
PART B

TRADITIONAL KNOWLEDGE WITHIN THE COMMUNITIES*

GREAT BARRIER REEF COMMUNITIES

Lockhart River - **Mr Isaac Hobson**

The first settlement in the area was a Church of England mission, south of Cape Direction in 1924. In 1967 the Church of England handed the mission over to the Queensland government and a new settlement was established at Lockhart River.

With a population of 400, the community is serviced three times a week by a DC3 on an old World War II airstrip, and also by a barge bringing cargo from Cairns. All families have access to social service benefits and purchase food from the Lockhart River store. These facilities have led to changes in hunting and fishing practices, especially by young people who no longer hunt and fish **as** frequently as the older members of the community.

The community has not **commercialised** its fishing practices because it is believed that professional fishermen in the area have control of the market to the south. Marine animals 'that are still sought on a **subsistence** basis include:

salmon, caught by **handline** in February and July;

barramundi, caught in the **Cooktown** River and some coastal creeks, usually by spear;

reef **fish** speared from some of the few boats in the community;

crayfish, caught by diving from dinghies;

turtle, caught by harpooning and bulldogging;

dugong, caught by harpooning;

stingray, speared in shallow water; and,

crabs, oysters and shellfish.

Traditionally, spearfishing is carried out from canoes of more than about fifteen feet, with outriggers.

Lockhart River residents worked on pearling luggers some forty years ago, and were sought by commercial fishermen as **trochus** and **trepang divers**. Today, when searching for crayfish, they dive to a depth of up to ten feet, sometimes using goggles, and obtain **crayfish from** under bommies and rocks with a small handspear.

* Editors' Note: Compiled by editors from oral presentations and discussions.

Turtles (both green and hawksbill) are seen in the area, and are plentiful at Lockhart River. Turtles are caught in the stretches of shallow water at the old mission site, but the prevailing south-east wind causes problems at the new site.

Turtles may be hunted at any time of year. The community favours green turtles, and hawksbill are rarely eaten because some believe they are poisonous. Loggerhead turtles are not hunted because they are too stringy to eat. Turtles are more easily caught than dugongs, and the latter tend to be caught mainly for festivals and feasts, when a specific effort is made.

The move to the new mission site has made hunting difficult, especially for dugongs, because of reduced accessibility to good hunting areas. There used to be plenty of dugongs, at the old mission site, but nowadays hunting in this location calls for a two person expedition which entails camping out even in good weather. Therefore Lockhart River residents now catch dugongs near the seven mile long Cape Direction sandbar, although few have been seen in this area of late, possibly because of a shortage of feed.

Nowadays dugongs are cut up immediately after catching, on the nearest sandbar. Previously, however, hunters making a catch at night would leave it until the following day; or, if making a catch in the morning, would leave it until the afternoon, as the meat is easier to cut if the carcass has been left for a few hours.

Crabs and shellfish are plentiful, and may be collected close to the current community site. Crabs are caught at any time, but are considered easier to catch at full moon. Oysters are also plentiful, and are collected at Kid Point.

Land-based hunting and gathering includes pig hunting and digging turkey eggs.

Hopevale - Mr Lester Rosendale

Hopevale was settled on the northern side of Cape Bedford in 1886 by a German missionary. Until World War II the community lived in three missions at Cape Bedford, MacIvor River and Ayling. During World War II these communities were evacuated to Woorabinda, and after the War they were moved to a new site forty-two kilometres north of Cooktown. Administered by the Lutheran Church, the present community is made up of people from as far afield as Bamaga and Bowen. The community's diet varies between dugongs, turtles and beef, as well as fish and shellfish. The store at Hopevale is supplied with fish from Cooktown.

At the first mission sites the community used to fish, from Cape Bedford to the Starcke River using lines, nets and spearfishing techniques to catch blue-tailed mullet in September, October and November. Dugongs were also hunted, and, in the 1920s and 1930s, beche-de-mer or trepang.

Activities have changed. Clinker-built boats have given way to high-powered outboard motorboats so that expeditions which used to take a day from the Starcke River, to Cape Bedford can now be completed in about 4.5 hours.

