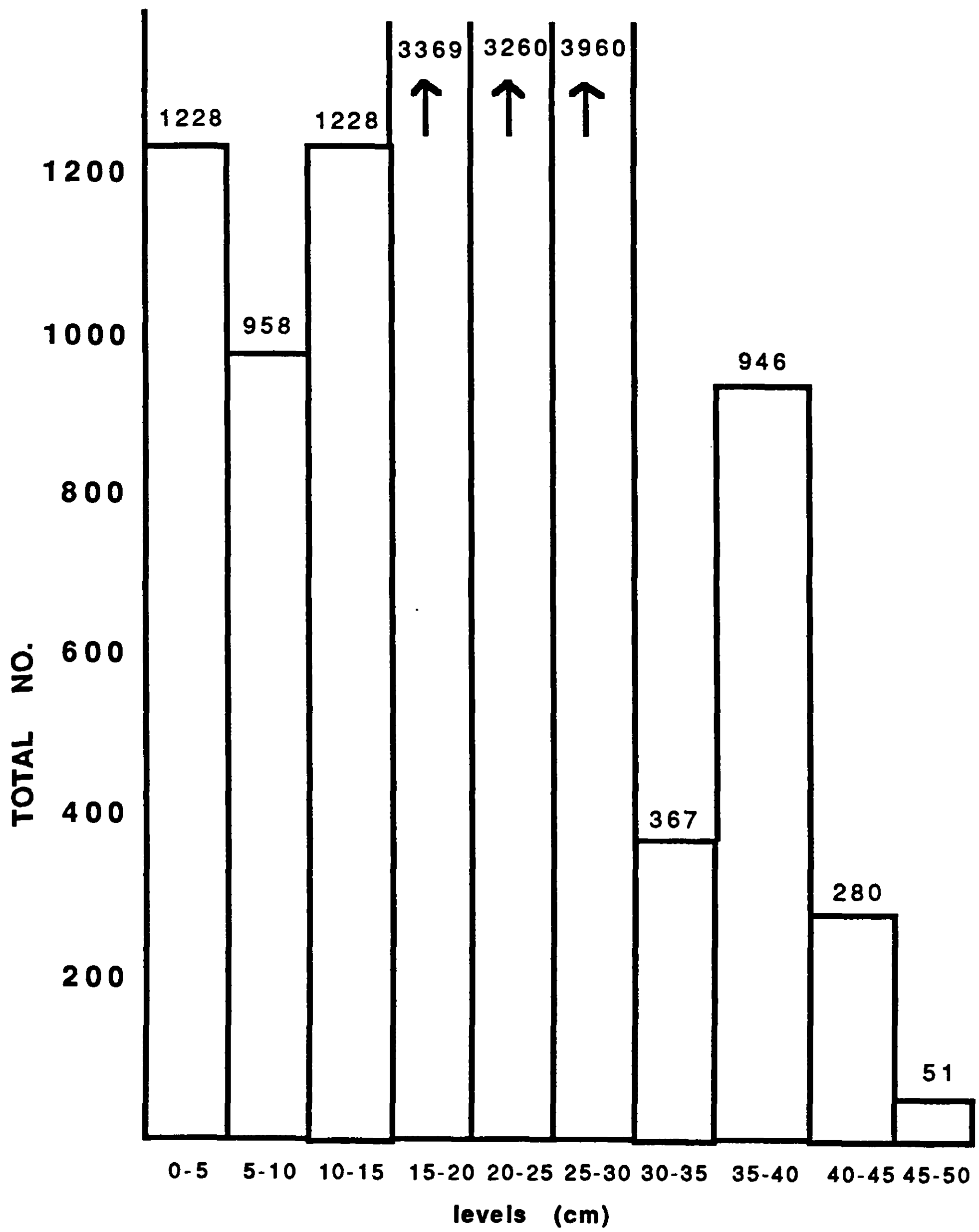


Figure 33. Total number of fish-bone fragments per level, Square M, Quadrant SE, transect excavation, Gumu III.

Twenty-three percent of the bones were classified as identifiable (26% on average per level), i.e., as either cranial element fragments or vertebrae (Fig.34). The remaining 77% were classified as unidentifiable; either nondescript fragments between 0.5mm and 1.5mm (60%), or fragments of fish spines (15%). The 23% of identifiable fish remains consisted of 59% vertebrae and 41% cranial elements, the vertebrae comprising 13% and the cranial elements 9% of the total assemblage. The vertebral remains were from either teleost, bony fish (77%) or elasmobranchs, cartilagenous fish (23%). The cranial fragments were divided into two categories: those identified to element type only (56%) and those identified to element and family (44%). Nearly 60% of the cranial fragments identified to element only were either teleost teeth, skull, or jaw (premaxilla and dentary) fragments, with 60% of the elements identified to family consisting of premaxilla, maxilla, pharangeal, dentary and articular bones (Table 12 and Figs 35 and 36).

ENW and YSE

The total amount of fish bones from quadrants ENW and YSE are between eight and nine times less than the number found in MSE (1,847 and 1,692 respectively). The percentage of identified fish bones per quadrant is also less, consisting of approximately one fifth (19% and 14%) of the total sample compared to one quarter of the assemblage in MSE. The percentage occurrences of vertebral and cranial fragments and of the sub-divisions within each category (teleost vs elasmobranch and identification of element only vs element and family) are summarised in Table 12. As

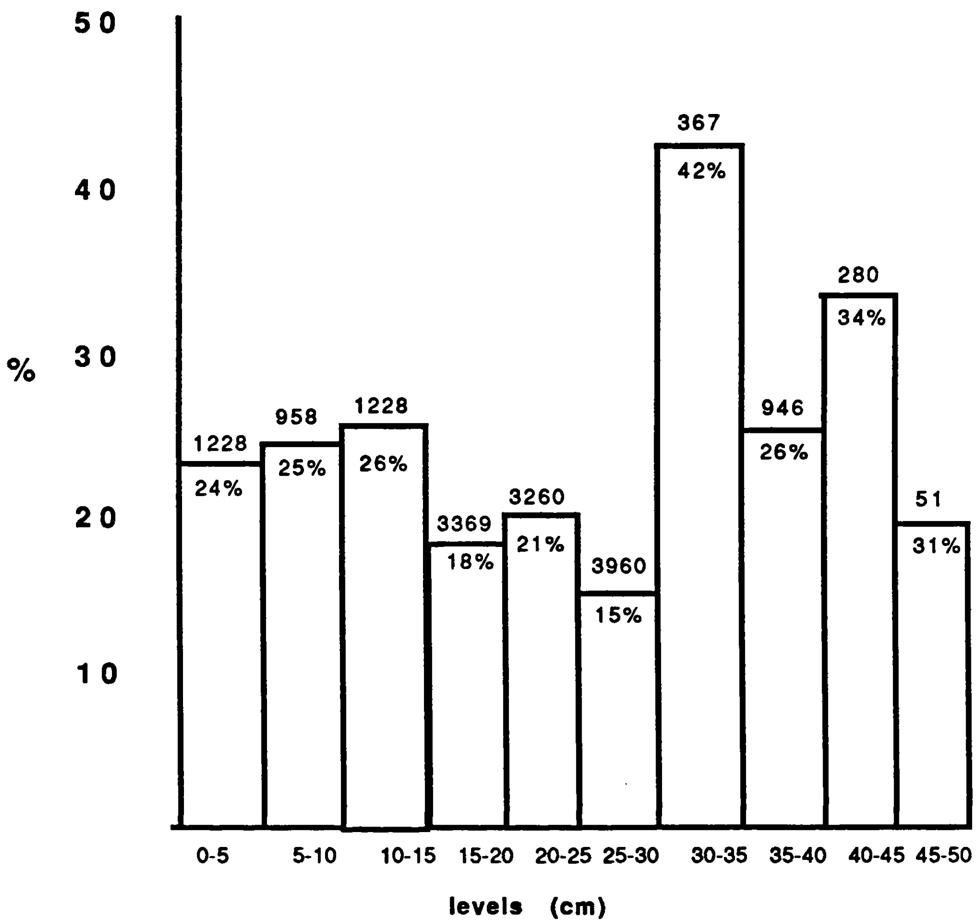


Figure 34. Percentage of fish bone identified per level (cranial elements and vertebrae), Square M, Quadrant SE, transect excavation, Gumu III.

Square/ Quadrant	% Ident.	% Vertebra Teleost Elasmob.	% Cranial Element Family	Total No. Fish Bones
MSE	23%	59% 77% 23%	41% 56% 44%	15,647
ENW	19%	49% 77% 23%	51% 52% 48%	1,847
YSE	14%	59% 74% 26%	41% 67% 33%	1,692

Table 12. Percentage occurrence of identified fish remains (cranial elements and vertebrae) per quadrant, transect excavation, Gumu III.

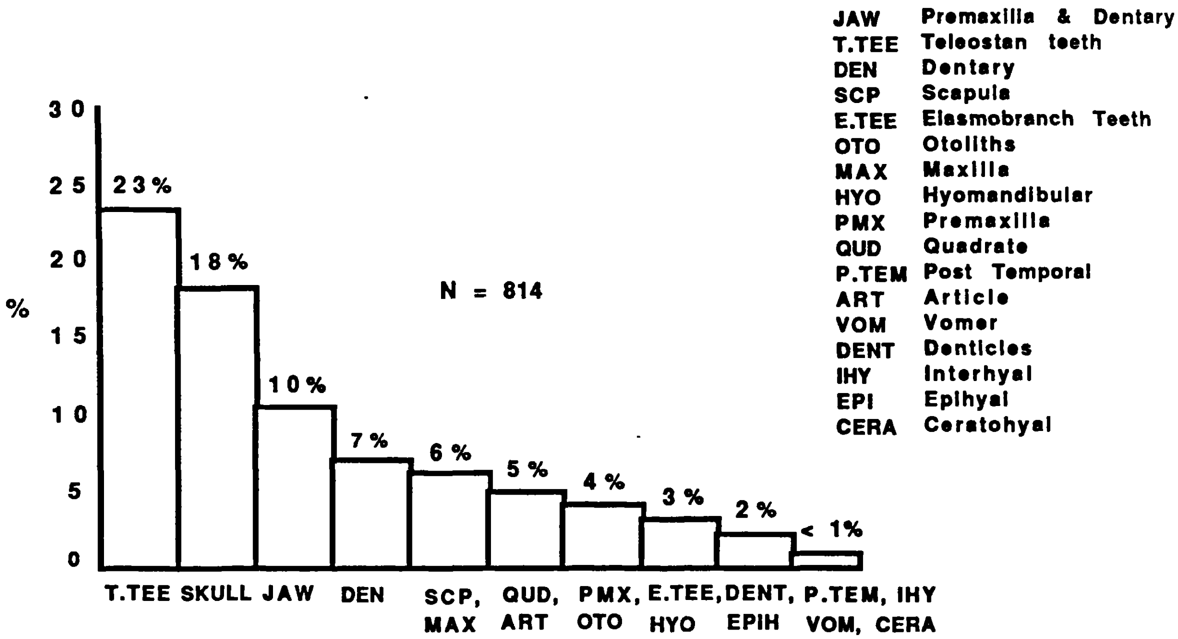


FIGURE 35. Percentage occurrence of fish cranial bones identified to element, Square M, Quadrant SE, transect excavation, Gumu III.

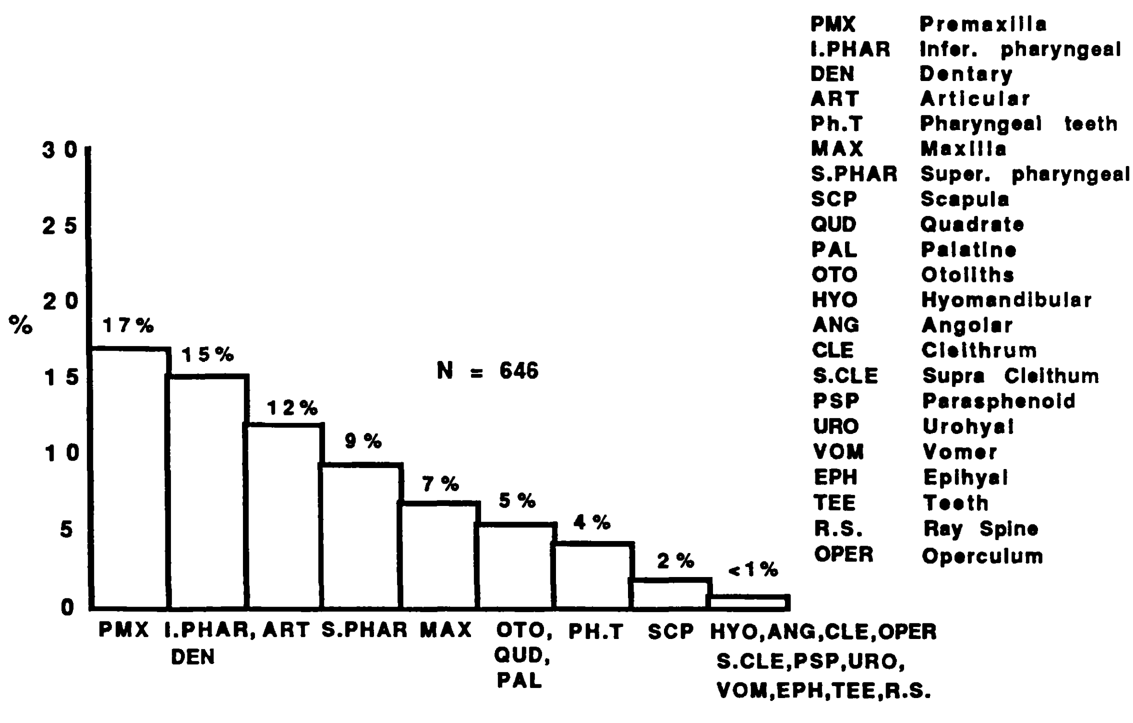


FIGURE 36. Percentage occurrence of fish cranial bones identified to element and family, Square M, Quadrant SE, transect excavation, Gumu III.

demonstrated, the percentage ratios of the different categories within each quadrant do not vary significantly across the samples although the sample size does. The number of bones identified to element and family is the smallest percentage in each example (44%, 48%, 33%), comprising only 4% of the total fish-remains sample from MSE, 5% of the total from ENW, and 2% from YSE (Figs 37-42).

Species diversity

Species of fish from eleven families (nine bony, one cartilagenous) were identified within the samples of excavated fish remains studied. The fish families represented are (in order of abundance): the Labridae, tuskfish (Choerodon sp.); the Scaridae, parrotfish (Scarus sp.); the Lethrinidae, bream or sweetlip (Lethrinus sp.); the Centropomidae, sand bass, or jewel-eye (Psammoperca sp.); the Serranidae, coral trout and cod (Plectropomus sp. and Epinephelus sp.); the Chaetodontidae, sea perch (Lutjanus sp.); the Carangidae, trevally (Caranx and/or Gnathanodon spp.); the Pomadasyidae, morwong or sweetlips (Plectorhynchus sp.); the Mugilidae, mullet (Mugil and /or Liza spp.); the Dasyatidae, rays, and the Carcharhinidae, sharks.

The majority (MSE, ENW) or all of the fish remains (YSE) within the quadrants identified to family level came from only three families (Labridae, Scaridae, and Lethrinidae). The combined percentage occurrence of these three families was, on average, 94% of the total sample (Figs 43-45).

The only family within which it was possible to distinguish between different species, based upon skeletal morphological differences, was the Serranidae. It was

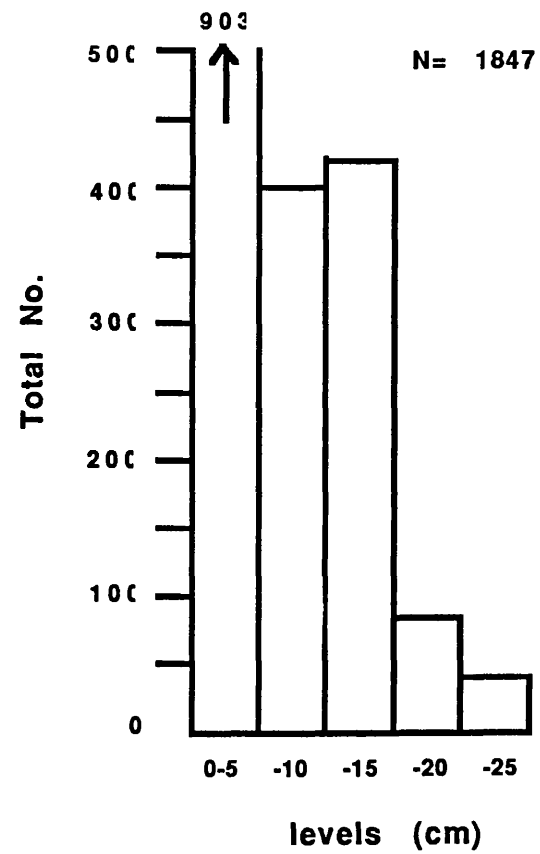


Figure 37. Total number of fish bones per level, Square E, Quadrant NW, transect excavation, Gumu III.

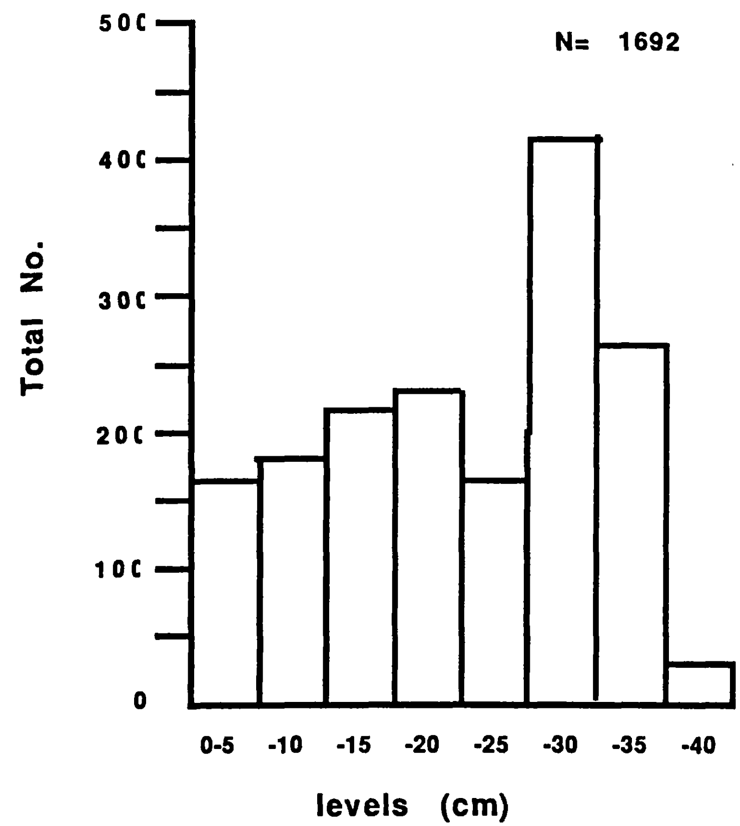


Figure 38. Total number of fish bones per level, Square Y, Quadrant SE, transect excavation, Gumu III.

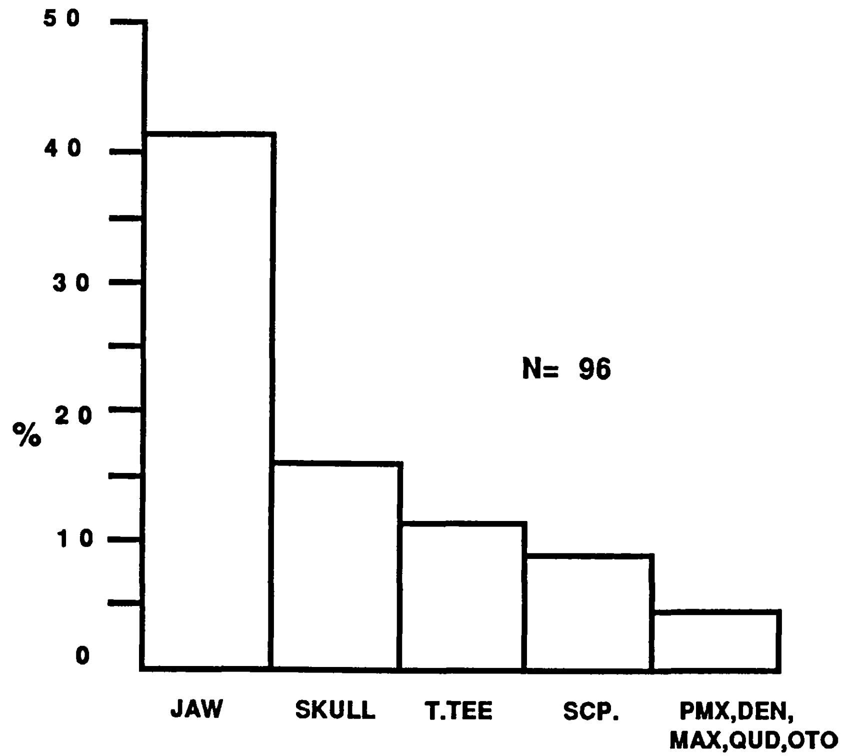


Figure 39. Percentage occurrence of fish cranial bones identified to element, Square E, Quadrant NW, transect excavation, Gumu III.

JAW	Premaxilla & Dentary
T.TEE	Teleostan teeth
E.TEE	Elasmobranch teeth
SCP	Scapula
PMX	Premaxilla
DEN	Dentary
MAX	Maxilla
QUD	Quadrate
OTO	Otolith
HYO	Hyomandibular
D.DENT	Dorsal denticle
B.OCC	Basio-Occipital

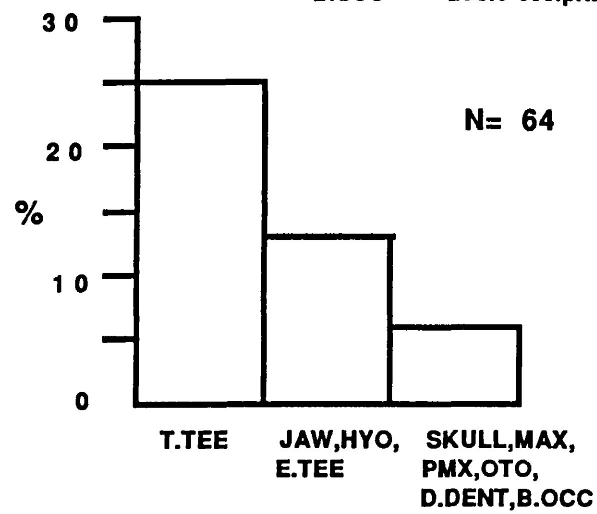


Figure 40. Percentage occurrence of fish cranial bones identified to element, Square Y, Quadrant SE,. transect excavation, Gumu III.

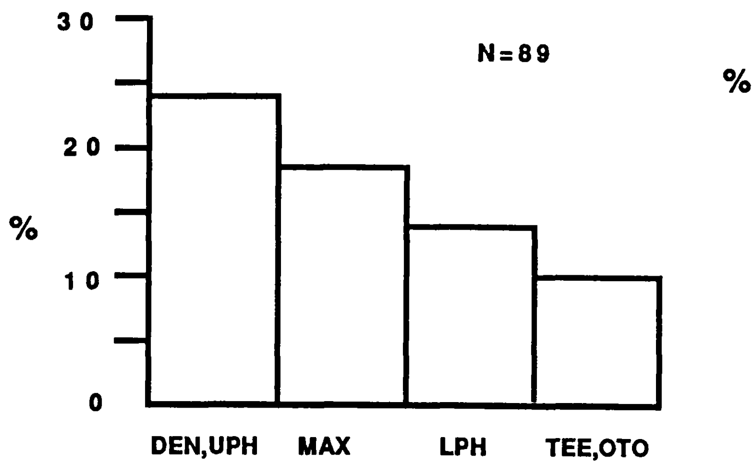


Figure 41. Percentage occurrence of fish cranial bones identified to element and family, Square E, Quadrant NW, transect excavation, Gumu III.

