



The Saga of the Minke Whale

The Editor, Reeflections

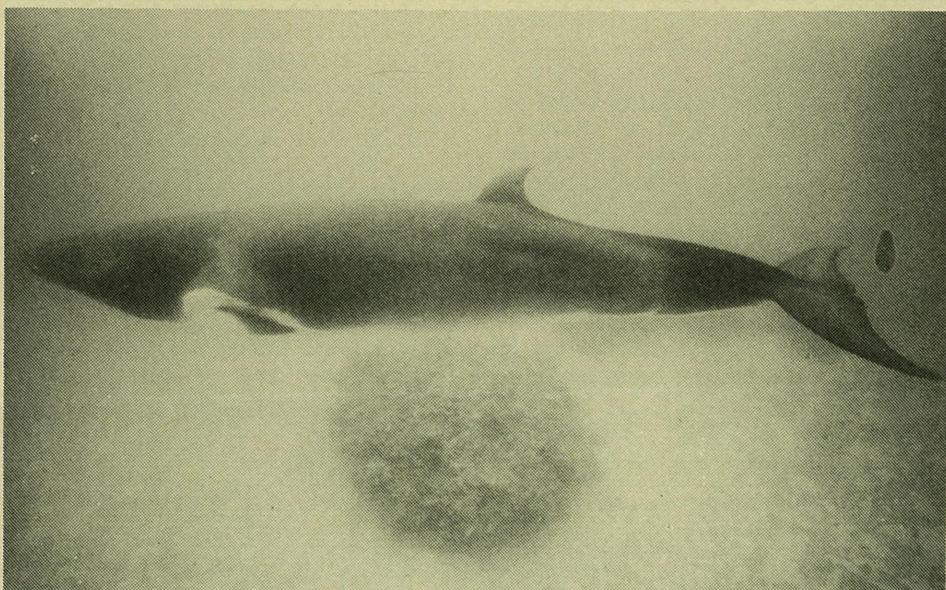
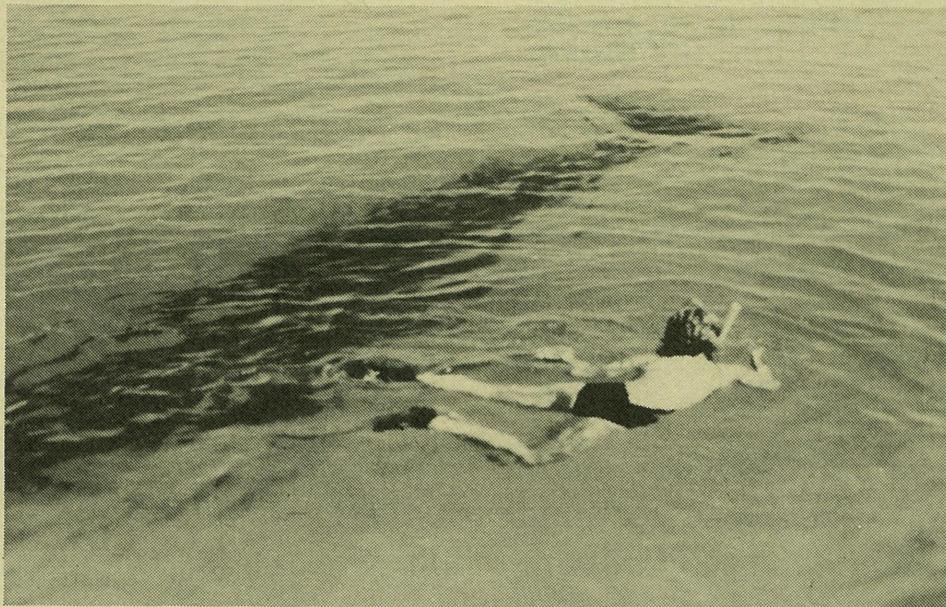
The saga of the minke whale in the lagoon on Hook Reef generated much public interest and comment during the latter part of last year. I was one of a number of people involved in that saga and I thought your readers might be interested in the complete story.

