

Shell artefacts in Cape York Peninsula: A literature review

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Abstract

As Australia's largest peninsula, Cape York Peninsula in Queensland presents abundant opportunities to understand the complex relationship between people and coastal environments. Beyond merely being food refuse, shells demonstrate considerable cultural significance as both practical tools and symbolic objects. Yet studies of shell artefacts across Cape York Peninsula have been limited. The Agayrr Bamangay Milbi (ABM) Project, a Traditional Owner-led archaeological and heritage project focused on the southeast Cape, offers an opportunity to address this issue. As a first step, a comprehensive examination of the existing literature on shell artefacts in the region illuminates their diverse functions and cultural implications, and review of anthropological and archaeological work undertaken since 1985, including new results from archaeological survey, updates the earlier work of Schall (1985). Shell artefacts fall into several categories: utility tools, spoons, fish hooks, component elements (primarily of larger wooden objects), ornaments, rattles and containers. The rich source material underscores the need for more focused and systematic analysis of manufacturing techniques, actualistic studies, and investigations of residues and use-wear on shell objects, as well as detailed studies of specific object classes. Future investigations should focus on conducting more extensive technological analyses and exploring the socio-cultural significance of shell artefacts in greater detail.

Introduction

Bordered by water on three sides, Cape York Peninsula (CYP) is Australia's largest peninsula, with a disproportionately long coastline embracing the world's richest and most diverse coral reef habitat. Inland of the coastal strip lies a relatively narrow but rugged hinterland bisected by the Great Dividing Range. Given its distinctive geography, CYP provides an ideal setting for examining the relationship between people and coastal environments – a connection that remains deeply relevant to this day. The Aboriginal peoples of this region still tend to refer to themselves as either 'sand beach' (saltwater) or 'sand-ridge' (inland) people (Beaton 1985; Chase 1980; Chase and Sutton 1981, 1987; Verstraete and Hafner 2016; G. Musgrave pers. comm.) and interact widely, exchanging materials from the coast inland and vice versa (e.g. Rigsby and Chase 2014; Roth 1910a; Thomson 1934). From an archaeological perspective, shell serves as the most tangible evidence of these intricate relationships between people and place, especially as people continue today to forage for shellfish as food, as bait (for fishing) and to make personal ornaments such as jewellery. The coastlines of CYP are renowned for their abundant shell middens, and, although in the inland regions the large middens that dominate coastal regions are generally absent, freshwater mussels were a common food source along the myriad large and small watercourses.

Much of the existing archaeological research on shell middens regionally has focused on site formation processes, subsistence strategies and environmental change, with scholars often interpreting their findings in the context of ecological studies of sea-level variations and the productivity

of aggrading and prograding shorelines (e.g. Bailey 1977; Bailey et al. 1994; Cribb 1986a, 1986b; Cochrane 2014; Greer 1995:104–105; Lambrides et al. 2020; Morrison 2000, 2003, 2010, 2015; Morrison et al. 2018; Shiner et al. 2013; Stanner 1961; Wright, M. 2018; Wright, R. 1971; Wright et al. 2023). More recently, scholars have turned to advanced analytical techniques, such as isotopes (e.g. Fanning et al. 2018; Twaddle et al. 2017; Wight 2020), to better understand factors of seasonality in site use. While informative, such studies form only one aspect of the relationship between human groups and coastal environments, as shellfish play a dual role: not only essential sustenance, but as discarded refuse they also provide an abundant raw material suitable for the production of material culture (Hook et al. 2024; Irish 2007; Szabó 2017). Investigating objects made entirely from, or incorporating, shell components affords a more holistic understanding of the profound connection between human societies and coastal ecosystems, and also how people imbue objects with meaning (e.g. Przywolnik 2003; Szabó 2005). Yet, in contrast to the extensive literature available on shell middens in CYP generally (see references above) and the study of shell artefacts elsewhere in Australia and beyond (e.g. Hook et al. 2024; Parkinson 2016; Roberts et al. 2021; Viales 2013; Weston et al. 2017), the study of shell artefacts in CYP has received far less attention. A notable exception is a study by Schall (1985), who presented an excellent review of shell artefacts in CYP based primarily on the ethnographic collections of Donald Thomson in Museums Victoria and Walter Roth in the Australian Museum. In doing so, she drew strongly on the ethnographic observations of Thomson

(unpublished field notes) and Roth (published bulletins), Ursula McConnel (1953) in western CYP, and Hale and Tindale (1933) in Princess Charlotte Bay (PCB). However, given that nearly 40 years have passed since Schall's (1985) review, during which time further anthropological and archaeological work has been undertaken, we consider it timely to revisit the shell material culture of CYP.

Aim, scope and methods

The aim of this paper is to explore the variety of shell artefacts across CYP, providing a source to guide future detailed analyses of archaeological shell specimens. With this in mind, and in keeping with the framework of the Agayrr Bamangay Milbi (ABM) Project, the literature review presented herein is primarily concerned with southeast CYP, though information from elsewhere across the Peninsula is included as appropriate (Figure 1). We consider both published and unpublished literature, concentrating initially on items relating specifically to the ABM Project study area, then expanding this to southeast CYP, and then the entire CYP region more broadly. We deliberately exclude the rich corpus of shell objects from the Torres Strait Islands, owing to their close cultural ties with the material culture of New Guinea, as well as objects further afield (such as those in the Pacific) given their entirely different cultural contexts. Archaeological and anthropological projects undertaken since Schall's (1985) review were a priority (noting, of course, the inherent limitations of any ethnographic study). In addition to published information about objects from CYP accessioned in Museums Victoria (Schall 1985), the South Australian Museum (McConnel 1953) and the Australian Museum (Khan 1993, 1996, 2003, 2004; Schall 1985), objects in the Queensland Museum (QM) (some of which were described in Allen 1980) were viewed by researchers, including members of the Laura Aboriginal community, on multiple occasions, though, unfortunately, and as is often the case elsewhere, a key constraint with the QM collection is that many of the items are poorly provenanced and catalogue information is limited. These investigations were complemented by archaeological evidence derived from the initial three years of fieldwork for the ABM Project between 2021–2023.

Results: Ethnographic accounts and collections

There are essentially two types of shell artefacts in CYP: (1) those crafted from shell fragments; and (2) those fashioned from whole shells with no or minimal modification. Shell fragments are typically used for the manufacture of smaller objects, such as utility tools, fish hooks, spearthrower components, and various items of personal adornment, including necklaces, necklets, chest ornaments, nose pins and pubic coverings. Whole shells primarily serve as containers, but some species, such as *Geloina coaxans*, may have been expediently used as utility tools and spoons, and smaller species may have been strung whole, with just a small hole drilled to form necklaces or rattles. Figure 2 provides a schematic representation of the classification of shell artefact categories, each of which is considered more fully below.

Utility tools

Utility tools, in this context, are used for everyday activities, often in the process of making other objects. The most cited function of utility tools is scraping, although it should be noted

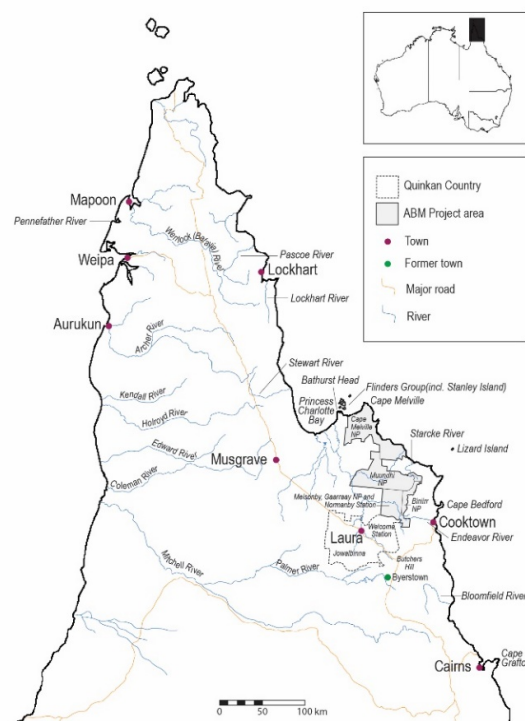


Figure 1. Map showing places mentioned in the text.

that the term ‘scraper’ may not align with its modern, widely used definition. Roth (1904:20) specified that he referred to scrapers variously as ‘spoke-shavers, gravers, adzes, gouges, chisels, scrapers, knives’, identifying them based on the motion applied in their use. To avoid confusion and unnecessary typological classifications, we differentiate only between ‘scraping’ and ‘cutting’ tools based on the description of the artefact’s use and the motion applied. Morphologically, utility tools can comprise fragments obtained from either the knapping or breakage of shells, or entire shells that are expediently used without modification; these obviously present challenges for identification.

In northwest CYP, McConnel (1953:8) noted ‘mussel shells’ used as scrapers around the Archer, Kendall and Holroyd Rivers, and Thomson (1939:209) recorded the use of shell adzes by Wik people, as well as bivalve shells by Yintjingga people near the Stewart River, to clean the hides of dugongs (Thompson 1934:247, 261). Taylor (1984:59) described shells used for cutting and scraping as a core part of the ‘male tool-making kit’ around the Edward River, and Sharp (1953:18) noted sharp-edged bivalves used for processing plant materials by the Yir Yoront of the Coleman River.

In southeast CYP, Rigsby and Chase (2014:340) recorded the shaping of heavy clam shells sourced from the reef into adzes by Lama Lama people occupying the coast from PCB north to the Massey River. In this broader region (including the mainland and Flinders Group of islands) and the Bloomfield River, mention of shell scrapers frequently arises in discussions about the crafting of bark knot containers fashioned from the twisted protrusions found on the base of certain eucalyptus trees (e.g. Khan 1993:72, 99, 2004:44). The base of the knot was cut with an axe, and a pointed stick employed to loosen its edges, allowing the hollow knot to be extracted intact. Its interior was charred using fire and then smoothed by scraping with a shell or stone (Roth 1898a:26).

