

ARCHAEOLOGY OF THE PEARL SHELLING INDUSTRY IN TORRES STRAIT

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In 1869, European traders discovered commercially viable quantities of pearl shell on Warrior Reef, central Torres Strait. This marked the beginning of a period of population increase within Torres Strait along with a sustained European colonial presence. This paper outlines an initial archaeological investigation into the early pearl shelling industry of Torres Strait. It examines the historical and archaeological evidence associated with the shore-based pearl shelling stations of Wai Weer Island and Good's Island. Features such as boat slipways, groynes, house sites, work sheds, gravesites and signal stations provide evidence for the nature and operation of this aspect of the industry. The introduction and adaptation of European watercraft such as mother ships, luggers, apparatus boats and swimming boats, to service and maintain the pearl shelling industry is documented and evidence is presented for their role in the movement of people and pearl shell throughout Torres Strait. □ *Pearl shell, pearl shelling stations, luggers, maritime archaeology, Torres Strait.*

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This paper presents a background to the pearl shelling industry in Torres Strait and documents preliminary results from archaeological fieldwork undertaken during 2000 and 2001. The broad aim of the project is to undertake a critical and structured examination of the archaeological and historical evidence associated with the pearl shelling industry of Torres Strait. The research focuses on both land based pearl shelling stations and the development of maritime technologies through the advent and creation of the pearl shelling lugger. The documentation of both the land based sites and the vessels associated with the industry allows for a comprehensive analysis to be undertaken. Both of these aspects of the industry are intertwined and form part of the same maritime system that was in operation within Torres Strait from 1870. Although this research focuses on the early stages of the industry (1869-1913), aspects of the industry that occurred outside of this time period are also included.

PREVIOUS ARCHAEOLOGICAL RESEARCH

Archaeological research into Australian marine industries has focused largely on whaling (e.g., Lawrence, 2001; Lawrence & Staniforth, 1998) and sealing (e.g., Kostoglou, 1996; Sim & Gait, 1992; Stuart, 1989; Townrow, 1989). This work has documented the crucial role that these industries played in the European exploration and

settlement of Australia along with the generation of exports and development of associated industries. Archaeological investigations of the pearl shell and pearling industries have been restricted to Western Australia (Burninham, 1994; Henderson, 1981, 1983; McCarthy, 1989, 1994; McGann, 1999; Moore, 1994; Stanbury, 1994). Research into the pearl shelling industry of Torres Strait has to date focused mainly on archival and oral history. The only archaeological research has been Vanderwal (1973: 175, 181) who recorded remains of pearling stations on Gebar (Two Brothers I.) and Morilag (Mt Adolphous I.) (see also Grimwade, this volume). Ganter (1994) provided a detailed historical overview of the Torres Strait pearling industry while Mullins (1995) documented issues surrounding the introduction of European pearl shellers in the broader context of the 19th Century colonial history of Torres Strait (see also Schug, 1996a, 1996b, 1997). There have also been a number of different papers presented to historical societies that deal primarily with the pearl shelling industry or include it in histories of Torres Strait (e.g., Mann, 1973; Stephens, 1962). Finally, contemporary fictional films and novels have also presented versions of the pearl shelling industry in Torres Strait (e.g., King of the Coral Sea, 1954; Simpson, 1952).

TORRES STRAIT ISLANDER USE OF PEARL SHELL

During early European exploration of Torres Strait in the early to mid-19th Century, the most commonly documented use of pearl shell by Islanders was as crescentic chest ornaments. These artefacts were usually recorded at a distance by European mariners while passing through Torres Strait or up close while engaging in trade with Islanders. The term used by Torres Strait Islanders for these pearl shell ornaments was *mai* (Eastern Islanders) or *danga mai* (Western Islanders), meaning 'pearl shell tooth' believed to have come from the shaping of the shell to represent a boar's tusk or 2 tusks joined at the base (Allen & Corris, 1977: 31; Haddon, 1912: 43; see also Vanderwal, this volume). Other decorative uses of pearl shell included tabular pearl shell 'beads' threaded together to form headbands (Dumont d'Urville, 1987: 542). Jukes (1847, I: 255) also stated that pearl shell was worn when Torres Strait Islanders were fighting; as witnessed when 2 groups were fighting off Erub. Additional uses of pearl shell include tools to soften leaf strips used to make mats and baskets (10-16cm semi-lunar pieces) and as general purpose scrapers, cutters, and ladles (scraping out of coconuts) (Haddon, 1912: 66, 124).

Pearl shell was also used extensively in trade throughout Torres Strait and PNG (Beaver, 1920; Haddon, 1912). This trade has some antiquity with Swadling & Anamiato (1989) obtaining radiocarbon dates of 2000-3000 BP on pearl shell excavated from the Yuat Gorge in N PNG. Swadling & Anamiato (1989) suggested that the Yuat pearl shell may have come from Torres Strait, thus indicating that an extensive trade network once existed from lowland Papua into N PNG (Lawrence, 1994).