The whale, which had apparently been seen in the general area for about three weeks, was first sighted in the lagoon at the end of August by the pilots of the small amphibious Air Whitsunday aircraft which ferry tourists out to this part of the Great Barrier Reef (about 75 km from the coast). In practice, Air Whitsunday transports most of the visitors to this area and acted very responsibly in discouraging tourists from visiting the lagoon and harassing the whale throughout the whole saga. (The Great Barrier Reef Marine Park Authority has no formal control over the area which has not been declared part of the Marine Park.)

The lagoon on Hook Reef is about 250 m long x 150 m wide x 10 m deep and, at the north-west end, is separated from a channel about 60 m deep by a narrow coral sill only 50 m wide. The sill is covered by more than 2 m of water at most high tides. The tide on which the whale entered the lagoon was equalled or exceeded on more than fifty occasions during her three months' stay. Thus she was never really 'trapped'.

Two visits were paid to the lagoon by scientists from James Cook University and the Great Barrier Reef Marine Park Authority in September. During these visits we photographed, sexed (as a female) and estimated the length of the whale. We also recorded her dive times and general behaviour and attempted (unsuccessfully) to record sounds. On the second visit a brief attempt was made to herd the whale out of the lagoon at high tide with a speedboat. However, this was unsuccessful as the whale resisted all attempts to get her within about 7 m of the reef.

I discussed the whale's flipper colouration with South African cetologist, Peter Best, who suggested that she was probably a 'dwarf minke'. This was later confirmed when Peter examined our photos. Another whale expert, Seiji Ohsumi of Japan, also checked his files and reported that no



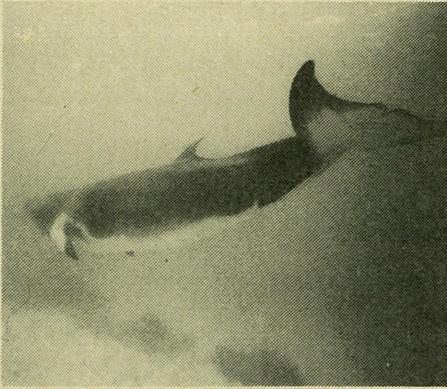
'Dwarf minke' whale

minkes with this colour pattern had been taken in the Antarctic. Now that it was established that the whale belonged to the dwarf race of minkes about which little is known, it was decided to concentrate efforts on getting information about the whale rather than on getting her out of the lagoon. Consequently, together with staff of the Authority we developed a plan to make three trips to Hook Reef in November to monitor the whale.

Bill Dawbin, Research Associate in the Mammals Department of the Australian Museum, came up from

Sydney with his hydrophone gear for the first trip in early November. However, after a total of over forty hours of hydrophone monitoring including one twenty-two hour session, we did not record any sounds from the whale.

Those of us who had dived with the whale in September noticed a big change in her by early November. There was a pronounced weight loss; she was developing a 'neck'. The canting of her dorsal fin was more pronounced than on previous trips, her swimming speed was slower, and at



Underview of 'dwarf minke' whale showing distinctive flipper colouration

times she did not appear to be maintaining horizontal orientation in the water. Because of these changes, we attempted to encourage her to leave the lagoon using a bubble curtain and/or herding with Zodiacs, but without any success. It seemed obvious that the whale would die in the lagoon where she was clearly not getting enough to eat. As a last-ditch effort to get the whale to leave the lagoon, the Authority agreed to finance a netting attempt using the expertise of Hec Goodall who runs a porpoise pool in New South Wales and who has had extensive experience in netting marine mammals for displays. Goodall was highly recommended by Bill Dawbin and had the added advantage of having some experience with minke as he looked after a sick minke calf in his pool for several weeks in 1981. (Editor's Note: The Authority is not in favour of interfering in natural processes. The agreement to finance the netting attempt was viewed only as an experiment to determine the efficacy of such measures for possible future use in the Marine Park.)

News of the whale's deteriorating condition, released to the media by the Marine Park Authority, caused a great deal of concern and the Authority was

put under considerable pressure to 'save the whale'. Two members of the Melbourne-based 'Whale Rescue Squad' insisted on being present at the attempts to get the whale to leave the lagoon in mid-November. These attempts failed despite Goodall's considerable expertise and efforts. The whale broke through the heavy shark nets twice, losing some skin (but no obvious blood) in the process. Later, several attempts were made to drive the whale from the lagoon using up to seven boats, seven SCUBA divers and people in each boat banging kitchen utensils together in the water. However, we had no success. It was a clear case of whale 10 : humans 0. The Authority announced that it would not be party to any further attempts to induce the whale to leave the lagoon, which I consider to have been the only sensible decision under the circumstances.

