



Great Barrier Reef  
Marine Park  
Authority

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# Reeflections Reeflections

17 NOV 1987

## REEF WONDERLAND NOW A REALITY



AQUARIUM



Great Barrier Reef Wonderland, the \$20 million plus commemorative Bicentennial project in Townsville Queensland is now officially up and running.

At a ceremony before more than 600 guests on 24 June 1987, Wonderland was declared open jointly by the Prime Minister Bob Hawke and the Queensland Premier Sir Joh Bjelke-Petersen.

The Prime Minister described the project as brilliant and hailed it as one of the world's most ambitious aquarium projects.

'This development will ensure that every aspect of the great natural environment of the Great Barrier Reef is displayed and understood at its best. It is a unique way of bringing one of Australia's biggest assets to the people,' said Mr Hawke.

As well as housing the aquarium which is stocked with a breathtaking array of corals, fish, and other reef creatures,

the Wonderland complex also has Australia's only Omnimax theatre, the first in the southern hemisphere.

Great Barrier Reef Wonderland is also venue for the first general branch of the Queensland Museum outside Brisbane, the displays featuring science, history and technology.

Following the opening ceremony, visitors were taken on a tour of Wonderland. They were spellbound by the beauty of the aquarium with its spectacular corals and brightly coloured tropical fish.

Environmental conditions in the aquarium simulate those on the reef by the use of an algal-turf farm to condition and purify the water. There is also a continuous half metre wave action, twice daily tides and currents, as well as open exposure to the weather.

Great Barrier Reef Wonderland is the brainchild of Great Barrier Reef Marine

Park Authority Chairman Graeme Kelleher. It is his foresight and determination that have given Australia one of the world's most spectacular tourist and educational centres.

'Because over one million dollars came from the people and businesses of Townsville, this is very much a community project and that's what we wanted it to be,' said Mr Kelleher.

'Soon after becoming Chairman of GBRMPA, I discovered that a great many Australians all over this country had a very strong emotional attachment to the Great Barrier Reef. They wanted to see it looked after so that future generations could experience and enjoy it. We had to find a way for many more people to learn about it and understand how to respect and care for it. The answer was simple, we had to build a reef on the land. It took seven years to bring this concept to reality but it was certainly worth the effort.'

# ZONING IN THE SOUTHERN SECTIONS

The end of April 1987 saw the closure of the three month period for public comment on the draft Zoning Plan for the 'Southern' Sections (Capricorn and Capricornia Sections) of the Marine Park. The review included a call for comment on zoning proposals for both the Capricorn and Capricornia Sections with a view to the resultant final Zoning Plan covering a single amalgamated Section of the Marine Park.

A total of 325 representations were received from a broad cross-section of users representing commercial, recreational, scientific and conservation interests. Recreational activities are the primary activity of well over half of the respondents, of which recreational fishing is the most prominent.

## Capricornia Section Zoning Plan

Most respondents accepted that there was a need for conservation of the Great Barrier Reef as well as acknowledgement that the current Zoning Plan for Capricornia was beneficial to the area.

The areas of primary concern appeared to relate to those reefs zoned for Marine National Park 'B' zoning to replace the current Reef Appreciation Areas and to the lack of spearfishing opportunities in the southern part of the Section.

## Capricorn Section

There was call from users of the Swain Reefs opposed to the location and extent of proposed MNP 'B' zoning in the Swain/Hardline area, while there is strong opposition to the proposed MNP 'B' zoning of the Guardfish Cluster of islands, especially Curlew Island, from recreational fishermen.

A number of respondents called for the inclusion of coastal areas that have never been part of the Park, to be included within the boundaries of the Marine Park. There has also been a call primarily from conservation organisations for more protective zoning of seagrass beds in coastal areas.

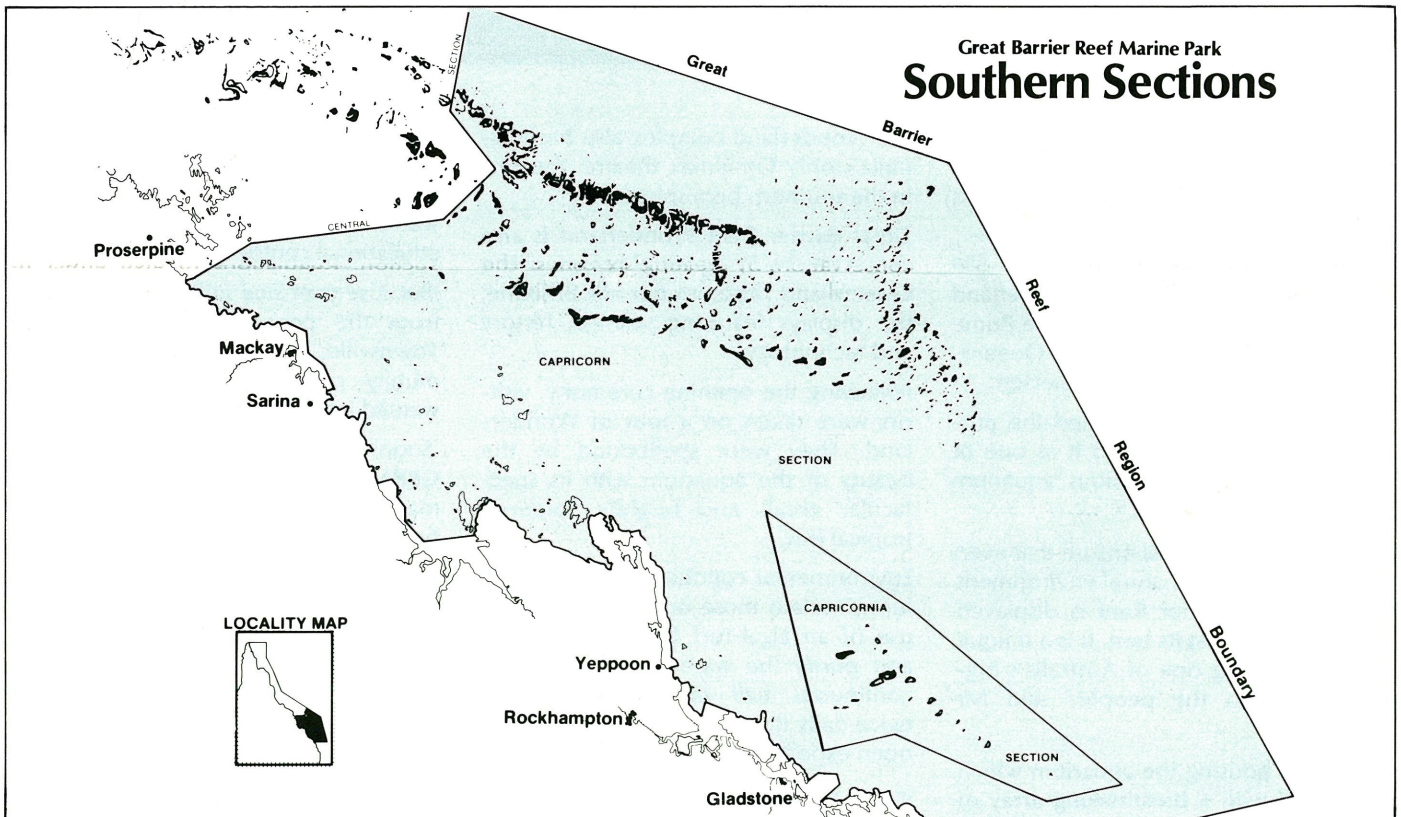
Overall there has been strong general support for zoning of the Capricorn Section, although naturally enough most respondents do not want to see their own activities or areas over-regulated.