EUROPEAN COMMERCIAL PEARL SHELL COLLECTION

The first commercial quantity of pearl shell entered the Australian mainland in 1812 when William Campbell, master of the brig *James Hay*, entered Sydney Harbour with a shipment of shell. Campbell, a trader and shipping merchant from India and Sydney, collected the pearl shell from the then named Pamootoes (Tuamotu Archipelago in French Polynesia). By 1813 Sydney traders, advised by missionaries and encouraged by friendly Polynesians, had shipped 91 tonnes of pearl shell to Sydney (Bain, 1982: 39; Reid, 1954: 111). This increased to over 150 tons of

pearl shell in 1814 when Naval Purser, Graham Blaxcell, began a trade from the same islands (Wells, 1962: 4).

According to Yonge (1930: 163-164), the Australian pearl shell fishery was the 4th of the great pearl fisheries of the world to be discovered. It extended from Torres Strait and the N end of the Great Barrier Reef, W to the shores of Western Australia and NW to the Aru Islands, SW of New Guinea. It was primarily, although not exclusively, a mother-of-pearl shell fishery, with the shell being either the Gold or Silver Lip variety, *Pinctada maxima*. To a very minor extent the Black Lip mother-of-pearl shell *P. margaritifera* was also collected with *P. albina*, *P. chemnitzii*, *P. fucata*, *P. maculata* and *P. albina sugillata* (Torres Strait Fisheries Assessment Group, 1999: 5). The world supply of *P. maxima* was minimal (250 tons imported to London annually) until the Australian beds were discovered. Their discovery, along with improved manufacturing techniques, led to an increase in demand for this particular species of pearl shell (Bach, 1961: 106).

In order to trace the influx of European people into Torres Strait, and development of the pearl shell industry, it is necessary to follow the movements of traders that were operating within the Pacific region. As Ganter (1994: 15) pointed out, the fishery in Far North Queensland began long before the push for settlement in the Cape York region. There was no pressure through pastoral expansion, gold mining or from 'land-hungry Europeans'. Wilson (1924/26: 108) observed that the pioneers of the pearling and bêche-de-mer industries ventured N from Sydney when there was little settlement along the coast of Queensland N of Brisbane.

These South Pacific traders were known to be 'resource raiders' who followed and exploited both tradeable resources and labour (Ganter, 1994: 17). With no direct ownership over the resources they were exploiting, they moved from 1 resource base to another as they were depleted. This very process is what drove the South Pacific traders into Torres Strait in the early 1860s as the returns from whaling and sandalwood became marginal. The Torres Strait bêche-de-mer beds were seen as a viable resource and traders set up stations. In turn, these traders brought with them Pacific Islanders who had not only previously proved their ability as crew, but were also a cheap and exploitable labour source that was able to

adapt to different industries (Ganter, 1994: 17; Mullins, 1995: 70).

Haddon (1935: xiii) outlined the need to document the era (1849-71) when both the bêche-de-mer and pearl shelling industries in Torres Strait rapidly evolved. He believed that documentation of the European and South Sea Islander influx 'would make most interesting and doubtless unsavoury reading' as the 'events of this troublous period affected the natives very adversely in every way and that the ill effects persisted for a long time'.

Captain William Banner is generally credited with the first large-scale shipment of pearl shell from Torres Strait in 1869. The actual discovery and collection of the pearl shell was made by Captain William Banner's men and specifically a Tongan diver and experienced seaman known either as Tongatapu Joe, Joe, Joseph John or lae (Bain 1982: 45; Fuary, 1991: 146; Hopkins, 1995: 572; Mullins, 1995: 5; see Shnukal, this volume). Banner had come to Torres Strait as an experienced Pacific trader and master having worked in the South Seas around Lifu and other islands (McFarlane, 1954: 17). In 1869, Banner established a bêche-de-mer station on Tudu (Warrior) Island and operated it on the model of Pacific trading. In order to sustain this industry he employed 70 South Sea Islanders and no doubt some of the members of the 43 families of Tudulgal living on Tudu at that time (Bain, 1982: 42; Ganter, 1994: 20; McFarlane, 1954: 17). Moresby (1876: 27-28) described Warrior Island as a scantily vegetated sandbank approximately 2 miles in circumference. It has a salt-water lagoon in the centre and is situated at the S end of a great coral reef that bears the same name — Warrior Reef. Banner's arrival was not an entirely smooth transition for the Tudulgal. According to Chester (1870), when Banner first arrived on the *Bluebell*, 13 canoes full of men, women and children fled the island, leaving behind 5 canoes full of people. The remaining people stayed in their village at the SE end of the island while Banner set about 'possessing' the NW end.

Banner went to Sydney in 1870, taking with him 4 men from the Tudu station while leaving Tongatapu Joe in charge. While Banner was away, the Tudu Islanders showed Tongatapu Joe and the Pacific Islanders the shell beds from which they obtained their pearl shell to manufacture chest ornaments. When Banner returned the Pacific Islanders had collected 6 tons of pearl shell. Banner's employer, James Merriman of

Sydney, instructed Banner to forego the collection of bêche-de-mer and concentrate on pearl shell. Additional vessels were sent and 50 tons were collected in a matter of months (Bain, 1982: 45; Fuary, 1991: 146; Haysom, 1999: 29-30; Hopkins, 1995: 572; Lack, 1963: 145). Pearl shell was initially collected from a depth of 15cm, and within the year was being brought up from depths of 6.5 metres as the shell was systematically worked out. Seven boats worked the reef, and another fetched wood and water from other islands at least 16km away such as Yam I. (Iama). These boats left Tudu for the reef at dawn every Monday and returned Saturday evening (Chester, 1870).

