



Reeflections

Newsletter of the Great Barrier Reef Marine Park Authority
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OF ADELAIDE

ZONING PLAN IS SUBMITTED TO PARLIAMENT

Procedures for the development and management of the Great Barrier Reef Marine Park — Capricornia Section entered their final phase on 19 August, when the zoning plan for the Section was placed before the Commonwealth Parliament.

The plan had been endorsed by the Great Barrier Reef Ministerial Council following changes made as a result of public comment. A sixth zone was incorporated.

The zoning plan and accompanying regulations do not introduce any new licences or additional charges in relation to public use of the Capricornia Section. The plan has been developed so as to provide for maximum public enjoyment of the area with a minimum of restrictions, consistent with maintaining the natural qualities of the Great Barrier Reef.

The Capricornia Section, covering 12,000 square kilometres of the southern reefs, was proclaimed in October 1979. Following consultations with appropriate Commonwealth and Queensland departments and agencies and taking into account submissions received from industry and the public,

the Great Barrier Reef Marine Park Authority released a draft zoning plan for public review between 8 April and 6 June.

Plan Changes

As a result of the public review, a major change to the zoning plan was the introduction of a new zone — the Marine National Park "B" Zone. Many submissions requested such a zone. This zone will provide for unrestricted public access to an area free from the influences of fishing and collecting. It can be likened to a traditional terrestrial national park, in that visitors will be able to appreciate reef areas and marine life which remain relatively undisturbed by human activity.

Other changes include a reduction in the extent of Seasonal Closure Areas outside a reef edge from 1 km to 100 metres; the provision for navigation of

vessels in Replenishment Areas provided fishing equipment is stowed and secured; the provision for amateur bait nets to be used in lagoons of General Use "A" Zone and subject to permission, in the Marine National Park "A" Zone; and the provision for the regulated use of rod and reel as well as handlines in the Marine National Park "A" Zone.

● Zoning plan details — inside pages.

REEF SPEAKERS AVAILABLE

Members of the Great Barrier Reef Consultative Committee are available to speak to public groups and assist the dissemination of information about the Great Barrier Reef and the marine park concept.

The Committee has 15 members representing a diversity of interests connected with the Great Barrier Reef, including fishing, tourism, marine science and conservation.

Members locations are:

Townsville — Professor Kevin Stark
(Chairman)
Dr John Bunt

Cairns — Mr Gordon McKaige,
Mr. J.H. Izatt

Mackay — Mr Jim Ballingall

Brisbane — Mr Eddie Hegerl,
Dr Des Connell,
Dr Patricia Mather,
Dr Peter Saenger
Dr Graham Saunders,
Mr Jack Woods

Canberra — Mr Graeme Kelleher (also
Chairman of the Authority)
Mr Ken Thompson,
Mr Don Fraser,
Mr Paul Eccles

Initial contact by interested groups may be made through the Great Barrier Reef Consultative Committee, P.O. Box 1379, Townsville, Qld. 4810, or by telephoning Mr David Chippendale (077) 71 2191.



"How did that get up there?" — Townsville diver Doug Tarca answers the question on Page 2.

Coral Reefs — from a New Angle

Townsville diver Mr Doug Tarca has literally turned nature upside down to increase the Great Barrier Reef experience for tourists.

Faced with the problems of many tourist operations of presenting a realistic impression of the incredible beauty and complexity of a living reef, Mr Tarca has developed an illuminated display with a difference. He has hung an arrangement of artificially coloured corals weighing 12½ tonnes upside down from the roof of his Townsville tourist centre above a shallow pool.

When visitors look down at the pool, the reflection gives the illusion of a "coral garden" deep under water much the same as it would be seen from a glass bottom boat over a real reef.

The height of the suspended display above the pool governs the perceived depth of water over the corals. Because the display is three metres high, the water seems three metres deep.

The display has been so effective that some visitors have been worried about children falling into what they think is a deep pool. It is really only 15 cm deep.

Mr Tarca has experienced a rapid increase in the demand from visitors for more detailed information about all aspects of the Great Barrier Reef including its associated marine life.

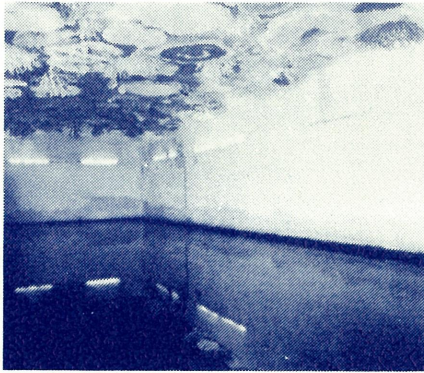
In order to satisfy this demand and educate visitors, Mr Tarca has produced with assistance from the Great Barrier Reef Marine Park Authority an educational commentary to complement the coral display, explaining what corals are, the different types, how they feed, live and grow, and their relevance to the Great Barrier Reef.

