Chapter 1: Introduction to the Thesis

The Torres Strait Islands are located between northeastern Australia and the southern coast of Papua New Guinea. Their inhabitants occupy an area that marks the border between Australian hunter-gatherer cultures and Papuan horticulturists (Figure 1.1). Archaeological fieldwork in Torres Strait began in the early 1970s and emerged with a research agenda centered around the ‘bridge or barrier’ debate and an emphasis on defining the nature and timing of the horticultural economy (Barham and Harris 1983; Harris 1977, 1995; Walker 1972). However, the early hypotheses on the antiquity of human occupation and development of marine and horticultural subsistence in Torres Strait were loosely constructed from minimal archaeological evidence, and relied heavily on ethnohistoric and documentary records (Beckett 1972; Moore 1972; Vanderwal 1973). Only in more recent times has the archaeology of the Torres Strait begun to be considered within the broader regional framework connected in space and time to southern New Guinea and northeastern Australia (Barham 2000; Barham et al. 2004; Carter 2002; in press; David and McNiven 2004).

This thesis concerns an archaeological investigation of prehistoric settlement, subsistence and trade on the Murray Islands in the Eastern Torres Strait, northeastern Australia. By determining the chronology of human occupation of these islands, defining the nature and timing of the developments in the subsistence economy and identifying evidence of regional trade and exchange, this research presents the first investigation, analysis and interpretation of excavated archaeological assemblages from the Eastern Torres Strait. By considering the results within the chronological, economic and cultural frameworks previously established by archaeological research in the neighbouring regions of northern Australia and the western Pacific, this research also places the prehistory of the Murray Islands within a regional context.
Objectives and Aims

Because the prehistoric sequences for the Torres Strait were largely unknown at the time my research started in 1998, I developed two major research objectives:

1. To identify and define the prehistory of human settlement, subsistence and trade on the Murray Islands, and
2. To examine the extent to which this prehistory conforms to the general patterns of occupation in the neighboring regions of northern Australia and the western Pacific.

As the thesis was developed, four more specific aims were identified, as follows:

1. To determine the nature and chronology of human occupation, and to identify patterns of prehistoric subsistence on the Murray Islands through space and time,

2. To identify any effects of human settlement and subsistence on the environment in the study area,

3. To examine the extent to which archaeological subsistence and material culture assemblages of the Murray Islands reflect ethnographically recorded cultural assemblages for the Torres Strait, and

4. To identify any evidence within the archaeological record for the development of the area’s local and long-distance trade and exchange systems.

**Study Area Overview**

The Torres Strait Islands are located on a shallow shelf between Cape York in northeastern Australia and New Guinea’s southern coast. The Torres Strait itself is approximately 150km wide and comprises a discontinuous chain of largely granitic islands in the west, isolated volcanic islands in the east, scattered coral islands in the centre and a group of northern coastal alluvial islands. The islands were formed between 8500 and 6500 years ago after rising Holocene sea levels submerged the land bridge that joined Australia and New Guinea (Barham and Harris 1983:529).
The Eastern Islands lie within sight of the outer Great Barrier Reef and are located approximately 210km northeast of Cape York and around 100km southwest of New Guinea’s Fly Estuary. Unlike the rest of the Torres Strait Islands, whose inhabitants speak Australian Aboriginal languages, the inhabitants of the Eastern Islands speak Meriam Mir, a Papuan (Non-Austronesian) language closely related to the languages of the Trans-Fly region along the southern coast of New Guinea. At the time of European contact the populations of the Eastern Islands were sedentary and relied heavily on fishing and gardening, while the populations of the other islands were more mobile, subsisted on hunting and fishing, and relied to varying degrees on plant collection and cultivation. Eastern Islanders had strong trade and kinship ties with the southern New Guinea coast and indirect ties with Australian Aboriginal populations and Western Islanders through the agency of Central Islanders.
The investigations in the Eastern Islands which are reported in this thesis focus on the islands of Mer and Dauar, which along with the smallest island of Waier, are commonly known as the Murray Islands (Figure 1.2). Their traditional inhabitants are the Meriam, who at the time of European contact occupied all three islands. The settlements on Dauar and Waier were abandoned during the 1920s and the community today is concentrated on Mer, mostly along the northwestern foreshore and the eastern beach at Las. Dauar and Waier are still used extensively for temporary residence, gardening, fishing and food gathering.

To address the key issues of this thesis - the chronology of human occupation of the Murray Islands, the nature and timing of subsistence change, and the development of regional trade and exchange networks - the Eastern Islands thus offer an excellent geographical vantage point from which to determine and contextualise the human prehistory of Torres Strait. This is particularly the case given the well-documented late Holocene human migrations westward along the southern New Guinea coast, and the archaeologically demonstrated expansion of fisher-horticultural peoples into marginal and offshore island environments throughout the western Pacific during this time (Allen 1977a; Egloff 1979; Kirch 1997; Kirch and Ellison 1994; Spriggs 1997, 1993).

**Research Context**

This research forms part of a larger collaborative archaeological program called the Murray Islands Archaeological Project (MIAP). The project commenced in 1998 and has been jointly conducted between the Anthropology Department at the University of Arkansas in the United States and the Archaeology Department at James Cook University in Townsville and in conjunction with traditional Meriam landowners. The MIAP was an initiative of the Mer Island Community Council, with the ultimate aim of documenting the chronology of marine resource use on the islands of Mer and Dauar (Bird et al. 2002; Carter 2000, 2003a).
As part of the MIAP, Richardson (2000) has examined shell midden variability on the Murray Islands through comparison of the excavated archaeological shell remains and ethnoarchaeological observations of contemporary prey choice, shellfish processing and discard behavior (see also Bird et al. 2002; Bird et al. 2004). The results of this investigation demonstrated that the relative importance of various shellfish species in contemporary Meriam diets is not reflected in either contemporary shell accumulations or in the proportional representations of shells in the prehistoric assemblages. The fact that the most important shellfish prey types were virtually absent from the archaeological deposits, and conversely, the species that are relatively unimportant quite common in shell assemblages, was attributed to field processing strategies and differential transport of shell material. It was concluded that where locations of procurement and consumption are different, the composition of shell assemblages would reflect behavior that maximised the rate at which resources could be delivered to a central locale (Richardson 2000:43). This theory was offered in explanation for the absence in the shell assemblages of the large tridacnid clam species, and the abundance of the much smaller *Nerita* species.

Richardson’s (2000) research offers a useful explanatory framework for examining archaeological shell remains from a purely subsistence or dietary point of view. The investigations conducted in this thesis, however, demonstrate that the nature of archaeological shell assemblages on the Murray Islands requires additional explanations to account for the accumulation, density and proportions of deposited remains. By reviewing the material culture of the Torres Strait and the nature of combined marine and horticultural subsistence on the Murray Islands, it is suggested that certain factors which lay outside of the scope of behavioral ecological models offer supplementary reasons for explaining variability in archaeological marine resource remains.
Fieldwork Details and Limitations

This thesis is based on the analysis and interpretation of data derived from two major seasons of fieldwork carried out between 1998 and 2000 on Mer and Dauar. Waier was not included in the archaeological program as most of the island is regarded as sacred, and so permission to investigate it was not sought. Opportunity for archaeological survey during fieldwork on Mer and Dauar was limited owing to rules associated with access to traditionally-owned land. Territorial boundaries are strongly enforced on the islands and permission from the landowners must be granted before entering onto land, particularly gardens. Free access to land is limited to public areas such as the council building and school on Mer, and the beaches and main roads. To avoid trespassing, archaeological survey was kept within the boundaries of the areas where traditional landowners had previously consented to excavation, beaches and foreshores and public access paths and roads along the foreshore and interior regions of the islands. In spite of these restrictions, it was concluded that the extent and scope of the preliminary investigations provided a representative sample of the coastal archaeology of Mer and Dauar, and was adequate to examine the broad ranging questions posed in this thesis.

It was concluded that stratified archaeological contexts from which reliable archaeological and radiocarbon chronologies might be derived fell into three site categories: i) rock shelter deposits, ii) stratified middens visible in eroding shorelines, and iii) midden material in areas known to have been horticultural gardens within the historic period. Initially one example of each of these site types was selected for excavation, analysis and radiocarbon dating. These were Kurkur Weid, a small rock shelter on the northern coast of Mer, Pitkik, a stratified midden exposed by contemporary shoreline erosion 40m from Kurkur Weid rock shelter, and Sokoli, a former garden located on the northeastern side of Dauar, where surface shell and bone debris suggested the possibility of midden stratigraphy at depth. In 2000 a fourth excavation was undertaken at Ormi on the southwestern
side of Dauar, where surface finds and eroding shoreline stratigraphy suggested midden assemblage was present at depth.

Thesis Structure

This thesis is divided into 11 chapters. Chapter 2 introduces the broad cultural and natural backgrounds in which the investigations of this thesis are framed. It provides the environmental background of the Torres Strait and adjacent coasts as the context for a description of the Torres Strait Cultural Complex (sensu Barham 2000) as it was documented in early historical accounts and the more recent 19th and early 20th century ethnographies.

Chapter 3 sets the archaeological scene of this research by providing the history and major themes of archaeological research undertaken in the Torres Strait prior to the investigations described in this thesis, and pays particular attention to the results and outcomes of research that are of relevance here. The archaeological background of Cape York and southern New Guinea is also discussed, with a focus on the patterns of human occupation, the nature of excavated cultural assemblages and evidence of regional contact and cultural exchange previously established by investigations of the late-Holocene archaeologies of these regions.

Chapter 4 provides information on the cultural and natural setting of the Murray Islands specifically. In particular, ethnographic information on marine and horticultural subsistence strategies and trade and exchange links with southern New Guinea is provided. The observations of contemporary Meriam marine subsistence strategies mentioned above are also described. Based on these lines of evidence, a number of archaeological implications for the distribution, nature and composition of archaeological site types related to past marine and horticultural subsistence on the Murray Islands are identified.
The results of fieldwork conducted on Mer and Dauar in 1998 and on Dauar in 2000 are described in Chapter 5. Results of the preliminary survey along with site descriptions and excavation methods are included. Site stratigraphies, the diversity and density of the excavated archaeological assemblages and the radiocarbon age-depth sequences for each site are discussed.

Chapter 6 details the methods and results of marine faunal analyses, including the excavated shell and the marine vertebrate remains. The excavated terrestrial vertebrate assemblage is also identified and discussed. The major aim of this chapter is to provide detailed quantification and description of the marine and the terrestrial faunal assemblages. This is undertaken with the main objective to define the nature of the prehistoric marine subsistence economy of the Murray Islands, and secondly, to identify any changes to the marine economy at both a temporal and spatial level.

Chapter 7 provides the results and interpretation of phytolith and starch grain analysis of excavated sediment samples. These analyses were conducted to provide evidence of prehistoric horticulture by identifying microscopic remains of edible plants and patterns or shifts in vegetation owing to human disturbance. Based on the results, and taking into consideration sample size and the preliminary nature of this investigation, the nature of horticultural evidence for each site is summarised. In the context of changes to the marine subsistence economy identified in the previous chapter, conclusions for the timing of the development of the prehistoric horticultural economy on the Murray Islands are included.

The portable artefact assemblages recovered from the excavations are described in Chapter 8. Interpretations of artefact function are provided, based largely on references to the material culture ethnographically collected and documented in Torres Strait. Where no documentary evidence for excavated artefacts exists, as is the case with pottery, the explanation of artefact function and origin is based on analogues from the
adjacent Papuan coast. A discussion of the material culture assemblages is based around the identified chronological trends, evidence for subsistence and trade and exchange, and site function.

Chapter 9 outlines the results and interpretation of the mineralogical analysis of four of pottery sherds recovered during the archaeological investigations on Mer and Dauar. The analysis aimed to identify the geological source of the pottery temper and to establish the geographical context of the trade network from which the pottery originated. The results confirm the possibility of previously undocumented trade and exchange networks between the Eastern Torres Strait and New Guinea.

Chapter 10 places the prehistory of the Murray Islands and archaeological research into the wider regional context. The interpretations reached in the previous chapters are discussed in detail with reference to the results of other recent archaeological research in Torres Strait, and models and evidence for human occupation, subsistence development and trade networks for the adjacent mainlands, as well as relevant archaeological evidence from the Pacific. It is concluded from the combined ethnographic and field archaeological evidence, that the timing of human occupation of the Murray Islands and the development of subsistence economies and nature of trade and exchange linkages are a product of late-Holocene human expansion from southern New Guinea, with whom ongoing cultural connections were maintained from the outset. Finally, a brief discussion on recommendations and directions for future research is included.
Chapter 2: The Torres Strait Cultural Complex

Towards the end of the 19th century the Torres Strait islands formed the geographic core of a trans-Strait maritime cultural complex which extended as far as Princess Charlotte Bay on the eastern coast of Cape York, and north along the southwestern Papuan coast into the Fly River estuary. This extensive maritime-based social network was documented in 1898 by distinguished natural scientist and ethnologist Alfred Cort Haddon and other members of the famous Cambridge Anthropological Expedition to Torres Strait. Over a century later the Torres Strait Cultural Complex, as it has recently been defined (Barham 2000), continues to represent a unique and dynamic cultural phenomenon to anthropologists and archaeologists alike. This chapter provides a comprehensive description of the Torres Strait Cultural Complex based on the early historical and later ethnographic records for the Torres Strait and its neighboring regions of Cape York and southern coastal New Guinea. As the research objectives of this thesis are concerned with colonisation of the Murray Islands, and the nature of the original subsistence and trade systems, a description of the environmental backdrop against which the Torres Strait Cultural Complex emerged and developed is first provided.

The Environmental Setting

Pleistocene Separation and Holocene Emergence

Southern New Guinea, the Torres Strait islands and Cape York once belonged to the same Pleistocene landmass known as Sahul (Figure 2.1). Over the last 120 000 years, prior to the emergence of the separate Australian and New Guinea mainlands, Sahul underwent several shoreline variations owing to glacio-eustatic changes in sea level. Lying on the eastern margin of the Lake Carpentaria drainage catchment, it is estimated that the shallow shelf topography of the Torres Strait had been dry land for most of the last 55 000 years (Chappell 1983; Chappell and Shackleton 1986).
The end of the Pleistocene, around 10 000 yrs BP, saw a period of dramatic paleo-environmental and paleo-geographic change in Sahul. Rising temperatures dried up the lakes of inland Australia, rainforests contracted into the higher interior regions of New Guinea and melting ice caps resulted in rising sea levels that drowned vast stretches of low-lying land (Figure 2.1). Between 12 000 and 10 000 yrs BP the Bassian Plain connecting Tasmania to the mainland was inundated, isolating the small landmass after several hundred thousand years of connection. It is estimated that between 8500 and 6500 yrs BP the rising post-glacial seas flooded the shelf between Australia and New Guinea to form Torres Strait (Barham and Harris 1983; Jennings 1972a).

From decades of archaeological research on mainland New Guinea and its offshore islands, including New Ireland, the antiquity of Melanesian occupation has been firmly established at greater than 30 000 – 40 000 yrs BP (Allen et al. 1989; Gorecki et al. 1991; Groube et al. 1986). On the Australian mainland Aboriginal occupation at Sandy Creek I and Nurrabullgin in Cape York (David 1993; Morwood et al. 1995), Carpenter's
Gap rockshelter and Malakunjanja II in the Kimberleys (O’Connor 1995; Roberts et al. 1990), as well as Mimbi Caves in the southern central Kimberleys (Balme 2001) has resulted in a Pleistocene human chronology for northern Australia ranging between 32 000 and 55 000 yrs BP (Figure 2.1). Our understanding of the natural and cultural processes that occurred during the Pleistocene throughout Australia and New Guinea is exceeded by the vast archaeological knowledge of environmental and cultural changes that occurred during the Holocene or the last 10 000 years (for example Allen 1977a; Golson 1977; Kirch 1997; Meehan 1977; Lourandos 1985, 1993; Rowland 1996; Spriggs 1993).

In contrast, our knowledge of the natural history of the Torres Strait and how environmental changes such as Holocene sea level fluctuations affected colonisation and the development of subsistence systems, is considerably less well known. Details about the natural environment and history of the region, including marine physiography and biodiversity, reef development, and floral and faunal diversity have only recently begun to emerge from a set of broad scale regional studies. A number of the following sections on the natural environment of the Torres Strait are largely based on these recent sources.

**Environmental Overviews: Southern New Guinea, Torres Strait and Cape York Peninsula**

**Climate**

From the low-lying coastal plains of south-western New Guinea southward across Torres Strait to the southern region of Cape York Peninsula a relatively uniform climate prevails. The region lies in a sub-humid tropical environment and experiences two alternating seasons of wet and dry weather. The dry season extends from April to October while the wet season runs from November through to May, although localised differences in duration of the seasons do occur (Bird 1996:35). Mean annual rainfall increases northward across the Strait and the dry season
diminishes in length and severity along the same gradient. In the Torres Strait, on average 95% of the annual precipitation falls between December and April (MaSTS 1993). Across the region the mean monthly temperature is 20°C or more with a mean relative humidity of 65% or more (Denoon and Snowden 1981:42). Average temperatures in the Torres Strait range from 23-29°C during the dry season and 26-31°C in the wet season (Bird 1996:36). Between the months of November and April northern Australia and the eastern Queensland coast are susceptible to the effects of tropical cyclones. These potentially destructive weather events can produce sustained high wind speeds, wave scouring of coasts, damage from wind borne debris, storm surge and torrential rain and flooding. Although tropical cyclones are very infrequent in southern New Guinea and the Torres Strait, wet season weather can bring persistent rain depressions, rough seas and sustained periods of high winds.

**Geology, relief and broad vegetation patterns**

From the West Papuan border (Irian Jaya) east to the Gulf of Papua and bordered in the north by the mountains of the Southern Highlands is a structural region commonly referred to as the Fly Platform (Loffler 1977:7). It encompasses the modern day Western Province of Papua New Guinea, the largest but most sparsely populated district in the country. Predominantly featureless, the coastal plain of the Oriomo Plateau is elevated to around 3m above sea level and is subject to seasonal and tidal flooding during the wet season and desiccated during the dry. Widely spaced and slow moving rivers including the Bensbach, Morehead, Pahoturi, Binaturi and Oriomo dissect the coast. Coastal waters are shallow and muddy and comprise a maze of swamps, mangroves, muddy tidal flats, and sand bars, connected by innumerable shifting channels, and occasional reefs (Knauff 1993:25). The mouths of the Fly and Bamu Rivers consist of numerous channels separating low islands that are predominantly uninhabited tidal swamps, which combined with muddy waters and floating debris, make river journeys difficult.
Soil along the Oriomo Plateau and the coastal plain is generally clayey and poorly drained, although some fertile soil exists along the narrow beach ridges and inland along rivers and swamps. Mangroves form the dominant vegetation along the muddy shores of the southwestern coast, while inland vegetation habitats include grasslands, open canopy woodlands and patches of rainforest and palm forests (Lawrence 1994:248).

The southwestern coast of New Guinea, the westernmost islands of the Torres Strait and the igneous and metamorphic rocks of Cape York Peninsula are composed of Carboniferous acid volcanic and granitic rocks, which form part of the north-northeast trending pre-Mesozoic ridge known as the Cape York-Oriomo Ridge (Willmott 1972; Willmott et al. 1973).

The Torres Strait is a 150km wide shelf, predominantly between 10-15m deep, and is scattered with more than 100 islands, coral reefs and cays between 141° 15’ and 144° 20’ E longitude and 9° 20’ and 10° 45’ S latitude (Figure 2.2). Around the Eastern Torres Strait islands water is deeper ranging from 20 to 40m. Several kilometers further east the Great Barrier Reef marks the edge of the continental shelf where slopes bottom out at a depth of 200m.

The Torres Strait islands are commonly divided into four bio-geographic groups (for both contemporary and alternative names for the Torres Strait Islands see Appendix A, contemporary names appear on Figure 2.2 and are used throughout this thesis). The Northern Islands consist of Boigu, Saibai and Dauan. Dauan is a high granitic rocky island with steep slopes similar to islands of the western group to the south. Vegetation on Dauan includes Melaleuca spp. open woodlands, low forests of Acacia spp. and wooded slopes of Corymbia spp.
Figure 2.2 Map of Torres Strait showing contemporary island names and language divisions

Saibai and Boigu are low islands, with extensive flat clay-band mangrove and brackish water freshwater swamps. These islands were formed by estuarine and mangrove sediments derived from rivers of the southern Papuan coast, and are ecologically and geologically similar to the adjacent Papuan coastline. Dominant vegetation units include closed forests of *Rhizophora* spp. along creek margins and grasslands with emergent *Pandanus* spp. on the more raised inland areas (Nelder 1998). In a recent biodiversity survey undertaken in the Torres Strait Boigu and Saibai
recorded the lowest floristic biodiversity relative to their extent (Neldner 1998:67). Although fish and crabs are plentiful, in comparison to the clearer waters to the south, turtles and dugongs are not as abundant around the northern islands, and reef growth is also inhibited.

The Central Islands, including Warraber, Yam, Puruma and Masig are either smaller, low rocky islands or low sandy cays formed by wave action over reef limestone. Water is scarce on these islands and overall they have a low floristic biodiversity. They are sparsely vegetated with some patches of mangroves, coarse tussock grasslands and low scrub and open shrublands. Beach ridges are characterised by open forests of *Casuarina* spp. and *Terminalia* spp., evergreen notophyll vine forests and groves of coconuts. These islands have extensive fringing reefs with an abundance of marine life.

The islands of Mer, Dauar, Waier, Ugar and Erub comprise the Eastern Islands. Most of these islands are relatively high, small in land area, and composed of volcanic tuffs and basaltic lavas. Soils are deeper and more fertile than in the Western Islands, and locally support dense complex mesophyll vine forest. In less sheltered areas on the high slopes thick grassland has mostly replaced semi-deciduous mesophyll/notophyll vine forests. Vegetation surveys have demonstrated the presence of a high number of alien taxa on the Eastern Islands, which has mostly been attributed to direct human influence through burning and gardening (Neldner 1998:3). Although dugongs are rare around the deeper waters of the Eastern Islands, extensive fringing reefs there support an abundance of marine life including fish, turtles, sharks and rays.

The Pre-Mesozoic Western Islands include the southern-most and largest islands of Muralag, Mua and Badu and to the north and east the much smaller islands of Mabuiag and Nagi. The larger islands are high with steep hill slopes and broad plains with poor clay based or sandy acidic soils. The dominant vegetation units on the Western Islands include stands of *Corymbia/Eucalyptus* spp; open *Melaleuca* spp. woodlands, and
areas of low trees and tall shrubs (Neldner 1998). Upper slopes and ridges are characterised by low open Acacia spp. forests with some islands also having sparse herbland within rock crevices where a depth of soil has accumulated. The Western Islands have the highest floristic diversity within the Torres Strait and also recorded the highest number of alien taxa. The high incidence of alien plant species has been interpreted as the result of mining and urbanisation (Neldner 1998:3). The Western Islands are surrounded by a diverse array mud and sand-flats, fringing reefs and mangroves, each contributing to the availability of a variety of marine life including turtle and dugong.

Located approximately 10 – 20km from the southern-most Torres Strait Islands and comprising the same lithology of sedimentary and conglomerate acid volcanic rock, the northern coast of Cape York Peninsula is a montage of high rocky headlands, extensive sandy beaches, mangroves and permanent freshwater springs and soaks. Vegetation is dominated by open schlerophyll forest (especially Eucalypt sp. and Melaleuca sp.), with occasional grassland, marsh country and patches of rainforest. Beyond the headlands the landscape is slightly elevated and is dominated by lowlands and foothills (Cofinas and Bolton 1995). Numerous tidal rivers and tributaries on the western, northern and central coasts dissect the entire Cape York region.

Most of the coastal and inland terrain of Cape York Peninsula is fairly similar, although along the eastern-central coast the Great Dividing Range and its associated uplands provide a clear physical contrast to the adjacent coastal plains and beaches. This region also generally receives a higher rainfall and has a less severe dry season than the rest of Cape York Peninsula. This has resulted in a greater diversity of vegetation communities, which vary from mountainous rainforests and open-canopy forests and woodlands along valleys to coastal heath, grassland, mangroves and salt pans (Harris 1977:429-430). Swamps of fresh or brackish water that occupy the narrow zone between the beach or rocky
foreshore and the inland woodland communities are also common along the sandy beaches of eastern Cape York.

Terrestrial faunal diversity

In the same way that the vegetation communities of Cape York Peninsula and southern coastal New Guinea appear to have broad similarities, both the narrowness of the Torres Strait and the existence of islands within it have ensured that many faunal continuities also occur to the north and south. Barham and Harris (1983:537) explain that the close floral and faunal similarities on either side of the Torres Strait correlate with equivalent habits. Although New Guinea is recognised as considerably more 'species rich' than Australia, based on the ratio of land area to total number of indigenous species, many of the same species occur on both landmasses (Flannery 1995).