By 1871, the value of the annual pearl shell harvest amounted to £25,000. The schooner *Kate Kearney* discovered a rich patch of shell in January 1872, and was getting 2 tons in 3 days. The *Australian Packet* soon joined the *Kate Kearney* and between them they gathered 21 tons in less than a fortnight. In March of the same year the schooner *Melanie* discovered a fresh patch of shell near Tudu, from which 13 tons of shell were taken (Wilson, 1924/26: 110).

In a number of years pearl shelling vessels were dispersed across the whole of the Torres Strait. Mullins (1995: 78) stated that from Warrior Reef the pearl shell vessels worked Moa Pass, then the passage between Friday and Prince of Wales Islands and then Endeavour Strait. Gill (1876: 199-200) corroborated this point by documenting pearl fishery boats moored off Horn Island and Prince of Wales Island in late 1872. This evolution of the industry also brought about the development of shore-based pearl shelling stations. By 1872 bêche-de-mer and/or pearl shelling stations were located on Tudu, Gebar (Two Brothers), Erub (Darnley) and Murray Islands, while semi-permanent, 'floating stations' were recorded on Poruma (Coconut) and Campbell Islands (Mullins, 1995: 78). By 1886, pearl shelling stations had been established on Mabuiag (Jervis), Mua (Moa/Banks), Badu (Mulgrave), Suragi (Bourke), Naghir (Mount Ernest), Murulag (Prince of Wales), Tuined (Possession), Palilag (Good's), Albany, Wai Weer, Giralag (Friday), Nurupai (Horn), Waibene (Thursday) and Keriri (Hammond) Islands and at Somerset (mainland Cape York) and Endeavour Strait (Chester, 1879: 492; Ganter, 1994: 244; Loos, 1982: 120). Thus, stations were established on islands in the Eastern, Central and Western Straits but not amongst the Top Western (Northern) Island Group adjacent to the PNG

coast. By the early 1880s, communication to Brisbane was by the steamer *Corea* that made monthly trips S with pearl shell and returned with supplies for the stations (Austin, 1949: 226). Pearl shelling stations then became consolidated within the Prince of Wales Island Group, centring around the then industry base on Thursday Island. The method of shell collection then depended on a number of factors including shell availability, market price and availability of labour. This in turn designated whether larger vessels were used as semi-permanent floating stations or smaller luggers that operated out of land based stations.

TERRESTRIAL PEARL SHELLING STATIONS

A major aim of this paper is to document pearl shelling stations within the Prince of Wales Island Group. Pearl shelling stations have been located on all of these islands as well as Mabuig Island and potential sites examined on Badu and Murray Islands. Two field seasons provided an avenue for documenting aspects of the industry that are not present within the historical record.

This fieldwork indicates key areas on the islands that may be correlated with functions of the stations and the ethnicity of pearl shellers. Research to detail all of the pearl shelling stations and the spatial relationships between or within stations is currently being undertaken. The stations were located in either naturally sheltered areas or places where artificial groynes could be constructed for protection from harsh weather. Slipways and boat repair areas were constructed on gently sloping beaches and shell-processing areas were kept separate from dwelling and garden areas. European or manager's dwellings were separate again and where possible were located on elevated vantage points.

According to historical documents, most pearl shelling stations had a house where either the owner or a white manager lived, a dwelling for the pearl shellers, jetties, wharves, diving gear provisions and kitchen facilities. At most stations stores were kept for the men and boats, boats were outfitted, provisioned and repaired, and pearl shell was received, cleaned, packed and despatched (DeHoughton, 1880: 3; Douglas, 1886: 490; Shnukal, 1998: 42; Streeter, 1886: 165; *The Australasian Sketcher*, 1876: 199). The buildings were usually constructed of corrugated iron, contained most of the essentials of home life and were by no means devoid of comfort or taste (*Brisbane Courier*, 8/12/1877; Coppinger, 1885:



FIG. 1. Aerial view of Wai Weer Island .

196; Douglas, 1886: 490; Shnukal, 1998: 42). Coppinger (1885: 196) recorded that the stations often had a whitewashed house (residence of the white manager) and a few large grass-built huts in which the labourers resided. Loos (1982: 120) described some of these stations as comprising small villages. Table 1 shows the composition of populations on pearl shelling stations around Thursday Island in 1890.

WAI WEER ISLAND STATION

Wai Weer Island is situated within the Prince of Wales Island Group, lying approximately 2 nautical miles WNW of Thursday Island. It was selected as a primary research site given its small size and predicted integrity resulting from geographic isolation from potential processes of disturbance since closure (e.g., WWII operations, bottle collectors, day picnickers from Thursday Island) (Fig. 1).

HISTORICAL RECORD. Historical documentation for the pearl shelling station on Wai Weer is limited. The *Brisbane Courier* (December 8, 1877) provided a brief description:

Most conspicuous and picturesque of all, in a direct line between Good's Island and Vivian Point, about a couple of miles from the latter, lies the tiny islet of Wai-wee, occupied by Messrs. Lamb and Browne. I could scarcely discern the different buildings with the naked eye, but with the assistance of a telescope it was easy enough to do so. The settlement was very similar to what I have already described at Albany Island (consists of several cottages, sheds and out houses...the whole establishment had an orderly appearance which was considerably heightened by the buildings being whitewashed). A schooner of about 70 tons was lying off the point, nearer in shore there were three or four fishing luggers. Boats were passing from one to the other, and on shore there was a jetty, the store, the grass sheds, the superintendent's cottage, and crowning the summit of the island, the flagstaff and signal station.