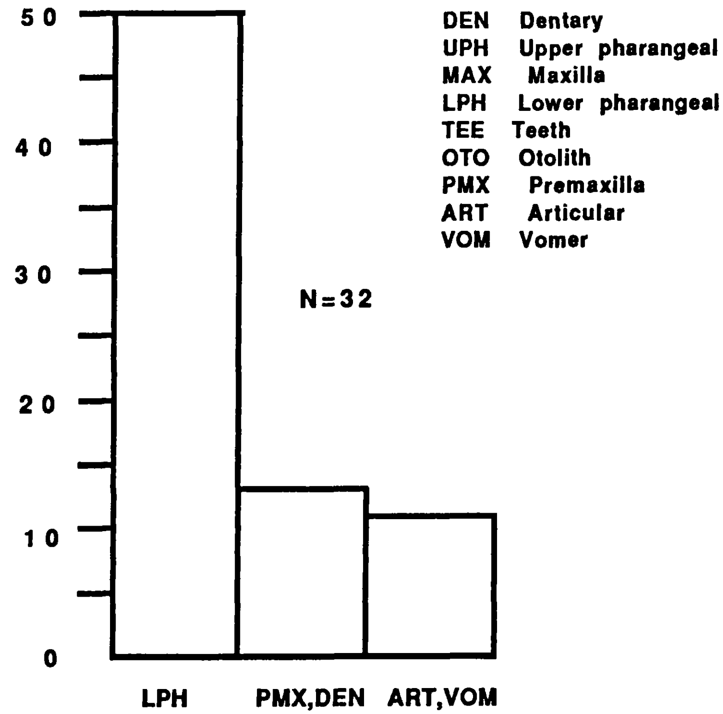


Figure 42. Percentage occurrence of fish cranial bones identified to element and family, Square Y, Quadrant SE, transect excavation, Gumu III.

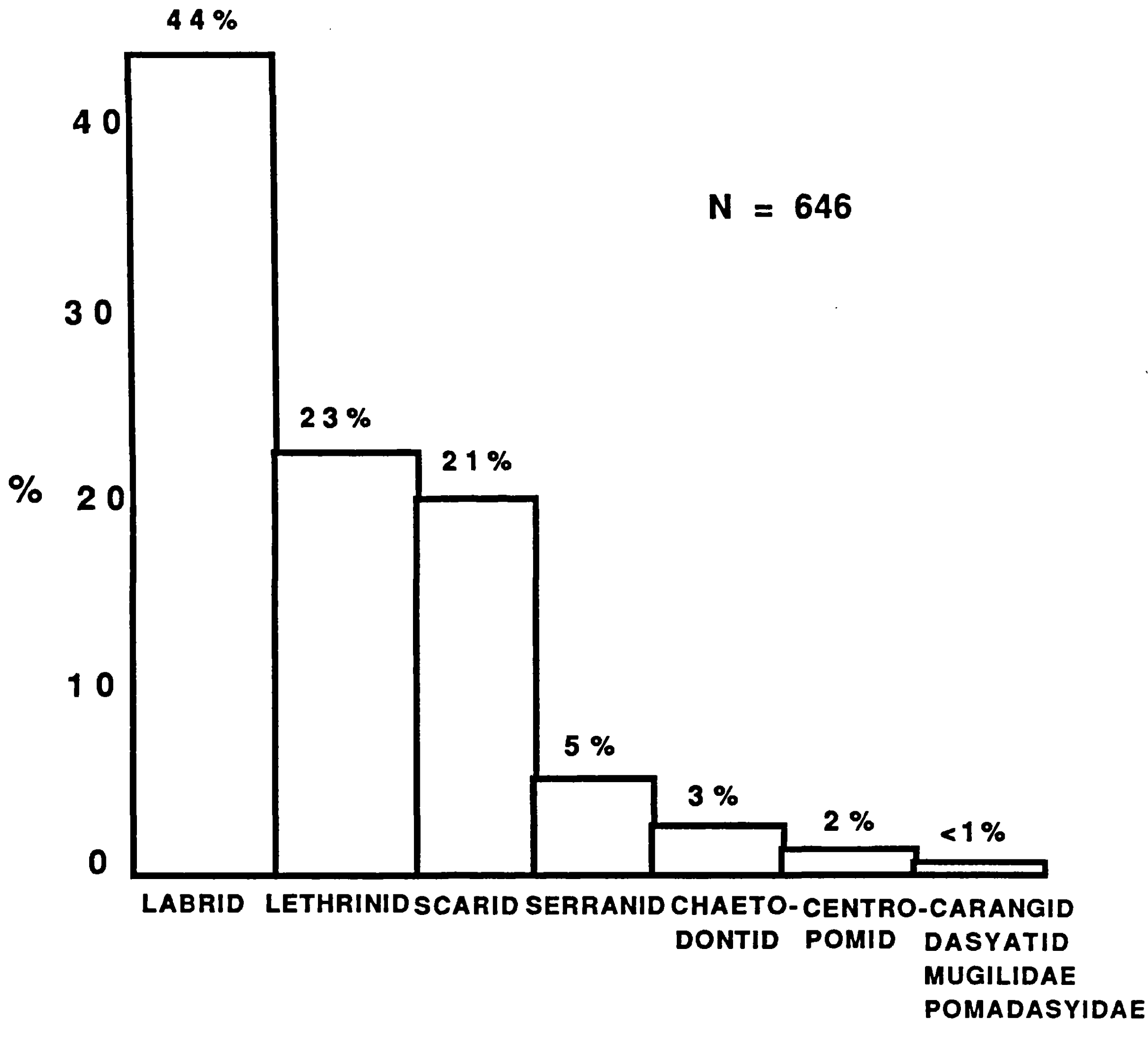


FIGURE 43. Percentage occurrence of fish families identified by cranial element, Square M, Quadrant SE, transect excavation, Gumu III.

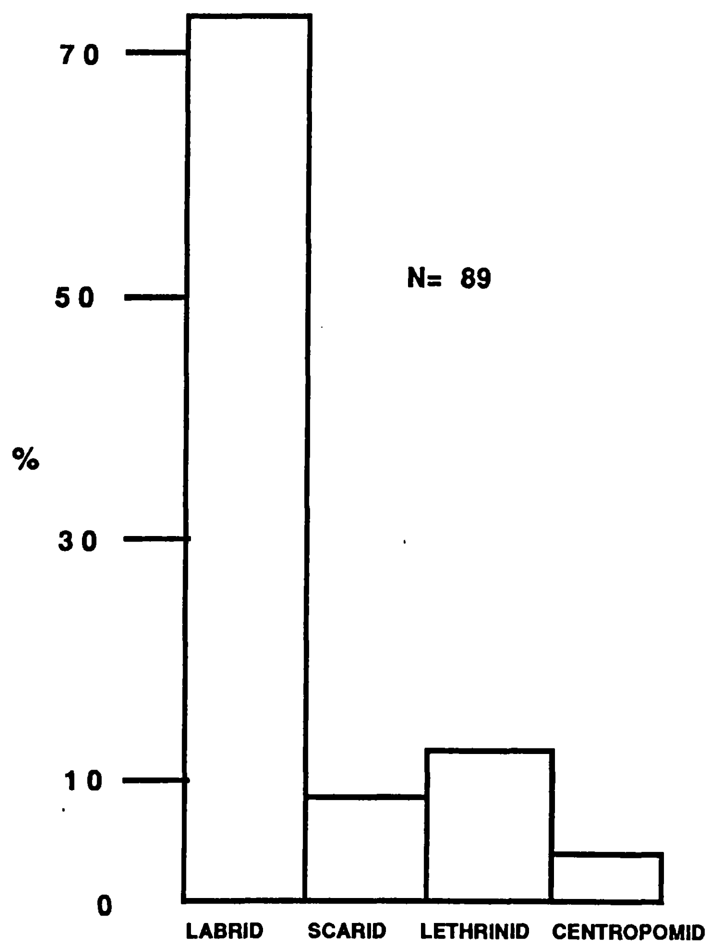


Figure 44. Percentage occurrence of fish families identified by cranial element, Square E, Quadrant NW, transect excavation, Gumu III.

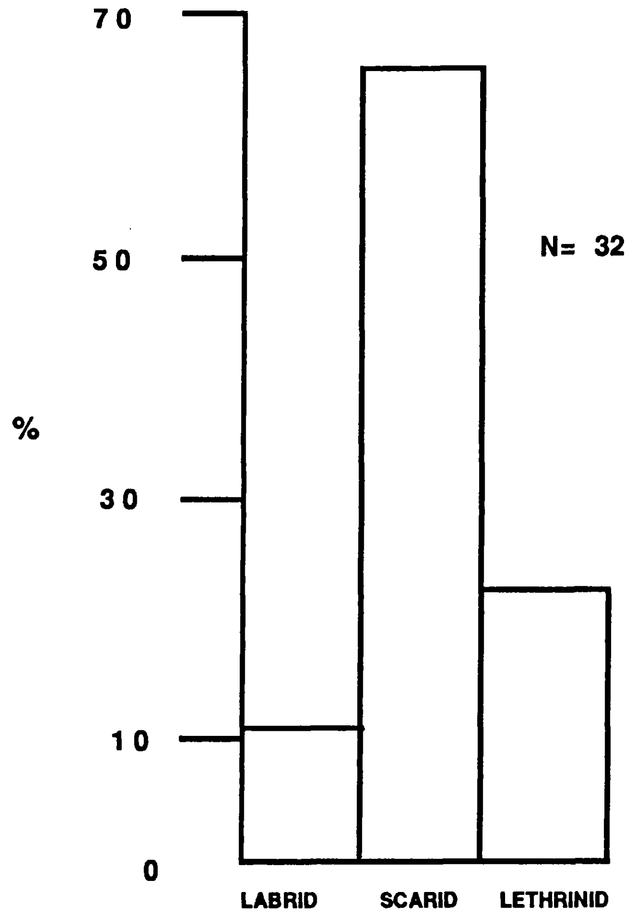


Figure 45. Percentage occurrence of fish families identified by cranial element, Square Y, Quadrant SE, transect excavation, Gumu III.

possible to identify one family of ray (Dasyatidae), the stingrays, based upon one tail spine, but not to genus. The one specimen (a lower jaw tooth) of shark recovered was identified to genus (Carcharhinus sp.), and is described as a Whaler shark approximately four to five feet long (Roly Mckay, pers.comm., Brisbane Museum). The percentage of elasmobranch vertebrae (the most commonly preserved element of cartilagenous fish), which comprises approximately 25% of the vertebra in each quadrant, does however, suggest the presence of a higher species diversity of cartilagenous fish than could be identified here (Table 12).

5.3.10 Discussion

All the eleven fish families identified from the quadrants along the transect at Gumu III today inhabit areas of the near-shore zone. Their habitats include sandy foreshore, lagoon, estuary, fringing reef, mangrove and rocky headland, with most species found in more than one of these habitats. Members of the Carangidae, trevally, also commonly inhabit offshore reefs and deeper waters. All of the above habitats (except estuary) occur close to the site of Gumu, and all but one of the types of fish identified could have been either speared or caught with hook and line. Scarids, or parrotfish, on account of their molar-like grinding "beaks" (formed by the premaxilla and dentary), developed for browsing upon living corals and coralline algae, will rarely take a bait, but they can be speared or picked up by hand if trapped among the coral-reef flats at low tide (Grant 1982:571, Ghaleb in press).

Out of over 150 fish families whose habitat range extends into Torres Strait (Munro 1956, 1967, Grant 1982), a total of eleven families identified within the Gumu midden deposits seems low. Moreover, of the types identified only three are present in any quantity. To reiterate, of the nearly 20,000 fish bones analysed 19% were classified as identifiable, with an even smaller percentage of the remains identified to family (4% on average). To gain a better idea of the significance of these results it is necessary to consider how two factors may have affected the identification of the fish remains to family level: a) the lack of comprehensiveness of the modern comparative fish collection; b) the condition of the bone.

As mentioned earlier, a modern comparative collection of all of the types of animals expected to be found archaeologically was compiled in the field and shipped to London to aid in the identification of the archaeological remains. The comparative collections used were assembled primarily by the author during the two field seasons in Torres Strait. Because it was not known which species of fish might be found archaeologically, all types of fish that were available (from the Islanders, from personal fishing, or frozen, from a store on Thursday Island) were taken and prepared. The collection now consists of 40 specimens representing 16 families and 19 species. Four types of fish were not caught near Mabuiag: a mackerel (Scombridae) caught trawling off the coast of Muralug, a spinefoot (Siganidae) caught off Moa Island, a mullet (Mugilidae) bought on Thursday Island, and a parrotfish (Scaridae) which was sent to London by a colleague working in the South Pacific on the island of Tonga.

The 12 families from which species were obtained on Mabuiag represent the types of fish most commonly caught by (some of) the Islanders during part of the dry season in 1985 (June-August). The 12 families represented by the species caught were: Labridae, Lethrinidae, Serranidae, Carangidae, Pomadasyidae, Chaetodontidae, Centropomidae, Teraponidae*[1], Exocoetidae*, Belonidae*, Dasyatidae, Ostraciontidae. Islanders provided names for an additional 11 types of fish which were not caught (to my knowledge) during my stay on Mabuiag. These 11 species represented eight families: Chaetodontidae (1), Carangidae (2), Echeneidae (1), Sillaginidae (1), Siganidae (1), Scatophagidae (1), Mugilidae (3), Scaridae (1). Three of these fish were said to have been caught frequently during other times of the year: two types of mullet, one described as found near the shore or mangroves "murgurdal" (?Liza vaigiensis or Mugil cephalus); the other from the shore or near the jetty, "mackeer" (?Mugil georgii); and "cubbim", the black spinefoot (Siganus spinus), which was described as caught primarily during "kuki" (the wet season).

Almost all the fish were caught with plastic-reel hand lines and small to medium-sized jabbing hooks, either off the side of a dinghy, from the beach, or from rocks along the shore of Mabuiag or nearby islands. Occasionally men speared fish within the coral reefs while diving from a dinghy. All the Islanders that I got to know personally had favourite fishing spots that they frequented time and time again, from

[1] *The absence of members of these three families from the archaeological samples is not surprising on account of their small size (some between 80-100cm in length) and fragile bones.

which the same range of species was caught. When asked why these particular locations were chosen, the Islanders said that they were pleasant locations at which to fish (e.g. rocky headlands, small offshore islets or over particular areas of offshore reefs) where they knew which species they would catch (i.e. their favourites for eating).

Four types of fish were most commonly caught in 1985: 1) tuskfish, "bila" or "dungal wap" (Choerodon albigena and C. schoenleinii); 2) snapper bream, "poo-ood" (Lethrinus fletus); 3) coral trout, "whittee" (Pleitropomus leopardus); and 4) two species of trevally: papuan "whitefish" (Caranx sansun), and golden "zerr-moi" (Gnathanodon speciosus). These species represent the Labridae, Lethrinidae, Serranidae, and Carangidae respectively. Thus, out of a potentially much larger range of fish inhabiting the coastal waters of Mabuiag, the Islanders were specifically targeting a relatively small number to eat. This pattern of fishing, in combination with the relatively short period of time over which specimens were collected, led to the preparation of a fairly low number of species for the comparative fish collection.

The number of species of modern fish collected did directly influence the identification of the archaeological fish remains, because over half of each sample of cranial elements was not identified to fish type on account of inadequate comparative material. However, although the number of modern fish skeletons collected did limit the extent to which cranial remains could be analysed, a more significant factor relating to the loss of information was the overall condition of the bone, which rendered 77% of the fish remains unidentifiable. This high percentage is reduced somewhat (to 60%) when viewed in terms of the percentage of bone that could have been identified if in better condition, as 17% were fish-spine fragments, which, regardless of condition, generally only indicate that fish are present. With such a high percentage of unidentifiable fragments, it is important to consider the range of agents that could have been responsible for, or contributed to, the condition of the fish-bone assemblage.

If the fish bones represent remains of past Islander meals, which were discarded within areas of habitation, a variety of pre- and post-depositional factors would be expected to have affected the bone.

Let us first consider the high percentage of unidentifiable fish remains in relation to hypothesized types of past human behaviour that could have damaged or destroyed bone from fish eaten. For example, the quantity and condition of the fish bone could be related to pre-depositional activities such as: methods of preparation (extent of butchery); cooking (direct or indirect exposure to fire; i.e. roasting, baking, boiling); and consumption (chewing or swallowing bones). In addition, post-depositional factors such as patterns of bone discard (into fire, or on surface of site), the use of the site in relation to both duration of occupation and variation in on-site camping locations (trampling effects, exposure to hearths); burning or other surface clearance activites; and the direct introduction of domestic animals (dog and pig) and/or indirect introduction of wild ones, e.g. rodents, would also have affected the condition of any bone discarded in the area. Alternatively, or in addition to, these possibilities, the condition of the fish bones could have been caused by "natural" taphonomic factors such as the organic and inorganic processes that can affect bone both above and below ground, e.g. sun, wind, rain, organisms in the soil, plant-root action, etc.

The results of the weathering analysis carried out on dugong-rib fragments indicated that bone throughout the deposits had been exposed to natural weathering conditions prior to burial. Thus, while exposed, a range of influences (both related to human and non-human activity) could have potentially affected the bone. The percentage occurrence of element types of the dugong, turtle, and fish remains identified, and the comminuted condition of most of the excavated bone supports this suggestion, without necessarily indicating the precise types of destructive factors responsible.

If the majority of the animal remains found within the deposits studied represent food eaten, one might also expect to find some superficial indications of it. Study of the superficial damage on the dugong and turtle remains indicated that over half of the combined samples were charred (78%) and a small percentage of the bones (9% total) had possible butchery marks. The only kind of damage noted on the surface of the fish bone was discolouration due, perhaps, to exposure to fire. It was present on only a small percentage of the remains (approximately 3%), and could be the result of intentional or unintentional exposure of the bone to fire. The small quantity of fragments that do show signs of charring might suggest methods of cooking that could have protected the bone from direct contact with flames or hot ashes (e.g. boiling, or roasting and/or baking wrapped), or conversely that the majority of the bone exposed to fire did not survive at all.

However, as stated earlier, it is impossible to know whether or not bone was charred due to cooking, discard, or practices related to site clearance. The effects of natural weathering on the surface of the dugong and turtle remains, in combination with damage associated with dog and rodent behaviour (i.e. gnawing, indicated by the distinctive teeth marks found on some (13%) of the bone), may well have destroyed or obscured butchery marks.

Both human and non-human types of "destructive" activities probably contributed to producing the patterns of bone alteration present in the midden assemblages studied here. However, it is interesting to note, in relation to the fish remains, that although the abundance of particular element types found in each archaeological sample may well reflect the most robust elements, three of the four most abundant fish families identified archaeologically are the favourites "targeted" and caught most commonly today: labrids, lethrinids, and serranids.

One type of fish not caught today was found in relative abundance in the midden deposits: the parrotfish (Scaridae). It is the only type of fish found archaeologically that is seldom caught with a hook and line, but it was not possible to determine why it is not caught on Mabuiag today. One Islander man, Mr. Paipai, referred to the fish as "oodoom" and said it lived in the east (Eastern Islands). However there is no information to suggest that it does not presently inhabit the Western Strait (Munro 1969, Grant 1982). So, parrotfish may have been favoured in the past but is not today, or, alternatively, it may not be caught today due to a change in fishing technology.

Fishtraps are, in fact, the only archaeological evidence found on Mabuiag which are clearly related to past Islander fishing technology. One perforated valve of Anadara sp. was found on the surface of Gumu, which could have been used as a net weight[1]. One of two double-trap structures was located within the ethnographically described Kaigas-surlal clan district, just to the south of Gumu off the coast at Sipingur, and an additional 12 traps were identified around the coast of Mabuiag and the offshore islets (see Section 4.8). Although not in use today, we were informed that, in the past, as the tide fell and fish were trapped in the "graz", they were either speared, knifed, or caught by hand. This is consistent with the description of how they were used recorded in the Haddon Reports, and was probably the method used to obtain parrotfish in the past.

In general, it is difficult to "prove" precisely which or how many of the possible bone-altering agents discussed above might have contributed to the condition of the fish or other animal remains, because, different processes (related to human behaviour or natural influences) can affect bone in similar ways. However, it is probable that if Gumu was occupied over hundreds of years, a combination of factors would have affected the bone, or other types of materials discarded there. Regardless of how bone damage did occur,

[1] However, only one pierced valve was found, and it is specifically stated in both mid- and late-nineteenth century ethnographic accounts that the Western Islanders did not use nets (Haddon 1912:159).

more information about past Islander fishing practices has probably been lost than information about the other main types of subsistence practice which are represented by the animal remains recovered archaeologically, principally because fish bones are the least robust. On the other hand, information in the Haddon Reports helps to illuminate the pre-European importance of fishing as well as the importance of other subsistence practices in Mabuiag Islander life.

5.3.11 Summary of the results of the archaeological work carried out at Gumu

The stratigraphic test pits and quadrants excavated indicated that midden deposits are consistently shallow and extensive across the entire Gumu area. Although the abundance of midden remains suggests past Islander activity throughout the area, no specific locations of habitation (e.g. discrete hearths or postholes) were identified. In addition, there is little in the material remains recovered to suggest whether or not the numerous midden accumulations and the mound-and-ditch relict fields were constructed and used contemporaneously. The only stratified European material discovered (fragments of glass within Mound 87), indicates that that particular mound was made sometime after Torres Strait Islanders had access to glass (unless, of course, the fragments intruded later). The radiocarbon dates suggest a period of occupation that began sometime between c. AD 990 and AD 1390, which may have extended (continuously or intermittently) into the mid-nineteenth century when Gumu enters the historical record.

The midden deposits discovered at Gumu were first described and located by means of a survey of the entire area (Fig.8). The types of deposit found were all superficially dominated by remains of dugong and shellfish and pieces of island bedrock. As discussed previously in Section 4.10.2, although the most striking contrasts between the numerous raised midden accumulations were in their surface morphology (e.g. height and shape), there were also, in some cases, striking differences in surface composition, certain of the raised features having been associated with numbers of whole Syrinx shells, large stones, or artefacts (e.g. perforated and ground fragments of shell). Thus, it was clear that the the midden materials were, superficially, diverse, but was it possible to determine the significance of this diversity in relation to past Islander behaviour?

The approach taken here was to sample a range of superfically different midden deposits by excavation and to analyse the remains through identification and quantification, hoping that the types of remains and their abundance might be related to, or indicate, the past function of the different deposits. A series of stratigraphic test pits was also dug, to get a better idea of the relationship between surface remains and subsurface composition, and of the nature of the stratigraphy across a much larger area than was possible to sample through excavation.

In general, the density of the midden remains on the surface of the excavated and stratigraphically sampled areas was an accurate indication of the density of remains underneath. However, differences and similarities existed between the types of remains identified on the surface and within the excavated deposits. Remains of turtle were found superficially only on the platform-and-ridge feature but they were an abundant component of all the transect quadrants excavated and were present in most of the test pits dug. Fish remains were not apparent on the surface of the transect quadrants although they were abundant within the deposit. Artefacts were scarce both on the surface and within all the deposits. Comparisons between the surface and subsurface composition of Mound 87 revealed a much higher diversity of shellfish species on the surface than within the deposit, with consistently few remains of turtle and fish both within it and on the surface, and an abundance of dugong remains and stone (fragmented bedrock) throughout.

The analysis of the excavated remains from the superficially distinct deposits (level, platform and mound), demonstrated that the greatest difference between the middens' internal composition was in the relative abundance of the types of remains found, not in their diversity. These results further highlight the distinctiveness of the superficial morphology of the midden features across the Gumu area. However, there were quite marked differences in the relative abundance of remains within the two raised-midden deposits excavated (i.e. the platform and the mound).

Dugong remains were a dominant component of each, but their occurrence within the mound was to the virtual exclusion of all other types of animal remains. The fragments were almost entirely of rib and skull and although they were, in general, highly weathered, they were less fragmented than the dugong bones of MSE and few fragments were unidentifiable. In contrast, the dugong skeleton was represented more completely by the remains in the platform deposit, but with a higher degree of fragmentation and percentage of unidentifiable remains, and the deposit also contained abundant remains of turtle and fish, with shellfish and some crustaceans.

In addition to variation in the surface morphology and surface and subsurface composition of the midden deposits, the three methodological approaches followed in this study (mapping and description, stratigraphic testing, and excavation and analysis), demonstrated that there were differences in the stratigraphic depth of the midden remains. Light to dense deposits of midden were found, on average, to a depth of 25cm below the level surface of the raised areas of the platform and ridge features and surface scatters excavated, but not below the discrete mound (87) sampled. Thus, it appears that the mound was the only feature built on level ground with few remains underneath, whereas dense midden deposits extended below both the platform and the ridge features; and the midden remains of the former were considerably more concentrated, although they extended to a similar depth (25cm) as the deposit below the surface scatters excavated.