Although actively involved in collecting corals for displays and retail sale, Mr Tarca is very much aware of the potential for damage and the dangers of uncontrolled extractive exploitation of the Great Barrier Reef. He believes that some carefully selected areas can continue to be provided for responsible and licensed collectors. He points out that the damage caused by commercial collecting is minute compared to naturally occurring damage done by cyclones and other natural events.

Many Changes

During his many years of working around the Great Barrier Reef, Doug Tarca has seen changes in the Reef Region and in people's attitudes, activities and understanding of the Reef.

He has observed a marked decline in the condition of many of the near-shore reefs such as those around Magnetic Island which appears to have been caused by silt and mud from farming and dredging operations.



The presence of the crown of thorns starfish does not particularly worry Doug Tarca. He observed severe infestations in the Swains area in the early 50's and thinks that it is a naturally occurring phenomenon and there is little man can or even should do about it except perhaps in the popular tourist spots.

People's attitudes to the Reef is one area where he thinks there has been the biggest change. He believes people are much more environmentally aware now and are very concerned with the protection of the Great Barrier Reef. Younger people seem to be the most conservation-minded and express a strong interest in more detailed information about the Reef.

This has led him to plan living displays to complement his artificial displays to more fully educate knowledge-hungry visitors, especially showing coral polyps feeding and their natural colours.

Reef Future

As for the future of the Great Barrier Reef Mr Tarca sees the increased environmental awareness especially by the younger people combined with the controls and care resulting from the Marine Park preventing excessive damage. There is a need for much more information presented in a simple and entertaining form to educate visitors about all aspects of the Great Barrier Reef. He is involved with Bush Pilots Airways in their regular Reef excursion flights from Townsville, with passengers visiting his tourist centre before the flight to obtain a clearer concept of the reefs they see later from the aircraft. This service too has been aided by the Authority which has provided an informative in-flight commentary.

Although Doug Tarca's involvement with the Great Barrier Reef has spread over many years he still finds it as fascinating as ever and enjoys educating people about the Reef and giving them an introduction to its constant beauty.

AUTHORITY FUNDS INCREASED

Funds for the Great Barrier Reef Marine Park Authority were increased in the Federal Budget by almost 70% to \$1.85 million.

The Minister for Science and the Environment, Mr David Thomson said the increase would cover further staff increases and ensure the continued development of reef research, conservation and management programs.

The Authority had already undertaken a major co-ordinating role in research relevant to the Marine Park.

The allocation of \$307,500 for research in 1980/81 would provide for further development of this role and ensure that a substantial part of that research was directed towards improving the efficiency and effectiveness of Reef management.

An amount of \$136,000 had been provided for education and information programs. These programs were aimed to ensure that the various sectors of the community were aware of opportunities to use and enjoy the Reef in ways which would ensure its protection for future generations.

New Authority Staff

David Chippendale has been appointed Assistant Executive Officer, Secretariat and Services. His recent service has been as Secretary, National Standing Control Committee on Drugs of Dependence, and Assistant Director (Administration) in the former Federal Bureau of Narcotics, Department of Business and Consumer Affairs. In November 1979 he transferred with the position to the Australian Federal Police.

Jean Dartnall has joined the Authority as its librarian following three years as a librarian with the University of Tasmania. She holds a B.Sc. from the University of Durham and M.Sc. from the University of Newcastle-upon-Tyne, as well as librarian qualifications.

The Office Manager's position has been filled on a permanent basis by Michael Hunter. Prior to his transfer to the Authority Michael held similar positions in the Commonwealth and Northern Territory Public Services.

Kim McClymont has joined the Information Sub-Section. He has a Bachelor of Applied Science degree in Resource Management from the Canberra College of Advanced Education and has wide personal experience of the Great Barrier Reef.

Your lift-out guide to the Capricornia Section

ZONES, AREAS OF NEW PARK

The Great Barrier Reef Marine Park — Capricornia Section covers approximately 12,000 square kilometres of the most southern area of the Great Barrier Reef, around the Carpricorn and Bunker Groups.

It is heavily used for commercial and recreational purposes and is adjacent to the large and growing coastal centres of Rockhampton, Gladstone, Bundaberg and Yeppoon.