TABLE 1. Population of neighbouring islands within a radius of three miles of Thursday Island in 1890 (QV&P, 1890, 3: 178). (Ethnicity as identified in original survey).

Ethnicity	Horn Island		Prince of Wales Island		Friday Island		Goode Island		Wai Weer Island		Hammond Island	
	M	F	M	F	M	F	M	F	M	F	M	F
Europeans	1		38	23	1	1	11	8	5		30	3
South Sea Islanders	2		52				43		34		5	
Arabs			1									
Cingalese			1									
Africans							2				1	
Malays			72	4			22		20			
Japanese									13			
Philippine Islands	15		17				24		46		2	
Aboriginals		5	47	23							13	6
Other mixed races			1				12				1	
Total	18	5	229	50	1	1	114	8	118		52	9

The *Town and Country Journal* (March 27, 1880) described a visit to Wai Weer (commonly called Parbury's) at which Mr W. Summers was the manager and belonging to a firm of which Mr Charles Parbury and the Messrs. W. and F. Summers were partners. The article stated that the station employed more boats than any other within Torres Strait, having as many as 21, 17 of which were fully equipped with diving apparatus. The operation at Wai Weer Island was formerly stationed at Possession Island but for the convenience of shipment close to Port Kennedy on Thursday Island, it shifted to its present station. Wai Weer was described as 'being a thorough hive of industry, with a great amount of repairing being required by such a large fleet of boats necessitating the maintenance of carpenters and other shops, besides a host of employees at different other avocation'.

By 1895, Wai Weer station was run by the Queensland Pearl Shell Co. Ltd who also had a large fleet of vessels, including 2 schooners — *Tarawa* and *Wai Weer*. They also had 19 luggers — *Two Brothers*, *Eleanor*, *Ida*, *Gertrude*, *Kafoa*, *Henrietta*, *Beatrice*, *Xarifa*, *Barb*, *Martha*, *William*, *Rebecca*, *Arthur*, *Rosa*, *Magic*, *Result*, *Moralug*, *Johnnie* and *Annie* and *Majorie*. The station was employed as a store for surplus goods and sundries.

Other references to the Wai Weer pearling operation are usually associated with general descriptions of Torres Strait pearl shelling stations and mention little more than site location, a description of buildings and their general uses. Singe (1979: 160) and Foley (1982: 49) referred

to the slipway, barracks and graveyard and note that at one time (no dates are given) the station employed 164 men and 25 boats.

ARCHAEOLOGICAL FIELDWORK. The features recorded on Wai Weer Island during the 2 field seasons confirm the designated areas by function and ethnicity (Table 1). In 2000, Wai Weer was surveyed and mapped, and selected artefacts surface collected for more detailed laboratory analysis. Due to thick vegetation cover and inclement weather, excavations were postponed until the following dry season. Wai Weer Island was re-surveyed using an Electronic Distance Measurer (EDM) in October 2001 and excavations were undertaken at specific locations. All recovered artefacts are being analysed following release from Australian Quarantine Inspection Service (AQIS). Although Wai Weer Island is divided into a number of features/sites and functional areas, the nature of use of other areas of the island remains unclear.

The most obvious features of the island are the several rock groynes extending out from the foreshore. They function as buffers to rough seas brought on by the notorious tidal surges and strong winds of the Strait. Two of the groynes lie parallel to each other and are constructed using what may be a Japanese stone walling technique. The 3rd groyne is of more random construction and is situated adjacent to the slipway. The groynes all appear to be constructed using local rock. Although 2 groynes have flat edges, the rocks do not appear to be dressed. The parallel groynes would have provided a safe mooring for vessels to unload their shell and restock supplies



FIG. 2. Rock groyne, Wai Weer Island .

and gear. Artefacts found associated with the groynes include case bottles, alcohol bottles, vessel repair material and pearl shell fragments (Fig. 2).

The slipway located between the groynes still features iron rails and timber sleepers. It allowed vessels to be slipped and repaired in a sheltered environment within close proximity to workers' quarters, facilities and Company overseers. Artefacts adjacent to the slipway include copper sheathing (used to sheath the hull of the vessels), copper sheathing tacks, other copper fastenings, iron rails and wooden sleepers, ballast stone, anchor winch, anchor chain, blacksmiths slag and work shed site (Fig. 3).

Inshore from the groynes is a work area where pearl shell was cleaned, packed and dispatched. Numerous pearl shell fragments are present within this area. Timber posts and corrugated iron sheeting associated with the packing shed are also present along with what appears to be a washhouse area.

Of particular interest is the stonework that has been undertaken across the entire island. It includes intricate paths that service the signal station on top of the hill and stone walls of various forms. It is expected that the function of these stone walls will be determined through analysis of associated artefacts (Figs 4, 5).