The fragmented, generally compacted, assortment of animal remains and pieces of stone which comprised the surface and interior of the archaeological deposits appeared to represent discarded refuse from Islander meals. It was then hoped that the identification and quantification of the excavated remains would demonstrate the extent to which the different animals had contributed to the diet (seasonally or year-round), and thus allow inferences to be drawn about Islander food preferences and the (relative) amounts of time spent engaged in different subsistence activities. However, interpretations based upon either of these "levels" of analysis (i.e. species identification and quantification) are not as straightforward as they might seem, because the significance of the results relies upon how representative the remains are of what was originally eaten and discarded.

The results of certain of the analyses carried out in this study (e.g. weathering, % occurrence of element types), indicated that much information was lost due (probably) to pre- and post-depositional factors conducive to the destruction or obliteration of animal remains. Thus, although one would like to conclude with definitive statements about the range and relative contribution of animal species to past Islander diet, the conclusions drawn from the analysis of the data presented here must be considered as somewhat tentative and cursory. However, in spite of this lack of precision concerning the original range and quantities of animals (and particularly plants) eaten by the Mabuiag Islanders, it is clear that the four major animal taxa identified (dugong, turtle, fish and shellfish) were heavily exploited and apparently comprised the meat staples of the diet.

The archaeological bias in favour of the survival of animal remains, clearly impedes our understanding of the nature and extent of plant exploitation by Mabuiag Islanders. Plant remains in the form of fragments of charcoal were found in small quantities throughout the deposits, and much of the dark staining of the midden matrix was probably due to decomposed organic debris. Although remains of types of tuberous tissue (parenchymatous) have been identified from similar contexts in the region (J.Hather, 1990 pers. comm), preliminary study of samples of charred-plant remains from Gumu has thus far yielded information of primarily one type of plant tissue: wood. To obtain a more complete picture of the nature of past Islander plant exploitation it is necessary to consider the results of the ethnobotanical and ecological work carried out on Mabuiag Island, and other areas within and on either side of the Strait (Harris, in press). This research indicates that a variety of tuberous plants would have provided the Islanders with an abundant supply of carbohydrate throughout the dry season and to some extent during the wet, together with various fruits and nuts. Tubers are not available during a few months in the wet season, and during that time there may have been only a few other types of plants available to provide carbohydrates (e.g. the mangrove Bruguiera gymnorhiza).

The animal remains do not suggest any particular season of occupation at Gumu because all the species identified could have been exploited throughout the year (based upon data from present-day ecological studies of the species concerned). Fluctuations in abundance and ease of availability certainly exist in relation to green turtles, and may to some degree in dugong populations, or in species of fish, but behavioural information is lacking. Two species of birds are known to migrate across the Western Strait, the Torres Strait pigeon (Ducula spilorrhoa) and the rainbow bee-eater (Merops ornatus), but the one fragment of bird bone found (a shaft) could not be identified to species. Nevertheless, one type of archaeological feature does represent the seasonal exploitation of a food resource: the mounds and ditches, or relict field system, in the southwestern corner of Gumu I. However, as it has not yet proved possible to determine the antiquity of these features[1] there is no way of knowing if they were contemporaneous with the accumulation of the midden deposits.

Evidence of the processing of animal or plant foods is scarce and ambiguous, and that of techniques of procurement is almost non-existent. Certain superficial marks on a small percentage of bone fragments (9%) suggest butchery with an object sharp enough to slice into bone, and dark colouration on a large percentage (78%) of the remains probably indicates exposure to fire, although this could be due to patterns of cooking, bone discard, or to natural or human-induced site-clearance fires. A few stones were found during the surface survey which appear to show signs of having been used as pounders.

The only direct evidence of technology related to animal procurement is the near offshore stone-built fishtraps, because no fish hooks or bone points, etc. were found. If artefacts used to procure food had been constructed out of materials such as bone or shell, or stone or clay, one would have expected to find remains of them within the middens. There appeared to be little evidence of Islander technology within the excavated deposits, however, the abundant fragments of angular rock recovered may represent past construction of earth ovens (see Section 3.8.3 and Table 2). Chips of vein quartz were recovered which could have been used for cutting

[1]Intensive field work has been carried out on the northwestern island of Saibai to try to determine the age of the extensive relict-field systems there, but so far with little success (Harris & Barham 1988).

purposes, hafted or perhaps on their own, and a piece of pummice was found with striations on one side that suggest it may have been used, possibly as a smoothing instrument (Fig.19). A ground cylindrical piece of shell was also uncovered, apparently a fragment of the original, with no obvious function (Fig.16).

The surface survey yielded more abundant technological remains, with a number of articles found which appear to have been worked. These consisted of: a) three pierced fragments of pearlshell; b) two (possibly three) fragments of shell adze and one of a stone adze; c) four fragments of ground shell, three of which are pierced; d) six worked hinge fragments of pearlshell; e) an elongated and pointed flat stone with ground and smoothed edges, half of a large stone with ground edges, and half of a large cobble with a bifacially ground and battered edge; f) a large cobble flake unifacially worked with a battered edge; and g) a few vein quartz cores, flakes, chips and igneous flakes (Figs 13-19 and Table 5). Without reference to any direct ethnographic information it is difficult to interpret the function of most of these artefacts, or to form a clear idea of the technology that was used to exploit the animal species recovered.

In view of the composition of the most prevalent archaeological features discovered at Gumu (the raised-midden accumulations), the most parsimonious interpretation of their past "function" is that they were areas of refuse discard. However, consideration of information already presented from the mid-nineteenth century accounts (Sections 3.6-3.8.3), as well as from the

Haddon Reports (Section 4.3), might suggest alternative or additional interpretations, in the light of their morphological characteristics and their density across the surface of the area. The mid-nineteenth century descriptions do pertain to Western Islanders, but none relates specifically to the Gumulaig. Much of the information in the Haddon Reports pertains directly to the Mabuaig Islanders, and even though it was recorded some forty years later (after considerable change had taken place in their traditional way of life), it can be viewed in light of the earlier, less "distorted" ethnographic evidence.

The archaeological reconnaissance of Mabuiag Island and some of the surrounding islets indicated that the most widespread and highest density of midden remains were present across the surface of the area known ethnographically as Gumu. Gumu is one of five locations on Mabuiag considered traditionally as an "old (major) village site", and in addition to three other of the village sites also had a kwod, or ceremonial, area. Only one other site, however, was found to (superficially) contain abundant and morphologically diverse accumulations of midden remains: Dabungai. Thus, based upon the results of our reconnaissance survey, the Gumu and Dabungai areas appear to have an atypical archaeological signature.

Prior to further consideration of the possible significance or function(s) of the archaeological remains at Gumu (and Dabungai), further discussion of activities related to past patterns of Gumulaig subsistence, settlement and ceremonial life is presented in Sections

6.1-6.7, based upon additional information from the *Reports*. Comparisons between Gumulaig subsistence, settlement and ceremonial practices and those of the Kowrarega and Kulkalega, as documented by the mid-nineteenth century accounts, are also discussed om Section 6.

PART D: ETHNOARCHAEOLOGICAL SYNTHESIS: SUBSISTENCE AND SETTLEMENT ON MABUIAG ISLAND

6. The Haddon ethnography: nineteenth-century Gumulaig subsistence, settlement and ceremonial practices and their significance for the interpretation of the Gumu archaeological remains

Introduction

References relevant to the exploitation of plants and animals for food by Mabuiag Islanders, and to ceremonial practices, can be found throughout the six volumes of the Reports, although they are primarily contained within Volume IV, Arts and Crafts (1912), and Volume V, Sociology, Magic and Religion of the Western Islanders (1904). The Reports themselves are testimony to the fact that much knowledge of traditional Islander life existed within the Mabuiag (and Mer) communities after 20-30 years of sustained European influence, even though marked changes had taken place in many aspects of their lives, particularly in relation to economic activites (Haddon 1908:xix; and see Section 3.4).

The extent of the changes in Islander life was, however, thought by Haddon and his colleagues to have affected the quality of the ethnographic information recorded in certain instances. For example, Anthony Wilkin found it difficult to obtain accurate information on traditional patterns of land tenure and inheritance because of what he termed the "ignorance" of the "present generation", and he felt that the young men "may have warped the utterances of the older men which they interpreted" (Haddon 1904:284)[1]. He also describes how a few of his informants "were at a loss for names, places, and ownerships" of traditional garden locations (Haddon 1904:284). Undoubtedly these types of problems (and others common to ethnographic work), affected the degree of accuracy of some of the information recorded in the Reports. And although this problem cannot be just dismissed, it is possible, having outlined traditional Mabuiag Islander patterns of subsistence and ceremonial life, on the basis of the Reports, to then compare this with information derived from those mid-nineteenth century accounts less likely to have been as "distorted" by European influence (see Chapter 3).

Descriptions of Western-Islander life from the nineteenth-century accounts may be of significance to the interpretation of the Gumu midden remains, but one crucial issue must be borne in mind: however "accurate" a portrait of pre-(sustained) European contact the accounts provide, they refer specifically to life in the western islands during the early to mid-nineteenth century. The one radiocarbon date available from within the stratigraphy of the excavated midden deposits demonstrates occupation of the area approximately 400 years prior to the beginning of the nineteenth century. And, based upon the available evidence, it is not possible to determine whether Gumu was occupied continuously from c. AD 1390 (or earlier) into the

[1] However, Haddon recounts that most of the ethnographic information he collected came from discussions with old Islander men, all but the very oldest being conversant with English (1904:vi, 1935:xi).

nineteenth century. Therefore, regardless of how "pristine" a portrayal of Western-Islander life is gleaned from the study of the ethnographic accounts, the interpretation of any of the archaeological features of Mabuiag (in the light of the historical sources), requires the assumption that continuities in cultural practices existed over a minimum period of 400 years.

Before comparing aspects of Western-Islander subsistence, settlement and ceremonial life, from the mid- and late-nineteenth century accounts, traditional Gumulaig subsistence practices (from both seasonal and daily perspectives) are discussed (Sections 6.1-6.2). This information is then considered with reference to Kowrarega and Kulkalega subsistence (Sections 6.3-6.4), and also discussed in relation to the archaeological results (6.5). The issue of cultural continuity is addressed in greater detail (Section 6.9) after discussion of the social context of traditional Gumulaig eating (6.6), and of the relationships between Gumulaig ceremonial features, patterns of subsistence and settlement, and the archaeology of Mabuiag Island (6.7-6.8).

6.1 A seasonal view of subsistence on Mabuiag Island

The Reports provide some details on Mabuiag Islander activities related to subsistence that took place seasonally prior to sustained European contact. S.H. Ray, the linguist of the Haddon expedition, recorded Islander perceptions of the "seasons" that comprised their year, and the major events that defined them, in a table entitled "Calendar of Western Islands of Torres Strait" (Haddon 1912:228). Table 13 is based upon Ray's "Calendar", and on the explanatory descriptions which Haddon provides, together with a few references to subsistence-related seasonal activities from other sections of the Reports (Haddon 1912:144-151, 225-228).

According to the Gumulaigs, the year began with the mating of the green turtle. This occurred during the month of October when many mating pairs floated at the surface of the near-shore waters of the Western Strait. They were referred to as Surlal (copulating turtle) in Mabuiag, and this was the name of this "season". The year was divided into four major periods: Surlal (copulating turtle, mid-October through November); Raz (time of die, December through February); Kuki (northwest, rainy season, March through May); and Aibaud (harvest, June through mid-October). Three of the major periods (all but Surlal) were divided into a further three or four shorter periods (eleven in all), defined according to environmental conditions that changed or were expected to change, e.g. direction of wind, amount of rain, position of stars or constellations, and resource availability (Table 13). Haddon remarked that "the seasonal appearance of certain stars or constellations was noted [by the Islanders], and their rising regulated particular ceremonies and various horticultural events" (1912:225). The four major Islander periods or seasons fall within the European division of the climatic changes of the region, i.e. seasons of wet (December through May, Raz and Kuki) and dry weather (June

Islander Name of Season	**Surlal** (copulating turtle)	**Raz** (time of die)	**Raz**	**Raz**	**Kuki** (northwest; rainy season)	**Kuki**	**Kuki**	**Aibaud** (harvest)	**Aibaud**	**Aibaud**	**Aibuad**
Calender Month	Mid-Oct.-Nov.	December	January	February	March	April	May	June -July	August-Sept.	Ist week Oct.	2nd week Oct.
Periods within Season	**Surlal**	**Duau-urma** (cashew tree)	**Dob** (the last of the growing things)	**Aga gaba**		**Kupa kuki**	**Gugal arai** (wind moves around)	**Waur** (southeast wind) **Sasi waur**	**Waur** **Piepe**	**Waur** **Tati waur**	**Birubiru**
Constellation(s)	**Baidam** (shark) appears	**Dogai** (spirit) appears	**Dogai** sets in west	**Bu** (trumpet shell) sets	**Dogai** + two other stars on horizon	**Dogai** rises	**Dogai** close to New Guinea	**Dogai** (large) + small star	**Gial, Usal, & Waplal** appear	**Kek* &Baidam** Kek rises & sets Baidam rises	**Gitalai & Wapi** Gitalai appears after Wapi sets in east
Weather	Dry with thunder	Wind, all ways, Northwesterlies begin	Northwesterlies continue	Wind not strong	Northwest monsoon	Northwest monsoon weakens	Northwest monsoon finishes	Southeastern winds strong	Fine weather	Southeasterlies strong	Southwesterlies strong
Animal Life	Turtle copulating eggs collected from islands & islets	Turtle finished hunted from deeper waters with gapu	**Kusi-kusi** (jellyfish) appears	**Kusi-kusi**	**Kusi-kusi**	**Birubiru** (bird) arrives from south	**Birubiru**	**Birubiru & gainau** fly north to N.Guinea	"Turtle got egg inside"	"Turtle got egg inside"	**Birubiru & gainau** fly south to Australia
Vegetation	Yams ripe	**Duau- urma** fruit (nut) is ripe	Yam runners and grass begin to grow		**Baradar malgui** (earth sprouts) yams watery	**Baradar malgui** & yams still watery	**Geru & Kai** (sugar cane & a tree) flower, & get new sweet potatoes	All dry leaves fall new yams	Wild yams, (boa) taro, & sweet potato ripe & **ubar**	Yam leaves dry, & yams ripe	Yams ripe
Occupation	Plant yams after 1st thunder, M & F Hunt turtle, M	Begin to prepare gardens for sweet potatoe & taro, M & F	Plant sweet potato vines & taro "heads" when heavy rains start, M & F		Make garden	**Gasi** (tuber), F. dig		Cut bush for yams, make dugong platform on reef, plant sweet potato in swamp	Cultivate yams, **Sauur & kutai** & other edible plants **(ikur) & ubar** ceremony at Panai	**Mudu kap** Dugong ceremonies at Dabungai	Plant yams, M & F
Food	Plentiful	**Duau-urma**	Scarce	Scarce	**Biiu & kolap** (mangrove & Queensland bean)	**Deab, bua, ketai** (wild tubers, bitter	**Deab, bua, ketai** **Gasi** & sweet varieties)		Begin to eat cultivated plants and wild fruits and tubers	Plentiful	Plentiful

*The star whose rising heralded much ceremonial activity and planting of new crops (Haddon 1912:224).

Table 13. Seasonal overview of the Gumulaig year, based upon "Calender of Western Islands of Torres Strait" (after Ray in Haddon 1912:225-28 &144-50).

through November, or *Aibaud* and *Surlal*), with the northwestern tradewinds blowing throughout the former, and the southeastern throughout the latter, separated by an intermediate period of calm, still weather.

Surlal was characterised by a stillness in the air and on the sea, in great contrast to the dry season preceding it, which was characterised by the continuously blowing southeastern trade winds, rough waters and fine weather. During this season the shark constellation (*baidam*) appeared along with the first thunder (*doiam*). Yams were still ripe and food was plentiful. *Doiam* signalled the coming of the *Raz* period, or "time of die", and the time to start planting yams. The major activities of *Surlal* were said to have been the hunting and the collection of eggs of green turtle, and the planting of yams (Table 13).

Raz was divided into three periods known as: *Duau-urma* (cashew tree, December); *Dob* (the last of the growing things, January); and *Aga gaba* (meaning unstated, February). During *Raz* the winds began to blow again (the northwesterlies), and both the *Dogai* (spirit) constellation appeared and set and the *bu* (trumpet shell, *Syrinx aranus*) star set. With the breeding season over, turtles were hunted in deeper waters, the *duau-urma* ("cashew" nut, *Semecarpus australiensis*) fruit was ripe, and gardens were prepared to plant sweet potato and taro at the start of the heavy rains. During the latter two months of *Raz* (*Dob* and *Aga gaba*) food was scarce. By the end of *Aga gaba* the winds died down and the northwest monsoon was on its way (Table 13).

Kuki, the rainy season, was also divided into three periods; Kuki, Kupa kuki, and Gukgai arai (wind moves around), each consisting of a month between March and May. Within Kuki the northwest monsoon ran its course, and each of the three phases was marked by the movement of the Dogai constellation. The birubiru (rainbow bee-eater, Merops ornatus) arrived from the south (Australia, on its yearly migration across the Strait), and throughout the first two periods (March and April) the yams were still "watery". Biiu and kolap (mangrove hypoctyl, Bruguiera gymnorhiza, and the Queensland bean, Entada scandens) were eaten then, as well as wild tubers (gasi, (Tacca leontopetaloides), deab, bua, and ketai, Discorea spp.). During Gugai arai (May) the kai tree (species unknown) started to flower together with sugar cane, and the sweet potatoes were just becoming edible. Wild tubers were still eaten. The Dogai moved close to New Guinea, and Aibaud began as it was joined by a smaller star.

Aibaud (harvest) heralded the return of the southeasterly tradewinds, and was divided into four periods, Sasi waur, Piepe, Tati waur, and Birubiru, which together lasted from June into mid-October. The rising and setting of particular constellations marked each period, the birubiru flew north to New Guinea during Sasi waur (June-July) together with gainau (the Torres Strait pigeon, Ducula spilorrhoa), and the former flew back to Australia during Birubiru. At this time, bush was cut (and burnt when dry) in preparation for planting yams, dugong platforms[1] were made on the near-shore fringing reefs, and

[1]These were bamboo structures which were placed on the reefs in near-shore waters to spear dugong from at night, as the dugong approached the shore with the rising tide to graze on sea grass.

sweet potatoes were planted in the swamps. During Piepe (August-September), the weather was "fine", and the "turtle got egg inside". Both wild (boa) and cultivated (sauur, kutai) varieties of yam were ripe, as well as taro, sweet potato, fruits and "other edible plants" (Haddon 1912:228). The ubar (wongai-plum, Manilkara kauki) ceremony (Mawa) was held at Panai over a four-week period, followed by the Mudu kap, or dugong ceremonies, which were held at Dabungai during Tati waur (over three days during the first week of October). Food was plentiful from August to November (mid-October through November being Surlal). The plant and dugong ceremonies were over by Birubiru and the bee-eaters flew south as the Islanders continued to plant yams.

6.2 Discussion

This intricate view of Mabuiag Islander life differs dramatically from one based upon analysis of archaeologcial remains alone and indicates how various periods of the year were defined by environmental conditions and their effect on the availability of food resources, particularly wild and cultivated tuberous plants. Other types of plants (primarily wild) are mentioned as sources of food and some as seasonal markers (cashew nut, mangrove, Queensland bean, sugar cane, a kai tree (species unidentified) and two fruits). However, none other than the tubers could have provided an almost year-round staple supply of bulk carbohydrate, given their nutritional composition (30%-40% carbohydrate, 3%-4% protein) and their abundance and variety in "the coastal thickets and woodlands that commonly occur just inland of the upper tidal limit throughout the Western Islands..." (Harris, in press).

According to Ray's calendar and descriptions by Haddon of tuber exploitation on Mabuiag, both wild and cultivated yams formed the most important part of the vegetable diet, supplemented by two other types of cultivated tubers, sweet potato (in particular) and taro (Haddon 1912:130). Sweet potatoes were introduced, "presumably from New Guinea which they reached at an unknown date from their tropical American homeland", as was taro, although a taro-like aroid is indigenous to northern Queensland and may have been ..."gathered or planted in the Western Islands"... before the introduction of cultivated taro from New Guinea (Harris, in press). By relying upon both wild and cultivated varieties of tubers the Gumulaig increased the overall quantity of tubers available during the year, particularly during the months within which they are naturally most abundant (August-November). As Table 13 shows, the time when the dugong and wongai-fruit ceremonies were held was in Aibaud when both wild and cultivated tubers could be eaten together with fruits and "other edible plants"[1], as well as dugong and turtle (Haddon 1912:228).

The names of particular animals that appeared seasonally in, or migrated across, the Strait (turtle, jellyfish, the rainbow bee-eater and Torres Strait pigeon) in part characterised the eleven sub-divisions of the Islander year, but only two animals are mentioned as food

[1]As mentioned in Section 5.3.10, Harris (in press) provides a summary of the potential plant resources of the island habitats, which are very similar to those recorded as eaten in the ethnographic accounts.

resources: dugong and turtle. Dugong hunting appears to have started at the beginning of Aibaud when the dugong platforms were built over the near-shore fringing reefs at the time when the dugong and wongai-plum (ubar) ceremonies were held. It is likely that green turtle would have also been hunted during this period, as it was approaching Surlal, and turtle hunting was described as carried out throughout the year. However, green turtles were hunted more frequently in deeper waters and channels between reefs (after having mated and laid their eggs), with the help of the gapu, or sucker-fish (Echeneis or Remora spp.)(Haddon 1912:159).

In contrast to the confined and predictable period in which an abundance of green turtle could be caught with relative ease (due to mating taking place close to shore on the surface of the water), no comparable behavioural information exists on the dugong, and their Islander name (dangal) is not used to define any of the seasonal periods. Other types of animals that would certainly have contributed to Islander diet, but are not referred to in the "calendar" are fish, shellfish and other species found within near-shore habitats, e.g. crustaceans. This may be because these animals can be exploited throughout the year and did not require special procurement scheduling; thus, they were not regarded as seasonal "markers"[1].

To summarise, this view of Mabuiag Islander life in relation to pre-European subsistence draws attention to the importance of the seasonal exploitation of resources, in

[1]Yet, a fish ceremony is described which took place on Waibene Island at the end of the dry season, and the Kowrarega blocked creeks with mats to trap fish during the dry (Haddon 1904:342-3; Moore 1979:150-1).

particular of tuberous plants as sources of carbohydrate, together with a few other types of plants, and dugong and turtle (particularly the latter) as sources of meat. But the only ceremonies mentioned are those held in relation to dugong exploitation and the collection of one type of wild fruit. Although wild tubers grow abundantly on Mabuiag in coastal thickets and woodlands, the Gumulaig increased their yield through cultivation of both indigenous yams and introduced tuberous cultivars (e.g. sweet potato and taro). Yet, even with this seasonal increase in the quantities of tubers available, there were still at least two months of the year during which food was considered scarce (January and February). Presumably this was due to the lack of tubers, at the time when the stems were growing and the tubers were "watery", and of other carbohydrate-yielding plants (e.g. cashew nut, mangrove and Queensland bean).

To get a more complete view of the variety of foods eaten throughout the Mabuiag year, of their daily relative importance, and of how they compare with foods eaten by the Kowrarega and Kulkalega, it is necessary also to summarise information from sections in the Reports that categorically describe the traditional plants and animals eaten (Haddon 1912:130-171). Additional information on subsistence-related ceremonies also exists (in sections of the Reports which specifically discuss aspects of ceremonial life), and this is considered in greater detail in Section 6.6.

6.3 The Gumulaig, Kowrarega and Kulkalega: their diet and the relative importance of the foodstuffs exploited

The seasonal range of foods eaten by the Kowrarega and the Kulkalega (as recorded in the mid-nineteenth century, see Chapter 3), are overall very similar to those eaten by the Gumulaig, with a greater variety of plants, in particular, recorded as having been exploited by the Gumulaig. The most significant differences appear to relate to the extent to which two resources, tuberous plants and dugong, were exploited by the Gumulaig: which are differences related more to the degree, or intensity of exploitation, than to the kind of resource exploited.