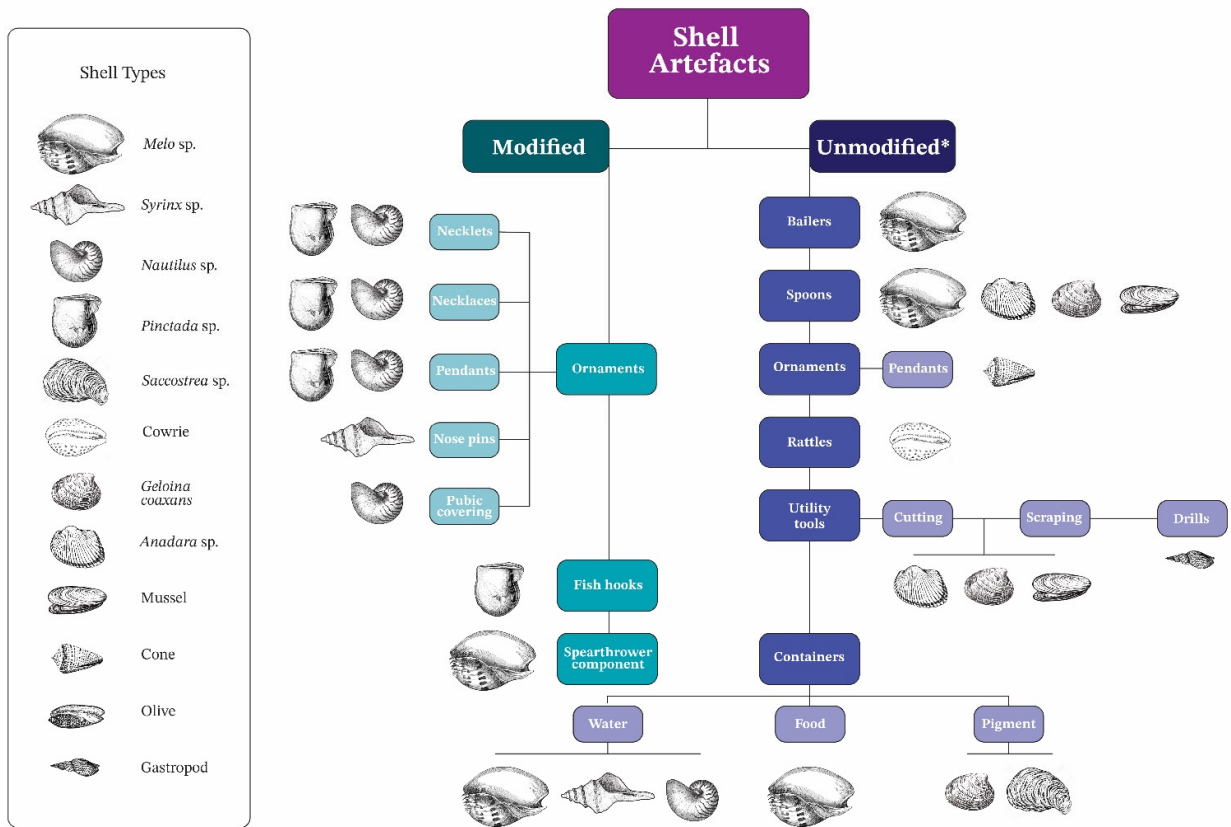


Figure 2. (a) Schematic showing shell artefact categories. *These items are either unmodified or largely unmodified.

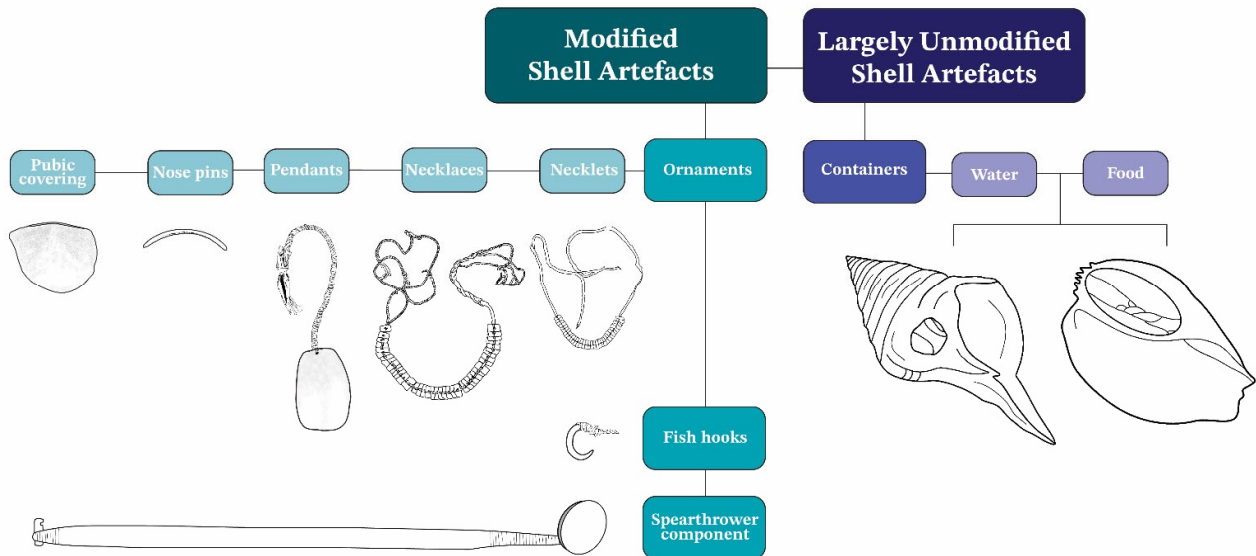


Figure 2. (b) Schematic showing finished shell artefacts.

Shell tools were also often used in processing bark to form fibre with which to manufacture various items, including woven bags, baskets and ‘skirts’ (Khan 1993:166, 2003:98, 2004:46). At Bathurst Head, woven baskets were fashioned from strips of fish-tail lawyer cane, the surfaces of which had been smoothed using pieces of shell (Khan 1993:40).

Tools not openly identified as scrapers or used for scraping actions are also mentioned, and are here defined as ‘cutting tools’. They are typically involved in manufacturing other artefacts from different raw materials, although shell was used for cutting the human body during mourning ceremonies on the Flinders Group of islands:

When a man dies the body is wrapped in bark: a mourning ceremony is performed, at which there is much ritual, wailing, and cutting of the body with shells, and the corpse is then buried. (Hale and Tindale 1933:95).

The manufacturing of wooden spears, drills and spearthrowers often involved using shell artefacts to cut or split the wood to allow the insertion of other materials (Roth 1904:24, 1910a:198). The use of shell as a tool to cut wood was also used at the Archer River during the manufacturing of canoes:

A short piece of timber, acting as a spreader or stretcher, was jammed into position to outline the future shape of the canoe ... The end was cut with a strong sharp-edged shell from below, upwards, the cutter cutting towards himself (Khan 1993:24–25).

In addition, shell-cutting tools of unspecified species were employed to cut grass reeds (in the Bloomfield River area; Khan 1993:114) and orchid stems (around the Endeavour River; Khan 1996:49) into small segments from which to craft necklaces. Although elsewhere *Melo* shells were used to fashion knives (e.g. Hook et al. 2024), there is no indication in the ethnographic literature to suggest this was the case in CYP.

In northwest CYP, McConnel (1953:16, Fig. 3a) reported the use of gastropod shells (specifically *Turritella cerea*) as a drilling tool, the shell being ‘fastened to the end of a stick (fixed so that the point is in a central position) and twisted between the hands like a firestick’. No other accounts of similar uses of gastropods have been located across CYP. Presumably, such a drill would only be effective on certain raw materials.

The descriptions of these tools share a common characteristic: they are often mentioned tangentially in the literature as part of manufacturing other implements, rather than being the focus of dedicated discussion themselves. This explains their corresponding lack of technological detail, although in at least some instances attention is given to the movements involved, such as by Roth (1904:21) when defining scrapers and illustrating fish hook manufacture.

Information regarding the specific shell species employed as utility tools is often absent. The non-specific phrase ‘mussel shell’ is frequently mentioned, particularly in the context of manufacturing fibre implements. Roth (1904:20–22) indicated a range of species would be used for various tasks, including *Polymesoda coaxans* (now *Geloina coaxans*), *Cyrena* sp. (now *Corbicula* sp.), *Donax australis* (now *Latona cuneata*), *Isognomon ephippiumaris* [sic], *Melo* spp. and *Tellina pharonis* (now *Pharaonella pharaonis*). Although

elsewhere pearl shell was used to make knives (such as in northwest Australia, where pearl shell fragments had resin handles added; Akerman 2023:66), this does not seem to have been the case in CYP. In inland areas, saltwater species were less easily procured and, instead, species of freshwater mussels (*Velesunio* spp.) and *Batissa* spp. shells were likely used for scraping or cutting, replicating many of Thomson’s ethnographic photographs from the coast showing the use of *Batissa* shells in scraping-related tasks (Schall 1985:64, 65).

Spoons

The identification of spoons is difficult without direct knowledge from the person from whom such an object was originally acquired, since spoons might be drilled and suspended from a string around the neck, and thus be confused with pendants (Roth 1904:29; see below). Nevertheless, the QM collection from southeast CYP (specifically Cape Bedford and Butchers Hill) includes at least four objects designated as ‘spoons’, one made from *Velesunio*, two from *Melo*, and the other from an unknown species, all collected and donated by Roth. Roth (1898b:4) described these specimens as ‘*nging-gün* = mussel shell (used as a “spoon” etc)—brought here from Byerstown and Palmer River’ and ‘*wâr-Kül* = “spoons” made from marine shells obtained from Kâr-bö } the Bloomfield & Cooktown’. Hedley (1922:163) also reported that ‘the melon shell [‘melon’ shell is the common name of *Cambium flammeum*] was the handiest thing from which to carve a dish or spoon or anything else in the crockery line”.