The information provided in representations is being used to modify the draft zoning plan, which is scheduled to come into effect in mid-1988. This event will be the culmination of an 8 year program of zoning the world's largest marine park.

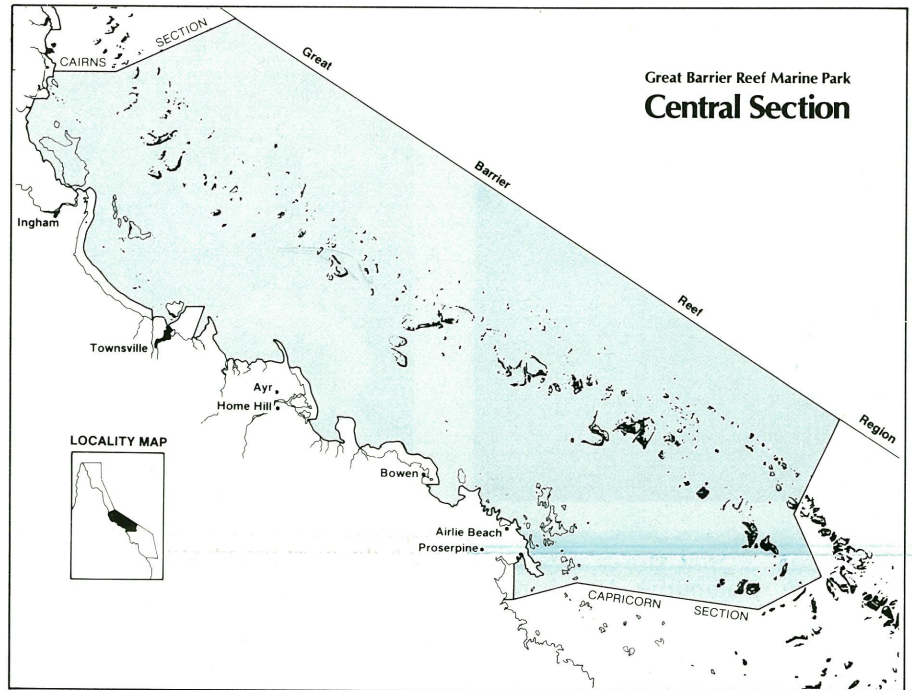
Zoning plans are to be revised every five years or so, following the same public participation procedures as have been used in the initial zoning program.



ZONING



# CENTRAL SECTION ZONING PLAN



On 25 March 1987 the Zoning Plan for the Central Section of the Great Barrier Reef Marine Park was tabled before both Houses of the Commonwealth Parliament.

Prior resolution of potential conflicts between users of the Marine Park is a major role of the zoning and management undertaken by the Great Barrier Reef Marine Park Authority. GBRMPA has, with the help of public participation, developed a Zoning Plan for the Central Section which balances human use with the need to conserve the Reef.

This Central Section of the Marine Park extends from just south of the Whitsunday Islands to Dunk Island in the north covering 77 000 square kilometres and comprises approximately one fifth of the total area within the Great Barrier Reef Marine Park.

The Zoning Plan for the Central Section was developed following a process of scientific research, information gathering and public review. A draft Zoning Plan was prepared for this Section following a four month period for receipt of public representations. The draft Zoning Plan was then released for a further period of public review. This plan was subsequently revised, taking into account representations received. Four hundred and eighty-six representations were made on the draft Zoning Plan, many of them by organisations representing large numbers of people.

Users of the Central Section are many and varied. The area is best known for its rich fishing grounds, tourist resorts and charter boat operations. Many major tourism developments are occurring, including a floating hotel off Townsville and large resorts in the Whitsunday Islands. Sport and recreational fishing is growing rapidly. Much marine research is also focused on this Section because of the proximity of two major research centres, the Australian Institute of Marine Science and James Cook University.

The Central Section Zoning Plan provides for commercial, recreational and scientific use of the Reef consistent with conservation, by creating six zones. The General Use 'A' Zone comprises slightly less than 75 per cent of the Central Section and provides for all reasonable activities. Of course, mining is not permitted. The General Use 'B' Zone comprising 22 per cent of the Section provides opportunities for activities free from trawling and shipping.

Two Marine National Park Zones, comprising approximately 3 per cent of the Section, provide for unrestricted public access to areas maintained generally free from harvesting or extractive activities. A Scientific Research Zone and a Preservation Zone provide small special areas protected in their natural state undisturbed by man except for approved scientific research.

Replenishment Areas can be closed from time to time to activities which remove fish and other living resources to allow for the recovery of those resources. Special Management Areas may also be declared to regulate the use of particularly sensitive or heavily used areas, providing an ability to deal with unforeseen needs and changed circumstances. Provision for national and international shipping and the requirement for defence training areas have also received careful consideration by GBRMPA and are dealt with in this Plan.

The tabling of this Zoning Plan was the first step in the establishment of management arrangements for the Central Section. Regulations to give effect to the Plan are now being developed. The Plan will come into operation on a day to be specified by public notice.