Boats are used to catch turtles, dugongs and fish. Details of fishing are covered in Andrew Smith's paper (this volume). The community tends to fish between new moon and second quarter, because it is believed that this is the best time to find fish. Another custom involves a successful mullet fisherman giving up to the whole of his catch to relatives or to those who claim some relationship.

It is generally the women who fish and collect shellfish, as they are considered more able in this field than the men, who hunt dugongs and turtles. Shellfish are generally collected from mainland shores.

Different fisheries are exploited at different times of year, depending on which fish are '**fat**' at the time. The community follows the same fishing patterns as they have always followed, although younger people tend to fish for sport rather than for subsistence. Almost annually the community catches a large groper swimming along the shore near the **MacIvor** River.

Dugongs are hunted at Christmas when the community goes to the coast. This seems to be the only time when community members come together at the coast, and it is possible to organise hunting parties of three or four.

The old hunters these days 'manage' a hunt, giving instructions to the younger members of the community, and most younger hunters **acquire expertise** from going out on expeditions with older members. There is no record of **successful** past hunting trips because of counting methods: 'one', '**two**', 'three', then 'big mob'. Information on hunting has been handed down only to those who are interested. However, a series of strokes cut into the sandstone of the rocks near Cape Flattery provide a record of the number of dugongs caught by older community residents. The community still hunts for dugongs along most of the coastline between the Starcke River and Cape Bedford and the islands and reefs near the coast. The catch does not exceed consumption by the community, which remains undecided about the extent of restrictions entailed by the policy of allowing it to take 20 dugongs per year by permit. (Note: the quota was lifted in 1986 after the 1985 quota was not met. (eds.))

Wujal Wujal - Mr Jimmy Johnson

Much of what has been said about fisheries traditions 'at Lockhart River and **Hopevale** also applies at Wujal Wujal. As at **Hopevale** the women are considered to be better at fishing than the men. The community fishes mainly at Cedar Bay, two hours by boat from Wujal Wujal. In rough weather, however, the Rattlesnake Island area becomes difficult to negotiate. Until recently, when outboard motors were introduced, the journey was made by paddling or sailing outrigger canoes carrying three or four people, two of whom would paddle at a time.

Three to four turtles may be caught per trip, and line fishing from boats is **practised**, as well as net fishing. Cast nets have been employed more recently, but fish traps have never been used. Fish caught include trevally, grunter, black bream, mangrove jack and salmon.

A few people at Wujal Wujal may have dugong catching knowledge, but dugongs are not hunted because there are so few in the area. The community would not hunt in the Hopevale area without permission from the Hopevale community.

Other seasonal activities include pig-hunting and digging for turkey eggs.

Fishing by the Lockhart River, Hopevale and Wujal Wujal communities is practised on a subsistence rather, than a commercial basis.- as the communities are remote and markets therefore inaccessible.

The seasonal, nature of hunting and fishing was emphasised by the representatives of the three communities. Catching of turtles and fish depends on whether they are 'fat'. Hunters assess the condition of a turtle by feeling the animal's 'armpit', under"; the front flipper.

Yar rabah - Mr Bryce Barlow

Yarrabah is a community of about 1,500 people founded in 1862 by the Reverend Gribble, who then founded a number of other communities, such as those of Mitchell and Edwards Rivers, before returning to Yarrabah. The community used to consist of eleven farms, but these have been amalgamated into one.

Dugongs, turtles, turtle eggs, clams and other shells and shellfish are taken by the community. People used also to collect seabirds' eggs in spring. Both dugout canoes with outriggers and sailing boats are used.

Shellfish and clams are collected in May and June. Shellfish used to be prolific on the mainland reefs near Yarrabah, but now only oysters can be found there. The community considers that women should not eat shellfish while pregnant or until three months after childbirth.

Turtles are hunted in October, November and December, and dugongs in April, May and June. Between December and March dugongs stay out at the reefs, following the colder water, and return to the coast only when the coastal water cools. Dugong hunting takes place at night, and hunters locate the animals by listening for their cough. Aluminium boats are considered too noisy for hunting dugongs.

