16

Fish and Fishing in Murujuga Rock Art

VICTORIA WADE

The waters of the Dampier Archipelago are rich with marine life which thrives in a diverse range of habitats. Across the archipelago aquatic fauna occupy environmental zones ranging from estuarine and nearshore, to reefs and open water (Rome and Newman 2010). Fish fauna studies have indicated the presence of 650 different fish species across these aquatic zones (Hutchins 2004). Such a productive resource means that the ocean was a focus of subsistence for Aboriginal people throughout the Holocene. With limited ethnographic or ethno-historical sources describing this coastal economy (Brown 1913; Clement 1903; Curr 1886; Durlacher 2013 [1900]; Gregory 1884; Hunt and Ridley 1863; King 1827; Richardson 1909; Stow 1865; Withnell 1901), much of our understanding is derived from the archaeological record. While excavations across the archipelago have provided insights, Murujuga's rock art provides an additional lens through which to understand this component of island life. Amongst the petroglyphs are images of fish, scenes depicting their capture, and material culture in association with marine animals; all have the potential to increase our knowledge of coastal lifeways within the archipelago.

This chapter is a component of PhD research (Wade in prep.) and focuses on what economic insights can be gleaned about the marine zoomorphic assemblage through an analysis of fish species depicted in the art – testing the notion of art as pictographic menu (Davidson 2018). Analysis of the rock art evidence enhances our understanding of fishing practices and predilections in this region throughout the recent past.

Murujuga's Coastal Economy

Little ethnohistorical information exists as to how the highly productive Murujuga marine environment was exploited by people in the past. Historical accounts of coastal life provide only cursory insights into marine-based subsistence strategies. Archaeological evidence has augmented the written record in many coastal locations, with the rock art of Murujuga affording a unique source of information which adds to our limited knowledge of people's past interactions with Murujuga's marine resources. An analysis of fishing scenes provides further insights into the marine technologies and methodologies employed by the people of the Dampier Archipelago.

Ethnohistorical evidence: fishing methods and technologies

The ethnohistorical evidence relating to coastal life on the Dampier Archipelago comes mostly from early explorers (e.g. Gregory 1884; Hunt and Ridley 1863; King 1827; Stow 1865), settlers (e.g. Richardson in Curr 1886; Durlacher 1900; Withnell 1901) and early trained anthropologists or ethnographers (Brown 1913; Clement 1903; Curr 1886). These accounts confirm that people used various types of nets made from spinifex (Clement 1903; Durlacher 1900; Gregory 1884; Hunt and Ridley 1863; Withnell 1901), watercraft made from mangrove logs (Durlacher 1900; Gregory 1884; King 1827), spears and fish traps (*The Inquirer* 1866), boomerangs (Clement 1903), fishing line (Hunt and Ridley 1863; King 1827), sharpened sticks (Durlacher 1900; Stow 1865) and toxic plants (Clement 1903) in their pursuit of marine resources.

Clement (1903), Durlacher (1900), Hunt and Ridley (1863), King (1827), Curr (1886) and Withnell (1901) all mention practices associated with fishing, and all accounts indicate that nets were a critical item in the local toolkit. Several records indicate the sophistication of net manufacture and note the similarity between traditionally produced nets and those of European origin (e.g. *The Sydney Morning Herald* 1870; *The Daily News* 1887). Withnell and Ridley both describe the use of spinifex in the production of fishing nets, with Ridley commenting that 'Nearly everyone carries a net, some of which are funnel shaped and others resembling small stake nets' (Hunt and Ridley 1863). Durlacher (1900) describes a process for net fishing whereby people with a net approach from one side, while others hit rocks together underwater on the other, thus scaring fish into the net (Figure 16.1). A large spinifex net, measuring 27 x 3 feet, was collected from the Nickol Bay area in the 1880s and exhibited in Perth (*The Inquirer* 1887). A further two such nets from this area, collected in the 1860s and 1890s, are currently held in the British Museum collection (Figure 16.1 and Chapter 19).

Two historical references mention line fishing. The first is an observation made by King in 1818 of a fishing line attached to the mangrove flotation device of a local person (King 1827), and the other is a brief mention by Ridley that spinifex was used to make fishing line and nets (Hunt and Ridley 1863). In contrast, Curr (1886) describes people from the Nickol Bay area using nets and spears to catch fish, and explicitly states that they did not have hooks. Clement (1903) adds to our knowledge of fishing methods by describing the use of a toxic plant which was placed in pools, resulting in fish rising, 'semi-comatose', to the surface for people to easily catch. Clement does not specify whether this occurs in fresh or saltwater pools; however, in other regions of Australia this method was used in reef pools (Weisler and McNiven 2016: 767). A type of boomerang, called a 'kaili', is also described as being used to hunt fish in shallow water (Clement 1903). The use of spears and fish traps is mentioned briefly in an article in *The Inquirer* in 1866, stating simply that local people 'are expert fishermen, and secure their prey with spear, weir and net'.

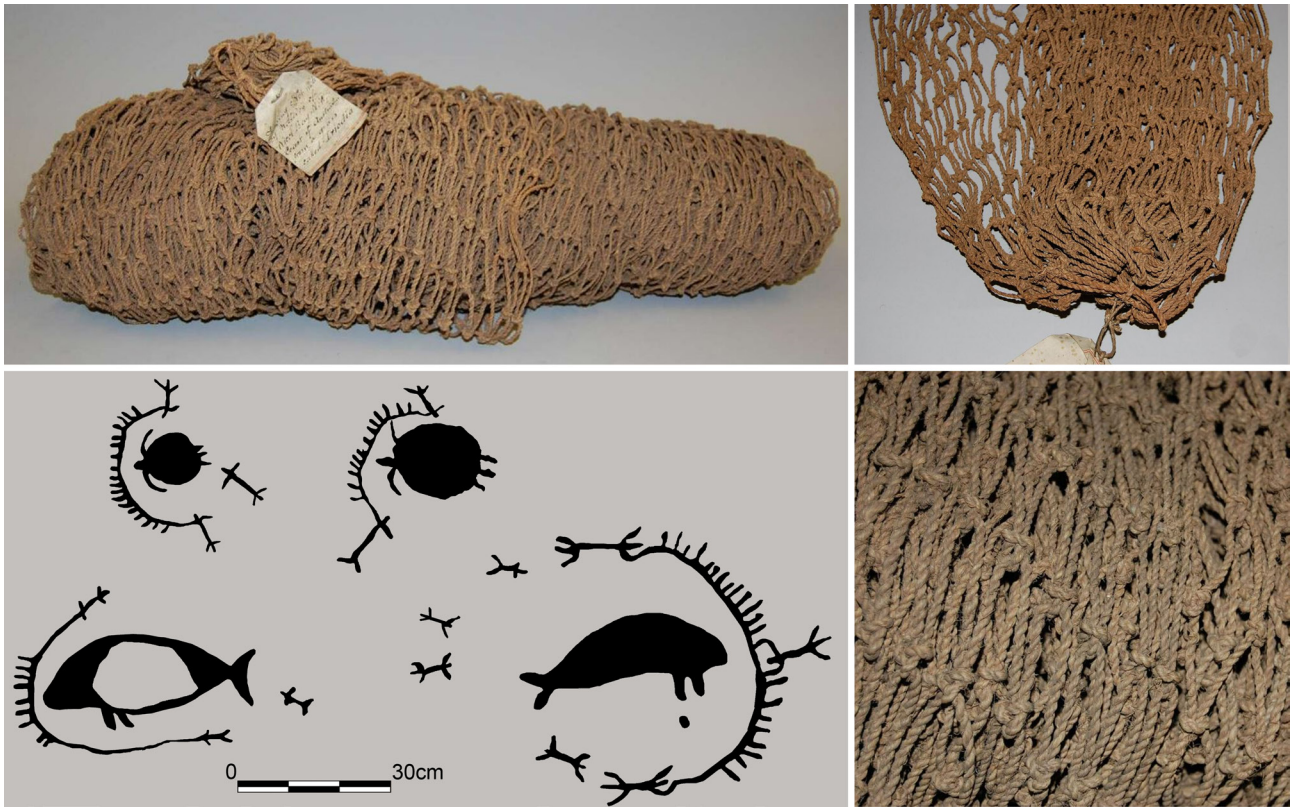

Figure 16.1. Spinifex fibre fishing net from the Nickol Bay area, held at the British Museum (collection number Oc. 3880; reproduced with permission of the British Museum); and line drawings of various Murujuga petroglyph compositions interpreted as the net capture of turtles and dugong.

Archaeological evidence: fish capture and consumption

Physical evidence of the tools and practices associated with marine subsistence on the Dampier Archipelago is relatively scant. Marine faunal remains have been recovered from several excavations in the area, with Parrot Fish found at Wadjuru Pool on Rosemary Island (Berry 2018: 284), Blue Tuskfish and Japanese Bream at King Bay (Green 1982: 138) and a species of small baitfish on Enderby Island (possibly Hardyhead, family *Atherinidae*, also known as silversides or whitebait; see Chapter 6). The latter, identified by the presence of hundreds of otoliths, is further indication of fishing with a net or basket. Many undiagnostic fish and turtle bones were also recovered during this project at the Old Geos site on the Burrup and at MLP-EI010 on Enderby Island. The presence of bone grinding plates, dentaries and teeth in these deposits suggests possibly parrot or wrasse reef species; more specific identification has not been possible in the absence of local reference collections.