The Plan completed its time before Parliament on 13 May 1987. It was originally intended that the Zoning Plan would come into effect on 1 July 1987. However, the Federal Elections have led to a short delay.

Copies of the Zoning Plan and an introductory brochure are now available for the public and are being distributed by the offices of GBRMPA and Q.NPWS. Large scale zoning maps may be purchased separately from these organisations.

## OPERATION STARFISH



RESEARCH

An outbreak of the crown of thorns starfish on Holbourne Island near Bowen has resulted in a joint exercise by the Great Barrier Reef Marine Park Authority and the Royal Australian Navy. Under the direction of GBRMPA scientists, fifteen RAN divers from HMAS **Cresswell**, the Navy's training station at Jervis Bay, embarked on a concerted two week program to eradicate the starfish from Holbourne during June 1987.



Final briefing by GBRMPA for Navy divers from HMAS Penquin, Sydney.

Although Operation Starfish was hampered by bad weather, divers were able to increase the daily total kill of the coral predator. Using a copper sulphate injection, each diver was capable of killing hundreds of starfish each day. Previous operations using this technique have accounted for more than 1500 a day in good conditions. It is estimated that the Holbourne Island crown of thorns aggregation totals some 10000 starfish.

GBRMPA Executive Officer Dr Don Kinsey explained there were several important reasons for mounting the eradication campaign at Holbourne. 'The area is particularly important as a recreation destination for people from Bowen and surrounding areas. In addition, Holbourne Island is small enough for us to see if the starfish can be completely eradicated from an area of this size using this method of control.'

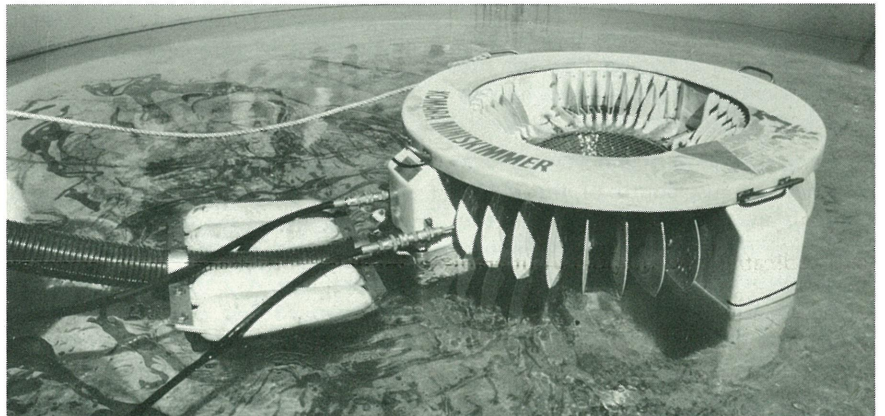
## REEFPLAN FOR OIL SPILLAGE



PARK MANAGEMENT

An oil spill contingency plan, designed to protect the Great Barrier Reef, has been developed by the Great Barrier Reef Marine Park Authority in Townsville and the Federal Department of Transport.

**Reefplan** will provide a rapid coordinated and effective response to any oil spill problems that may occur in the Great Barrier Reef Marine Park. A National Plan to combat sea pollution



Oil skimming pollution control device.

by oil spills has been operating around Australia for 13 years and **Reefplan** has been developed by GBRMPA, the Federal Department of Transport and other agencies as a regional supplement to the National Plan.

Combat cleanup equipment, stockpiled along the Queensland coast and elsewhere, includes boats, skimmers, booms and dispersants. The equipment was now available to meet pollution emer-

gencies at any time and could be deployed rapidly to spill crisis areas.

**Reefplan** will insure that the most effective response possible can be implemented in the event of any future oil spills on the Reef. It provides guidelines for an efficient coordinated response to oil pollution incidents.

Copies of **Reefplan** are available from GBRMPA in Townsville or the Federal Department of Transport, Canberra.

# NEW DUGONG HUNTING RULES



RESEARCH

**Claudia Baldwin, Research Officer  
Great Barrier Reef Marine Park  
Authority  
Peter Hunnam, Senior Management  
Officer  
Queensland National Parks and Wildlife  
Service**

The Great Barrier Reef Marine Park contains some of the largest remaining populations of dugongs in the world. Over the past four years, GBRMPA has led a concerted effort to examine these populations and develop a rational approach to their management.

Results of studies funded by GBRMPA are helping formulate better 'rules' for Aboriginals and Islanders who are legally allowed to take dugongs.

Traditional hunting of dugongs is limited to members of these two groups living in reserve communities ('Trust Areas'). All other taking of dugong is prohibited under the **Queensland Fisheries Act**.

In 1982, when the Cairns Section of the Marine Park was zoned, little was known about the area's dugongs. Limited surveys indicated low numbers but traditional hunting was accepted as a reasonable activity provided that the well-being of the species was monitored.

At that time, there was also concern about dugong carcasses found washed up on beaches and about reports of dugongs being shot and dugong meat being sold.

GBRMPA commissioned a James Cook University biologist, Dr Helene Marsh, to do an aerial survey of the area adjacent to the Starcke River north of Cooktown, where large herds had been sighted. Because it was adjacent to an Aboriginal Reserve and the inhabitants of a reserve were allowed to take dugongs under Queensland law, it was necessary to determine the size of the

nearby herd to see if the Aboriginal take was having an impact on the dugong numbers. The surveys needed to be very precise as the information would be used to determine population estimates and recruitment rates. Survey methodology was refined during this survey and others conducted in the Far Northern Section of the Marine Park and in Moreton Bay. The study also collected data on the biology of dugongs, to refine information on their reproduction and recruitment.

A hunting permit system was trialled at Hope Vale Aboriginal Community in 1983-84, and extended to Yarrabah and Wujal Wujal in 1985. Individual hunters needed a permit from the GBRMPA to take dugong. During the first 'permitted' hunting season, researchers were on site to take samples from the catch, and surveillance was maintained by Queensland National Parks and Wildlife Service's Marine Park staff.

Introduction of the permit system in each community was accompanied by a major extension effort by Q.NPWS and GBRMPA staff, to explain the permits and the need for dugong conservation measures. While the permit system was not welcomed by the communities, it was effective in controlling the dugong take and assisted in monitoring the catch. In December 1986, the system of issuing permits was reviewed in the light of the research findings and with the assistance of Aboriginal communities.