The signal station on top of the hill was used as a relay point from the signal station on Good's Island to the Government Residence on Thursday Island. Little historical documentation is available for the signal station, a fact no doubt reflecting its short life. As the position of the signal station is one

of the best on the island (in terms of elevation and aspect), it is likely that it was taken over as the manager's residence (Fig. 6).

The graveyard, with approximately 60 graves, was surveyed in detail. Only a dozen or so graves were visible when I first examined the site. Subsequent removal of thick vegetation cover revealed the remaining graves. Only 4 of the graves have headstones giving some indication of the date of interment. All graves feature mounded rocks, some in a more formal fashion than others. It is highly likely that the graves belong to individuals who worked in the pearl shelling industry. It is also possible that the graveyard was used prior to the creation of the Thursday Island cemetery soon after the Thursday Island settlement was established in 1876. As pearl shell collection was taking place adjacent to these islands from the early 1870s, Wai Weer Island would have been a safe and suitable (sandy substrate) place to bury those who passed away (Figs 7-9).

An enigmatic stone-walled area is located adjacent to the graveyard. The stone wall technique is of a formal style (similar to the parallel groynes and possibly of Japanese manufacture) using local stone. Part of this structure may have been a Japanese dwelling house (Kyuahara, 1977) with associated areas being used as an animal pen. Few artefacts were found associated with the site.

The southern end of the Island is where the South Sea Islander dwellings (grass huts) may have been located. The area is cleared of rocks indicating a habitation area but exhibits no stone structures and limited artefacts. Further examination of this area will help to determine its function.



FIG. 3. Slipway, Wai Weer Island.



FIG. 4. Stone pathway, Wai Weer Island.

For an island that housed up to 164 men over a prolonged period of time, surprisingly few artefacts are present. Over 110 test pits dug across the island allowed a comprehensive subsurface profile to be established. Artefacts recovered show few obvious links to pearl shelling industry. The majority are undiagnostic sherds of glass and ceramic. Some of the paucity of artefacts may be associated with souveniring or salvaging (recycling) of remains. Wai Weer is also known as Honeymoon Island as married couples used to make trips there from Thursday Island. The island was also used as a nurse's retreat during WWII and may have been cleared by soldiers.

GOOD'S ISLAND STATION

Good's Island was first surveyed in 2000 after an initial inspection in 1999. Surface collections were also undertaken in 2000 to allow comparisons to be made with artefacts recovered from Wai Weer Island. Good's Island is one of the better known pearl shelling bases within the Prince of Wales Island Group due to its ownership by well known identities. The island has also hosted, over an extended period of time, a pilot station, a school, a signal station, a lighthouse, a coaling station, a hospital, and substantial WWII defence outposts. As a consequence, historians and the general public have shown considerable interest in the island. This regard, however, has not translated into significant recording of sites. These other sites are

historically important and will be documented by the author at a later date for a broader regional analysis of the industrial development of Torres Strait (Fig. 10).

HISTORICAL RECORDS. The Queensland Votes and Proceedings (1890, 3: 174) indicate that Mr Kelly owned a large pearl shell station on Good's Island (with an intention to purchase an extra 50 acres) and that it had been occupied for a good many years. Foley (1982: 79) mentioned that in 1886 the station included a well-established community along with a wharf and a slipway to service its fleet of luggers,

schooners and work boats. The following quote from *The Torres Strait Pilot* (June 21, 1898) revealed a degree of extravagance at the station:

Mr Kelly the manager of the station has determined to provide himself with a little recreation appropriate to the tropical climate; and has consequently ordered a billiard table and all fittings for private use on the station. A room will be erected especially for its reception.

In the early 1900s, the pearl shelling station was run by James Clarke — probably one of the best known and prosperous of the so-called 'pearl kings'. Mullins (1997: 34) described Clarke as the most significant pearl sheller in Torres Strait and indeed Australia. Clarke's pearling fleet operated in Torres Strait, off the Aru Islands, and out of Broome in Western Australia. The Hocking family (Wanetta Pearling Company, HO & RN Hockings Pty) also had a large involvement in the Good's Island base through a number



FIG. 5. Rock walls, Wai Weer Island.



FIG. 6. Signal station, Wai Weer Island.

of different ventures, including the pearl shelling station, repair base, and their combined interests in a cultured pearl farm (Hooper, n.d.: 12).

ARCHAEOLOGICAL FIELDWORK. The station features remains of a large 'Queenslander style' house and is the most intact European manager's house seen on local stations. Extensive surface collections were undertaken as part of the 2000 field season with a marked increase in the quantity and quality of ceramic and glass artefacts being noted when compared to other stations. These artefacts reveal a different class of material culture in terms of function and type (e.g., chamber pot and use of porcelain as opposed to earthenware).

The slipway adjacent to the house is primarily covered in sand with only the remains of iron rails observable. Nearby was located a lugger winch and copper sheathing. An unidentified timber wreck also rests against the slipway (Illidge et al., this volume). The jetty on Good's Island was also recorded. It reveals major modifications for its use during WWII (e.g., iron drums, concrete, increase in size).

Other sites recorded include the slipway and artefacts associated with the Torres Strait pilot station. A grave (marked with a headstone) was recorded on the foreshore approximately 300m from the pearl shelling station.

