



Is the dugong at risk of over-hunting? John van Tiggelen profiles the traditional hunt for dugong in the Torres Strait.

Since time immemorial dugongs have been hunted by Islanders in the Torres Strait, an azure cummerbund of water between Papua New Guinea and Cape York.

In 1985, Australia and Papua New Guinea ratified a treaty designed to safeguard this custom. The Torres Strait Protected Zone was established to protect the traditional lifestyle of its Islander inhabitants, including the hunt for dugong and turtle.

Today, the role of the dugong in sustaining the cultural traditions of the

Torres Strait is as pervasive as ever. But the unexpectedly high fishing levels of dugongs bring cultural and conservation principles into potential conflict.

Aubrey Harris, a fisheries ecologist with CSIRO's Division of Fisheries at Cleveland in Queensland, has spent two years compiling dugong catch statistics for each of the protected zone's 14 island communities.

Two methods were used to gather the statistics. The first was based on records of local fishing effort, compiled on a continual basis by local schools. The second involved

the sampling of each island by a team of trained observers. From these data, Harris estimated that between mid 1991 and mid 1993 the annual catch in the protected zone (which excludes Thursday Island) totalled about 1000 dugong.

This was the first time that such a comprehensive survey of the actual catch had been undertaken, and the figure was considerably higher than any previous catch estimates. As such it begs the question: are the dugongs at risk of over-hunting?

Scientists aren't sure. Islanders don't think so. One thing remains clear though:

Survival in the Strait



A dugong mother and calf. In the Torres Strait, the

dugong's sustainable management will rely on

trust and cooperation between scientists,

fisheries authorities and Islander communities.

This will involve finding a balance between

conservation and cultural needs.

Ben Cropp

management of the dugong fishery must ensure the survival of a unique culture, as well as conserve the world's only herbivorous marine mammal.

Cultural links

Dugong and turtle meat is the major source of protein on the islands of the Torres Strait. In addition, the hunt and the provision of meat ensure the survival of many of the Islanders' traditions, according to Harris.

Dugong feasts are prepared cup murri (cooked in an underground oven).

Traditions inextricably linked with dugong hunting include language, dances and the concept of manhood, as well as rites associated with birth, initiation, weddings and death.

On some islands, the drowned dugong is pulled up onto the beach and left facing the sea for a few hours, as a mark of spiritual respect.

'No one cares more than Islanders if dugong stocks were to decline,' Thursday Island fisheries manager, Mick Bishop, says. 'At the moment they think dugong hunting is sustainable, but if it is shown

that it isn't, then they'd be the first to do something. They worry for their future generations.'

Nonetheless, there is concern that the fishing effort may have increased in recent times. Owing to a steady flow of jobseekers to the mainland, the 5000-strong Islander population in Torres Strait today differs little in number from pre-European times. But fishing technology has hardly remained static. On some of the islands, sun-bleached dug-out canoes on the beaches attest to an abandoned mode of transport and fishing.

These days the omnipresent motorised

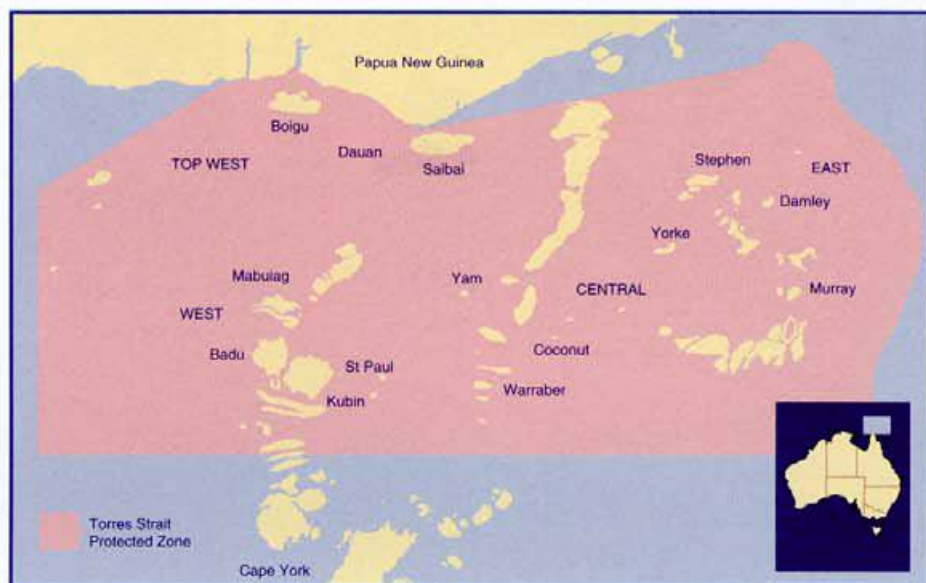
dinghy, dubbed the 'TI Taxi', has become an essential part of life for every Islander. More mainlanders are beginning to wonder whether the outboard motor is giving the hunter an unfair – and perhaps untraditional – advantage over the hunted.