Palm Island - Mr Eric Bunn

Fishing by the Palm Island community is no longer truly traditional, and is becoming largely a pleasure activity. Many of the old people for whom fishing was a subsistence activity have now died and their knowledge has not been passed on.

Palm Islanders believe that commercial fisheries have depleted marine populations in their fishing grounds. While in earlier days the women, rowing out in wooden 'flatties' to catch reef fish, could expect to fill a sugar bag in 1.5 hours, it is possible now to fish all day virtually without success.

In the depression years the reef provided mullet, turtles and dugongs over and above government rations, although the community fished only during daylight hours because of the curfew.

The clam population has been devastated in Pompey Bay and at **Fantome** Island, the dugongs around the Palm Islands have now disappeared, and turtles have decreased significantly.

There used to be three feeding areas for the green and loggerhead turtles which are seen in the Palm Islands area: at Havannah Island, North East Bay and Pompey Bay. The community believes that pleasure boating is disturbing the turtle population.

At the time of the workshop it is the trochus collecting season. The trochus come up with the cold water on to the reef flat and the community collects the shells at low tide.

Fish and shellfish form an important and valued part of the Palm Islanders' diet, partly because the community believes in their medicinal properties - for example, the green fat of the turtle.

Attempts at commercial fishing by the Palm Island community have failed largely as a result of bad management, inexperience, and people being employed on wages rather than on contract. Currently the community is looking at the possibility of farming giant clams.

TORRES STRAIT COMMUNITIES

Badu and Thursday Islands - Mr Ephraim **Bani**

While traditional fishing still occurs in Torres Strait, many people have left the Torres Strait Islands and have gone to the mainland, leaving behind traditional knowledge and creating a gap between them and their cultural environment. Modern technology cannot replace traditional knowledge in the field of dugong hunting.

There are now two types of dugong hunters in Torres Strait communities: the 'professional' and the 'amateur'. The professional has a great deal of cultural knowledge and plans his hunt, whereas the amateur tends to use a high-powered outboard, thus depending on speed rather than knowledge of dugong behaviour to hunt successfully. The professional possesses the knowledge to be selective when hunting, and decides whether a dugong is 'fat' and good to eat. Thus the community traditionally esteems him as a champion hunter and good provider, and he is always the first to obtain the favour of a female. Nowadays, however, men no longer hunt specifically to attract those of the opposite sex.

Selection techniques for hunting dugongs include differentiation between the sexes and recognition of pregnant females and herd leaders. Professional hunters differentiate between male and female dugongs by the length of their faces; the face of a male is longer. In addition, the first in a line of swimming dugongs will be a female and the second a male. A pregnant dugong is distinguished by the tail thrown high when diving into the water.

During darkness the sexes are distinguished by the sounds they make. The male makes a loud sound and the female a softer sound, like a whisper. These two sounds made in succession signify a male and female dugong swimming together, where the male is the fully-grown calf. Two sounds made simultaneously signify a mother and a young calf. Herd leaders make a whistling sound. An aid to the aural tracking methods employed at night is provided by the 'luminous trail' which issues from the mouth of feeding dugongs. The Torres Strait Islanders have given this a name similar to that for the Milky Way.

Feeding trails usually take the form of lines across the seagrass patch, their direction depending partly on its size and shape. The hunter can estimate the position of a dugong by assessing the effect of the tide, wind and currents, on the feeding trail. Thus it is essential that he understand the movement of the stars and the different oceanographic and weather conditions. The hunter watches the surface and pattern of the trail to predict the dugong's movements, but does not pick up the harpoon until the animal is within range. Having harpooned the dugong, he drowns it.

A professional might instruct an amateur in hunting techniques but would not actually accompany him on an expedition. There may be only three or four professional hunters remaining in the Torres Strait and it is important that their knowledge be recorded for both Torres Strait culture and marine biologists.

In the early 1970s young amateur hunters were killing herd leaders, contrary to custom. This factor, together with the dugong's sensitivity to noise, may have led to its declining numbers in the area.

Torres Strait Islanders used dugong oil as a castor oil substitute, and still apply it externally to bruises. The importance of the dugong for them also extends into the mythological dimension, as they believe that dugongs spread from an ancestral reef to the Torres Strait islands, Borgu, Thursday Island and Cape York. Today there are relatively few sightings in these areas, although individual dugongs are recognised to return to specific areas over long periods.