Fish hooks

Shell fish hooks were relatively common in many parts of Australia (e.g. Gerritsen 2001; Massola 1956; Rowland 1981; Walters 1988), but their use around the CYP coastline is somewhat ambiguous. In PCB Beaton (1985:6; see also Rigsby and Chase 2014:330) noted:

a careful search for shell fishhooks was made not only in the [Endaen] excavation but also across the deflating dune sites near the shelter. No fishhooks, fishhook blanks or tools to fashion hooks (e.g. drills) were found. I inspected sufficient shell to suggest that fishhooks were never a significant element in the material culture assemblage.

Nevertheless, there are other indications that shell fish hooks were indeed used around the CYP coastline: Moore (1979:239) reported their use at Cape York, as did Thomson (1939:209) on the north CYP coast, and Roth (1901:21, 1904:33) around PCB. Importantly, at the Endeavour River in 1770 Lieutenant James Cook noted that:

They have ... a small bag, about the size of a moderate cabbage-net, which is made by laying threads loop within loop, somewhat in the manner of knitting used by our ladies to make purses. This bag the man carries loose upon his back, by a small string which passes over his head; it generally contains a lump or two of paint and resin, some fish-hooks and lines, a shell or two, out of which their hooks are made ... Their fish-hooks are very neatly made, and some of them are exceedingly small (cited in Hawksebury et al. 1774).

Similarly, when botanist Allan Cunningham of the 1821 Matthew Flinders expedition went ashore at Cape Tribulation and visited an Aboriginal camp, amongst other items he noted

'a line, five or six fathoms long, furnished with a hook made from a shell, like the hooks of the South Sea Islanders' (King 1825:18 June 1821 entry).

It thus seems likely that shell fish hooks were a standard part of the coastal tool-kit in CYP until metal fish hooks became readily available, after which they largely dropped out of use. It is also worth noting that other fishing methods (especially netting/trapping and spearing) were common in CYP, somewhat negating the need for line fishing (Roth 1901; Thomson 1939).

Roth (1904:33) helpfully recounted in detail the manufacture of pearl-shell fish hooks at Cape Grafton (near Yarrabah, south of the ABM Project area), thereby indicating that such manufacturing techniques were likely to have been known on the east coast of CYP:

Picking a fresh "pearl" shell ... the operator chipped round and round the valve between two stones, until he at last succeeded in breaking it down to a more or less circular plate about 2 inches in diameter, with rough uneven edges. He next placed two pointed pieces of hardwood on the fire, and as soon as their sharpened ends were burnt and charred, put the smouldering extremities close to the centre of this shell-plate ... and blowing upon them with no inconsiderable force, caused the flame to play only upon its very centre, which was thus rendered comparatively brittle. But little difficulty was then experienced in breaking through, at this spot, with a pencil of white coral. The hole, once made, became gradually enlarged into the required oval ... by filing backwards and forwards with the coral, which at very frequent intervals was dipped into water to assist in the grinding. The uneven outer edge of the oval ring so produced was next gradually ground into shape ... until the desired width of hook was reached. The final processes consisted in very carefully grinding its middle ... up and down on a sharp vertical edge of rock until a break was obtained, and then finishing off with the rock and coral-file into the completed crescentic form.

Spearthrower components

There are numerous mentions, photographs and drawings of (usually) oval-shaped discs of *Melo* shell fixed to the proximal ends of spearthrowers across CYP, potentially functioning to enhance grip, as a counter-weight, or as decoration (e.g. Akerman 2018:205; Allen 1980:72–73; Beaton 1985:4; Chase and Sutton 1981:1823; Davidson 1936:470, Fig. 5; Hale 1927:9; Hale and Tindale 1993:99–100, Fig. 82; Hedley 1922:163; Kennedy 1934:174; Khan 1993:156, 186, 1996:64, 2004:39, 55; McConnel 1953:11, 27; Mjoberg 2015:Figs 161, 200; Rigbsy and Chase 2014:340; Roth 1898a:27, 30; Sutton 1994:40, 41, Fig. 11). These distinctive spearthrowers are the most common shell-related material culture objects from CYP in the QM collection (n=87, after Best 2003:138).

Incorporating baler shell into a spearthrower was a time-consuming process, and it is one of the few shell artefact forms that has been well described ethnographically. Hale and Tindale (1933:99–101) described baler shell fragments being roughly shaped by chipping, and then refined into ovals by grinding with stone, sand and water. The convex face of the shell would be polished using a smooth rock and finer sand until shiny. Next, two shell ovals were attached, with their concave faces opposing each other, onto the spearthrower, with the gap between them filled with beeswax and a charm nestled within. The grip portion of the stick near the shell was then coated with gum, sometimes supplemented with string. This description was accompanied by photographs of an

unnamed Walbaria man on Flinders Island shaping a shell into a hand grip (Hale and Tindale 1933:Fig. 83, see also Fig. 85 for images of unfinished and finished spearthrowers with shell components). Tindale's unpublished notes associated with his 1927 field trip to CYP also specifically noted grinding dishes being used to shape baler shells for woomera handles (as cited in Jones 2008). There are also abundant references to the widespread trade of these implements to the south, including of the shells once detached from the spearthrower:

The area within which these baler shell spear-thrower ornaments are made is limited to Cape York, but the shell dishes detached from the throwers are articles of trade to southern inland peoples. By slow degrees they may pass south-east as far as Cooper Creek in South Australia, where they are highly prized as neck ornaments to be worn by young male initiates (Hale and Tindale 1933:100–101; see also Akerman 2018:205; Davidson 1936:471–473).

Coastal groups north of PCB also traded baler shell with inland groups, often in return for important medicine and magical charms associated with dugong hunting, as well as for red ochre, millstones and reed spears (Thomson 1934:240, 251).

Ornaments

Necklaces and necklets

An awareness of the use of shell in items of personal adornment in CYP dates back to some of the earliest written accounts. For example, during his 1770 stay at the Endeavour River, Lieutenant James Cook described the presence of shell necklaces and pendants, considering them to be high-value items:

Mr. Banks, Dr. Solander, and myself took a turn into the woods on the other side of the water, where we met with five of the Natives ... Two of these wore necklaces made of shells, which they seem'd to value, as they would not part with them (Cook 1893:18 July 1870).

they had necklaces made of shells, very neatly cut and strung together ... Besides these, some of them had gorgets of shells hanging round the neck, so as to reach cross the breast (Cook as cited in Hawkesworth et al. 1774).

Similarly, the botanical draftsman on the *Endeavour*, Parkinson (1773:147), described Aboriginal necklaces as being 'made of oval pieces of bright shells, which lay imbricated over one another, and linked together by two strings.'

Schall (1985:7) suggested standardising terms for head and neck ornaments, with 'necklets' being ornaments worn tightly around the neck and/or forehead (also known as forehead circlets, forehead bands, necklaces, head fillets and headbands), while 'necklaces' are longer ornaments worn loosely around the neck or across the shoulders. We adopt this terminology here. Schall (1985:8) identified four forms of necklet:

1. Those made of larger (c.2 cm long), rectangular nautilus shell segments strung securely and flat, so that the segments overlapped. These were commonly traded south from PCB to Cooktown, the Bloomfield River, Palmer River, Cape Grafton and Cairns (Roth 1910b);

2. Those made of smaller (c.1 cm long), rectangular nautilus or pearl shell segments strung securely and flat, typically found in western CYP. These were sometimes used in mourning ceremonies by women in some groups or in initiation ceremonies by men and women (e.g. McConnel 1953:15, 16, 24; Mjoberg 2015:Fig. 299; Sutton 1994:50; Thomson 1933:481);
3. Those made of larger, oval pearl shell segments strung loosely, generally found only along the lower west coast of CYP (Sharp 1985:14); and,
4. Those made of very large, oval nautilus shell segments strung loosely, possibly traded from Cape Grafton north to PCB (Sharp 1985:16).

Schall (1985:18) also recognised two unusual forms of necklace: one made from olive shells (*Oliva caldania*) and another from tusk shell (Scaphopod). The former were worn as mourning necklaces and are only found along the west coast of CYP. Olive shells were also used for the production of waist belts around Mapoon (Schall 1985:41) and in the Archer, Kendall and Holroyd River areas (McConnel 1953:15), but there is no evidence that such existed in the ABM Project area. Also, McConnel (1953:15) suggested ‘these ornaments are mostly borrowed from the north and are not, properly speaking, indigenous [sic].’ Thomson (1933:540, Plate XXIX) also photographed people wearing ornaments made of reef shell, which do not fit neatly into Schall’s (1985) scheme.

Necklets crafted in PCB were primarily made from *Nautilus* spp. shell, predominantly *N. pompilius*, although in some cases the shell is simply referred to as ‘pearl shell’. Information regarding the manufacturing process of the rectangular pieces is limited, though Roth (1898) noted that the shell must be worked while fresh, or otherwise rehydrated by soaking in water. After being broken into segments, the edges were bitten with the teeth and ground down to the desired shape (Roth 1910b:32). Each rectangular piece was then perforated with a single hole using one of a variety of usually non-stone drill tools specific to the geographic area. The shells were then threaded onto two fibre strings that passed through the hole from opposing sides to allow for a close overlap of the pieces (Hale and Tindale 1933:140) (Figure 3).

While most necklets and necklaces were made from pearl shell, Schall (1985:19) described a single example of a scaphopod necklace collected by Roth from the Staaten River area, and young children in the Pennefather River area were also said to have worn this form of necklace. Scaphopod necklaces seem to be more common in coastal areas beyond CYP (e.g. Akerman 2018:208; Balme and O’Connor 2019; Balme et al. 2018).

Such items of personal adornment were seemingly deemed valuable (Hale and Tindale 1933), a factor which likely contributed to their extensive trade (Roth 1910a:18–19, 1910b:28). Numerous examples of such necklaces from the Laura region are present in the QM collection, including 12 headbands and two necklaces collected by Native Mounted Police officer Daniel Fitzgibbon.