The gardens of the Mabuiag Islanders were described as "once second only to the sea as a source of subsistence" (Haddon 1904:284), and yams as "the chief farinaceous food" (Haddon 1912:130). These comments are supported by the "calendar" overview, by descriptions of varieties of tubers and other crops planted (e.g. banana and sugar cane), by the number of former garden locations on Mabuiag and the offshore islets, and by the fact that ceremonies were held to ensure good crops of both wild and cultivated plants (Haddon 1904:345-52, 1912:151,225-28). The only wild fruit for which ceremonies were held on the Torres Strait Islands was apparently the ubar or wongai plum (Manilkara kauki), a date-like fruit which ripens in the dry season. According to Haddon, "practices of a magico-religious character were universally employed to ensure the fertility of crops and the productivity of fruit trees, and even now they are not entirely discontinued"..."but it is evident there were many others about which we were not informed" (1912:151). In relation to the dugong, Mabuiag was regarded "as the head-quarters of the fishery of this sirenian" (Haddon 1912:166), "...owing to its contiguity to the great reefs..." where it abounds (Haddon 1912:137). Dugong were described as "abundant only on Orman's Reef immediately to the north of Mabuiag, and over the unsurveyed expanse of reefs between Mabuiag and New Guinea" (Haddon 1912:166), and were thus "a very important article of food, more especially on Mabuiag" (Haddon 1912:137).

Other of Haddon's comments indicate, to some extent, the relative daily importance of the different animals in the Gumulaig diet, although the information given is not always consistent. Haddon quotes MacGillivray as stating that "fish and shellfish are alone obtainable all year round", and he adds that "fish or shellfish are eaten nearly every day, with occasional meals of turtle and dugong; the two latter being especially "rich" or oily (1912:130). However, as part of an introductory description of the Islanders' daily life, Haddon offers this picture:

"A little fishing is indulged in by both sexes when they feel inclined for a change in diet; but at certain periods fishing becomes more of a general occupation. At low tide men, women, and children may be seen searching the reef for shellfish and fish which have become imprisoned in rock-pools, but as a rule this simple collecting is done more by the women and children. Although serious fishing is more particularly men's work the women also take a part, but definite fishing expeditions and the quest of dugong and turtle are confined to the men. Practically the fishing of the women is limited to that which they can undertake on the fringing reef of their home island" (1912:3).

Clearly, it is difficult to gauge the extent to which Haddon is describing what he believes to be traditional patterns of fish, turtle or dugong exploitation, and/or practices observed at the time of his research. However, additional references to the exploitation of these animals in the Reports help to clarify their (relative) past dietary importance.

Without mention of particular species, Haddon comments that "numerous kinds of fish...", "molluscs and crustaceans..." were eaten, along with "various birds" (1912:138-39). But, in spite of the proclaimed importance of the dugong as an "article of food" (1912:137), and the daily availability of fish and shellfish, Haddon refers to "the various species of turtle and their eggs..." "as the most important meat diet of the Islanders" (1912:138)[1].

Few species of fish or shellfish exploited as food[2] are taxonomically identified in the text of the Reports, so it was of particular interest to find many listed in the Mabuiag-English vocabulary compiled by Ray (Haddon 1907:88-130). Sixty-nine Islander names of fish are there recorded, 47 of which are identified taxonomically by Haddon (8 cartilagenous, 39 bony, see Table 14). Half as many shellfish names are recorded (34), with 29 identified taxonomically. Names of two types of octopus, a squid, two types of sea-urchin, a sea-star and three types of crab are also listed, although not identified taxonomically. The different animals recorded should no doubt be regarded as a minimum of types known at that time (and previously), but the variety of names of each type may represent, to some

[1] Note, however, that both of Haddon's visits to Mabuiag took place during the dry season, either just preceding or during Surlal, and that most of his informants were Islander men (Haddon 1904:vi).

[2] When types of fish, shellfish or bird are recorded, they usually refer to species used to make tools or body ornaments, in exchange, or as symbols in ceremonial contexts, and not as foodstuffs.

Table 14. Fish species recorded from Mabuiag Islanders and identified by A.C. Haddon in 1888 and 1898, listed by taxon and habitat (from Ghaleb, in press).

SL- Sandy Lagoons | **IN- Inshore Waters**
ER- Estuaries Rivers | **IR- Inshore Reefs**
MC- Mangrove Creeks | **OW- Offshore Waters**
MS- Mudflats Swamps | **OR- Offshore Reefs**

Taxonomic Classification*	Common Name*	Islander Name**	SL	ER	MC	MS	IW	IR	OW	OR
CHONDRICHTHYES										
Lamniformes										
Orectolobidae Eucrossorhinus sp.	Carpet- Shark	*im,ime*	x					x		x
Scyliorhinidae Chiloscyllium sp.	Catshark	*itar*	x							
Carcharhinidae @ various genera	shark	*baidam* +								
Sphyrnidae Sphyrna sp.	Hammerhead Shark	*kursi* +	x						x	
"with hard skin"	shark	*kutikuti*								
Rajiformes										
Pristidae Pristis sp.	Sawfish	*apad* *brug* *waiitutu*		x						
Rhinobatidae Rhinobatos sp.	Shovel- nosed ray	*kaigas* +	x							
Dasyatidae @ Trygonorrhina sp.	Fiddler Ray	*gwiar, kwier* *taimer* *tapi*	x							
Dasyatidae Urogymnus sp.	Thorny Ray	*tapim(u)* +	x							
? sp.	ray	*pukai*	x							
? sp.	ray	*tolupai*	x							
"generic names"	Ray	*maibi* *sursu, sursur*								
OSTEICHYHYES										
Clupeiformes										
Clupeidae Megalops sp.	Oxeye Herring	*iam*		x	x					
Anguilliformes										

Table 14 continued

Taxonomic Classification*	Common Name*	Islander Name**	SL	ER	MC	MS	IW	IR	CW	CR
Muraenesocidae Murenesox sp.	Pike Eel	*merpa*		x		x				
Gonorynchiformes										
Chanidae Chanos sp.	Giant Herring	*saur*		x	x					
Siluriformes (Nematognathi)										
Arriidae (Tachysuridae) Neoarius sp. Netuma sp.	Sea Catfish	*buk* *waroi*		x						
Atheriniformes										
Exocoetidae Exocoetus sp.	Flying Fish	*pokan-wapi* *puwi*					x		x	
Exocoetidae Hemiramphus sp.	Banded Garfish	*kubimaidal* *-pitai*	x					x		
Belonidae Tylosurus sp.	Long Tom	*dam* *damu-kodal*	x							
Syngnathiformes										
Syngnathidae Fistularia sp.	Pipefish	*dunur*		x						
Scorpaeniformes										
Synanceiidae Synanceia sp.	Stonefish	*uzi*		x				x		
Platycephalidae Platycephalus sp.	Flathead	*tubu*	x	x						
Perciformes										
Centropomidae @ Lates sp.	Barramundi	*moian*		x			x			
Serranidae @ Epinephelus sp.	Rock cod	*kurup*			x			x		x
Theraponidae (Terraponidae) Pelates sp.	Trumpeter	*zaram*	x	x		x				
Sillaginidae Sillago sp.	Whiting	*kopuru* *kupur*	x	x						
Echeneidae Echeneis sp. Remora sp.	Suckerfish	*gapu +*	x				x		x	

Table 14 continued

Taxonomic Classification*	Common Name*	Islander Name**	SL	ER	MC	MS	IW	IR	CW	CR
Carangidae @ Caranx sp.	White Trevally	gaigai- ubal	x				x	x	x	x
							x	x	x	x
Carangidae Absalom sp.	Fringe-Finned Trevally	*go baigo bai* *suli*	x							
Carangidae Alectis sp.	Diamond Trevally	*ialai-wapi*					x	x	x	x
Carangidae Scomberoides sp.	Queenfish	*kabar*					x		x	
Pomadasyidae @ Pomadasys sp.	Javelin fish	*buz*			x			x		
Lethrinidae @ Lethrinus sp.	Sweetlip	*poad* *poadi*	x		x		x	x	x	x
Sparidae Argyrops sp.	Long-Spinned Snapper	*purkalwapi*						x		x
Ephippidae Platax sp.	Batfish	*ialal-dad*	x	x						
Scatophagidae Scatophagus sp.	Butterfish	*karmoi*			x		x			
Scatophagidae Drepane sp.	Butterfish	*warka*								
Pomacentridae Amphiprion sp.	Anemonefish	*grusa-wapi* *susul-pagazi*						x		x
Mugilidae @ Lisa sp.	Mullet	*muragudal* *piwer*		x			x		x	
Sphyraenidae Sphyraena sp.	Barracuda	mugarir dabor		x			x		x	
Labridae @ Choerodon sp.	Tuskfish	*bila* *dungal wap*						x		x
Labridae Cheilinus sp.	Scarlet- Breasted Wrasse	*parama*						x		x
Scaridae @ Scarus sp.	Parrotfish	*kalu*						x		
Blenniidae ? sp.	Blenny	*wad +*	x					x		
Gobiidae Periophthalmus sp.	Mud-hopper	*gepuai* *kewe*			x	x				

Table 14 continued

Taxonomic Classification*	Common Name*	Islander Name**	SL	BR	MC	MS	IW	IR	OW	OR
Scombridae Scomberomorus sp.	Mackerel	*dabor* *dabu, debu* *gaigai*				x		x		
"generic name"	Kingfish	*kuda*								
Pleuronectiformes (Heterosomata)										
Soleidae ? sp.	Sole	*mulpal* *paza*	x			x	x		x	
Tetradontiformes										
Balistidae Monacanthus sp.	Leather- jackets	*imulu*	x	x						
Ostraciontidae Osracium sp.	Boxfish	*kworanga*						x		
Tetraodontidae ? sp.	Toadfish	*badar*		x						x

* - Taken from E.M. Grant's Guide to Fishes. Queensland Government 1982.
** - Taken from Haddon, A.C. Vol. III 1907:88-130
@ - Represented archaeologically
+ - Totems

extent, their relative past importance to the Islanders (although no information is given on which species may have been eaten).

For birds, however, there is information in the text of the *Reports* on the species most commonly eaten, and a variety of Islander names are given in the vocabulary, although there is a large discrepancy between the two. Three species are described as eaten, the most important being the Torres Strait pigeon (the only bird of "any size" in the islands), a frigate bird, and a tern (Haddon 1912:152). Eggs, especially of sea birds, were collected from sand banks and eaten during the breeding season, and several large birds were caught for their feathers (three specified: the pelican, the white-reef heron, and a hawk). Although only three species are described in the text as eaten, 45 Islander names are recorded in the vocabulary, 33 of which are identified taxonomically. Birds as a food may, however, be regarded as a somewhat anomalous resource category because all types were taboo to women on Mabuiag because they were believed to be aphrodisiacs: "for as pigeons fly from tree to tree so the woman would desire one man after another" (Haddon 1907:88-130, 1912:140, 152-54).

Other food taboos existed which restricted the consumption of certain foods (*e.g.* turtle meat and eggs) by women during specific stages of the menstrual and reproductive cycles. They were most severe during *Surlal*, and in some cases extended to the husband. Certain foods (*e.g.* any with fat) were also tabooed to young men during initiation, which, if eaten, was punishable by death (Haddon 1904:196, 202-204, 210, 217, 1912:140).

The Gumulaig were said not to have eaten porpoises or dolphins, flying foxes (although some of the "big men" did), the monitor lizard (Varanus sp.), snakes or frogs (although other Western and Eastern Islanders did), but they considered the larvae and pupae of a beetle as delicacies (eaten raw or roasted) (Haddon 1912:137-39). All but one type of shark (carpet, Eucrossorhinus sp.) and one type of ray (shovel-nosed skate, Rhinobatos sp.) were considered taboo, as was a stone fish used in magic, which could only be eaten by old men and old women (Haddon 1912:139). Men also ate "certain portions, generally the eyes and cheeks, of enemies killed in battle"..."in a raw or partially cooked condition". However, as far as Haddon could discover, humans were only ever eaten in a ritual context, i.e. never purely for the sake of eating another type of animal flesh (1912:139-40). Certain of the Kowrarega's food taboos were similar to those of the Gumulaig (i.e porpoises, Torres Strait pigeon for women, and all sharks and stingrays), although MacGillivray (1852 II:10) recorded food taboos that Haddon did not, e.g. "many kinds of fish, including some of the best [were] forbidden on the pretence of their causing disease in women, although not injurious to men", and "the hawksbill turtle and its eggs are forbidden to women suckling" (see Section 3.8.3). The Kowrarega also beheaded captured enemies and ate certain body parts during ritual celebrations (Moore 1979:150-51,156,166,170).

6.4 Discussion

From this discussion of the variety of animal and plant foods eaten by the Gumulaig, Kowrarega and Kulkalega, it is apparent that fish, shellfish, dugong and turtle comprised the staple meat-derived proteins and fats of the Western Islander diet. Tuberous plants, both cultivated and wild, appear to have provided the staple carbohydrates for most of the year, supplemented by a few fruits during the dry season, particularly the ubar or wongai-plum.

Fish and shellfish (particularly fish) are mentioned in both the mid- and late-nineteenth century accounts as having been important sources of food throughout the year (see Sections 3.6 and 3.8.3). Due to the accessibility of fish for exploitation by both sexes and most ages, and their abundance and nutritional value as sources of protein and fat, it is probable that they (supplemented by shellfish, crustaceans etc.), were a common part of Islander daily diet.

Haddon's opinion of the dugong's special importance on Mabuiag, in contrast to the other Western (and Eastern) Islands, is consistent wth Barbara Thompson's descriptions and MacGillivray's impressions that, although a much-favoured food, the dugong was eaten infrequently in the Southwestern Islands and at the Cape. Barbara Thompson's account of turtle meat as the "principal" food during the dry season (together with koti yams), and of dietary hardships in the wet season, suggest that turtle was not eaten often during the wet (Section 3.8.3). On the other hand, Haddon's reference to turtle "as the most important meat diet of the Islanders", suggests that it may have been eaten throughout the wet season on Mabuiag. However, periods of food scarcity in the wet season were also said to have affected the Gumulaig.

In addition to more intensive exploitation of dugong and possibly turtle by the Gumulaig, cultivation appears to have been more widespread on Mabuiag than on Muralug and, possibly, on Nagir. The MacGillivray (1852) and particularly the Brierly (Moore 1979) accounts suggest a considerable commitment to agriculture by the Kulkalega on Nagir. However, it is difficult to make direct comparisons between Mabuiag and Nagir because the latter island has, relative to its size, considerably less land suitable for cultivation. Nevertheless, the range of crops described as cultivated by the Gumulaig and Kulkalega are similar (in contrast to the situation among the Kowrarega where there is uncertainty over the extent of cultivation and the range of plants cultivated). The wongai is mentioned in the mid-nineteenth century accounts as one of the dry-season fruits eaten, and, according to Haddon, it was the most important fruit eaten throughout the Strait (1904:347-49, 1908:202-06).

Irrespective of the the year-round (though seasonally variable) availability of a variety of animal foods, fish, dugong and turtle were preserved on Mabuiag (dried, smoked, or slightly roasted) to be taken on voyages, traded, or eaten in the wet season (Haddon 1904:294-95,1912:137). The end of the dry and the beginning of the wet season was described as a period within which nutritious food was "generally very scarce", when the Islanders "often had to rely on anything they could find in the bush that was edible" (Haddon 1912:130). This period coincided primarily with the last two stages of Raz (Dob and Aga gaba) (Table 13) when tubers could not be collected, which suggests that the perception of food scarcity was related more to a lack plant foods (especially tubers) than animal foods. Although there are descriptions of both the Kowrarega and Kulkalega drying turtle and fish to be used on voyages and in the exchange of goods, Barbara Thompson describes how the Kowrarega, in contrast to the Kulkalega, did not store any food to be eaten during periods of food scarcity in the wet season (see Section 3.8.3). However, the maintenance of a population density on Mabuiag, as high as that indicated in the historical acccounts (Harris 1979), may imply that the Gumulaig preserved/stored plant foods in addition to animal (see Section 6.4) to be eaten during the lean periods of the wet season.

In general, the information on Western Islander diet, derived from both the mid- and late-nineteenth century ethnographic accounts, is descriptive rather than explanatory. It is clear that the range of plant and animal foodstuffs documented at both periods is very similar, with some variation in the extent, or degree, to which certain foods were exploited (i.e. tubers and dugong, and possibly turtle) and stored (to be eaten during periods of food scarcity). Haddon does offer some explanations for the differences observed in subsistence patterns. The dugong was an especially important part of the diet of the Mabuiag Islanders because of the island's proximity to the large dugong populations which inhabited the waters just to the north. However, why the cultivated gardens of the Gumulaig may have been "once second only to the sea as a source of subsistence" (Haddon 1904:284), was not as readily answered, especially in view of the physiography of Mabuiag.

The high islands of the western Strait were "all somewhat infertile owing to the scarity of water" (Haddon 1935:24), with Mabuiag, in particular, being small, "very hilly and only moderately fertile" (Haddon 1935:21). The "more northerly Western Islanders" were said never to have "been great gardeners" on account of the islands' sterile soil which did not "encourage them thereto" (Haddon 1935:410).

Haddon thought that the differences in geographical factors across the Strait "clearly conditioned the economic life of these people" (1935:410-11), particulary in relation to the extent to which agriculture was practised, it being more highly developed on the rich volcanic soils of the eastern islands than in the western islands[1]. However, within the western islands, in spite of the relative infertility of the soil of Mabuiag, the Gumulaig somehow attained the "second stage" (the art of cultivation) which "the natives of Muralug and the neighbouring islands never really" did, remaining essentially "simple hunters and collectors" (Haddon 1935:412).

Haddon was familiar with the journals of Jukes (1846) and MacGillivray (1852), and includes in the Reports their

[1] However, the introduction of new plants including better varieties of yam, to Mer, was attributed (in Islander folklore) to persons who came from either the western islands or New Guinea (Haddon 1935:413).

descriptions of the areas cultivated on Nagir Island, but he states that there was a greater commitment to agriculture among the Gumulaig (and among the more northerly people of Saibai) than there was among the people of the western islands farther south (including Nagir). However, he offers no opinion as to why these contrasts existed within the western islands. The main cultural contrast that Haddon emphasised was that between the Australian Aborigines and the peoples of the southern coast of Papua (particularly in relation to the absence and presence of cultivation), and he considered that "the evidence of the material culture of the islanders [was] in conformity with that of their physical characters and psychology, as also [was] the general character of their social institutions and to a very large extent their ceremonial culture (1935:411); i.e. the Torres Strait Islanders were all "distinctly "Papuan" "and not Australian" (Haddon 1935:410-11).

The question of why such differences existed in the degree to which cultivation was practised across the western Strait is considered further in Section 6.9, following discussion of how the historical view of traditional Mabuiag-Islander diet accords with one based upon the results of the analysis of the archaeological remains recovered on Mabuiag (Section 6.5), and discussion of the social context of Gumulaig eating (Section 6.6).

6.5 Archaeological and ethnographic perspectives on Gumulaig subsistence

Analyses of the excavated remains of Gumu did not provide any clear evidence of seasonal (as opposed to year-round) occupation of the area (Section 5.3.9). This is predominantly because the ecological information on the animal species identified (which does exist) suggests that they are all (today) available throughout the year, and are assumed to have been so in the past. The only archaeological evidence which indicates that the Islanders would have been at Gumu at particular times of the year is the area of agricultural mounds and ditches in the southwest corner of Gumu I. The ecology of the types of tuberous plants most likely to have been grown there (i.e. taro, yams and sweet potato), based upon analogy with the plants grown historically (see Section 3.8.3) and today on similar raised fields in the Papuan lowland north of the Strait (Harris and Laba 1982), requires that soil preparation, planting, and harvesting would have been carried out according to a strict seasonal regime (see Section 6.3). However, as noted previously (Section 5.3.9), it has not yet been possible to determine the antiquity of the relict fields, and to discover whether they were contemporaneous with the midden deposits which were analysed and radiocarbon dated. Regardless of the antiquity of tuber cultivation on Mabuiag, wild tubers must also have been exploited on a seasonal basis (and the ethnography of the region strongly suggests that tubers were the most important indigenous plant of traditional diet). Thus the exploitation of wild and/or cultivated tubers by the Gumulaig would have been seasonal, but neither practice necessarily implies seasonal or year-round occupation of the area.

The archaeological remains recovered at Gumu do, however, provide direct evidence of some aspects of pre-European Islander diet. The animal species identified (dugong, turtle, fish and shellfish) are all consistent with those described as eaten by the Islanders in the Haddon ethnography and the mid-nineteenth century accounts, although not all of the animals described as eaten were found archaeologically (no evidence was found of bats, tree grubs, mangrove crab, bird eggs, and almost none of birds). Tree grubs are the only resource that one would not expect to recover, and environmental conditions in combination with human and animal activities (e.g. consumption or trampling effects) at the site probably prevented the preservation of the other relatively fragile animal remains. It is, however, interesting to note that birds are documented as taboo to women in both the mid- and southwestern islands, and bats are said to have been eaten only by certain men on Mabuiag.

It is perhaps more difficult to estimate accurately the contribution of animals to Islander diet on the basis of the archaeological data than it is on the basis of the ethnographic descriptions. This is primarily due to two factors: a) the small size of the excavated samples in relation to the total midden surface area, which prevents us from knowing how representative they may be of the remains across the entire site, and b) the extent of differential preservation, i.e. the effect of pre- and post-depositional destructive factors on different types of remains which vary in robusticity, with the concomitant likelihood that certain types were damaged or destroyed to a greater extent than others (e.g. birds, fish, crustaceans). With these caveats in mind, we can now consider consistencies between impressions of traditional-Islander diet afforded by the archaeological analyses of the Gumu remains, and those derived from information recorded in the Haddon Reports.

Numerically speaking, fragments of fish bone are the most abundant type of animal remains recovered (49% of the total) from the deposits excavated at Gumu. As fish bones are the least robust of the four most abundant types of animal remains found (fish, dugong, turtle and shellfish), they probably suffered the greatest taphonomic damage. The high percentage of unidentifiable fragments (on average 77%) suggests this, particularly when compared with the percentage (by weight) of unidentifiable dugong and turtle remains (32%), and the average percentage of unidentifiable shellfish remains (20%). Only eleven genera of fish were identified archaeologically compared with 47 named in the Mabuiag-English vocabulary (although there was one family identified archaeologically that is not referred to in the Reports, see Table 14). This may also indicate that a considerable amount of information on past Islander fish exploitation was lost due to the destruction of the archaeological fish remains. That fish, and other species which could be caught or collected in the near-shore zones, were important components of the traditional-Islander diet is supported by the proximity of two fishtraps to Gumu, by the fishtraps close to other former settlement sites (e.g. Panai and Wagedagam), and by the total number (14) located around the coast of Mabuiag and its offshore islets.

The range of shellfish species recovered archaeologically (29 families, 59 species), and the presence in the remains of chiton, crab and sea-urchin, are consistent with Haddon's comment that numerous types of molluscs and crustaceans were eaten, and with the variety identified in the vocabulary (29 species, plus five names which were unidentified). Of the 29 families identified archaeologically, 21 are in the vocabulary. Species of crab were not identified from the archaeological samples, nor are species included in the vocabulary, although three different Islander names are recorded in the vocabulary.

The remains of shellfish may represent the original amount discarded more accurately than the other types of animal remains recovered, on account of their having the lowest percentage of unidentifiable fragments (20%) and because of the robusticity of the parts used to calculate the MNI's (bivalve hinges and gastropod apexes). Although a relatively high diversity of types was collected, only one species was found in abundance (the small sand-dweller Mesodesma striata which was not, however, recorded in the Reports). This, in combination with the overall low number of total shellfish fragments (3,279) and lower MNI (1,392), suggests that they did not contribute large quantities of protein and fat to the Gumulaig diet, unless of course substantial quantities were eaten and discarded offsite.

The dugong and turtle remains were, in general, fragmented and weathered. However, the majority of the skeletal elements that comprise each animal are very robust, and are more likely to have been preserved to some extent than to have been destroyed completely. Thirty-two percent, by weight, of the remains were in such a fragmentary and corroded state that they could not be identified to either dugong or turtle, although this does not necessarily indicate much loss of information. If one considers the number of ribs and vertebrae, for example, that comprise only one dugong (adult or immature) skeleton, or the size of a single adult turtle carapace and plastron, the number of bone pieces which could be generated by their fragmentation (tens to hundreds depending on the degree of fragmentation), is potentially great, so that a large percentage of these fragments could be rendered unidentifiable, without having any effect on the accurate calculation of the MNI, provided fragments of other elements were found.