The boundaries were proclaimed on 17 October, 1979 after intensive investigation by the Great Barrier Reef Marine Park Authority which included seeking the views and opinions of user groups and individuals.

The zoning plan for the Section was developed by the Authority after two periods of public participation — one immediately following declaration when the Authority sought comments on a proposed zoning plan, and the second when a zoning plan was drafted for public comment.

As a result of the second period of public representations, the zoning plan was amended, providing for six zones, an addition of one zone to the five originally proposed.

In the zoning plan placed before the Commonwealth Parliament on 19 August, the zones are:

General Use "A" Zone
General Use "B" Zone
Marine National Park "A" Zone
Marine National Park "B" Zone
Scientific Research Zone
Preservation Zone

In addition there is provision in the zoning plan for Replenishment Areas and Seasonal Closure Areas where access may be subject to periodic restriction.

General Use "A" Zone

As shown on the accompanying map, this zone covers that part of the Capricornia Section which is not included in any other zone. The objectives of the zone are to:

- (a) provide opportunities for reasonable use consistent with the conservation of the Great Barrier Reef;
- (b) provide areas for trawling;
- (c) provide for Replenishment Areas where fishing and collection are prohibited for limited periods to enable resource stocks to regenerate.

General Use "B" Zone

General Use "B" Zone covers an area where the objectives are to:

- (a) provide opportunities for reasonable use consistent with the conservation of the Great Barrier Reef;

- (b) protect reefs from the potential effects of trawling and commercial shipping;
- (c) provide for Replenishment Areas where fishing and collecting are prohibited for limited periods to enable resource stocks to regenerate;
- (d) provide for Seasonal Closure Areas to protect some important bird and turtle nesting sites from human intrusion.

Marine National Park "A" Zone

This zone applies to an area within a line one kilometre seaward from the reef edge of the Heron Island Reef and the Wistari Reef.

It allows the following uses:

- (i) recreational activities
- (ii) limited recreational fishing
- (iii) approved research.

Marine National Park "B" Zone

The zone applies to an area within a line one kilometre seaward from the reef edge of Llewellyn Reef. It is to provide for the protection of the natural resources of the area while allowing the public to appreciate and enjoy the relatively undisturbed nature of the area free from the influence of fishing and collecting.

Scientific Research Zone

The objective of the Scientific Research Zone is to provide an area where approved research can be carried out protected from the influences of recreational activities, fishing and collecting. It covers the area within a line one kilometre seaward from the reef edge of One Tree Island Reef.

Preservation Zone

This zone covers an area within a line one kilometre seaward from the reef edge of Wreck Island Reef. The objectives are to:

- (a) preserve areas of the Great Barrier Reef in their natural state undisturbed by man except for the purposes of scientific research.
- (b) provide protection around some islands where important turtle and nesting sites occur.

Periodic Restricted Use Areas

Within the General Use "A" and General Use "B" Zones there may be Replenishment Areas. The objective of the Replenishment Area is to provide, for a specified period time, an area

Management of Park

The day-to-day management of the Capricornia Section is to be undertaken by existing Queensland agencies, which in discharging these responsibilities will be subject to the Great Barrier Reef Marine Park Authority.

The Queensland National Parks and Wildlife Service and the Queensland Fisheries Service already have major responsibilities in the area.

The Great Barrier Reef Ministerial Council has decided that Commonwealth and Queensland officials should examine the possibility of complementary management regimes in areas of the State adjacent to, or likely to affect the Marine Park. This examination will cover:

- (i) the proclamation of terrestrial national parks and marine parks under Queensland legislation;
- (ii) the suitability of legislation, both Commonwealth and Queensland, for establishing a uniform management approach, particularly with reference to the difficulties of law enforcement at the interface between the two jurisdictions; and
- (iii) consultative mechanisms in the development of proposals.

The Ministerial Council also agreed that the present scope of co-operation between Queensland and Commonwealth officials on issues relevant to the Reef should be maintained and expanded.

which is closed to any activity which would remove living resources of the Marine Park, to enable the recovery of fish and other resource stocks.

The Replenishment Areas will consist of not more than two of the following:

- Irving Reef;
- Rock Cod Shoal;
- Innamincka Shoal;
- Boulton Reef;
- Lamont Reef;
- North Reef;
- Polmaise Reef.

Within the General Use "B" Zone there may be Seasonal Closure Areas. The objectives of the Seasonal Closure is to protect some important bird and turtle nesting areas from human intrusion.