Interestingly, the manner of wearing strung shell fragments varied from one region to another: in the Bloomfield River, Cape Bedford, and PCB areas, men wore them as headbands (Figure 3), while women wore them as necklaces (Roth 1910b:27, 28). However, upon reaching the



Figure 3. Kuku-Thapan elder Tommy George (now deceased) wearing a shell headband collected by Walter Roth during a visit to the Australia Museum (Photograph: Noelene Cole, reproduced with permission of Roseanne George).

Middle Palmer River area through trade routes like the Musgrave River, they were exclusively worn as necklaces by both men and women (Roth 1898a:63, 1899:21, 1919). At Butchers Hill, Roth (1898b:4) named this form as ‘*chil-ngâr* = the square nautilus-chip necklace: worn by men over the forehead, by women around the neck’. It is also of note perhaps that McConnel (1953:351) noted ‘pearl-shell necklets and forehead bands’ worn during ceremonies associated with the traditional burial rites of the Wikmunkan people, though it is not clear if such items were also worn at other times.

Chest pendants

Unlike necklaces and necklets composed of multiple shell fragments, chest ornaments consist of a single, larger piece of shell attached to a string to form a pendant (Schall 1985:7). While these are reminiscent of similar objects from the Kimberley region in northwest Australia (e.g. Akerman 2023:9), those from CYP generally tend to be undecorated. Across CYP, Schall (1985:29, 39) recognised four main forms of pendant, based on the species of shell used, with a fifth category being a heterogenous group of more unusual shell types (including *Placuna placenta*, *Malleus vulsellatus* [now *M. regula*] and *Solarium* [now *Architectonica*] *perdex*).

In some areas, the first group of chest ornaments were predominantly crafted from *Nautilus* shell, and although described as ‘common’ by Hale and Tindale (1933:141), are poorly represented in museum collections. Roth (1910b:35) conjectured that the relative fragility of *Nautilus* shell might have prevented its extensive trade, thus making it rare outside of the coast and hinterland zones, although Western collector bias may also have operated on the part of male collectors who considered pendants to be feminine or superfluous to their interest in hunting and fighting weapons (cf. Best 1986). It is also possible that such pendants were highly prized and thus their owners were loath to part with them (as surmised by Cook), though there are indications that even uninitiated children could wear them (e.g. Thomson 1931:57). Certainly, Traditional Owner knowledge indicates the symbolic value accorded to these objects, and just north of PCB Thomson (1933:472, 1934:240) indicated that pendants made from a

single *Conus millepunctatus* (now *C. leopardus*) shell were 'greatly prized', as were mother-of-pearl pendants; perhaps importantly he did not describe any other form of shell ornament as being valued in this way (Thomson 1933, 1934). Another possible reason for the under-representation of *Nautilus* pendants in collections may be the relative rarity of the species. *Nautilus* species live on the deep slopes of coral reefs between 100–600 m (Vandepas et al. 2016:4924). As such, access to their shells would be infrequent, and most likely when storm surges washed the shells into shallow water or onto the shore. With such a broad use of this species in CYP material culture, it is also likely that larger, broken *Nautilus* shell pendants were quickly re-purposed into other items, such as necklets.

Elsewhere around the CYP coastline pearl shell dominates pendant morphologies (e.g. McConnel 1953:4, 15), though such objects were rare inland. Pearl shell pendants in museum collections display a range of shapes, including oval, teardrop, narrow rectangular, triangular and crescentic, forming Schall's second group (Allen 1980; Hamlyn-Harris 1918:Plate ix; Schall 1985:32). Schall's (1985) third group of pendants are baler (*Melo*) pendants, these seemingly being limited to southwest CYP, from where they were traded inland (e.g. Akerman 2023:144; Mountford and Harvey 1938). The fourth group are cone shell pendants, these only appearing in far north CYP (Schall 1985:31; see also Hamlyn-Harris 1915).

Extensive details are available regarding the manufacturing process of pendants (Hale and Tindale 1933:141; Roth 1910b:35). The outer layer of the shell was removed by placing it face down on the ground and covering it with hot ashes to facilitate easier removal of the surface during grinding on a stone and subsequent water rinsing. Following the grinding process, a hole was drilled into one end of the shell, and a piece of bark fibre string threaded through and secured with knots. While information about the use of kangaroo tooth drills around PCB to make head and neckbands is available (see earlier), details about the tools and techniques used to make the hole for chest ornaments are not provided. Elsewhere, Roth (1899:21) mentioned 'pearl, cut narrow' and 'nautilus, cut broad' pendants on the Middle Palmer River. This suggests a distinction in manufacturing based on the raw material, although he did not elaborate further.

Roth (1910b:35) recorded that the use of pendant ornaments in the ABM Project area differed between men and women, naming them '*mel-bâr* = the cup-shaped portion of nautilus shell worn by men over the back of the shoulders, by women between the breasts' (Roth 1898b:4). Possibly those worn by men were longer and larger, while those worn by women were smaller and rounder (Schall 1985:33).

Material culture items seem rarely to be mentioned in Creation stories across the region, which makes any such accounts of particular interest. In this regard, a Lockhart River area Creation story recounts two sisters who travelled south from the Holroyd River searching for lovers; to signal their intent they decorated themselves with ochre, possum fur headbands, *Pandanus* armlets and shell pendants (Taylor 1984:211). This fits with traditional knowledge held by Kuku-Thaypan speakers in the Laura region, whereby pendants are seen as a symbol of 'love magic' (Ang-Gnarra Aboriginal Corporation 1996; Trezise 1971:9).

Nose pins

Nose pins (or pegs) were a common artefact observed in most parts of Australia and, while usually fashioned from bone (Akerman 2018:202), around PCB there are mentions of nose pins made from 'carved shell' (Hale and Tindale 1933:77). Hale and Tindale (1934:14) noted these made from *Megalatractus* [now *Syrinx aruana*] shell, being:

large, seven or eight inches in length, and at a little distance the persons wearing them appeared to have long moustaches of the 'walrus'? type, As far as could be ascertained nose ornaments have no ceremonial significance amongst the Princess Charlotte Bay people, and are worn simply as decorations.

Similarly, Rigsby and Chase (2014:341) noted the ridge strips from large 'trumpet shells' (presumably *Syrinx*) being used for nose ornaments, and Sutton (1994:50) noted shell nose pegs being common in Wik country. Several photographs exist of Aboriginal people wearing such pins (e.g. Hale and Tindale 1933:Figs 201, 207). Both men and women were likely to wear shell nose pins, though gender preference varied by area (McConnel 1953:4,15; Thomson 1939:209). One shell example in the QM collection, from northwest CYP, is described as likely being *Syrinx aruanus* (now *S. aruana*) or *Turritella crocea* (Allen 1980:10), although the latter seems unlikely given the piece's curvature. Regarding the traditional manufacturing process of nose pins, there is limited information available, except that fresh or soaked shell must be used, and the pins were typically obtained from the whorls of *Syrinx* shells (Hale and Tindale 1933:140; Roth 1910b:29-30; Schall 1985:40).

Pubic coverings

Swedish collector Eric Mjoberg (2015:Fig. 237), much better known for his ethnographic work with Aboriginal groups of the rainforest country southeast of the ABM Project area, recorded large pieces of pearl shell strung from a waist belt and hung in front of the genital area during his short visit to the Coleman River on the western CYP coast. The QM collection includes: (1) one object from the Bloomfield River region (collector unknown), which is described as a 'pubic cover' made from a *Nautilus* shell with fibre string attached; and (2) two similar shell items from the Aurukun region described as being worn by young girls and boys before puberty (Allen 1980:25).

A comment on items of personal adornment made from shell comes to us from Peter Good, a gardener on Matthew Flinders' 1802 journey. Good described meeting Aboriginal people along the coast near Cape Bedford (who came out to their vessel in canoes) on 30 October 1802, stating:

they were naked but wore several ornaments. Most all had the ears cut in several places & pieces of a kind of pearle [sic] shell neatly cut & fixed in the ears of different shapes. They had various tassells [sic] made from fibres of the bark of some tree, neatly plait [sic] & fixed, some round the neck, others the arms, some round the middle & some the legs. They had also gorgets for the breast, some neat neck bands & some had a piece of a large shell with string fastned [sic] to the lye [sic] round the middle which completely covered the privy parts but few wore it (Edwards 1981:97-98).

Rattles

Instances of shells (cowrie and *Anadara pilula*) being strung together to form children's rattles are known from CYP, including from the Pennefather River and Mapoon, and the Batavia and Wenlock Rivers (Haagen 1994:6; Roth 1902:24). Etheridge (1894) also described one such item collected approximately 100 miles (160 km) inland from Port Douglas south of the ABM Project area, though he considered it might have been a Papuan-derived object.

Containers

In CYP, as elsewhere (e.g. Akerman 1973, 1975; Allen 1980:89; Davidson 1937; McCarthy 1956; Smith and Veth 2004), shells used as carriers and containers were widespread. *Melo* shells were used most commonly as containers, although there are some instances of *Nautilus* shells being similarly used (e.g. Hale 1927:9; Hale and Tindale 1934:132–135, Fig. 167). Additionally, *Syrinx* shells were also identified in this capacity (Roth 1904:29), as were conch shells (Sutton 1994:46). Along the northwest CYP coast, Sutton (1994:38) noted that:

a baler shell on the ground was a common sign of the presence of a well. Although potable surface water was abundant in the wet season, it was not so in the dry season ... Coastal people preferred to dig a well, even next to a large pool of water.

Sutton (1994:Fig. 17) shows Traditional Owners Noel Peemuggina and Johnny Ampeybegan drinking from medium-sized baler shell vessels at the beach near Big Lake, in northwest CYP, illustrating that variously-sized shells were used in this fashion.

Although shells could be used without any modification, if such was required it usually involved:

cut[ting] away the ventral surface of the last whorl, the spire and the columella, to form a basin. If the shell was fresh this could be done straight away. If not, the shell was soaked in water for three to four days before being worked on. The chipped edge was finally ground down with a stone (Khan 2004:83; see also Davidson 1937:185–186 and Hedley 1922:163).