The population of dugongs in the Great Barrier Reef Region was not as low as originally estimated. With an improved understanding of dugong life history, use of complicated mathematical models, and recent catch statistics in Aboriginal communities, we now know that the combined annual catch by Aboriginal hunters from Hope Vale and Lockhart is substantially less than the

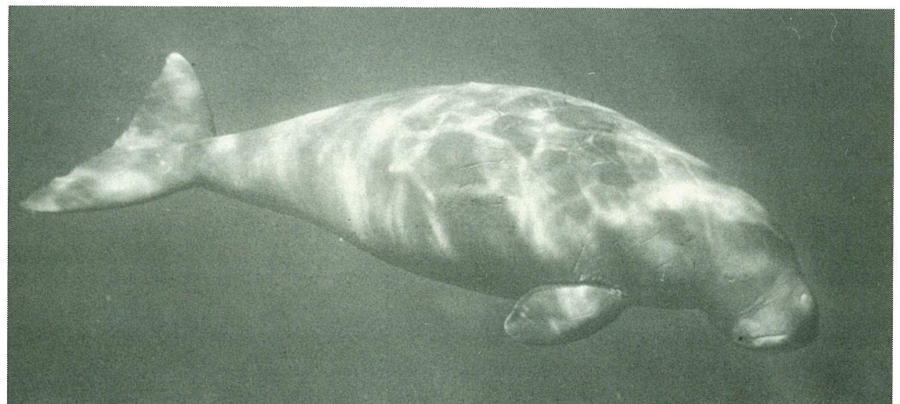
sustainable harvest. In these communities, harvest is limited not only by weather, but by the number of boats available, fuel costs, the size of the boats, and the limited time available for hunting, especially at Hope Vale.

Radio taggings of dugongs have shown that most of their movements are local. As Aboriginals hunt only in their immediate location, any significant local reduction in numbers of dugong would most likely result in a reduced hunting effort.

The population estimate of dugongs in the areas surveyed from Cape Bedford to Hunter Point on eastern Cape York indicate that the picture is not all that bleak in that part of the world. However, in Australia we need to protect this endangered species as the only large herds seen are in our waters. Elsewhere they have been hunted down so severely that they are regarded as extinct in the many parts of their former range area which extended from East Africa to the Solomon Islands.

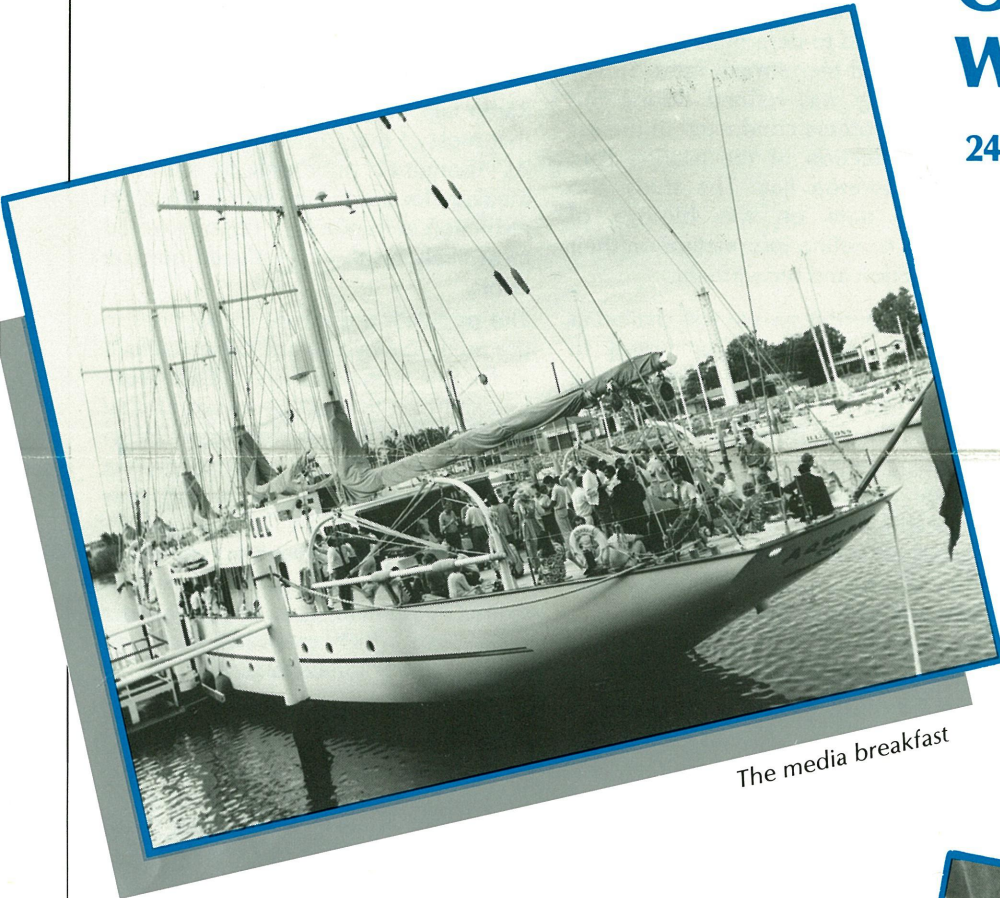
As a result of the research outlined above and through the trial permit system, GBRMPA is now introducing a more consistent permit system to all the Aboriginal communities which hunt dugongs within the Marine Park. Permits will be issued to each community on an annual basis. Stringent conditions are attached to the permits which include: no use of firearms, a specified hunting area, hunting restricted to people who are permanent residents of the community to which the permit is issued and hunting restricted to a brief open season at Hope Vale. These conditions will be maintained over the year, and if necessary, amended before the permit is renewed.