Murray Island - Mr Eddie Mabo

I lived in Torres Strait for my first twenty years, and now return regularly to visit. My paper is based on information learned from adults while living in Torres' Strait.

Me'r (Murray) Island is the largest of the three islands comprising the Murray Group which lies at the eastern end of Torres Strait. Unlike the western Torres Strait Islands the eastern islands are volcanic. Mer Island has lush vegetation and thick rainforest. There used to be about 2,000 people living on the island on a subsistence basis. My ancestors made Mer their home many generations "B.C." (before Cook),.

I believe that my ancestors were capitalists and that their consequent recognition of boundaries of clan ownership on land and sea led to conservation of resources. However, this practice was established to ensure survival of individual clans rather

than as a philosophical priority of conservational management in the community.

In recent years since the cash store opened and canned food became available almost fifty-five per cent of the island population suffers from obesity or diabetes. A reduction of manual labour undertaken has also contributed to this problem. Yet although some behaviour similar to that of urban blacks manifests itself, traditional laws are still practised in some measure, and these ways are near to the hearts of the Murray Islanders.

Torres Strait Islanders are believed to be among the oldest inhabitants of Australia, and are expert horticulturalists and fishermen. There is a plentiful supply of fish from the waters around the islands, including grouper, mackerel, trevally, rock cod, sardines and sharks. Spears and handlines are used to catch trevally and mackerel, and the community tends to fish in the early morning and late afternoon before the sardines retreat to the reef at dusk.

Mackerel remain in these waters all year, and may be caught with live bait, whereas the maiu (yellow and black spotted trevally) is caught in May to July. The maiu feeds on the base sections of seagrass and on 'tick' (which resembles paua shell). Trevally are caught by men, women and children, using a handline with roasted or decomposed sardines for bait. On the whole, however, men do not participate in fishing as they feel it to be below their dignity.

Stone fish traps near the beach were built by ancestors of the community. The construction of the traps was a major effort made during periods of tide when the boulders were underwater and could be lifted more easily. The traps are reactivated between January and March each year and provide their owners with a constant supply of fish for the following nine months.

Trap owners must be approached for permission to harvest fish from their traps. If a trap owner cannot be found he must be given payment for harvesting the fish. This procedure applies also to clam shell collecting and the harvesting of other marine resources. The clan leader has the right to decide who may or may not take clams.

In July and August the women's task is to fish for rock cod on the far edge of the stone fish traps and on the boulders of the reef. It is thought that the rock cod come in to spawn because the fish caught are full of eggs.

In September to December and April to June, Mer Reef is invaded by rock lobsters and octopus, which are regarded as delicacies. They are hunted at night by both men and women, using palm leaf flares and pressure lamps.

Mer is a known breeding area for green turtles; other sites include Bramble Cay and Darnley Islands. A large number of turtles come up to lay eggs in the mating season. One night in 1985, 120 tracks led down to the beach after one tide. Such large numbers led Murray Islanders to question the restrictions on turtle hunting.

Out of the breeding season turtles are rarely hunted, but turtle oil is stored and roasted with mashed banana or yams to keep up the fat content in the community's diet. Nowadays bottles are used instead of coconut shells to store fat.

Discussion

In relation to the closing comment of Mr Bani's presentation, it was noted that the persistence of individual dugongs in a particular area for long periods of time has also been reported in Western Australia at Lombadina, near Broome. It is believed that this behavioural pattern may encourage similar patterns in other dugongs. Additionally, 'whistlers' (herd leaders) are also recognised in W.A. as large older males in the community.

Other unrelated comments made include the following:

- stonefish are dangerous to feeding dugongs;

- dugongs can prevent shark bites by making their body hard;

- baby dugongs shed tears when caught and killed;

- dugongs have been reported to live in captivity for up to eleven years. Currently there are dugongs in captivity in Indonesia and Japan.

GULF OF CARPENTARIA AND NORTH-WESTERN AUSTRALIAN COMMUNITIES

Borroloola - Mr **Graeme Friday** and Mr Johnson Timothy

Borroloola lies in the south-west corner of the Gulf of Carpentaria. The community has many mythological associations with the dugong, including its main Gulf dreaming sites.