Mammals provide a good example of this faunal affinity, as several species belonging to each of the major families (including Macropods, Murids, Phalangerids and Burramyids) are endemic to southern New Guinea and north-eastern Australia (Flannery 1995). Murids (rats, mice and Melomys) and Pteteropoids (bats) are the two families with the highest number of species recorded both to the south and north of the Torres Strait. However, just as the distribution of mammals throughout New Guinea demonstrates the relative faunal poverty of the southern coastal and woodland regions, a similar scenario is also the case for the rainforests of Cape York. Based on such evidence it is clear that the recent formation of the Torres Strait Islands has played only a minor role as a marine barrier between two evolving regional faunas. Barham and Harris (1983:537) suggest that the main effect of the Torres Strait has been ‘to attenuate faunal diversity northward in woodland habitats, and southward in rain-forest habitats, rather than to create a sharp faunal boundary between Papua and Cape York Peninsula’.
The faunal diversity of Torres Strait has not been subject to the intensity of research that has been undertaken on mainland Australian and New Guinea fauna. However, recent biodiversity studies undertaken in the region combined with information recorded during the historical period, provide a basis for a broad review of the terrestrial fauna of Torres Strait.

A recent synthesis of terrestrial mammals, reptiles and amphibians in Torres Strait has recently been compiled from such data (McNiven and Hitchcock 2004). Their analysis has illustrated that a total of 297 terrestrial mammals, reptiles and amphibians are present throughout the Papuan Trans-Fly region, Torres Strait and Cape York (McNiven and Hitchcock 2004:106-107, Table 1). Of this total, 80 species occur on the Torres Strait islands, while 188 and 189 species are identified from the adjacent regions of New Guinea and Australia respectively. This result reflects earlier research, which demonstrated that very few native species are known to occur on the Torres Strait islands (Freebody 2002:17). Native rodents including *Melomys*, *Rattus* and *Hydromys* species probably dominate the mammal population. Nineteen species of bats have been recorded from nine of the islands, predominantly from the southern group including Muralag, Wayben and Mua islands (Freebody 2002:17). Friday Island, located near Cape York Peninsula, has the only known population of Agile wallabies (*Macropus agilis*) in the Torres Strait (Cameron et al. 1978), although Warham (1962) recorded Agile wallabies on Mai Island near Albany Island in 1958 (see Figure 2.2). The presence of a possible *Phalanger* sp. on Mer was recorded by Jukes (1847 I:49), who observed a small animal in a cage which he later identified as a cuscus, suggesting that ‘the Torres Strait Islanders occasionally procure them from New Guinea’.

The goanna (*Varanus* sp.) is perhaps the most common large reptile throughout the islands, and several other smaller species of ground dwelling lizards and also snakes have been recorded (Cameron et al. 1978). Although an apparent total of 62 land species of reptiles and frogs have been recorded in the Torres Strait, expanses of seawater are considered as major barriers to the dispersal of these groups as their
distribution is largely dependent on previous land connections (Freebody 2002:18).

The Torres Strait acts as a major migratory pathway for birds between the Indian and Pacific Oceans: 50% of the 243 coastal and offshore birds recorded in the Torres Strait are classed as migratory (Draffen et al. 1983). However, the majority of bird species identified on the Western Islands are described as sedentary species that have a limited ability to cross water (Draffen et al. 1983). Among these species are the mound-building scrub fowl (Megapodius freycinet) and the brush turkey (Alectura lathami). The most abundant birds throughout the entire Torres Strait are sea birds, such as Noddies (Anous spp.) and Terns (Sterna spp.), which also produce large rookeries on sandy cays. As well as the geographical position of an island affecting the assemblage of bird fauna present, it is also inferred that the number of birds on any island is generally proportional to the degree of its botanical diversity rather than the land area of the island (Draffen et al. 1983). Of the terrestrial birds, however, one of the most widespread and commonly consumed species was the Torres Strait pigeon (Ducula spilorrhoa) (McNiven and Hitchcock 2004:107).

Several introduced mammal species occur on the Western Islands and include the Rusa Deer (Cervus timorensis), horses (Equus caballus), pigs (Sus scrofa), goats (Capra hircus) and cattle (Bos spp.). Today domestic and feral pigs, dogs (Canis familiaris) and cats (Felis catus) are found throughout the Torres Strait on most of the permanently inhabited islands. Historical records indicate some uncertainty as to when these species first appeared in Torres Strait. In the case of pigs, it was also undecided whether the animals observed were New Guinea pigs or the recently introduced European pigs (Brockett 1836:25; Haddon 1912:152). Several historic references to Murray Islanders obtaining dogs from the north coast of ‘New Holland’ are recorded, suggesting that the importation of dogs from northern Australia and their presence in the Eastern Islands may have been common prior to European contact (Jukes 1847 I:180, King 1983:56 and Rutherford 1833 in Haddon 1935:97).
Summary

From the preceding broad environmental description of southern coastal New Guinea, the Torres Strait islands and Cape York Peninsula two major themes are evident. The first is the wide scale similarity in climate, geology and biodiversity running across Torres Strait and encompassing the northern and southern regions of the adjacent mainlands. Although mammals are largely absent on the Torres Strait islands, the distribution of similar mammal species in regions on the adjacent mainlands also confirms their past palaeogeographic linkages. The second theme is in distinct contrast to these unifying similarities for southern coastal New Guinea and Cape York, and recognises the variability between the Torres Strait Islands demonstrated by geology, topography and vegetation. Unlike southern New Guinea and Cape York Peninsula where the landscape forms the dominant environmental backdrop, however, the Torres Strait islands (comprising a total land area of less than 1000km²) exist within a vast and complex seascape of coral reefs, cays, tidal currents and marine habitats. The following section provides an environmental background to the development of the Torres Strait seascape and includes both broad regionally based data and data that are relevant to specific islands and islands groups.

The Torres Strait Seascape

The timing of the flooding of the Torresian Plain by around 6500 yrs BP and our wider understanding of Holocene sea level change along the Australian coast has been established for some time (for example Jennings 1972b; Carter and Johnson 1986; Chappell et al. 1983; Lambeck and Nakada 1990; Thom and Chappell 1975). In contrast, the formation and development of the coral reefs within the Torres Strait and our knowledge of the areas marine palaeoecology has only recently been investigated (Barham 1999, 2000; Harris 1995; Woodroffe et al. 2000). The results of this research now allows a comprehensive description of the marine environment of the Torres Strait including information on the timing
and nature of reef development, intertidal zone formation, marine resource availability and development of prograded beach environments. Based on several years of data collection and investigation, Barham’s (2000) recent synthesis in particular provides a first critical insight into the implications of reef development and beach formation for the timing of human occupation and availability of marine biotypes in the Torres Strait. This will be discussed later, after a more general overview of reef and marine development in the region.

Reef development, resource availability and beach formation

Reef growth is prolific within the Torres Strait, occurring as both fringing coral reefs and as elongate reef platforms, although it is restricted around the northern islands by sediment influx from the Fly Estuary (Woodroffe et al. 2000:332). As the Torres Strait forms a tidal buffer zone between the Coral Sea to the east and the Arafura sea to the west, reef morphology and distribution patterns of sediments are determined by the predominantly east-west axis of tidal and wind driven currents (Harris 1995:151) (Figure 2.3).

Recent investigations of reef growth on the Central Islands of Yam and Warraber and Hammond Island to the south have established that reef colonisation occurred very soon after inundation during the Holocene transgression (Woodroffe et al. 2000). Mid-Holocene emergent reefs were identified on each of the islands and it was concluded that ‘extensive reefs with a general morphology similar to the modern reefs existed around 5000 years ago when sea level was about 1m higher than present’ (Woodroffe et al. 2000:343). Coring of reef deposits on Yam and Warraber demonstrated that reefs are located over Pleistocene reef limestone remnants, while reef at Hammond Island had built up over non-carbonate bedrock outcrops. Mapping of emergent Holocene microatolls of *Porites* sp. coral heads also indicated that reef growth has prograded seawards with the progressive lowering of sea levels during the last 5000 – 6000 years.
Barham (2000: 283) has shown that the contemporary patterning of fringing reef ecology and development observed in the Western and Eastern islands is of late Holocene age. The presence of residual fossil structures of *Porites* sp. coral colonies on Mua, Badu and Mer confirm that coral reef growth has prograded seawards and was located much closer inshore during the early Holocene (Plate 2.1). Although radiocarbon dating of these microatolls indicated significant in-shore coral growth occurred at a period of maximum sea level around 6500 to 4000 yrs BP, Barham (2000:284) concluded that fringing reefs around the high islands of the Torres Strait in this period would have been quite unlike present
reefs. He suggests that early near-shore coral growth took place primarily as isolated colonial ‘bommies’ within deep subtidal pools and lagoons, resulting in minimal intertidal reef flat while the reef edge was developing (Barham 2000:284). At this time near shore resources would have been limited to rocky foreshore and live subtidal lagoonal types, and higher wave energy conditions during storms and high tides would have prevailed (Barham 2000:284). On Mer and Dauar geomorphological evidence for these conditions is displayed as erosional notches in the soft volcanic lithology (visible in the headland in the mid-background of Plate 2.1).

Barham (2000) has concluded that this early type of reef morphology would have meant limited sediment availability for reef flat infilling and near shore sediment accumulation. He suggests that the result of such delayed sedimentation ‘was that development of fringing reefs in Torres Strait, and reef biotypes, lagged significantly behind the approximation of modern shorelines by marine transgression’ (Barham 2000:285). Barham estimates at least a 2000 – 3000 year time lag following shoreline transgression at 6000 yrs BP, before the completion of significant platform reef development (2000:285). Although based on limited data, he also
projects a delay in the development of inter-reef sea-grass areas comparable with the present day habitats, and which could not have sustained large turtle and dugong populations prior to 4000 – 3000 yrs BP (Barham 2000:287).

Coring of mangrove facies on Mua and Saibai have demonstrated the presence of inland mangrove communities by 6000 yrs BP (Barham 1999; Budworth and Barham 1987). The Saibai evidence indicates that after 3000 yrs BP mangrove communities were restricted to the coastal fringes, as sedge communities colonised the interior of the island (Barham 1999). However, Barham (2000:288) suggests that from at least 4000 yrs BP onwards mangrove resources, including shellfish and crab communities, were available ‘in those areas where mangroves are known to have been a significant component of either archaeologically or ethnohistorically reconstructed past diet’, and that the mangrove biotype was probably ubiquitous along the shorelines of many of the larger islands from 7000 yrs BP.

Barham (2000:289) has also demonstrated that fringing reef development and stabilisation of intertidal reef flat surfaces had a direct influence on the onset of beach formation and the development of prograded beach environments in the Torres Strait. On the higher Torres Strait Islands, these beach environments appear to have been favored sites for seasonal camps. Uncorrected radiocarbon dates from Dauar and Nagi suggest that beach formation and the long-term storage of beach sediment in prograded beach units commenced around 3500 – 3000 yrs BP. After this time most fringing reefs had developed and infilled enough to act as a zone of sediment transfer rather than the sediment ‘sinks’ formed by the fringing lagoonal topography prior to 4000 to 3000 years ago. As Barham (2000:289) explains, the development of fringing reefs ‘resulted in commencement of net onshore sediment flux to form beaches, and a probable increase in intertidal sediment accretion overlying reef, (such as carbonate muds and sands supporting sea grass) from c. 3500 BP onwards’.
Barham’s (1999:291-293, Table 1) broad model of Holocene shoreline changes on the Torres Strait islands has a number of implications for human occupation and coastal biotype resource availability. Underlying this model is the rationale that from the time of marine transgression and the establishment of modern shoreline configurations around 7500 yrs BP, human occupation of the Torres Strait islands would have been subject to a variety of ecological constraints (Barham 2000:290).

The apparent 2000 – 3000 year delay in reef flat and platform reef development following marine transgression is regarded as the most significant of these ecological constraints (Barham 2000:290). Barham estimates that ‘reefal areas comparable to those of the present day were only achieved some time after 4000 BP’ (2000:290). Resource availability was not entirely restricted before this time, however, as partially developed inshore reefs and rocky shoreline biotypes would have provided suitable habitats for exploitable fish and mollusc species. Similarly, protein sources such as turtle and dugong may have been widely available around the shores of the larger islands from as early as 4000 yrs BP. However, Barham (2000) notes that during the early lagoonal phase of reef development the construction of the large stone fish traps seen around the shores of each of the Eastern Islands today, would have been both difficult and less practicable. Only after coral-algae cementation of the reef, which occurred by around 3500 yrs BP due to increased sediment availability, would the construction of fish traps have been possible. In turn the construction of the fish traps themselves served to break onshore wave energy and to promote sedimentation and sea grass colonisation (Barham 2000:294).

From his assessment of Holocene palaeogeographic changes and of coastal and littoral biotype development in the Torres Strait Barham (2000:295) concludes that:
successful maritime exploitation of coastal resources (using the
techniques and strategies documented ethnohistorically for Torres
Strait) would have been feasible from c. 4500 BP onwards, if the
methods used in prehistory were comparable with those established
for the ethnohistoric period.

The purpose of the above section has been to provide an environmental
framework for the emergence of the Torres Strait Cultural Complex. This
information combined with the recent data on the development of the
Torres Strait seascape has provided a chronological backdrop for the
emergence of reef flats and associated resource zones and development
of coastal occupation sites. The following section provides a discussion of
the cultural context of the Torres Strait Cultural Complex largely based on
historical documentary narratives and late 19th century ethnographies.

The Cultural Setting

The immediate sphere of operation and influence of the Torres
Strait Cultural Complex in the mid-nineteenth century….is defined
by the area of which indigenous Torres Strait Islanders are known
to have traded or voyaged in search of resources, by demonstrated
intermittent contact or reciprocal exchange as defined through
warfare, kinship and marriage, and by commonality of myths and
beliefs…(Barham 2000:227-228)

The picture of traditional life in the Torres Strait and of the extended
cultural complex in which the islands and their occupants were involved
has been constructed from a variety of documentary sources. These
include the initial observations of European maritime voyagers during the
18th century and the more detailed accounts made by the learned
occupants of sailing vessels during 19th century. Knowledge of traditional
practices in the region during this period is further enhanced by the
published records of European missionaries appointed throughout the
islands and the southern coast of New Guinea. However, it is from the
ethnographies recorded at the turn of the 20th century that most
information about traditional culture and customs of Torres Strait Islanders,
and also the coastal Papuans is obtained.
Almost three decades prior to the Cambridge Anthropological Expedition in 1898, however, the Torres Strait had become the base of lucrative international markets in pearl shell and beche-de-mer and was increasingly populated by Japanese, South Sea Islander and European divers and traders (Beckett 1987; Singe 1979). By the beginning of the 20th century the Queensland Government had also taken administrative control of the Torres Strait, and the London Missionary Society had established permanent presence throughout the region. Thus the historical circumstances in which the Cambridge Expedition was undertaken begs the question of how accurately the records of Haddon and his colleagues portray pre-19th century customs and way of life in Torres Strait in general, especially given the apparent biases in the documentary records towards certain islands. This issue is addressed in the latter half of this chapter. Although some background details from the Eastern Islands ethnographies are provided in this chapter, more detailed information about the Murray Islands, including subsistence and trade and exchange is provided in Chapter 4.

**Cape York and Western Torres Strait**

For Cape York Peninsula and the adjacent Torres Strait islands numerous narrative and ethnographic records exist. A source of particular interest is the journal of O.W. Brierly, an artist on board the HMS *Rattlesnake* during its surveying expedition around northern Australia and New Guinea (Brierly 1848-1850 in Moore 1979). In addition to the detailed observations of mainland Aboriginal groups, Brierly produced a remarkable ethnographic reconstruction of traditional life on Muralag (Prince of Wales Island) based on his interviews with shipwreck survivor Barbara Thompson. As a young Scottish girl she had been the sole survivor of the *Charles Eaton* after it wrecked off the northern coast of Cape York in 1844. She lived with the inhabitants of Muralag until her rescue during the *Rattlesnake* voyage in October 1849. Another major source of information for the western Torres Strait and Cape York is the journal of John MacGillivray (1852 II) who was the zoologist on board the *Rattlesnake*. 
Territory and language

The traditional territory of the Cape York Aboriginals, who comprise a number of language groups, extends along the eastern coast to Princess Charlotte Bay and as far as Mapoon along the western coast (see Figure 2.2). Four main Cape York tribes were identified by early observers, amongst whom the Gudang, whose territory extended from Cape York to Fly Point, generally had the most contact with Western Torres Strait Islanders (Jardine 1866; MacGillivray 1852 II; Moore 1979). The languages and dialects spoken by northern Cape York groups are believed to have originated from an Australian mother language called Proto-Northern Paman (Hale 1964 cited in Sharp 1992:13). However, Wurm (1972:355) identified that out of twelve Cape York language groups, four had phonological structures indicative of external Papuan linguistic influence. Known as Kalaw Lagaw Ya, the language spoken by the occupants of the Western Torres Strait Islands is phonologically distinct from, but closely related to the Pama Nyungan languages of Cape York (Wurm 1972:349).

According to Brierly (cited in Moore 1979:171) the inhabitants of the western Torres Strait Islands, including Muralag, Mua, Badu and Mabuiag were aware that their islands were located between two larger land areas. Although there is some variation on the spelling of these names throughout the historical literature, Brierly (cited in Moore 1979:210) refers to them as Mugee Daudthee for New Guinea, and Kyiee Daudthee for Australia. The documentary records indicate that the Kaurareg, the traditional inhabitants of Prince of Wales Island group (for which most information is recorded) and other groups in Western Torres Strait regularly sailed between their islands and adjoining reefs, and regularly visited Cape York where they set up transitory camps. Barbara Thompson recalled such activity:

After the Badus went away, the Kulkalagas came over. They had at least a dozen canoes. The beach was quite full of them. I should think that at least 300 people came over. They brought all of them, old people and women and children with them and left no one but
Quiqui, who they thought was drowned upon their island. I think they stopped for about two months (Moore 1979:203).

Although most interactions between Western Islanders and groups from Cape York were friendly and involved trade, resource procurement and even intermarriage, some hostile relations were recorded. Barbara Thompson recalled raids on the Muralag people by certain Cape York groups and also periods of ill feeling of the Muralag against Mua and Badu, brought about by theft and an attempt of her own kidnapping respectively (Moore 1979:307).

Social organisation and mythology

For Cape York tribes and the islanders of Western Torres Strait the basic social unit appeared to be the extended family, further characterised by 'an exogamous totemic system with territorial attachment, minimal political control by consultation between prominent men and cooperative secret ceremonies for initiation' (Moore 1979:329).

In terms of mythology, ceremony, magic and initiation, many parallels between the Cape York tribes and Kaurareg of Western Torres Strait were also recorded. Of particular interest was the widespread tradition of cult heroes, such as *Kwioam*, the fierce and mythical Aboriginal warrior (Haddon 1904:67-83). It was suggested that the widespread celebration of the Aboriginal warrior myth may have been the result of an attempt in the past of a northward invasion from the mainland (Haddon 1904:79-80). The *Kwioam* myth was recorded throughout coastal Cape York, Mua, Badu and Mabuiag as well as at Mawatta on the southwestern Papuan coast (Landtman 1917). Sharp (1992:14) suggests the myth of the Aboriginal warrior hero 'links mainlanders with the Islanders and beyond the Torres Strait to Kiwai and Tugeri country of the land mass to the north they know as Mugie Dudai (the island of New Guinea)’. The warrior hero Siverri, equipped with bows and arrows, a drum and a dugout canoe, provides another example of a western Cape York and Torres Strait
culture hero similar to those of the southern Papuan coast (Trezise 1969:11).

Subsistence

The natural resource suites and overall subsistence patterns of the Kauarag were similar to the mainland Cape York groups. During the dry southeast season both groups depended on wild yams, koti, and turtle, waruu, and to a lesser extent fish, shellfish and other plant foods including fruits and nuts that were in season. Wild yams grew prolifically in high rocky places on the Western Islands, on Mt Adolphus Island (Muri) and in littoral thickets on the mainland. Both groups also used Mt Adolphus during the northwest monsoon season when the food situation was much less favorable. During this time the main staple was a grey paste made from mangrove pods, buyi, as well as mangrove and rock oysters and fish and turtle caught offshore.

Spearing was the most common method of obtaining fish, which in the Western Torres Strait was done usually with a multi-pronged wooden spear (Haddon 1935:157). Spearfishing was usually carried out by men, whereas line fishing was often undertaken by women (Moore 1979:272). Hooks made from turtle shell and lines made of coconut fiber were used for this purpose. Barbara Thompson also describes a method used by the Kaurareg to trap fish in the mouths of creeks using mats and branches (Moore 1979:272). Although she claimed that the Kaurareg had no fishing nets, she mentioned that some of the islanders did use them.

Documentary records indicate that a form of plant management of key species, such as yams, was a common practice on the northern Australian mainland and the adjacent Torres Strait islands. Interestingly, Beckett (1972:342) notes that Barbara Thompson’s description of the preparation and planting of wild yams species on Muralag may have been due to the circumstances of the two previous years, during which no turtles had been captured. This was in comparison to the season three years previously
when she claimed that 300 turtles were captured. There is also the suggestion that yams were generally planted as a back up, in case wild yams failed or were low in numbers. Barbara Thompson’s testimony also indicates that sugarcane was often planted on Muralag, having been brought from nearby Nagi (Moore 1979:203).

Brierly (cited in Moore 1979) recorded three different techniques for capturing turtle among the Kaurareg. The most common method was the use of a sucker fish, *gapoo*, which was used to secure a line to turtle which was then easily pursued by a man after jumping from a canoe into the water (Moore 1979:168). This was the method most commonly used for the capture of the flatback turtle (*Chelonia depressa*) whereas green turtles (*Chelonia mydas*), most plentiful during the months of September and October before the wet season, were caught in the water by a man simply jumping in after them. Due to the sharp edge of their shell, hawksbill turtles (*Eretmochelys imbricata*) were often caught on the beaches at night, while they laid their eggs, by simply being turned over on to their backs. Hunting of dugong was accomplished by the use of a large spear with an attached harpoon head, *wap*, was thrust into the animal as a man jumped from a canoe into the water. The harpoon detached itself from the pole letting out a line curled up in the bottom of the canoe (Moore 1979:162). Once dead the dugong was hauled into the nearest beach and sliced into portions and cooked in earth ovens.

The method of cooking commonly observed by Brierly (cited in Moore 1979:108, 200) among Cape York Aborigines and the adjacent Torres Strait Islands was the earth oven or *ami*. This technique was used to cook turtles and also vegetable foods, including yams and mangrove pods:
Stones are spread over the bottom of it, shallow with sloping sides, and upon this a fire is made and a number of stones put into it. When the stones are thoroughly heated, the fire is taken out from amongst them, the heated stones being left in the pit. The sloping sides of the pit are now lined with bark of tea-tree which is laid all round against the sand. Over the bottom of the pit they lay some of the strong coarse grass, not very dry grass, but moderately so. The amis will vary in size (Brierly cited in Moore 1979:169).

Turtle meat and yams was also prepared by boiling in large conch shells (Syrinx aruanus) or baler shells (Melo sp.), although this method was mostly used when the time of day or rain prevented the construction of an earth oven (Moore 1979:172, 277). Barbara Thompson also recalled that on several of the islands in Western Torres Strait turtle meat was dried and was often carried in canoes as food during voyages (Moore 1979:172).

As terrestrial animals and birds, including wallabies, kangaroos, cuscuses, goannas, cassowaries, brush turkey and scrub fowl were more common on the Australian mainland than on the islands of the Prince of Wales group, these terrestrial resources probably contributed considerably less protein to the Kaurareg diet than they did for the mainland Gudang people (Harris 1977:438). Thus, as Moore (1979:276) suggests, although the latter group may have been better off during the wet season, the Kaurareg ‘with the more efficient marine technology, had an ample and extensive diet during the south-east season’

Canoes and trade

From early documentary accounts it is clear that the distribution of outrigger dugout canoes was seen as a crucial technological element in linking the Western islands of Torres Strait, Cape York and southern New Guinea (Sweatman in Allen and Corris 1977:33-36; Brockett 1836; King 1837; MacGillivray 1852 II:4). Early observations in northern Queensland indicate that both single and double outrigger dugout canoes were used along the western and eastern coasts of Cape York (Roth 1908, 1910).
Rowland (1987) has illustrated that observations made during early European voyages confirm the use of single outrigger canoes as far south the Whitsunday Islands. Evidence suggests that single outrigger canoes were manufactured by groups at Cape York and as far south as Princess Charlotte Bay (Haddon and Hornell 1975:191; Thompson 1934:232) (Figure 2.4).

The southern distribution of the larger double outrigger canoes was more limited, with vessels observed as far south as the Endeavour River on the
eastern coast of Cape York and to Archer River on the western coast (Roth 1908, 1910; Brockett 1836; Jukes 1847 I; MacGillivray 1852 II). The large hulls of the double outrigger canoes were manufactured within the vicinity of the mouth of the Fly Estuary (Beardmore 1890:459; Chalmers 1903:123; Haddon 1904:296-297) (Figure 2.4). Early observations of double outrigger canoes highlights the regional differences of these vessels:

The same kind of canoe which is found throughout Torres Strait has been seen to extend from Cape York along the eastern coast as far as Fitzroy Island, a distance of 500 miles. It essentially consists of a hollowed-out log, a central platform, and an outrigger on each side. The largest canoes which I have seen are those of the Murray and Darnley Islanders, occasionally as much as sixty feet long, those of the Australians are small, varying at Cape York between fifteen and thirty feet in length (MacGillivray 1852 II:15).