Not so, says Norman Savage, a 44-year-old pearl diver from Moa Island. 'People say life on the land is about family tradition, but no-one expects farmers to use a horse and cart anymore, do they?' he says.

Hunters continue to fashion and use traditional waps (harpoons). The use of nets and guns is banned. Dugong meat cannot be sold and must be communally shared in line with traditional customs. Savage says using motorised dinghies is simply a case of changing the frame around a painting. 'The picture still stays the same,' he says.

Harris agrees. 'Outboards extend the range of hunting, and thus the potential catch, but they don't necessarily make hunting itself any easier,' he says. 'The motors and aluminium hulls are noisy and Islanders have adapted their fishing techniques accordingly. For instance in windy conditions a plywood skiff is often towed to the hunting ground and used to drift downwind onto the dugongs.'

Harris found that at Badu Island, about 25 dugongs were towed ashore each month. His survey showed that few Badu hunting expeditions returned empty-handed. Hunters from nearby Mabuiag (where singer Christine Anu grew up) were almost as successful. Both communities appeared to have doubled their take of two decades earlier, where catch records were collected for a brief period.



Of the 14 island communities in the protected zone, only Boigu Islanders caught more than their counterparts on Mabuiag and Badu to the south. In fact, according to the 1991-93 survey, the Boigu catch amounted to two kilograms of dugong meat a week per inhabitant.

'Not all this is eaten in Boigu,' Harris says. 'Some is sent to relatives and friends on other islands.'

The survey team found that the dugong was just a rare delicacy in islands further east, including the Murray islands (Mer), home of the late land rights campaigner Eddie Mabo.

'The scarcity of dugongs around the

protected zone's central and eastern islands is likely to be a consequence of fewer seagrass pastures, rather than evidence of recent decline as a result of overfishing,' Harris says.

Neither should the latest figures, which put the 1994 catch at 860, be taken as a sign that stocks are becoming depleted, Harris says. 'If one aspect stands out, it's that the catch can change considerably over periods of just a few years.'

During the mid 1980s, some Islanders (and scientists) became alarmed about apparently plummeting catches. Others said the dugongs had simply moved away. Researchers guessed the yearly take in the protected zone to be no more than 200 at the time.

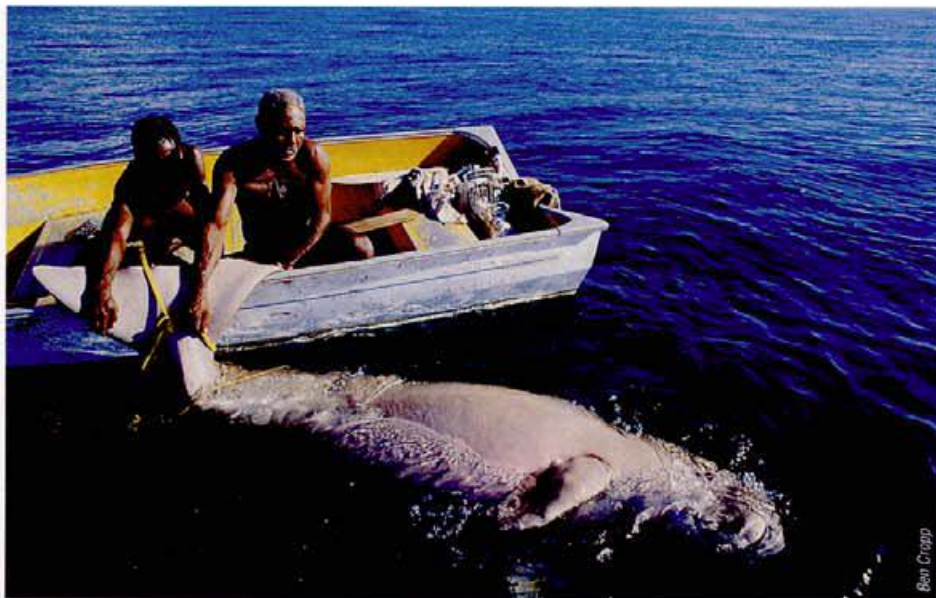
'The catch would seem closely related to the number of dugong within these narrow straits,' Harris says, pointing out that aerial surveys in 1987 put the total dugong population at 13 000, compared with 24 000 in late 1991.