No fishhooks have been recovered from archaeological contexts in this area; however, there are multiple recorded stone fish traps across the archipelago. Beckett (2021) identified 19 'barrier' features which are likely to be associated with fish procurement (see Chapter 4). Four different forms of barrier were identified (bowl, bottleneck, bar and dam), all operating on the same principle of structures that trap fish and other creatures (e.g. stingrays) as tides recede.

Fish Species in the Murujuga Rock Art

There are nearly 3,000 zoomorphic motifs within the dataset used for this study, of which over half (58%) are marine subjects. Of these, 33% (n = 573) are fish (Table 16.1). Using the established system of contrast state as an indicator of relative age (Figure 16.2), most fish motifs, predictably, are produced in the more recent phases, with contrast state 4 dominating (n = 260, 48%; Figure 16.3).

While the majority of the marine-themed motifs are recent, and most likely produced in the last 7,000 years since sea level stabilised and the archipelago formed, there are numerous fish and other marine subjects (n = 78, 14%) which are in the lower contrast states (1 and 2).

MARINE SUBJECT	NO.	%F
Turtle	759	43
Fish	573	33
Marine tail	275	16
Stingray	50	3
Other marine	46	3
Dugong	37	2
Crustacean	7	<1
Total	1,747	100

Table 16.1. Zoomorphic motifs in the MLP assemblage showing proportions of marine-themed motifs.

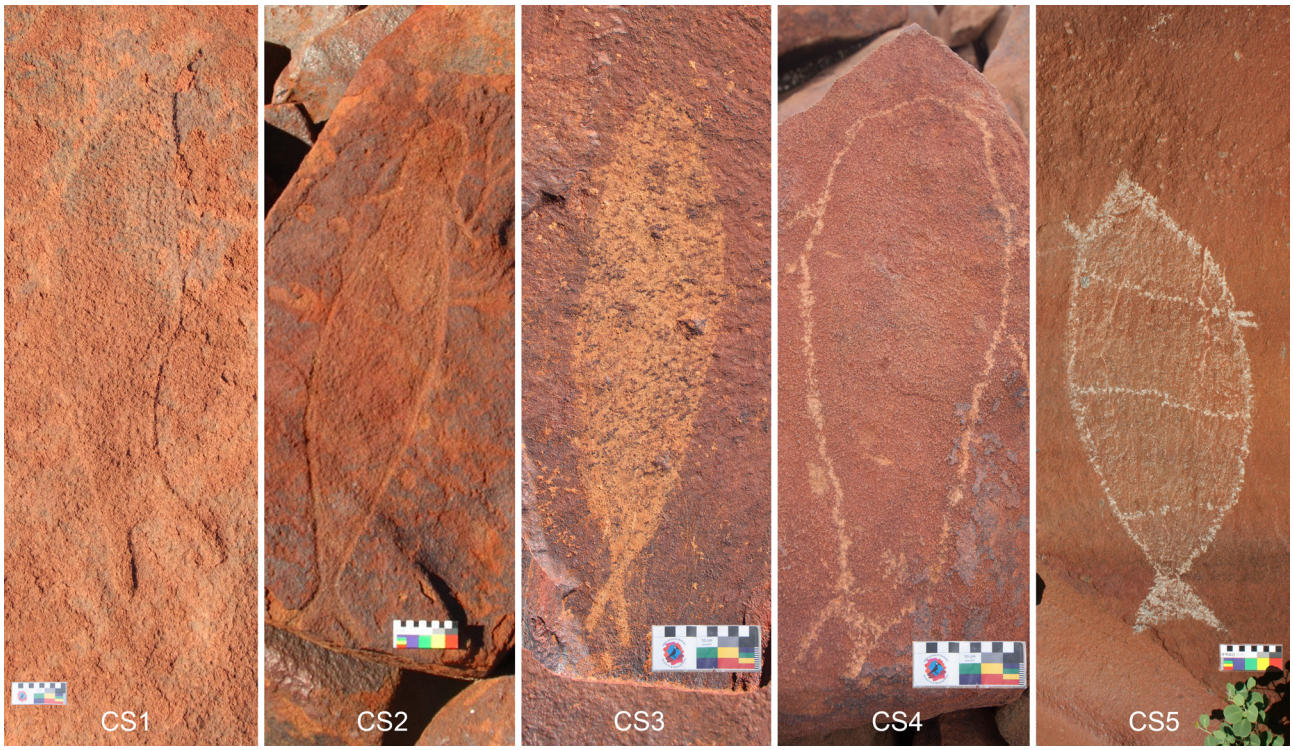

Figure 16.2. Fish motifs demonstrating each contrast state.

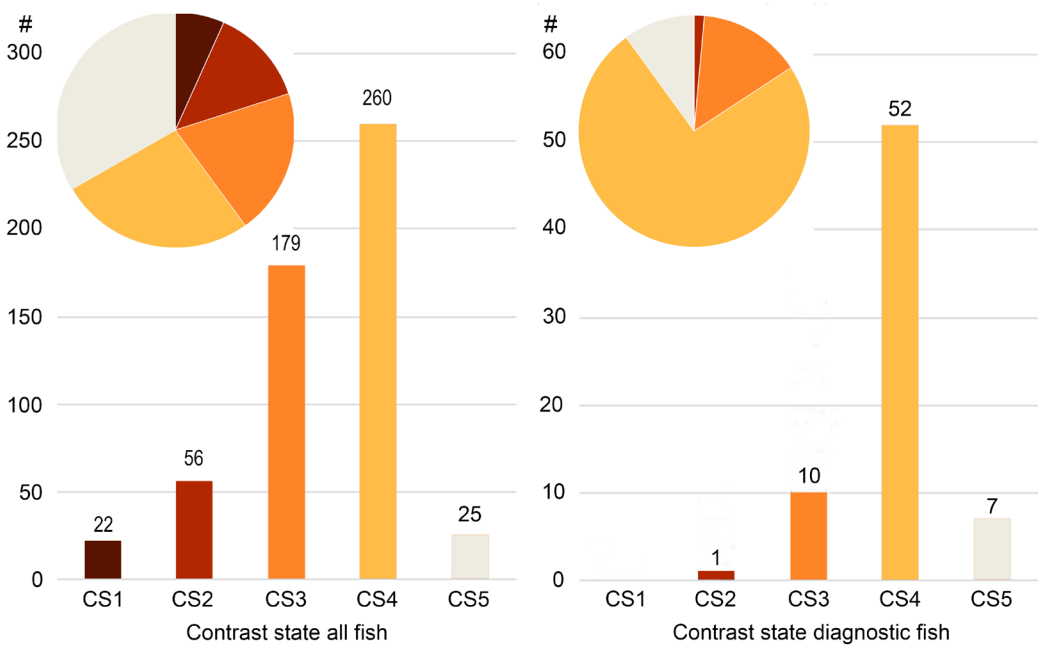

Figure 16.3. Data relating to fish motifs and recorded contrast state. Note: total fish numbers differ from Table 16.1 as contrast state was not diagnostic on 31 petroglyphs.

There is a noticeable shift in the way that fish are depicted, stylistically, through time. Simple outline and solid forms are characteristic of the early phases, with a gradual increase in the level of detail depicted through time, such as an increased range of tail shapes (Figure 16.4). Fish motifs with enough diagnostic detail to enable species identification occur mostly in contrast state 4 (74%, see Figure 16.3).

Although the sample of fish which were able to have species assigned is small (n = 72), this subset of the broader zoomorphic assemblage can be characterised. All speciated fish motifs have a dominant form of either solid or outline (outline = 47%, solid = 53%). Most fish identifiable to species level do not have any decorative infill (80%). Where an interior design is present, the majority (86%) are vertical linear stripes in the body. The only two exceptions are a cross-hatch design and a curvilinear pattern resembling large scales (Figure 16.5). Most have fins depicted (86%), including variously pectoral, dorsal and/or anal fins.

Tail shape is an attribute of speciated fish motifs which also indicates stylistic preferences by Murujuga artists. Six different tail shapes are identified among the speciated fish motifs (Figure 16.4), with V or arc shapes dominating (69% combined), followed by fan (22%). The 17 different fish species identified in the rock art have four different tail shapes amongst them (Figure 16.6), and when comparing motif tail forms with those observed in nature, V and arc-shaped tails can be most closely compared with 'forked' or 'emarginate' tail shapes, while the 'fan' type is similar to 'truncate'.

When considering fish as they appear biologically, of the 17 species identified in the art the most common tail shape is 'truncate' (n = 7, 41%), closely followed by 'forked' varieties (n = 5, 29%). While 41% of the fish species identified in the art have truncate-shaped tails in nature, only 22% of speciated fish motifs have a fan-shaped tail. Conversely, 41% of the fish species identified in the art have a forked or emarginate tail, while in nature 69% of fish motifs have a V or arc-shaped tail. This demonstrates that Murujuga artists preference V or arc-shaped tails when depicting fish, as a stylistic marker, regardless of their actual tail morphology.