In the Western Torres Strait canoes were obtained from New Guinea through a trade network that ran via Mua or perhaps directly to Badu. The network then continued via Mabuiag, to Saibai, Mawatta and along the coast to the Fly (Moore 1979:303).

Along with canoes, items traded southwards included shells particularly Cone shell (*Conus* sp.), cassowary and bird-of-paradise feathers, stone clubs and bamboo tobacco pipes. Goods traded northwards included ochre spears and spear throwers from the mainland, and pearlshell (*Pinctada margiferita*). Many items were also traded within the Western Islands themselves including bamboo water carriers, pipes and knives, shell ornaments and coconut fiber fishing line.

As Moore (1979:303-306) suggests, it is clear from Barbara Thompson’s recollections of constant visits to Muralag by canoes full of people from Nagir, Mua and Badu and less frequently from Mabuiag, Saibai and Yorke, that the continual movements of these groups assisted in the trade and exchange of goods throughout the Western Torres Strait and Cape York (1979:303-306). However, intermarriage no doubt also facilitated cultural and social interactions amongst islanders and mainland Aboriginal groups (Moore 1972:337-339).
The Insular Island Core of Torres Strait

Language

First detailed by Haddon (1935:289), one of the most distinguishing features between the Western and Eastern Islands of Torres Strait, was language. Sweatman (cited in Allen and Corris 1977:23) noted that the language spoken on York Island was distinct from the Eastern Islands language, and appeared ‘to bear a greater affinity to Cape York’. As previously mentioned, Kala Lagaw Ya was spoken throughout Western Islands and is the dominant language in Torres Strait, although dialectical variants of it occur in the Central and Northern Islands (Shnukul 1998) (Figure 2.2). Previously referred to as Mabuiag, today these dialects are collectively known as the Western-Central Language (WCL) and, although they are related to the Pama Nyungan languages of Cape York, they also have a strong Papuan influence (Shnukul 1998; Wurm 1972:349).

The language spoken in the Eastern Islands is structurally a Papuan (non-Austronesian) language and belongs to the Eastern Trans-Fly Family (Wurm 1972:349; Lawrence 1994:250) (Figure 2.2). Known as Meriam Mir, this language closely resembles the Bine, Gidra and Gizra languages of the southern New Guinea coast and is further unique in its adoption of some southern New Guinea Kiwai language features (Lawrence 1994). Wurm’s (1972) broad linguistic analysis of Torres Strait languages demonstrated that although there was some Australian influence on Meriam Mir, this was negligible in contrast to the strong Papuan influence on Mabuiag.

Architecture

The more sedentary mode of life observed in the Eastern Torres Strait, particularly when compared to the mobile nature of groups in the Western Islands closest to Cape York, is shown by the descriptions of traditional housing throughout the Torres Strait. On Mer, Jukes (1847 I:197)
observed that the whole shore ‘was lined with a continuous row of houses, each in a small court-yard of from ten to twenty yards’. In comparison, housing in the Western Islands took on the form of temporary tent-like shelters that were constructed from an array of available materials including pandanus mats, saplings, branches, standing trees, and also paddles and oars from canoes (MacGillivray 1852 II:19; Moore 1979:283). Some of these shelters were quite large, however, such as the ‘long hut’ described by Barbara Thompson (Brierly 1849:155-156 in Moore 1979). In general, ethnographic records indicate that housing used in the Western Islands was much less substantial than that observed throughout other parts of the Torres Strait (Murray 1874:37; Jukes 1847 I:132). Melville (cited in Haddon 1912:93) the artist on board the HMS *Bramble* and HMS *Fly*, also noted ‘a gradual improvement’ in housing along a northward gradient across the Torres Strait.

On Nagi MacGillivray (1845 II:35) described a village consisting ‘of a single line of huts, which probably would furnish accommodation for, probably, 150 people’. These huts were long and narrow with a framework of bamboo and thatched grass roofs, and were also fenced with a roofed enclosure where cooking usually took place (Figure 2.5). Jukes (1847 I:167) observed well-constructed huts on Yam Island that had gabled roofs of palm leaves and grass thatch and walls made from closely fastened bamboo sticks. Away from the main village on Yam he also observed a single beehive shaped hut which he recognised as the type of house built in the Eastern Islands, and which he interpreted ‘had either been erected in imitation of them, or by some people of those places when on a visit to Masseed’ (Jukes 1847 I:168). On Dauan and Saibai, houses were observed built on stakes eight to ten feet off the ground (Moresby 1876:133; Murray 1876:456 cited in Haddon 1912:99). These were constructed of bamboo, thatched grass roofs and walls of pandanus leaves.
Material culture

Barham (2000:233) points out ‘in terms of material culture, the core area of the Torres Strait Cultural Complex exhibited strong affinities with Papua, rather than Cape York’. In the context of personal body ornaments, Haddon (1935:296) suggests that nearly all items:

…such as plaited or twisted necklaces and arm- and leg-bands, were made locally and appear to be common to all the islands, yet most of them can be matched with those made by the Western Papuans and often with those from other parts of New Guinea.

Body ornaments include headdresses and headbands, nose and ear ornaments, necklaces, shell and bone pendants, belts, armlets and leglets (Figure 2.6). Rope or string was commonly made from either twisted coconut fibre, plaited strips of rattan or bamboo rind. The decorative components of headgear often included feathers and shaped pieces of shell. Pendants were made from various shell species, including the highly prized Cone shell, *dibidibi*, as well as Pearl shell and Baler shell. Rounded boar tusk pendants, *sauad*, were imported from New Guinea and were of great value. In Torres Strait imitation boar tusk pendants were made from *Trochus niloticus* shell, *nasir sauad* (Haddon 1912:51). This species was also used to make arm rings, although throughout Torres
Straits Cone shell arm rings, *wauri*, were the most precious (Haddon 1912:55-56) (Figure 2.6).

![Image removed due to copyright restrictions]

**Figure 2.6** From left: Shell pendants, cone shell arm ring (*wauri*), cone shell pendant (*dibidibi*) (Haddon 1912: 47, 236, 44)

Domestic items and tools included shells, such as the large Trumpet and Baler species, which were used for carrying water and for boiling food. Large *Tridacna* spp. clams were also commonly placed at the base of trees as a water collection device. Coconut shell and lengths of bamboo were also widely used as water storage and drinking vessels. Stones and wooden mortar and pestles were used as pounders to soften food. The shells of several bivalve species including *Cyrena*, *Tellina* and *Asaphis*, were used for cutting and scraping. Turtle shell was often shaped into scrapers, while imported cassowary bones from New Guinea were commonly used as coconut huskers. Bamboo knives were mostly used to cut the meat of turtle and dugong. Haddon (1912:125-126; 1935:302) stated that adzes were unknown in Torres Strait, and he only recorded *Tridacna* shell axes on Mer and Badu. Although he failed to record any stone axes, Haddon (1935:302) thought it probable that they were also made. Given McFarlane’s (1888) remark that ‘the old stone and clam-shell axes have given way to ‘white man’ goods, as have the bamboo knives and big bailer shell which duty as saucepans’, limited observations of shell and stone axes throughout Torres Strait are understandable. In
relation to horticultural subsistence, the pointed digging stick appeared to constitute the entire cultivation tool kit (Haddon 1912:144).

Weaponry employed in the Torres Strait consisted of the bow and arrow and a stone-headed club called *gabagaba*. Referred to by Williams (1936:266) as ‘the weapon par excellence of the raider’, *gabagaba* were using during inter-island feuding and fights between islanders and neighbouring Papuans. They consisted of a shaped stone head attached to a wooden handle that was often decorated with plaited rattan or beads. Handles varied in length from around 38 cm to as long as 1m (Haddon 1912:191) (Figure 2.7). The shape of the stone heads have a variety of forms, including unflanged knobbed clubs, triangular, rectangular, flattened ball, ovoid, flanged star, flanged disc, and knobbed (Haddon 1912:190). Haddon (1912:191) also drew attention to similar forms of stone clubs observed in New Guinea, and suggested that ‘owing to the absence of suitable rock the mainlanders, like many of the islanders, must have obtained their weapons by trade or loot’. *Gabagaba* also played an important ceremonial role in some contexts throughout Torres Strait. On Mer in particular, four rayed *gabagaba* known as *seuriseuri* were used in dances and for cermonial purposes (Haddon 1912:192; McNiven 1998; Wilson 1993:154).

\[\text{Figure 2.7 Top: stone headed club (gabagaba),} \]
\[\text{Bottom: ceremonial stone club (seuri seuri) (Wilson 1988:82)}\]
Subsistence

The subsistence economy of the Torres Strait is characterised by a high degree of dependence on marine resources, but also by a varying reliance across the Strait on cultivated species and other available plant foods. Jukes (1847 I:25) provides a description of the varying levels of horticultural production and reliance on plants foods throughout Torres Strait:

A great variety of yam-like tubers are cultivated in Torres Strait. Although on Murray and Darnley and other thickly peopled and fertile islands a considerable extent of land in small patches has been brought under cultivation, at the Prince of Wales Islands the cleared spots are far and few in number and of small extent – nor does the latter group naturally produce cocoa-nut or bamboo, or is the culture of banana attempted. On the mainland again I never saw the slightest attempt at gardening.

On Mabuiag and Nagi small areas of cultivated land were observed, although such areas were minimal in scale compared to the extent and organisation of the gardens on Mer (Wilkin cited in Haddon 1912:149). On Nagi MacGillivray (1852 II:36) recorded the cultivation of a broad-leaved species of yam (Dioscorea sp.), as well as a species of ‘Calladium’ with an esculent root that was planted in regular rows of mounded earth (almost certainly Taro, Colocasia esculenta). While visiting Dauan in 1873 Moresby (1876:132) observed ‘...some fine patches of grassy land, well supplied with fresh water, and a richly cultivated valley, producing taro and melons’. At the time of European contact the knowledge of the processing of imported plant foods from New Guinea, such as sago (Metroxylon spp.), had extended to Mer, as well as Nagi and further south to Muralag (MacGillivray 1852 II:62).

The vast majority of information on horticulture in the Torres Strait, including types of plant cultivars, methods and seasonality of planting, associated technologies and ceremonial practices, was recorded from the Eastern Islands, and Mer in particular (Haddon 1912:144-151). Such information mostly refers to the common tuberous species of yams and
sweet potatoes (*Ipomoea* spp.), and bananas (*Musa* spp.) and coconut (*Cocos nucifera*). However, Haddon (1912:136) did suggest that on Mer the consumption of rhizomes and aroids was more common in the past compared to the late 19th and early 20th centuries. He further suggested that tales and legends associated with such items 'may date back to a time before the cultivation of yams and sweet-potatoes, when the islanders were merely collectors of food' (Haddon 1912:136). Further discussion on the horticultural economy of the Murray Islands is provided in Chapter 4.

Records of the terrestrial faunal subsistence economy within the Torres Strait are limited, particularly for the Central, Eastern and Northern Islands. As Haddon (1912:152) suggests, this is perhaps a reflection of the absence of mammals in the Torres Strait. Information on terrestrial resources is therefore mostly limited to the capture of birds. The species captured varied on an island to island basis, and was seasonal depending on migration paths and periods. Birds were caught predominantly to be eaten, but sometimes also for their plumage (Haddon 1912:153). Various methods were used in their capture including snares, line and bait and airborne missiles.

Descriptions of marine based-subsistence activities throughout the Torres Strait at the time of European contact focus on turtle and dugong capture. Haddon (1912:159) described two turtle hunting seasons; one during the mating season when turtles floating on top of the water were easy prey, and a second extending throughout the remainder of the year when turtles inhabited the deeper waters around offshore reefs. Three major species were recorded throughout the Torres Strait, their distribution varying throughout the region. The Hawksbill turtle (*Eretmochelys imbricata*) was most common around the Western Islands and on the coast of Cape York, and was also the species from which turtle shell for trade was obtained. The Loggerhead turtle (*Caretta caretta*) was a prized food in the Western Islands, while the green turtle (*Chelonia mydas*) was the most common species observed in the Murray Islands. As described in the previous discussion on turtle hunting in the Western Torres Strait, a number of
methods for capturing turtles were recorded during the late 19th century (Haddon 1912:159-166, MacGillivray 1852 II:20-22).

Dugong meat is commonly regarded as the most significant marine food source in the pre-European subsistence economy of the entire Torres Strait (Johannes and McFarlane 1991; Mulrennan and Hanssen 1994). Haddon (1912:166), however, claimed that these animals were most abundant at Orman’s Reef immediately north of Mabuiag, and in the waters between Mabuiag and New Guinea. Methods of dugong capture included spearing the animals from a canoe on offshore reefs, or at night from a bamboo platform constructed on the shallow reef flat (Figure 2.8). The spear used was the large wap, which was fashioned with a barbed head loosely inserted into the butt of the implement.

MacGillivray (1852 II:25) claimed that the earth oven or kopa mauri (as it was widely known) was the ‘favorite mode of cooking turtle and dugong throughout the Torres Strait’. Noting that he had only ever seen it made in
sandy soil, Haddon (1935:132) suggested that throughout the islands yams and sweet potatoes were also commonly cooked in earth ovens.

Observations and records of other marine subsistence activities in the Torres Strait, such as fishing and in particular the gathering of shellfish, appear much less frequently and with much less detail. Ironically, Haddon (1935:154) notes that both resources were available all year round, and that ‘fish and shellfish are eaten nearly everyday, with occasional meals of turtle and dugong; the two latter are especially rich and oily’ (1912:130). The daily gathering of reef and rocky shore shellfish was undertaken by women and children, while the activity of fishing was practiced by both sexes (Haddon 1912:154-155). Men, however, would dive for crayfish, pearl shells and large cone shells.

Fish were speared or taken with a coconut fibre line and turtle shell hook (Haddon 1912:155). Line fishing was practised from canoes, off rocks or while standing on the reef flat. The use of poisons such as *Derris* sp., was also a common method of procuring fish from shallow lagoons on the reef at low tide. Stone walled fish traps built from local boulders were observed around the fringing reefs of the Erub, Ugar, Mer and Mabuiag. Jukes (1847 I:181) provides a detailed description of the stone fish traps located around the southern coast of Mer:

> These are walls of loose stone, about three feet high, formed in curves and semicircles along the sand flats, each having a radius of one or two hundred yards. They are completely covered at high water, but when the tide falls (its range being about ten feet) many fish are left within these enclosed spaces, or together with crabs and other sea creatures, caught in the interstices of the stones.

**Social organisation, ceremony and religion**

The majority of information recorded about social organisation in the Torres Strait refers to the island of Mer (Rivers in Haddon 1908:169-184) (as detailed information about Meriam social organisation is provided in Chapter 4, only a summary is provided here). The sedentary population occupied small hamlets on the beach around the peripheries of Mer and
Dauar as well as portions of Waier. Each house site belonged to an individual or a few close agnates, usually brothers, who had inherited it from a biological or adoptive father. These hierarchically-nested, patrilineally related households were defined by Rivers (in Haddon 1908:169) as forming villages and districts (of which there were eight), which formed the basic units in the ritual division of labor as well as the conduct of particular social and religious duties. Haddon (1908:254) regarded totemism as virtually absent among the Meriam and saw this as a product of their isolation and a higher likeliness ‘to develop socially independently of their neighbours’. Later 20th century ethnographies, however, recognised that eight totems (one relating to each of the eight districts) were introduced to Mer by the cult figure Malu, as part of the cult of Bomai and Malu (Laade 1973).

Most other information on social organisation in Torres Strait refers to the Western Islands and particularly Mabuiag. The basic components of the social systems for these more mobile populations were the exogamous totemic patriclans (Beckett 1972:323). These patriclans were not necessarily localised but could be found in more than one community. Clans often had more than one totem, \textit{augud}, which included most of the common land and sea animals as well as constellations and mythical persons. Haddon (1935:68) was informed that in the Western Islands any \textit{augud} could be eaten and that a man and woman belonging to the same totem could marry. Moore (1979:262) thus concludes that for the Western Islands:

\begin{quote}
...as with the mainland Aborigines, the totemic system applied purely to ritual matters and played little part in everyday social life. Also the inclusion of mythical persons and constellations as totems sounds much closer to an Australian Aboriginal system than to a Melanesian one.
\end{quote}

Clans on Mabuiag and Badu were each associated with a stretch of foreshore and tracts of interior land on one or both islands (Beckett 1972:323). These clans were further divided into districts, with each district having two headmen. Land tenure was multi-faceted with some
tracts of land owned collectively by clans, while others were owned by individuals or by groups of agnates. The only other island for which some detail about social organisation is available is Saibai. Here the sedentary population was located in two settlements and divided into two clans based on non-exogamous moieties (Haddon 1904). The system of land tenure was similar to that in the Western Islands.

Ceremonial life throughout Torres Strait was characterised by everyday ritual processes as well as the more sacred followings of hero cults and legends. Rituals and ceremonies practiced by the Meriam included those for rain making, fishing, turtle and dugong hunting, gardening and crops as well as love magic and health ailments (Haddon 1908:192-240). These processes involved the production of charms of wood and stone, and sometimes included vocal and dance components. Although the Meriam had many cult heroes, according to Haddon and Myers (Haddon 1908:281-313) the cult of Bomai and Malu was central to social and religious life.

For the Western Islands complex magic and religion associated with fishing and turtle and dugong hunting was recorded (Haddon 1904:330-345). These traditions involved the ritual preparation of canoes and elaborate dances with associated paraphernalia including charms, masks and costumes. Some agricultural magic was also recorded for Mabuiag and Yam Island in the Central Torres Strait, involving dance and the use of garden charms. On many Western and Central Islands ceremonial life centered around an open space, *kwod*, permanently set apart from the rest of the island. Haddon (1904:365) did note, however, that a *kwod* could also be set up temporarily wherever there was a camp. On Nagi MacGillivray (1852 II: 36-37) described the *kwod* as fitted out with two large screens, *wows*, made from bamboo and plaited coconut palm and decorated with large spider shells, conchs and dugong bones. Various death and initiation rites were associated with the *wows*, and in general only men and initiated boys could visit the *kwod* (Haddon 1904:365-366) (Figure 2.9). The *kwod* was also the totemic site of *Kwiom*, which as
discussed previously was the principal cult hero of the Western Islanders (Haddon 1904:367-373).

**Figure 2.9** Ceremonial *kwod* site with bamboo screens and shell decoration (Haddon 1904: plate XIX).

**Mobility and trade**

As previously noted, it was recognised early in the history of European voyaging throughout the region that the technological trait linking the peoples of southern New Guinea, the Torres Strait islands and Cape York Peninsula was the double outrigger canoe. Within the Torres Strait there were repeated observations of movements of groups of people, and in some instances the entire populations of islands. When visiting Erub in the Eastern Torres Strait, Sweatman (cited in Allen and Corris 1977:24) noted regular visitation by parties from several of the Central Islands.

Oral history suggests that Yorke Islanders acted as intermediaries between coastal Papuans and Eastern Islanders as well as Yam and Tutu Islanders. Yorke Islanders were situated close to the Warrior Reef where they obtained turtle and dugong, which they then took to the Papuan coast to exchange for bows and arrows, yams, sago, taro, drums and drumskins.
Exchange for garden foods with the Eastern Islanders was particularly important to the people living on the low, sandy infertile Central Islands (Lawrence 1994:295). More detailed information on trade and exchange on the Murray Islands is provided in Chapter 4 (Figure 2.10).
Further to the north, Saibai Island and the coastal Papuan village of Mawatta were viewed as the principal centres or ‘middle men’ for converging Torres Strait and coastal Papuan exchange routes (Haddon 1904:295; McCarthy 1939-40:184). Obtaining information from Leo Austen, Resident Magistrate at Daru between 1919 and 1924, McCarthy (1939-40:185) wrote that the Kiwai-speaking villages near Daru and from Parama Island and Mawatta, had direct trade linkages with the peoples of Saibai, Dauan and Bogui islands. Further to this they also had kinship relationships which expanded to the peoples of Yam Island and Murray Island. Austen (cited in McCarthy 1939-40:186) claimed that the villages of Saibai, Dauan and Boigu obtained vegetable foods from the mainland as well as Nipa-palm leaf for house building. The main agent in the movement of canoes from the Fly Estuary to the Torres Strait appeared to be the coastal people around Daru. They in turn received pearl shells and cowrie shells (*Cypraea* sp.) from the Torres Strait Islanders, which were dispersed eastwards along the southern New Guinea coast as far as Goaribari Island near the Bamu Estuary (McCarthy 1939-40:186).

In summarising trade routes throughout the Torres Strait McCarthy (1939-40:190) concludes that Saibai and Mawatta were the links between the western and eastern coasts of Cape York and New Guinea ‘by trade routes which ran through the western and central islands of Torres Strait’. He also identified another trade route in which the Murray Islands were the interlinking element between the east coast of Cape York and the Parama, Kiwai and Fly Estuary districts of New Guinea (McCarthy 1939-40).

The New Guinea Coast

The trading operations, when taken in conjunction with the cultural and linguistic evidence, limit Papuan influence on Torres Straits to the area of Papua from the estuary of the Fly westwards...It appears... unnecessary to consider the peoples east of the Fly estuary and those up the Fly River (Haddon 1935:209).

When Haddon arrived in Torres Strait during the late 19th century the adjacent New Guinea coast was occupied by Kiwai-speaking Melanesian
populations (Eley 1988 cited in Barham 2000:235). The majority of ethnographic information recorded about the Papuans of the southern New Guinea coast predominantly refers to the Kiwai, and particularly those populations who inhabited the Fly Estuary (Haddon 1935:210-236; Landtman 1927). Members of the Cambridge Expedition team spent one month on Kiwai Island in 1898, which between 1910 and 1912, also became the major focus of Finnish anthropologist Gunnar Landtman (1917, 1927, 1933). More general information about the peoples of the southern New Guinea coast is available from publications written by missionaries stationed in coastal communities during the late 19th century (Chalmers 1887, 1903; McFarlane 1888).

Figure 2.11 Southern New Guinea (Trans-Fly) showing language groups and places referred to in text (after Singe 1979:72 and Barham 2000:232)

Based largely on oral histories, however, the current understanding is that the coastal Kiwai only came to occupy the areas west of the Fly Estuary, including Kadawa, Katatai, Parama, Mawatta, Tureture and Mabudawan, in the late 19th century due to the establishment of government stations and police posts (Laba 1996; Lawrence 1991; 1994; Wagner 1996) (Figure 2.11). Other areas on the coast west of the Fly, such as Buji (directly adjacent to Boigu Island) and Sigabaduru (located adjacent to Saibai Island), were similarly occupied in the late 19th century by Agob speaking
people. Although oral histories from Buji and Sigabaduru link these groups with the inhabitants of both Boigu and Saibai, there is no indication that the populations of the Northern Torres Strait Islands originated from these adjacent mainland Papuan groups (Lawrence 1994:298-299).

Architecture and social organisation

On Kiwai Island, Chalmers (1903:117) observed several villages and estimated the population of around but probably less than 4000 people. Housing was substantial and had a variety of forms, including long houses which were either communal dwellings or men’s houses, and smaller huts which were erected at gardens or fishing places to provide temporary shelter during subsistence excursions (Chalmers 1903; Landtman 1927). The basic social unit among the Kiwai was the exogamous patrilineal totemic clan (Haddon 1935:212; Landtman 1927:193). Each person had one totem that could be a land or sea animal, a mythical animal, a plant, a seasonal wind or a manufactured object. Landtman (1927:168) interpreted the totemic system of the Kiwai to serve more of a social function as opposed to a religious function, and identified that men, through such activities as hunting and harpooning, obtained some level of social distinction. Land, including individually owned gardens, was inherited through the male line. The entire island of Kiwai was owned and divided among different villages. Within the boundary of different villages land was divided among individual owners ‘except large swamps, which generally belong to the whole community, and certain plots of land which may be owned by a group of people together’ (Landtman 1927:196). However, ditches often separated garden plots belonging to different people (Landtman 1927:196).

Ceremony and religion

The most characteristic feature of Kiwai ceremonial life noted by Landtman (1927:298-320) was the belief in mythical figures and cult heroes. The distribution and similarities of stories of cult heroes in Cape York, the
Torres Strait and southern New Guinea has previously been mentioned in reference to the culture hero *Kwiom*. However, there were other similar culture heroes such as *Soida* (New Guinea) or *Sida* (Torres Strait); who,

Everywhere is regarded as a benefactor: he instructed people in language, he stocked reefs with the valuable cone shell and notably he introduced plants useful to man (all versions), but for personal reasons he gave more food plants to some islands than to other. There is very close association between the sexual act and agricultural fertility (Haddon 1935:377).

At Parama Island at the southern mouth of the Fly Estuary Gill (1876:221) observed similar screens to the *wows* observed at *kwod* sites on several islands throughout Western Torres Strait. Landtman (1927) also recorded several important cults and ceremonies practiced by the Kiwai, including plantation fertility rites, garden increase rites, skill in hunting dugong and in fighting, turtle hunting, sexual instruction for young boys and girls and success in yam growing.