However, even if we "allow" ourselves to accept the MNI's of dugong and turtle in the excavated deposits as representative of the quantitities of each within the midden deposits not excavated, and, therefore, also accept the total numbers calculated as an accurate estimate of the quantities within the entire midden deposits of Gumu (Section 5.3.6), it is still not possible to evaluate the significance of the estimated quantities of these animals in the pre-contact Islander diet without information which relates to the social context of their consumption. Because, if the animal remains found represent refuse from meals eaten over approximately 800 years of occupation by one clan, the average weekly intake of protein and fat is of the order of eight times greater than the amount consumed if eaten by the entire (hypothesized, c. 450) population of Mabuiag (e.g. during multi-clan gatherings).

As further consideration of the archaeological data can offer no information on the social context of Gumulaig eating, it is sought from the Haddon Reports. It is also argued that information in the Reports, together with information discussed previously from the mid-nineteenth century accounts, when viewed with reference to certain of the archaeological features of Mabuiag and the offshore islets, implies a degree of cultural continuity that justifies interpreting the archaeological remains in the light of their ethnographically recorded significance.

6.6 The social context of traditional Gumulaig eating: daily sustenance and ceremonial feasting

The Haddon Reports contain descriptive information on aspects of the collection (or "capture"), preparation, cooking, and discard of plant and animal foods recorded as having comprised the pre-European Mabuiag Islander diet. Table 2 highlights information related to these activities from the mid-nineteenth century accounts and suggests their potential archaeological visibility. Information in the Reports confirms these earlier descriptions and provides additional detail in relation to the Gumulaig (i.e. about coastal stone-lined fish traps, the use of ground axes of shell and stone, the use of shell as a scraper on plant fibres for basketry, and the upi, or bamboo knife, for cutting into dugong and turtle as well as human heads). Of the relative wealth of information in the Reports on subsistence-related activities, descriptions that refer to the contexts of cooking, eating, and the disposal of bone, shell, and stone remains are of greatest relevance here.

The few references to Mabuiag Islanders eating within a domestic setting are not site-specific and occur in discussions on the style of traditional western-island houses and techniques of food preparation. The descriptions of differences in "house", "shelter" or "hut" architecture across the Strait are in accordance with those contained in the mid-nineteeth century accounts (see Sections 3.6 and 3.8.1). The placement of houses within "settlement" areas is not mentioned, although Haddon refers to a drawing by Melville (artist of the 1844-45 "Fly" expedition) as an accurate representation of a traditional western-island village setting, and in that drawing the "houses" are all located along the first beach ridge above the high-tide limit (Haddon 1912:96).

Western- and central-island houses were described as very similar to those of Muralug, the latter being somewhat "ruder". They were "simple, oblong, low structures built on the ground with a roof sloping on each side to the ground", with some houses also having very low side walls (Haddon 1935:299, see Plates 1b and 2a). Larger houses had three entrances with a fireplace in front of each, with some having as many as ten entrances (Haddon 1912:93-98). Several families might occupy the same house, but "each family had its own fireplace, and each provided its own food" (Haddon 1912:130). "If one man had no fish or other food while another in the same house had some, the latter was bound to give some to him who lacked" (Haddon 1912:130).

Cooking was done by the women, except in the bachelor's quarters (kwod), or when men were out on hunting expeditions. There were no separate kitchen areas and cooking was "carried on either inside or outside the house, more generally inside, but the earth-oven was always outside" (Haddon 1912:131). Mats "were used to sit on occasionally, especially when feasts were given, in which case the feeding took place outside the houses" (Haddon 1912:120).

As noted previously (Section 4.4), Haddon is sceptical about the formation of "kitchen middens" at that time and in the Islanders' past (1890:303; 1912:131). However, he does mention that "dugong and turtle skulls and bones were formerly, and often still are, massed in heaps or placed in rows by the Western Islanders" (1912:131). This, he explains, "was done for ceremonial purposes, or merely to keep count of the number of animals caught in any one season, in the latter case they were subsequently distributed and soon crumbled away" (1912:131-32). Haddon does not elaborate, in this part of the Reports, upon what became of the heaps of bone "massed" for ceremonial purposes, but he does refer to them in the accounts of activities associated with Gumulaig ceremonial life (see below).

Chapters and sections of chapters in the Reports consist solely of descriptions on traditional-Islander ceremonial life: _e.g._ "Dances and dance paraphernalia" (1912:289-305); "Funeral ceremonies" (1904:248-262); "Magic and religion" (1904:320-378); "The magical and religious aspects of totemism" (1904:182-186). Although the expedition was unable to document the ceremonial life of the Western Islanders as fully as that of the Easterners, Haddon believed that "religious and other ceremonies must have taken up a good deal of time" (1912:5). Details of ceremonies relating to four aspects of Islander life are recorded in the _Reports_: subsistence, warfare, death, and initiation. In relation to subsistence practices (as stated in Section 4.3), Haddon comments that there were several ceremonies connected with turtle- and dugong-hunting, fishing and the fertility of crops and fruit trees, but that they were unable to record, which would have "occurred only in definite places" (1904:341-42, 1912:151).

Those described took place at specific clan localities over certain periods of time (hours, days or weeks) and were frequently associated with constructed features or "shrines". Ceremonies relating to subsistence practices took place seasonally: some once a year within a day (dugong and turtle taboo ceremonies at Dabungai and Gumu); or over a few days (_e.g._ _Mudu kap_, the dugong-increase ceremony held at the _kwod_ at Dabungai, and the _Waitutu_, or sawfish dance seen on Thursday Island); or over several weeks (_e.g._ _Mawa_, the fruit ceremony held at Panai over four weeks). These particular ceremonies were all held once a year, at the end of the dry season (within _Aibaud_), although others were performed frequently throughout a season (_e.g._ during _Surlal_ when turtle- and dugong-increase ceremonies were held before and after hunting expeditions at Gumu, Dabungai and Pulu, Fig. 46).

Ceremonies relating to warfare were held at Wagedagam and on the islets of Widul and Pulu as the occasion warranted, as were the initiation rituals and those related to a girl's first menstruation (Haddon 1904:217). A few of the ceremonies described were attended by both sexes (Mudu kap, Mawa, and the Waitutu), but certain of the hunting-increase (e.g. Wiwai-stone), turtle- or dugong-taboo, and warfare and initiation ceremonies were attended only by select groups of men, i.e. any of the ceremonies held within a kwod were strictly restricted to initiated men (Haddon 1904:365).

The clans associated with Dabungai (Dangal-kodal) and Gumu (Kaigas-surlal-umai), where the most important ceremonies related to dugong and turtle hunting took place, were both part of the marine-animal moiety whose main function was "to secure success in catching dugong and turtle". The bay of Dabungai opens north towards (what were reputed to be) the reefs most heavily populated by dugong in the Strait (Orman's reef), and it was here that the first dugong caught at the beginning of the hunting season was positioned facing the reefs (in order to beckon other dugong to the shore), and "treated" with various plant "medicines" by the Dangal men before being given to the Surlal men to eat (see Section 4.3). The Mudu kap was also performed here by men who sang and danced around a dugong platform in front of a general audience.

The fig tree ornamented with dugong bones and large shells which the missionary Gill described as a dugong

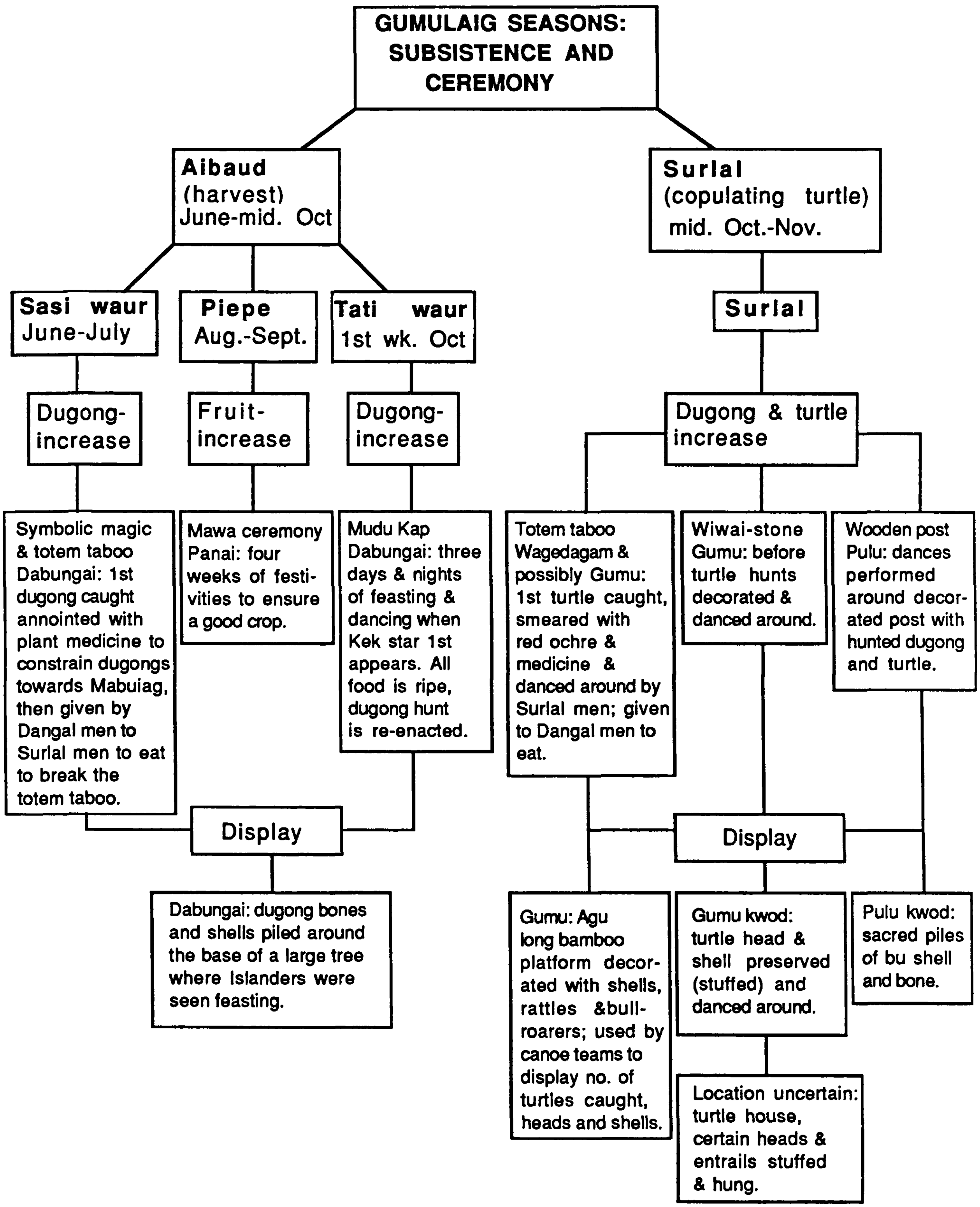


Figure 46. Gumulaig seasons: subsistence and ceremony.

shrine (1876) and which inspired Moresby's comment about a "puzzling custom" of the "unclothed" and "uncivilized Papuans" seen feasting beneath it (1876:131, see Section 3.4) was also observed by Haddon who "ascertained" that it "grew beside the kwod at Dabungai" (1935:59). This is the only mention by Haddon of an accumulation of bone at Dabungai.

References to Gumu in the Reports do not include descriptions of bone accumulations there, but Haddon does refer to specific features constructed at Gumu around which turtle-hunting rituals were performed. In addition to the Wiwai-stone ceremony (Plates 18a and 18b), during which dancing and singing took place around a large, spherically-shaped stone (anointed with turtle oil, painted with black paint, and decorated with plants and short feathered sticks) which was surrounded by upright stones (adil) (Haddon 1904:334-6, and see Section 4.9), dancing also took place around another feature believed to ensure success in turtle hunting: the agu.

An agu consisted of a long bamboo platform with bull-roarers attached to the sides, upon which the heads and shells of turtles were placed to form long rows. This was made during Surlal for men to dance around and swing bull-roarers before and after hunts. Each canoe had its separate agu, so that the crew with the greatest number of turtles displayed at the end of the season "acquired the greatest glory" (Haddon 1904:330) (Plates 19a and 19b). Haddon quotes a description, written almost a decade earlier, of a feature on Dauan Island (north of Mabuiag near Saibai Island, off the Papuan coast) which he believed

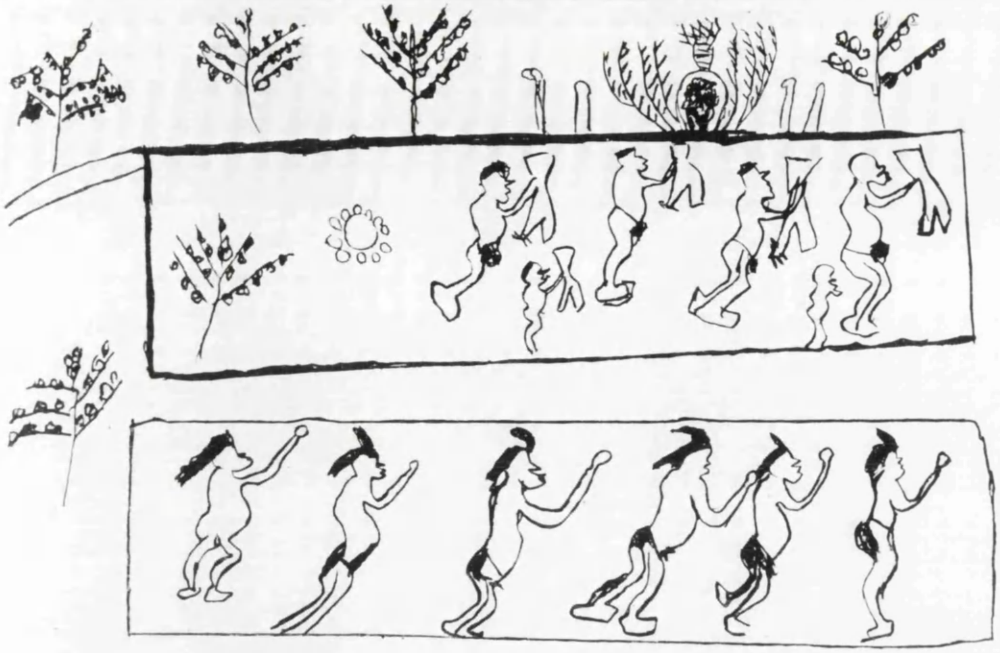


Fig. 56. Drawing by Sunday of the turtle-ceremony at Gumu, Mabuiag.

The *wiwai* shrine is shown in elevation on the top of the upper figure and in plan within it.

Plate 18a. Drawing by a Mabuiag Islander of the turtle ceremony at Gumu, with the wiwai shrine (Haddon 1904:336).

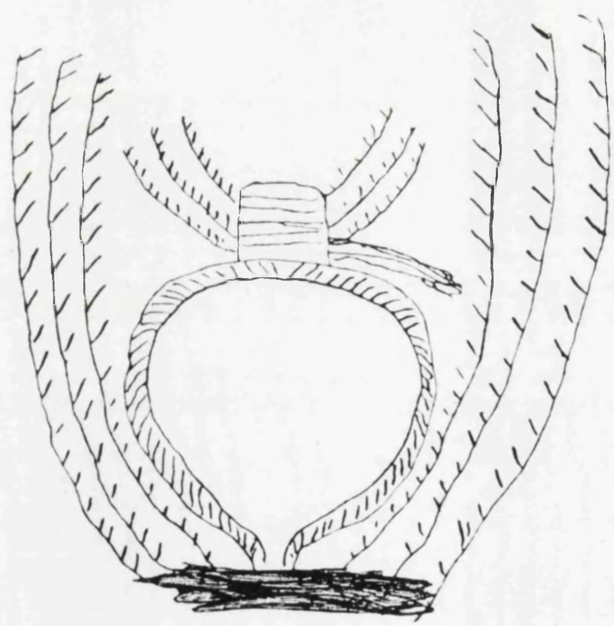


Fig. 55. Drawing by Gizu of the *Wiwai* turtle-shrine at Gumu, Mabuiag.

Plate 18b. Close-up drawing by a Mabuiag Islander of the Wiwai turtle-shrine at Gumu (Haddon 1904:335).

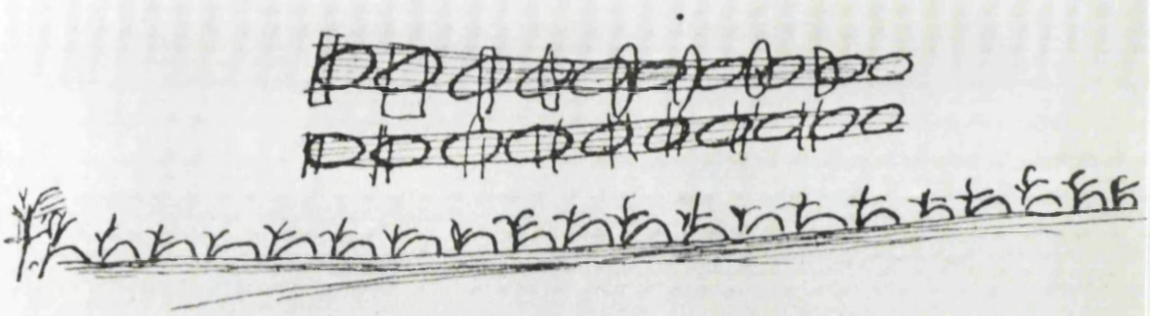


Fig. 50. *Agu*, or turtle-platform, drawn by Waria.

Preparatory to starting out to catch the floating turtles the men took a bull-roarer from the *agu* and swung it over the canoe (fig. 51), and they also stood round the *agu* and whirled the large (*bigu*) and small (*wanes*) bull-roarers (fig. 52, Pl. xx. fig. 2). A performer whirled a *bigu* many times round his head and a *wanes* was at first swung in the same manner, but after a few revolutions it was lashed backwards and forwards and was thus made to produce more than one kind of noise.

Plate 19a. Drawing by a Mabuiag Islander of the Agu or turtle platform (Haddon 1904:331).

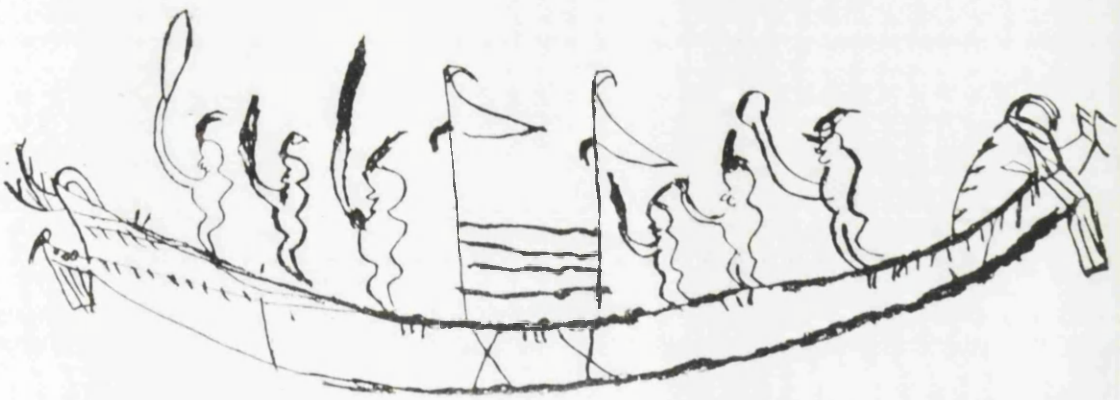


Fig. 51. Drawing by Sunday of the turtle-ceremony at a canoe at Gumu.

Plate 19b. Drawing by a Mabuiag Islander of the turtle ceremony at a canoe at Gumu (Haddon 1904:331).

may also have been an agu: "all the shells of the turtles killed in the place are placed in one long row extending from the little temple to the beach" (D'Albertis 1880 II:8, in Haddon 1912:235). These features are reminiscent of the agoola's observed on Nagir Island and the small central islands of Waraber and Arden (traditional name unknown) by MacGillivray and Brierly, said "to bring the turtle about" (Moore 1979:135, and see Sections 3.8.1-3.8.2).

The ceremonial significance of the wiwai stone is consistent with Gill's statements about turtle- and dugong-giving gods within the Strait being simply round painted stones (see Section 3.4). Haddon was informed that the people of the central island of Tutu had a wiwai stone and that their ceremony was similar to the one held at Gumu, also enacted to ensure success in turtle hunting (1904:335).

In addition to the ceremonies which took place at Gumu around specific features during the Surlal season, the totem-taboo ritual was carried out in the Gumu kwod with the first turtle caught during Surlal, and turtles were sometimes just placed on their back at the kwod and danced around. Turtle heads were also stuffed with special plants and hung over the sides of canoes, or placed in a shelter constructed expressly for the skulls and other skeletal parts which was called the turtle-house (site(s) unspecified) (Haddon 1904:183,333). Throughout this time of year [before and during 1888] turtle carapaces were preserved dorsal side up, and necessarily intact, "for if they were broken the female turtles would immediately sink when a canoe approached" (Haddon 1904:333). Although (as this discussion demonstrates) Haddon recorded aspects of ceremonial life at Gumu in detail, there is no mention of precisely where the constructed features were placed nor of where the kwod was located. However, the decriptions do indicate that Gumulaig ceremonial activities at Gumu were not restricted solely to the ceremonial, or kwod, area.

The significance of the kwod in Gumulaig life, however, extended far beyond the enactment of formally or more casually staged ceremonial rituals. Kwods were a part of each settlement site and of certain clan localities and they were described as "the central spot in the social, political, and religious life of the men" (Haddon 1904:365, and see Sections 4.2-4.3). In the western islands they were "generally an open space which was definitely and permanently set apart for ceremonial purposes", which on Mabuiag "could also be made temporarily wherever there was a "camp"" (Haddon 1904:365). Some of the kwods were associated with a screen, but Haddon knew of only one in the western islands, the waus within the kwod of Nagir, described a few decades earlier by Jukes (1847) and MacGillivray (1852) (Section 3.8.2). In addition, "occasionally the term kwod applied to a house which was allocated to male visitors and used as a club-house" (Haddon 1904:365: in 1888 there was such a house at Bau which was drawn by Haddon).

As already mentioned, specific ceremonies were held within kwods, but men also frequented them on a more daily basis. "Grey-haired men" met in kwods to discuss matters such as fighting, dancing, tai (time or place for a ceremony and/or feast), augud (totems, sacred objects) and women (Haddon 1904:365-6). Young initiated men sat and listened to these discussions, and as one informant told Haddon, "it was like a school" (1904:366). The young men were responsible for the upkeep of the kwod, which entailed collecting water and firewood and attending the fires, and "if the elder men went out to fish or to harpoon dugong or turtle and had good luck, they would probably bring some fish or meat to the kwod, and it was the duty of the young to cook it" (Haddon 1904:365). Thus, "sacred" arrangements of bone, shell, and/or stone were not necessarily the only type of midden remains associated with activities that took place within a kwod.

There are few specific references to cairn-like features on Mabuiag (i.e. discrete piles of animal remains and pieces of island bedrock), or any of the other islands visted by the Haddon expedition, and none are at all comparable to those found today at Dabungai and Gumu. In the chapter on hunting and fishing (Haddon 1912:152-171), Haddon quotes MacGillivray's descriptions of the turtle-lookout stations (cairns comprised of stone, bone, and shell) that he and Jukes observed on the southwestern islands (1912:160). Their observations and a drawing of a grave seen on the beach at Port Lihou, Muralug (a more elaborate structure than the "lookout" cairns (Plate 1a), but still partially comprised of dugong remains and shellfish), are also referred to in Haddon's chapter on funeral ceremonies (1904:559-261, and see Sections 3.8-3.8.2).

The only traditional grave site visited by Haddon was that of the cult-hero Kwoiam, located above Gumu on the crest of a hill that overlooks Pulu Island (Plate 20). According to Haddon, Kwioam's grave consisted of a low cairn about three metres long by a metre high, surrounded by three of Kwoiam's shell trumpets (bu shells, Syrinx sp.) (Haddon 1904:83). It was "investigated" by a Mr. Cowling (subsequent to Haddon's stay) and was reported not to have contained any bones or objects. However, at that time Haddon was informed that the Gumulaig formerly "had a custom of erecting a memorial cairn independently of the grave" (1904:368). Haddon was also told that "when a kaigas man died his relatives made a heap of earth shaped like a kaigas" (1904:185). An Islander from Muralug (a Kowrarega) recounted to Haddon that their graves "consisted of a low circular mound of earth surrounded by a ring of cleared ground on which were strewn large and small shells of various kinds" (1904:261). The only descriptions of traditional graves on Mabuiag are of those seen by Gill in 1872, which are very similar to the accounts by Jukes, MacGillivray and Barbara Thompson on the Kowraregas' method of burial (see Sections 3.4 and 3.8.2).