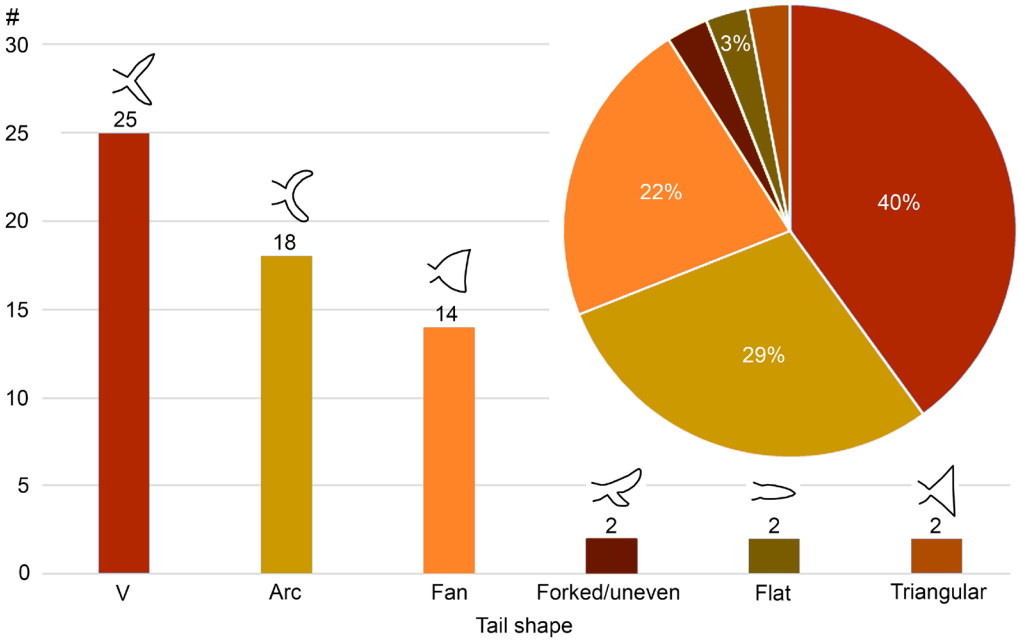

Figure 16.4. The six defined fish motif tail shapes (identified in the 63 petroglyphs used in this analysis).

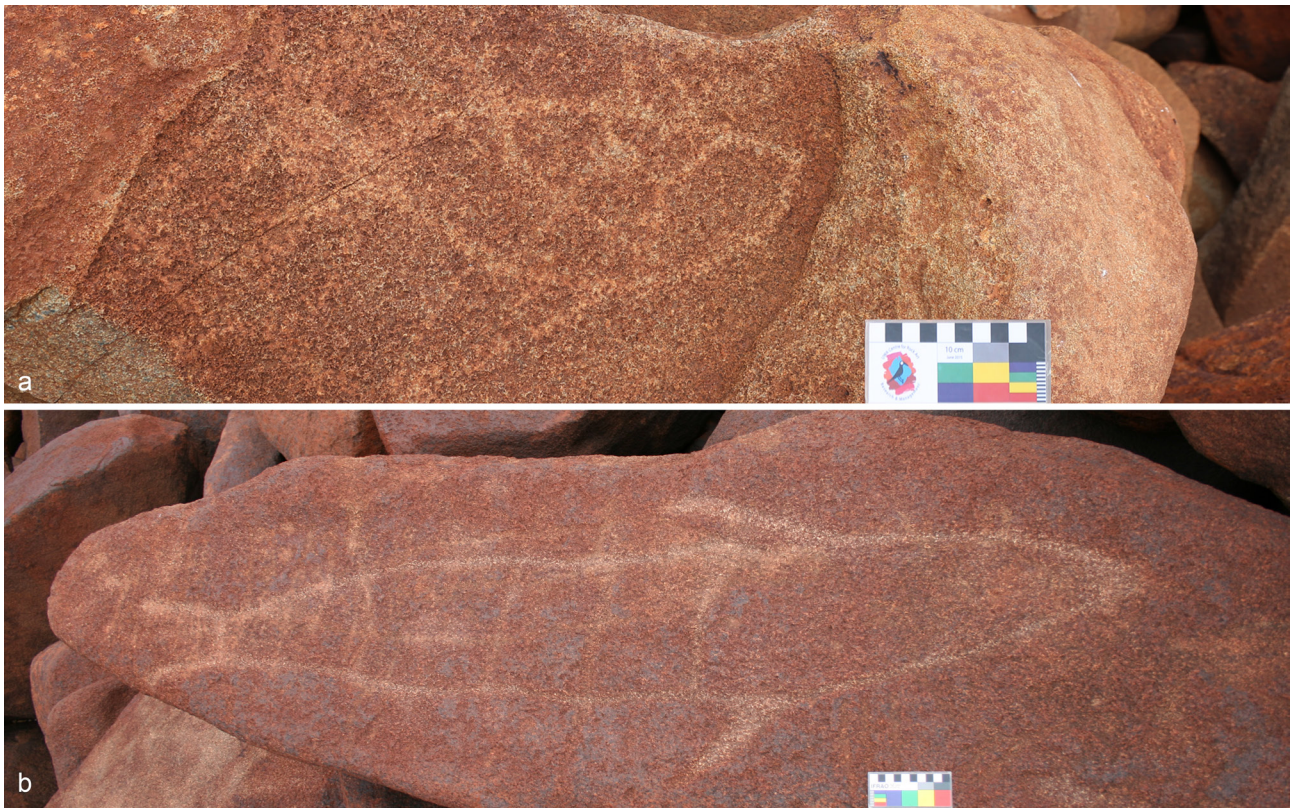

Figure 16.5. Interior designs on fish motifs: (a) curvilinear pattern resembling large scales; and (b) a cross-hatched pattern infill design.

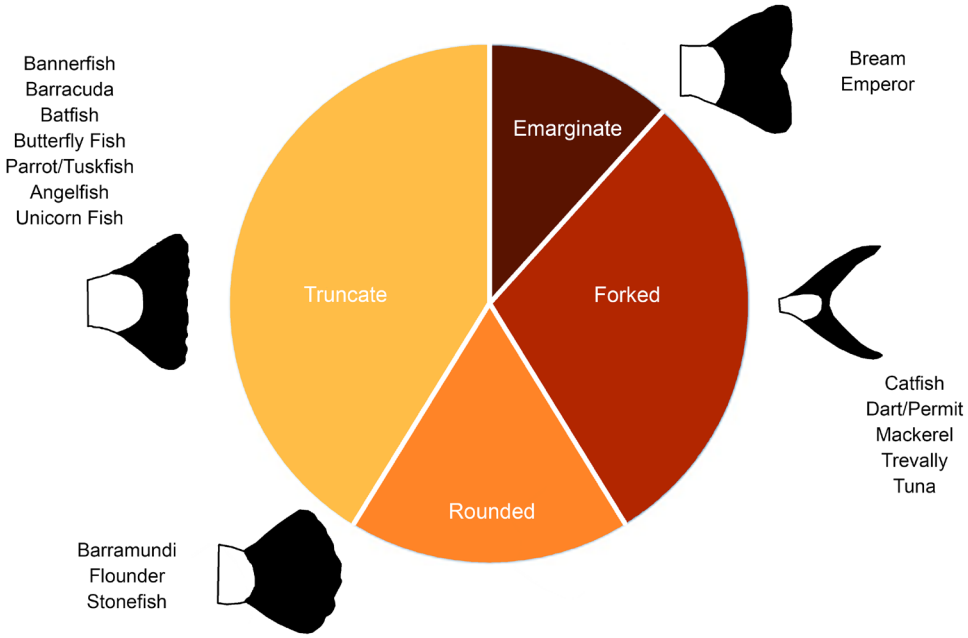

Figure 16.6. Morphologically accurate tail shapes of fish species identified in the rock art.

Most fish depicted in the Murujuga rock art have an oval-shaped body with converging tangs, or an arc, V or triangular shape at one end, indicating a tail. These schematic forms do not lend themselves to a detailed zoologically based species identification. The vast majority of human forms across the archipelago are also schematically simple (i.e. are not anatomically correct), and this is at the core of the Murujuga style. The small sample of fish motifs with anatomical detail allowing for species identification has meant that a multivariate attribute/morphometric analysis (e.g. de Koning 2014; Stewart 2016 for turtles and macropods respectively) has not been attempted here.

During fieldwork, fish motifs with any anatomical details, such as fins, potentially distinctive body or tail shapes, and internal designs, were flagged for further

analysis and possible species identification. Of the 573 fish motifs recorded, 123 (22%) were identified as having 'anatomical detail', though it should be noted that this designation was applied liberally in the field to ensure a thorough review during analysis.

Species identifications have been made based on distinctive key attributes which can be observed on zoological specimens. In some cases, it is observed that zoologically precise measurements, angles or shapes are not always present in the rock art motifs. For example, a flounder is a highly distinctive fish with rayed fins encircling almost the entire body and a fan-like tail. There are several fish motifs recorded with rayed fins, leading to their classification as flounder, yet the characteristic fan-like (rounded) tail has not been depicted in these instances (see Figure 16.8f). These examples have a V-shaped tail, which is a schema adopted on many Murujuga fish motifs, as noted above. Similarly, Angelfish have highly distinctive body and tail shapes, but the two Angelfish motifs that have been identified based on their body shape do not have anatomically correct tail shapes.

This analysis demonstrates that clear stylistic choices were made by artists to portray the specific features of particular fish, but without strict adherence to complete zoological correctness, especially in tail shape, as discussed. A more extensive morphometric analysis was not possible given the relatively small sample of diagnostic motifs; however, it does appear that tail shape is considered a crucial component of design choice commonly adopted by Murujuga artists.