At this point, the Authority received criticism both from those claiming that a ridiculous amount of time and money had been wasted on one whale, and from the humaniac lobby who claimed not enough had been done. A clear case of 'damned if they did and damned if they didn't'.

Two days after our last attempt to drive the whale out, two large tiger sharks entered the lagoon. During the next week the number of large (more than 2 m) tiger sharks in and around the lagoon increased to at least twenty-five. The sharks did not systematically harass the whale and the number actually in the lagoon fluctuated with the tide. According to the Air Whitsunday pilots, the whale did not seem to avoid the sharks but appeared to be surfacing more often (about every ninety seconds). Peter Lofts, skipper of the *Reef Encounter* visited the lagoon in a dinghy on two successive days about a week after the sharks entered the lagoon and observed blood

trickling from the whale's left tail fluke.

The Melbourne-based Whale Rescue Squad lobbied the State and Federal Governments, professional fishermen and anyone else they could think of to do something about the sharks. Finally they financed a professional shark catcher, Vic Hislop, who runs the 'White Death Shark Show' on the Gold Coast, to go up to Hook Reef. Hislop arrived eight days after the sharks first appeared.

Hislop's original plan was to catch two of the sharks on baited lines and extract their livers which he planned to cut up and place in black plastic bags to hasten decomposition. These would be placed around the lagoon as a shark repellent.* This scheme did not eventuate as the death of the first two sharks caused a 'feeding frenzy' among the others. During the course of three hours, Hislop, aided by Peter Lofts from the *Reef Encounter*, killed thirteen large tiger sharks. Another two sharks died when they attacked each other. When Hislop and Lofts left the lagoon at dusk there were still sharks present feeding on the carcasses. (The biomass of the dead sharks would have been at least twice that of the whale.)

* Decomposing shark flesh was one of three materials shown to have possible shark repellent properties in American experiments conducted during World War II. The principal chemical substance released was ammonium acetate. Because copper sulphate was also found to have deterrent properties, it was combined with ammonium acetate to produce copper acetate which was combined with a black nigrosine type dye as a shark repellent (Budker, 1971) marketed as 'Shark Chaser'. Even the producers of Shark Chaser tacitly admitted that it was not the 'ultimate repellent'. It does not work against sharks in a feeding frenzy or produce a long lasting effect against all species (Hodgson & Mathewson, 1978).



Taking measurements before the necropsy



Cleaning of whale carcass before packing and shipping to Townsville

During all this carnage the whale apparently continued her circuits of the lagoon even through all the gore. However, both Hislop and Lofts reported that she seemed to stay down longer between breaths.

Hislop and Lofts returned to the lagoon very early the next morning. The visibility was bad but they saw the whale apparently swimming as usual and caught another large tiger shark on a line. When they returned to the lagoon after breakfast, the sea had calmed and the visibility was excellent, but the whale was gone. After a search of the lagoon and surrounding reef, they returned to the *Reef Encounter* to triumphantly announce that the whale had left.

Her body was located by an Air Whitsunday pilot about two hours later. It was on the reef top in about 3 m of water several hundred metres from the lagoon. Hislop and Lofts later anchored the whale in this position which they marked with a buoy. They also attached a dead tiger shark and some rotting shark livers to the buoy to repel other sharks.

Thus the whale died the day after the shark slaughter and almost exactly three months after she entered the lagoon.

When we arrived at the Reef about twenty-four hours later, an underwater inspection of the carcass revealed no evidence of major shark attack although it is possible that there was a minor shark bite on her left tail fluke. Nor was there evidence of abrasions

caused by coral for the whale had left the lagoon on a king tide. We concluded that the whale must have been near death when she left the lagoon. She was so negatively buoyant that I doubt that she died in the lagoon.