There are not many traditional fishermen in the community now, and only four or five people have traditional hunting knowledge. Within the community hunting is of variable importance, as many individuals have lived on the mainland.

The community catches fish using aluminium boats, lines and spears. Stingrays are caught by the tail and the sting removed. Oysters and mud crabs are also collected by both men and women. Turtle eggs are sought in September, October and December. The community also hunts dugongs and turtle. Only men may catch dugongs, although a woman may take the helm of a boat used to hunt.

If dugongs cannot be caught during the day the community catches them at night, but in the latter instance the animal is not butchered until the following day. There are clear and definite rules for the treatment of captured dugongs. The animal must face seaward when being brought ashore, and a specific method of butchering must be used. All parts of the dugong's anatomy have specific names. The community has seventeen different names for dugongs which refer to their behaviour in their habitat., occasionally many dugongs are observed. One hundred and thirty were washed up during Cyclone Kathy.

Flat-back, hawksbill and green turtles occur in the area, but the community eats only green turtles. Hawksbill is considered poisonous. Turtles are caught using a harpoon and two ropes. All turtle eggs are eaten. Species may be determined by the relative size of their eggs: loggerhead eggs are the biggest; green turtle eggs are smaller, and hawksbill eggs smaller still, though this last species is considered the most palatable.

Bardi Community, One Arm Point - Mr Joe Davey

One Arm Point is about 240 kilometres north-east of Broome by road. The area known to the **Bardi** extends from the settlement of Beagle Bay across King Sound to Montgomery Islands. King Sound has a tidal range of about eleven metres and a tide flow of six to seven knots.

Ordinary fish are the most important sea food now taken. Turtles are also very important. Few dugongs are now caught but they are prized highly.

Fish are caught mostly with hand lines. Some fish are speared, but nets are rarely used. Turtles and dugongs are taken from boats using spears. Fish are taken close to the community centre at One Arm Point at any time of the year. In bad weather when fish are needed a net may be used. Generally all people go fishing. Turtles are taken locally by men who own boats and they may be caught at any time of the year. Dugongs are caught in season from about April to August; Most are caught near One **Arm** Point, but people may travel away at some times in search of dugong.

Trochus shell is fished for sale, but the meat is not eaten. Nor does the community eat trepang as some species are believed to be toxic. All fish, green turtles and dugongs are eaten by the community. Hawksbill is considered unpalatable. Sharing of the catch is now restricted to within family groups.

In early times all sorts of reef shellfish (clams, mussels, **trochus**, etc.) were important food. Some reef fish were speared and the community continues to catch them in fish traps. Other fish were caught in traps or were hunted in rock pools. The community used also to poison fish. Groups of people also caught turtles and dugongs on reefs by hand. Traditional spears were also used in daytime hunting. Modern fishing lines, aluminium boats with outboard motors and metal tipped spears are now used because these implements facilitate hunting and fishing.

Dugongs are most readily seen and caught during the hunting season. It is thought that these dugong move away from the community outside this season, but it is understood that they can be found in some of the other areas throughout the year. The **seagrass** eaten by dugongs and turtles grows on the small island reefs of the Buccaneer Archipelago. Sharks can catch turtles and possibly dugongs. Dugongs breed in August and September or perhaps later, and dugongs may be born in shallow waters, such as those around the Montgomery Islands. Green and **flatback** turtles nest inside King Sound.

Traditional knowledge is being lost. Some that has' been **recorded** has not come back to the community. In early times this knowledge was passed from father to son (and from mother to daughter), and from groups of old people to the young. Special stories and the like were the responsibility of particular **people**.

People controlled **fishing and hunting** in their own country. Some people who were more skilled always took the lead in catching animals like dugongs and turtles. Rules for eating seafoods by different members of families are still followed in community groups. Wishes of the owners of particular **country** are also respected. The community remains unconvinced that it is over-hunting, but is nevertheless worried about the dugong population. If **dugongs** or other **endangered** species inhabited local waters constantly, rules for their conservation would **have to** be devised.