**Material culture**

The recorded material culture of the Kiwai includes body ornaments, weapons, domestic items, sound producing items, ceremonial items and the tools used in both agricultural and marine subsistence strategies. Body ornaments described include headdresses, ear and nose weights of wood and bone, necklaces and chest ornaments and armlets made from shell. The crescent-shaped pearl shell chest ornament is noted as obtained from the Torres Strait, while the cone shell armlet is considered the most valuable, and the armlet made from two boar tusks was the most commonly used (Landtman 1927:25-26). Items of weaponry showed some regional variation in production and distribution. Two of the more noted weapons include bone headed arrows that only the bush people located further inland of the estuary produced, and stone headed clubs (*gabagaba*). Landtman (1927:31-32) described *gabagaba* as highly esteemed weapons of the Kiwai, and observed only two of them within the district. In the context of other stone implements used by the Kiwai, such as axes and adzes, it was suggested:
Their occurrence in the country where there are no stone at all provided by Nature (except in an isolated place at Mabudavane on the coast), is a result of the extensive traffic in various articles which in former times was carried out between the Kiwai country and the islands in Torres Strait (Landtman 1927:33-34).

Landtman (1927:32-35) mentions, however, by his time they were considered of very little value and that he never saw a stone axe or adze in use, but that they were often kept on graves or at water holes or stuck into the ground in an upright position.

The most common implements used for cutting, scraping and carving were valves of *Cyrena* sp. shell, which, along with pieces of coconut shell, were also used as spoons. Chips of shell, bamboo knives and stone, as well as fragments of boar tusks were employed for delicate cutting. Coconut huskers were made from either wood or cassowary bone. Totemic designs such as the face of a man or the figure of a man with arms and legs, were often carved into coconut huskers, while the other end of the larger implements would be shaped into a small spatula to be used for scraping out the coconut kernel (Landtman 1927:38) (Figure 2.12).

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**Figure 2.12** Kiwai coconut huskers (Landtman 1933:109)

Landtman (1927:37-39) did not record pottery as a traditional item of Kiwai material culture, but noted a number of vessels for preparing food, storage
and carrying water including large shells, coconut bowls, boxes made from bark, lengths of bamboo and gourds which were used specifically for holding lime. Chalmers (1903:008) makes an interesting remark concerning the use of pottery in cooking among the Kiwai;

Thinking I should be doing a great good, I brought over twenty Motuan cooking pots; some I gave to the teachers, and they cooked vegetables in them, and the others I wished to exchange for curios, but they would not have them. Rather than keep them to be broken, I gave orders they should simply be given away, but even then the natives would not take them. When a Kiwai crew is at Dauan, they prefer their food roasted; and get tired of boiled rice in a few days.

The most common method of cooking among the Kiwai was roasting over an open fire or in an earth oven (Landtman 1927:37). Cooking meat and vegetables by boiling on the other hand was never practised.

Chalmers (1903:117) describes the canoes used by the Kiwai as single outriggers that are obtained from Dibiri on the mainland at the northern mouth of the estuary. He recalls the southward trade of canoes to the Torres Strait:

The large canoes obtained from Dibiri, are traded to Parama, Tureture, Kadawa and Mawata; and they trade them to Saibai, Dauan, Boigu, Mabuiag, Badu, Moa, Prince of Wales, Waraber, Damut, Masig, Stephens Island, Darnely and Murray. In all these places, the single gives place to the double outrigger, with a platform in the centre, and a large amount of ornamentation fore and aft; these canoes are used for dugong fishing, and for going on long journeys.

Subsistence

Subsistence activities of the Kiwai described in detail by Landtman (1927) include inland hunting, horticulture and the procurement of turtle and dugong from offshore reefs. The principal animals hunted by the Kiwai were the wild boar, wallaby, cassowary, large snakes, goannas and young crocodiles (Landtman 1927:111). The use of bows and arrows and spears were common hunting methods, as were dogs used for hunting pigs, cassowaries and wallabies. Chalmers (1903:119) claimed that agriculture was widely practiced by the Kiwai; ‘everywhere they cultivate the soil and
plant taro, yams, sweet potatoes, bananas, and have growing coconuts, bread-fruit, mango and many other fruit bearing trees’. He also remarks that as the island is very low and swampy, drainage was an important part of cultivation, with drains being well cut and ranging from 30cm to almost 1m deep (Chalmers 1903:119). Landtman (1927:75-106) recorded in considerable detail the methods and procedures used in the cultivation of taro, sweet potato, banana, coconut, sago and sugar cane. Gardening tools were few including only wooden digging sticks (often shaped or carved) and baler shell hoes. The chewing of betel nut (*Areca catechu*) and lime was uncommon among the coastal Kiwai, but was more regular in the bush tribes located further inland of the Fly River (Chalmers 1903:121; Landtman 1927:110).

Harris’s (1977) recent investigation of economic strategies in the Papuan coastal zone west of Daru indicated that the gathering of wild plant foods may have played a more important role in the subsistence economy of coastal Papuans than portrayed by Landtman (1927). Harris (1977:449) suggested that many plants had a dual status as wild and tended or cultivated, including numerous fruit trees, kernel-yielding trees (*Terminalia catappa*, *Aleurites molucana* and *Canarium* sp.) and wild herbs such as ginger. He also reported that according to his informants, wild plant foods such as cycads (*Cycas circinnalis*) and the edible mangrove (*Bruguiera gymnorrhiza*) until recently been used as staple foods in the coastal villages of Mabaduan, Sigabadura and Buji (Harris 1977:449):

In general, traditional subsistence in the littoral woodlands and swamps of the Papuan coastal zone appears to have been based on limited horticulture including the tending of semi-wild species, on the gathering of wild plant products and shellfish, on fishing and to a lesser extent turtling and dugong hunting, and on the hunting of wild pigs, wallabies, other small marsupials, lizards, snakes, land birds and waterfowl (Harris 1977:451).

Landtman states that for the Kiwai ‘the spearing of fish alongshore is an every day occupation’ (1927:143). Using multi-pronged spears, fish were also speared on the outer coral reefs ‘before the more serious task of capturing dugong and turtle begins’ (Landtman 1927:143). Spearing fish
in creeks was also common and was assisted by the setting of numerous traps and dams made of saplings, vines and palm trunks placed at the creek entrances to take advantage of shifting tides and currents. Small fish were also procured through the use of conical shaped baskets (Landtman 1933: Plate 607). Traditionally, fishing nets were not used by the Kiwai, although line fishing using coconut fiber and hooks fashioned from either a small stick, fish spines or turtle shell was common practice (Landtman 1927:142). Women collected shellfish and crabs at low tide on the beach and in the marshes.

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**Figure 2.13 Kiwai fish scoop (Gónea) (Landtmann 1927:142)**

During the day, turtles and dugongs were harpooned from canoes while sailing out on the reefs, and at night the animals were harpooned from platforms constructed on the reef flats. Both methods required the use of a large spear with a detachable harpoon head, called a *wapo*. Thus, capture techniques were very similar to those used in the Torres Strait. Indeed Landtman (1927:127) suggests that the practice of harpooning turtle and dugong along the coast of New Guinea was learnt from the Torres Strait Islanders, a theory corroborated further ‘by the fact that harpooning is not practiced at all by the groups of the Kiwai people who live further to the east in the delta of the Fly’.
Discussion

From this discussion on the ethnographic information recorded throughout Torres Strait and the coastal regions of the adjacent mainlands, this chapter has demonstrated that some areas experienced considerable attention from explorers and late 19th century ethnographers alike, while others were subject to more fleeting and even second-hand observations. The Eastern Islands, for example, became a major focus of the Cambridge scholars during the teams’ five-month stay on Mer in 1889 (Herle and Rouse 1998). Having also stationed themselves on Mabuiag for a period of one month, reference to culture and way of life in the Western Islands also features prominently in the Haddon volumes. In contrast, less information was recorded for the Central and particularly the Northern Islands, which also appeared to be situated outside of the major navigational paths of vessels during much of the 19th and early 20th centuries. The implications of this documentary emphasis on the Eastern Islands in the context of the archaeology of horticulture in Torres Strait are discussed in Chapter 3.

In the context of marine subsistence, however, by the late 19th century and the beginning of sustained European presence in the region, ethnographic records illustrate that the coastal zone was a major focus of resource exploitation throughout Torres Strait and on the adjacent mainland coasts. In each of these regions a variety of marine resources were exploited including intertidal shellfish and fish, and the larger often offshore resources of turtle and dugong.

The subsistence activities that received most attention in the early ethnographies were dugong harpooning and turtle hunting. Both of these activities are characterised by excitement and danger, and accorded prestige and status to the men who were successful in capture. The procurement of both dugong and turtle, however, was characterised by a degree of seasonality. In the case of dugongs, their availability also varied depending on conditions such as water depth and visibility, and the
distribution of seagrass beds for feeding. In contrast, the more mundane, female orientated, activities of fishing and particularly shellfish gathering, received very little attention, despite recognition of the facts that both resources were available all year round and that their procurement was a daily activity. Although a diverse range of mollusc and fish species may have been procured as staple dietary resources, information on the biodiversity of marine habitats, abundance, availability and range of exploited species is unavailable in the ethnographic record.

Common technologies were used in marine subsistence activities throughout Cape York, Torres Strait and southern coastal New Guinea, including the spear and the hook and line. However, the documentary evidence reveals a degree of regional variation and intensification of maritime subsistence technologies, such as fish traps. In the Western Torres Strait the Kaurareg constructed temporary traps in creeks and streams from materials such as branches and mats. The extensive stone fish traps observed on several islands in Torres Strait represent a more permanent and intensified marine procurement strategy. The construction of these traps implies the presence of a large and permanent labor force, and also a degree of social organisation and cohesion among the islands’ population. On Mer, for example, both the observed sedentary mode of life and the high degree of social structure demonstrated by clan divisions, property rights and cult following, provide a supportive base for such a time-consuming and labor intensive undertaking.

Within the ethnohistorically recorded information on trade and exchange throughout Torres Strait and the coastal regions of the neighbouring mainlands, the distribution of the dugout canoe was undoubtedly viewed as the key element. These vessels allowed the distribution of goods and materials, enabled the exploitation of distant supplementary and staple resources and fostered social connections through intermarriage and kinship relationships, as well as raiding and warfare.
However, from the above discussion it is clear that historically trade in Torres Strait was viewed in terms of a series of commercial networks and transactions that primarily facilitated the dispersal of goods and material items. Lawrence (1994:289) has recently pointed out that this simplistic or generalised view of an inflexible and unchanging system of customary exchange throughout Torres Strait is ultimately incorrect. It was not until the ethnographies recorded towards the end of the 19th century that an understanding of the social networks and kinship systems underlying the relationships between Torres Strait islanders, Cape York Aborigines and Papuans were adequately recognised and detailed (Haddon 1904, 1908; Landtman 1927; Thomson 1933, 1934).

What is more easily extracted from the early accounts is that the nature of the trading relationships varied geographically, depending on the inter-island and island-mainland distances involved (Harris 1979:85). Another discernible feature of the trade systems documented during the early period of European occupation is the relationship between resource availability or abundance and increased role in exchange. Lawrence (1994:271) notes that due to their greater access to natural resources ‘certain villages and islands possessed greater facilities than others and were in a position to exchange their surplus production for scarce resources, thereby dominating intra-insular trade’. This was apparent on an inter-island scale between the Central and Eastern islands, where the inhabitants of the former, relatively infertile islands provided turtle and valuable shells for vegetable foods from the inhabitants of the latter, more fertile islands.

The above discussion demonstrates that at the time of sustained European contact in Torres Strait in the late 19th century, regional trade was dominated by alliance and exchanges with coastal Kiwai speaking groups located in the Fly Estuary and along the southwestern coast of New Guinea. The Kiwai learnt to harpoon turtle and dugong from Torres Strait Islanders, this practice being unknown to the groups that lived further east along the Fly Estuary (Landtman 1927:127). The Kiwai
groups located west of the Fly Estuary only occupied the coast in the late 19th century and so, as initially highlighted by Barham (2000:235), the ethnohistorically described trading systems between the Torres Strait and these coastal Kiwai must have only originated during this time. Lawrence (1998:13) argues that from the 1850s onwards the coastal Kiwai dominated older established exchange networks, becoming the mediators between coastal Papuans and Islanders as well as controlling the fish-for-garden produce exchange between themselves and their coastal hinterland neighbours.

The absence of trading groups at points along the southwestern Papuan coast prior to the late 19th century is extraneous to the earlier emergence of maritime based trade in the region, particularly as the Fly Estuary seems to be the origin of both the Kiwai and double outrigger canoes hulls. In other words, evidence for movement and interaction of peoples and the operation of trading networks within the Torres Strait and between New Guinea and Cape York Peninsula was possible well before the migratory expansions of Kiwai groups along the southwestern Papuan coast during the 19th century. Indeed trading relationships between Torres Strait Islanders and more inland Papuan groups has been suggested by several sources (Lawrence 1994; McCarthy 1939-40; Swadling and Aniamato 1989:230). This is particularly well documented by oral history evidence from riverine groups living along the Pahaturi, Binaturi and Oriomo Rivers which suggests the Bine- and Gizra-speaking groups were in contact with Torres Strait Islanders before the Kiwai people settled along the coast;

The oral accounts stress that access to the Binaturi River enabled the Masingara people to gain and then maintain contacts with the Torres Strait Islanders...After the establishment of initial contacts, the Islanders would come to the coast in their canoes to exchange with the villages inland. It was after this that the people of Masingara and Kunini villages began to acquire and use ocean going canoes (Lawrence 1994:309).

Lawrence (1994:307, 309, 311, 319) concludes from oral history evidence that contact between the Central and Eastern Islanders and coastal Papuans, prior to the westward movement of the Kiwai along the coast,
were initially the results of both accidental and deliberate voyages of Papuans on bamboo rafts. He suggests that as the riverine Papuans became more knowledgeable and skilled in sea faring technology, contact became easier and more regular, and even more so after the coming of colonial administration (Lawrence 1994:319). Thus, although the documentary record is limited, the nature of oral history evidence indicates the possibility of links between Torres Strait Islanders and more interior peoples of southwestern New Guinea before the more coastal dominated systems detailed by ethnographies and other historical accounts came into force.

**Conclusions**

The first section of this chapter demonstrated that the Torres Strait Cultural Complex, encompassing Cape York Peninsula, the Torres Strait Islands and southern New Guinea, operated within a region characterised by broad palaeogeographic and climatic similarities. The Torres Strait Islands emerged by the middle of the Holocene after rising sea levels flooded the Torresian Plain, and today are commonly divided into four main bio-geographic groups based on similarities in geology, topography and floral and faunal diversity. On either side of the Strait the shared palaeogeographical history of southwestern Papuan coast and Cape York is demonstrated to a degree by floral and faunal affinities, each vegetated by open canopy woodland species and populated by common mammal and avian species. Equally, the diversity of these regions is displayed by landscape, geomorphology and relief, with Cape York dominated by rocky headlands, sandy beach flats and saltpans, and southwestern Papua by swamps, poorly drained alluvial plains and low islands.

For Australia and Papua New Guinea, archaeologists have established reliable chronologies of human occupation and have developed a broad understanding of environmental changes and how these relate to the timing of human occupation, and the nature of settlement patterns and subsistence economies. In contrast, the environmental record and in
particularly the development of the marine environment of Torres Strait, has only recently become the focus of research. Results have demonstrated that extensive reefs similar to the modern Torres Strait reefs had developed by 5000 years ago and progressed seawards with the lowering of sea levels. A similar mid-Holocene time frame is also estimated for the emergence of mangrove communities around many of the larger islands. However, investigations on high islands including Mer, have indicated that the development of fringing reefs, reef flat biotypes, and the formation of prograded beach environments may not have occurred until around 3500 yrs BP due to limited availability of sediment. Various implications of these findings for the timing of human occupation of the Torres Strait islands have been identified. These include the delayed development of occupiable land surfaces, and the restricted availability of coastal resources including inshore molluscan species, nearshore fish as well as offshore turtle and dugong populations, until at least 3500 yrs BP.

In spite of certain biases and shortcomings, the broader picture presented by the early Torres Strait ethnographies described in this chapter illustrate that towards the end of the 19th century the islands formed the central geographic cores of a trans-Strait socio-economic maritime network. This encompassed the Aboriginal communities of coastal Cape York and the peoples of the southern New Guinea coast, and was made possible by the double outrigger canoe as the common medium of maritime voyaging. Linkages through formal trade, warfare, inter-marriages and regular, less informal inter-island and island-mainland movements fostered a degree of cultural continuity across the Strait and between the islands and adjacent coasts. These are demonstrated by material culture, subsistence strategies and technologies as well as by less tangible forms of evidence including language, social organisation, ceremony, mythology and associated beliefs such as hero cults.

However, just as obvious as the cultural continuity, is a significant degree of cultural discontinuity within the Torres Strait Cultural Complex. This is manifested in distinct regional and localised forms of material culture,
subsistence practices, language and in the socio-religious realm. Due to maritime voyaging technologies distances proved no barrier to the interaction of the region’s occupants. However, it was perhaps also the distance between islands and island groups and island groups and the adjacent mainland groups, which fostered the development of unique cultural identities both within Torres Strait and across the broader region. This emerging theme of cultural continuity and discontinuity across Torres Strait is demonstrated further in Chapter Three, which provides a description on the archaeology of the Torres Strait Islands and the adjacent northern and southern coasts. This chapter pays particular attention to the archaeological evidence for occupation, subsistence and trade in Torres Strait, and as indicated in the discussion above, identifies discrepancies between the early ethnographic records and the region’s emerging archaeological record.
Chapter 3: The Archaeology of Settlement and Subsistence in Torres Strait

In spite of its rich historical record and the comprehensive information recorded during the Cambridge Anthropological Expedition in 1898-99, the Torres Strait Islands remained archaeologically unexplored well into the late twentieth century (Carter in press). It was not until the 1970s that the first preliminary surveys and excavations were undertaken, with almost another decade passing before systematic investigations in the Torres Strait commenced. In contrast, archaeological research in New Guinea and Australia was already vigorously underway by the 1970s, with the results of intensive fieldwork, radiocarbon dating and other analyses providing evidence for the development of major regional models on human occupation, migration, subsistence and exchange (for example Birdsell 1977; Bowdler 1977; Golson 1977; Jones 1973, 1979; Kirk and Thorne 1976).

This chapter outlines the history and major themes of archaeological research undertaken in the Torres Strait, paying particular attention to the themes of this thesis. The first half of this chapter undertakes this task in the context of the timing of human occupation, evidence of marine and horticultural subsistence and evidence for trade and linkages. The remaining half of the chapter outlines the results of archaeological research carried out in northern Queensland and southern coastal New Guinea, and identifies results of relevance or consequence to the timing of occupation of Torres Strait and the development of its subsistence economies and trade networks.

The Archaeology of Torres Strait: A Prelude to Research

In 1971 a Torres Strait Symposium was held by the Research School of Pacific Studies at the Australian National University, representing the first Australian gathering of professionals and academics with specialist
knowledge on the natural or cultural history of the Torres Strait. Around 80% of the Symposium’s participants were from scientific backgrounds, including the biological sciences, forestry and botany, geography, entomology, geomorphology, human biology and meteorology. As further evidence for the lack of archaeological interest the Torres Strait had received prior to the 1970s, the Symposium proceedings was devoid of any archaeological discussion based on research undertaken within the Torres Strait (Walker 1972). Authors referred only to possible scenarios for the region’s prehistory through knowledge of the occupation and economic and cultural development on the Australian and Papuan mainlands (Golson 1972). It is also clear, however, that at the time there was a general lack of knowledge about the natural history of Torres Strait. This is pointed out by volume’s editor who noted, that ‘most authors refer to the dearth of basic information which limits their confidence in their conclusions’ (Walker 1972:vii).

As a prelude to the commencement of archaeological research in the region, the 1971 Symposium highlighted the need to address several basic questions. These included the antiquity of human occupation of the Torres Strait, the nature of traditional subsistence systems and the development of linkages between Torres Strait Islanders and the occupants of the mainlands to the north and south. The degree to which the archaeological evidence might support or refute the ethnohistoric record for the region was also viewed as an important component in developing a greater understanding of the prehistory of Torres Strait (Moore 1972; Beckett 1972; Golson 1972). However, perhaps the most significant outcome of the Symposium was the inception of the bridge and barrier debate, which questioned the role that the Torres Strait played in the emergence of the divergent subsistence economies to its north and south. This is encapsulated by Walker (1972:405):

Indeed, its waters have provided food resources and its Islanders, though developing some cultural individualities of their own, have been strongly influenced by the peoples on one side of the Strait or the other. Yet the contrast between horticultural man to the north and hunter-gatherer to the south remains, starker and more
perplexingly than anywhere else in the world. For man’s languages, and even his genes, the Strait has provided a bridge but for his subsistence technique, a remarkably strong and persistent barrier.

A comprehensive overview of archaeological investigations and research in Torres Strait has recently been compiled by Barham et al. (2004), with a useful synthesis on the region’s archaeological heritage also provided by McNiven et al. (2004). The following section is largely derived from the same primary sources used by these authors, although presents a more specific review of the archaeology of Torres Strait in light of the major objectives of this thesis. The exhaustive discussion on the archaeology of Torres Strait by Barham et al. (2004) refers widely to the published results of the MIAP (Carter 2001; 2002; 2003b; Carter et al. 2004a). Consequently, some of the major conclusions offered in the Barham et al. (2004) review on the antiquity of human occupation, the timing of horticultural development and the evidence for trade and exchange, are largely based on the research conducted as part of this thesis.

As the primary aim of this chapter is to establish the nature of the archaeology of Torres Strait at the commencement of the Murray Islands investigations in 1998, the major hypotheses established by Barham et al. (2004) will not be included or discussed here. This is also the case for hypotheses recently generated from the results of excavations on Badu (David et al. 2004), although some of their results are mentioned below. Some of the more recent conclusions on the archaeology of settlement and subsistence in Torres Strait generated by other researchers are considered in Chapter 10, where a discussion and main conclusions based on the results of the Murray Islands investigations are considered within a broader regional context.

The Timing of Human Occupation

Between the commencement of archaeological research in the Torres Strait in the early 1970s (Moore 1979; Vanderwal 1973a) and the MIAP investigations of 1998, a total of 16 radiocarbon dates had been obtained
for archaeological contexts throughout the region (Barham et al. 2004: Table 1A and Table 1B). Four of these dates were from shell middens on Muralag and Evans Bay on Cape York, as well as a rockshelter at Red Island Point on the mainland. From the results Moore (1979:14) concluded that the excavated cultural assemblages from Muralag and Cape York were broadly consistent with the ethnographic record. From a quantitative analysis of the assemblage he identified two periods of intensive occupation – the last 100 years or so before European occupation and between 600 and 700 years ago. He also suggested that the lateness of the radiocarbon dates did not necessarily imply that occupation was a recent occurrence, but that the results were more a product of geomorphology. Moore (1979:15) concluded that earlier sites may be located either further inland or on the larger off-shore adjacent islands where coastlines have been less modified by progradation.

Two of the radiocarbon dates were derived from excavations on Mua and Nagi, with the primary objective of determining whether there was any evidence for occupation of Torres Strait prior to 700 years ago (Rowland 1984, 1985). Charcoal from the excavation on Long Beach, Mua Island produced a modern date (less than 250 years BP) (ANU-3025). The Nagi excavation revealed two occupation layers, the lower one featuring a fire pit. Charcoal from a depth of 65-67cm produced a result of 730 ± 80 years BP (ANU-3026). These results led Rowland (1985:129-130) to conclude that excavated sites in the Torres Strait have shown no clear evidence of occupation prior to 700 – 800 years ago. He emphasised, however, that at the time of European contact Torres Strait Islanders displayed a sophisticated and unique cultural system and the question of such a development occurring within 800 years is equivocal (Rowland 1985:130). This researcher postulated that given the complex cultural and physical history of the islands, a human history from at least 6000 years ago and perhaps well into the Pleistocene was possible (Rowland 1985:123).
The majority of radiocarbon dates obtained for Torres Strait before the MIAP were predominantly from the Western and Northern Islands (Mua, Mabuiag and Saibai). These dates were part of the first long-term investigations into the archaeological and paleoenvironmental history of prehistoric settlement and subsistence in Torres Strait. Known as the Torres Strait Research Project and led by David Harris, who was based at University College London (UCL) at the time, the aims of this research, as most recently defined:

....were to establish a regional chronology of Holocene sea level and coastal dynamics and then to reconstruct palaeoenvironmental settings at local scales...appropriate to modelling both horticultural and coastal resource aspects of the archaeological record (Barham et al. 2004: 14).

As part of the UCL team, Ghaleb (1990) obtained three charcoal-derived dates from excavated midden contexts at Gumu on Mabuiag. The radiocarbon dates ranged from 1050 ± 100 (Beta-21386) to modern (Beta-21384). As another member of the UCL team, Barham obtained three radiocarbon dates from midden contexts on Mua and four from middens on Saibai (Barham 1981; Barham et al. 2004:13). Three of the Saibai dates were from midden deposits underlying relict mound-and-ditch field systems at Woam, and one was from a dense midden with shell, bone and flaked stone near the Saibai village. The charcoal sample from the latter site produced a date of 410 ± 80 years BP (Beta 13481) (Barham 1999).