The carcass was then towed 40 km to the nearest island where the necropsy was carried out. The necropsy commenced about forty-eight hours after death by which time the brain was decidedly soupy. We could not ascertain a definite cause of death, but the attendant veterinarian, Dr. Ric Spear of the Department of Tropical Veterinary Science at James Cook University made the following observations:

- (1) *The whale had suffered chronic peritonitis of unknown cause, localised in the anterior abdomen. The peritonitis had occurred at least one month before death and would not in itself have been the cause of death, but indicated that the animal had been ill while in the lagoon. However, it is impossible to confirm whether or not the whale had peritonitis when she entered the lagoon.*
- (2) *A chronic gastric ulcer was present in the second stomach. The ulcer had not perforated the stomach wall and would not have been a cause of death.*
- (3) *Two acute gastric haemorrhages were present in the second stomach. These would not have been a cause of death but were indicative of stress (hardly surprising!).*

- (4) *The fat stores (particularly in the head) were gelatinous. This is indicative of starvation.*

The necropsy also confirmed that the 7.1 m long whale had the baleen colouration (cream) typical of a dwarf minke. Her gut was not completely empty indicating that she may have obtained a little food while in the lagoon. The parasite load was amazingly low. Only four or five flukes were found, all in the intestines.

The entire skeleton including the baleen, plus ovaries, mammary glands, uterine samples, heart, bacteriological and histological samples for pathology, parasites and gut contents have been saved. Frozen samples have also been obtained for heavy metal and pesticide analysis and electrophoresis. A full set of measurements was taken.

I am sure the Marine Park Authority has learned a lot about how to deal with whale 'bushfire situations' and the humaniac lobby. There has also been a gratifying amount of public concern about the shark slaughter.

If I am ever involved in such a situation again I would certainly advise against any rescue attempts and suggest nonmanipulative monitoring only.

I would like to thank everyone involved for their interest and help.

Helene Marsh



The necropsy — Hook Island

Although the preceding 'Letter to the Editor' is longer than most such letters, it was decided that because the 'whale incident' generated so much public interest, that reprinting of the entire letter in *Reflections* was warranted.

The Authority welcomes your comments, suggestions and criticisms and advises that future 'Letters to the Editor' should be held to a maximum length of 500 words and should be addressed to:

The Editor,
Reflections,
Great Barrier Reef
Marine Park Authority,
P.O. Box 1379,
Townsville, Q. 4810

GREEN ISLAND WORKSHOP

by Marc Hockings, Queensland National Parks and Wildlife Service



It would be difficult to convince most people that a week spent at a tourist resort on a coral cay could be considered hard work, but it was just that for the participants at the Reef Activities Workshop on Green Island in November, 1982. The workshop was conducted jointly by the Great Barrier Reef Marine Park Authority, the Queensland National Parks and Wildlife Service and Hayles Holdings Pty. Ltd. The objective of the workshop was to design a set of activities that could be used by staff at a Great Barrier Reef resort to help their guests explore and enjoy the reef environment in non-destructive ways.

The workshop had its genesis in the decision by Hayles to appoint an Activities Officer to work with overnight guests at their resort on Green Island. The company has

established an activities policy that emphasises assisting guests at their resort in exploring and enjoying the natural environment of the coral cay. After discussions between representatives of the Service, the Authority and Hayles to determine the best way to implement this policy it was decided to produce a manual that would help a new Activities Officer get started. Later individual training could then be directed to specific problem areas. Most importantly, the manual would be available to later Activities Officers and would be of relevance to other resorts on the Great Barrier Reef.

Hayles financially supported the workshop and participants with experience in reef and island biology, interpretation, tourist psychology, and in activities work on island resorts were invited to take part.

As most of the participants at the workshop had little or no knowledge of the management of island resorts we spent the first morning having our eyes opened by John Egan, Hotel Controller. The insight into island management that he gave us set the context in which an Activities Officer would have to work. The relative economics of having guests stay for more than one night showed, for example, what an important contribution an effective activities program could make to the viability of a resort. The remainder of the day was spent discussing the approach to be taken in developing the activities.

The remaining four days, and at least a portion of the nights, were spent in two working groups; one focused on the island, the other on the reef. The result, on Friday afternoon, was a rough draft of the manual.

Not all of the proposed activities require the active participation of the Activities Officer. Some are self-guided and the role of the Activities Officer is to encourage guests to go on these activities and to answer questions that may arise from them.