Examination of the 123 fish motifs with nominal anatomical details allowed 33 motifs to be identified to species level. Images from additional sites recorded across the archipelago allowed a further 25 fish motifs to be speciated. These 58 fish motifs include 17 different species (Table 16.2). This is a small proportion of the 650 fish species that have been identified within the natural environment of the archipelago, and Hutchins (2004) provides lists of those most frequently seen and most collected. The majority of these are not present in the art (except for Parrot/Tuskfish and Butterfly Fish). A 'simple, easy to use manual to assist commercial, recreational, charter and customary fishers to identify the most caught marine finfish species in the North Coast Bioregion' (Rome and Newman 2010: i) similarly provides a list which is more extensive than that found engraved in the rock art, further highlighting the limited range of fish species depicted in the art compared with the range found in nature.

The 58 motifs identified to 17 species belong to every local marine habitat, including estuary, nearshore, reef and pelagic (Table 16.2), with reef species dominating (n = 25; 43%). However, as noted by Keegan (2012), when assessing human interaction with particular species, caution must be exercised when relying on 'generalised marine habitat denominations for taxa' as these often do not capture the full breadth of fish behaviours. For example, though a species may be characterised as pelagic, this may not preclude their presence in nearshore environments. As such, this discussion also draws on contemporary local knowledge of fish behaviours and habitats. A further 14 fish motifs belonging to the sharks and rays category (cartilaginous fishes) were also identified. Here I provide details of each of the species identified in the art.

FISH SPECIES	HABITAT	COUNT
Angelfish	Reef	2
Bannerfish	Reef	2
Barracuda	Pelagic	2
Barramundi	Estuary	1
Batfish	Reef	7
Bream	Estuary	2
Butterfly Fish	Reef	2
Catfish	Estuary	9
Dart/Permit	Nearshore	1
Emperor	Reef	5
Flounder	Nearshore	3
Mackerel	Pelagic	2
Parrot/Tuskfish	Nearshore	1
Stonefish	Nearshore	2
Trevally	Nearshore	9
Tuna	Pelagic	1
Unicorn Fish	Reef	7

Table 16.2. Fish species identified in the engraved assemblage showing their natural primary habitats.

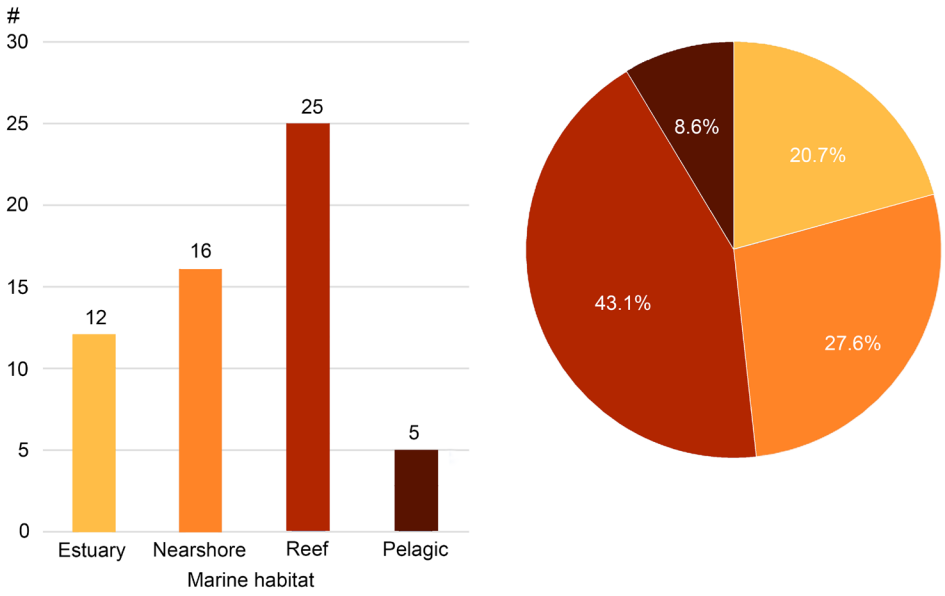

Figure 16.7. Fish species by marine habitat.

Estuary species

This analysis has identified just three estuarine fish species in the Murujuga rock art, therefore only a small proportion of the natural range of this habitat's species is represented in the art (using anatomically recognisable traits).

Barramundi

Barramundi (*Lates calcarifer)* is a well-known estuary species that features on many modern menus. They have a distinctive body shape, with the hump-like concave head profile. A single image of this fish has been identified amongst the rock art. The example identified from Enderby Island (Figure 16.8a) also has a characteristic head shape and anatomically accurate anal and posterior dorsal fins depicted, along with the characteristic rounded tail.

Across northern Australia today, Barramundi is a popular target species for modern anglers, both for eating and as a sport fish because they can be more challenging to catch than other creek fish using modern tackle (such as a rod and reel). This fish is often easily spotted in clear water conditions; though they are fussy eaters, which makes fishing with a lure or bait hard, spearing them may not have been as problematic. They grow to enormous sizes, which may have been an appealing factor for people in the past.

Catfish

Catfish motifs have a generic body shape but are identifiable by the distinctive whiskers around their mouths, which are characteristic of this species (Figure 16.8b). Nine catfish (*Arius* sp.) have been identified in the rock art, making it one of the most depicted species, equivalent to emperors and trevally. Catfish motifs are also distinctive as they are portrayed as if viewed from above, which is not as common a perspective as the usual zoomorphic convention in Murujuga – which is in profile. All the catfish motifs in this sample featured the simple V or arc-shaped tail. Although Barramundi are considered in much higher regard today when it comes to eating, catfish thrive in abundance in the creeks of the Murujuga area and grow to large sizes.

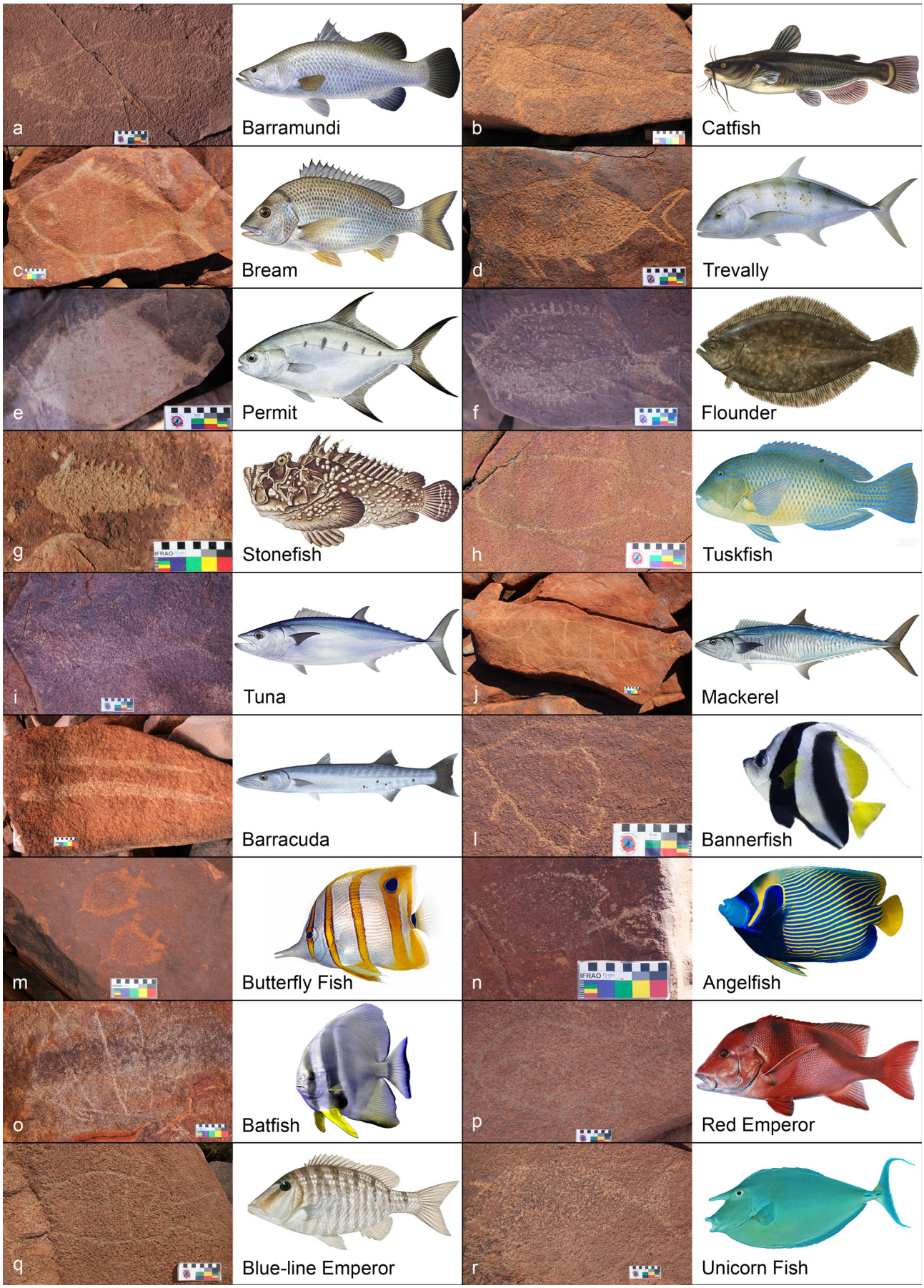

Figure 16.8. Identified fish species in the Murujuga rock art alongside example images. Image sources: Black Turtle Dive 2022 (Batfish); Bray 2019 (Unicorn Fish); Department of Fisheries, nd (illustrations © R. Swainston/anima.net.au) (Barramundi, Bream, Trevally, Permit, Tuskfish, Tuna, Mackerel, Barracuda, Red Emperor, Blue-line Emperor); IndiaMART 2022 (Bannerfish); iStockphoto 2022 (Butterfly Fish, Angelfish); NicePNG 2018 (Flounder); OurMarineSpecies.com, nd (Stonefish); US Fish and Wildlife Service 2006 (Catfish).