Roth (1904:Fig. 210) made a drawing of one such worked container. Photographs of containers collected in different areas are also available, including some from the Starcke River (Khan 2004:83) and Cape Melville (Hale and Tindale 1934:Fig. 167). Bailey (1977:137) reported finding 'a large, broken fragment of baler shell (*Melo* sp.) with sharp unworn edges' in a shell mound at Kwamter (Weipa), and 'a baler shell, with the central columella exposed to form a handle, on the surface of a shell mound on the bank of the Hey River'. The Australian Museum reportedly also holds a baler shell carrying dish from the Batavia River area (Thorpe 1924:492).

Containers made from *Melo* were primarily used for carrying water (Beaton 1985:4; Chase 1978:169; Spry 1895:164), and in one account from Denham Island (in the Flinders Group) it was noted, 'At high tide [people] dive down and drink, at other times they lower shell buckets into the sea to obtain supplies' (Hale and Tindale 1933:69). These containers were also commonly used for boiling water (Davidson 1937:186; Roth 1898:26, 1904:29; Sutton

1994:46), which sometimes resulted in the outer surface becoming blackened (Hale and Tindale 1933:Fig. 177), or in the cracking of the shell, which could be repaired with a mastic (Hale and Tindale 1933:135). Hale and Tindale (1934:130, Fig. 137) illustrate a *Nautilus* shell used for drinking that has been repaired in such a manner, with the accompanying text indicating these vessels would be become 'worn and blackened around the lip where soiled by the mouth' (Hale and Tindale 1934:135).

Less commonly observed was the use of shell containers to store and/or cook substances other than water. Thomson (1933:Plate XXVII, 1934:249, 250, 259, 1939:209) mentioned particularly *Melo* being used as 'cooking pots' for boiling the flesh and fat of large marine mammals, amongst other foods, as did others (e.g. Carron 1859:102; Hale and Tindale 1934:133, Fig. 177; Rigsby and Chase 2014:299). Similarly, McConnel (1953:8, 11) reported the use of baler shells for heating adhesives (particularly from the grass-tree) (see also Thomson 1929–1933 as cited in Schall 1985:73). A few examples also originate from Bathurst Head, where, during the wet season, yam tubers (*Dioscorea sativa*) were grated and the resulting pulp boiled in a *Melo* shell (Hale and Tindale 1933:113). Conversely, during the dry season, mangrove fruits were cooked on heated stones and stored in baler shells (Hale and Tindale 1933:114). Hale and Tindale (1933:112) also noted that women collected green ants in bark dishes, subsequently transferring them to baler shells in which they were mashed and mixed with water before consumption.

Variouly-sized shell containers were also used for storing or preparing pigments. For instance, at Bathurst Head, Hale and Tindale (1934:135) reported the use of a blacklip oyster (*S. echinate*) as a 'palette' by a man painting a motif on a rockshelter wall (see also McCarthy 1960:299). From the Archer River, Thomson (1929–1933, as cited in Schall 1985:70) collected a *Batissa* spp. shell that contained pieces of red ochre later used for mourning ceremonies. Thomson (1933:471, 496) also noted how red ochre and white pipeclay used to decorate people and objects in a series of initiation ceremonies of the Koko Ya'o, near the Pascoe River, would be stored in baler shells.

Melo shells were also employed as bailers in canoes, the first such account coming from Parkinson (1773:147) during the *Endeavour's* sojourn at Cooktown (Parkinson referred to them as Persian-crown shells). Baler shell bailers were part of the canoe toolkit around the Stewart River (Hale and Tindale 1934:121) and the Archer River on the northwest coast of CYP (McConnel 1953:8, 27, 32; Sutton 1994:46; Thomson 1939:Fig. 1).

Unsurprisingly given their wide utility, container shells were highly sought after items and were often traded from the east coast to the hinterland and inland (Roth 1904; Thomson 1934:40). Colliver and Woolston (1966:22) specifically noted the trading of such items from Bloomfield River to Koko-Yelandji people at Laura. When broken beyond repair, presumably such items could then be repurposed for the production of other smaller items, such as nose pins, necklaces, pendants and spearthrower discs.

Results: Archaeological specimens and rock art

There have been many excavations of both rockshelters and shell middens across CYP over the past half century, revealing abundant shellfish refuse that is clearly subsistence-related. Despite the massive quantities of discarded shell,

finds of archaeological shell objects in the region have been surprisingly limited and those that have been found often lack specificity in interpretation. Another, though indirect, indication of shell material culture is its representation in rock art. In this section we consider such archaeological evidence incorporating recent results from the ABM Project. In doing so we note the inherent difficulties in identifying worked shell archaeologically (cf. Szabó 2017; but see Tumong et al. 2015), and also of distinguishing between shell pendants and those made from other raw materials in rock art depictions.

Utility tools (scrapers)

Generic ‘scrapers’ (usually of *Geloina*) are one of the most common types of shell artefacts deriving from archaeological investigations, although, as described below, many such identifications are now considered tenuous. Beaton (1979:21) noted that most of the middens he recorded around PCB regularly featured ‘shell ornaments, shell scrapers and shell cutting tools’, although he did not collect such from most recorded sites.

In his excavation of the Alkaline Hill rockshelter on the mainland near the Marrett River (in which the deposit began accumulating from 3,440±80 BP), Beaton (1985:7) reported that:

tools of the general form of flaked scrapers were made from shell (*Geloina coaxans*). Tools made from this shellfish species occur in all level of the sites. Of the 835 *G. coaxans* shells and shell fragments collected, 26% (214) had clear evidence of edge damage or intentional flaking or retouching. The flaking or edge damage occurs on the lip (or margin) of whole valves or on valve fragments which are broken along the concentric growth bands, usually at the pallial line. Most (68%) edge-wear or modification appears as simple edge damage, although end-modified ‘awl’ types and notched scraper types also occur.

Alongside 75 *Geloina* scrapers, the Alkaline Hill material lodged in the QM includes two objects listed by Beaton as ‘*Anadara granosa* tools’, although he did not provide any further information; the inconsistencies in numbers between his published counts (n=214) and what was lodged with the museum appear to relate to inconsistent labelling of bags.

Amongst the abundant shell excavated from Yindayin, Beaton (1979:10) also noted what he interpreted as small cutting and scraping tools fashioned:

on shells of medium-sized bivalves. They are recognised by flake scars or use-damage along the mantle, edge, or in some instances the mantle is broken crescentically along a growth line to nearly the edges of the hinge. Occasionally, only this leading edge is found and it exhibits flaking along one edge and or a well prepared awl-like point on one end of the longate mantle edge.

In his published paper detailing the excavations, he elaborated:

broken pieces of flaked shell (*Geloina coaxans*) were found in all levels. *G. coaxans* is a robust, medium-sized bivalve which lives in mangrove muds. It is certainly edible, its shell is broad and strong, and the valves are typically the diameter of an orange. Being of appreciable size, shape and density these shells substitute for stone in function and form. (Beaton 1985:6).

At least 36 so-called ‘*Geloina* scrapers’ and 102 ‘*Geloina* margins’ from Yindayin are present in the QM collection.

Importantly, 108 of the purportedly used *G. coaxans* shells from the various sites excavated by Beaton (1985) were recently re-examined by Harris et al. (2017) using residue and use-wear techniques. On this basis, Harris et al. (2017) concluded that two were ‘likely used’ as expedient tools, but only one was ‘confidently used’ as such. This implies that all of Beaton’s original assignments of shell scrapers require re-assessment and that such ‘tools’ are far less common than originally supposed. No shell artefacts were identified from the re-excavation of Yindayin in 2016 (Wright, M. 2019; Wright et al. 2023).

Tellingly, in his extensive investigations of more than 400 shell matrix sites near Weipa, Morrison (2010) found definite shell tools at only one: SM:93a in the Prunung area on the northern side of the Mission River. Here he recovered just two examples of what he considered to be cutting or scraping tools, of an unknown shell species:

Both items are flat (<3 mm) pieces ... Both were clearly broken at one end and ground to form a smooth, rounded edge at the other. Although this margin was clearly ground, no other major evidence of use such as striations, edge damage or polishing were apparent. Both were also concave in shape (Morrison 2010:25).

From the same site, 12 *Polymesoda erosa* fragments with intact margins were also observed ‘to have at least one of four types of evidence of use (rounding, polishing, striations and retouch/edge damage’ (Morrison 2010:260). No further interpretation of these items was offered, and subsequent discussions with Morrison (pers. comm., 4 March 2024) reveal he now strongly suspects these items were not in fact used.

Of the numerous rockshelters excavated in inland southeast CYP (see Flood and Horsfall 1986; Morwood and Hobbs 1995; Rosenfeld et al. 1981), Sandy Creek 1 (Morwood et al. 1995:78), Magnificent Gallery (Morwood and Jung 1995:87) and Early Man (Rosenfeld et al. 1981:29) contained small quantities of freshwater mussel shell likely to be food refuse. Adherence to Szabó’s (2017) protocols for the identification of worked shell, and incorporating residue and use-wear analyses would assist in determining whether any of these were expediently used for scraping tasks, as has been suggested on the basis of ethnographic accounts. Only two rockshelters excavated to date have contained shell that might derive from material culture objects. Giant Horse had a single piece of unidentified shell on the surface collected in 1974 by Andrée Rosenfeld and lodged in the QM (Morwood 1995:102). The Red Horse site (located about 30 km from the coast) contained:

Shell from at least three marine species (including *Tapes literata* [now *T. literatus*]) ... on the surface of the deposit, indicating contact with the coast (approximately 30 km away). This is in keeping with the evidence of Roth (1901-10), who noted that marine shell was a valued trade item between coastal and inland groups. The largest shell would have been 11 cm in length when complete, and suitable for personal adornment. Grinding striations on another specimen suggest that it was used in the preparation of lime for painting (Morwood and L’Oste Brown 1995:122).