The community believes that it does know quite a lot **about the** various **marine** species that it eats; as well as some others which are not used as food. This information can be recorded by appropriate people, but the community would like to see the results afterwards and have the information available for educating its young people.

The community is willing to help scientists with their work, but would **like to** understand what these people are doing.

'GENERAL DISCUSSION

It was suggested that resources may never have been sufficiently limited in **Torres Strait** to have necessitated any type of conservation effort by the indigenous population. Mabo said that, on the whole, Torres Strait Islanders stop exploiting a marine resource that they perceive to be decreasing, in order to let **the** population regenerate. During World War II, while men were away, the clam populations increased from their pre-War levels. After the war they were decimated. One clan **leader** prohibited clam collection to allow clam spawning for regeneration. Other instances of conservation awareness in the Torres Strait Islands were related to the practice of turtle farming. Bags and bags of sardines were being collected to feed these turtles, sardine schools were decreasing, and the Murray Island community protested that they might become extinct., The **turtles** have since been released and sardine numbers have increased.

It was pointed **out that** in the instance of the sardines the Islanders might be concerned not because the schools were becoming smaller, but because non-Islanders might be exploiting the resource without due recognition to the Murray Island community.

Mabo has seen crown of thorns starfish in the Torres Strait Islands, but has no knowledge of infestations. The people **knew** not to touch the starfish because it would cause a **stinging** reaction.

There was **some** discussion concerning the reaction of the communities to the possible loss of dugongs. Barlow (Yarrabah) said that his community would hunt only turtles and that the loss of dugongs as a resource would not be too serious. **Bani** (Badu and Thursday Islands) thought that the loss of dugongs would have significant cultural ramifications, particularly **for** the older people of the community, but that the younger people would not be so affected. Davey (One Arm Point) said that the loss of dugongs would not affect his community much, as they caught few, and these only in season. At Borroloola the loss of dugongs would mean loss of food supply and ceremonial practices and could therefore lead to a social crisis. In the Northern Territory dugongs form a very important part of **some** rituals and secret ceremonies.

There was general agreement that, with the **dugong's** slow breeding, increased hunting could result in its extinction.

On the question as to whether the loss of an animal would lead to the loss of rituals, Palmer referred to desert mythology, which features many ritual animals no longer in existence.

There was considerable discussion concerning conservation management by indigenous communities, and whether such procedures were **practised** in a conscious effort to conserve marine life. Certainly all groups exploit living resources in seasonal cycles, with harvest periods depending on the 'fatness' and availability of the various species.

In obtaining traditional knowledge of the various marine resources in Arnhem Land, it has been found that different clans must be interviewed at different **times** of the year in relation to the various organisms. Thirty or forty clan estates have been found in Arnhem Land, but no one clan covers the whole range of organisms. For example, while a large number of species of shellfish may be recognised in the wet season by one community, the **same** group of people may recognise only ten species at other **times** of year. Additionally, communities **specialise** in different **activities**, thus making acquisition of information very complex.

Palmer emphasised that notions of conservation will prejudice the answers of white management with regard to traditional fishing and there is a need to distinguish between resource management and taking what **is** available in various seasons.

Table 1. Marine resources exploited by the Bardi Community.

	HOW CAUGHT	TIME OF YEAR	WHERE CAUGHT	TIDES	MOON	OBLIGATIONS	FISHED ON A REGULAR BASIS	ECONOMIC
DUGONG	boat/spear	April-August	Lombardia to Dugony Bay (Talbot Bay)	any	moonlight nights now best	now share in family groups	depends on the seasons and on opportunity.	food only
TURTLES	as above	all year	local	as above	moonlight is good, but can catch in daylight	as above	yes	as above
OTAER FISH	lines mostly some nets and spears	as above	as above	as above	any	as above	yes	as above
REEF FISH	spear, line	all year, but different species	local	low tide	moonlight	as above	no	as above
CRABS	hand	all year	local	as above	any	family	no	as above
TROCHUS SHELL	hand	depends on the weather	local	as above	as above	commercial	yes	\$1,000/t
REEF SHELLS (OYSTERS, CLAMS, ETC.1	hand	as above	local	as above	as above	family	no	food only