Bream

Bream (likely *Acanthopagrus palmaris* – Northwest Black Bream) are commonly found within the creek systems in this area and are considered, today, to be good eating. The key identifying features are the ovoid body shape and distinctive spikey dorsal fin. There are two bream identified in the rock art (Figure 16.8c). Though not as prized as Barramundi today, catfish and bream are two of the most caught species when fishing the creeks and bream are often kept for eating (pers. obs.).

Nearshore species

Trevally

Trevally is a prevalent nearshore species (*Gnathanodon speciosus, Carangoides* sp., *Caranx ignobilis*) with a distinctive elongated body shape, steep head profile and forked tail (Figure 16.8d). They are easily identifiable in the rock art and their frequency (n = 9) is unsurprising given they are prolific around the archipelago. There are several different types of trevally and despite their official designation as a surf species, they can be found in a variety of contexts including creeks, shallow sandy beaches, reefs, open water and long distances offshore. They are also often seen on the surface. Those found feeding in the shallows may have been good targets for people using spears in the past and could also have been caught on a line in most locations across the archipelago, with the appropriate hook technology.

Dart/Permit

Darts and permits have very similar morphologies, with a distinctive elongated dorsal fin. They typically inhabit shallow, sandy waters in sandy bays and beaches. Permits grow to relatively large sizes (over 1 m in length and up to 36 kg), which may also have been an attractive feature. A single example of what is likely to be a Dart (*Trachinotus botla*) or Permit (*Trachinotus falcatus)* has been recorded on West Lewis Island (Figure 16e). Today, people catch permits using a fly rod from the beach. It seems likely that people in the past would have spotted them from the shore and may have been able to spear them.

Flounder

Flounder (*Pseudorhombus* sp.) have unique rayed fins which encircle almost the entire body, except for a short section at the head. These odd-looking fish are usually found camouflaged and sitting on the bottom in shallow sandy or muddy environments, making them potentially easy targets for people in the past. Today they are considered an excellent eating fish. Three Murujuga motifs have been identified with distinctive rayed fins on both sides of their oval-shaped bodies. The example shown (Figure 16.8f) has the encircling rayed fins while having the more stylised (non-diagnostic) tail.

Stonefish

Stonefish (*Synanceia* sp.) can be found in inshore reef and estuarine environments, often in very shallow water. They are very well camouflaged and their spines are extremely poisonous, injecting poison deep into a wound if trodden on. They are, in fact, the most poisonous of all fish (Bray 2020a) and are unlikely to be an economic species. Two stonefish motifs have been identified amongst the rock art, with the distinctive body shape and row of pointed spines down the back (Figure 16.8g).

Tuskfish

Several species of tuskfish (*Choerodon* sp.) are found in the archipelago today, inhabiting both nearshore and reef locations. These species grow to large sizes (between 40 cm and 80 cm) and are considered excellent eating today. Its rounded head, body and tail shape are distinctive (Figure 16.8h), and a single example of a tuskfish has been identified, with stylised fins and anatomically correct truncate tail shape.

Pelagic species

Tuna

The waters of the archipelago are inhabited by Mackerel Tuna (*Euthynnus affinis*) and Longtail or Northern Bluefin Tuna (*Thunnus tonggol*), which are large, meaty fish which swim in large schools. They can often be seen attacking baitfish on the surface, a behaviour that makes them easy to see, even from a distance. Pushing the baitfish to the surface results in chaotic white water, which is highly visible. The process also attracts lots of birds which circle and dive, and the tuna often break the surface and jump. In this regard, tuna are one of the most visible fish in the archipelago, making it highly likely that people in the past would have been familiar with them, yet whether they could have been often caught is questionable. Today the method for catching tuna in open water is to throw a lure from a boat which is mistaken for a baitfish. Such an endeavour may have been a challenge without modern fishing technologies, particularly fishhooks and sturdy lines. Only a single example of this well-known pelagic species has been identified in the rock art (Figure 16.8i). The unmistakable symmetrical torpedo-shaped body is the distinguishing feature.

Mackerel

Another pelagic fish known in the archipelago is mackerel, but unlike tuna it can sometimes be seen and caught in close around the islands or off the shore. The long body shape with pointed head is what makes these identifiable, and the internal stripes suggest either Grey Mackerel (*Scomberomorus semifasciatus*) or Spanish Mackerel (*Scomberomorus commerson*). They are considered excellent eating today as the meat can be cut into large steaks. The most significant barrier to catching mackerel is their sharp teeth, and most modern anglers use a wire trace to avoid losing their tackle. This pelagic species could have been caught from the shore using spears or nets. Two engraved mackerel motifs have been identified (Figure 16.8j).

Barracuda

The usual habitat for barracuda (*Sphyraena* sp.) is offshore and inshore reefs, though smaller barracuda can be found inshore, and it is not impossible to catch one in shallower waters. This species is identifiable by their long, thin bodies and snub-rounded head (unlike other long, thin species like Garfish and Longtom, which have pointed beaks; Figure 16.8k). Barracuda are very similar to mackerel in many ways – they are a large pelagic fish with fearsome teeth. As such it is debatable whether they would have been targeted by fisher gatherers in the past. Certainly, hook and line would have been out of the question in the absence of heavy wire leader.

Reef species

Bannerfish

Within the suite of reef species depicted in the art, there are several which most likely were not eaten. One of these is the bannerfish (*Heniochus* sp.), which has a distinctive body shape and a long filament that protrudes from the dorsal fin. Growing to only about 25 cm, they are seen frequently around the coral reef. They are not eaten today due to their small size. You can see them when swimming around the reef and they are also visible when floating over the reef on watercraft on a still, clear day. Two engraved motifs of this species have been identified (Figure 16.8l).

Butterfly Fish

Like bannerfish, although often even smaller, butterfly fish (*Chaetodon* sp.) are common inhabitants of coral reefs. Their fins and pointy beak make them identifiable and one panel, containing an engraved pair, has been recorded (Figure 16.8m).

Angelfish

Two slightly less diagnostic reef fish motifs have also been recorded on one panel (Figure 16.8n). Likely to be a species of angelfish (of which there are many), it is the distinctive more trapezoidal body shape which makes them identifiable as one of the smaller species seen on the reef.

Batfish

Batfish (*Zabidius novemaculeatus*, *Platax pinnatus*) is a species of large and inquisitive reef fish which is likely to have been eaten in the past. Growing to around 4.5 kg and 60 cm long, batfish today often swim to the surface to investigate boats on the reef. This species would have been seen frequently in the same way when people were out on their mangrove logs (or other watercraft), potentially making them a good target species. Batfish are identifiable in the art by their body shape, with one motif also having the characteristic stripes depicted (Figure 16.8o). They are one of the most common identifiable Murujuga fish species, with a total of seven motifs recorded.

Emperor

Emperor are one of the most sought-after species in the archipelago today, and the only fish (except for shark and ray species) where it has been possible to identify them to subspecies level, based on body, head and fin shape, and in one case markings on the body (Figure 16.8 p–q). They include Red Emperor (*Lutjanus sebae*), Long Nose Emperor (*Lethrinus olivaceus*), Blue-line Emperor (*Lethrinus laticaudis*) or Blue Spot Emperor (*Lethrinus punctulatus*). It is unlikely that people were able to catch them from inshore as they are not often seen in such areas. This species was likely caught on a line on the reef around the islands. A total of five emperor motifs have been identified.

Unicorn Fish

The Unicorn Fish (*Naso unicornis*) has a unique horn protrusion from its head, and the tail, with the trailing filaments, is also diagnostic. Today they are not a target species for locals. They are often seen around the reefs by people spearfishing, but not often caught because their diet consists mostly of algae. This species may have been caught to eat by people in the past and there is a fishing scene composition featuring unicorn fish on Gidley Island (Figure 16.15b). Seven engraved unicorn fish have been identified across the archipelago (Figure 16.8r).