**For any further information on dugong in the Marine Park, contact the GBRMPA office at (077) 818811 or the Q.NPWS Cairns office on (070) 519811.**

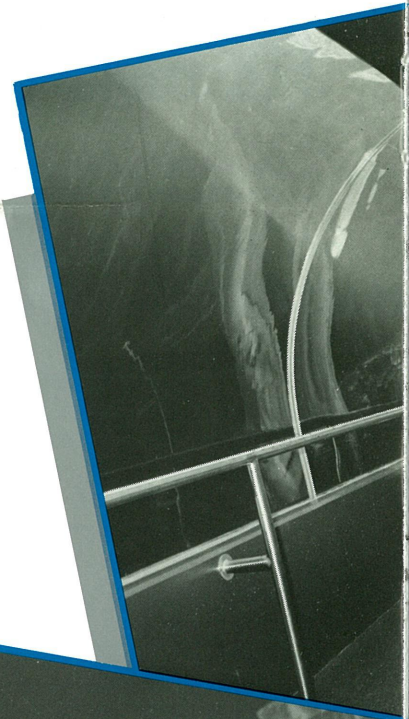


# OPENING DAY AT WONDERLAND

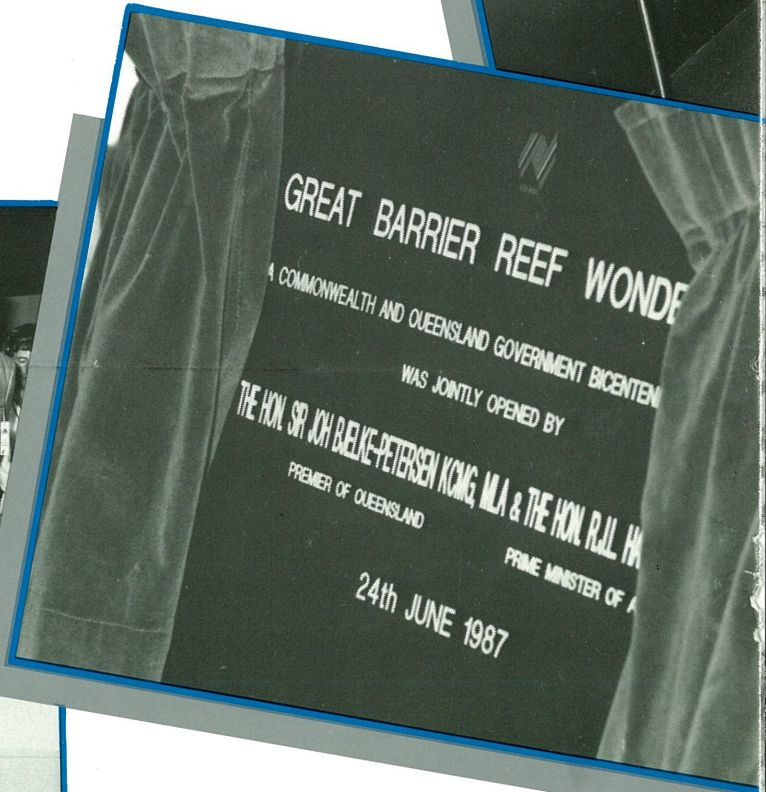
24 JUNE 1987



The media breakfast



Looking at the touch tank



The commemorative plaque



The viewing tunnel



Inside the museum



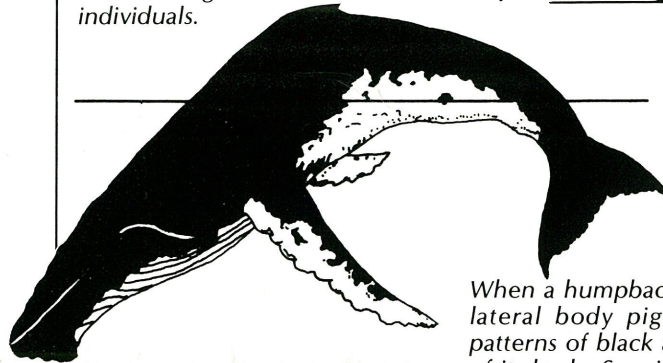
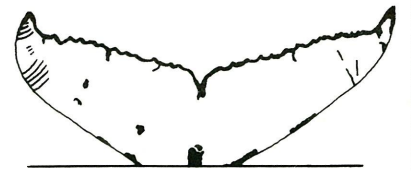
Guests celebrating in the mall

# FINGER-PRINTING WHALES



PARK  
MANAGEMENT

*Ventral view of tail fluke may be characterised by various pigmentation markings and scarrings. Even the patterning on the margins can be used to identify individuals.*



*When a humpback dives it may expose lateral body pigmentation visible as patterns of black and white on the side of its body. Scarring may also be visible around the dorsal fin area. Both of these types of markings can also be used to help identify individual animals.*

## **Mike Osmond Queensland National Parks and Wildlife Service**

The Great Barrier Reef Marine Park provides for the management of one of the most diverse habitats on Earth. It creates a haven for a wide variety of endangered species. The most spectacular of these is a part-time inhabitant, the humpback whale. Humpback whales often over 10 metres long are one of the largest living creatures in the world today. These whales are warm blooded and have a layer of blubber to enable them to survive the Antarctic waters where they feed on plankton and small fish during the southern summer months. As their calves are born without this protective blubber layer these animals must move to warmer waters in order to bear their young. They undertake this journey during the winter months travelling along both the east and west coasts of Australia. The east coast population begins to arrive in the warmer waters of the Great Barrier Reef Region in June, after travelling about 5000 kilometres.

Very few sightings of humpbacks were recorded after whaling stopped in the southern hemisphere. However, the east coast humpback population has gradually become more conspicuous. The extent to which the population has recovered is still uncertain. Dr Michael Bryden and Dr Robert Paterson have conducted aerial and land based surveys to provide broad population estimates. However, weather conditions, observer fatigue and the nature of the animals'

own migratory behaviour contribute varying degrees of error to population estimates.

The east coast population lends itself to studies using the technique of individual identification because observations can be easily made at key points along the route. For example both Coffs Harbour and North Stradbroke Island have long been used by whale watchers. At North Stradbroke Island the first major attempt to estimate population numbers using photographic identification in Australia was made by the Pacific Whale Foundation, a privately funded research organisation based in Hawaii. With experience from a similar project on the north Pacific humpback population which began in the late 1970s, work began off Stradbroke Island in 1983.

One way to reduce the error in population estimates is to identify animals individually. Identification of individual humpback whales was first applied to northern hemisphere populations and over the past ten years has proven to be an extremely valuable tool. The method involves photographing the underside of the tail flukes of an animal. Exposure of this area usually occurs at the end of the breathing sequence as the animal prepares to dive.

The patterns which exist on the fluke are unique to individual whales and so the animal is virtually fingerprinted when photographed.