The Seasonal Closure may apply, between 1 October and 1 March, to one or more of the areas enclosed within a line 100 metres seawards from the reef edge of Masthead Islands Reef; Tryon Island Reef; Hoskyn Islands Reef; and Fairfax Islands Reef.

COUNCIL ENDORSES AGREEMENT ON DAY-TO-DAY MANAGEMENT

The Great Barrier Reef Ministerial Council has endorsed the basis of agreement between the Commonwealth and Queensland Governments defining the relative responsibilities for day-to-day management of the Capricornia Section, and delineating principles and policies for preparing detailed day-to-day management specifications and procedures.

There will be an agreed initial capital works program and an agreed recurrent program.

The Council at its third meeting on 1 August, endorsed a cost sharing arrangement between the two Governments which provides that:

- The Commonwealth will identify and finance an initial capital works program for the day-to-day management of the Capricornia Section of the Great Barrier Reef Marine Park. Queensland concurrence to the program will be obtained.
- All capital costs for the Capricornia Section after the initial capital works program and all recurrent costs will be shared 50:50. The recurrent costs include those costs incurred by the Queensland Government in managing Queensland National Parks and marine parks lying within the boundaries of the Capricornia Section, in accordance with an annually-agreed program. All the costs under this point would be for activities included in the agreed programs.
- All capital costs incurred by Queensland for Queensland parks lying within the Section, which are not for

the Marine Park and not part of the initial agreed program, to be met by Queensland.

- Nothing in these arrangements prevents either Government from undertaking work, at its own cost, that is additional to the agreed programs.
- The initial capital program would represent that required to place the day-to-day management operation on a sound footing — later capital expenditure would be treated as replacement expenditure.
- Where large capital works projects (e.g. underwater observatories) are proposed in the Section, and they are neither part of day-to-day management nor are constructed and operated by the private sector, special management and financing arrangements will be negotiated between the Governments.

These agreed arrangements will enable Queensland instrumentalities to undertake the day-to-day management functions required to implement the zoning plan and regulations as they come into operation.

Cairns Proposals for next Council Meeting

Proposals for boundaries of a possible second section of the Great Barrier Reef Marine Park are to be submitted to the next meeting of the Great Barrier Reef Ministerial Council.

A program to obtain the views of the public on this matter was carried out by the Authority in May and June. The program consisted of several advertisements in national and Queensland local newspapers requesting public comment on the proposal. As well, displays were organised in Tully, Innisfail, Cairns, Port Douglas, Mossman, Cooktown and Brisbane. These displays were manned by Authority staff and oral comments were obtained from the public.

Most of the written comments were strongly in favour of a section of the Marine Park being declared off Cairns.

At its meeting on 1 August, the Ministerial Council noted that considerable progress has been made by the Marine Park Authority in assembling biological, physical and economic information and evaluating public comment on this proposed second section of the Marine Park. Following discussions, Ministers agreed to invite the Marine Park Authority to examine and bring forward to the November meeting of the Council, proposals for boundaries for the proposed Cairns Section, and the full implications of these boundaries.

The Zoning Plan and Users

The zoning plan for the Great Barrier Reef Marine Park — Capricornia Section provides for all reasonable uses of the park area to continue. Approximately 80 per cent of the area is without restriction, except that mining is prohibited anywhere in the Marine Park, and commercial spearfishing is also not permitted.

It is important that all users are familiar with the zoning plan, and copies are available free of charge from the Authority. As a guide only, the following provisions are highlighted for the major user activities.

Commercial Fishing

Trawling may take place in the General Use "A" Zone and line-fishing (including trolling) in General Use "A" and "B" Zones except in a Replenishment Area or Reef Appreciation Area. Trolling for mackerel species is permitted in a Replenishment Area from 1 May to 31 August each year. Commercial spear-fishing is not permitted anywhere in the Section.

Recreational Fishing

This may occur in General Use "A" and "B" Zones under the same provisions as commercial fishing. It is also permitted in the Marine National Park "A" Zone, except in a Reef Appreciation Area, providing a hand-held rod and reel, or a handline is used with an artificial fly; a lure; or no more than two hooks or gang-hooks.

Non-commercial spear-fishing may occur in General Use "A" and "B" Zones except in the Replenishment and Seasonal Closure Areas.

Other Recreations

Recreational activities, such as diving, snorkelling and reef walking are permitted throughout the Section except in the Scientific Research Zone and the Preservation Zone and in a Seasonal Closure Area.