FRIDAY ISLAND STATION

HISTORICAL RECORDS. Historical information is still emerging on the operation of the pearl shell station on Friday Island. The Queensland Votes and Proceedings (1890, 3: 173) stated that a Quarantine Station was first established at Friday Island in March 1888, when certain buildings

previously used as residences by persons engaged in pearl shelling were transferred to the Government. Friday Island was strategically chosen for the Quarantine Station as it was believed prevailing winds would not carry germs to any of the neighbouring occupied islands. The Government report described the buildings as somewhat frail and at the mercy of white ants. There were 2 small cottages, a store-room, a kitchen and some huts. A lazaret (leper station) at Friday Island was opened on June 23, 1892 and the lepers

from Dayman Island were transferred to it (Queensland Votes and Proceedings, 1894, 2: 917). James Clarke also had a heavy involvement in the pearl shelling base on Friday Island (Hooper, n.d.; Mullins, 1997; Pixley, 1972).

ARCHAEOLOGICAL FIELDWORK. Surveying revealed a slipway that was subsequently recorded in detail. Current residents of Friday



FIG. 7. Grave with headstone, Wai Weer Island.



FIG. 8. Unmarked grave, Wai Weer Island.

Island appear to have utilised materials from previous buildings to construct their dwellings. As a result, structures associated with the pearl shelling station are not apparent. Rock walling was recorded at different locations and represent the remains of known historical sites — pearl shelling station, quarantine station, lazaret, signal station/caretaker house). These sites will be examined at a later date to determine their function. Iron ships' tanks were also recorded (Fig. 11) along with piping. These features are thought to be the same as those described in 1890:

There are some good springs on Friday Island. One of these immediately behind the caretaker's cottage, yields a good supply of water, which is conducted through iron pipes to a tank for distribution (Queensland Votes and Proceedings, 1890, 3: 173).

PRINCE OF WALES ISLAND STATIONS

HISTORICAL RECORDS. No historical accounts have been found regarding these stations apart from an 1890 map detailing their locations.

ARCHAEOLOGICAL FIELDWORK. Six pearl shelling stations were located and recorded on Prince of Wales Island. These were known as



FIG. 9. Grave with headstone, Wai Weer Island.

Collis Shelling Station, Waynes Shelling Station, Tolmans Shelling Station, Cussions Shelling Station and two unnamed stations. Each of these stations features rock groynes built as breakwaters to provide shelter for anchoring vessels. Contemporary houses built over the site of stations severely limit the potential for recovery of undisturbed artefacts and features. These recent house sites make the most of safe anchorages and available level building sites. Many materials from the stations have either been used in the construction of these recent dwellings or removed altogether. No surface collections were conducted on the Prince of Wales Island sites. A shipwreck associated with the pearl shelling industry was located adjacent to the Island at Country Women's Beach (pearling lugger) (Illidge et al., this volume). Further surveying is recommended to ensure any remaining artefacts are recorded in full.

HAMMOND ISLAND STATION

HISTORICAL RECORDS. No historical accounts have been found regarding this station apart from an 1890 map detailing its location.

ARCHAEOLOGICAL FIELDWORK. In the final stages of the 2001 field season, an assessment was made of the Hammond Island pearl shelling station. Significant structures associated with the station were identified and recorded, as were 2



FIG. 10. Aerial view, Good's Island pearl shell station.

rock groynes. The site on Hammond Island was very similar in style to the station on Wai Weer Island. Numerous stone walls occur across the landscape while artefacts adjacent to the groynes include a typical lugger anchor winch, anchor chain, copper sheathing, glass and ceramics. No surface collection was conducted at this site. Further surveying of the site is planned to allow more comprehensive comparisons with the Wai Weer Island station.

HORN ISLAND STATION

HISTORICAL RECORDS. No historical accounts have been found regarding this station apart from an 1890 map detailing its location.

ARCHAEOLOGICAL FIELDWORK. The site of a pearl shelling station on Horn Island in 1890 was located. This site was not surveyed or recorded in detail and no surface collections were undertaken. Subsequent development has altered the site with no visible structures present apart from remains of a jetty. Further surveying and investigation is recommended to record the limited artefacts present.

THURSDAY ISLAND PEARLING SITES

An abundance of recorded and unrecorded, historically significant pearling sites occur on Thursday Island. For the purposes of this project, a preliminary survey was conducted over a number of slipways associated with pearl shelling on the island. These slipways are associated with large quantities of artefacts that need to be recorded in detail to document their past function

and use. These slipways and associated structures were the focus of different boat building yards run by peoples with different cultural backgrounds, each with their own unique methods and style of boat construction. These boat-building sites are currently under pressure from foreshore development and need immediate recording before they are destroyed. Buildings and associated harbour facilities (jetties) were also inspected and again need heritage assessments before additional development removes them.

PEARL SHELLING VESSELS

Another important aspect of archaeological research within Torres Strait is documenting the development of maritime technologies associated with the introduction and expansion of the pearl shell industry. These technologies include the introduction of European designed vessels to service the *bêche-de-mer*, pearl shelling and trochus shelling industries, the adaptation of these vessels to serve all 3 of these industries simultaneously, and changes in vessel type and layout introduced with the advent of diving apparatus and engines. Different cultures also administered changes to vessels to suit their own maritime style and to suit local conditions. Finally, evolution and development of vessel design was achieved through continual use over time and the application of different building techniques by those operating the slipways.