Several other features can also be used to help identify individuals. These include body scarring, shape of the dorsal

fin and lateral body pigmentation. The lateral body pigmentation is most prominent in southern hemisphere humpbacks which tend to exhibit a mixture of white and black pigmentation along their sides. This area can be visible as the animal 'humps' its back to dive.

Queensland National Parks and Wildlife Service field staff with responsibility for the day to day management of the Great Barrier Reef Marine Park were quick to recognise the potential significance of the investigation begun by the Pacific Whale Foundation to users of the Capricornia Section. Taking advantage of the rare opportunities for systematic observations on humpback whales in Capricornia, projects were developed which could be conducted during routine aerial and surface surveillance. Cooperative arrangements have been formed with the Pacific Whale Foundation in the area of individual whale identification and with the School of Biological Sciences at James Cook University of North Queensland to maximise the information that can be gained on this large and mysterious animal during its time in tropical waters.

As a result of these studies 283 individual whales have been identified since 1983. Ninety percent of these were due to surveys in the 1985 and 1986 seasons. This total includes 210 from North Stradbroke, 66 from the Capricornia Section and miscellaneous identifications from the Whitsunday area, the Gold Coast, Coffs Harbour and Antarctica. Eighteen individuals identified off



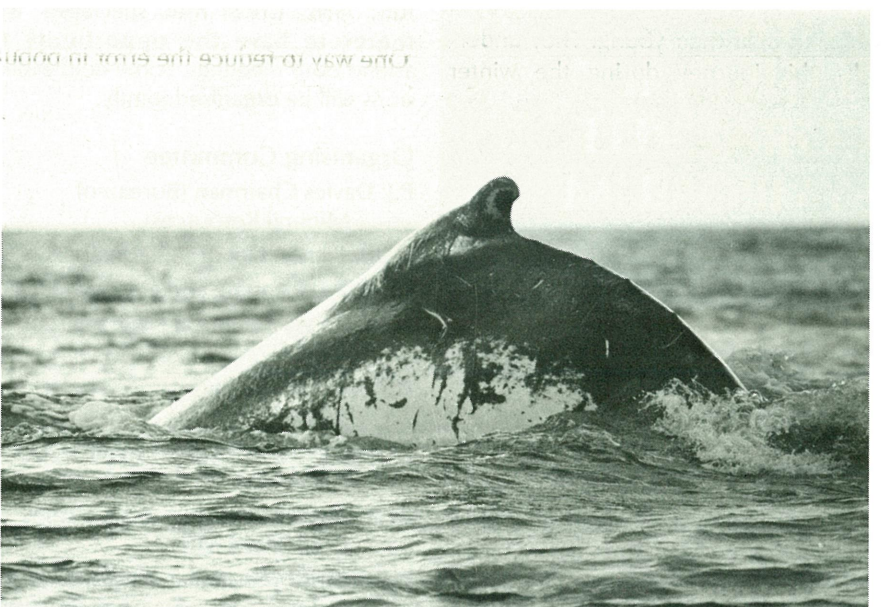
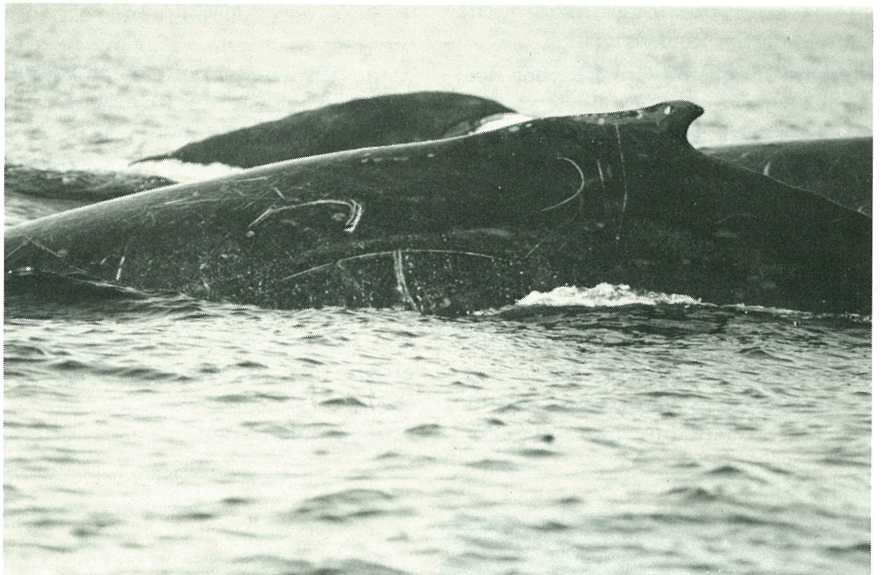
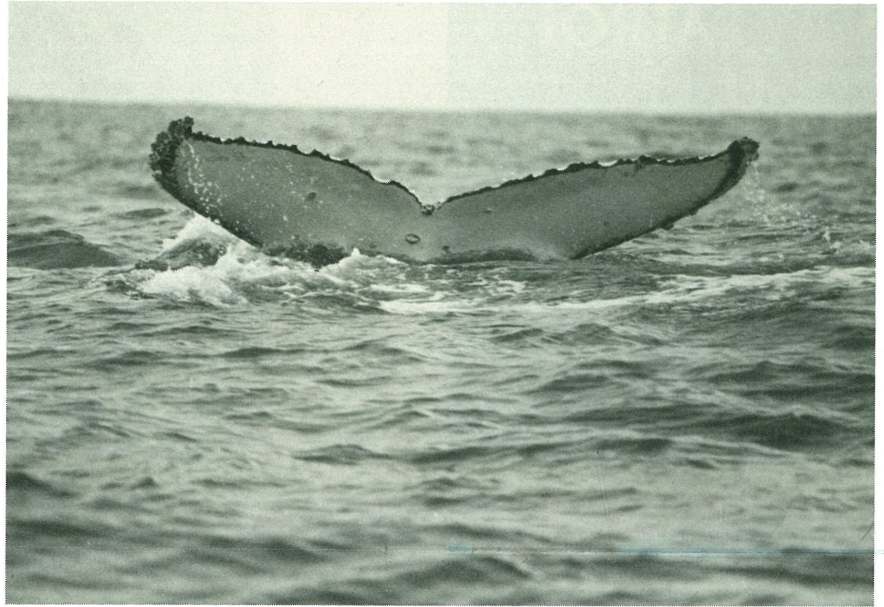
North Stradbroke Island have been re-sighted in Capricornia.