Boating

All vessels may use the General Use "A" Zone, and with the exception of large ships, General Use "B" Zone and

Marine National Park "A" and "B" Zones as well, providing that any equipment used for fishing or collecting is stowed and secured while vessels are traversing zones in which the use of such equipment is not permitted.

Aircraft Movements

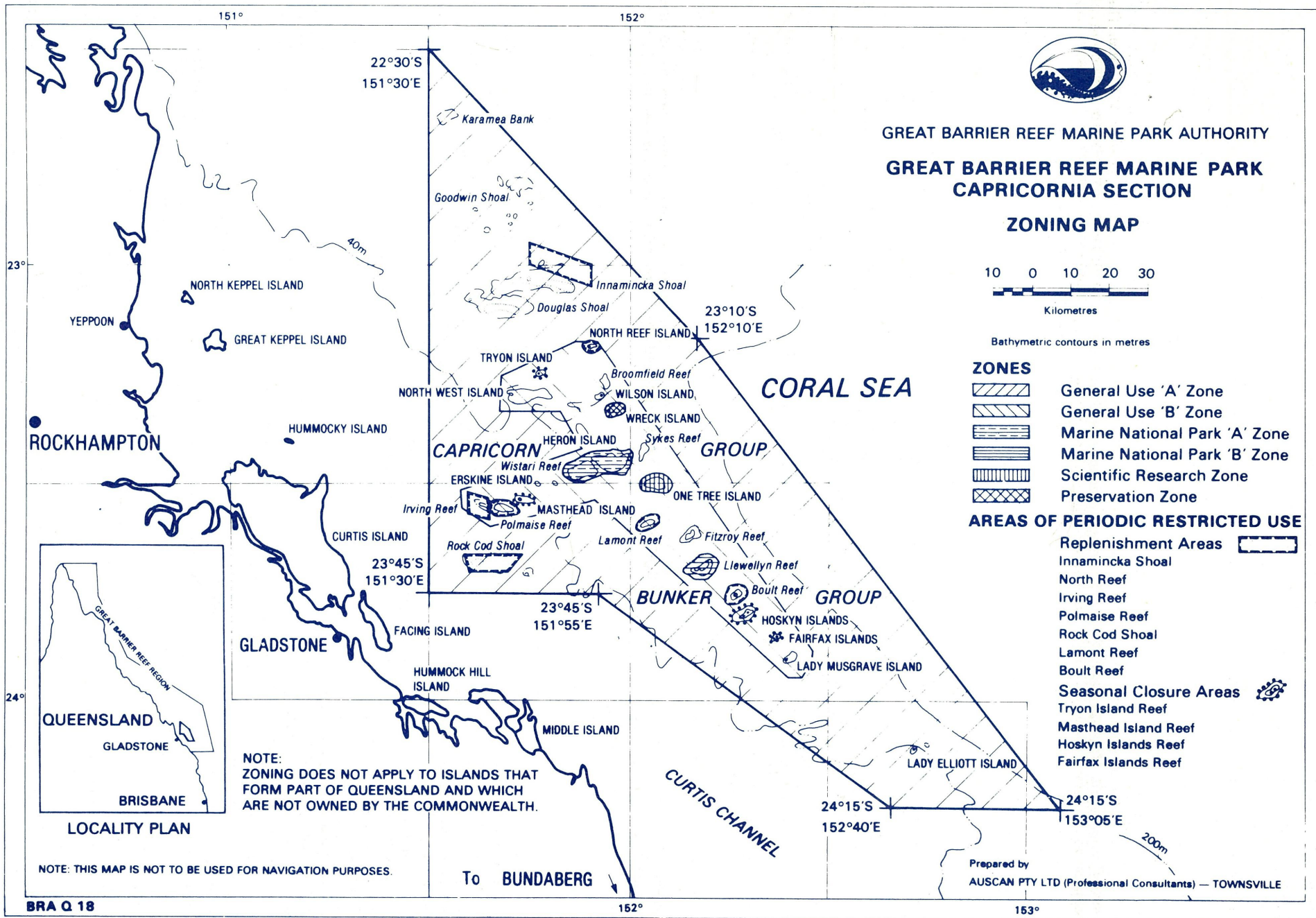
All aircraft may continue to overfly the Section at a minimum height of 500 feet except over a Seasonal Closure Area, the Preservation Zone and the Marine National Park "B" Zone where the minimum height is 1,000 feet.

Collecting

The collection of shells and aquarium fish in the Section will require permission and may only take place in General Use "A" and "B" Zones subject to any conditions imposed on the permit.