Of the unique features, discovered and described by MacGillivray (1852) and Brierly (Moore 1979) on Nagir Island, and said to have been features of ceremonial sites, or kwods, by Barbara Thompson and the Islander (Kulkalega) man Zoga, Haddon saw traces of one type: the funeral screen, wouse or waus (Plate 4a).

"In 1888, so far as I could learn, no waus remained in any of the islands; in Nagir the places where the screens stood were still to be recognised in confused lines of bleached and often broken shells of the large Fusus [Syrinx], Cassis, and Giant clam, but the formerly cleared spaces were overgrown with scrub" (Haddon 1904:366).

Plate 20. Photograph of "Kwoiam's grave" with three _Syrinx_ shells and view of Pulu Island in the middle distance to the right (Haddon 1904:Plate IV Fig.3).

Haddon was informed that the death, initiation and mawa (ubar or wongai fruit) ceremonies on Nagir took place in front of the waus, with the spectators on one side only (the performers occasionally going behind the waus to rest) (1904:366). Mawa ceremonies were also recorded as having taken place on Tutu and Saibai islands and in the eastern islands (Haddon 1904:348-49,366, 1908:202-07).

As described in Section 3.8.2, although morphologically diverse, all the features of ceremonial/ritualistic significance (e.g. the waus, agoolas, or turtle-increase shrines, areas marking birth or death, or graves) were constructed with dugong and/or turtle bone, Syrinx and other shells (e.g. Melo sp. and the mangrove bivalve, Geloina coaxans), and sometimes with large stones, human skulls, and/or post-cranial bones.

Haddon's most detailed description of a Gumulaig ceremonial ground includes a drawing and a photograph of the area (see Plates 5a,5b,6a,6b). It is where the death-dance, initiation rites, warfare, and turtle- and dugong-increase ceremonies were held: the most important, or "national", kwod, on the sacred islet of Pulu (Haddon 1904:3-5). He described it in detail, as follows:

"Near the centre of the kwod is a large oblong heap, about 10 feet in length composed of dugong bones, and surrounded by several upright stones. This is the kai siboi. At short distances from this were the fireplaces of the five chief clans. These were so arranged that the Sam (cassowary), Kodal (crocodile), and Tabu (snake) fireplaces were comparatively close together at its westerly end, whereas the Kaigas (shovel-nosed skate) fireplace was to the north and the Dangal (dugong) fireplace was to the north-east. The first three clans were the people of the big augud (cf. p. 172).

At the back of the kwod towards the east were two heaps of Fusus [Syrinx sp.] shells, one on each side of a boulder, the more westerly one was slightly the larger, and was called kai mat, the other being the mugi mat. A short distance from these to the south-east are two small heaps of Fusus shells, the kai augudau kupar and the mugi augudau kupar, that is "the large navel of the augud", and "the small navel of the augud."

To the south of this is a double row of dugong ribs called mugi siboi. As there was some shade here owing to it being at the border of the kwod close to the trees, the men used to sit by the mugi siboi when the sun was hot, but when it was cool they went and sat by the kai siboi. Near these latter shrines is a stone, at one end of which are a few Fusus shell; this was stated not to be a shrine.

It was here that the most important ceremonies were performed, the kwod being the place where the markai or death-dance was held, and subsequently the initiation of the lads" (1904:4-5).

6.7 Gumulaig ceremonial features, patterns of settlement and subsistence and their relevance to the archaeology of Mabuiag Island

Haddon's description of the *kwod* of Pulu exemplifies how inter-related were the social organisation, ceremonial life, settlement patterns and subsistence of the Mabuiag Islanders. Both the fireplaces of the chief clans, and four of the five piles of *bu* (*Syrinx*) shells, were grouped by totemic affiliation and positioned according to the geographical location of the clans' major settlement sites on Mabuiag (Haddon 1935:57). Although ceremonies related to Islander subsistence were only one type of ritual performed in the *kwod* on Pulu, and not referred to as one of "the most important ceremonies" held there (as were the death-dance and initiation ceremonies, Haddon 1904:5), each of the six accumulations described as "shrines" consisted predominantly of animal remains. Thus, it is clear that within certain contexts (as similarly indicated for other Western, Central, and Eastern Islanders in the ethnographic accounts previously discussed), piles, or arrangements, of animal remains, and particular types of plants and stones, were symbolically significant to the Gumulaig.

Numerous examples derived from the *Reports* and from the earlier nineteenth-century ethnographic accounts suggest that the attribution of symbolic meaning to animals and their skeletal parts (inculsive of humans and human remains), was pervasive in Islander life. The range of contexts (*e.g.* birth, death, hunting and warfare), described as associated with features made of animal remains, stone, and plants (most commonly bamboo), indicate that a conceptual categorization of animals, solely as a means of subsistence, did not exist in the minds of the Islanders.

During the 1984 and 1985 field seasons on Mabuiag, discrete accumulations of bone, shell, and stone were found at all but three of the traditional sites described in the Reports as having had a kwod (i.e. at Dabungai and Gumu, and on the islets of Pulu, Widul, and Redfruit, but not at Wagedagam, Aubait and Panai, the latter being one of two areas on Mabuiag lived at today). Haddon spoke of bone accumulations at two of the sites, Dabungai and Pulu, although neither description conveys a picture comparable to that provided by the results of the archaeological reconnaissance of Dabungai and Gumu (even that of the Pulu kwod, the "national" ceremonial ground of the Gumulaig and Badulaig). Neither do the historical descriptions of features made of animal remains, nor the results of archaeological survey carried out elsewhere in Mabuiag and in other western islands, come close to paralleling the quantity and diversity of types of midden "arrangements" noted (particularly at Gumu) on the surface of these two areas today.

If some of these surface archaeological features are interpreted as having been related to Gumulaig ceremonial activities (through adherence to the "direct-historical" approach of ethnographic analogy), the significance of their quantity and morphological diversity, particularly at Dabungai and Gumu, comes into question. Both Dabungai and

Gumu, however, appear to have represented characteristic, yet unique, aspects of Gumulaig traditional life: intensive exploitation of dugong and turtle and/or[1] cult-hero worship.

Dabungai was clearly the centre of ceremonial activities associated with the exploitation of dugong. Gumu appears to have fulfilled a similar role in relation to turtle exploitation (Haddon 1904:183-4, 330-33, 1935:59), but was, in addition, more closely associated with the cult-hero Kwoiam than any other location on Mabuiag, or any other island in the western Strait. And, although warfare ceremonies were held in the kwods of Wagedagam, Widul and Pulu, one of the two important structures related to warfare on Mabuiag was located in the kwod of Gumu.

Kwoiam chose Gumu as his "home" and "burial" place, and because of this the Islanders of Mabuiag were known as the Gumulaig. There were also a number of other specific sites associated with Kwoiam in the Gumu area, all located within the Kaigas-surlal clan district, e.g the year-round water hole Kuikuyaza or Yaza (see Sections 4.7 and 4.10.1). In addition, near Yaza were stones with grooves which were said to have been made as a result of Kwoiam sharpening his javelins; a wall of stones on top of the hill which was believed to mark Kwoiam's house; and two places in the low-lying areas below, one on either side of Kwoiamantra, or Kwoiam's ridge, which were described as the gardens of Kwoiam and his mother (Haddon 1904:82-83, see Fig.4).

[1] "Or" because Haddon felt the cult of Kwoiam was a relatively recent introduction into Islander life, which was easily assimilated and reinforced the ancient totemic and war cults (Haddon 1904:365-7,1935:58).

The cult of Kwoiam was referred to as "essentially a cult of war" (Haddon 1935:58), and the feature related to warfare in the _kwod_ of Gumu was the _kwikwi-iut_, or "head-house", one of two on Mabuiag (Haddon does not specify the location of the other site). Weapons and skulls of enemies were kept inside the "head-house" and it was strictly taboo to women and uninitiated boys (Haddon 1904:306-7, 1912:97-9). It was built on piles with a door at either end "festooned with redden'd skulls", and very much like those seen in Mawata and in the Fly Delta of New Guinea (Haddon 1904:306). The _kwikwi-iut_ was similar to, but not as significant as, the most sacred "skull" site of the Gumulaig: the cave _Augudalkula_, located in the centre of Pulu.

The _Augudalkula_ was the primary site for the storage of the skulls of captured (beheaded) enemies, which were placed in special baskets made in the Pulu _kwod_ (Haddon 1904:365). Each Gumulaig moiety had a basket containing their enemies' skulls, the favourite Islander fighting weapon (a ground stone-headed club from New Guinea), and their collective totem, one of the two magical turtle-shell crescents of Kwoiam. The sacred crescents were referred to as _kutibu_ and _giribu_ (the only non-animal totems of the Gumulaig), and were believed to have assisted Kwoiam in fighting. Haddon summarises the inter-relatedness of the Gumulaig totemic, hero and war-cult beliefs as follows:

"In the cult of Kwoiam we have no longer to deal with the separate clans but with these two groups of clans. "The people of the great _augud_" received this appellation because they belonged to the _kutibu_ phratry, whereas "the people of the little _augud_" belonged to the _giribu_ phratry. To the former belonged the "elder basket", and to the latter the "younger basket". There was an active rivalry between these two phratries concerning the acquistion of the greater number of skulls" (1904:370).

The significance of Gumu to the Gumulaig thus becomes clearer with knowledge of the extent to which the most important aspects of their ritual life - success in fighting and hunting - were associated with the area (through totemic and folklore beliefs, and the presence of shrines of warfare and hunting). Relationships between Gumu (and other Gumulaig clan localities) and the totemic infrastructure of Gumulaig society are highlighted in Figure 47, which indicates how their totemic belief system permeated traditional patterns of settlement, ceremonial activities and subsistence practices. It can be seen that of all the important former clan localities on Mabuiag, the greatest number of ceremonial rituals and sacred shrines, or places, was associated with Gumu. As discussed previously (Section 6.6), although the Reports record that shrines were built within the kwod at Gumu and ceremonies were carried out there, and that other rituals associated with shrines were performed in areas outside the kwod, there is no mention of the specific location of any of these features[1]. Gumu was also considered to be an important settlement and garden site, and there are references to two garden-site locations, but no information is provided on the location of the living areas.

The most geographically specific references in the Reports, to areas or features within the Kaigas-surlal clan

[1] However, the "wiwai" shrine was described as located under a "komak" tree (mango), and a photograph which was taken allows it to be placed fairly accurately within the Gumu landscape today (Haddon 1904:334-36).

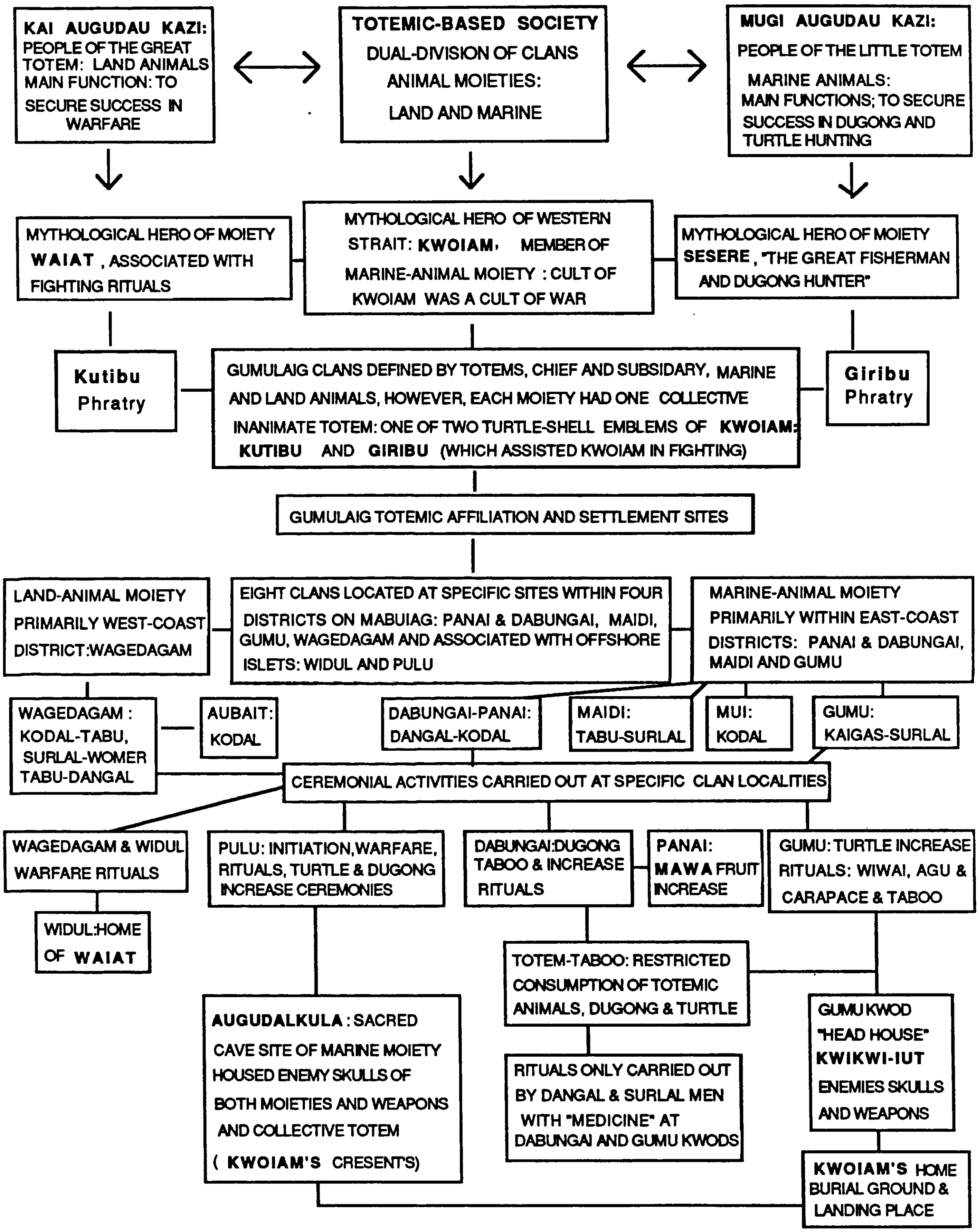


Figure 47. Gumulaig social organisation: settlement patterns, ceremonial and subsistence-related activities.

district, are those (mentioned above) that are related to the cult-hero Kwoiam. One of "his" areas[1] does fall within the Gumu area surveyed as part of this research, and it was discovered during the 1985 field season in the southwest corner of Gumu I (the mounds and ditches, described ethnographically as one of Kwoiam's garden sites). These agricultural features probably date back to at least the mid-nineteenth century, although it was not possible to determine if they were contemporaneous with any of the midden deposits. It was therefore hoped that archaeological survey and excavation would provide more specific information on the past use of the Gumu area, and perhaps enable us to differentiate between ceremonial and general living areas.

The discovery of such an abundance of discrete midden features on the surface of Gumu was astonishing from an archaeological perspective. It was less surprising in view of the ethnographic significance of the area, although certainly unexpected, there being no mention of any bone accumulations at Gumu in the Reports. Based upon knowledge of: a) Islander use of animal remains, etc. in symbolic contexts (recorded in the mid- and late-nineteenth century ethnographic accounts), b) the types of features associated with the sacred kwod of the Gumulaig at Pulu, and c) the totemic and ceremonial importance of Gumu, it seems plausible to interpret most, if not all, of the raised discrete midden features at Gumu as having been symbolically significant. If this was true, perhaps the extensive surface scatters of level midden deposits

[1] The folklore associated with these sites is perpetuated among Mabuiag Islanders today, and most of the features can still be located.

represent refuse from daily (settlement) living. It was hoped that the excavation of a sample of each of the superficially distinct types of midden deposit at Gumu might help to verify or falsify these hypotheses.

As previously explained (Section 4.9), the initial internal study of a discrete raised midden feature entailed "dissecting" (and taking samples of the matrix for laboratory processing) the first mound discovered at Gumu I to determine whether it contained any human remains. None was found, although two (seemingly) unusual discoveries were made. Three large stones (one over a metre in length) surrounded the mound, and a feature was found in its centre: a large circular piece of coral whose upper surface (as revealed gradually while brushing away the soil) precisely resembled the coronal view of a human skull. In addition, this coral "head" was nestled within a circle of dugong ribs. A minimum number of six dugongs were represented in this mound, and it also contained the remains of shellfish, a few fragments of turtle carapace and fish bone, as well as many fragments of bedrock. A third related discovery made (an amazing coincidence) was that this mound appeared to have been associated with one of the turtle-increase ceremonies held outside the kwod at Gumu (the Wiwai-stone): an inference based on its location and the morphology and position of the large stones surrounding it (see Section 4.9).

It was originally intended to (more systematically) excavate a selection of superficially distinct mounds, in addition to the first one studied, to determine whether there was also significant internal variation (unusual remains or features). However, in the event, it was only possible to sample one additional mound, and this was chosen due to its proximity to the unique platform-ridge midden complex in Gumu III, rather than because of any special superficial characteristic(s) (e.g. large numbers of associated bu shells or uncommon artefacts). One half of Mound 87 was excavated (see Chapter 5), and this demonstrated that, like the first mound, it consisted primarily of weathered dugong remains (rib and skull) and fragments of bedrock, mixed together, apparently randomly. A minimum number of eight dugong was calculated for the entire mound and no features were found, although there were fragments of European glass in the lower layers, the only stratified European material recovered at Gumu.

The only superficial difference between the wiwai-stone mound and Mound 87 (and most of the other mounds discovered) was the occurrence of the large stones around the perimeter of the former, which may have been related to the internal coral-head feature (in addition to the wiwai-stone ceremony). However, because no other superficially distinct mounds were excavated (e.g. those associated with numerous bu shells), it is not possible to say whether their internal morphology would have also been in some way unique, and thus potentially more significant symbolically than the (majority of) mounds which did not have additional "special" superficial characteristics.

The most distinctive raised midden feature of the Gumu area which was studied in detail was the platform-ridge complex at Gumu III (see Sections 4.10, 4.10.1, 4.10.2, 5.1). As in the mounds, so in the sections of the platform and ridges that were excavated, the deposits were dominated by weathered dugong remains and fragments of bedrock, compacted in jumbled juxtaposition. The minimum number of dugong per square metre of platform deposit (12) was higher than the MNI's of the mounds, and the dugong skeleton was more completely represented. Turtle and fish remains were also abundant within the deposit, and shellfish remains occurred more commonly than in the mounds, though they were less abundant than the other types of animal remains recovered from the platform deposit. A non-random distribution of bone was found throughout c. 15cm of the deposit excavated (articulated part of dugong vertebral column), and the platform-ridge complex was also the only feature at Gumu upon which there were visible turtle remains.

To summarise, exploration and excavation of a small sample of the discrete raised-midden features at Gumu revealed that they consisted largely of fragmentary, weathered remains of dugong and bedrock. The platform and ridge deposits also contained relatively abundant quantities of turtle and fish and extended approximately 30 cm below the surface. In addition to their surface morphology, one of the discrete mounds had two unusual features associated with it, and the other contained some material of European origin. Unequivocal[1] evidence of technology was sparse in all of the features (but when recovered was almost entirely on the surface in association with raised-midden features). With the exception of the

[1]Bearing in mind, however, that the angular fragments of bedrock could have been used in the construction of earth ovens, or, as described ethnographically "ami".

coral "head" encircled by dugong ribs, and perhaps the large perimeter stones, there is little about the composition of these discrete raised-midden deposits to suggest anything other than their being piles of refuse from past Islander meals. The most unusual aspects of these features (in so far as midden deposits are concerned) relate to their abundance and surface morphology.

The other types of midden deposit at Gumu - level areas with and without surface scatters of midden remains - were also excavated and stratigraphically sampled across Gumu I, II, and III. Although habitation features such as postholes or hearths were not found, the results of this work indicated that the midden deposits appear to be extensive, extending laterally beneath the surface of the entire area, if relatively shallow (c. 35 cm) in depth. The excavated areas (to the east and west of the platform-ridge complex) contained the same variety of types of materials (animal and charred-plant remains and stones), all in significantly smaller quantities than in the platform deposit, and with many fewer dugong remains than were found in the mounds (MNI's of one). The condition of the remains was generally the same as in the raised midden features: fragmented, with some evidence of charring, and with a high percentage of weathered bones throughout. Again, the most parsimonious interpretation of these excavated subsurface horizontal midden deposits is that they represent refuse from past Islander meals.

Having discussed the rather limited range of interpretive possibilities of the midden features at Gumu based upon the results of the archaeological enquiry, we can now consider these results in the light of information derived from the relevant ethnographic accounts.

As noted earlier (Section 4.10.2), the spatial patterning of the discrete midden features across Gumu left the largest open areas just inland of the near-shore beach ridge, particularly in Gumu I and III (Fig.8). The location of the largest open areas is consistent with where Islander villages or shelters were observed in the mid-nineteenth century. Although not specifically related to settlement at Gumu, the Haddon Reports do contain general information on traditional cooking practices and houses that may be relevant to the interpretation of the level, laterally extensive midden deposits found there (see also Section 6.6 and Table 2).

In both the mid- and late-nineteenth century ethnographic accounts the western-island houses, or shelters, are described as made of plants (grass and tea-tree (eucalyptus) bark) and as either long, low, dome-shaped enclosed structures, with varying numbers of entrances, or open, high frameworks covered with palm leaves. All the shelters observed were located at the front of the beach, along, and just inland of former beach ridges.

Round houses in the eastern islands were said to have been rebuilt about every six years, with shorter intervals required to rebuild the less durable western-island style of house. The enclosed houses, or huts, appeared to have been used little in the daytime (except in wet weather), but Islanders often sat under the high palm-leaf covered frameworks (Haddon 1912:3). This information is in accordance with Barbara Thompson's account, who described the Kowrarega as constructing enclosed huts on Murlaug in the same location each year during the wet season (for protection against rain), and using open-walled shelters primarily in the dry season (Section 3.8.3). The "skeleton" of a large enclosed wet-season house was observed on Nagir, but there were many houses observed in the dry-season village there (Section 3.8.3). Whether built seasonally or not, open or enclosed, these types of shelters would have been essentially ephemeral on an archaeological time scale. In 1888, Haddon noted that after a death occurred in a house a fire was lit and the house was closed for several days. "Indeed houses generally are temporarily or permanently abandoned after sickness or death" (1904:362).

Information on the western-island villages observed during the mid-nineteenth century is particularly significant here because the only first-hand knowledge that Haddon had of a village on Mabuiag was Bau, created after the missionaries had moved in and "resettled" the Islanders. Brierly's account of the dry-season village on Nagir (Section 3.8.3) includes descriptions of drying racks for fish and turtle meat and heaps of bone and plant remains located near the houses (Moore 1979:135). Ceremonial grounds of the Kulkalega, areas of cultivation, and a turtle shrine (the agoola, see Section 3.8.2), were all also observed close to the village. The spatial proximity of these types of areas is consistent with information in the Reports, which refers to traditional gardens and ceremonial grounds as having been associated with clan settlements on Mabuiag.

As discussed Section 6.6, Haddon recorded that cooking was carried out inside the houses (each family having its own fireplace), or outside in earth ovens. Earth ovens were built, in a shallow depression in the sand, with piles of fist-sized stones, plants (leaves, branches and twigs) and sand. When cooking directly over fire, stones were used to prop up shell "pots" (Melo or Syrinx spp.) within the hearths, and were also sometimes taken hot from the ashes and put into the shells to boil the water faster. Haddon describes the Islanders (at that time) as generally eating inside, although they did so outside on mats during feasts. Thus, in the late-nineteenth century, Gumulaig cooking and eating were closely associated with living sites, and if similar customs were followed in the more distant past (whether these activities took place inside or outside the shelters), charred (and uncharred) remains of stone, plants, and animals would probably have been buried and/or accumulated nearby.