The development and rapid expansion of the pearl shelling industry of Northern Australia happened at a time when Australian boat building



FIG. 11. Water tanks, Friday Island.

was still in its infancy. Vessels such as schooners were servicing the coastal routes along the east coast as debate continued over the virtues of either the Inner or Outer Route through the northern Great Barrier Reef (McInnes, 1978-79). The development of a vessel that could service a maritime industry such as pearl shelling had not been met. Other marine industries such as *bêche-de-mer* and guano were often island based and serviced from larger vessels such as schooners and barques constructed outside of Australia.

The first vessels to proceed to the pearl shelling grounds in Torres Strait were of fair tonnage, usually brigs, barques and schooners. These larger vessels were used to compensate for the fact that all stores and equipment had to be carried from Sydney. However, by 1870 there were 7 boats employed in Torres Strait pearl shelling in addition to a schooner and a brig. These boats had been built in Sydney by the firms MacBeth, Russel and Stephens, at a cost of between £60 and £70 each, all ready for sea with masts, oars, anchor, chain, etc. They were about 30 feet in length with a beam of 8 feet, bow and stern were alike, and they carried 2 standing lugsails. They were said to be able to stand up to any weather, sailed well, and could carry up to 4 tons of produce (McFarlane, 1954: 20). This early use of vessels with lugsails may have been where the term 'lugger' originated.

'Pearling lugger' has, and to a certain extent continues to be used, as the general description of vessel type that was involved with the pearl shelling industry. This terminology is not relevant to all of the vessels that were used within the industry as in the early period of pearl shelling larger vessels such as those used by *bêche-de-mer* collectors were heavily utilised. It is also important to note that most of the vessels employed throughout the whole of the industry were not 'luggers' by the strict maritime definition (i.e., the 'lug' rig of the vessel). The original lugger had a dipping lugsail that had to be partly lowered and then reset on the other side of the mast each time the vessel went about. It was the most common type of sail used in small- and medium-sized fishing vessels in Britain in the 19th Century. Despite its unhandiness, the lugger was a powerful, close winded sail, and was economical because it only required simple gear that did not clutter up the boat when taken in. It was more suitable for fishing vessels with crews as the big lug sail required the crew to operate it (Greenhill, 1970: 24).

The development of vessels was also tied closely to the supply of pearl shell and technological advancements such as the introduction of diving apparatus and a steamship service from southern ports. Divers collected the first commercial pearl shells in Torres Strait from reef flat shallows around islands. The divers then took their haul to shore for defleshing and cleaning. As shell was depleted from these reef flats, small boats known as 'swimming boats' were used. These boats were so named as free divers as opposed to divers using diving apparatus used them. Mullins (1995: 69-70) described these 'swimming boats' as 4-8 tons, carvel built with 2 standing lugs and a jib, and drawing about 1.5m of water. They were partly decked and accommodated 10-15 men with rations for a week. They operated from shore stations or mother vessels, and were sailed to the pearl shelling ground no deeper than about 8m to work the weather tide. The divers went overboard and the boat, under jib and mizzen, made a series of short tacks through the divers, who tossed the shell into the boat. At the windward end of the ground the men were picked up and the process repeated until the tide grew too strong to work.

By the mid 1870s, the vessels used in Torres Strait pearling were becoming standardised as clinker-built double-ended vessels, decked in at each end, with 2 masts, each supporting a dipping lug rig. The introduction of compressed air to suited divers at this time seems to have brought about an immediate change in design. The need for more space for the divers' air hose tenders on deck was a good reason for vessels to develop the counter sterns characteristic of later pearling luggers (Henderson, 1983: 281; Mullins, 1995: 69). DeHoughton (1880: 3) added to this description by stating that the vessels employed in the industry were 5-8 tons measurement, were built in Sydney, generally sharp at bow and stern, rigged with 2 standing lugs and jib, and partly decked over. The amidships were open for convenience of placing a pump, they were mostly carvel built, drawing 4-5 feet of water, coppered, carrying each a small punt, capable of standing much knocking about, and seem well adapted for the purpose. These vessels were often termed 'apparatus boats' and fitted out with sails, fittings, and dive apparatus, fetched a value of about £400 in Sydney (DeHoughton, 1880: 3). The cost of bringing the boat by mail boat to Torres Strait was an additional £40. *The Australasian Sketcher* (1876: 199) detailed that vessels were slung on davits, or inboard on skids on

steamers heading for Somerset. These vessels were described as pearling luggers to be employed in the pearl shell fishery. Their construction consisted of a little cabin aft containing a bank and lockers for provisions and a forecastle where clothes and blankets of the crew could be stowed. The centre of the boat was reserved for the storage of pearl shell and for opening and cleaning the shell. These boats were able to carry from four to five tons of cargo more or less according to size and build.