Professor Helene Marsh, the head of James Cook University's Department of Environmental Studies and Geography, coordinated the aerial surveys and says the marked difference in population size cannot be explained by natural increases. She suspects that migration of dugongs into the Strait (probably from the Irian Jaya coast after storms wiped out offshore seagrass beds) bolstered catch statistics.

Harris acknowledges that there is a risk of the yearly catch breaching a notional sustainable level in some years. In the absence of information about dugong populations to the west of Torres Strait, this is an issue that cannot be ignored.



Aubrey Harris has compiled catch statistics for each of the Torres Strait Protected Zone's 14 island communities. He says the hunt and the provision of meat maintain many of the traditions that give meaning to the Islanders' lives.



Dugong and turtle meat is the major source of protein for Torres Strait Islanders.

A vulnerable species

The dugong is on the World Conservation Union's Red List, which encompasses species considered vulnerable to extinction. The dugong's closest relative, Steller's sea cow, which preferred subarctic climes, is already extinct. Hunters finished off the last of the toothless ocean giants two years before Captain Cook set foot in Australia.

While dugongs live in tropical waters from Africa's east coast to the South Pacific, Marsh says Torres Strait is the most important dugong habitat in the world in terms of sheer numbers. Marsh, who has studied the mammals for more than 20 years, also says the myriad environmental threats that endanger dugongs elsewhere are largely absent in the Strait.

For example, further south, along the Queensland coast, about 800 dugongs have drowned in shark nets since 1964. The mammals vie with humans for a share of the inshore environment, because seagrass meadows tend to hug the coast. (Dugongs graze on seagrass, hence they are also called sea cows: a considerably more accurate description of their appearance than the mermaids early sailors are said to have mistaken them for.)

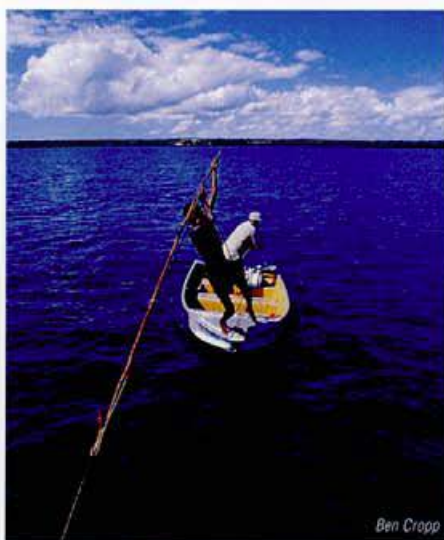
Commercial fishing's toll on dugongs is unknown, although gill net fishing in particular poses significant risks. Illegally set gill nets were found to have ensnared and drowned about 30 dugongs near Borroloola, on the south-western edge of the Gulf of Carpentaria, in July this year (1995).

But Marsh says poor land use practices may be the biggest threat at present. The combination of large-scale clearing, overstocking and fertilised cropping has

meant increases in water turbidity and land run-off, which in turn have led to the widespread disappearance of seagrass beds.

Aerial surveys show that dugongs appear to have declined in southern Great Barrier Reef waters by as much as 50% since 1985. Zoologist Dr Tony Preen, who works in Marsh's group, also found that in 1992 massive floods wiped out extensive seagrass beds in Hervey Bay, resulting in the starvation of several hundred dugongs.

Dugongs are long-lived (more than 70 years), slow growing, and take at least a decade to reach sexual maturity. Marsh has shown that even under optimal conditions, dugong populations increase at a rate of only 5% a year.



Although outboard motors extend the range of hunting, and thus the potential catch, they don't necessarily make hunting itself any easier, according to Aubrey Harris. The motors and aluminium hulls are noisy and hunters continue to fashion and use traditional waps (harpoons). Nets and guns are banned.

The right to hunt

Two years ago a Queensland Government proposal to expand indigenous hunting rights met a storm of protest. The issue came to symbolise the struggle for land rights, attracting a vehement response on talkback radio and in the letters pages of the *Cairns Post*. One person wrote: 'Now we will have a select group of Australians blazing away with 12-gauge shotguns at every wallaby that moves'.