The nature of both the surface and subsurface archaeological remains at Gumu is consistent with the Islanders having used the area to camp, cook and eat. The midden matrix ranges in colour from light to dark brown, and this variation appears to be related to the density of charcoal fragments, which are present in small amounts throughout almost all of the deposits (both excavated and sampled). The charcoal fragments could represent the remains of plants used as fuel, or food, and/or the remains of collapsed shelters. Many of the pieces of bedrock (often charred and of limited size range: c. 4cm-10cm in greatest length) which occur abundantly throughout the deposits are likely to have been used in earth ovens or hearths. They are naturally ubiquitous across the island, but are unlikely to have been deposited in such abundance in the coastal sand deposits by natural processes of sheet wash and channel flow. The animal remains are, in general, highly fragmentary, with evidence of charring noted on over 50% of the turtle and dugong remains. The jumbled composition of the midden materials (except for part of an articulated immature dugong vertebral column), suggests that the refuse was randomly discarded, or subsequently became randomly distributed. The generally high degree of surface weathering of the larger bone fragments (i.e. dugong rib, skull and turtle carapace) throughout the excavated levels indicates that they lay on an exposed surface prior to becoming incorporated into the raised midden features, or into the subsurface midden deposits. It was not possible to reliably determine if the excavated fish and shellfish remains had also been exposed to surface weathering prior to burial, but they are more likely to have been incorporated quickly into the deposits, because of their smaller size (particularly fish bones), or as a result of being discarded directly into hearths (if not first destroyed by weathering, trampling, or contact with fire).

The midden deposits discovered on the surface and within the soils of Gumu clearly represent extensive past Islander activity. The archaeological reconnaissance of the area just to the south of Gumu (considered ethnographically as part of the Gumu-clan territory or district, Udai), revealed surface features of stone (rectangular enclosures, stone-lined pathways, large piles of stone and small stone circles, as well as groves of useful plants (*e.g.* mango and bamboo, Section 4.7) which together indicate that the area was used extensively in the past. Thus, it may be more realistic to view the Gumulaig (or the *Kaigas-surlal* clan), as having lived throughout, or frequented, a larger area in southeastern Mabuiag than the sites of Gumu I, II, and III studied in detail here.

Ethnographic information from both the mid- and late-nineteenth century accounts discussed in this thesis, supports the archaeological interpretations that areas of the southeastern coast of Mabuiag were inhabited by past Islander populations within which specific activities such as cooking, eating, and sleeping took place. Although the ethnography provides precise details of aspects of traditional occupation (*e.g.* the types of materials used in building shelters, in hunting or cooking), which aid in interpretation, the hypotheses presented above could have been posited without recourse to the ethnographic information. This is because the interpretations relate specifically to the nature and types of remains found, without reference to the depositional context from which they were recovered (at Gumu, level or discrete raised midden deposits). However, an overall view (provided by the surface survey, Fig.8) of the number and distribution of the raised midden features at Gumu offers an extraordinary picture (based upon the author's knowledge of other midden sites, both regionally and globally, see Section 6.9 for further discussion), and the ethnographic accounts do provide information which suggests "out of the ordinary" social contexts related to their accumulation. The level surface scatters and the subsurface horizontal midden deposits, on the other hand, do not appear to be particularly unusual, and lend themselves more easily to being considered the result of eating and camping in more "everyday" social contexts (domestic settings). But, the Haddon Reports, in particular, contain information which suggests that the accumulation of the horizontal midden deposits could also have resulted in part from activities which archaeologists usually disregard when interpreting midden deposit of this kind.

6.8 The archaeology of Gumu: ethnographic insights and interpretive ambiguities

The range of interpretations of past use of the area (or of particular parts of it, as discussed below) certainly broadens considerably when seen through "ethnographic eyes", but a greater degree of interpretive ambiguity (albeit at a higher conceptual level) is also introduced. This difficulty is exemplified by consideration of some of the ethnographic information that is available on the social context of Gumulaig cooking and eating.

Discussion of the role of the *kwod* in Gumulaig life (Section 6.6) indicated that *kwods* were ceremonial grounds ("generally an open space" (Haddon 1904:365)) within which important ceremonies were enacted. Moreover, they were the initiated mens' arena; places at which to convene for discussions, meetings with visitors, and eating, as the occasion warranted. Although it is consistently recorded in both the mid- and late-nineteenth century accounts that various types of constructed features were associated with kwod sites (some of which are likely to have survived archaeologically), the Reports, in particular, indicate that common daily activities (e.g. camping, cooking and eating) also took place in kwods. Therefore, one might also expect to find general "domestic" refuse as part of the archaeology of these sacred areas. In addition, the ephemeral nature of some kwod sites on Mabuiag (because they might be "made temporarily wherever there was a "camp"": Haddon 1904:365), and their close association with general living areas, contributes to the difficulty of distinguishing non-ceremonially from ceremonially related refuse.

Together with these problems of archaeological interpretation, are others which stem from knowledge of the Gumulaig's (and other Islander groups') versatility in the use of certain types of natural (unworked) objects. The description of the kwod at Pulu provides a particularly illustrative example. Haddon recorded that four of the five piles of bu (Syrinx) shells located there were shrines, with no explanation as to why one of them was not, although in appearance it varied little from the rest. As noted previously, bu shells were used in a variety of symbolic contexts, but they were also used as water containers and cooking pots. Moreover, unaltered stones and other types of shells were recorded as artefacts in both domestic and ceremonial or sacred contexts (e.g. stone pounders and "gods"). However interesting (from an anthropological perspective) the Islanders' multifarious use of these naturally shaped objects may be (perhaps, in part, explained by access to a relatively limited repertoire of raw materials), it introduces still further caveats into the ethnoarchaeologist's interpretations.

If eating, sleeping, and related activities took place both in kwods and general living areas, and they were all carried out within "open-spaces", it could be difficult to distinguish ceremonial grounds from daily-living areas archaeologically, if all that remained was refuse, unless certain foods were eaten only within kwod grounds (and were preserved archaeologically). The foods mentioned as specifically eaten within kwods (and thus by men only) include dugong and turtle (during the totem-taboo ceremonies with the first catches of the hunting season), dugong, turtle and fish (when elderly men shared the spoils of successful hunts), and parts of humans (during warfare ceremonies at Pulu, and possibly other kwod sites, e.g. Wagedagam and Widul). The traditional ceremonies described as associated with general feasting (e.g. Mudu kap, Mawa), on the other hand, were multi-clan affairs, and probably did not take place within the kwod on account of the presence of women and children. Only three types of plants were described as feast foods - varieties of coconut, banana and yam - and they were referred to as eaten (in the 1890's) during funeral ceremonies on Mer Island (Haddon 1912:131). Therefore, general feasting in this sort of social context would probably have generated refuse related to ceremonial activities, which was not discarded in kwods. The obvious problem in relation to archaeological interpretation is that if the same types of foods were eaten in different social contexts, and within similar types of areas, the archaeological signature of very different social contexts might well be the same. Ironically, although it may not be possible to distinguish ceremonial refuse from that of daily life archaeologically, it seems likely that certain of the superficial archaeological features at Gumu can be interpreted in the light of specific ceremonial rituals which were recorded ethnographically as having taken place there.

In addition to having discovered where the wiwai-stone shrine was located, and hence the area where the turtle-increase ceremony was held, there appears to be at least one other example (possibly two or three) of a close "fit" between the ethnography of a ceremonially significant feature and its present-day archaeological signature at Gumu (none of which was described as having been located within the kwod).

The surface survey indicated that in addition to the unique morphology of the platform-ridge feature in Gumu III, it was the only midden deposit at Gumu upon which there were visible turtle remains. Fragments of turtle carapace are relatively robust and if discarded at the site would probably have survived, so this observation was unexpected. Excavation and analysis of the remains from this feature and from the two metres in the surrounding level areas (as well as from the stratigraphic test pits), demonstrated that turtle remains were an abundant (internal) component of the midden deposits (also present in the mounds though in relatively small numbers). That turtle remains were only apparent on the surface of the platform and ridge complex may be of significance in relation to one of the ceremonial features described as constructed at Gumu: the agu. These were the long bamboo platforms, laid out in rows and decorated with the heads and shells of turtle, around which men danced swinging bull-roarers, before and after turtle hunts during Surlal (Plates 19a and 19b). At Gumu, each canoe was represented by its own agu, so, archaeologically speaking, there might be traces of more than one across the area. The eastern and western sides of the platform feature are bordered by ridges, and there is one long, raised-midden accumulation in Gumu I and another in Gumu II (although turtle remains were not identified from the surface of either of the latter two, see Fig.8). It is thus possible that some or all of these midden ridges represent former agu locations.

Thus, although not apparent superficially, turtle remains were a dominant component of all the subsurface midden deposits, except for the mounds. In contrast, the dugong remains were apparent on the surface and were also found abundantly throughout the excavated and stratigraphically-sampled midden deposits. There does appear to be some sort of relationship between all of the raised midden features and dugong hunting, on account of the surface prevalence of dugong remains. This is supported by the minimum numbers of dugong calculated for the excavated raised features (seven on average for the mounds and 10 for the platform-ridge complex compared with an MNI of one within the level areas), although the sample size is too small (three out of over 100 features) to allow generalisation about the features' internal composition. The only types of ceremonies recorded in the Reports as having taken place at Gumu were related to ensuring success in turtle hunting. Dugong remains, however, are superficially abundant across the entire area, in contrast to the relative dearth of turtle remains. The nineteenth-century ethnographic accounts contain numerous examples of the Western Islanders' use of dugong remains in contexts not related to dugong hunting, and thus they may have been considered as symbols with more general meanings (e.g. power, strength).

The relative presence and absence of dugong and turtle remains on the surface or within the midden deposits of Gumu, may or may not have carried meaning for the Gumulaig, but, in either case, the remains in themselves suggest little other than refuse from Islander meals. It is also difficult to imagine the range of potential social contexts that may have been related to the accumulation of any of the midden deposits, based upon the study of the archaeological remains alone. As already suggested, the most parsimonious interpretation of the midden deposits at Gumu, without reference to the ethnographic information, is that they represent refuse of past Islander meals, probably associated with living areas. However, the quantity and variety of the surface morphology of the deposits there do suggest something out of the ordinary, although it is only with access to relevant ethnographic evidence that we are in a (relatively) strong position to entertain specific alternative interpretations of the past significance of these features. This is due to information in the nineteenth-century ethnographic accounts which consistently demonstrates that features (shrines) which related to a range of "ceremonial" or "spiritual" contexts were often piles, or arrangements, of precisely what is found at Gumu and Dabungai and on Widul, Redfruit, and Pulu islets today: remains of animals eaten or associated with eating.

In relation to the specific ceremonial "function" of these midden arrangements, there are a few references to cairn features in the ethnographic accounts which describe features somewhat similar to those at Gumu, and which suggest possible interpretations of the features at Gumu (see Section 6.6). Those observed were described as related to hunting ("lookout" points, usually located on hillsides or cliffs), to ceremonial activites (e.g. the kwod at Pulu), or to burial practices. The position and quantity of the midden features at Gumu suggests that they were not used as "lookout" points. The likelihood that some may have been related to specific ceremonial activities has already been discussed, and it seems conceivable that many of the other (c. 90) discrete mounds may represent past "shrines" which symbolised some sort of power or magic (perhaps related to hunting, warfare, or to individual men?). That some of the features may have been related to burial practices, or to honouring the dead, also seems plausible in the light of Haddon's comment that the Gumulaig formerly "had a custom of erecting a memorial cairn independently of the grave" (1904:368, i.e. Kwoiam's cairn), and the description given by a Muralug informant of how they made traditional graves (see Section 6.6).

Therefore, does the ethnographic information discussed throughout this thesis, in relation to traditional Western (and to a minor extent Eastern) ceremonial/ritual life, imply that all the superficial midden features across the Gumu area should be interpreted as symbolically significant? Even though we do not know whether they are contemporaneous, or what period of time their construction may span, there are some 95 discrete mounds scattered across the area (in addition to the two elongated raised features and the platform-ridge complex). In the light of the ethnography, the interpretive options appear to be: a) that all the raised midden features were of ceremonial or symbolic significance; b) that only some of them were (as recorded for the bu piles at Gumu); or c) that none was of ritual importance. Due to the ubiquitous occurrence of the features, together with the kinds of Islander knowledge recorded ethnographically in relation to Gumu and other "important" Gumulaig areas, a) and/or b) seem to be more convincing interpretations than c). Yet, it is still difficult to postulate, with confidence, the exact nature of the symbolic significance which may have been associated with these features in the past.

Gumu was considered an important former settlement site, in addition to its ceremonial significance, and the lateral and vertical extent of the midden deposits found there suggests that Islanders ate and camped over the entire area of Gumu I, II, and III. However, as discussed earlier in this Section, details of traditional Islander life demonstrate how difficult it is to interpret even the level surface and subsurface midden deposits as representing _either_ ceremonial _or_ daily food consumption. Perhaps it is not very meaningful to try to establish this kind of distinction between the majority of the archaeological deposits discovered at Gumu.

The available ethnographic evidence allows us confidently to infer ceremonial contexts of refuse discard and/or use on Mabuiag and some of the surrounding islets. However, even with the degree of detail provided by the _Reports_, it is still not possible to gauge the extent to which the clans of Mabuiag used the Gumu area seasonally or year-round, although there are statements in the ethnography which suggest that the Gumulaig led relatively sedentary lives (Haddon 1912:1-3, 1935:82). Nor (based upon the ethnography) is it known to what extent the remains at Gumu represent refuse generated by one clan or many (_e.g._ as a result of multi-clan events). Both of these possibilities are highly relevant to the interpretation of the quantities of midden remains within the area (_i.e._ to answering basic zooarchaeological questions), and they raise issues that cannot be adequately answered here, by study of either the archaeological remains or the available ethnography, comprehensive as the latter source of data may appear to be. On the other hand, by reference to the _Reports_, it seems plausible to consider interpretations which are related to ceremonial activities, and to even posit the specific type of ceremonial activity responsible for the remains found (_e.g._ turtle-increase ceremonies which included dancing and singing around the Wiwai-stone or agus). But it must be stressed that the study of the archaeological data alone, does not offer much specific information on the kinds of activities associated with the numerous discrete, and morphologically diverse, midden accumulations discovered.

Irrespective of the ambiguities introduced into archaeological interpretation by the study of detailed and relevant ethnographic accounts, the Reports have made it possible to consider social contexts of refuse discard that were related to subsistence behaviour, but which extended into many other aspects of Islander life. Studied together, the mid- and late-nineteenth century ethnographic accounts have opened an avenue into a more holistic understanding of how patterns of settlement and subsistence were related to the social and ceremonial framework of past Gumulaig society than could ever have been achieved by analysing the archaeological remains alone.

It is hoped that the research presented in this thesis has successfully highlighted the inter-relatedness of behaviours (that we categorise as) related to social, economic, and ceremonial activities and, hence, the misinterpretations that may arise if we try to study any of them in isolation. However, the point to stress here is that the (midden) archaeologist is much more likely, when studying the types of archaeological remains discovered on Mabuiag (and on other of the western islands of Torres Strait), to have little choice but to consider these varied aspects of human behaviour in isolation, or not to consider their relationships at all. This is because we rarely have access to directly relevant ethnographic information (such as was available for this research) which "allows" us to highlight this inter-relatedness, and demonstrate how inseparable were the social, economic, and ceremonial aspects of a people's life.

Without the ethnographic data we are left with the archaeological evidence on its own, which at Gumu consists primarily of discrete mounds, level surface scatters, and subsurface horizons of fragmentary, weathered and charred midden remains. These remains can indicate: the kinds of foods eaten*[1], and thus habitats exploited*, methods of cooking and preparation, types of technology*, and the nature of occupation (locations* and duration*). In addition, study of the midden remains can provide glimpses of body ornamentation* and evidence of exchange or contact* (due to the presence of exotics), burial practices, or the size of populations. The results of this study demonstrate that if we are limited to the archaeological data recovered, we are largely restricted to gaining information on aspects of past Islander subsistence and settlement patterns, with little evidence even of technology. And, most significantly, the archaeological data offer no direct route to attaining an understanding of past social organisation or systems of belief, two components of Islander life which the Haddon ethnography indicates were intricately interwoven and strongly influential in directing the flow of traditional Gumulaig society.

[1] The asterisks indicate the topics on which study of the archaeological remains was able to provide some information.

6.9 The archaeological significance of Mabuiag Island and explanatory perspectives

The archaeological reconnaissance of Mabuiag Island and some of the offshore islets demonstrated that a rich archaeological record exists as testimony of past Gumulaig life. The results of the surface survey and excavation at Gumu also demonstrated what the archaeology of Mabuiag shares in common with the other western islands studied archaeologically (Muralug, Moa, Nagir, Redfruit, Widul, Pulu, and Saibai): that the evidence of past human occupation consists predominantly of fragmented remains of marine animals in coastal depositional contexts, which on present evidence date to sometime within the past 500 to 1000 years.

Yet in spite of any archaeological similarities between the western islands, the nature and extent of the archaeological record on Mabuiag stands out as unique. Archaeological features were discovered in most of the places explored on Mabuiag, both in expected locations (e.g. low-lying level coastal areas) and unexpected ones (e.g. densely vegetated hill slopes, high ridges, and on rock outcrops). The features found range from types that seem relatively straightforward to interpret (e.g. surface scatters or large piles of bones, shells and stones, cultivation mounds, and stone-lined paths), to those which appear more engimatic (e.g. tens of small discrete piles of stone, shell, and bone, large piles and small circles of stones near stream channels or on hill slopes, "arrangements" of stones, sometimes with shell, placed on low-lying or high rock outcrops, and rock art). In addition to the overall abundance of surface archaeological features on Mabuiag, particularly high densities of remains were discovered at two areas (Dabungai and Gumu), one of which was chosen for detailed archaeological study (Gumu) and provided the primary archaeological data base of this thesis.

Of all the other western islands studied archaeologically, Saibai is the most similar to Mabuiag in terms of the number of sites identified (a minimum of 13, with perhaps as many as 44, Barham & Harris 1987:92) and the density of the remains in the midden deposits, although the diversity of archaeological features found there is not as great. However, two characteristics of the archaeology of Saibai Island also make it atypical: the location of the midden deposits, which tend to be farther inland from the coast than on the other western islands, and the extent of relict agricultural mounds and ditches (Barham & Harris 1985). Both of these characteristics are undoubtedly related to the topography of the island, only two to three metres, on average, above sea-level (Barham & Harris 1983).

There is, however, only one area (Ait) on Saibai where the archaeological remains consist of a few large discrete bone, shell and stone mounds that resemble some of those found on Mabuiag (at Gumu and Dabungai) and on the offshore islets (Pulu, Redfruit, and Widul). Most of the midden sites so far recorded on Saibai are horizontally extensive level surface scatters of midden material which extend 35-45 cm below the surface (Barham & Harris 1987:91-99). The majority of the piles at Gumu (and

Dabungai) are small and discrete (c. 1-2 metres in diameter and 30cm high), and, in size, the Saibai mounds (c. 8 metre by 5 metre) appear to be more comparable to those described from western Cape York, south of Weipa (Cribb 1986). The raised-midden deposits on Saibai are in areas that are seasonally inundated and their larger size (in height and length) may, in part, reflect the creation of ground for camping that was above high water level (Barham & Harris 1987:95)[1], thus creating a habitat which may also have been conducive to the growth of useful plants (e.g. shade and/or food-bearing bushes and trees, cf. Hynes & Chase 1982, Cribb 1986).

Undoubtedly additional archaeological reconnaissance on Mabuiag or on other western islands would reveal further evidence of past Islander activity, but the work carried out thus far in the Strait (see Section 2.5) and in the region (e.g., for Cape York Peninsula: Bailey 1977, Rosenfeld 1981, Cribb 1986, Beaton 1981,1985, and, for southern Papua New Guinea: Egloff 1979, Allen 1977, Harris & Laba 1982), has indicated that the nature (size and shape) and abundance of the discrete archaeological features at Dabungai and Gumu on Mabuiag are unique. The only archaeological site outside the Strait where the midden features discovered are at all similar to those on Mabuiag, is located on the eastern coast of Cape York Peninsula (approximately 300 miles south of Torres Strait) at Princess Charlotte Bay.

Archaeological and geomorphological research at

[1]This is not, however, to suggest that the midden features at Ait carried no symbolic significance, as the area is known through folklore today as an important traditional site (Barham pers.comm.1989).

Princess Charlotte Bay (Beaton 1981,1985) revealed two extensive midden deposits ("each covering several thousand square metres", Minnegal 1984:65) on top of raised Holocene beach ridges. Seven small discrete clusters (all distinct from the extensive midden deposits) and seven isolated finds of dugong bone were also located in the area (Minnegal 1984:64). All the clusters of dugong remains found at Princess Charlotte Bay consisted primarily of dugong bone with some artefacts (made of both traditional and European materials), and only one cluster represented a minimum number of dugong greater than one (three). Because of the paucity of dugong remains within the extensive midden deposits, Minnegal suggests that the evident lack of dugong remains identified from archaeological sites along the northern coasts of Australia (within the natural range of dugong populations and where dugong are, in some cases, known ethnographically to have been hunted), may be a function of the fact that research has focused upon the excavation of extensive midden deposits. If, as at Princess Charlotte Bay, the majority of dugong remains were discarded in small discrete clusters distinct from the more obvious and extensive accumulations of midden deposit then they may have gone unnoticed (1984:70).

Ethnographic information on some of the Australian Aboriginal tribes of the northeastern coast of the Cape York Peninsula, whose territory included areas within and to the north of Princess Charlotte Bay (Hale & Tindale 1933-1934, Thomson 1933, 1934), indicates that close cultural ties formerly existed with Western Torres Strait Islanders in terms of both social practices (related to hero-cult worship, initiation, totemism and dugong and turtle hunting), and material culture (e.g. double out-rigger canoes, bailer shells (Melo sp.) as water containers and cooking pots, pearlshell pendants, and spears tipped with stingray spines; Thomson 1933, 1934). One tribe in particular, the Yintjingga (whose territory centred on the estuary of the Stewart River which flows into the southwestern corner of Princess Charlotte Bay), were renowned for their prowess in dugong hunting, which was attributed to the efficacy of their dugong magic. The Yintjingga constructed graves with accumulations of dugong bone, consisting primarily of skulls and ribs, and they were also famous among other tribes of the Cape York Peninsula for their power in rain and thunder magic (Thomson 1934:238, 250-255). Among another related tribe, the Koko Ya'o, the object of eating human flesh was "to make a man poi'ya kunta (fearless) and to give special prowess in dugong hunting"[1] (Thomson 1934:252).

Although this kind of ethnographic information exists and may be relevant to the interpretation of the archaeological remains at Princess Charlotte Bay, Minnegal (1984) does not, in her discussion of the discrete clusters of dugong bones found there, consider issues other than the potentially discernible patterns of dugong butchery and consumption, and the likelihood of the archaeological visibility of dugong hunting.

Dugong remains were one of the two most prevalent types of materials in the discrete mounds at Gumu, but the

[1] On Mabuiag eating the partially cooked cheeks and eyes of beheaded enemies made men brave and fearless, and the "maidelaig" (magicians) frequently ate human flesh and corpses'juices (Haddon 1904:301,321).

mounds also contained a similar range of types of remains to those in the nearby more extensive subsurface midden deposits, if in smaller proportions. In addition, dugong remains at Gumu, in both the discrete mounds and the subsurface midden deposits, were found in much greater abundance than in the discrete clusters or extensive middens at Princess Charlotte Bay, and over a much smaller surface area. Thus, based upon the research carried out within the region to date, discrete midden deposits resembling in composition and spatial concentration those at Gumu have not been discovered elsewhere, although this may change with additional research in the Strait and in the adjacent areas of Australia and Papua New Guinea.

The Haddon Reports contain a level of documentation of the traditional lifestyle of a group of Islanders (the Gumulaig) which is unique for the past communities of the western Strait. This research has resulted in the discovery of another unique set of data through which the Gumulaig's past can be studied: rich and extensive archaeological deposits. Based upon these two sets of data and their relationship to information derived from the earlier nineteenth-century ethnographic accounts, this thesis has primarily offered descriptive accounts of past life on Mabuiag Island, without going very far towards explaining aspects of traditional Gumulaig society.