General

The zoning plan does not provide for any new licences or additional charges in relation to public use of the Capricornia Section.



Reef Islands — Formula for Conservation, Protection

By Dr. Graham Saunders.*

The islands of the Great Barrier Reef have long played an important part in the development of Queensland's national park system.

From the introduction of the State Forests and National Parks Act in 1906 to the establishment of the National Parks and Wildlife Service in 1975, parks were administered by the Forestry Department. The first specific reference to an island national park came in the annual report of the Director to State Parliament in 1932/33.

In that financial year, nearly 97,000 acres of Hinchinbrook Island, near Cardwell in North Queensland, became part of the national park estate, establishing a pattern which has continued to this day.

Dunk and Brampton Islands followed two years later and the great leap forward came in the period 1936 to 1939 when a further 88 national parks were gazetted in the Great Barrier Reef Region.

Today, there are 176 island national parks off the Queensland coast, the most recent being North West and Wreck Islands which were jointly gazetted on the 16 February, 1980. Both are within the recently proclaimed Capricornia Marine Park Section.

North West Island, situated about 120 kilometres from Rockhampton on the Central Queensland coast, is the largest of the Capricorn Group of islands and extends over about 100 hectares. At one stage, there was a proposal to establish a tourist resort on the island but its importance as a nesting area for the wedge-tailed shearwater (mutton bird), other bird species and as a green turtle rookery outweighed purely recreational considerations.

Wreck Island has important ecological considerations as the largest loggerhead turtle rookery in this section of the Great Barrier Reef and it has been listed by the International Union for the Conservation of Nature and Natural Resources. It was once the site of an exploratory bore by an oil company but, after drilling to nearly 600 m without any promising signs, the company withdrew.

Natural History Study

Another recent development in the Reef Region is the establishment of a natural history association on the resort island of Lindeman in the Whitsunday Group. This has been achieved through the agreement and co-operation of the Queensland

National Parks and Wildlife Service to help interpret the human and natural history of the national parks and reserves administered by the Service in the area.

The resort management has also set aside a special area, known as 'Adventure Valley' where children can have their own holiday virtually independent of their parents but under the constant supervision of experienced camp leaders.

Whilst mum and dad are enjoying the more sophisticated comforts of the Lindeman resort, the children sleep out under canvas, cook over camp fires and in camp ovens. They are also taught how to live in harmony with the various animals, trees and bushes found on the island and the techniques of mountain climbing, abseiling and fishing. There is also a chance for them to qualify for a badge designating them 'Junior Bushman' of Lindeman Island.

Novel Experiment

Adventure Valley is a fascinating experiment, not only in its novel approach to the market of an island holiday resort, but in its positive response to the whole concept of nature conservation — an experiment that is being closely watched by the Queensland National Parks and Wildlife Service.

What the Service would like to see happen, in the long term, is an extension of interpretive services to all resort islands along the Reef. Over the past two years, it has been encouraging resort management to assume responsibility for telling guests about the natural resources of the islands. Some have shown interest and the Service is preparing to step up representations in this area.

The Service plays a vital role in all areas of nature conservation throughout Queensland and it has undertaken significant research on the fragile reef environment. The World Wildlife Fund has recognised this expertise by making a grant of \$43,600 to the Service to initiate research at Raine Island, the most outstanding sea bird rookery on the Great Barrier Reef and a major nesting site for the green turtle.

The Raine Island exercise forms a part of the Queensland Sea Turtle Project, a long term study of the State's Sea turtle by the Service, which has also received funding for the project from the Australian National Parks and Wildlife Service.

Stop Press

Zoning Plan Delay

The dissolution of Federal Parliament for the election has resulted in a delay in the introduction of the zoning plan for the Capricornia Section, and the subsequent issue of regulations.

The plan is required to lay before the House of Representatives and the Senate for 20 sitting days. If no motion of disallowance is passed in either place, the plan comes into effect on a date to be announced by the Minister for Science and the Environment.

Parliament rose for the election before the required number of sitting days had been met for the zoning plan. Under the Great Barrier Reef Marine Park Act, if Parliament is prorogued before 20 sitting days, it shall be deemed to have been presented on the first sitting day of Parliament after prorogation.

This means that on the day the new Parliament convenes, the period of 20 sitting days can recommence.

Objectives

As with all Queensland National Parks, the prime objective of management is to preserve the natural condition of the Barrier Reef Islands for both present and future generations.

Many of the island National Parks, particularly the more remote ones, have been protected by their insular nature and difficult access so that they are less disturbed by man's influence than their mainland counterparts. However, since they are more biologically sensitive to degrading than mainland areas, careful management is essential.