But the controversy about traditional hunting of protected species in protected areas did more than open up old wounds in the Queensland community. Without warning, it split the green movement.

The Cairns and Far North Environment Centre, an umbrella body for northern green groups, received prominent resignations 'written in blood' over its support of hunting for traditional purposes. While the Wilderness Society and the Australian Conservation Foundation backed the centre's stance, the Wildlife Preservation Society sided with a breakaway group called Sanctuary.

Essentially, Sanctuary treated conservation and indigenous culture as wholly separate matters. It believed the two could not be reconciled, particularly with regard to National Parks.

Two years later, the measured view that the preservation of culture and the conservation of nature need not be mutually exclusive still struggles to gain public acceptance.

Last year James Cook University PhD student Fernando Ponte surveyed North Queenslanders to determine the extent of opposition to indigenous hunting of protected species in protected areas. Three out of five people disapproved. In addition, of the remainder, 75% qualified their approval by stating that only pre-European methods could be used.

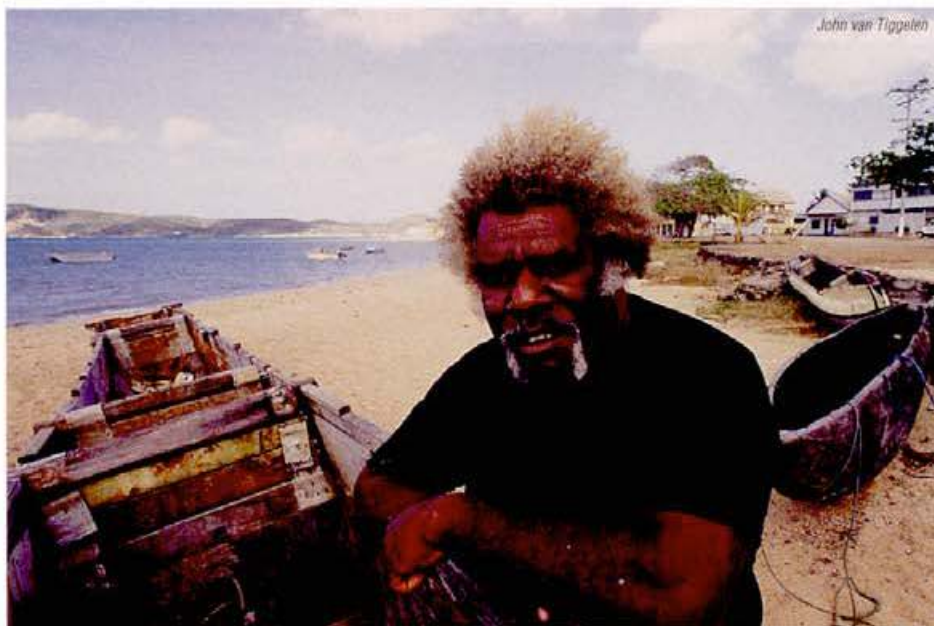
The United Nations, the Commonwealth and indigenous people themselves consider this attitude to be intolerant of basic human rights. They say the hunt's cultural purpose defines whether the hunt is traditional or not. After all, hunting techniques evolve over time, and there is no rightful reason why the adoption of modern technology should preclude anyone from practising their spiritual beliefs.

Such life history parameters explain just how crucial seemingly small declines can be. Like its large mammalian colleagues (including elephants, whales and rhinoceros), dugongs 'are extremely susceptible to hunting above a sustainable level', according to Harris. Interestingly, Marsh's latest aerial survey of the Torres Strait region (as opposed to the somewhat smaller protected zone) was conducted in the same period as Harris's study. Having put the Strait's dugong population at about 24 000, the maximum rate of increase would thus amount to about 1200, a figure worryingly close to the annual catch for 1991-93. 'To the 1000 dugongs caught in the protected zone, add in unknown numbers taken south around Thursday Island (no more than 100) and north around Daru in Papua New Guinea,' Harris says. 'It's too close for comfort.'

While Marsh acknowledges that the figures are cause for concern, she cautions that 24 000 may be a substantial underestimate of the Strait's dugong population. 'This is due to the difficulty of estimating the number of dugongs that are available to observers (from the air) in turbid water. She says that the dugong's status in the region will remain uncertain without more accurate data.

Custodianship proposed

Attaining the information needed to establish sustainable hunting quotas (such as improved estimates of absolute numbers and precise Papuan catch statistics) may be beyond the means of science, Marsh says.