It is certainly not our intention that the activities contained in the manual should be the only ones undertaken on Green Island. It is hoped that in the light of experience the manual will be added to and modified by the Activities Officer.

It will be an interesting exercise to watch the manual 'grow up' in the coming years. But in the mean time it may be difficult to convince anyone who saw us snorkelling and diving and otherwise enjoying our (brief) times off, that we were engaged in hard work. Hopefully the manual will speak for us.

IT'S BIGGER THAN WE THOUGHT

Nathan Reef off Innisfail in the Cairns Section of the Great Barrier Reef Marine Park is bigger than we thought!

A previously unknown section of Nathan Reef was discovered during a reef mapping project being undertaken by the Queensland Department of Mapping and Survey in conjunction with the Queensland Department of Harbours and Marine.

The project is the first in a series of reef mapping projects by the Queensland State Government, and will provide

valuable data for research and management of the Reef. It will also contribute significantly to local marine safety. A total of thirty-six detailed maps which were produced during this project were presented to the Chairman of the Great Barrier Reef Marine Park Authority by the Queensland Minister for Environment, Mr. Hewitt. The maps will be used by the Authority primarily for research rather than navigation. The other projects currently underway are off Townsville and in the Cairns and Capricornia Sections of the Great Barrier Reef Marine Park.



ZONING THE REEF

In the second phase of public participation for the Cairns/Cormorant Pass Sections, the public was requested to respond to zoning plan proposals as illustrated in the brochure 'Zoning the Reef'.

During this phase of the public participation program which commenced on 7 September, 1982, Authority members and staff met with local councils, and interested organisations and individuals in the area adjacent to the Marine Park to clarify any questions and make notes on issues and recommendations for the zoning plans.

The deadline for receipt of representations was 7 December 1982, but late representations were accepted. As of 28 January, 1983, 189 representations had been received. A brief description of the representations received is in the following series of graphs.

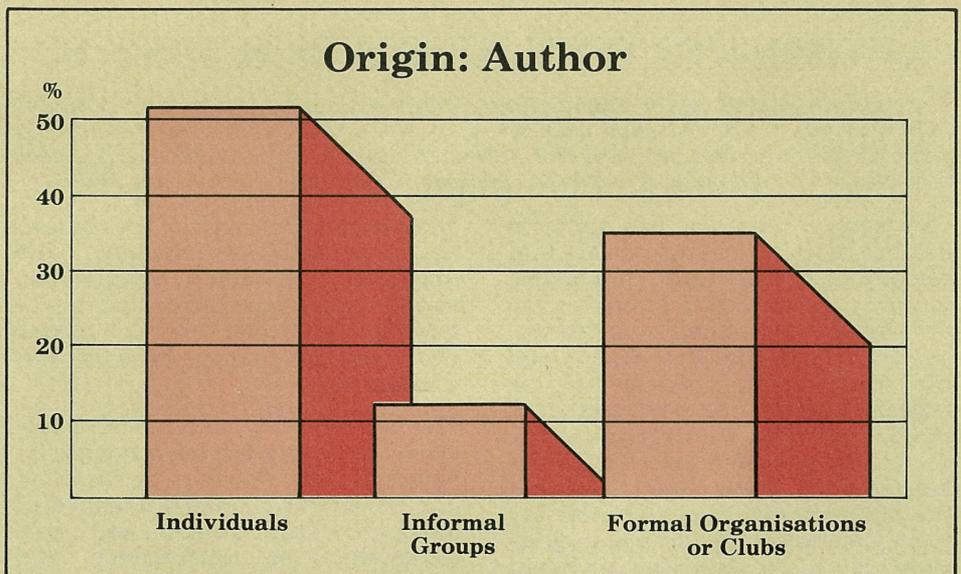
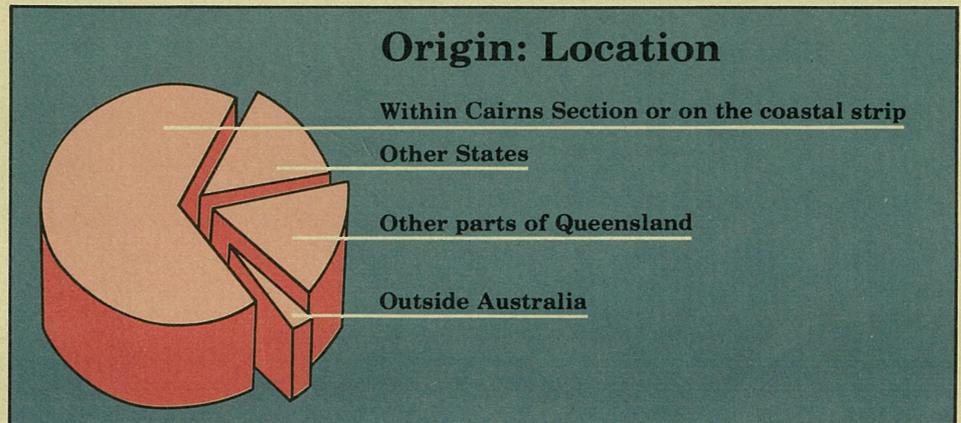
Major Issues arising from the zoning plans concerned the following:

- **Lizard Island, Northern Ribbon Reefs and Cormorant Pass.** Research and conservation interests conflicted with commercial, recreational and game fishing interests.

- **King Reef/Kurrimine Beach Area.** Less restrictive zoning was requested to allow recreational fishing of nearshore areas (particularly by locals using small boats), mackerel trolling and spearfishing.

- **Mackerel fishing and associated bait netting.** Commercial mackerel fishermen felt discriminated against by Marine National Park 'A' zoning which would prevent them from trolling at highly rated mackerel grounds. A similar concern was expressed by commercial reef fishermen.

- **Trawling.** A number of trawlers felt that the zoning plans restricted their fishing grounds. This view conflicted with the recreational fishing and conservationist interests which expressed concern as to the impact of trawling and favoured more protective zoning.



- **Bag limits.** Even though bag limits were not proposed in the zoning plans, a number of representations supported the concept of bag limits or limiting the catch of certain species. Many of those commenting on bag limits suggested them as an alternative to closing off areas by zoning.

- **Preservation Zone.** The prime concern was permission off access to proceed through the area for reasons of safety and navigational use.

Several other concerns were mentioned in the representations but were either easily resolved or mentioned in only a few representations and so they have not been presented here as 'major' issues. All concerns and recommendations from the representations have been considered by the Authority in revision of the zoning plans. Finalisation of the revised zoning plans is underway and it is anticipated that they will come into effect in early 1984.

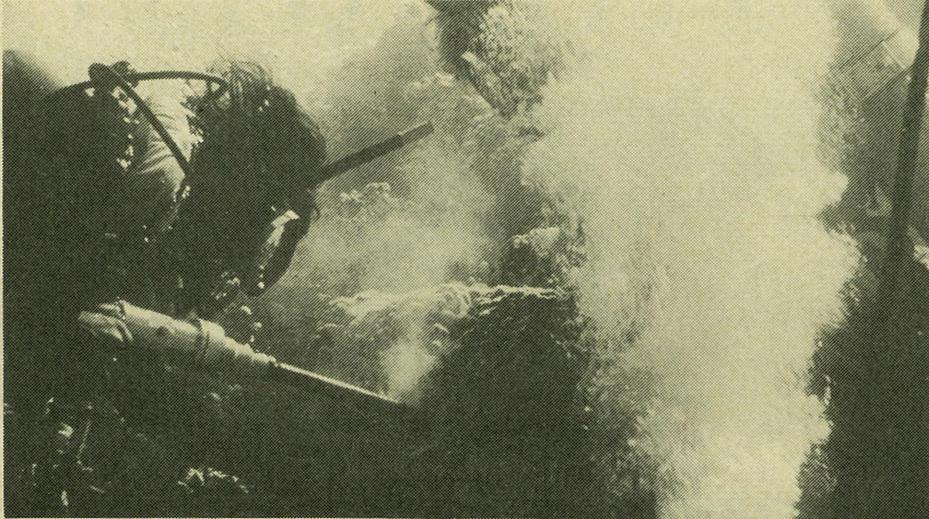
NEW TOURIST BIBLE

The tourist industry in the Townsville region has a new 'bible' entitled *A Guide to the Natural Attractions of the Townsville Region (Cardwell to Bowen)*. The guide was produced for a course recently conducted by the Great Barrier Reef Marine Park Authority and the Queensland National Parks and Wildlife Service for the Townsville Regional Tourism and Hospitality Industry Training Committee.