Analysis of this information shows that a number of very interesting patterns are appearing. For example we now know that north bound humpback whales take approximately one week to travel between North Stradbroke Island and the Capricornia Section while the southerly journey appears to take longer as the adults and their calves spend longer 'milling' around. South bound animals may stay up to a week or even longer in a particular area. Whales migrating south frequently travel in larger pods than on the northward journey. Finally, while resight data is still very limited there is a consistent trend emerging for individuals to be observed at about the same time in successive years. If this trend is confirmed it will lend support for the long established 'parade theory' which postulates that the whales travel in bursts related to age and sex classes.

The results of this study will be useful in developing management strategies through government departments and the International Whaling Commission. In the last few years, the growth of strong public interest in whales has led to the realisation that there are a number of benefits which may be obtained without actually harvesting whales and that this requires still other management strategies. Management may fall under the guidelines of socio-economic, from providing and supporting recreation or tourism, to providing educational benefits. These non-destructive uses should be emphasised so that future generations of humans and whales may mutually benefit from today's management decisions.

All of this work is carried out under a permit issued by the Australian National Parks and Wildlife Service with reference to the **Whale Protection Act 1980** and it is important to note that a great deal of experience is required to manoeuvre a vessel around these whales without causing them undue stress. It is an offence to harass any whales in Australian waters.

You can help Q.NPWS by recording sightings of humpback whales along the east coast. Sighting forms can be obtained from our offices. Copies of photographs taken during the encounter would be of great assistance. We would like to thank those people who have already contributed and would very much appreciate their continued involvement.



## NEW PATROL VESSEL LAUNCHED



PARK  
MANAGEMENT

A new 12 metre Marine Park vessel that will patrol some 650 kilometres of coastline from Dunk Island to Princess Charlotte Bay was launched in Cairns on 11 May 1987. The vessel has been named **Caretta** after the loggerhead turtle found in Barrier Reef waters.

Funded through the Great Barrier Reef Marine Park Authority by a Commonwealth Government capital grants program, the \$191 000 vessel, built by Cairns Custom Craft, will be operated by Queensland National Parks and Wildlife Rangers during its patrol duties on the Queensland coast. It will be the largest vessel in the Q.NPWS patrol fleet.

Mr Kelleher, who commissioned the vessel, explained the vast area comprising the Great Barrier Reef Marine Park, that stretched for more than 2200



kilometres along the Queensland coast, presented a formidable challenge when it came to the task of developing an effective patrol and surveillance capability.

'It is a very difficult and expensive program that faces us in the next few years. However with the commissioning of vessels such as this, I know we will be in an increasingly better position to develop and maintain management of the various zones that now make up the Marine Park.

'The Marine Park exists to conserve the Great Barrier Reef. It does not prevent us from using the Reef and its resources and it allows for sustainable use that will ensure that the resource will be there for future generations.'

**Caretta** will be used in a wide variety of

projects, including underwater surveys, fishing studies, public contact and assistance, surveillance, enforcement, supervision of Marine Park permits and island picnic and campgrounds. In addition the vessel will be used in the support of remote field bases and work camps, the maintenance of Park moorings, monitoring sites, nature trails and signs.

Powered by a twin diesel engine, **Caretta** returns a cruising speed of around 18 knots over a range of 500 kilometres. On board equipment includes the latest technology in navigation equipment together with all appropriate radio frequencies used by commercial, Government and private operators.

## SIXTH INTER- NATIONAL CORAL REEF SYMPOSIUM

James Cook University,  
Townsville, Australia  
8-12 August 1988

### Invitation

All interested scientists and environmental managers are invited to attend this meeting which occurs during Australia's Bicentennial year. The symposium is being organised with the

International Symposium on Fossil Cnidaria to be held in Brisbane from 25-29 July 1988. Coral reef specialists will therefore have the opportunity to attend both meetings. Some field excursions will be organised jointly.

### Organising Committee

P.J. Davies Chairman (Bureau of Mineral Resources)

M.M. Pichon Deputy Chairman (AIMS)

J.T. Baker Planning and Finance (AIMS)

D.W. Kinsey Technical Program (GBRMPA)

P.F. Sale Publications (University of Sydney)

D. Hopley Field Program (James Cook University)

R.M. Carter General Program (James Cook University)

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CORAL REEF SYMPOSIUM  
TOWNSVILLE AUSTRALIA 1988

## NEW REEF NOTE TOPICS

Six new Reef Note pamphlets have been recently added to the Marine Parks series promoting a better understanding about the Great Barrier Reef.

The new Reef Notes feature popular topics including **Captain Cook's** first voyage of discovery along the Queensland coast; **Wrecks of the Reef**; the unusual behaviour and biology of reef **Larval Fishes**; the migration of **Whales** along the east coast; the inclusion of the reef as a **World Heritage Site**; and the development of **Trochus Shells** as an early industry.

Reef Notes can be obtained through the offices of the Queensland National Parks and Wildlife Service and the Great Barrier Reef Marine Park Authority. Bulk orders for educational organisations, visitor centres, etc can be made through GBRMPA.

## REEF REPORT

For the first time in video format there's an informative and fascinating insight into the wonders of the Great Barrier Reef that is proving to be of considerable interest in Australia and overseas.

**Reef Report** is a 20 minute video produced quarterly by the Great Barrier Reef Marine Park Authority. Presented in news magazine format, it features several short topical items and comments on important issues.

The program is currently received by over 80 organisations and groups including tourist operators, scientific research establishments, primary industry groups including the fishing industry, recreational groups, hotels and resorts and the media.

**Reef Report** is available on VHS and costs \$20 from GBRMPA. Other formats including Beta and Umatic are also available.