Some islands are developed, in part, as holiday resorts. Others are used for camping and for day trips from the mainland or from island resorts. The responsibility of the Queensland National Parks and Wildlife Service is to ensure that management, so far as possible, achieves a balanced use of the total resource.

Above all, it means avoiding any action which unnecessarily closes off options for future generations, for the national parks are held in trust for the benefit of all people for all time.

It is interesting to note that the first marine national parks on the Great Barrier Reef — Heron/Wistari Reefs and Green Island Reef Marine National Parks — were declared under Queensland's Forestry Act in 1974.

*DR. SAUNDERS IS DIRECTOR, NATIONAL PARKS & WILDLIFE SERVICE OF QUEENSLAND, AND MEMBER OF THE GREAT BARRIER REEF CONSULTATIVE COMMITTEE.

Extra Surveillance Measures Include Reef Areas

Extra coastal surveillance measures covering areas that include the Great Barrier Reef have been introduced following the declaration of the 200 nautical mile Australian Fishing Zone (AFZ). They are aimed at providing the optimum level of control while maintaining physical surveillance effort at an acceptable level.

The main thrust of surveillance — which is co-ordinated by the Australian Coastal Surveillance Centre (ACSC) in Canberra — is concentrated on the detection and apprehension of unlicensed foreign fishing vessels entering the Zone.

The 200-mile AFZ is patrolled mainly by RAAF Orion aircraft. Up to nine Navy patrol boats are available to carry out enforcement activities against illegal foreign fisherman and to ensure that licensed foreign fishing vessels are complying with Australia's requirements.

Chartered private aircraft and vessels are also used for enforcements and spot checks.

A total of about 27,000 military and civil aircraft flying hours were dedicated to coastal surveillance in 1979-80. This compares with some 4,200 military and 400 civil charter hours flown in 1977-78.

New Aircraft

Surveillance activities have received a significant boost with the introduction of three specialised radar-equipped Nomad aircraft under charter to the Department of Transport. One will be used to patrol the Great Barrier Reef, primarily for fisheries surveillance.

This brings the total number of Nomad aircraft available for surveillance tasks, including Customs work, to ten.

Since the AFZ came into force on 1 November, 1979, about 400 foreign fishing vessels have been licensed to operate in the AFZ. They have to report their position to the Surveillance Centre every 48 hours, display effective identification numbers and call at Australian ports for inspection. Australian observers also board vessels to see that regulations are being observed and to assemble information essential to fishery management of the Zone.

Their movements in Australian waters are tracked with the aid of a computer which is also used to record details of their catches.

Buffer Area

Rather than presenting Australia with a surveillance nightmare, the extended fishing zone acts as a buffer between the outer sea limits and the established fishing grounds.

Most of Australia's important fishing grounds lie within 40 nautical miles of the coast. Any unlicensed foreign fishermen intruding into the AFZ would have to travel about 160 nautical miles through the controlled zone before fishing, and would also have to stay in the area for some time to make operations worthwhile.

This increases the chances of detection by surveillance ships and aircraft or by Australian or licensed foreign fishing vessels.

Voluntary sources of surveillance information — such as members of the public in remote areas — also play an important role in Australia's overall surveillance effort.

To encourage this, the Department of Transport has installed a special telephone service in the Australian Coastal Surveillance Centre, so members of the public can report, free of charge, matters of interest such as unusual or suspicious activities of vessels or aircraft. An easily-remembered telephone number has been allocated for this purpose:-

Canberra (062) 47 6666

A reverse charge call can be made in cases where STD services are not available.

This article was provided by the Department of Transport, Canberra.

New Fishing Survey

A survey of recreational fishing activities between Tully and Port Douglas began on 23 August.

The Great Barrier Reef Marine Park Authority is conducting the survey in co-operation with the Queensland Fisheries Service and with the support of the Queensland Amateur Fishing Council.

It is designed to provide information on the current state of recreational fishing; catch and effort statistics; and other relevant information such as the importance of recreational fishing to the Queensland economy.

The participation of recreational fishermen is entirely voluntary and Authority and Fisheries Service staff have been in attendance at boat ramps between Tully and Port Douglas to obtain information. Fishermen have been invited to complete a questionnaire developed for the survey.

Dr Wendy Craik, a fish biologist from the Great Barrier Reef Marine Park Authority, said that very little was known about the state of amateur fishing in Great Barrier Reef waters, and the survey would help to determine the importance of the industry, in leisure as well as economic terms.