The course was designed to help tourist industry staff acquaint themselves and their customers with the extensive natural marine and terrestrial attractions of the Townsville Region.

It is hoped that the guide will be published in the near future and that further such guides can be developed for other regions along the coast.

Research Review



Core drilling of *Porites* bommie

AUGMENTATIVE RESEARCH 1982/83

The Authority's program of Augmentative Research Support Grants commenced in 1979 and has continued each calendar year since. This year some twenty-four applications were received, and the Authority approved the funding of fourteen projects with a total value of nearly \$11,000 (each award being on average \$750).

This support program was initiated because the Authority was aware that recently graduated research workers, in particular, are often limited in the development of research work relevant to the Great Barrier Reef Region and the Marine Park because of the expense involved. As one function of the Authority is to arrange for the conduct of research relevant to the Marine Park, it was appropriate that the Authority take some responsibility in augmenting short duration projects submitted to the Authority by recent graduate researchers.

Each year advertisements are placed nationally to solicit such project proposals. After careful review with regard to management relevance, timeliness, expertise and the appropriate grant management considerations, the Authority makes the annual augmentative awards. This year, successful awardees were from the following Universities:

- University of Queensland (3)
- James Cook University of North Queensland (3)
- Griffith University (2)
- University of Melbourne (1)
- Monash University (1)
- University of Sydney (1)
- La Trobe University (1)
- University of New England (1)

Some of the highlights of this year's awards are as follows:

Three studies of coral are included.

One is designed to contribute to the development of a long-term monitoring project which will catalogue changes in reef crest communities. It is being undertaken in the Department of Zoology at the University of

Queensland. Information on changes in colonization, frequency, and abundance of certain scleractinian corals on the Heron Island Reef crest is expected to be of use in making decisions on management of this popular reef.

The second study aims to elucidate growth and reproduction strategies in lettuce coral *Pavona cactus* and *Turbinaria mesenterina* in a number of habitats. This project will give information on reproduction and recruitment periods of these two successful inshore reef corals which can occur near areas of heavy population or tourist use. It is part of a Ph.D program in the Department of Marine Biology at James Cook University of North Queensland.

In the third study, the community of microorganisms associated with staghorn coral *Acropora* will be identified. Activities of the microorganisms will be examined and the possible effects of oil pollution, pesticides etc. at catastrophic and low levels will be evaluated. This work is part of a Ph.D program in the Department of Microbiology at La Trobe University, Melbourne.

Sea squirts *ascidians* may be useful indicators of pollution. A grant has been awarded to a Ph.D project which is investigating the ability of algal-bearing *ascidians* to concentrate trace and heavy metals. This study is being undertaken in the Department of Chemistry at the University of Queensland.

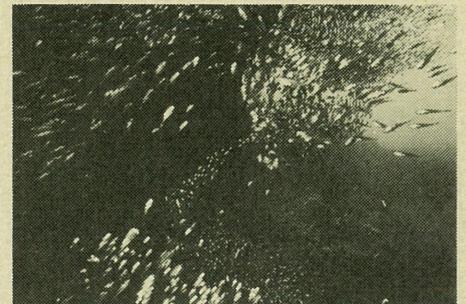
Some other studies to receive grants this year look at fish and birds.

Atherinids (fish known as silversides) are prey species for larger fish and sea birds. An understanding of the role and behaviour of these fish is important to management of activities in the Marine Park. An M.Sc. project in the Department of Zoology at the University of Queensland specifically aims to quantify the abundance and biomass of *atherinids*, to evaluate their importance in the diet of predators, and to calculate the predation mortality.

The supply of prey fish for seabirds may be affected by over-fishing or pollution. A Ph.D project in the School of Australian Environmental Studies at Griffith University is designed to examine if food is a limiting resource to reproductive output and chick growth for tropical seabirds and to investigate if weather, tides, interspecific competition and prey availability affect consumption. Boundaries for bird populations may give input for fish management decisions.