For the Woam excavation the three dated samples consisted of paired charcoal and shell from a depth of 55-60cm, and a second shell sample from the same depth. The radiocarbon results varied in age from 780 ± 70 BP (Beta 3614) and 2890 ± 60 BP (Beta 6885) for the paired charcoal and shell dates respectively, and 1420 ± 60 BP (Beta 6934) for the separate shell sample. Barham and Harris (1985:277) suggested a number of reasons for the discrepancy in the radiocarbon dates, including a low rate of deposition, spatial variability in the deposition of food refuse, discontinuous use of discrete areas of the midden surface over time and mixing or reworking of the midden surface. They also acknowledged that
the lack of environmental isotopic data for the region proved problematic in
the application of calibration curves established from work elsewhere
(Barham and Harris 1985:264). Considering such factors it was concluded
for the Woam site that 'a significant component of the basal midden
stratigraphy dates from c. 700 radiocarbon years BP, and represents a
maximum age for the mound-and-ditch system (Barham and Harris

Barham's (1999) more recent report on the results of investigations on the
Saibai mound-and-ditch systems provides a review of the earlier data.
From coring of swamp facies and the reconstruction of sedimentary and
pollen records, the recent results have led to revisions of the chronological
data for the antiquity of human occupation on the island and the timing of
the emergence of the horticultural systems. From the evidence it is
interpreted that by 3000 yrs BP ecological adjustments to Holocene sea
level changes had caused large-scale mangrove dieback and a transition
to *Eleocharis*-dominated swamp throughout the interior swamp systems of
Saibai. The last stages of swamp infilling occurred around 2500 yrs BP,
while a further unique sedimentary event commenced around 1200 yrs BP.
This involved direct sedimentation from the clayland into swamps leading
to a rejuvenation of sediment accumulation rates further favouring the
development of sedge-swamp plant communities. The following
conclusions were made;

The combined on-site archaeological radiocarbon dates, and off-site
palaeoenvironmental reconstruction, provide sufficient evidence to
now model first occupation of the northern Torres Strait islands at
some time after 2500 yr BP. By this time clayland areas were free
from tidal incursion – a process which had commenced in the
preceding 1500 – 1000 yrs. Also, higher local habitat and resource
diversity existed on Saibai, than at any time since 6500 yr BP. The
development of agricultural mound-and-ditch systems, probably
also involving water management and well construction, dates to
some time after 1200 yr BP, and therefore significantly post-dates
the onset of sedge swamp development by at least 1000 yr
(Barham 1999:101).

Barham's (1999) investigations on Saibai also served to demonstrate an
apparent association between the timing of human occupation and the
nature and development of island physiography. As discussed in the previous chapter, Barham (2000) concluded that maritime exploitation of coastal resources (based on ethnohistorically documented techniques and strategies) may have also been limited owing to a time-lag in reef flat formation and resource habitat stabilisation. Therefore the demonstrated 2500 year time-depth for human occupation of the Torres Strait is broadly consistent with the estimated 2000 - 3000 year delay in reef and resource habitat development after shoreline transgression of the Strait around 6000 yrs BP (Chapter 2).

**Summary**

The majority of the radiocarbon dates produced from the initial investigations into the antiquity of human occupation of Torres Strait resulted in conclusions that occupation was broadly consistent with the 19th century ethnographic record of the region (Moore 1979; Vanderwal 1973a). However, the suspected existence of older occupation sites perhaps located inland and away from the destructive affects of wind and water was also voiced by several researchers (Vanderwal 1973a; Moore 1979; Rowland 1984). Surprisingly, the shallow nature of the occupation deposits was not offered in explanation for the recent time-depth of human occupation. In their recent synthesis paper, however, Barham et al. (2004:35) have explained that there is a poor relationship between depth and age of archaeological contexts across Torres Strait, with more recently obtained samples from depths of 40 - 60cm producing radiocarbon dates that span the full range of known Holocene occupation of the islands.

Barham’s (1999) recent assertion concerning the reliability of the Woam midden radiocarbon results provided a new benchmark for the antiquity of human occupation of the Torres Strait. The estimation of at least 2500 years of human occupation in the Torres Strait for the first time allowed consideration of the scenario that the complex cultural, economic and social systems recorded in the region at the time of European contact had originated and developed during the early Holocene. As initiated by
Barham (1999, 2000) the expansion of the human chronology of the Torres Strait also provided the opportunity to consider the archaeology in the context of regional subsistence strategies, human chronologies and trade networks previously established for the adjacent Australian and Papuan regions.

The Marine and Horticultural Subsistence Economies

As a result of widespread concern expressed by Torres Strait Islanders ‘that significant domains of traditional knowledge and cultural heritage sites and place were being lost or jeopardised by uncontrolled development and other pressures associated with social change’, from 1996-1998 the Culture Site Documentation Project (CSDP) was conducted for Torres Strait (Fitzpatrick et al. 1998; McNiven et al. 2004:75). The penultimate aim of this project was ‘to establish an enduring culture site management program with a detailed database and methodology Islanders could use for conservation and development planning throughout the region’ (McNiven et al. 2004:75).

The culture site database was constructed through a comprehensive literature review, including ethnographic and archaeological literature recorded for Torres Strait (see McNiven et al. 2004:76 for primary source details), and the archaeological sites inventory for Torres Strait held with the Queensland Environmental Protection Agency (EPA). Historical texts such as ships logs, missionary accounts and local history and stories were also utilised. No field surveys were undertaken as part of the CSDP.

Based on information tabulated from the literature categories, a total of 621 archaeological sites (known and potential) were recorded for 42 islands (McNiven et al. 2004:76). The greatest number of sites were recorded for Boigu and Saibai in Northern Torres Strait with the Eastern Islands recording the second highest number. These are followed by the Western Islands of Mabuiag and Mua, with the Central Islands and the Muralag group located in the southwest closest to Cape York recording the
lowest number of sites. Twenty-one different site types were identified (see McNiven et al. 2004: Table 1). The two most common archaeological site types are horticulture/grove/tree sites (n=174) and stone walled fish traps (n=115). These are followed by arrangements of shell, bone and/or stone (n=103), old village sites (n=71), burial/skull locations (n=62) and shell middens (n=51). Arrangements of shell, bone and/or stone are noted as the most widespread site type, found on 25 islands (McNiven et al. 2004:77). Table 3.1 provides a list of the frequency of selected site types associated with subsistence and site occupation.

Table 3.1 Selected frequencies of site types for Torres Strait identified as part of CSDP (1996-1998) (after McNiven et al. 2004:77).

Interestingly, the researchers noted vast differences between this data and the government records. They explained that only half the 42 islands with archaeological sites have registrations with the EPA (McNiven et al. 2004:78). The majority of these are from Saibai and Mua, which is concluded to reflect the focus of past archaeological research (see above discussion). As the most obvious discrepancies in the data:

Three-quarters (76%) of the EPA sites are shell middens. In contrast, no stone tool quarries/sources, ochre quarries, clam shell water holders, and 'other' stone structures have been registered. Similarly, only 10 of the 115 fishtraps and 12 of the known 174 horticulture/grove/tree sites have been registered (McNiven et al. 2004:78).

A number of reasons are offered for these discrepancies in registration, including the different archaeological perceptions and abilities of recorders, as well as the specific interests of researchers and their abiding by
community wishes in avoiding sites of special significance (McNiven et al. 2004:78). However, based on the results of the CSDP a number of implications for the nature of archaeological evidence for marine and horticultural subsistence in Torres Strait arise.

**The Evidence for Horticulture**

Firstly, at initial glance and contrary to the registered archaeological site record for Torres Strait (prior to 1998), the CSDP data suggests that sites indicative of past horticultural practices may be as abundant as the evidence of past marine based subsistence strategies, i.e. shell middens. This seems to be the case particularly for the Northern Islands, which recorded the highest incidence of horticultural related site types. As demonstrated by Table 3.1, however, this appears to be considerably less so for the Eastern Islands, which recorded the third lowest number of horticulture/grove/tree sites. This result is surprising in the light of Haddon’s (1912) view that horticulture was most intensive in the Eastern Islands. However, it does support a component of Harris’s (1977) model of subsistence strategies across Torres Strait, which was based on documentary evidence and early fieldwork (Harris 1975). Harris (1977:444-45) postulated a north-south subsistence gradient across Torres Strait, where the greatest dependence on horticultural production occurred in the north, was of lesser importance on Badu and Moa, and even more so on the islands closest to the Australian mainland, where ‘plant foods were obtained mainly by gathering’.

The extensive relict mound-and-ditch systems on Saibai recorded by Barham (1981) were located inland of canals previously recorded by Harris (1975). The first of these systems was located 2.5km south of the present village and had a 30m wide well located in the centre. Covering a total area of 1.9ha, the garden features varied in size and shape from 40m long rectangular formations to circular mounds with a diameter of 5m. A ground survey revealed large numbers of quartz flakes, two irregular shaped stones of leucocratic biotite granite and an isolated shell scatter of
*Anadara* sp. and *Syrinx aruanus*. Based on these results of the 1980 field season Barham (1981:19) concluded ‘both the gardens and the well construction suggest considerable organised labour inputs, and given optimal sedimentary facies, the Saibai sites represent the most significant evidence for land use history within Torres Strait...’. In a follow up field season it was also identified that the relict mounds and ditches on Saibai were restricted to the interior of the western side of the island and were located on clayland areas lying 0.5 - 3.0m above the high tide mark and beyond the limits of seasonal inundation.

In contrast to Vanderwal’s (1973a) meager findings on Yam in the Central Islands, Neal (1989) recorded several sites within the three areas surveyed. These included a number of linear, curvilinear, circular and semicircular stone structures and stone cairns averaging about 25cm in height and 1-1.5m in diameter. Collectively the stone arrangements were interpreted ‘as structural features forming part of a very extensive relic horticultural system’ and included garden boundaries, pedestrian pathways, drainage channels, retaining walls as well as less spatially patterned piles of stone gathered up during cultivation procedures (Neal 1989:9). Similarly, on Mabuiag Neal (1989) recorded five sites comprising a number of stone arrangements including stone cairns, and circular, semicircular, curvilinear and linear stone arrangements. At site MABUIAG 3 where a rock wall 15-30cm in height ran parallel for 30-40m to a creek gully, Neal (1989:6) interpreted the structure as evidence of water management techniques associated with nearby horticultural systems. However, Barham et al. (2004:21) note that the location of the site on a ridgeline suggests that the stone wall may equally represent marine hunting lookouts or boundary markers, as recorded by Moore (1979:153, 272-273).

Based on this evidence from the Northern and Central Islands as well as a more substantial review of the archaeological evidence from Torres Strait, Barham et al. (2004:45, Table 3) have identified three main site categories of archaeological features indicative of horticulture in the region: 1)
constructed mound-and-ditch systems, 2) linear and curved linear mounds, and 3) complexes of stone arrangements and stone cairns. Of relevance to the investigation of prehistoric horticulture on the Murray Islands detailed in this thesis, Barham et al. (2004: 46) point out that ‘once extensive areas of mound-and-ditch systems are considered, the evidence for prehistoric agriculture/horticulture, and the geographic pattern, shifts considerably’. There is no ethnographic evidence for the use of these mound-and-ditch horticultural systems in the Eastern Islands, which appear to be restricted to Saibai, Boigu and Dauan, adjacent areas of lowland Papua New Guinea (see discussion below), Mabuiag, and on Badu and Mua in areas associated with post-missionary settlement (Barham et al. 2004:46). As explained:

At a simple level this pattern is consistent with the geographic distribution of areas of lowland extensive enough to reward cultivation, but where wet season flooding by either fresh or brackish waters represents a problem that might be mediated by ‘raised beds’ separated by ditches (Barham et al. 2004:46).

As detailed in the following chapter, these physiographic conditions are absent from Mer, Dauar, Waier and the other high, small islands in Eastern Torres Strait. Thus contrary to Haddon’s (1912:144) portrayal of the Eastern Islanders as the ‘horticulturalists’ of Torres Strait, the emerging archaeological picture suggests that evidence for horticulture is most visible in the Northern Islands, were gardening was generally regarded as considerably less important to the late 19th century subsistence economy. However, apart from the mounded topography of the sites themselves and the associated ditches and wells, excavation in the Northern Islands has failed to recover macro floral remains of cultivated species or artefactual evidence associated with horticulture.

As illustrated by the ambiguous results of three stratigraphically consistent samples extracted from the basal deposit of the Woam midden (Barham and Harris 1985), the dating of horticultural sites in Torres Strait has so far been problematic. Although recent lithostratigraphic analyses of the Saibai swamp has rectified this chronological discrepancy (Barham 1999), this provides a useful indicator of the potential problems associated with the
dating of archaeological remains extracted from mounded horticultural features, and particularly where mound construction occurred after midden deposition.

Thus the results of archaeological fieldwork in the Torres Strait during the 1980s refuted Harris’s (1977, 1979) suggestion that horticulture was most intensively practiced on the small, high rocky islands of Mabuiag, Dauan and Nagi. The work conducted throughout the Northern Islands demonstrated that evidence for horticulture had to be extended to include the very large areas of Saibai, and to a lesser extent Boigu. In the context of these advancements in our understanding of the distribution of horticultural practices across Torres Strait, Harris’s (1977:456-457) belief that the relationship between island size, population pressure and diversity and availability resource habitats as a precursor to the degree or intensity of horticultural production, appears to pale.

The Evidence for Marine Subsistence

Second, the results of the CSDP also highlighted the fact that evidence for past marine-based subsistence in Torres Strait was widespread and was visible in a variety of archaeological contexts. This included surface scatters, stratified and mounded remains of shell and the bones of fish, turtle and dugong (Barham 1981; Barham and Harris 1983, 1985; Coleman 1985, 1990; Ghaleb 1990; Harris and Ghaleb 1987; Moore 1974, 1978, 1979; Neal 1989; Rowland 1984, 1985; Vanderwal 1973a), technologies used in the procurement of marine resources, such as stone fish traps and dugong bone mounds (Barham 1981; Barham and Harris 1983, 1985; Ghaleb 1990), non-secular physical formations (dugong increase and zogo sites) (Ghaleb 1990; Harris and Ghaleb 1987; see also McNiven and Feldman 2003), as well as the representation of marine resources such as fish, turtle, dugong, sharks and sting-rays in rock art (Barham 1981, 2000; Beckett 1963; Cole and David 1992).
In spite of the proliferation of shell middens in the region, however, detailed examination of an excavated marine faunal assemblage from Torres Strait is confined to Ghaleb’s (1990) research at Gumu on Mabuiag. The results demonstrated that the vast majority of excavated faunal remains consisted of marine shellfish and bone from turtle, dugong and fish. While around half of the excavated shell was highly fragmented and unidentifiable to species level, identifiable species were from a variety of habitats including sandy, rocky, coral reef, mangrove and deep water (Ghaleb 1990:270). Although species from all five habitats were identified throughout the excavations, patterns of relative abundance provided some evidence for an increase in species diversity over time in which mangrove species (Polymesoda sp. and Terebralia sp.) and reef-flat species (including Melo sp., and Tridacna sp.) were favored over sandy shore species such as Pphies striata.

Ghaleb’s (1990) investigations also demonstrated large quantities of fragmented dugong bone in association with coastal middens. According to Ghaleb’s (1990:251-252) weight calculations, turtle comprised the next most abundant fauna after dugong, and consisted mostly of fragmented remains of the carapace and plastron. Fish bone comprised the least abundant marine faunal category, and owing to its highly fragmented nature was almost entirely unidentifiable. The remains that were identified demonstrated a relatively low species diversity consisting of fish from eleven families, particularly Labridae, Scaridae and Lethrinidae, but all of which inhabit the near-shore zone (Ghaleb 1990:292). The test-pitting and excavation of coastal middens on Dauan (Vanderwal 1973a), Mua (Rowland 1984, 1985), Muralag (Harris et al. 1985) and Mabuiag (Ghaleb 1990), also demonstrated the predominance of archaeological marine faunal remains.

**Summary**

From the above discussion it is clear that the emerging picture of the archaeology of subsistence in Torres Strait is complex, involving a certain
level of contradictory evidence between the ethnohistorical records, published archaeological data and the inventory of government registered sites. Due to a lack of archaeological fieldwork in the region, the early models for the nature and distribution of horticultural subsistence in Torres Strait were based on ethnohistorical evidence (Harris 1977, 1979). With the subsequent commencement of field-based research, initially limited to the Northern and Western Islands, the inaccuracies and biases in the ethnohistorical records were revealed. As the busiest decade of research, the archaeological investigations conducted throughout the 1980s (Barham 1981; Barham and Harris 1983, 1985; Harris and Ghaleb 1987) and the recent re-examination of the data (Barham 1999, 2000) have revealed that the prehistoric horticultural economy of Torres Strait may have developed through complex interplay of a variety of factors, including island stabilisation, physiography and topography.

The archaeological evidence for the marine subsistence economy was demonstrated by early research as being widespread throughout Torres Strait and indicated by a range of evidence such as middens, discrete accumulations of marine mammal bones and stone fish traps. In spite of the abundance of middens, however, investigations of these assemblages was generally limited to species identification of the marine shell and faunal components, with minimal consideration of spatial and temporal change. Thus, the analysis of the marine faunal assemblages from the Murray Islands outlined in Chapter 6 provides an important contribution towards an understanding of the nature of archaeological subsistence in Torres Strait.

Archaeological Evidence for Trade and Linkages

A relatively small assemblage of portable cultural artefacts has been archaeologically recovered from Torres Strait. From research conducted prior to the MIAP, flaked stone (ground and unmodified) was the most prolific artefact type recorded from both surface and excavated sites. Vanderwal (1973a) reported flaked stone for Dauan, Mer, Dauar, Gabba,
Mabuiag and Pulu Islet, while unmodified lithic micro-debitage was recorded for the excavations on Cape York (Moore 1979), Mua (Barham and Harris 1987) and at Gumu on Mabuiag (Harris and Ghaleb 1987; Ghaleb 1990). In most cases only small numbers of artefacts were recorded, and in some instances such as for Mer and Dauar, a single flaked artefact was recorded. These artefacts were believed to be imported from the Western Islands (Vanderwal 1973a:184). The artefacts recorded on the Western Islands were made from local quartz and porphyritic microgranite raw materials (Ghaleb 1990; Vanderwal 1973a:182, 178-179). Quartz flakes have been observed on Saibai, where the absence of bedrock suggests that the lithic material must have been imported from Dauan or the New Guinea mainland where there are bedrock outcrops (Barham and Harris 1987; Barham et al. 2004:30). To date the only known stone quarry in Torres Strait is recorded for Dauan (Vanderwal 1973:182), which is also the same site that Haddon (1912:191-192) identified historically as a raw material source for club heads (gabagaba).

Discussions of stone as a raw material in Torres Strait by Haddon (1912:190-193) refer largely to stone-headed clubs (gabagaba), the general perception being that these implements were imported to Torres Strait from New Guinea (Allen and Corris 1977:33; Haddon 1900:244; MacGillivray 1852 II:4, 19). Recent geological sourcing analyses of a number of ethnographic and archaeological gabagaba undertaken by McNiven (1998), however, have demonstrated that the main source of raw material was within Torres Strait, and particularly from the Western and Eastern Islands. Gabagaba manufacture (Hitchcock 2004; McNiven and Von Gnielinski 2004) and the origin of Kiwai stone axes (McNiven et al. 2004) have also more recently been examined. The results of their geological analyses have confirmed that the majority of the gabagaba and stone axes historically provenenced to New Guinea were produced from raw material in Torres Strait. Although in situ archaeological evidence that could testify to the prehistoric manufacture of these items is lacking from
Torres Strait, these investigations suggest their production and importation to New Guinea may have considerable antiquity.

Before the Murray Islands archaeological investigations the only earthen pottery sherds recorded for Torres Strait were from Booby Island, located in the far southwest south of Muralag. Queensland Museum staff first investigated the island in 1981 as part of a preliminary archaeological survey (Coleman 1985). Booby Island is a rocky outcrop and has a number of rockshelters that were the focus of the team’s investigations. Due to its location at the western entrance of the Torres Strait passage and the fact that it was uninhabited by indigenous occupants, Booby Island was a regular stop-over point for sailing vessels from the early 19th Century (Nicholson 1996). The island also became a maritime ‘post office’ as visiting ships often left letters and other mail to be picked up and carried on by the next vessel. Booby Island was also regularly used as a refuge for shipwreck survivors, with funds provided by the New South Wales government to permanently stock one of the island’s caves with food and water, as well as other provisions such as books, newspapers, cigars and rum (Nicholson 1996:3). Due to this frequent use and disturbance and vandalism caused by modern day ‘treasure hunters’, many of the rockshelter deposits on Booby Island are highly disturbed (Coleman 1985).

In a return trip to the island in 1990, several pottery sherds were recovered, although no precise location of the artefacts is given. They are described as ‘extremely crude, low-fired earthenware pottery shards representing the majority of the remains of at least two small pottery vessels’ (Coleman 1991:3). Although the antiquity of the artefacts was regarded as questionable, Coleman (1991) believed that as there are no clay or natural fuel sources on the island, tests which may determine the origin of the clay and antiquity of the sherds were warranted. An examination of one of the sherds was undertaken by Cox and Watchman (2000).
The sherd was a rim fragment of what was interpreted to be a small personal serving bowl with an orifice of 160mm. It was suggested that the crude appearance of the sherd was the result of extensive spalling i.e. exploding, of the interior and exterior surfaces of the vessel during firing. In spite of this damage on the exterior surface below the rim a panel of widely spaced oblique slashes was visible. The sherd was made from a very coarse paste with inclusions of up to 3mm, which included white feldspar, grey quartz, quartzite and red-brown fine-grained weathered volcanic clasts. Both shell or sand tempers were absent, and it was interpreted that the vessel may have been fashioned out of coarse sedimentary clay that was used in its natural state. The results of chemical analysis of the clay indicated that it was iron-rich and relatively high in chloride. The investigators concluded:

Without detailed knowledge of the nature of the provenance it is difficult to say whether the high chlorine content represents original use of seawater during preparation of the bowl or is a function of post-depositional leaching in a marine environment (Cox and Watchman 2000:3).

As indicated in the previous chapter, pottery has generally not been viewed as a traditional indigenous component of the material culture assemblage of Torres Strait. However, several historical references to pottery in the Torres Strait have been identified. Vanderwal (1973a:187, citing McFarlane 1874:3) noted an observation of New Guinea pottery on Puruma in the late 19th century. MacMillan (1957:115) reported that Mission teachers gave earthenware vessels of New Guinea origin to Sir William Macleay when he visited Darnley Island in 1873. Thirdly, Myres (1901:98) reference to pottery in Torres Strait appears to be a case of mistaken citation of Haddon’s (1901:118) observations of pottery manufacture in Port Moresby. In the first two instances, however, it is clear that the missionary occupation of Torres Strait by the late 19th century was the most likely reason for the presence of pottery in the region at this time.
Although more indicative of social connectivity across the Torres Strait rather than as evidence of trade, Barham et al. (2004:54-55) discuss regional affinities in rock art styles, designs and motifs. The characteristics of Torres Strait rock-art (predominantly on Mua, Naghi, Dauan) referred to as demonstrating Papuan stylistic elements include the high-incidence of anthropomorphic and zoomorphic images in painted rock-art, the use of natural, unusual landforms such as boulders, and figurative depiction of marine animals and maritime images, including both single-hull and double outrigger canoes. As noted by Barham et al. (2004:55) the dating of rock art and determining chronological patterns to link stylistic affinities to occupation events will represent a major step forward in understanding the cultural origins of Torres Strait. Some interesting developments in dating early 19th century Torres Strait rock art through radiocarbon dating and analysis of associated occupation deposits have recently been reported for Mua Island (David et al. 2001; 2004, see also McNiven et al. 2000 for other recent technological advancements in deciphering painted rock art in Torres Strait).

Summary

The recent surge of archaeological research in Torres Strait, particularly in the Western Islands, has considerably advanced knowledge on the origin and trade pathways of stone artefact raw material, largely through the analyses of curated artefacts collected during the Cambridge Expedition and throughout the 20th century. It is clear, however, that what remains for Torres Strait is a lack of excavated in situ artefacts from which to directly determine the chronology and time-depth of trade and exchange.

Archaeology of Northern Queensland: Evidence for Linkages to the Late-Holocene Occupation of Torres Strait?

Our understanding of the nature of late Holocene Aboriginal hunter-gatherer settlement patterns, and of the associated social, economic and technological changes that occurred in various part of the country during

This body of research has provided evidence to support a late-Holocene intensification in the region from around 3000 yrs BP. This is evidenced by an increase in site occupation and land use in Cape York and along coastal regions of Queensland more generally, the initial occupation of offshore islands, and an increase in dependence on marine resources including shellfish, fish and turtle. Each of these attributes provide evidence that the occupation and development of cultural complexity in Torres Strait may have been a component of a wider regional process of late Holocene intensification. This is supported by ‘Melanesian’ influences in Cape York and along the Queensland coast, the most prominent of which is the southward distribution of both the double and single outrigger canoes (Rowland 1987).