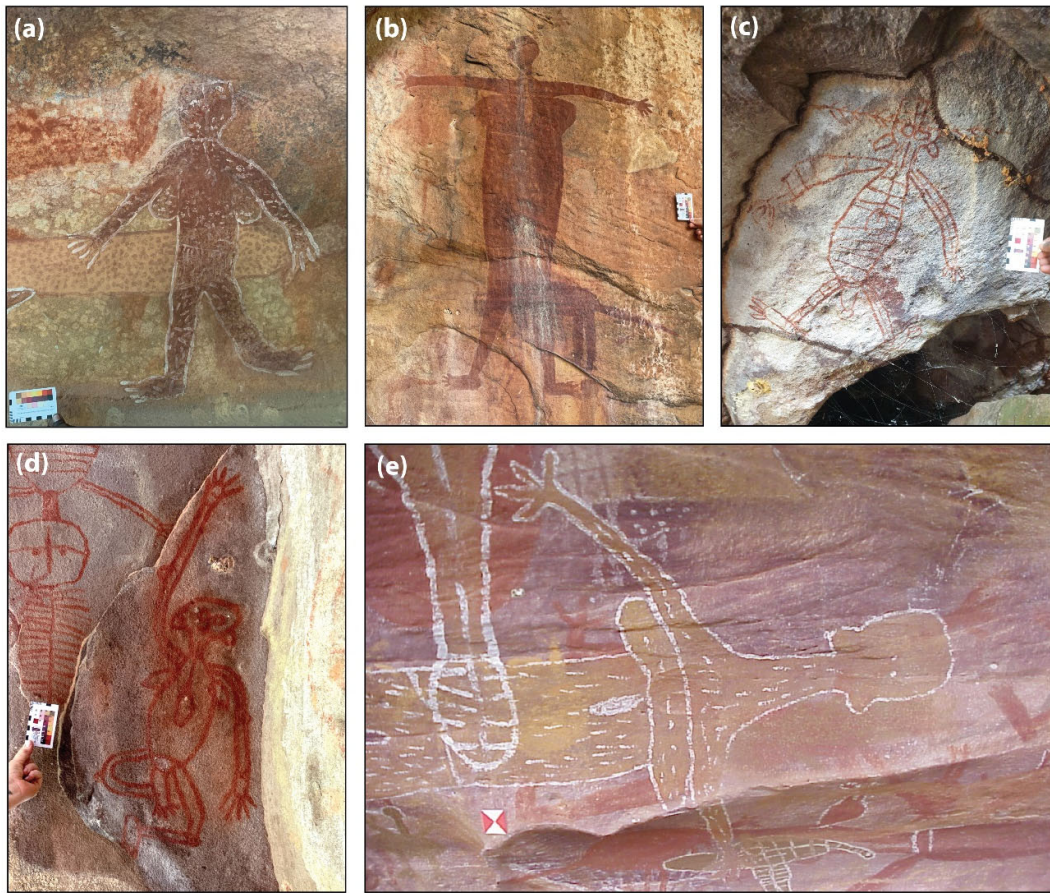


Figure 4. Rock art motifs depicting chest ornaments: (a) Ibis Gallery (Site B2) Panel 5 Motif 15; (b) LAUR00133 Motif 11; (c) WAAR00066 Panel 2 Motif 2; (d) WAAR00033 Panel 8 Motif 11; and (e) Giant Horse.

While there are hints that the material from Red Horse may be artefactual, additional inspection would be required to confirm this; as yet, these materials have not been re-located. While material from the Red Horse excavation is in the process of being repatriated from the University of New England to Laura as part of the ABM Project, inspections of the material have failed to locate the reported shell material.

Chest ornaments

From his Yindayin rockshelter excavations, Beaton lodged five artefacts with the QM that he described as ‘baler pendant blanks’ (n=3) or ‘baler shell blanks’ (n=2), suggesting these were possibly destined for use as chest ornaments, or as discs to be affixed to the handles of spearthrowers. At least two other artefacts from this site are described in the QM catalogue as a ‘baler shell pendant’ and a ‘half baler shell pendant’, but the grounds for such definitive interpretations are unclear. More recently, M. Wright (2018:134) reported recovering a single, bored *Monetaria annulus* (cowrie) shell from Yindayin. This object might have been deliberately drilled for suspension as part of an ornament or rattle, but might equally be the result of natural predation; the absence of detailed information makes it difficult to assess which is more likely.

Other evidence for the presence of shell chest ornaments in inland southeast CYP derive from rock art assemblages. Paintings of anthropomorphs adorned with pendants have

been widely reported in accounts of rock art across southeast CYP (e.g. Ang-Gnarra Aboriginal Corporation 1996; Cole 1988, 1992; George et al. 1995; Huchet 1993; Trezise 1969, 1971). The collective records, including extensive unpublished data generated during the ABM Project, indicate that a small proportion of the region’s large corpus of anthropomorphic figures display pendants of the type documented by ethnographers, for example, the *Nautilus* shell pendants noted by Roth (1910b). An example collected by Roth in 1898 at Butcher’s Hill provides a reference for identifying rock art pendants. It consists of an elongated, oval-shaped portion of *Nautilus* shell (length 11 cm) with a drilled hole through which a string of bark fibre is threaded (Roth 1910b:35, Fig. 20; see also Khan 1993:170).

Pendants depicted in rock art are small, oval-shaped motifs usually suspended from a line that extends from the base of an anthropomorph’s head or neck (Figure 4a, 4b). Current records suggest that the majority of pendants occur on female figures. On such figures the shell (usually tear-drop shaped) tends to be positioned between the breasts (Figure 4a, 4b, 4e). However, an example documented by Traditional Owners (see Ang-Gnarra Aboriginal Corporation 1996; George et al. 1993) is attached to the lower breast line. On male figures the pendant is usually suspended from a vertical line (‘string’) that extends from the neckline lower onto the body (Figure 4c). Detailed analysis may determine whether pendants on overtly female and male paintings have other differing attributes.

As well as occurring on naturalistic forms, pendants often appear on supernatural figures (spirit beings, see Trezise 1971:8). Such figures may have prominent ears and eyes, headdresses, and/or distorted body shapes, limbs, hands, and genitalia. Around Laura, they have names such as Timara, Anurra or Imjim (Ang-Gnarra Aboriginal Corporation 1996; George et al. 1993). A Timara figure documented by George et al. (1996:26) has a precisely drawn pendant set inside the enclosed chest/breast area.

Trezise (1971:123), based on knowledge provided by local Aboriginal men, noted the association between rock art pendants and ‘love magic’, a cultural feature also described by Kuku Thaypan Elder Tommy George (Ang-Gnarra Aboriginal Corporation 1996), who stated that a painting of a woman with a pendant signifies a man singing love magic. A similar association is indicated in the Lockhart River cultural story cited above. Although George et al. (1995:34) noted that there are ‘only a few paintings’ of this kind, the distribution of paintings with pendants in the ABM Project area reflects the documented cultural significance of this type of shell ornament. The luminous, highly prized properties of fragile shells convey the powerful ancestral values of such figures.

Spearthrower components

To date, only one spearthrower with a shell handle has been recovered from an archaeological context in CYP (Cole 1998:147), but in the ABM Project area these objects are sometimes depicted in rock art with sufficient detail to be confident that they include the distinctive shell discs in their handles. Both stencilled and painted spearthrowers with baler discs on the proximal ends occur in several rockshelters of the ABM Project area, including at Jowalbinna (in the National Heritage listed Quinkan Country) and in Biniirr National Park (Figure 5a–h). However, not all such renditions are easily recognisable. In Walaemini shelter, for example, Hale and Tindale (1934:144) noted a spearthrower drawing that they were little impressed with:

One is naturally somewhat surprised to see a spear-thrower drawn in such a crude manner ... While the artist who made this drawing was probably quite competent to produce a smooth, shapely weapon, he apparently took little pains to record his handiwork pictorially. The peg against which the spear fits is grossly disproportionate and the baler-shell grip is ill-drawn.

Baler shell discs

Windmill Way is a late Holocene-aged rockshelter on Welcome Station, north of Laura. In 2022 a broken baler shell disc was recovered during investigations at this site (Figure 5i). The size and shape are suggestive of it being either a chest ornament or a disc from a spearthrower handle. Unfortunately, the incomplete nature of the object precludes ascertaining whether it included a drilled hole for stringing.

On Jiigurru (Lizard Island) Specht (1978:7–9) recorded a piece of worked shell, possibly *Melo*, amongst the surface items on an extensive midden (Site 17, Freshwater Bay Midden), which he suggested might be a scoop or shallow container. This object, shown in Lentfer et al. (2013:Fig. 3a), is somewhat larger than the discs usually hafted onto spearthrowers but, as it is unfinished, may be a blank for such. Ulm et al. (2024) noted their recent excavations of the South Island Headland Midden site on South Island at Jiigurru

recovered shell artefacts (Ulm et al. 2024:10), though no further information has yet been published thereon.

Of 106 shell middens recorded in Cape Melville National Park (CMNP) by the ABM Project team, at least three contain deliberately shaped baler shell fragments (Figure 6a,b,c). As these objects remain in situ, they have not been subject to use-wear or residue analysis and so it is not possible to be confident of their function; again, however, their size and general shape is suggestive of their being pre-forms for baler discs that might be later either hafted into spearthrower handles or pierced to form chest ornaments.

The QM collection includes one *Melo* fragment excavated by Beaton from Alkaline Hill that he described as a ‘shell ornament’, and four fragments of *Melo* shell from Walaemini (Beaton 1985:7). The function of any of these fragments is not clear, but they are grouped here on the assumption that they are: (1) too small to have been used as containers; and, (2), given the ubiquity of spearthrowers with baler shell disc handles, on the balance of probabilities they are likely to have served such a purpose.

Containers

At Yindayin, Beaton (1985:6) recovered ‘whole baler shells (minus the central spiral column) which were used as water containers’. Similarly, from an open midden site approximately 200 m west of Yindayin, Beaton (1979:10–11) also reported collecting ‘baler shell water containers and ornaments’, although he did not elaborate further.