In 1874, Wilson (1924/26: 113) stated that there were 18 vessels (9 schooners, 3 brigs, 3 cutters, 1 barque and 2 ketches), 40 boats (likely to be 'luggers') and 707 men engaged in the Torres Strait pearling industry. However, owners were also starting to contemplate withdrawing their larger vessels from the fisheries, as a regular mail service had been established with Somerset and was allowing supplies to be forwarded. These owners were also establishing fishing stations on various islands as headquarters for small boats. By the end of the 19th Century these changes were becoming consolidated with communication with Brisbane starting to become more frequent through the steamer *Corea*. The *Corea* started to make monthly trips, taking supplies to the various pearling stations and bringing pearl shell back on the return trip. It was no longer necessary for large vessels to carry produce and men to and from Sydney. Some of the large schooners left Torres Strait and were replaced by small cutters, which made regular trips to meet the steamers. Additionally, outer island pearl shelling stations were replaced by 'floating stations' in the form of large mother schooners which were often over 100 tons burden. The remaining land-based stations were clustered close to Thursday Island and as steamer services became more frequent this centralisation intensified (Haysom, 1999: 31; Mullins, 1995: 145).

Recent oral histories recorded from shipwrights who worked on the slipways of Thursday Island highlight the fact that the Torres Strait lugger was distinct in design from both the Broome and Aru boats (McPhee, 2002). In summary, each of these vessel types were built to meet the local environmental conditions they were working in, the resources they were collecting and the crews that were operating them. The Torres Strait lugger had design features such as a deep draft to stop them drifting in the notoriously strong Torres Strait currents (but also causing problems due to shallow slipways) while the Broome luggers

were more suited to the big tides on the Western Australia coast.

The overall design of the Torres Strait lugger was a functional work vessel that was practical in all weather conditions and could be used as a dive platform, storage and transport vessel. The lugger was a simple design in the early days. There was very little that could go wrong with them and if it did could usually be fixed either at sea or quickly on the slipway. This simple but strong and functional design also allowed luggers to be careened to scrub the hull and in order to kill cockroaches and rats. The rigging was also very simple with everything being hand-operated for ease of use and reliability. The lugger also evolved and adapted over time to suit the changing marine resources that were being harvested. For example, pearl shell luggers adapted for trochus and bêche-de-mer collection, required the addition of boilers, smokehouses and dinghies necessary to process these marine resources. According to Duffield (2002), the particular design of each boat built often had a lot to do with the stern diver and how and where they were working — if he thought his boat was not deep enough for the area that he was working he would talk to the Japanese shipwright or carpenter to make some changes. For example, the *Mercia* had a long ducktail stern on her — one of the reasons was that she sometimes worked trochus and needed to carry dinghies.

Over time Thursday Island became one of the major shipbuilding centres along the Queensland coast. There were up to 4 slipways operating on Thursday Island employing a myriad of peoples with different cultural backgrounds as shipwrights and carpenters. The majority of these were Japanese who were regarded as highly skilled and as a consequence were well-respected shipwrights. These Japanese shipwrights built vessels using tools familiar to them (e.g., Japanese adzes) and introduced techniques from their own maritime knowledge and heritage. As a consequence, Thursday Island hosted a complex ethnic mix with slipways in areas known as 'Jap Town' and 'Malay Town' for example (Grimwade, this volume).

The development of pearling technologies can be linked with different cultures crewing, operating and building the vessels. Mullins (1995: 70) provided insight into the varied ethnic mix of crews working within these industries, noting the crews of the *Crishna*, *Julia Percy*, *Pakeha* and *Western Star* originated from

Mexico, Mauritius, Java, Singapore, Sri Lanka, New Hebrides, Rotuma, Mare, Lifu, Tana, Eromanga, Aneityum, New Caledonia and the Solomon Islands. Each of these peoples, coming from different cultural backgrounds, brought their own maritime knowledge, skills and heritage, enabling a multicultural workforce unique to Australian industry at the time.

A good supply of local raw materials facilitated the local construction and maintenance of Torres Strait luggers. Ovoid ballast stone was obtained from Prince of Wales Island and Good's Island. Tea tree used for frames was cut from Prince of Wales Island and from around Aurukun and Edward River in the Gulf of Carpentaria (Japanese used to go into the tea tree swamps with the locals and wire templates and cut the grown frames). In summary, the Thursday Island luggers were locally built by people with local knowledge using local resources whenever possible. The development of the Thursday Island lugger and associated diving apparatus and techniques are unique examples of maritime technology developed over time to suit a specific industry.

After World War II there was a marked difference in the type of vessels used in the pearl shelling industry. The majority of luggers were taken away during the war to New Guinea to reduce the availability of vessels for Japanese invaders. After the war there were only about 10 boats working, comprising airforce crash boats, submarine chasers and trawlers.

One final aspect of the maritime technological transformation that should be mentioned is the transfer of technologies from European vessel design onto local indigenous watercraft. From a fairly early stage, Torres Strait Islanders were able to adapt European ship features such as sail design onto their own vessels — in other words they were able to replace their traditional mat sails with European rigged sails. Other aspects of the transference of maritime knowledge was the sudden influx of South Sea Islanders into the Strait with their experience of double outrigger canoes and their knowledge of prior employment with European capitalists in the *bêche-de-mer* industry.

CONCLUSION

My initial findings into the pearl shelling industry of Torres Strait provide stepping-stones for continued research. Other aspects of the industry not discussed in this paper include the impact of the pearl shelling industry upon the

Indigenous cultures of Torres Strait and Cape York, diving methodology and changes overtime, social aspects of life on board the luggers, and the reasons behind the decline of the industry (Ganter, 1994). Pearl shelling, as one of Australia's most important maritime industries, has started to receive the archaeological attention it deserves.

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