However, in spite of the evidence for Melanesian influence on the northern Australian mainland, the archaeology of Torres Strait and the regions strong cultural continuities with southern New Guinea confirm that the cultural origins of Torres Strait lie firmly to the north. Although the recent results of excavations on Badu are reported to provide evidence of use of the island by Australian Aboriginal populations after Holocene transgression and before 3500 yrs BP, it is concluded that permanent occupation of Badu during the late Holocene was by Papuans from the north (David et al. 2004). The following section therefore provides an archaeological overview of southern coastal New Guinea largely as a chronological framework for reviewing the evidence for, and timing of, human occupation and cultural development in Torres Strait.
Archaeological research undertaken on the southern Papuan coast has investigated the antiquity of human occupation, but has predominantly focused on defining the nature of local trade, exchange and cultural interaction through the excavation and analysis of pottery (for example Allen 1972; Bickler 1997; Frankel and Rhoads 1994; Rhoads 1980, 1982, 1983; Sandy and Davis 1983; Swadling 1980; Vanderwal 1973b, 1978; Worthing 1980). Although this represents a substantial body of archaeological investigation, it is clear that by the mid 1980s research in southern Papua had taken a back-seat to the large-scale excavation programs conducted throughout New Guinea’s northern offshore islands in search of Lapita.

The results of archaeological research on the southern New Guinea coast, including analysis of excavated cultural assemblages and radiocarbon dating, have demonstrated that the presence of pottery around 2000 yrs BP represents the first permanent human occupation of this region. However, several early pre-ceramic occupation sites are recorded, including Kukuba Cave on Yule Island at almost 4000 yrs BP (Vanderwal 1973b), and the Ouloubomoto and Rupo sites in the Gulf dating between 2500 yrs BP and 2000 yrs BP (Rhoads 1980) (Figure 3.1). Bickler (1997:151) remarks on the intriguing nature of this outcome, given that occupation elsewhere in New Guinea commenced tens of thousands of years earlier. He further notes that pottery production throughout Near Oceania had also already existed for about 1500 years before the tradition appeared in southern Papua (Bickler 1997). The results of radiocarbon dating from the site of Nebira 4, located approximately 16km north of Port Moresby, also confirm the relatively late antiquity of the southern Papua sequences, indicating that human occupation of the inland plain occurred around 2000 BP (Allen 1972). This period, dating from 2000 to 1200 years BP, is commonly designated as the ‘Early Period’ (Allen 1977a:391).
The remains of distinct red-slipped pottery constitute the dominant cultural material in the majority of the Early Period occupation sites in southern Papua. It is from the examination of these assemblages that a conclusion on the origin of the ceramic-bearing colonising populations of southern coastal Papua is derived. This is largely based on the comparison of the pottery from Nebira 4 and Oposisi (Yule Island), where both assemblages displayed almost identical features in form, decoration and antiquity (Allen 1972; Vanderwal 1973b). The ceramic assemblages were regarded as generically related to Lapita, and it was assumed ‘…the red-slipped pottery users spoke an Austronesian language, and that their origins are to be sought in the widespread migration(s) of pottery using peoples into the Pacific in the first or second millennia B.C.’ (Allen 1972:122).

Pottery dating to this period was recovered during archaeological investigations at Samoa, located at Kikori inland of the Gulf of Papua (Rhoads 1983). The excavated pottery assemblage totaled 1.6kg and comprised mostly small sherds weighing about 2g. Based on morphological features, three different vessel forms were identified with a
small number of sherds also having red slip and incised decorations. Rhoads (1983:99-100) concluded that the pottery assemblage was deposited during two phases; an early phase dating from 1900 yrs BP and a more recent phase dating to around 1400 – 1600 yrs BP. Due to the small size of the pottery assemblage no comparisons were made with pottery recovered from other sites along the Papuan coast.

Numerous chemical and petrographic analyses of excavated pottery assemblages have demonstrated early patterns and changes in production and trade along the southern Papuan coast (Allen and Rye 1982; Bickler 1997; Frankel and Rhoads 1994; Rye and Allen 1980; Rye and Duerden 1982; Swadling 1980). Bickler (1997) conducted one of the more recent analyses and included sherds from Port Moresby, Yule Island and the Gulf of Papua. Petrographic analyses revealed features that distinguished the pottery sherds, including the presence of chert in Port Moresby pottery, and the presence of larger fragments of quartzite, quartz and feldspar in the Yule Island wares. Bickler’s (1997:159) results confirmed ‘a rapid adaptation to local conditions indicated by the use of local clay sources during the earliest times’, and the long distance exchange of pottery around Yule Island and Port Moresby between 1900 and 850 cal BP. Although exchange from Yule Island sites to the Gulf occurs simultaneously with the first evidence of pottery on Yule Island, from 1400 cal BP there is evidence that Port Moresby potters joined in exchanges with Gulf populations (Bickler 1997:160).

From 1200 yrs BP there is widespread change in settlement and pottery production and exchange along the south coast (Irwin 1985; 1991; Rhoads 1982). Dating from 1200 to 400 years ago this period is known as the ‘Intermediate’ or ‘Middle Period’ (Allen 1977a:393). During this time, Yule Island sites were abandoned and exchange between the Gulf and regions to the east stopped. This is known as the ‘Ceramic hiccup’ (Rhoads 1982:146) and is associated with the breakdown of exchange systems in the Papuan Gulf and the southern central coast. Several reasons for this shift have been offered, including the westward migration of peoples from
the Massim (Bulmer 1975) and the movement of inland peoples from behind Port Moresby to the coast (Allen 1977b:448).

The most recent or ‘Late Period’ of occupation along the southern Papuan coast dates from 400 yrs BP and represents historically-recorded patterns of pottery production and exchange in the region. The most archaeologically distinctive trade network during this period is known as the *hiri* (1977a, 1977b; Frankel and Rhoads 1994). This was the annual voyage undertaken by Motu-speaking pottery traders from Motupore Island westward to the Gulf to trade for canoe hulls and sago (Figure 3.1). It is concluded that the Motu arrived at Motupore near Port Moresby around 800 yrs BP, which is signaled by a change in style of pottery decoration, as well as the deposition of substantial quantities of flaked stone artefacts, bone remains, marine shell and shell jewelry (Allen 1977a:443).

The commencement of Late Period pottery production and exchange from 400 yrs BP is attributed to number of factors including an economic necessity of the Motu to manipulate food resources beyond their immediate zone of marine exploitation (Allen 1977b:447), a desire to maintain links with regular trading partners and as a mechanism to acquire prestige associated with successful high profile activities (Frankel and Rhoads 1994:1). Late Period pottery assemblages have been recovered from several sites located between Kikori and Port Moresby, including Popo and Kerema (Frankel and Rhoads 1994). Petrological examination of these sherds has demonstrated that the pottery was imported from the east around Bootless Bay (Figure 3.1).

Archaeological research on the southern Papuan coast has been dominated by a focus on pottery assemblage, but the excavated sites have also produced significant quantities of subsistence remains including both marine and terrestrial resources, as well as an assortment of material culture items made from stone, shell and bone. In relation to the nature of subsistence assemblages in particular, a number of interpretations have
been made of a change in focus between a marine-based economy and a more inland economy throughout the 2000-years of occupation.

Allen (1972:116) identified that pig, macropod (predominantly *Macropus agilis*) and fish dominated the excavated faunal assemblage at Nebira 4. (Figure 3.1). Dog teeth were also recovered, with two specimens exhibiting drill holes found in conjunction with shell beads (Allen 1972:119). Significantly, however, it was demonstrated that the percentage weight of marine faunal remains at the site showed ‘a sharp decrease from the earliest levels to the most recent…’, which ‘suggests a strong marine element in the economy which diminishes in importance through time’ (Allen 1972:116).

Based on this evidence Allen (1972:122) concluded that the most plausible reason why the Nebira people settled so far inland from the coast ‘when presumably they could have established themselves right on the coast’, was the availability of valuable gardening land and also the presumed good hunting conditions. A total of 51 shell artefacts were also recovered from the site, including small disc beads, drilled shells and ten pieces of *Conus* sp. armbands. This provides support for Allen’s (1972:123) final conclusion that although Nebira 4 represents an attempt to move into a new ecological niche, networks and links were maintained with coastal settlers across long distances.

The excavation at Oposisi on Yule Island revealed numerous artefacts dating from 2000 yrs BP, including bone awls, spatulæ, adze-like scrapers, tubular beads, pendants and gravers (Vanderwal 1973b:421-423). Many of these items were polished and have been interpreted as having had a range of functional and ornamental or decorative purposes. Shell artefacts included armbands made from *Trochus* sp. and *Conus* sp. shells, and a single pearl-shell artefact that was both ground and polished (Vanderwal 1973b:423-424). Vanderwal (1973b:424) identified many parallels between the Oposisi cultural assemblage and items recovered from elsewhere throughout New Guinea and the Pacific, with this evidence
no doubt contributing to his conclusion that ‘those responsible for the Oposisi culture were descendants of the Lapita ‘traders’’. Several bone and shell artefacts were also recovered from excavations and surface surveys near Kikori in the Gulf Province (Rhoads 1983) (Figure 3.1). These included *Cypraea* sp. shell ornaments and shaped pieces of *Tridacna* shell with drilled holes. One of the bone artefacts is described as a broken fragment of polished bone spatula with a carving of a human face (Rhoads 1983:103).

The nature and density of the stone artefact assemblages recovered in southern Papuan sites is relatively varied. Over 7000 flaked artefacts, 12 hammerstones and two axe-head fragments were recovered at Nebira 4, along with small quantities of Massim obsidian in the earliest levels (Allen 1972:109) (Figure 3.1). With the major characteristic of the Nebira 4 stone assemblage being the small size of the artefacts, Allen (1972:109) defines it as ‘a small flake and core tool tradition’, comprising local fine-grained chert that occurs widely in the Port Moresby region. Other characteristics include a high proportion of scrapers (many of which show evidence of retouching), and an increase in the quantity of flaked stone in the uppermost levels. Allen (1972:116) concludes that the lithic assemblage from Nebira 4 ‘is a relatively complex suite of flaked stone tools previously undocumented in New Guinea’, but also confirms that this unique assemblage bears very little or no resemblance to the mid-Holocene Australian stone assemblages.

Less complex stone artefact assemblages were recovered from Kikori (Rhoads 1983), and the sites of Oposisi and Apere Venuna (Vanderwal 1978). For Kikori a total of two small cores, four flakes and four fragmented axe-heads comprised the entire stone assemblage. One artefact was made from quartzite, while the remaining flakes were identified as a non-local chert. The axe-head raw materials were identified as a local volcanic tuff and a metamorphic volcanic rock most probably sourced from the western Owen Stanley Mountains approximately 300km southeast of the Samoa site (Rhoads 1983:101) (Figure 3.1). From his
examination of 17 adzes recovered from Oposisi and Apere Venuna, Vanderwal (1978:417) comments on similarities between these and axe head fragments from Nebira 4 and Amazon Bay further east, concluding that ‘the Oposisi / Apere Venuna adze forms could easily be lost in an early Oceanic adze kit’ (Vanderwal 1978:417).

In returning to the topic of horticulture in coastal Papua, it is clear that the archaeology of southern lowland horticulture is considerably less well known than the intensively studied horticultural economy of the New Guinea Highlands (Denham et al. 2003; Golson 1976, 1977, 1989, 1991; Wilson 1998). Barham and Harris’s (1985) investigation at Waidoro, located approximately 45km west of Daru and some 20km northeast of Saibai Island, is the only archaeological research undertaken on mounded field systems in the region. More recently, however, Hitchcock (1996) has also described relict horticultural ditch-and mound systems along the lower Bensbach River in the Western Province (Figure 3.1).

The Waidoro area is a mixture of lowland forest, grassland and alluvial plains, and is flooded annually during the wet season (Laba 1975:32). By preference traditional gardens were cultivated in the forested areas, where plots were cleared of trees and the ground prepared for planting (Laba 1975:34). Barham and Harris (1985:267-268) noted that although mounds are still cultivated on an extensive scale by traditional methods at Waidoro, mound construction took place before living memory of the present villagers. The recorded mounds were rectilinear in plan and ranged from 16-20m in length and 9-11m in width, with their surfaces approximately 40cm above the level of the ditch base (Barham and Harris 1985:267). The growing season was dependent on the length and intensity of the wet season (January to August), during which time the ditches filled with water. The principal crop Taro (*Colocasia esculenta*), was planted on the highest part of the mounds, where other crops such as beans, yam, sugar cane, banana, sweet potato and manioc were also occasionally grown (Barham and Harris 1985:268, Laba 1975:34). Traditional gardening tools included
digging sticks and stone axes, and since the late 19th century, metal axes (Laba 1975:34-35).

Preliminary test pitting undertaken by Barham and Harris (1985) to locate underlying substrates and suitable organic material for radiocarbon dating was unsuccessful. They concluded that much like the horticultural ditch-and-mound systems on Saibai, the former functioning of the Waidoro field systems ‘appears to be intimately connected with micro-topographically controlled adaptations to seasonal changes in water levels’ (Barham and Harris 1985:271). Hitchcock’s (1996:38) preliminary investigations of raised field systems in the lower Bensbach River area support this view, and based on field survey, archival research and testimonies from the Waratha people, he concludes:

The evidence to date clearly demonstrates that in the lower Bensbach River area, relict mound-and-ditch fields were constructed up until the 1930s, when as a result of dynamic vegetational and hydrological changes the Waratha ceased making them.

Hitchcock (1996:37) states that in response to these changing conditions the Waratha ‘shifted to a wet season agricultural regime based on swidden cultivation in forested areas above the flood waters’.

Archaeological Implications for Torres Strait

The archaeological evidence from southern New Guinea has suggested a surprisingly recent human occupation of this region. However, initial human occupation of the region is dated to around 4000 years BP, which confirms the presence of non-ceramic populations along the southern Papuan coast before the proposed settlement of Torres Strait around 2500 yrs BP. The recovery of pottery from 1900 BP at Kikori inland of the Gulf Province, however, suggests the possibility of contact between the late Holocene occupants of Torres Strait and the Early Period ceramic traditions in New Guinea.
Although limited, anthropological and archaeological investigations on the nature of horticultural systems in southern Papua have revealed similarities to the relict mound-and-ditch fields on Saibai adjacent to the coast, as well as the presence of a suite of cultigens also documented ethnographically for the Eastern Torres Strait. These traits confirm that connectivity between lowland southern Papuans as well as interior riverine groups with the Northern and Eastern Torres Strait Islands may have considerable time-depth and date to well before the late 19th century.

Conclusions

This chapter has demonstrated that in spite of 30 years of archaeological research in the Torres Strait, answers to the fundamental questions of the antiquity of human occupation, the development of marine and horticultural subsistence and the nature of pre-European trade and exchange, have only recently begun to emerge. Even so, these answers have largely emerged for Northern Torres Strait, where the majority of long-term research before the commencement of MIAP was concentrated. During the last 30 years the Eastern Islands experienced a single fledgling archaeological inspection, which although brief and non-systematic in nature, did document the archaeological potential of the Murray Islands (Vanderwal 1973a). As the following chapters on the natural and cultural background of the Murray Islands and the results of the archaeological excavations and analyses demonstrate, such an interpretation is certainly justified.

Lastly, however, a further contrast to the rudimentary state of Torres Strait archaeology during the late 20th century is the intensively investigated and well-documented mid- to late Holocene archaeological sequences of both northern Queensland and southern New Guinea. Radiocarbon chronologies have established that the localised expansions and migration of coastal populations, intensification of subsistence systems, development in technologies and the enhancement of social and cultural networks in both of these regions occurred within the last 3000 - 2000
years. The fact that a similar late-Holocene human antiquity is emerging for Torres Strait confirms that these islands were not peripheral to the dynamic and complex changes experienced by populations to the north and the south.
Chapter 4: The Natural and Cultural Background to the Murray Islands

The island, towering black, big Gelam with its little hills sloping away down to the indistinct lands. A stone’s throw across the water was shadowed the precipitous peak of tiny Dauar with the castellated cliffs of Waier, isle of evil, beside it; and over all a dome of velvet blue pierced by a million stars. It seemed that the curtains of heaven were withdrawn, so that the angels might gaze upon Mer (Idriess 1947:1).

This extract illustrates the remarkable degree to which the physical presence of the Murray Islands captured the imagination of mid 20th century romantic novelists. As demonstrated in the previous chapter, however, these intriguing narratives and a large body of ethnographic literature evidently failed to promote future archaeological interest in the Murray Islands. Taking a significantly less fanciful and romantic approach, this chapter first provides an environmental description of the Murray Islands, followed by information on the islands’ cultural setting. Throughout the chapter an emphasis on information relevant to the objectives of this thesis is maintained.

The Natural Setting

The islands of Mer, Dauar and Waier are the remains of three well preserved volcanic cones of Pleistocene age, during which they were last active (Willmott et al. 1973:14). Commonly referred to as the Maer Volcanics, the erosionally degraded Pleistocene basalt and tuff that comprise the small volcanic islands of the Eastern Torres Strait (including the Murray Islands, Erub and Ugar), a small exposure at Bramble Cay in the northeast of Torres Strait, and the calcareous tuff and tuffaceous sediments forming Daru Island on the southern coast of New Guinea (Willmott et al. 1973:50).
Mer

Mer Island is the largest of the Murray group (Plate 4.1). It is separated from Dauar and Waier to the southwest by a channel approximately 2km wide and 40m deep. The island is approximately 2.8km in length, 1.65km at its widest point and with an area of 386ha. A simple twofold division of the island’s geology and derived soils into predominantly ash deposits in the higher western half of the island, and lava flows in the lower eastern part of the island, conditions present topography, regolith and vegetation.

Plate 4.1 Mer Island with Waier (left) and Dauar (right) in background
(photo: Gateway Resort Museum, Horn Island)

The western half of Mer consists of the remnants of an elliptical crater, Gelam, composed of volcanic ash and scoria locally imbedded with lava (Figure 4.1). The crater rim is now highest on the northwest side of the island, where a summit peak reaches a height of 210m. A long grass covered ridge runs for 1.3km above the northwest coast and present village at Umar, terminating at a low hill, Zomar. Deeply incised valleys dissect the southwestern part of the island, which accommodate waterfalls and gullies fed by ephemeral wet-season streams.
Figure 4.1 Mer Island showing place names referred to in text (after Bird 1996:109)
Two deep valleys reach the southern shore at Nemer Pit and Werbadu (Haddon et al. 1894, Plate XXII). A third valley, running east-southeast reaches the coast at Er, and marks the geological boundary between tuffs to the west and basalt lava flows to the east. The western half of the island now supports low scrub and fired grasslands, with local pockets of vine woodland along creeks. The eastern interior is a relatively flat tableland formed on low viscosity olivine-basalt lava flows lying c. 60-80m above sea level. The interior is extremely fertile, with deep reddish-brown soils developed on the underlying lavas. Densely vegetated today, Haddon (1935 I:30-31) described the eastern interior of Mer as thick with vegetation and cultivated crops.

Mer is completely surrounded by a large fringing reef of variable width, being widest off the northeast, east and southeast shorelines. In the northwest the fringing reef is partially covered by sea-grass beds developed on calcareous muds deposited within the protected area formed by large fish traps. A lithothamnion ridge forms the outer margin of the eastern and southeast reef flat. Live corals are predominantly restricted to the outer fringing reef and reef edge, except on the east of the island (Mayer 1918) (see Figure 4.1 for illustration of reef zones).

The southern coastline is either formed of low cliffs, or undercut marine notches eroded into bedrock, with boulder beaches marginal to the reef flat. Isolated sand beaches occur on the east and southeast coasts (at Las and the former village sites of Er and Werbadu) but most sandy beaches are restricted to the north and northwest coastline (leeward to the southwest trade winds). Most parts of the coastline exhibit modern erosion around storm tidal datums, revealing archaeological stratigraphy in many eroding sections at the junction of lower slopes with the present beach. Most beaches exhibit either cemented lava boulder beaches, or coarse sandy beachrock at elevations between low tide and high tide datums. Mayer (1918:7) noted the rapid rate of cementation of the Holocene intertidal beachrocks, and also described archaeological artefacts (granite manuports, which he interpreted as slingshot ammunition) cementing into
the upper surface of the beachrock. These lithified deposits reflect substantially higher wave energy environments than those operating at present, suggesting that coastal intertidal and subtidal environments may have altered substantially since the mid-Holocene, as reef flat developed off shore.

Dauar

Dauar is the second largest of the Murray Islands and is 1.6km in length and approximately 800m at its widest point (Plate 4.2). The island’s topography is dominated by the remains of two volcanic ash cones formed of steeply dipping tuffs. The larger, Au Dauar, rises steeply to 185m above the sea, with the smaller, Kebi Dauar, rising to 76m (Haddon 1935 I:31-32, Jukes 1847 I:205) (Figure 4.2). The coastline is variably rocky with low undercut cliffs, erosional notches and intertidal rock platforms and beach rock forming the shoreline within embayments. Most of the latter, such as at Sokoli and Ormi, show evidence for active marine erosion, exposing beach sands, rock talus and colluvium in low (1 - 4m high) eroding cliff sections.
This image has been removed due to copyright restrictions.

Figure 4.2 Schematic map of Waier Island and Dauar Island showing place names referred to in text (Lawrie 1979)
Well-developed sand spits occur at the eastern end of Dauar (facing Waier) at Teg (Haddon 1935 I:31, Haddon et al. 1894, Plate XXIII) and at the western end of the island at Giar Pit. The island interior has variable soil cover, with grassland and bushes on the upper slopes, and denser woodland with deciduous thicket on lower areas (Haddon et al. 1894:437).

**Waier**

Waier is the smallest island in the Murray group and is formed by a crescent shaped rim of a small volcanic crater, breached towards the southeast to form a lagoon (Plate 4.2). The island is only 610m in diameter and is composed entirely of stratified volcanic tuffs (Haddon 1935:332; Haddon et al. 1894:438-439) with near-vertical walls that rise out of the sea about 80m above the fringing reef. Slopes are very steep all over the islet and are severely furrowed and fissured. Most of the coastline is cliffed and rocky except for a sand beach on the eastern side of the lagoon, a small beach on the north side of the islet, and a sand spit, Waier Pit, facing Dauar to the west (Figure 4.2). There is minimal soil and vegetation cover on Waier, except in gullies and a small patch of luxuriant vegetation located on the small beach in the interior lagoon. Waier and Dauar are also enclosed by a single fringing reef. During high tides the islands are separated by only 100m of lagoon underlain by subtidal and intertidal sandbars.

**Flora and Fauna**

Recent research into the terrestrial biodiversity of the Torres Strait islands has largely been based on broad regional studies and surveys, resulting in limited data being available for the taxonomic and distributional data of individual islands or island groups (Cameron et al. 1978; Draffen et al. 1983; Freebody 2002; Neldner 1998). Data on the terrestrial flora and fauna of the Murray Islands has been extracted from surveys undertaken by Freebody (2002) and Neldner (1998). Where it is available, historical data on the islands floral and faunal species are also cited. Observations
of flora and patterns of vegetation were also noted by the author during archaeological fieldwork on Mer and Dauar and are used in addition to these published sources.

**Local flora and vegetation patterns**

In a recent biodiversity survey of Torres Strait, the Eastern Islands recorded the highest percentage of alien taxa, forming 26.4% of the total (Neldner 1998:67). This is reflected in the identified proportions of plant families on the islands, with the largest number of species recorded being of Poaceae (grasses) with 31 species, Fabaceae (herbs, vines, shrubs and trees) with 23 species and Euphorbiaceae (deciduous trees and oil and starch producing crops) with 17 species (Neldner 1998). The proliferation of alien taxa on the Eastern Islands is attributed to the disturbance created by direct human influences such as urbanisation and cropping, and indirect influences through altered fire regimes. In the latter instance, Neldner (1998:30) commented that the extensive grasslands on the slopes of Mer were an example of the high level of disturbance caused by deliberate burning. There is also some historical reference to vegetation disturbance on Mer.

Haddon (1912:146) recalls Robert Bruce mentioning to him in 1889 that an enormous quantity of timber had been felled on Mer for the construction of the missionaries' houses, but particularly for boat building. However, observation of the grass covered slopes on Mer during the late 19th century suggest that this vegetation type may have existed well before permanent European presence on the island (Jukes 1847 I:175). Haddon et al. (1894:427) also remarked on the less fertile nature of the western half of Mer, owing to the high permeability of soils derived from the underlying ash. Chalmers and Gill (1885:28) also commented on the drought-prone nature of parts of Mer in 1877.

In contrast to the sparsely vegetated western slopes of the island, historical observations of the eastern half of Mer recorded the luxuriant
and abundant nature of its vegetation. Haddon (1935:30-31) describes profuse coconut groves, fruit trees such as mangoes and gardens of bananas (*Musaceae* sp.), yams (*Dioscorea* sp.) and sweet potatoes (*Ipomoea* sp.) in this part of the island. Many of these species are recognised as staple plant-foods throughout Melanesia (French 1986; Yen 1995). Today on Mer the eastern half of the interior tableland still supports dense vine thicket, groves of bamboo, feral mango trees and secondary re-growth interspersed with garden plots. Plate 4.3 provides an aerial view of Mer showing the contemporary division between grasslands in the west and dense vegetation in the east.