The ABM Project team have recorded a large, complete baler shell on the surface of a rockshelter in Muundhi National Park (Figure 6d), and non-worked whole or fragmented baler shells on 26 middens in CMNP. Given the propensity for these shells, particularly the larger sizes, to be routinely used as containers and cooking dishes on both the east and west coasts of CYP, it seems reasonable to assume they served such purposes at these sites as well.

Discussion

Based on a study of six main types of material culture objects, Best (2003:159) found that ‘Cape York’ represents a distinct culture bloc that can be reasonably separated into an eastern and western watershed separated by the Great Dividing Range. This literature review highlights the significant role of shell material culture across CYP, covering both practical and symbolic dimensions. Much of our understanding stems from Roth’s ethnographic reports and collections and Khan’s (1993, 1996, 2003, 2004) detailed catalogues thereof. However, it is evident that literature on shell artefacts in the broader context of CYP is relatively scarce and there is a notable imbalance in the abundance of literature concerning shell artefacts on the west coast, with less information available for east CYP; for the hinterlands, ethnographic information about shell artefacts is almost non-existent, except for Roth’s brief commentaries. This discrepancy underscores the potential value of a focused study on shell artefacts across the ABM Project area, particularly given the essential and prized role of shell resources in this region. Moving beyond typological classifications and descriptions, such a study should adopt a more nuanced approach that emphasises the technological and functional significance of these items, be they utility tools or ornaments, rather than merely their subsistence value, and integrates Traditional Owner knowledge and experimental and actualistic studies.

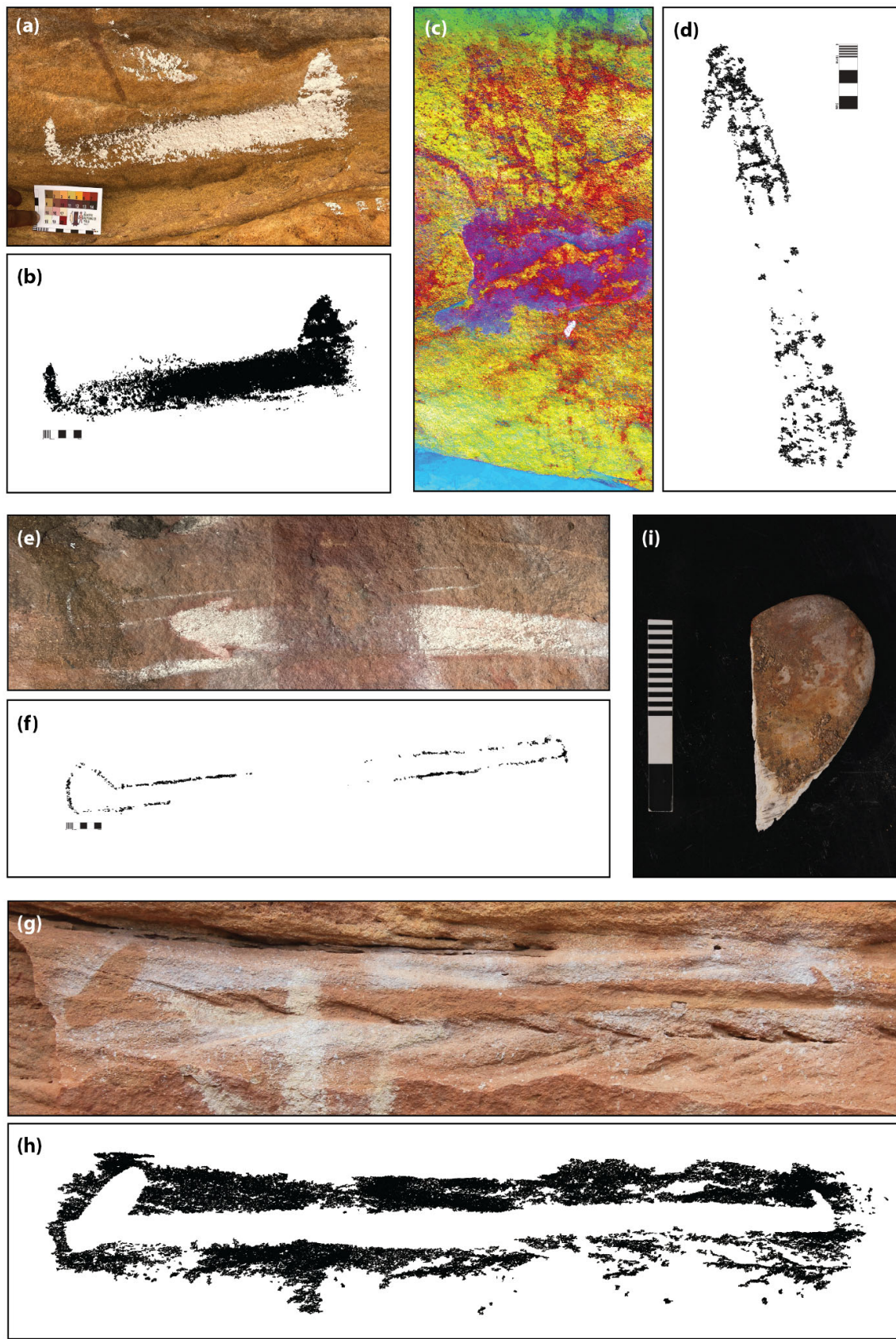


Figure 5. Spearthrower motifs in rock art in the ABM Project area likely showing baler shell discs incorporated in their handles: (a,b) LAUR00072 Panel 7 Motif 14; (c,d) WAAR00071 Panel 7 Motif 3; (e,f) LAUR00131 Panel 4 Motif 27; (g,h) Red Bluff; and (i) a partial baler shell disc from Windmill Way.

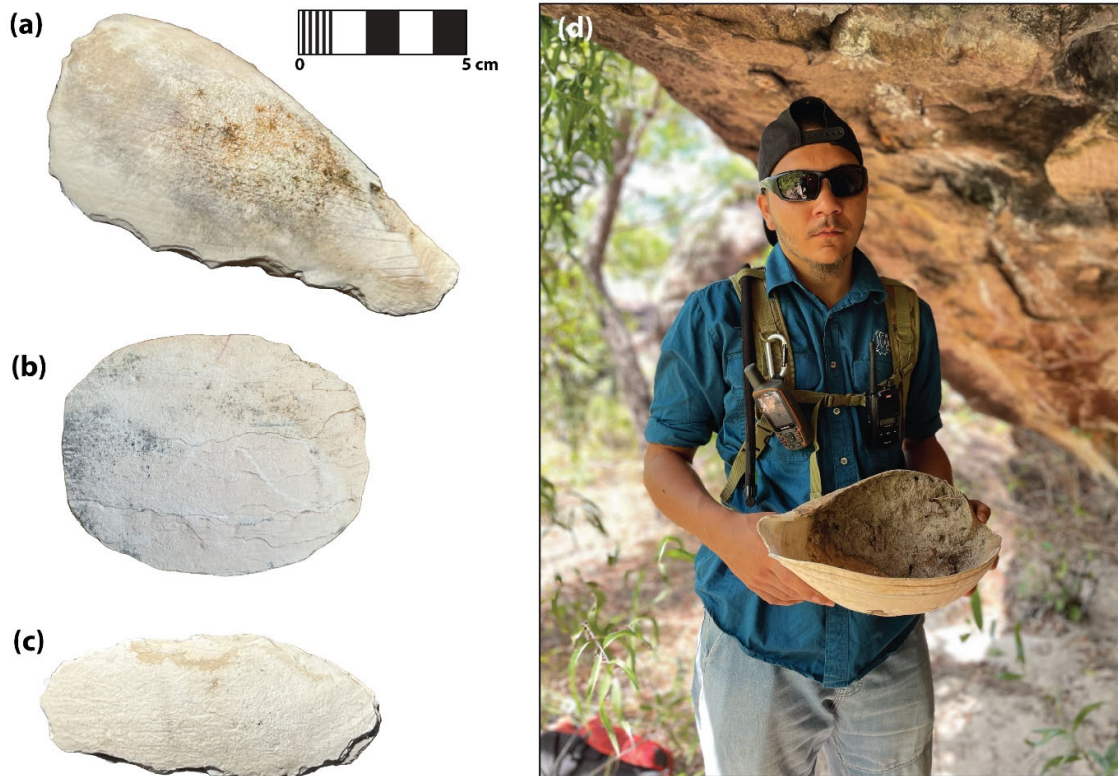


Figure 6. (a,b,c) Baler shell artefacts recording during the ABM Project shaped fragments found on coastal midden sites in Cape Melville National Park (a: CMFH00028; b: CMFH00116; c: CMFH00039); and (d) Munthiwarra man Linken Henderson holding a large baler shell container cached in a rockshelter in Muundhi National Park.

In the literature, several recurring themes emerge, including the absence of detailed technological analyses, inconsistencies in information regarding manufacturing processes, and confusion regarding the identification of shell species. These themes could serve as valuable guidelines for future studies, providing a roadmap to address critical gaps in the understanding of shell artefacts across CYP.

Technological analysis

Despite repeated references to shell artefacts in CYP, there is a notable gap in the technological analyses of such items. This gap is especially pronounced in the case of utility tools, where dedicated descriptions of shell scraping and cutting tools are conspicuously absent. While some insights exist for the west coast of CYP, particularly regarding hafted shell knives, with accompanying illustrations and descriptions of their manufacture, there is a distinct absence of specific contributions regarding utility tools in south or eastern CYP. Nonetheless, insights can be derived from secondary accounts of implements crafted from wood, bark or fibre to reveal indirect references to shell utility tools scattered throughout the literature.