Sharks and rays

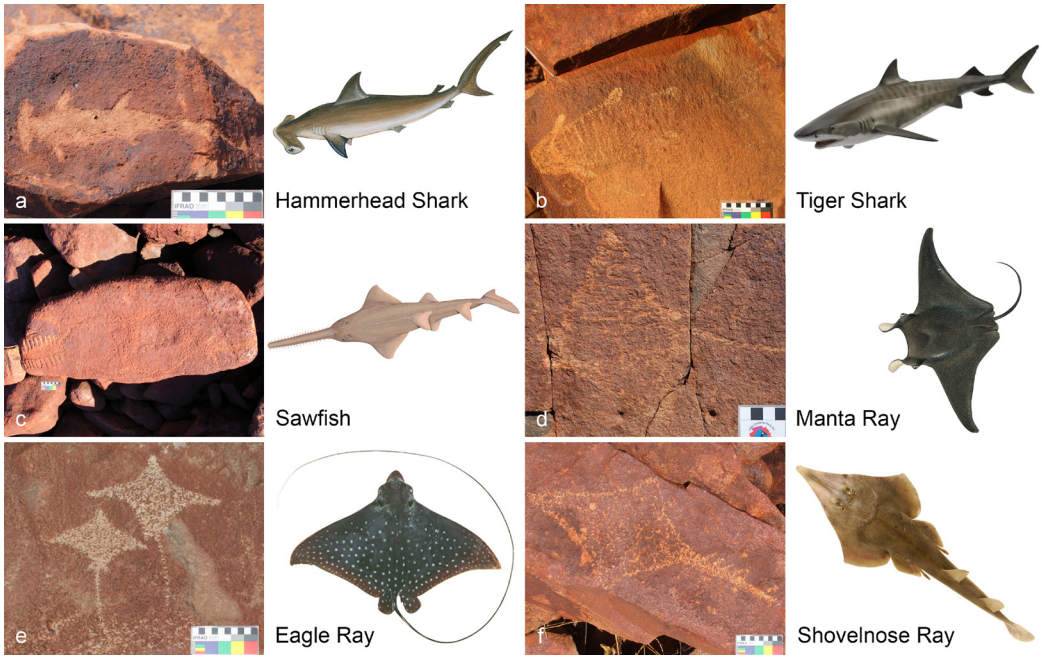

Figure 16.9. Examples of petroglyphs within the sharks and rays category (cartilaginous fishes) alongside example images. Sources: Bray 2020b, nd; Encyclopedia Britannica 2009a, b; Kidstuff nd; Stick Figure Fish 2022.

Hammerhead Shark

The distinctive shape of the head of the Hammerhead Shark (*Sphyrnidae*) makes it an easily identifiable shark, which is known to frequent shallow waters around Dampier. There are two motifs from Murujuga identified as hammerhead sharks (Figure 16.9a). These are viewed from above, rather than in profile.

Tiger Shark

The Tiger Shark (*Galeocerdo cuvier*) is a common sight in the archipelago today. This species can be identified through its distinctive body, fins and tail shape. Linear markings inside the body are also diagnostic in identifying two particular tiger shark motifs. The motif shown in Figure 16.9b is an interesting example of twisted perspective, with the front half of the body seen from the top and the tail from the side.

Sawfish

Sawfish (*Pristidae* sp.) are found mostly in estuaries and inshore areas, where they sit on the sandy bottom in creeks and inner reefs. This species is distinguishable by the unmistakable saw nose protrusion, and the fins on the tail are also diagnostic. A single sawfish (*Pristidae*) motif has been identified at Gum Tree Valley on Dampier Island (Figure 16.9c).

Manta Ray

Manta rays (*Mobula* sp.) are not an uncommon sight in the archipelago today and can be seen in both open water and shallow, sheltered environments. They are easily identifiable by their distinctive body shape, which is defined by the horn-shaped fins (cephalic lobes) located on either side of their mouths and their wide triangular pectoral fins (Figure 16.9d). Three manta ray motifs have been recorded in the archipelago on Dampier, Malus and Enderby islands.

Eagle Ray

Eagle rays (*Myliobatidae* sp.) are found in similar environments to manta rays and can be seen in the archipelago today. A single panel containing three precisely depicted eagle ray motifs has been recorded on Gidley Island (Figure 16.9e), and two other panels with a single ray on them are located on Dampier and Enderby islands. The shape of this ray is distinguishable from the other rays by the diamond shape of the pectoral fins, pointed snout and distinctive pelvic fins.

Shovelnose Ray

Shovelnose rays (*Aptychotrema vincentiana*) are typically found in sheltered bays, estuaries and coastal and offshore waters. They prefer sandy areas and seagrass beds. Their morphology is characterised by an elongated, pointed snout, diamond-shaped body and prominent dorsal fins on the tail. A single example of a Shovelnose Ray has been identified on Angel Island (Figure 16.9f).

Stingray

There are multiple stingrays depicted in the rock art (44 in this dataset). These motifs comprise a circular or ovular body with linear tail, sometimes also with pectoral fins or eyes (Figure 16.10 a–b). Commonly sighted in shallow water, there are many stingray species found in the natural environment. The generic, stylised depiction of these creatures in the art means that greater accuracy in terms of identification is difficult.

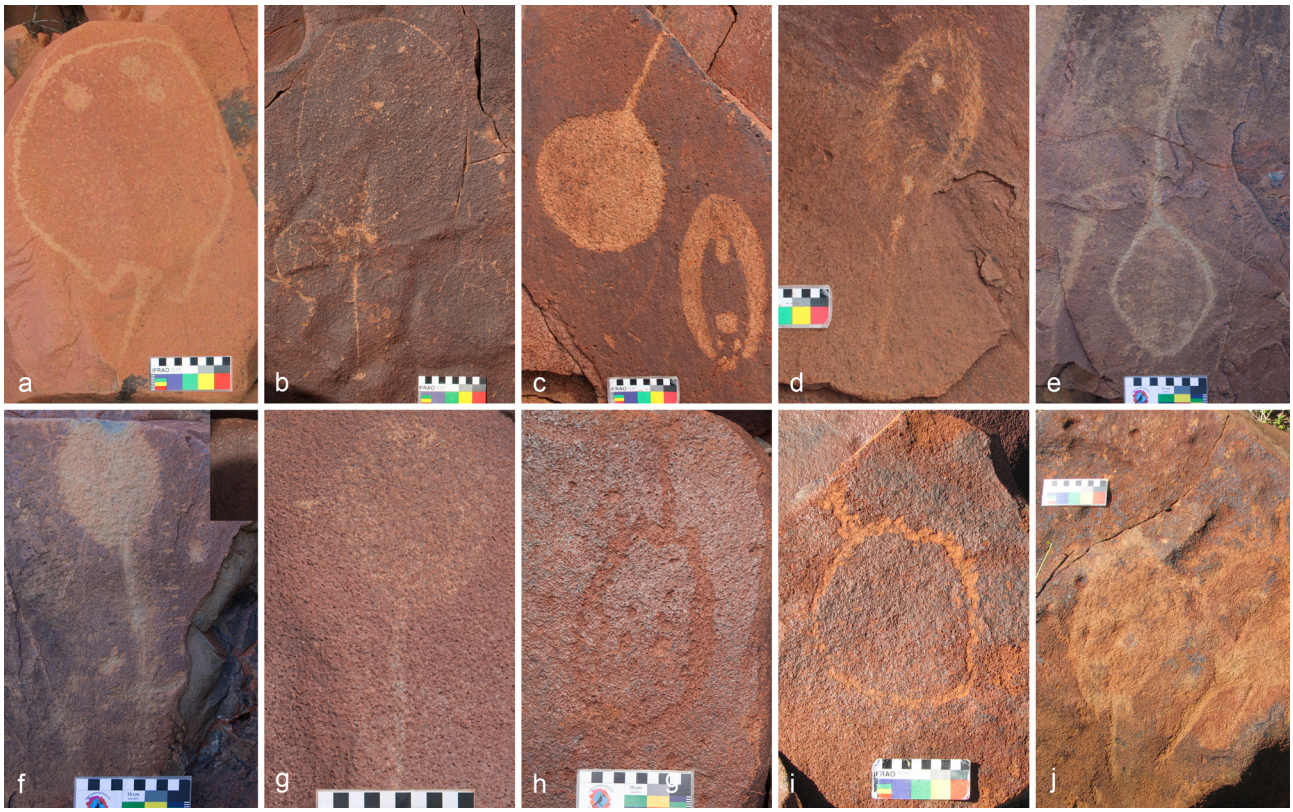

Figure 16.10. Petroglyph examples of stingray motifs: (a) Burrup Peninsula; (b–f) Enderby Island; and (g–j) Rosemary Island.

Other marine species

Despite being arguably one of the most common sights in the archipelago, fish are not the most frequently depicted marine species in the rock art. Turtles dominate the marine zoomorphic assemblage, comprising nearly half of all marine creatures represented (44%, n = 759). Other species, such as crustaceans and dugongs, occur in significantly lower numbers, despite their common occurrence in the natural environment (Figure 16.11). Previous research has shown that turtle motifs across the archipelago can be identified to species level (de Koning 2014, see Chapter 17). Included within the 'other marine' category are dolphins, whales, eels, a squid, a possible jellyfish and a whale shark. There is also a large proportion of marine tails (Figure 16.12) depicted as part of the Murujuga assemblage, which also represent part of the maritime economy.