![Plate 4.3 Aerial view of north coast of Mer Island showing west-east vegetation differences](image)

The eastern side of Mer and a small portion on the southwest coast at Werbadu, where a deep valley dissects the foreshore bringing freshwater from the slopes, consist of a vegetation unit defined as closed mesophyll vine forest vegetation (Neldner 1998:28). In addition to the cultivated species mentioned previously, a number of canopy tree species as well as low trees, shrubs and robust climbers may be present in this region. Scattered Taro (*Alocasia macrorrhiza*) and ferns occur in places on the
ground layer, which is otherwise sparse. This vegetation unit is described as restricted to sheltered, more inland areas.

On the dryer, more exposed slopes the closed mesophyll vine forests are reduced to a vegetation unit defined as semi-deciduous mesophyll/notophyll vine forest (Neldner 1998:28). In addition to the vegetation types mentioned above, deciduous canopy trees such as *Bombax ceiba* var. *leiocarpum* occur in these areas. In the western half of Mer the *Themeda* spp. grasslands have almost entirely replaced the semi-deciduous slope vegetation (Nelder 1998:28).

A small vegetation unit defined as open woodlands and herblands on the littoral zone is located along the northwest foreshore of Mer (Freebody 2002). Species noted on the frontal dunes include pandanus (*Pandanus tectorius*), sea almond (*Terminalia catappa*), orchid tree (*Bauhinia purpurea*), coconut (*Cocos nucifera*) and cheese fruit (*Morinda citrifolia*). Ground cover on beach ridges is dominated by *Ipomea pes-caprae* and low grasses. Several of these species are typical Melanesian tree domesticates (Yen 1995).

Semi-deciduous mesophyll/notophyll vine forest most consistently defines the dominant vegetation type observed on the western half of Dauar Island. The rocky slopes of the larger western hill are scattered with *Bombax ceiba* var. *leiocarpum* interspersed amongst low grasslands, while the lower slopes of the smaller eastern hill are vegetated with woodland with deciduous thicket more common in the closed mesophyll vine forest vegetation unit. The lower interior saddle of Dauar has variable soil cover and is vegetated with pockets of bamboo (*Bambusa* sp.), but is mostly dominated by low to medium canopy trees and shrubs (particularly Fabaceae) and large numbers of Malvaceae (particularly *Hibiscus* sp.). Various cultivated species also grow in the interior portion of Dauar, including pawpaw (*Carica papaya*), banana (*Musa* sp.) and cassava (*Manihot esculenta*). In areas where the littoral zone meets an exposed beach, such as at Sokoli and Ormi, common species include coconut...
(Cocos nucifera), frangipani (Plumeria sp.) and pandanus (Pandanus tectorius).

The results of recent biodiversity surveys and information obtained in historical records indicate that a number of indigenous activities and post-contact processes may have played a significant role in the contemporary nature and distribution of vegetation on the Murray Islands. These include burning, clearing and planting by islanders, post contact clearing and felling, and localised fertility caused by the underlying geology of the islands. The diversity of the floral species present also indicates that a number of varieties have been introduced. These include decorative angiosperms such as frangipani and hibiscus, and a number of economic species such as the pawpaw and mango. The faunal diversity of the Murray Islands is similar in that it is also a product of several external factors (Cameron et al. 1978 and Draffen et al. 1983).

Terrestrial and marine fauna

Information on the terrestrial faunal of the Murray Islands is relatively limited. Although Haddon (1912:152) observed wild pigs on Mer around the turn of the 20th century, based on a review of historical accounts McNiven and Hitchcock (2004:113) suggest that ‘pigs were absent or extremely rare in Torres Strait prior to European settlement’. Today pigs are kept on Mer in small numbers for specific large-scale feasts, and are usually obtained from feral stock on neighboring Erub Island (Bliege Bird et al. 1995:6). Several historic references to Murray Islanders obtaining dogs from the north coast of ‘New Holland’ (Jukes 1847 I:180, King 1983:56 and Rutherford 1833 in Haddon 1935:97) are recorded. Today both dogs and cats are kept on Mer as pets. Rodents including Melomys, Rattus and Hydromys species probably comprise the dominant mammal population on the Murray Islands.

Goannas (Varanus sp.) are common on the Murray Islands and today are captured primarily for their oil and skin for drum making (Bliege Bird et al. 1995:6).
Although over twenty species of snakes have been identified in the Torres Strait (Cameron et al. 1978), snakes are today rarely encountered on the Murray Islands. Green tree frogs (*Litoria caerulea*) on the other hand, are commonly observed on Mer. Coastal and offshore birds including herons (*Egretta* spp.), frigate birds (*Fregata* spp.), terns (*Sterna* spp.), noddies (*Anous* spp.) and the Torres Strait pigeon (*Ducula spilorhhoa*) are observed on the Murray Islands. Larger birds of prey such as kites (*Haliastur* spp.) and sea eagles (*Haliaeetus leucogaster*) can be seen nesting in trees along the coast.

In contrast to the limited terrestrial faunal diversity of the Murray Islands, a much greater diversity and abundance of species occupies the marine environment. The coasts of Mer, Dauar and Waier provide a variety of intertidal habitats including tidal pools and inshore lagoons, expansive reef flats and fringing reefs, sandy beach embayments and rocky foreshore areas. A great diversity of molluscs, crustacea and fish inhabit these ecosystems, providing an abundance of edible resources.

Although almost 1500 fish species have been recorded for the northern Great Barrier Reef, ten families, including reef and pelagic species, have been identified as particularly important to contemporary Meriam subsistence (Bird 1996:30). Mollusc species commonly collected and eaten in the Eastern Islands today include numerous common tropical reef and rocky shore gastropods and bivalve species (Johannes and MacFarlane 1991:98) (details on species given below). Crustacea, including prawns and crabs are rare, although, the tropical rock lobster (*Panulirus ornatus*) is more common and is today used by the Meriam for commercial and subsistence purposes (Bird 1996:31). Octopus and squid are abundant in the waters of Eastern Torres Strait and are eaten and used as bait. Sharks are common around the Eastern Islands, but along with rays and eels are not generally eaten today. Green turtles (*Chelonia mydas*) are the most common turtle around the Murray Islands and are especially abundant during the mating season (September to December) and nesting season (October to March). Hawksbill turtles (*Eretmochelys*
*imbricata* occur less commonly and are significantly less important to the contemporary Meriam diet (Bird 1996:30). Dugongs (*Dugong dugon*) are rarely seen in the deeper waters around the Eastern Islands today, but may have been more common in the past (Johannes and MacFarlane 1991:98).

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**The Cultural Setting**

**People and Demography**

Traditionally the Meriam inhabited Dauar, Waier and small villages around the entire coast of Mer. At the time of Haddon’s visit in 1888 and 1889, however, a schoolhouse and church had already been constructed in the area that forms the centre of the modern village of Umar on Mer (Laade 1973:152). By the 1960s villages on Dauar and Waier were abandoned and the Meriam population became concentrated in a narrow village along the northwest foreshore of Mer and at Las, a small village on the eastern side of the island. Early population estimates suggest that the Murray Islands were densely populated at the time of European contact. In 1802 Matthew Flinders estimated a population of 700 (Haddon 1935:95), while the London Missionary Society records of 1873 suggest a population of 800 (Murray 1872:34). The current indigenous population of the Murray Islands is around 400 (Australian Bureau of Statistics 2001).

The first recorded observations of village life on Mer depict scenes of large dome-shaped huts (commonly called beehive huts) in clusters along the beach (Brockett 1836:24-25; Jukes 1847 I:132) (Figure 4.3). Made from lengths of bamboo scaffold and covered with grass thatch, the houses were relatively large measuring approximately 15 feet high and 18 feet in diameter (Jukes 1847 I:251). They were also fenced with large bamboo poles and had gardens and coconut groves (Jukes 1847 I:172). This organised and permanent style of village life in the Eastern Islands was referred to by Jukes (1847 I:132) as a feature confirming that Torres Strait
Islanders were different to the indigenous people of mainland Australia, and more similar to the Papuans of New Guinea.

Figure 4.3 Village scene on Erub (Darnley Is) (Melville 1848: plate XVII)

Language and Oral Tradition

The language spoken by Eastern Torres Strait islanders, Meriam Mir is distinct not only from Australian languages, but within the Torres Strait itself. Haddon (1935:289) stated that ‘the most prominent difference between western and eastern islanders is that they speak entirely different languages which have no genealogical connection’. Meriam Mir belongs to the Papuan (Non-Austronesian) language family and is closely related to the Bine, Gidra and Gizra languages spoken by the inhabitants of the Oriomo River region on the New Guinea mainland (see Figure 2.2). As a member of the Eastern Trans-Fly linguistic family, Miriam Mir is distinguished also by its adoption of some southern New Guinean Kiwai language features (Lawrence 1991) (see Figure 2.2). Miriam Mir is linguistically distinct from Kala Lagaw Ya and the dialectical variants of this language spoken throughout the rest of the Torres Strait. Kala Lagaw Ya
is structurally an Aboriginal language and is closely related to Pama Nyungan languages from Cape York Peninsula, although does have some Papuan elements (Wurm 1972).

Although displaying some Australian elements, as a member of the Eastern Trans-Fly languages, Meriam Mir is seen as a product of the southward movement of languages from central and southern New Guinea, including Kiwai, around 2000 years ago (Wurm 1972). This influence came almost 2000 years after the splitting of the Eastern Trans-Fly stock into daughter languages, estimated to have occurred 3000 to 4000 years ago (Wurm 1972:361). Citing the contemporary and historic trade relationships between Meriam and Kiwai, Bird (1996:46) offers the possibility:

\[\text{…that the distinction between Meriam Mir and other Trans-Fly languages developed in situ after a sub-set of the stock Eastern Trans-Fly speaking population emigrated to the Eastern Islands and later had extensive contact with Kiwai speakers.}\]

A number of Meriam oral legends also provide evidence in support of a southern New Guinea origin, such as the story of Pop and Kod who came from the Fly River district to found the Meriam population (Lawrie 1970). Although the Meriam recognise New Guinea as the home of their ancestors, Las on the eastern side of Mer is where they consider their social origin to lie (Bird 1996:48).

**Trade and Material Culture**

Chapter 2 demonstrated that ethnographic records and oral histories provide strong evidence for exchange partnerships and kinship ties between the Meriam and coastal Papuan groups of the Fly Estuary, including Parama Island, Sui and Kiwai Island, and the southwestern coastal villages of Mabudawan, Mawatta and Katatai (Lawrence 1994:297) (see Figure 2.11). Haddon (1935:183) describes the trade route from Mer as via Erub and Ugar to the Central Islands including Damut and Tutu, then directly north to Daru where goods moved eastwards along the coast.
to Parama and Kiwai, and west to the coastal sites of Mawatta and Turituri (see Figure 2.10). Although several trade routes and patterns of exchange are recorded (Lawrence 1994: Figs. 25-29), the principal trade route into the Eastern Torres Strait appears to have an origin in the Fly Estuary and then traveled a westward route along the southwest coast:

Formerly Murray Island had a brisk trade with the New Guinea coast from the Fly River westward. This was carried out directly, but was conducted by a privileged tribe at Murray Island, through Darnley Island, and then by Darnley through Warrior Island. In this tedious and round about way the Murray Islanders obtained their canoes from New Guinea, and the Papuans obtained their shell ornaments (Macgregor 1911:4).

Goods sent to Papua via this route included shell ornaments such as pendants, armlets, necklaces nose ornaments and pearl shell breast ornaments, turtle shell and gifts of food. The islanders received in return cassowary and bird of paradise feathers, dogs-teeth necklaces, pigs tusks, sago-palm petticoats, pandanus mats, bows and arrows, stone-headed clubs, drums and canoes, with Haddon (1935:182) suggesting that ‘in fact nearly all their moveable requirements for work, fight or play came from the Fly River’.

On Mer the Komet clan appears to have played a central role in inter-island and regional trade (Haddon 1908:186; Laade 1969). This clan specialised in voyaging to other islands and members were renowned throughout the region for their seafaring skills and as intermediaries in trade and exchange (Lawrence 1994:259, 273; 1988:23). According to Haddon (1908:185) members of the Komet clan were the ‘traders in canoes’ for the Murray Islanders, the canoes being traded directly from the Fly Estuary via Parama, then to Ugar, Erub and Mer (Figure 4.4).
In contrast to their trading associations with Papuan groups, Haddon (1908:185) remarked that ‘owing to their remote situation the Meriam were practically debarred from intercourse with Australia and the inter-insular trade probably did not amount to very much…’. Baldwin (1976:16) has suggested that head hunting practices of the Central and Western Island groups may have prevented Eastern Islanders from making contact with Cape York Aboriginal groups. As Lawrence (1994:287) states, for the relatively resource rich Eastern Islanders contact with Papuans of the southwest coast was not only considerably easier, but also more economically advantageous than contact with southern Aboriginal groups.

However, several references to Murray Islanders voyaging southward to the eastern coast of Cape York suggest some level of direct contact between the Eastern Torres Strait Islanders and the peoples of northern Australia (Jukes 1847 II:541; King 1837:26). Through a combination of oral evidence and documented kinship ties, Lawrence (1994:297) confirms that while contact between Eastern Islanders and southern mainland groups was limited, at the time of European contact the main exchange contacts for the Murray Islands was with ‘coastal Papuans concentrated on
the coastal Kiwai-speaking peoples of the lower Fly estuary, Parama Is. and the Mawatta-Katatai coast’.

Social Organisation and Subsistence

Meriam social organisation and territoriality centres around eight Meriam clans (nosik): Meriam (Piadram and Samsep), Geuram, Magaram, Dauareb, Peibri, Komet, Meuram and Zagareb (Rivers in Haddon 1935:22) (Figure 4.5). Bird (1996:38) explains that Meriam clans ‘are composed of groups of patrilineally related, mostly exogamous, totemically organised descent groups grounded in their spatial relationship to the Meriam land and seascape’. Each clan is associated with their own totem (lubabat), seasonal wind (kerker), and island district (ged). Clan-owned property on Mer is divided into wedge-like portions that extend from the interior of the island outward to include stone-walled fish traps (sai) and the edge of the fringing reef. Fishing and land use rights within clan boundaries are further divided among patrilineages (Johannes and MacFarlane 1984). Residential plots (including the foreshore to the edge of the fringing reef) and interior garden plots are owned and managed by individual patrilines (Bird 1996:40). Although property inheritance usually passed from a father to his eldest son, Wilkin (cited in Haddon 1908:165) described the interesting occurrence among the Meriam where a man could also leave, give away or loan land and gardens to whomever he wished. This practice still occurs on the Murray Islands today.

As mentioned briefly in Chapter 2, Haddon (1908:192-240) recognised that the cult of Bomai-Malo and its associated initiation rites, public ceremonies, sacred power (zogo), law (Malo ra gelar) and customary land tenure (gelar tonar), were of supreme significance to Meriam life. Bomai is said to have arrived on Mer in the form of an octopus whose eight tentacles represent the eight clans of Mer. Malo ra gelar set out the rules for all Meriam concerning gardening activities, land and food utilisation, social conduct, and property rights and obligations (Laade 1969, 1973).
Figure 4.5 Mer Island showing clan divisions and fishtraps (after Haddon 1935:160)
From the Bomai-Malo cult arose a secret society of initiated men from various clans, each having their own set of ceremonial and public responsibilities. The most important of these men were the zogo le, who were entitled to take leading parts in the ceremonies and received limited public offerings in the form of food and gifts. These men were also the regulators of Malo re gelar and gelar tonar and could enforce these traditions with punishment by death. Today Malo re gelar and gelar tonar remain of great significance to the Meriam (see Sharp 1993).

Although there is some variation in the way the organisation and nomenclature of Meriam clans are described in the ethnohistorical and anthropological literature, the subject of clan specialisation has remained a common topic of interest (Bird et al. 2000; Carter in press; Laade 1969, 1973; Lawrence 1994; Sharpe 1993). The central role played by the Komet clan as intermediaries in trade has been mentioned previously. Based on his fieldwork on Mer during the 1950s Laade (1969) identified a fundamental east-west distinction between the Meriam clans. He suggested that the Meriam Le, comprising the Piadram, Zagareb, Geaurem and Magaram clans were regarded as ‘the people belong garden’, while the Komet Le, consisting of the remaining clans were ‘the people belong water’ (Laade 1969:36). According to Laade’s (1969) interpretation the Meriam Le were the gardeners of Mer and owned most of the fertile land on the eastern side of the island. The Komet Le on the other hand, inhabited Dauar, Waier and the western side of Mer, and did the majority of fishing and the hunting and gathering of resources (Laade 1969). Importantly, Laade (1969) identified that clan specialisation did not translate into restrictions on the consumption of either marine or vegetable foods, but encompassed a form of prohibition on the subsistence activities themselves. A comment from one of Laade’s (1969:36) informants emphasises this point:

When I been young I went for sardines with were [fish scoop]. I fall, got sore leg. My grandfather he take my were, break it say: ‘You never go fishing again’. Bush (gardenland) your fishing ground. You (are a) Samep.
However, recent anthropological fieldwork conducted on the Murray Islands has highlighted inaccuracies in Laade’s (1969, 1973) descriptions of clan specialisation. Based on observations of Meriam subsistence activities and the roles played by men, women and children, Bird and Bliege Bird (pers.comm.) claim that most of the specialisation in a clan was the result of male-male competition. They suggest, for example, that while Meriam men competed especially in gardening and displaying produce, Komet men competed in broader affairs of trade while Dauareb men were great spearfishermen. While some of these competitions revolved around subsistence activities, it was indeed not the case that Meriam Le had to rely on trading garden produce for fish as a matter of daily subsistence. The research shows that while men compete socially in specialties that may be associated with clans, women of all clans fish, garden and collect shellfish as a matter of daily household subsistence.

Anthropological research undertaken on Mer has also demonstrated that until the 1970s gardening remained the focus of most of men’s effort, with considerably less time spent on fishing or hunting (Duncan 1973). Men concentrated on the labor intensive planting of yams and bananas, which were designated for competitive display at feasts, rather than family consumption (Bird 1996:101). While women were not permitted to enter these ‘display’ gardens, both men and women tended ‘kitchen’ gardens, which grew a broader variety of produce for household consumption. Thus unlike men, it appears that women have predominantly concentrated on fishing and gathering activities (Bird et al. 1997:101). This confirms Haddon’s (1912:154-455) observation that the gathering of shellfish was a subsistence activity predominantly undertaken by women and children.

Archaeological implications

Traditional clan organisation and the role clans played in the overall subsistence economies of the Murray islands must be considered in the context of these recent anthropological observations. This work has demonstrated that any prediction of the distribution and nature of
archaeological site types based on historically documented descriptions of clan organisation and subsistence would be problematic. According to Laade’s (1973) interpretations, marine subsistence remains, such as shell middens, would be disproportionately located on the western side of Mer and on Dauar and Waier, while the archaeology of the eastern side of Mer would comprise predominantly evidence of horticultural subsistence. The research conducted by Bird et al. (1997) has indicated that such a clear-cut division of subsistence-related archaeological site types across the islands is not likely. Indeed Laade (1973:155) himself noted that the stone fish traps around the northern and eastern margins of Mer, are located precisely around the district of the Meriam Le, the supposed ‘gardeners of Mer’.

A similar physical blurring of divisional constructs based on subsistence specialisation and location to resources as those described for the Murray Islands, are also characteristic of Island Melanesian societies, as recently illustrated by Roe (2000). In the Port Sandwich area of southeast Malakula in Vanuatu, Roe (2000:205) observed that the spatial configuration of coastal and inland subsistence production included the location of fishing shrines in the forest and yam shrines on inshore coral reef heads. This was interpreted as evidence of the risky, but successful curation of the ritual centres of subsistence production by opposing groups (Roe 2000:205). In his discussion on the bush-saltwater subsistence divide in the Solomon Islands and Vanuatu, Roe (2000:217) concludes that ‘the geographical position of archaeological sites in the landscape…cannot be taken per se as unequivocal evidence of the economic focus of the cultural group(s) who once were its inhabitants’.

The historically recorded evidence on the geology of Mer, and both the past and contemporary distribution of garden plots and vegetation communities on the island confirms the presence of horticultural gardens in the island’s eastern fertile half. Evidence also suggests, however, that small household gardens were associated with houses and villages located along most of Mer’s coastline. Much like the distribution of
archaeological marine subsistence remains on the islands, archaeological evidence associated with past gardening practices may therefore be recoverable from areas of past occupation or settlement located in coastal areas. Thus the implication of this is that archaeological evidence of horticultural practices on the Murray Islands may not be as geographically restricted or bounded as Laade’s (1969, 1973) interpretation of subsistence specialistation infer.

Terrestrial Subsistence: Faunal and Floral Resources

Many early sources noted a lack of dependence on terrestrial fauna as subsistence resources throughout Torres Strait (Allen and Corris 1977:25; Haddon 1912:152; MacGillivray 1852 II:25). For the Murray Islands, however, some information on the procurement of terrestrial resources was recorded. Haddon (1912:152-153) mentions a number of techniques used by the Meriam for the capture of bird species including herons, frigates and terns. Techniques included the use of a small bow and arrow, knocking down low-flying birds with lengths of bamboo, line and sardine bait and underwater snares. Birds could also be caught by hand when unable to quickly fly away from the branches of certain species of sticky fruit bearing trees. During the breeding season terns eggs were also obtained from regular trips to offshore sandbanks (Haddon 1912:154).

Although Haddon (1912:138) claims that goanna was eaten on Muralag, Moa, Saibai, Dauan, Boigu and in New Guinea, he does not mention it as an edible resource on the Murray Islands. However, goanna oil is obtained on Mer for medicinal purposes and the skin is widely used across the Torres Strait for the making of drums, wasikor. Haddon (1912:139) suggests that snakes were roasted and eaten by men of a certain zogo, while frogs were collected by the basketful on Mer and were roasted before eating. The restricted faunal diversity of the Murray Islands combined with the limited nature to which fauna were used in subsistence, implies that very little evidence of terrestrially based fauna may be archaeologically recovered.
In contrast to the limited role that terrestrial fauna evidently played in subsistence, plant foods were highly significant resources (Allen and Corris 1977:25; Brockett 1836:25; MacGillivray 1852:25). A remarkable amount of information was recorded on the types and diversity of edible species on the Murray Islands as well as on gardening and horticultural methods. This information is largely derived from Haddon and the records of the Cambridge Expedition, and provides important data for the subsequent interpretation of the archaeological record, and particularly in identifying and characterising the nature of the pre-European horticultural economy.

Haddon (1912:130, 132) concluded that the yam, banana and coconut were the most important vegetable foods in the Torres Strait, with the Eastern Islands being the ‘best off’ in terms of their availability. Nineteen varieties of bananas were recorded on Mer, each characterised according to taste, ripeness and most suitable method for cooking (Haddon 1912:133). Haddon (1912:133) claimed that in addition to a number of indigenous or bush bananas, two introduced varieties grew on Mer including a ‘Lifu’ (New Guinean) variety and a Chinese ‘Cavendish’ variety. Banana leaves were frequently used as plates and for wrapping other foods such as yams and sweet potatoes for roasting. Bananas were roasted but more commonly boiled with coconut milk in shells.

The large Eumusa section of the Musa genus was initially thought to have originated on the southeast Asian mainland (Simmonds 1962). However, more recent genetic analyses have demonstrated that the wild species Musa accuminata ssp. banksii, was domesticated in New Guinea and subsequently dispersed to southeast Asia where hybridization with local varieties occurred (Lebot 1999). The presence of seed and leaf phytoliths from the Musa accuminata ssp. banksii at Kuk in the highlands of New Guinea dating from almost 7000 cal BP, confirms the hypothesis of the domestication of the Eumusa section in New Guinea (Denham et al. 2003). The origin and distribution of the smaller Australimusa family of cultivated bananas, which spread into Island Melanesia and eastern Polynesia, is
similarly assigned to New Guinea (Argent 1976; Simmonds 1962). Largely based on the recent review of stratigraphic, archaeological and archaeobotanical evidence from the Kuk site, a recent theory proposes that before any known Southeast Asian influences, New Guinea was a primary centre of agricultural development and plant domestication (Denham et al. 2003). In light of such a theory, it is possible that the use of banana in subsistence on the Murray Islands may date to well before the late 19th century ethnographic observations.

Haddon (1912:136) remarked on the presence of a number of yam varieties in the Torres Strait, although he was unsure whether some varieties were true yams or merely ‘wild yams or yam-like tubers’. Both Haddon (1912:136) and MacGillivray (1852 II:26) refer to the common cultivated yam as *ketai*, although, whether this is a wild variety or an introduced species is not made clear. On Mer Haddon (1912:136) recorded the names for a number of pink and white yam varieties. Yams were cooked by roasting or by boiling in water or coconut milk.