In a recent attempt to direct archaeologists towards a "re"thinking or "re"structuring of their approach to archaeological interpretation, Shanks and Tilley (1987) argue that the existing explanatory positions in archaeological literature, which reflect adherence to the tenets of the "New Archaeology", "say little more about the symbolic and social other than that which can be reduced to the effects of the technological and economic"...(1987:32), and that they "...fail to offer much insight for a study of either past or present social processes and their relationship to material culture" (1987:29). The "usual" view of human behaviour espoused in the archaeological literature is also criticised as being one "...where actions are deemed to be propelled by various external stimuli"...(Shanks & Tilley 1987:35). With access to the ethnoarchaeological information presented in this thesis, it seems that we should be able to make progress towards positing explanations which consider human behaviour as having been influenced by factors other than those related directly to the techno-economic, and perhaps offer some insight into social processes and their relationships to material culture. In other words, perhaps we may be able to explain (in terms of social processes and their relationship to material culture) why Mabuiag Island was a focus of a high degree of past human activity, as suggested by the ethnographic accounts and by the results of the archaeological survey of the island, both of which indicate more intensive cultivation and dugong and turtle hunting than in any other western island except Saibai and a more dense population, in spite of such apparently limiting physical factors as small size, rocky and hilly terrain, and acidic soils.

As indicated earlier (e.g. Section 6.1), a substantial commitment by the Gumulaig to practising agriculture, hunting dugong and turtle, and supporting a high population is recorded in the Reports although Haddon had no knowledge of the archaeology of Mabuiag. Haddon's ethnographic research on the Torres Strait Islanders led him to compare the general condition of the Western Islanders unfavourably with that of the Easterners. He believed that differences in geographical factors across the Strait "clearly conditioned the economic life of these people" (1935:410-11), particularly in relation to agricultural practices (see Section 6.4). His opinion of the Western Islanders (which was based primarily upon information recorded while on Mabuiag; 1904:v-vi) was that:

"Life was certainly not so easy for the Western Islanders. The islands are less fertile and the inhabitants had to depend to a larger extent than the Eastern Islanders on the spontaneous produce of the soil (which was not of much account) and on fishing. Fighting was also more frequent" (1912:6).

More detailed explanatory hypotheses, which relate to Mabuiag's past cultural position in the Strait, have been proposed by scholars in the latter half of the twentieth century, based upon their interpretation of the historical sources and some contemporary ethnographic research (Beckett 1972, Golson 1972, Harris 1977b, 1979).

At the core of these authors' hypotheses are arguments constructed around the environmental differences which exist in the position, topography, soil type, and available resources of the islands across the Strait, and to that extent they broadly resemble Haddon's "explanation" of the economic contrast between the Western and Eastern Islanders.

Golson's hypothesis addresses the linguistic differences that existed historically (and do today) across the Strait, which he considers are related to variations in Islander (and Australian Aboriginal) resource exploitation. His proposition is that the differential degree of commitment to agriculture across the Strait was related to the extent to which Trans-Fly populations migrating from lowland Papua influenced the resident Islander and Cape York Aboriginal populations. The linguistic evidence suggests that sometime after 2-3000 years ago people from the Trans-Fly region migrated into the Strait, and Golson suggests that the degree of the island populations' "receptiveness" to the incomers (and their language and agricultural techniques) was dependent upon the size of the islands (created, together with the Strait, during the early- to mid-Holocene sea-level rise). Agriculture and the Miriam language were fully adopted in the eastern islands because of their small size and consequently small populations who offered little opposition to intruders. The situation was different on the larger islands in the western Strait (and the relatively smaller central islands) where indigenous communities "pooled together" and maintained a hunter-gatherer lifestyle with both seasonal and residential occupation of the islands. Colonising groups therefore faced greater opposition (i.e. larger populations) to the introduction of their agricultural practices and language in the western and central islands of the Strait, where the language and agriculture was only partially adopted. The Cape York Peninsula was never colonised by the peoples of the Trans-fly region, and hence their influence there was more dilute, especially because the Australian Aborigines were less restricted environmentally than the Islanders and thus under less stress to adopt agriculture. Golson's hypothesis does not address the situation on Mabuiag specifically, but it does provide an overall "explanation" of why agriculture and a Papuan language were adopted differentially across the Strait, and it is chronologically consistent with the radiocarbon dates so far available on archaeological samples of charcoal and shell from the western islands.

Beckett (1972) emphasises the (historically recorded) contrasts between the western and eastern islands in their commitment to agriculture, their types of houses and settlements, and their population sizes, and he interprets the variations as having been primarily related to the differences in the geology of the islands: the rich (basic) soils of the eastern islands having made intensive cultivation possible, the "fruits" of which maintained large populations and a sedentary lifestyle, in contrast to the poor (acidic) soils of the western islands which were only conducive to minimal cultivation, and hence supported small populations which were seasonally mobile. Turtle and fish were the staple sources of protein in the eastern islands, complemented by the carbohydrates (e.g. tubers and bananas) provided as the result of intensive cultivation. Yet, although more expert gardeners, the Eastern Islanders were less expert hunters than the Westerners whose greater expertise was related to the abundance of dugong and turtle which inhabit the waters of the western Strait. The Australian Aborigines resembled the Western Islanders in terms of resource exploitation, with, however, no need (i.e. demographic stress) to cultivate. Mabuiag Island is singled out as the one western island with a high population density and as being particularly barren, with no explanation offered as to why its population density was unusually high.

Harris' second model (1979) attempts to explain the differences in Islander resource exploitation within the western Strait, and considers the most important factors to have been variations in the availability of resources (which lead to relationships of generalised interdependence between island communities) and in the islands' role in the pan-Strait system of exchange. Whether introduced or not, agriculture was practised to a greater extent on three of the smallest western islands due to their restricted ecosystems (Mabuiag, Dauan, and Nagir). These islands were also known historically to have occupied significant positions in relation to Islander trade routes. Therefore, in addition to an ecologically-based need to cultivate, there may have also been a concurrent "socio-economic need". The subsequent discovery of extensive agricultural raised-field systems on Saibai Island (Barham & Harris 1985), does not necessarily contradict this hypothesis, but may require additional explanation (see below).

Harris' hypothesis provides the most detailed explanation of the relatively high intensity of cultivation carried out on Mabuiag, and he was the only author to address the subject of differential commitment to agriculture on specific western islands. An intensification of activity (relative to other western islands) on Mabuiag was explained, but not singled out as much different from what had taken place on Nagir or Dauan Islands, although he does stress Mabuiag's unique position in relation to the pan-Strait system of exchange and to the nearby reefs with exceptionally large populations of dugong and turtle.

The degree of cultivation practised across the Strait, or within the western islands, in all three hypotheses, is primarily attributed to environmentally determined factors, which stressed the Islander populations (i.e. the range of available food resources). Whether an ecologically less diverse setting was more, rather than less, conducive to practising agriculture, it is clear that historically Mabuiag was not considered environmentally ideal for cultivation, but that it was nevertheless cultivated fairly intensively (in both relative and absolute terms).

Although it is not appropriate here to try to determine whether or not the three scholars, whose work is discussed above, would be classified as "New Archaeologists", their respective explanatory hypotheses do not offer much insight into the social processes which may have affected Islander behaviour in relation to subsistence strategies, and do seem to present human choice ("actions") as largely determined ("propelled") by various external (i.e. environmental) stimuli, even though the authors had access to, and studied, the Haddon Reports. Harris' study of the Reports and other nineteenth-century ethnographic accounts did, however, suggest to him that socio-economic factors were as significant as the islands' ecological differences in relation to the extent to which Western

Islanders cultivated. He proposed a "trade-horticulture hypothesis" to account for the differences in plant exploitation within the western islands and predicted that the evidence for cultivation and local manufacture would be the clearest and probably the earliest on the three small western islands of Dauan, Mabuiag and Nagir, and hence testable archaeologically (see Section 2.4). As has already been pointed out, the archaeological and palaeoenvironmental research of the Torres Strait Research Project demonstrated that the most extensive relict field systems in the western Strait are on the islands of Mabuiag and Saibai[1], and that there exists very little evidence of artefacts or their manufacture on any of the islands. The greatest number has been found on Mabuiag, although most of the artefacts were recovered from surface contexts, with no evidence of their having been manufactured there. The archaeological deposits for which there are radiocarbon dates from the islands of Mabuiag, Nagir, and Saibai, are not significantly older than the deposits dated from other western islands (except for the somewhat ambiguous shell date from Saibai; see Section 2.5), although it is important to note that none of the agricultural features was directly dated. Thus, although Harris' hypothesis has not been overtly contradicted, neither has it been clearly "proved".

The objectives of this ethnoarchaeological research project (in contrast to those discussed above) led to a study focused on one island only: Mabuiag. The author's

[1]Extensive relict fields on Saibai do not contradict Harris' hypothesis because Saibai is restricted ecologically and played a critical role in the Islanders' pan-Strait system of trade (Haddon 1904:293-97).

"reading" of the ethnographic and archaeological sources of data has inspired the proposal of an hypothesis which addresses why cultivation was practised more intensively on Mabuiag Island, in particular. This hypothesis is supplementary, rather than contradictory, to Harris' in that it considers the kinds of attitudes, or perceptions, that the author believes were the most critical in influencing the degree to which the Gumulaig cultivated on Mabuiag.

Mabuiag's geographical position in the Strait appears to have favoured the Gumulaig with easier access (than all other Torres Strait Islanders) to the most highly prized animal foods (dugong and turtle) and to have enabled them to play a critical role in the relaying of material goods both north and south along the western-island trade routes. This geographical factor may be intimately related to why the island became the spiritual centre of the western Strait.

Mabuiag was the "home and "burial" place of the western Strait cult-hero Kwoiam, and this unique association with Kwoiam conferred on the people of Mabuiag an elite power, as he and his various emblems (all associated with war) were considered sacred on all the western islands (Haddon 1904:367). "The Moa men also had magical emblems belonging to Kwoiam, but they were not effective," according to an informant, as "the augud belonging to Mabuiag was much more powerful because Kwoiam belonged to Mabuiag and not to Moa" (Haddon 1904:372). The (male) Mabuiag Islanders were particularly renowned fighters, "stalwart and valiant" (Haddon 1935:55), and hunters of dugong and turtle. Meddling with a Mabuiag man was likened to meddling with a gapad (nest of a tree wasp), or like putting your hand inside the mouth of a kurup (rock-cod), "because of the needles, or you sore like hell" (Haddon 1935:55).

Kwoiam's relationship to Mabuiag may have conferred on the Gumulaig a special, or elite, power, although the onus was on them to maintain it. Perhaps Kwoiam "chose" to ally himself closely with the Gumulaig because they had proved themselves worthy of his "presence" by being exceedingly successful at the most highly esteemed activities associated with the attainment and appropriation of "magic" (e.g. obtaining enemies' skulls, and dugong and turtle hunting).

Much of what the Gumulaig did necessitated the successful conjuring of magic, the extent of which might have, in part, reflected the amount of skill (e.g. hunting and fighting) and effort (e.g. cultivation) required to achieve the desired result, and the item's socio-economic importance (e.g. dugong and turtle meat and bones, tubers, the wongai plum, and enemies' skulls). The use of magic was affected by the Gumulaigs' totemic beliefs. Certain magical rites could only be performed by members of particular totemic clans, although some forms of magic could be practised by anyone (Haddon 1904:321). The maidelaig were the specially trained magicians or sorcerers, but only men of the Dangal and Surlal clans had access to the kinds of "magic" required during the enactment of hunting rituals.

Many items of material culture, both artefacts (e.g.

ground-stone clubs, bull-roarers, *Conus* and *Pinctada* sp. shell pendants) and natural objects (e.g. stones, shells, animal and human bones), were considered as magical charms (Haddon 1904:324-29). As already explained, certain of these objects were used to adorn people (*e.g.* shell pendants) or a variety of structures (shells and bone) such as houses, graves, screens, or constructed "features" which were commonly associated with ceremonial/spiritual contexts.

Obtaining certain of these items demanded a great deal of skill and effort (dugong, turtle and human bones) on the part of the Gumulaig and some were only or primarily accessible through trade (e.g. ground-stone clubs, conus-shell pendants). However, the single most important item of Islander material culture, without which little success in fighting or hunting would have been possible, was the out-rigger canoe. Canoe hulls were obtained only through trade with the Papuans, and in addition other essential objects used in hunting (the spear or *wap*) and fighting (ground-stone clubs, *gaba-gaba*) also had to be obtained by the Gumulaig through trade with either the Southwestern Islanders or the Papuans.

Gumulaig totemic beliefs also reflect the importance of success in fighting and hunting (each having been the main function of one of the two moieties). To maintain their reputation for prowess in hunting and fighting (which conferred high status on the individuals concerned) required continual success in these activities; and the enactment of specific rituals, such as the totem-taboo ceremonies and various other increase ceremonies (*e.g.*

Mudu-kap, Wiwai-stone, see Section 6.6), was intended to ensure this success. (That the Gumulaig were highly successful, at least in hunting, is supported by the nature of the archaeological remains discovered at Gumu and other areas on Mabuiag and the nearby offshore islets.)

The ceremonial activities associated with hunting and fighting involved participation and feasting by all the Mabuiag clans and by only certain men of particular clans. Thus, a commitment to maintaining a high level of success in hunting and fighting would also have been associated with a greater consumption of food. Dugong and turtle were perhaps the favoured foods at these ceremonial occasions, but fish were another important source of protein (and to a lesser extent fat) caught on hunting expeditions, for which increase ceremonies were also held. However, unlike dugong and turtle, fish (and shellfish) could be caught or collected in abundance from within the island's near-shore zones and they could be exploited on a daily basis by most of the community with a minimum of locally manufactured technology. Thus, the quantity of proteins and fats derived from the naturally abundant populations of dugong and turtle around Mabuiag could readily have been increased by the exploitation of fish and shellfish, to be eaten in both ceremonial and domestic contexts. Equally abundant quantities of carbohydrates, however, may have been more difficult for the Gumulaig to acquire.

Wild plant resources would have been available on Mabuiag and the offshore islets throughout most of the year, but not necessarily in quantities sufficient to match the amount of animal protein and fat that could have been procured. To increase the yields of carbohydrate-rich plants (i.e. tubers) would have entailed concerted effort by the Gumulaig, and this was achieved (at least in the nineteenth century) by cultivation of indigenous and introduced tuberous crops. Increased access to sources of carbohydrate other than those naturally available would have been particularly important during the most intensive periods of pan-island ceremonial feasting (Aibaud), as well as at various other times throughout the year to supply the more frequently held increase ceremonies or all-male meetings related to kwod activities (in addition to supporting a relatively high population density during periods of food scarcity). The procurement of wild and cultivated plants also required magic conjured through the enactment of specific rituals and the use of particular charms (unfortunately, Haddon considered the information he obtained on Mabuiag in relation to plant ceremonies to be very incomplete, 1904:345-49). Therefore, success in gardening would have also "fed" directly into aspects of ceremonial life, which in turn, were related to the acquisition and application of magic and the maintainence of a powerful reputation.

A strong commitment to hunting and fighting by the Gumulaig necessitated successful transactions in trade, and required greater access to carbohydrates, which led to a (relatively) high commitment to cultivation on Mabuiag. Success in all four of these activities (hunting, fighting, gardening and trade) was not only intimately associated, and related to, or "driven" by, the Gumulaig's desire to maintain a powerful status, but it would also have "allowed" larger populations to have been supported. The maintainence of a relatively large population, however, would have depended upon the Gumulaig's ability to obtain an adequate amount of calories during the leanest period of the year (two months during Raz). The Haddon Reports indicate that meat was dried to be eaten during the wet season and this practice may well have been extended to the preservation of fruit and the storage of tubers, although even with storage of plant foods it is not suggested that there would have been no degree of seasonal nutritional "stress".

Exceptional success in hunting by the Gumulaig was possible because the geographical position of Mabuiag favoured it and because the appropriate technology was available, but it was sought after because success in hunting was perceived as one of the most highly esteemed ways of perpetuating and reinforcing the use of magic and the attainment of power in Gumulaig society (in addition to providing great gastronomic pleasure). Although the environmental "odds" were against intensive cultivation on Mabuiag, it can be suggested that the Gumulaig were strongly "propelled", or "motivated", by the same types of reasons which related to success in hunting and fighting, to expend the necessary time and energy to render the acidic soils and rocky terrain of Mabuiag productive.

Although the environmental setting of Mabuiag provided the essential "props" with which activities were carried out, the factors that guided precisely how those "props" were used (e.g. the extent to which the land was worked for cultivation, or reefs were hunted) were related to Gumulaig perceptions, their systems of belief, which led them to exploit and transform their environment to the extent that they did. The desire to acquire and maintain power can thus be seen as the most significant or strongest determining factor behind the extent of hunting, fighting, cultivation and trade practised by the Gumulaig.

The Gumulaigs' reputation as renowned "big (sea) game" hunters was considered as "natural" by Haddon and subsequent scholars (because of their ease of access to large dugong and turtle populations), as was the Eastern Islanders' reputation as excellent gardeners (which was attributed to their islands' rich soils). That the Gumulaig should have been highly committed to agriculture, against the expectations aroused by Mabuiag's physical characteristics has, however, always required additional explanation, an explanation which has been attempted here.

In 1888, Haddon recorded the then chief of Mabuiag (Nomoa's) sentiment about Kwoiam and his effect on life on Mabuiag:

"The fame of Kwoiam caused the name of Mabuiag to be feared for many a long day, and although the island was rocky and comparatively infertile, Kwoiam covered it with honour and glory, thus showing how the deeds of a single man can glorify a place in itself of little worth" (1904:83).

Thus, excerpts from the Haddon Reports once more provide insights into the way in which the Islanders of Mabuiag thought and lived which could never be "read" from archaeological data alone.

Although it is possible that the archaeological remains discovered and studied on Mabuiag and some of the offshore islets are not remnants of the activities of the ancestors of the nineteenth-century Gumulaig, that they are a visible expression of 600 years (or more) of cultural continuity is consistent with the mid- and late-nineteenth century ethnographic accounts studied, and with certain traditions of today's Mabuiag Islanders.

Twentieth-century ethnographic work (see particularly that of Beckett (1987), Sharp (1980), Shnukal (1983), Nietschmann (1984) and Fitzpatrick (1981, Draft Typescript n.d.) has clearly demonstrated that many of the "traditional" practices and beliefs (recorded by the Haddon expedition) persist today in island communities across Torres Strait, in spite of considerable opposition to their persistence (from religious/governmental bodies) and societal change brought about by almost 150 years of imposed "westernisation". Although not specifically discussed here, aspects of the field work undertaken for this thesis (which involved periods living alone among the Mabuiag community) also support the above ethnographers' findings. It does not seem unlikely that the Gumulaig culture existed at least 600 years previously, in a fundamentally similar although "pre-contact" state.

It is hoped that the research presented in this thesis goes some way towards preserving the memory of a lifestyle of the past, and equally that it may help to reinforce the Torres Strait Islanders' culture of the present.

6.10 Concluding comments

The ethnoarchaeological methodology followed in this study led to a much greater understanding of the inter-relatedness of a past people's ceremonial and daily life, although it did not provide any formulas for detecting these relationships in the archaeological record. The archaeological data provided direct evidence of activity areas where, in addition to refuse discard, eating and camping probably took place. Although the places where ancient refuse was located were generally consistent with areas described in the Haddon Reports as having been former settlement and/or ceremonial sites, the analysis of the remains recovered provided information of specific types of animals eaten (fish and shellfish in particular) that are not recorded in the Reports as having been traditionally exploited. In addition, a whole range of archaeological features were found that were not referred to at all in the Reports (e.g. fishtraps, stone effigies and circles, and large stone piles). Reference to ethnographic information did, however, allow us to suggest interpretations which would rarely be considered on the basis of the analysis of these sorts of archaeological remains alone, although study of the written accounts also indicated likely areas of ambiguity pertinent to archaeological interpretation. Moreover, irrespective of the degree of written detail provided, it was still not possible to answer certain fundamental questions about past Islander society (e.g. whether the sites were occupied year-round or seasonally, and what were the population or clan densities).

Information provided by the written accounts did, however, inspire the author to posit a "high-order" (i.e. psychologically abstract) level of explanation.

The kinds of interpretations most readily inferred from study of the archaeological remains alone at Gumu, and those suggested when the relevant ethnographic accounts were considered, have already been discussed (Sections 6.8 & 6.9). As indicated, if the investigation of past Gumulaig society is restricted to what can be inferred from analysis of the types of archaeological remains discovered on Mabuiag, insights into past Gumulaig behaviour are fairly limited. Alternatively, with knowledge derived from the ethnographic accounts, the (objectively substantiated) interpretive possibilities of the archaeological features discovered expands considerably[1]. If one is interested in identifying factors that may have motivated Islander behaviour as it was recorded historically, or that may have caused the archaeological signature seen today on Mabuiag (i.e. proposing a "higher order" explanatory framework, than, for example was provided by Harris 1979), one must consider the ethnographic information from the kind of perspective discussed in Section 6.9, which requires drawing more heavily upon one's own imagination[2].

Thus it has here been postulated, in the light of the information on Gumulaig social organisation, settlement and subsistence gained from the written accounts, that the over-riding determinant of Gumulaig behaviour was the wish

[1] However, the breadth of interpretive possibilities may have little bearing on the likelihood that an hypothesis will be testable, although it may be more intellectually appealing.
[2] That is, to reach a higher explanatory level, we have to steer further away from interpretations based upon (relatively) objectively-derived information, and rely more upon ideas based in subjective thought.

to attain and maintain "magic", "strength" or "power", and that many, if not all of the discrete raised archaeological features at Gumu, Dabungai, Pulu, etc. can best be interpreted as material symbols that served to reify and perpetuate such magic and power. Or, to put it in another way, to suggest that adherence to a totemic system of belief determined customs which led to the construction of x number of features at specific locations on Mabuiag and the offshore islets. Knowledge of the nature of the totemic beliefs of Gumulaig society therefore greatly increases our understanding of why (at least some) features such as those discovered today were built.

In addition to fuelling explanatory hypotheses (however outlandish[1] they may appear to be), access to relevant written sources can also clearly demonstrate the erroneous nature of certain interpretations that may be based solely upon the study of archaeological remains. This is exemplified by the contrast between an interpretation of the cultural affinities which existed across Torres Strait that is suggested by the ethnographic data, as opposed to one that might be inferred from study of the archaeological data alone.

The small amount of technological evidence we have from Mabuiag Island suggests Melanesian cultural ties (e.g. ground stone and shell adzes, ground shell pendants, see Figs 13,14,16), in contrast to that from Muralug, Moa, or Nagir, which contain almost no signs of Melanesian influence. Thus, if determination of the past degree of

[1] It is perhaps worth noting here the idea that "what scientists see is essentially related to their theories and beliefs about the way the world is" (Shanks & Tilley 1987:37).

cultural affiliation between western island groups and indigenous Papuan and Australian Aboriginal peoples was to be based only upon a study of the archaeological assemblages, the cultural ties posited would probably be quite contrary to those which we know existed historically (i.e. that all of the peoples living on the islands considered themselves to be Islanders who were culturally distinct from the Australian Aborigines). And we also know (from the historical accounts) that, at other levels of cultural definition, Papuan influence united the Islanders and the Australian Aborigines inhabiting the northeastern coast of Cape York Peninsula (e.g. totemic beliefs, subsistence strategies and material culture). This example therefore highlights how inadequate the archaeology of this region is as a basis for understanding the cultural complexities which existed between close, but geographically distinct, communities.

The extent to which any unusual archaeological interpretation realised through this research (e.g. midden deposits as symbols related to ceremonial activities) might be relevant to the interpretation of midden deposits elsewhere in the region, largely depends upon the detail and geographic specificity of the ethnographical documentation available. The information we do have indicates that the symbolic use of stone, bone, and shell was a pan-Strait phenomenon. Therefore if features such as those discovered at Gumu were found on the southern coast of Papua New Guinea, or the eastern coast of Cape York Peninsula, their interpretation (by this author at least) would include reference to possible symbolic/ceremonial significance, if only in general terms.

Seen from a world perspective, most archaeological remains discovered belong to eras for which we have access to only a very limited range of archaeological data with which to develop a picture of a people's past life. However, for the region and time period within which the Islanders of Mabuiag existed (and still do), we have access to additional ethnographic information that greatly broadens our interpretive horizons and our potential understanding of their past. Although any "out of the ordinary" interpretations presented in this thesis may not have direct relevance to any analysis of archaeological discoveries outside the Torres Strait region, they help us to appreciate just what a restricted view archaeologists usually have when their attention is focused solely (by necessity or choice) on the surviving material remains of a people's past.

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