The emergence of new interpretative approaches and analytical techniques, such as experimental archaeology, use-wear analysis and high-powered microscopy, provides fresh opportunities to examine shell material culture (cf. Hook et al. 2024; Meskin 2023; Silvestre et al. 2022; Tumong et al. 2015; Weston et al. 2017). For example, although Beaton (1985)

suggested that *Geloina* shells regularly displayed damage from their use as utility tools, the recent analytical work of Harris et al. (2017) has cast doubt on this interpretation. Such work will also be aided by comparisons with lithic tools. A recurring observation across coastal CYP is the use of shell artefacts for tasks that, elsewhere, were typically accomplished with stone (and more recently, glass), particularly cutting and scraping (e.g. Roth 1904:20–21). Many shell tools are commonly labelled as ‘scrapers’, without a clear definition that can be technologically compared to other tool industries. In lithic studies a scraper is defined as a flake with retouch along one or more edges, typically used for scraping purposes (Inizan et al. 1995). The action of scraping involves a transverse movement with unidirectional force, moving toward the user (González Urquijo and Ibáñez Estévez 1994). While Roth (1904:2) identified scrapers based on their directionality, he provided few details. Additionally, the traditional definition of a scraper includes retouch, yet Roth (1904:21) noted that some shell species could function as scrapers without functional modification: ‘A *Donax*, *Cyrena*, or even *Mytilus* valve may also be used as a scraper in its entirety, i.e., without breaking or chipping, its lip or margin being sufficiently strong’. This observation resonates with the findings from studies on expedient tools crafted from *G. coaxans*, where the ‘crossed lamellar microstructures are strong in both compression and tension, exhibiting microstructural properties that may have influenced the selection of [*G.*] *coaxans* as a raw material for expedient tools’ (Harris et al. 2017:202).

An additional area requiring technological investigation is the crafting of baler shell discs for incorporation into spearthrowers. This is a practice that appears to be unique to southeast CYP, and we raise the possibility that the production of such objects may have increased post-invasion, being sought after by collectors in a similar manner as occurred with Kimberley points in Western Australia (cf. Harrison 2004, 2006). Understanding the features and properties of these grips through technological analysis could shed light on whether their use arose for functional reasons. This inquiry gains significance when considering the availability of alternative grip materials, such as wood, or the practice of simply modifying the wooden surface of spearthrower handles for improved grip.

A technological analysis of these shell discs is also relevant given their widespread use as trade items once detached from spearthrowers (Akerman 2018; Davidson 1936; Hale and Tindale 1933). Establishing identification criteria would enable development of a reference collection that could be used to recognise potential shell grips in museum collections or archaeological sites, even when they are no longer attached to the spearthrower. A similar technological analysis could be applied to the study of shell ornaments, enabling greater recognition of these culturally significant artefacts.

Manufacturing

As a subset of technological analysis, understanding manufacturing techniques is essential not only to comprehending how tools were made and used, but also, and more importantly, to discerning their societal roles. This review revealed that manufacturing information for shell artefacts is often lacking, except for the consistent mention that shells used for toolmaking must be fresh or soaked in water to facilitate easy fracture (Roth 1904). While detailed descriptions of manufacturing techniques exist for baler shell discs incorporated into spearthrowers (Hale and Tindale 1933) and used as water containers (Roth 1904), this is not the case for utility tools. Incorporating experimental archaeology as part of any future technological analysis will aid in understanding the manufacturing process of these objects and their function (see Parkinson 2016 for a recent example of such a study of *Nautilus* shells in eastern Indonesia).

In contrast, ornaments are typically well-described in the literature, often accompanied by photographs and drawings, but again manufacturing information is sparse. For necklets and necklaces, shells were cut into regular, rectangular pieces on the east coast of CYP, whereas those from the west coast were cut into oval segments, but details on the cutting process and tools involved are lacking. While the assembly process for head and neckbands is described, including drilling holes with a kangaroo tooth drill and stringing pieces together with fibre (Hale and Tindale 1933), specifics about the drilling movement are absent. Manufacturing details are available, however, for chest ornaments, albeit limited to one species (*Nautilus* sp.) (Hale and Tindale 1933). The method of hole creation, possibly using a kangaroo tooth drill, is suggested based on its use in other areas, yet direct evidence is lacking. Only through a technological study combining experimental replication of manufacturing processes and traceological analysis of manufacturing traces can these issues be resolved.

Geographic variability, the selection and availability of shellfish species and imprecise nomenclature

Although most shell species used for material culture production occur around the entire coastline, there is some variability in the use of particular species for particular objects (Schall 1985), although this is complicated by the fact that ethnographic accounts seldom mention specific species associated with utility tools, apart from sporadic references to ‘mussel shell’ in the crafting of various fibre items like necklaces and skirts.

Opting for generic terms such as ‘shell’ or ‘pearl shell’ obscures the variety of genera and species that might be in use – ‘pearl shell’, for instance, can include *Pinctada*, *Placuna*, *Melo*, *Nautilus*, *Pinna* and others. For example, in descriptions of chest ornaments, different manufacturing techniques are attributed to *Nautilus* (sp.) and pearl shell, and varying geographic distributions are implied for *Melo* and pearl shell (Roth 1899:21). Another instance is the reference to the Palmer River area acquiring shells for chest ornaments from different sources: *Nautilus* (sp.) from Laura, and pearl shell from Musgrave (Roth 1899:21); this must be a form of ‘down the line’ trade as people in both Laura and Musgrave must have themselves obtained these materials from coastal peoples. Evidence for the use of pendants in rock art throughout the Laura Basin, including the coast and hinterland of PCB, indicates the presence of regular interaction and strong cultural relationships between groups.

Interestingly, when it comes to more elaborate items, such as spearthrower components, there is greater specificity in shell selection, with *Melo* emerging as the dominant choice. In southeast CYP, this species is exclusively used for crafting hand grips and is nearly ubiquitous in its use as a container. The choice of using *Melo* shells as a container is logical due to its deep, concave shape. However, it is worth noting that groups elsewhere used other shell species for similar purposes because they possessed characteristics suitable for container-making (Roth 1904). This raises intriguing questions about whether the prevalence of *Melo* shell as containers in inland CYP was solely due to its availability, or whether cultural preferences played a role. Likewise, the exclusive use of *Melo* shell for spearthrower discs prompts inquiry into whether it was chosen for its superior qualities or for cultural reasons, especially given the importance of *Melo* in secular practices of cooking, carrying and storage.

The prevalence of certain shell species over others in different parts of CYP, as well as their specific applications for various purposes, becomes even more intriguing when considering the limited trading information available regarding *Melo* artefacts and the use of this species as a raw material. References to *Melo* shells originating from the Musgrave area are problematic, given that Musgrave is not located directly on the coast. This information is particularly relevant in the context of chest ornaments, where it is suggested that *Melo* as a raw material was preferred inland, while ‘pearl shell’ was favoured on the coast. In contrast, *Nautilus* shell emerges as the primary material used for ornaments, including head and neckbands, and chest ornaments, with only one instance mentioning its use as a drinking vessel (Hale and Tindale 1933, Fig. 165). Other shell species are rarely mentioned, excluding *Syrinx* for water containers and nose pins, although these references lack detail. Additionally, blacklip oyster (*Pinctada margaritifera*) and *Melo* are mentioned as pigment containers, while the

latter is also noted as a bailer on canoes, highlighting the diverse range of uses for shell species across the region.

Conclusion

Given the repeated mentions of shell artefacts in ethnographic sources, it is somewhat surprising that the abundance of shell along the coasts of CYP has not translated into an abundance of shell artefacts found archaeologically, though some forms are better represented than others. Schall (1985:63) has suggested that the poor representation of shell utility tools in particular amongst Thomson's and Roth's collections was perhaps due to a focus on 'more exotic objects' and that 'the use of shell scrapers may have been such an everyday occurrence that it was taken for granted and left undocumented.' Archaeologically, the situation is little better. Stanner (1961:10), for example, who was one of the first researchers to examine shell from middens at Weipa for signs of use, found that, despite looking at 'thousands of shells by the naked eye and hundreds with the aid of a magnifying glass' he could not find 'any sign readily interpretable as the hand of man'. Likewise, half a century later, in his extensive investigations of more than 400 shell matrix sites near Weipa, Morrison (2010) found shell tools at only one, and excavations of the Mangrove Beach Headland Midden site on Jiigurruru (Lizard Island) seemingly revealed no culturally modified shell amongst more than 11,000 (~20 kg) fragments (Lambrides et al. 2020). Such work suggests that far more needs to be done to identify shell artefacts more accurately and tease out the value of such objects in a range of geographical and cultural contexts. As Fowles and Heupel (2013:179) suggested:

missing things, that which is conspicuously not found, the non-occurrence of sites or shellfish or suntan lotion—absences such as these often possess at least as much cultural significance as the solid objects that get photographed and written up in reports.

The presence of utility tools and distinctive features like the shell hand grip, underscore the cultural richness and diversity that exists within CYP shell objects. Moreover, evidence of trading networks reveals the interconnectedness of groups and regions, as far afield as South Australia. Contrasts with neighbouring regions, such as the absence of shell hand grips in the Gulf of Carpentaria, and the utilisation of different shell species for water containers, highlight both the widespread use of shell and the localisation of specific artefact traditions. While geographic differences may not be pronounced within the Laura Basin, internal variations in artefact use and trading practices warrant further investigation. The intricate patterns of shell artefact manufacture, trade, exchange and use underscore the dynamic cultural exchanges shaping material culture and human lifeways in the region.

While the present study has shed light on many aspects of shell artefact production, function and distribution, several pathways for research remain. With the exception of the work of Harris et al. (2017), there have been no residue or use-wear studies of shell objects from CYP, nor have there been detailed studies of most objects themselves, except for Best's (2003) general study of spearthrower forms (see also Dearden 2021). Future investigations could focus on re-elaborating typological classifications, conducting more extensive

technological analyses, actualistic studies and exploring the socio-cultural significance of shell artefacts in greater detail. Future collaborative efforts with local Indigenous communities will offer invaluable insights into traditional knowledge, practices, and perspectives regarding shell artefacts, enriching our understanding and fostering better preservation of such material forms. Overall, the study of shell artefacts in CYP not only contributes to archaeological knowledge, but also serves as a testament to the resilience, creativity, and cultural richness of Indigenous peoples.

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