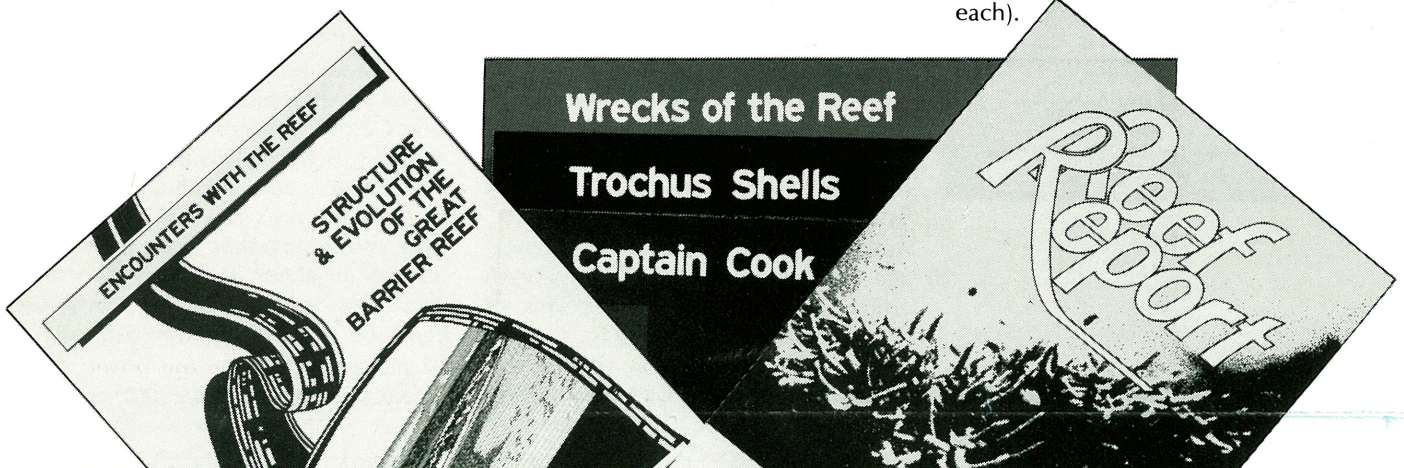
## ENCOUNTERS WITH THE REEF

**Encounters with the Reef** is an educational presentation that tells the story of the structure and evolution of the Great Barrier Reef.

Although it has been produced as an education aid for schools, **Encounters with the Reef** provides a fascinating insight into how the greatest living structure on earth was built and continues to grow along 2200 km of the Queensland coastline. This audio visual kit will be of immense interest to all age groups who visit the Reef.

**Encounters with the Reef** runs for 13 minutes and is made up of 50 synchronised slides accompanied by sound commentary. Produced by the Great Barrier Reef Marine Park Authority, the kit is designed to promote a better understanding of the Great Barrier Reef and its environment.

Price \$A29.95 (10 or more kits, \$A19.95 each).



## THE AQUARIUM SHOP AT WONDERLAND

A feature of the new Aquarium complex is a speciality shop including an Australia Post agency where visitors can purchase posters, pictures, paintings, T-shirts, jewellery and various publications on the Great Barrier Reef. Although GBRMPA's Education/Information Section will remain as a wholesale outlet for bulk orders, single item publications such as posters and other retail items will be on sale at the aquarium shop only.

All retail inquiries should be addressed to

The Manager  
Aquarium shop  
Great Barrier Reef Wonderland  
Flinders Street East  
TOWNSVILLE QLD 4810  
Phone (077) 81 8875

Wholesale inquiries should be addressed to

Education/Information Section  
Great Barrier Reef Marine Park Authority  
PO Box 1379  
TOWNSVILLE QLD 4810

# REVIEWS

## AQUARIUM FISHES AND THEIR COLLECTION IN THE GREAT BARRIER REEF REGION

**Michael Whitehead, Jeff Gilmore, Elaine Eager, Peter McGinnity, Wendy Craik, Paddy McCleod. Townsville, Great Barrier Reef Marine Park Authority, 1986 (Technical Memorandum GBRMPA-TM-13).**

This report considers the operation of the aquarium fish collection industry in the Great Barrier Reef Region. The current regulation of collecting is reviewed and something of the biology of potential aquarium fish is considered

for possible future regulation. The report concludes with a proposed research program that could provide data for improved management decisions about this industry.

The exact number of collectors in the Region is not known, but records available suggest that there are about 40 commercial collectors and a small number of amateurs. The most intensive commercial collecting is on reefs out from Cairns, although the fringing reefs of the Keppel Islands and reefs in the Capricornia Section are also important collecting sites. It is known that a great number of species are collected but the numbers of individuals taken by collectors varies considerably. This report states that, on one possible extrapolation from known figures, between \$500 000 and \$1 million are generated annually

from this industry in the Cairns region.

The report lists possible problems that could arise from extensive collecting. Depletion of stocks, destruction of corals during collection and disturbance of various food webs could occur. Some of the solutions suggested are restrictions on some collection techniques, establishment of sanctuary areas and licensing of collectors. Mariculture is considered as an alternative to collecting but rejected as a useful possibility in the short term because of the difficulty of rearing pelagic larvae.

The major impression left by this report is that there is a serious lack of information about this industry despite its economic and ecological potential. The research strategies suggested should provide a solution to this problem.

## CORELLA

**VOLUME 10,  
NUMBER 3,  
NOVEMBER, 1986**

Nine islands of the Great Barrier Reef are described in this twelfth special seabird island issue. **Corella**, the journal of the Australian Bird Study Association, has again produced an excellent description of Reef islands and cays well known for their seabird inhabitants. This issue covers Raine, Pison, Eagle, Brook, and Eshelby Islands; and Frigate, Bylund, Price, Bell and Gannet Cays.

As with the Association's previous coverage of seabird islands and cays each article gives detailed descriptions of island locations, status (such as under which authority it falls) topography, history, breeding seabirds list and bib-

liographic references. Maps and photographs are included making it an excellent reference for field naturalists and research workers.

This special edition of **Corella** was sponsored by the Raine Island Corporation and GBRMPA. It complements volume 9, no. 3 issued in 1985 and also funded by GBRMPA. Both volumes are available at the Authority's Townsville office. The two issues, together with further information about the Australian Bird Study Association, are also available from the Association's main address:

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## NOTES

Reflections is published by the Great Barrier Reef Marine Park Authority on a quarterly basis with the intention that it should cover a range of topics and serve as a forum for discussion. Your contributions are important to ensure that representative points of view are presented and items of interest are brought to the attention of our readers.

We ask that contributions be kept to a maximum length of 1,500 words and accompanied by the author's name, designation and address. Photographs (preferably black and white prints) drawings and diagrams will be gratefully received.

The Editor will assume that material submitted for publication has appropriate organisational approvals where necessary. The Editor reserves the right to reject or modify contributions. If modification is considered

necessary, it will be referred to the author for approval.

### Contributions should be sent to:

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