Yams belong to the large *Dioscorea* genus with around 600 species that favour tropical and sub-tropical environments. Telford (1986) lists five *Dioscorea* sp. for northern and eastern Australia, two of which he describes as endemic (*D. transversa* and *D. hastifolia*), two of which he claims are of indigenous pre-European introduction (*D. bulbifera* and *D. pentaphylla*), and one which is regarded as a recent introduction (*D. alata*). In New Guinea both wild and cultivated forms of *D. bulbifera* and *D. pentaphylla* have been observed, with these species also having a broad distribution throughout tropical Asia (Yen 1995:836). Yam varieties have also been recorded as part of the diet of Aboriginal groups in northern Australia, such as *D. transversa* and *D. bulbifera* for the Gidjingali people of Arnhem Land (Jones and Meehan 1989). This evidence suggests that the variety of yams observed on the Murray Islands in the late 19th century may have comprised both naturally occurring tuberous varieties, as well as domesticates that may have been introduced from New Guinea.
Haddon (1912:136) also observed three ‘indigenous’ forms of sweet potato and suggested that ‘several other varieties have been introduced’. As a New World crop, the sweet potato (Ipomeae batatas) originated in tropical America and was also grown in the West Indies and Mexico (Conklin 1963:129). Although there has been some debate (for example Merrill 1954; Suggs 1960 versus de Candolle 1959; Hornell 1946; Yen 1971), the widely accepted theory is that the global spread of the sweet potato was facilitated by 16th century Portuguese ships which carried it to Africa and parts of Indonesia, and that its introduction into the remote Pacific was by 17th century Spanish vessels sailing from the Pacific coast of Mexico (Conklin 1957:133).

Of the 400 or more species of Ipomoea that are distributed throughout the world’s tropical regions, Ipomoea batatas is the only species of economic importance (Cobley 1957:171). As these plants rarely reproduce from seeds, cultivated sweet potatoes are propagated by cuttings of the stems or root tubers. As this is so, Haddon’s (1912:136) distinction between naturally occurring and introduced sweet potato species on Mer requires some re-interpretation. His observations of multiple sweet potato varieties perhaps more accurately reflect a natural diversification of Ipomoea batatas, which may have occurred within a period of several hundred years after its arrival into the region. This is supported by archaeological research in the New Guinea Highlands, which has demonstrated intensive sweet potato cultivation at Kuk dating from around 250 yrs BP (Golson 1997; Denham et al. 2003).

Meriam names for taro and arrowroot were also recorded, as were several other varieties of edible aroids, vines, roots and leaves (Haddon 1912:136). The latin name cited by Haddon for Taro is Colocasia macrorhiza. It is likely that this illustrates his confusion between the species Colocasia esculenta and Alocasia macrorhiza. The former species is widely regarded as a very important crop in Melanesian and Pacific subsistence, while the latter has been identified as having a greater economic significance in the Bismarck Archipelago and in western
Melanesia and Polynesia in comparison to mainland New Guinea (Yen 1995:835). Furthermore, whereas *A. macrorhiza* is generally accepted as an introduced species to New Guinea and northern Australia, there is increasing evidence to suggest that domestication of *C. esculenta* may have occurred within Melanesia during the Pleistocene (Lebot 1999:624). This hypothesis is supported by the recent data from Kuk, which has also confirmed the presence of *C. esculenta* in the New Guinea Highlands from the late Holocene (Denham et al. 2003). Regardless of Haddon’s ambiguous species identification, the presence of either *C. esculenta* or *A. macrorhiza* provides further evidence in support of prehistoric plant cultivation on the Murray Islands.

Haddon (1912:136) cited Meriam names for nine varieties of sugar cane, and suggested that this species was ‘indigenous’ to Mer. Contrary to this interpretation, however, genetic analyses have unequivocally demonstrated that the species *Saccharum officinarum* originated in New Guinea where it was also first domesticated (Lebot 1999; Warner 1962). This suggests that at some time prior to the late 19th century, transportation of the species occurred from New Guinea to the Murray Islands, and as discussed in Chapter 2, throughout numerous other islands in Torres Strait.

On Mer coconut milk was used for cooking and drinking, while the oil, which was largely used by the Meriam for ceremonial purposes, was extracted by scraping the ripe kernal (Haddon 1912:132). Haddon (1912:132) also claimed that coconut palms were much more plentiful in the Eastern Islands and on Saibai compared to the few observed on the Western Islands. Haddon (1912:133) recorded almost twenty Meriam words associated with the growth of coconuts, and the colour, size and stages of ripeness of the nut.

Although earlier views regarded *Cocus nucifera* as the cultivated variety of previously wild species and therefore provided evidence of human planting (Corner 1966), more recent hypotheses lend support to the possibility that
spontaneous coconut populations may be truly wild and capable of wide natural dispersal’ (Sauer 1971:309). One of the main bodies of evidence in support of this model is the adaptation of the nuts for dispersal by ocean current over vast distances. This is owed to the ability of the nut ‘to remain buoyant and viable after several months in sea water’ (Sauer 1971:311). A germinating coconut can then be shifted up the beach by waves after it has begun to sprout. Limited by wave reach, and also by shade and competing inland flora, the natural habitat of the coconut is an extremely narrow zone on the foreshore, where the crowns of the palms overhang low shrubs and beach creepers.

Archaeological remains of *Cocos nucifera* have been recovered from several islands across the Pacific and range in date from between approximately 2700 and 5400 years BP (Hossfeld 1965; Kirch and Yen 1982; Spriggs 1984; Yen 1973). This evidence is largely interpreted as supporting the natural dispersal hypothesis for the establishment of this species, as the presence of the coconut remains significantly predate the human settlement of these islands.

Haddon’s (1935:30-31) observation of the presence of coconut groves in the high eastern interior region of Mer, however, places the species out of its natural habitat in the narrow zone along foreshore where competition for height is limited. This suggests that cultivation of coconuts was probably occurring on the Murray Islands prior to the first European sightings during the early to mid 19th century.

Two varieties of edible pandanus were identified on Mer, each with seeds that were roasted before eating and leaves which were used for mat-making (Haddon 1912:134). Other edible species of nut or fruit bearing trees more recently identified on the Murray Islands include *mikir*, native almond (*Terminalia catappa*); *iger*, native cashew (*Semecarpus australiensis*); and *enoa*, wild plum (*Manikara kauki*) (Bliege Bird et al. 1995). Haddon (1912:134) refers to *waiwai* as wild mango, while pawpaw,
watermelon, maize, rockmelon, pumpkin, potatoes, and peaches were all regarded as recently introduced.

According to Yen (1995:840) the genus *Pandanus* has the widest ecological range of adaptation and also perhaps the most domesticated forms of any native Pacific plants. In New Guinea the species is located at subalpine mountainous and mid-altitudinal ranges, and on riverine and coastal habitats. As the ubiquitous ‘screw pine’ (*Pandanus spiralis*) is often found with domesticated forms of the species, multiple origin hypothesis for cultivation of *Pandanus* are regarded as more favorable than a diffusionist theory (Yen 1995:840). The foraging-to-planting process of domestication of this species may have commenced in the New Guinea Highlands as early as 20 000 years ago (White and O’Connell 1982). Given this time-frame, by end of the 19th century it is possible that both wild and domesticate species of *Pandanus* were present on the Murray Islands.

Most notable of the other domesticate tree species mentioned above is *T. catappa*, which is widely distributed throughout Malaysia, New Guinea, most of the Pacific as well as the tropical coasts of Australia (Yen 1995:839-840). Although not cultivated in the majority of these regions, everywhere it is acknowledged as a supplementary food source, including Arnem Land in northern Australia. As Haddon (1912:136) indicated, it is possible that *T. catappa* along with other native nut and fruit varieties may have been much more important to subsistence on the Murray Islands prior to the intensive cultivation of yams and sweet potato documented at the time of European contact.

**Horticultural Methods**

A review of the horticultural methods used on the Murray Islands provide an insight into the possible nature of archaeological evidence of the pre-European horticultural economy. According to Haddon (1912:146), the Meriam had two broad land classifications in relation to gardening. Seau
ged, was land thickly vegetated with coconut groves or large closed
canopy trees that had plenty of shade and rich soil suitable for the planting
of yam varieties and bananas. Wargor ged, was sparsely timbered land
that had no large trees or had a few bushes and grass only. Sugar cane,
bananas, sweet potato, pawpaws and some yam varieties were planted on
this land, although Seau ged was preferred for the planting of yams.

Beginning around the end of August and continuing through the wet
season until the end of the year, Gedub ismi, was the time for clearing
undergrowth and cutting down trees in preparation for planting new
gardens. Prior to the introduction of iron axes and knives, clearing was
done with shell axes (Haddon 1912:145). Sweet potato vine cuttings were
planted in mounds or hillocks, although as MacGillivray (1852 II:256)
describes, a great deal of preparation was involved in the planting of yams:

…the patch of ground in strewed with branches and wood, which
when thoroughly dry are set on fire to clear the surface, - the
ground is loosely turned up with a sharpened stick, and the cut
pieces of yam are planted at irregular intervals, each with a small
pole to climb up. These operations are completed just before the
commencement of the wet season, or in the month of October.

Each year ground that had been fallow for four to five years was cleared
and a new garden, kerkar gedub, planted while another portion lay fallow.
Good yams were believed to come from fresh soil, while banana crops
exhausted the soil rapidly, so were grown until the fruit gradually
diminished. Old plants were never removed but were allowed to become
overgrown and die off. Haddon (1912:147) noted that there was no
regular rotation of crops, as generally the same kind of plant was cultivated
on the old land after a fallow period. Clearing of land was therefore a
yearly occurrence.

Archaeological implications

As described by Haddon, the classification of land based on the density
and openness of vegetation and soil fertility suggests that gardening and
horticulture on the Murray Islands may have been spatially patterned, with
certain species and combination of species only occurring in certain areas. The above information suggests that all cultivated species, although to a degree excluding yams, were planted in more open areas with sparse and low vegetation. Based on the nature of vegetation on Mer and Dauar and as suggested earlier in this chapter, such areas may have been more common on the coastal fringes where vegetation was predominantly sparse and low. This type of floral habitat is particularly characteristic of the low saddle located between the two hills of Dauar and extending to either side of the island at Sokoli and Ormi (see Figure 4.1).

Furthermore, although garden plots lay fallow for a period and were subsequently cleared and prepared for planting, the fact that the same crops were repeatedly grown in the same area suggests that build up of evidence may have occurred. This evidence may exist in the form of the remains (either macro- or microscopic) of edible species with recognisable temporal depth patterns. As the ethnographically observed methods of horticulture on the Murray Islands did not involve wet land cultivation or the construction of drainage channels, this also suggests that the archaeological evidence for horticulture may exist in the form of the remains of the plants and cultigens themselves. Another form of evidence for horticulture on the Murray Islands may be visible patterns or changes in vegetation and the redeposition of sediments brought about by initial clearance episodes. The recovery of such information is supported by the recent results of biodiversity surveys undertaken in Torres Strait, which as discussed previously in this chapter, have demonstrated a high proportion of anthropogenic vegetation.

**Maritime Subsistence: Resources and Methods**

On Mer Haddon (1912) observed that women collected shellfish and speared fish of all kinds on the fringing reef during low tides. He noted that in calm weather during the November northwest monsoon, women would also go to the outer reefs in a piece of broken canoe and wade out to spear rock cod and other small fish. Called a pau, the section of canoe hull
was fashioned with ‘a piece of would nailed to each end to keep the water out’ (Haddon 1912:158). Men and women would fish by torch light at night, which was common throughout the year when the tide was suitable. Small fish, octopus, crayfish and crabs would be captured in the lagoons and small pools. Opportunistic hauls of large quantities of fish were also recorded by Haddon (1912:158), such as the night time spearing of large gar fish shoals in the deep water around Mer from February to March. Although Haddon (1912:159) remarked that fishing nets were unknown in the Torres Strait, conical fish scoops made from bamboo, *weres*, were often used by Murray Islanders to collect large numbers of sardines, *tup*, which shoal along the shore all year round (Figure 4.6, 4.7). Poisoning pools and lagoons with toxic plants such as *Derris* sp., was also used as a method to obtain fish on Mer.

**Figure 4.6 Bamboo fish scoop (*weres*) (Haddon 1912:156)**

*Fig 4.7 Fishing scene on Mer Island (Dauar in background) catching sardines with *weres* fish scoop (Photo: Frank Hurley c.1920s, National Library pic-an23382042)*
Turtle was considered as the most important meat source for the Meriam, particularly as this species occurred in much greater numbers around the Eastern Islands than the dugong. The most common species of turtle recorded around the Murray Islands was the green turtle, which were most commonly caught with the *wap*, or by a man simply jumping into the water and tying a rope around the turtle’s flipper. Haddon (1912:168) claimed that dugong were rarely caught at the Murray Islands and that the Meriam only occasionally erected the bamboo platforms. Yonge (1930:193) also claimed that dugong were rarely caught around the Murray Islands, but during his visit to the islands in the early 20th century, photographed a bamboo platform constructed on the reef flat on the southeastern side of Mer (Yonge 1930, see Figure 2.8).

Thus while the ethnohistorical record has provided some valuable insight into marine subsistence on the Murray Islands, unfortunately little detail exists on shellfishing strategies in the region; this is problematic for two key reasons. Firstly, as indicated in Chapter 3, the importance of shellfish and of intertidal gathering in coastal economies during the late Holocene throughout northern Australia and southern New Guinea is well documented. Secondly and as detailed in the following chapter, the shells of marine invertebrates represent the most abundant category of faunal remains excavated from the archaeological sites on Mer and Dauar. This occurrence, however, may simply be a product of various taphonomic factors resulting in the differential preservation of archaeological shell remains. Fortunately, research that greatly assists in understanding the formation and composition of the archaeological shell assemblages excavated from Mer and Dauar is to hand.

**Contemporary Meriam Intertidal Marine Resource Gathering**

Mentioned briefly in Chapter 1, between 1993 and 1998 American anthropologists Bird and Bliege Bird conducted extensive fieldwork on the Murray Islands as part of the Meriam Ethnographic Research Project in Ecological Anthropology. This research focused on maritime subsistence
activities within the framework of evolutionary ecology. Bird’s 1996 PhD dissertation on intertidal foraging strategies among the Meriam is an impressive investigation of shellfish gathering and processing strategies within the theoretical settings of central-place foraging and behavioural ecology. Although this research focused primarily on contemporary shellfishing strategies, it was identified that transport and processing decisions would have implications on shell-midden variability and for the analysis and interpretation of prehistoric subsistence assemblages (Bird 1996:241; see also Bird and Bliege Bird 1997:54).

**Subsistence activities, prey types, prey choice and discard behavior**

Bird’s (1996:106) use of the term intertidal gathering refers to subsistence activities that occur between the foreshore and the subtidal margin. Based on mapping of the distribution of reef flat resources during which he participated in and observed shellfish gathering, Bird (1996:106) determined that intertidal gathering on the Murray Islands consists of two types of activities: reef-flat collecting and rocky-shore harvesting. These subsistence activities are characterised by ‘differences in resource distribution, the types of resources encountered, differences in nutritional return rate and gain functions, and for the most part they are mutually exclusive activities’ (Bird 1996:106-107).

Bird (1996) divided the reef flat into three broad zones based on the substrate zonation of Mer. The *supralittoral fringe* is located closest to the foreshore and has a substrate scattered with large volcanic boulders and cobbles with patches of coral sand and sea grass. The *midlittoral fringe* is dominated by coral sands, sea grasses and intertidal pools, with a varying distribution of micro-atolls, live soft corals and branch coral flats interspersed with coral sands. The *sublittoral fringe* is located furthest from the foreshore and is dominated by large live micro-atolls and sand patches with a varying distribution of algal pavement that extends to the subtidal reef edge. The extreme margin of sublittoral fringe is dominated by large coral heads (see Figure 4.1).
A number of key species or ‘prey types’ were distributed sparsely within the substrate zones, although variations in density of populations showed that some species preferred one zone over another. The gastropod prey types most commonly encountered on the reef included spider conch (*Lambis lambis*), tiger cowrie (*Cypraea tigris*), top shell (*Trochus niloticus*) and red-lipped conch (*Strombus luhanus*). Several species including turbo shell (*Turbo petholatus*), vase shell (*Vasum turbinellus*), baler shell (*Melo amphora*), trumpet shell (*Syrinx auranus*) and abalone (*Haliotis varia*), are described as rarely encountered and less commonly taken. The bivalve species identified as commonly collected include bear paw clam (*Hippopus hippopus*), various tridacnids including *Tridacna squammosa* and *Tridacna maxima* with rarer collections of pearl shell (*Pinctada margaretifera*), and oysters (*Crassostrea* sp). Figure 4.8 provides schematic representation of the distribution of the majority of these species.

![Figure 4.8 Schematic representation of reef intertidal zone showing distribution of key shell species (after Bird and Bleige Bird 1995:12)](THIS_IMAGE_HAS_BEEN_REMOVED_DUE_TO_COPYRIGHT_RESTRICTIONS)

Unlike the widespread dispersal of reef flat resources, Bird (1996) found that rocky shore resources were concentrated in patches exclusively in the supralittoral fringe, and were found only within zones of volcanic rocks and cobbles. Two species form the total of resources taken from the rocky
shore; the small ribbed nerite (*Nerita undata*) and the small sunset clam *Asaphis violascens*. Chitons (Polyplacophora) were the species most widely distributed, while nerites (*Nerita undata* and *Nerita albicilla*) and limpets (*Patelloida saccharina*) occurred in similar densities. *Asaphis violascense* are located 5 - 10cm below the surface within silty sand and must be dug for, while the nerites are plucked from boulders and rock walls.

Bird’s (1996) fieldwork demonstrated that reef flat collecting was by far the most important shellfish-gathering strategy for contemporary Meriam. From the 91 reef gathering episodes, Bird (1996:123) calculated that *Hippopus hippopus*, *Tridacna* spp. (including *T. squammosa, maxima* and *gigas*) and *Lambis lambis* comprised 90% of all the edible weight, energy and protein harvested. Part of Bird’s (1996) analysis was to investigate the effect that the constraints faced by foragers, such as volume and weight of a load of unprocessed shellfish, would have on shell deposition at residential sites or ‘kitchen middens’. The results illustrated that for *H. hippopus* and *Tridacna* spp. their calculated dietary contribution was under-represented in shell accumulations, representing less than 10% of the reconstructed edible flesh weight. Conversely the remains of the rocky-shore resources *Asaphis* sp. and *Nerita* spp. were over-represented in the accumulations, comprising over 30% of the flesh weight in the sampled household remains (Bird 1996:213).

Bird’s (1996) observations confirmed that these discrepancies were the result of prey choice and differential field processing and transport of shellfish prey types. Bird et al. (2002:461) explain the factors affecting prey choice among Meriam shellfish gatherers as follows:

> Meriam adults and children make decisions about intertidal prey selection in a manner consistent with the hypothesis that only those prey that increase the rate at which energy can be gained while foraging will be handled on encounter. Those prey types which will on average reduce foraging return rates are almost always passed over by foragers... In other words, overall proportional representation of each prey type across all specimens collected on
all focal follows is predictable in terms of energy tradeoffs of remaining in a patch or of handling an item on encounter in a patch.

Thus although prey choice is predictable, there is a simple explanation for the inconsistency observed in contemporary household accumulations: much of what is collected during shellfish gathering is processed at the point of procurement, with the shell remains left on the reef. This is particularly the case for the large bivalve species including *Hippopus hippopus* and *Tridacna* spp. and also for *Lambis lambis*, which is most commonly encounter-processed. Conversely, other species are always transported whole to residential or ‘dinner time’ camps, such as the rocky-shore species *Asaphis* sp and *Nerita* spp., which during his fieldwork Bird (1996:146) never once observed being processed in the field prior to transport. These species were usually cooked by boiling, although both were occasionally roasted.

**Archaeological implications**

The archeological implications of prey choice and shellfish processing and discard behavior described by Bird (1996) have recently been examined by Richardson (2000) (see also Bird et al. 2002 and Bird et al. 2004). On the basis of behavioral ecological theory and predictive models generated through central place foraging theory, she analysed the excavated shell assemblages from Sokoli on Dauar and Pitkik and Kurkur Weid on Mer. Her results demonstrated that contemporary household shell deposits and the three excavated archaeological shell assemblages were similar, and contained a high proportion of *Nerita* spp. and very low numbers of *Tridacna* spp. and *Hippopus hippopus*. Richardson (2000:45) attributes these similarities to the transport and processing decisions described above.

Based on field processing data another model was developed that could predict the probability at which unprocessed shellfish would be transported from a known distance to a central place. The results from statistical comparison of the total edible flesh represented in the archaeological
samples, the contemporary shell accumulations and the foraging follow data show that the archaeological assemblages from Sokoli, Kurkur and Pitkik ‘predict the observed prey choice during ethnographic observations’ (Richardson 2000:47). Based on these results, it was concluded that:

the predictive model developed…supports the hypothesis that Meriam foragers in the past selected a similar range of shellfish species and processed them under similar conditions as modern Meriam foragers in a manner that efficiently returned the edible flesh to a central base (Richardson 2000:59).

Given the lack of ethnohistorical information on the strategies and methods of traditional shellfishing, the work undertaken by Bird (1996) and subsequently by Richardson (2000) is important for attempting to understand the excavated archeological record of the Murray Islands. Although it is recognised that simply correlating archaeological assemblages with ethnographic behavior is problematic, Richardson (2000:4) explains the benefits in adopting a behavioral ecological approach:

Generating predictive hypotheses about human transport behavior, testing them ethnographically, and then investigating such predictions in a real archaeological situation, like midden assemblages, can lead to new understanding of midden variability and subsistence strategies of the past.

However, the ethnographic evidence for Torres Strait demonstrates that the benefits of shell went beyond a dietary or subsistence contribution. As a raw material, a variety of shell species were widely used as cutting implements, as vessels for water collection and storage, body ornamentation, and most significantly, as items of trade that attracted considerable economic and social value throughout the region. Although Richardson’s (2000) investigation of the Murray Islands archaeological assemblages has produced important information relating to past marine shellfishing strategies, it fails to recognise or account for the deposition of shell remains that may have resulted from other non-subsistence related activities.
A further problematic issue with Richardson’s (2000) analysis of the archaeological shell assemblages is the lack of consideration of the impact that the prehistoric horticultural subsistence economy may have had on the abundance and deposition of shell remains. As indicated in the above discussion, horticulture on the Murray Islands may have considerable antiquity and included the gathering of naturally occurring species as well as the more intensive cultivation of domesticated crops. In light of the ethnographic evidence therefore, a suggestion that the emergence of horticulture may have had some impact on the nature of marine subsistence strategies, which also resulted in changes to the spatial and temporal patterns of the density and composition of archaeological assemblages, is not entirely unfounded.

The interpretation of the archaeological assemblages from Mer and Dauar conducted in this thesis considers the diversity of ethnographically documented uses of shell in Torres Strait, the emergence and nature of horticulture on the Murray Islands, as well as data provided from the analysis of the excavated vertebrate remains. This represents a more holistic approach to documenting the nature of subsistence on the Murray Islands, and provides a level of information that is more applicable on a regional scale at understanding the timing and nature of settlement and subsistence development in Torres Strait.

Conclusions

This chapter has provided a comprehensive background to the natural environment of the Murray Islands and a description of Meriam culture based largely on late 19th century ethnographic accounts and recent anthropological observations. This data demonstrates that in trade and exchange networks, kinship, language, oral histories and origin legends, there is a strong historical link between the Murray Islands and the Fly Estuary region of the southern New Guinea coast.
The ethnographic accounts of Meriam social organisation illustrate a complex system based on totemic-based clan divisions with rules on territoriality and access to resources that encompassed both land and reef. In contrast to earlier ethnographies which emphasised definite cultural and physical boundaries between marine and horticultural based subsistence regimes (Laade 1969, 1973), recent anthropological data suggests that subsistence was far less structured and is more accurately viewed in terms of daily household activities inclusive of both widespread marine and horticultural based practices (Bird et al. 1997). The archaeological implications of this data combined with other ethnographic and archaeological evidence mentioned earlier, suggest that evidence of both past marine and horticultural subsistence on the Murray Islands may be widely distributed.

As a product of their fertile soils and extensive fringing reefs, the ethnohistorically documented subsistence economy of the Murray Islands featured a diversity of marine and horticultural resources. Commonly procured marine foods included shell fish, fish and turtle, while horticultural production relied heavily on common Pacific cultigens including banana, coconut, yams and the recent sweet potato plant, as well as variety of fruit and nut bearing trees. In the above review of ethnohistorically documented plants foods on the Murray Islands, evidence for the origin and domestication of common western Pacific horticultural crops, as well as the cultural histories of other naturally occurring supplementary plant species in these regions, has been cited. This discussion has demonstrated the likelihood that the ethnohistorically described horticultural economy of the Murray Islands originated well before the late 19th century.

In contrast to the well-documented horticultural economy, the early ethnographies recorded for the maritime subsistence economy of the Murray Islands were comparatively lacking in detail. Surprisingly, this is particularly the case for the observed daily activity of shellfish gathering. Recent anthropological investigations undertaken on the islands thus
provide a valuable insight into this subsistence activity. Implications of this data for interpreting the nature of archeological shell middens on the islands have been identified, and are re-considered in the analysis of the excavated faunal assemblages which forms the content of Chapter 6. Firstly, Chapter 5 provides the details of the results of the Murray Islands archaeological investigations, including the results of survey and excavation, and descriptions of archaeological stratigraphy, chronology and the excavated assemblages.