Dr Craik said: "We are hoping to establish the direction recreational fishing is taking, how fast it is growing, and what it means in investment terms to this area of North Queensland.

"Catch results will allow the Authority to determine whether amateur fishing is as rewarding for fishermen today as it has been in the past", Dr Craik said.



The new specially-equipped Nomad surveillance aircraft to patrol the Australian coastline, including the Reef.

Mooring Design Challenge for Students

The Great Barrier Reef Marine Park Authority has launched a nation-wide competition for engineering students in connection with establishing mooring sites on the Great Barrier Reef.

The sites have been proposed as a means of protecting corals in heavily used reefs from damage by anchored or tide-stranded boats, and making reefs more accessible and safer for visitors. It is envisaged that the moorings should be capable of taking craft ranging from small run-abouts to large yachts and charter boats, up to four at a time at each mooring.

The Authority has invited engineering students at tertiary institutions throughout Australia to submit a design for permanent coral reef moorings. There is a first prize of \$1,000 and entries close on 19 October.

Besides considering the ability of moorings to survive in storms and cyclones, the students will have to allow for differing sea-floor conditions which can range from fine sand to coral rubble or dense coral. Account of tide and wind changes will also have to be taken.

Two Types

There may be a need for two types of permanent reef moorings — the first being an overnight all-weather secure site offering safety in bad weather; the second a good weather site for diving or fishing when conditions permit.

Students are being asked to recognise both requirements in their entries, although they may produce one mooring design suitable for both applications.

The main judging criteria will be based upon the mooring causing minimal damage to coral during construction and use; its efficiency in operation; the cost and expected life-span of the mooring as well as its aesthetic appeal. Design calculations and construction drawings will also be required. The Authority hopes that the competition will not only produce a mooring design that is appropriate for the Great Barrier Reef, but will also stimulate students' interest in marine engineering.

REFLECTIONS is published by the Great Barrier Reef Marine Park Authority to provide information about the Great Barrier Reef, and to give people an opportunity to express opinions on related issues.

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Lab. examination of the crown of thorns.

Crown of Thorns

By Dr. Joe Baker.*

The crown of thorns starfish is a natural inhabitant of coral reefs. From time to time it appears in local dense populations. Because of its obvious deleterious effect on the colourful hard corals, one of the recommendations of the previous Crown of Thorns Starfish Committee was that large populations, found near major tourist resorts, should be removed by intensive methods.

Consequently, when a large population of crown of thorns starfish was detected just before Christmas 1979 in one section of the reef around Green Island, the Commonwealth and Queensland Governments allocated \$10,000 to allow the Queensland Fisheries Service to remove starfish from the reef.

The Great Barrier Reef Marine Park Authority has established a committee of experts from the Authority, James Cook University of North Queensland,

Permanent Site for Science

A permanent scientific study site has been established off the west side of Orpheus Island in the Palms Group by researchers from the James Cook University of North Queensland.

The purpose of the site is to assist studies of the animals and plants that live on the sandy-mud floor of the continental shelf. The researchers have taken samples over 700 areas and identified more than 1000 different organisms, many of which were unknown to science.

The scientists need to be able to observe a particular area of bottom at fairly regular intervals in order to follow changes occurring through time and have set up the permanent study site off the west side of Orpheus Island at Longitude 146° 28.55'E Latitude 18° 37.15'S. This is 0.53 nautical miles south-west of Pioneer Point (on the south side of Pioneer Bay) and 0.47 nautical miles directly offshore of the island.

It lies in 24 metres of water and is marked by two buoys about 40 metres apart. One is round, orange and plastic with a diameter of 28 centimetres and the other is a bright yellow can of diameter about 30 centimetres with a stick 50 centimetres high bearing a small radar reflector. It is marked "James Cook University Research. Please leave."

They indicate the location of 10 engine blocks, 30 concrete blocks and many steel stakes.

Australian Institute of Marine Science, and the Queensland University to recommend to the Authority on what scientific investigations merit study, additional to those already supported by the Crown of Thorns Starfish Committee.

In May a survey of reefs between Innisfail and Lizard Island was undertaken by the Great Barrier Reef Marine Park Authority with divers determining reef and coral conditions, and surveying for the presence of crown of thorns starfish.

All available data on crown of thorns outbreaks will be gathered and information is being sought from private individuals who have knowledge of starfish outbreaks and habits over recent decades. The Authority would welcome any information on the presence of crown of thorns from the public.

* Dr. Baker is a Member of the Great Barrier Reef Marine Park Authority.