On the Thursday Island foreshore, sun-bleached dug-out canoes attest to an abandoned mode of transport and fishing. Norman Savage, a pearl diver for Moa Island, refutes the notion that motorised dinghies give dugong hunters an unfair advantage. 'People say life is about family tradition, but no-one expects farmers to use a horse and cart anymore.'

The mean daily dugong catch, fishing effort and per capita consumption for the 14 communities surveyed in the Protected Zone between June 1991 and May 1993

Community	No of days surveyed	Mean no of fishing trips per day	Mean daily catch in kilograms	Per capita consumption per day in grams ^{1,2}
Top West Islands				
Boigu	26	1.1 (0.3)	212.9 (57.0)	387.9 (103.8)
Dauan	10	0.3 (0.2)	41.0 (31.6)	140.8 (108.5)
Saibai	21	0.1	8.6 (0.5)	15.5 (0.9)
Western Islands				
Mabuiag	24	1.2 (0.3)	127.7 (41.4)	315.7 (102.4)
Badu	29	0.8 (0.3)	168.4 (39.8)	155.6 (36.8)
Kubin	15	0.1	51.0 (39.8)	65.2 (50.9)
St Paul	12	0	0	0
Central Islands				
Yam	20	0.1	28.6 (20.3)	55.2 (39.2)
Warraber	13	0	0	0
Coconut	13	0	0	0
Yorke	37	0	5.0	9.0
Eastern Islands				
Stephens	4	0	0	0
Darnley	11	0	0	0
Murray	36	0	0	0

¹ Assuming that the meat yield from a dugong is 45% by weight (Nietschmann, 1982) and that ² all meat is consumed on the island from which it was caught.

² Per capita consumption is based on data from populations in the collection districts for the 1991 census. In some cases, this means that the population was for a group of sparsely populated islands and consequently some of the values listed may be underestimates.

In any case, she contends that it is inappropriate to limit the management of dugongs to researchers and fisheries authorities. 'I think that traditional people must be given responsibility for their own resources,' she says.

Christine Cutts, a project officer with a Townsville-based Islander organisation called Magani Malu Kes, is pleased to hear it. Cutts says that while Islanders are aware that dugongs may be under pressure from hunting, the people's cultural needs cannot be overlooked.

'If science can tell us what and where the numbers are, then we can go about combining scientific knowledge with local understanding to work out sound methods of caretaking, monitoring and harvest-regulation,' Cutts says.

Cutts cautions that such cooperation will require tact and trust, because the past century of paternalistic rule has hardly endeared mainland experts to the Islanders. 'Science can tell us about conservation, but it cannot balance conservation needs with our cultural needs,' she says. 'Only we can do that.'

Harris agrees that sustainable management must be coupled with the Islanders' rich sense of culture. The imposition of quotas from outside has failed in the past.

The experience of the Great Barrier Reef Marine Park Authority is a case in point. For several years the authority tried to implement a licensing system for two Cape York communities wishing to hunt dugong and turtle. Unfortunately, the system unwittingly helped to erode a sense of traditional custodianship over community fishing grounds.

Instead the authority is now devolving management responsibility to councils of elders dotted along the coast. The new cooperation between scientists and elders has already borne fruit in some areas. For example, Bowen's Girudala people have banned dugong hunting altogether until the population recovers to manageable levels.

Harris says the black market of Daru Island, Papua New Guinea, offers an

indication of what could happen if communities were made to relinquish control over their own fishing grounds. On Daru, inadequately policed hunting restrictions have resulted in a flourishing illegal meat trade, rather than communal sharing.



Professor Helene Marsh from James Cook University has studied dugong for more than 20 years. She says the Islanders must be given responsibility for managing their own marine resources. The environmental threats that endanger dugongs elsewhere — such as shark nets, illegally set gill nets and the disappearance of seagrasses due to poor land-use practices — are largely absent in the Strait, she says.

Harris believes that the risks of over-exploitation are much higher if dugongs attain an economic instead of a cultural value. 'Selling the meat or exporting it from the Torres Strait would be the worst possible development for both culture and conservation,' he says.

But he is confident that the Islanders would never intentionally permit this to happen. 'As fishing technology evolves, there is a risk of increased harvesting effort. Scientists can provide the early warning signs, but there is a good case to leave management of the dugong fishery in their hands,' he says. 'They are the best people for the job because they have the most to lose.'

More about dugong and Torres Strait

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