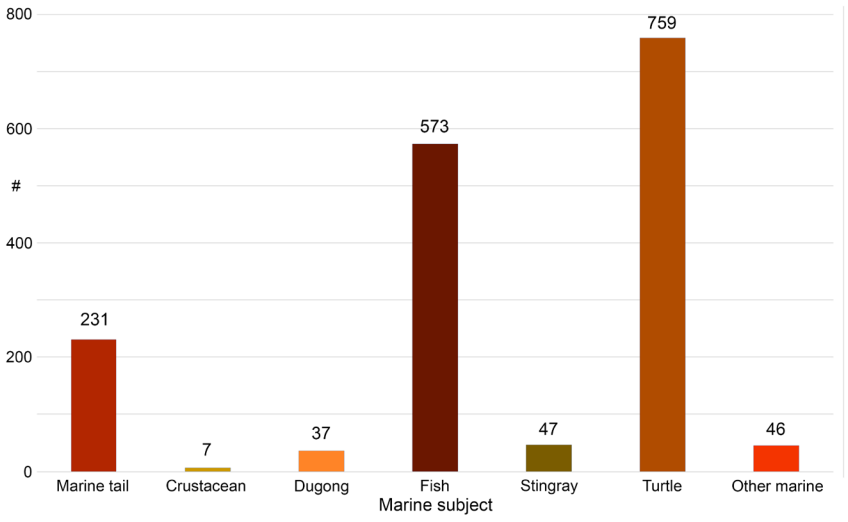

Figure 16.11. Categories of recorded marine motif subjects.

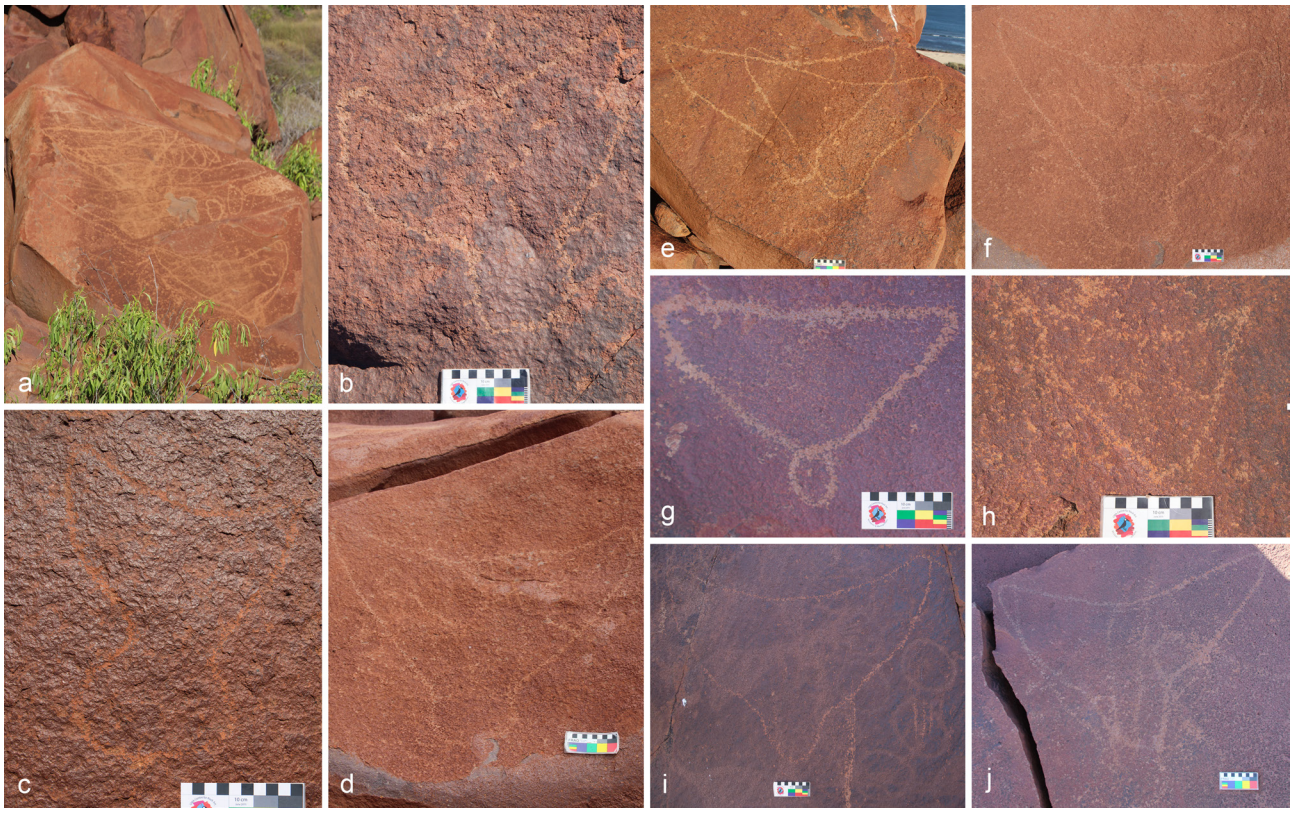

Figure 16.12. Examples of marine tail motifs from Enderby Island.

Fishing Compositions

Understanding the marine subsistence strategies of the Dampier Archipelago can be enhanced through analysis of fishing scenes and the material culture associated with fish motifs. The dataset employed for this analysis comprises motifs recorded by the Murujuga: Dynamics of the Dreaming project, and legacy panels in the CRAR+M database recorded by others (in particular photos taken by Ken Mulvaney) providing a fair sample across the archipelago (Figure 16.1). Two types of composition are included here: scenes (Davidson and Nowell 2021; May and Sanz 2010; Santos Da Rosa et al. 2021) and material culture associations.

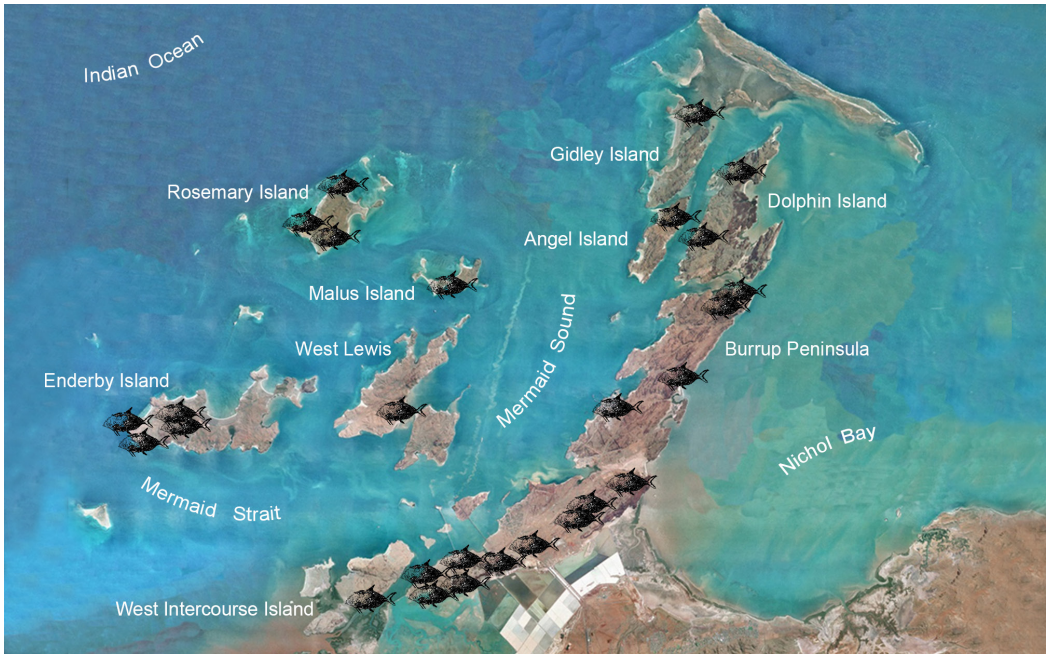

Figure 16.13. Location of rock art assemblages that provided data for this analysis.

To qualify as a 'scene' the composition has to include a human figure and may or may not incorporate other items of material culture (held by the human figure, associated with the fish or both). Compositions without human figures are classified as 'material culture only' and are composed primarily of lines or arcs entering the body of the zoomorphic subject at any point (i.e. head, mouth, back, stomach, tail). For the purposes of this analysis, elements of the material culture item have to intersect with the engraved elements of the fish to be included. Fish depicted on the same panel as an item of material culture, but not unequivocally associated through direct contact, were excluded from this analysis because of the potential subjectivity of interpreting this as deliberate composition. Material culture associations greatly outnumber scenes involving human figures (see Table 16.3).

COMPOSITION TYPE	NO.	%F
Scene	11	23
Material culture only	37	77
Total	*48*	*100*

Table 16.3. Murujuga fishing scenes and material culture associations.

Fishing scenes

The 11 compositions classified as fishing 'scenes' fell into two different categories:

Holding: those where the human figure was depicted in direct association with (i.e. touching) the fish (Figure 16.14a);

Line: those where there was a line joining the two subjects (Figure 16.14 b–c).

Figure 16.14. Fishing scenes with human (a) 'holding' the fish or (b–c) connected by a line; (d) a fish motif material culture association of 'line to mouth'; and (e–f) possible depictions of fishhooks entering the mouths of fish.

The most depicted fishing scene is the 'line' type which was recorded nine times. Line scenes typically comprise a straight line from the arm/hand of the human to the body of the fish. It is notable that none of the line scenes depict the line entering the mouth of the fish (Table 16.4). In two examples of line scenes a diagnostic fish species is featured: a batfish and a unicorn fish (see Figure 16.15 a–b). Two examples are recorded of 'holding', where the scenes depict the body of the fish attached to the arm/hand of the human figure.

ATTRIBUTE	NO.	%F
Line position – fish		
Line to body	9	100
Line form		
Straight	7	78
Curved	2	22
Line position – human figure		
Attached to arm/hand	8	89
Attached to body	1	11

Table 16.4. Line scene attributes.

Fish material culture associations

A total of 35 fish motifs within this dataset have been depicted with a material culture association. Of these, five have species identifiable (including trevally, batfish and catfish). The dominant association is a line to the body of the fish (n = 24, 68%). In some examples the line is to the head or back of the fish; however, these have all been classed as 'line to body'.

MATERIAL CULTURE TYPE	NO.	%F
Arc to head	2	6
Line to body	24	68
Line to body and mouth	1	3
Line to mouth	5	14
Possible net or trap	3	9
Total	*35*	*100*

Table 16.5. Material culture scene attributes.

Five fish are depicted with a line to their mouth (e.g. Figure 16.14d). The two 'arc to head' motifs could be interpreted as fishhooks, but equally may represent the kaili/boomerang that has been described in the ethnohistorical record (Figure 16.14 e–f). These motifs support the notion that line fishing was practised on the archipelago, supporting King's (1827) observation of a line attached to the back of a man's mangrove log, and in contrast to both the lack of fishhooks found archaeologically in the area and Curr's (1886) statement that local people did not use fishhooks. It is acknowledged that a line entering the mouth of a fish does not necessarily indicate use of fishing line. It may be intended as a depiction of a spear striking the fish in this location, although it is notable that with terrestrial fauna this line to mouth has not been recorded in hunting scenes.

Possible nets or traps

Three compositions are suggestive of possible netting or trapping methods of catching fish (as well as other marine creatures). Zoomorphic subjects on these panels are enclosed within linear motifs which could be interpreted as the creatures being depicted inside a net or trap (Figure 16.15 c–d).

Figure 16.15. Fishing scenes involving: (a–b) diagnostic batfish and unicorn fish; (c–d) possible net or trap motifs incorporating fish and turtle subjects.

Menu or Mythology?

It is acknowledged that the intentionality of the artist cannot be interpreted solely through the production of identifiable fish species in the motif repertoire (see Davidson 2018). Nevertheless, it is possible to elaborate on the ramifications of interpreting edibility of species depicted in the art, in terms of Indigenous knowledge of diagnostic identification of marine species.

An early attempt at fish species identification in the Murujuga rock art compared species depicted at King Bay with skeletal remains found in a nearby excavation and concluded that there is a 'direct association between the exploitation and depiction of a food resource' (Green 1982: 138). This current and broad analysis indicates little support for the simple notion of art as pictographic menu. Various fish depicted were almost certainly not eaten and, based on excavated faunal remains (see Chapters 6 and 15), many fish thought to have been the focus of this coastal economy are not recognisable in the rock art repertoire (Figure 16.16).

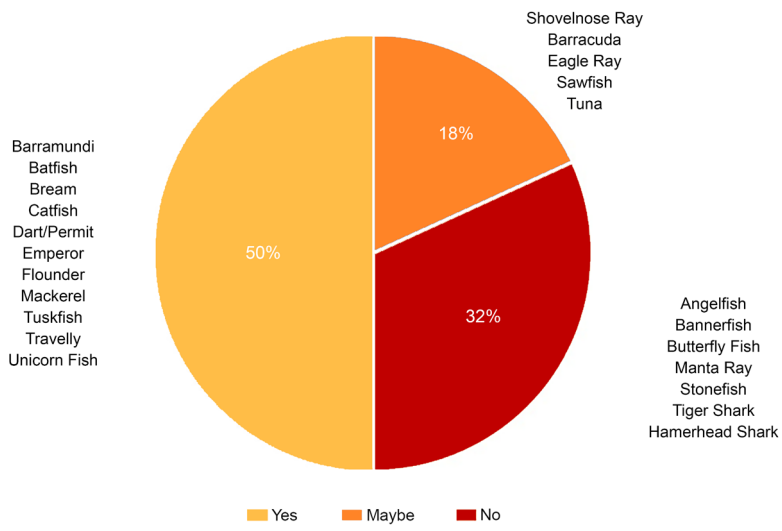

Figure 16.16. Identified fish species recorded in the rock art in relation to prospect as food resource.

While chronicling the nature of the 'daily catch' could well have been one of the functions of the art, only half of the motifs identifiable to species level, based on their habitat range and ease of capture, are likely to have been a common food source. Just under a third of the identifiable species have toxins or a level of danger involved in hunting them (see Figure 16.16). Some species, such as large sharks or Manta rays, are unlikely to have been hunted directly but may have been eaten opportunistically when their carcasses washed up on shore. Compositions showing fish being captured by humans involve two identifiable species (Batfish and Unicorn Fish; see Figure 16.15 a–b), while seven other fish in these scenes are not diagnostic. A detailed study, with an ethnographic component, of fish species depicted in the painted rock art of Arnhem Land (Tacon 1989) indicated that although fish were considered a critical element of the traditional diet and held in high economic regard, they also had 'great mytho-totemic importance'. Tacon (1989: 179) describes associations between fish and creation myths, rituals and stories, and indicates connections with water, life and human origins. Also in Arnhem Land, Morphy and Morphy (2006) illustrate the symbolic importance of specific marine creatures within stories associated with the landscape, including the notion of ancestors taking the form of particular species. McNiven (2004) highlights a deeply spiritual relationship with the ocean and complex ritual associations of people in northern Queensland to their 'seascapes'. Sea creatures such as dugong, turtles, crocodiles and particular species of fish and sharks are described as totemic entities with a kinship relationship to people and/or having clan associations (McNiven 2004: 334). Such insights into varying levels of significance of fish as both food and important cultural symbol across Australia suggest that a similar cultural association likely existed for Murujuga.

Ethnohistorical evidence relating to fish species preferentially consumed by people on the Dampier Archipelago is limited. There is one historical reference that provides an insight into a possible species eaten by people on the archipelago. Stow describes local people eating a 'fish [that] was yellow, and in places a very bright yellow; and there was a tuft of bristles passing quite under the fish and overlapping the upper edge. One of the natives told us they were excellent cooked, but in a raw state were objectionable' (Stow 1865: 7). While not specifically naming the species of this fish, Stow's description matches with locally available Threadfin Salmon, which can be yellow in colour and have the distinctive bristles on the underside.

Diagnostic bone in archaeological contexts is similarly rare, as are the reference collections necessary to make detailed identifications possible (see Chapter 6). Exceptions are Blue Tuskfish and Japanese Bream recovered at King Bay (Green 1982: 138), Parrotfish from Wadjuru Pool on Rosemary Island (Berry 2018: 285) and a prolific amount of small baitfish otoliths at Enderby 10 on Enderby Island (amongst over 1,000 NISP of fish bone and one shark element: see Table 6.53).

The use of spinifex fishing line (and the apparent absence of specialised fishhooks) may rule out the targeting of particular species in some environments. For example, when Phillip Parker King, in 1818, observed a man with a fishing line hanging from his mangrove raft in open water, it is more likely the angler was fishing for soft-mouthed reef fish as opposed to the larger pelagic species with sharp teeth, thus narrowing down the likely target species. Fishing scenes also have the potential to provide information regarding diet choices that are unknown from any other source. Two of the fish motifs identified to species level here are represented in fishing scenes: Batfish and Unicorn fish (Figure 16.15 a–b). Neither of these are commonly targeted for eating today, and so this evidence of scenes depicting their capture is an interesting insight into past fishing behaviour on the archipelago.

Discussion and Conclusion

On the Dampier Archipelago, the rock art provides details missing in the ethnohistorical records and from archaeological assemblages. Compositions involving fish motifs enhance our understanding of the maritime fishing toolkit, particularly the prevalence of spears and the rarity of fishing line and hooks. Use of spears in the area is known through multiple ethnohistorical references and is confirmed by scenes depicted in the art. The most common scene identified through this analysis is the 'line scene' and within this category it is most common for the line to be straight, extending from the hand of the human figure into the body, not the mouth, of the fish. This repeated compositional arrangement is suggestive of spearing, supporting the limited ethnohistoric evidence which suggests that spears were one of the primary pieces of marine material culture of local people.

The rock art evidence indicates that procuring fish using a spear was a far more common method than using a fishing line and hook. King's (1827) single historical reference to the practice of line fishing is contradicted by the later observation that 'Fish they take with nets and spears, but have no hooks' (Curr 1886: 299). Further, fishhooks are absent from the archaeological record.

The small number of depictions with the 'line to mouth' supports the logical notion that this was not an efficient method of food procurement, and indeed there is nothing to preclude a line depicted to the mouth being a spear as opposed to a fishing line. It may also be reflective of the habitats that were most frequently targeted by people. Fishhooks are predominantly deployed for pelagic species in open water (also requiring watercraft and strong knowledge of ocean-faring), while spears and nets are suitable for the more accessible nearshore, reef or estuarine environments. Modern local knowledge of fishing in the archipelago indicates that the rocky nature of the seafloor and prevalence of reefs, together with the high number of toothed fish species, consistently results in fishing line breakage. Given the higher incident of damage or loss and the effort required to manufacture and utilise the required tackle, line fishing is likely to have been considered a less efficient option than a weir, net or spear. Again, the rock art evidence appears to resolve questions raised by contradictory ethnohistorical records and a notable absence of evidence in the archaeological record.

As well as enhancing our knowledge of fishing equipment and practices, this research has identified the range of fish species depicted in the rock art, some of which are unlikely to have been eaten. This has reinforced that the function of the art was undoubtedly more complex than being simply a reflection of dietary preferences.

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