Tourism in the Great Barrier Reef Region is an important activity which has not been widely studied. Recognising this, a grant has been awarded for a study of the differences day visitors perceive between coral cays and continental islands. It will also examine factors and processes which influence the destination decisions of day visitors. This is an Honours research project in the Department of Geography at the University of New England.

Evidence has been accumulated that shows this research augmentation has catalysed the development of techniques and projects of further relevance and benefit to the Authority. A growing body of socio-economic and biophysical information has been collected via the research reports submitted as a condition to the grant award. The Authority is proud to be associated with this new generation of marine and social scientist, and for as long as their respective Universities can provide the basic support and access to library, computer and laboratory facilities, the Authority will welcome opportunities to assist in the support of aspiring marine and social researchers.



Schooling, an evasive tactic?

HUMPBACK WHALES AND THE GREAT BARRIER REEF

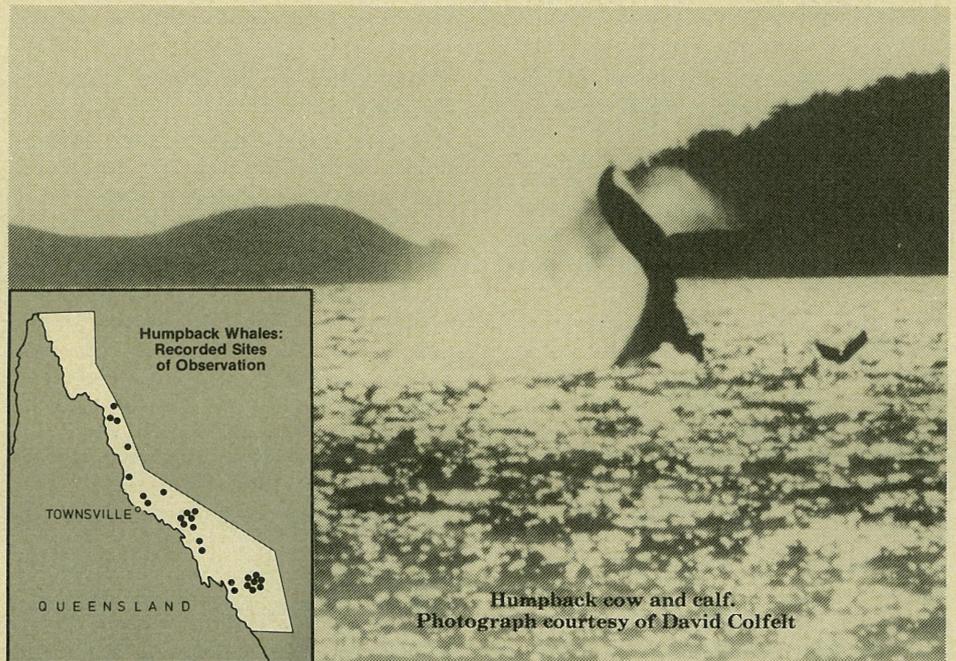
by Dr Robert Paterson, Brisbane

My interest in humpback whales dates from more than thirty years ago when my parents bought a fishing cottage at Point Lookout on North Stradbroke Island. From there, large numbers of humpback whales were an every-day sight during the winter and spring months, prior to the commencement of east coast whaling in 1952. So many humpback whales could be seen that one took particular notice only if their breaching and splashing were exceptional or if they passed close to the headland or a fishing boat. But by the early sixties that sense of familiarity had disappeared and after the closure of the whaling stations reports of humpback whale sightings were a rare event. On a memorable September day in 1972 my wife and I saw two large groups of southbound humpback whales from Point Lookout and we realised that our children and other peoples' children might once again have the opportunity of seeing these magnificent animals, which we took for granted during our childhood. We kept records of sightings made in the following years and since 1978 have taken every opportunity to observe the annual migration.

The scope of our study has widened in recent years because of an opportunity provided to us by Mr. Martin Bowerman, the editor of *Australian Fisheries*, a monthly journal published by the Commonwealth Department of Primary Industry. Martin asked us to write an article in 1979, appealing for whale sighting reports. The response to that request was most generous and reports have been received each year from numerous localities on the east Australian coast, not only of humpback whales but also of blue, minke, southern right and sperm whales as well as many smaller whale species.

The 'home' of a migratory animal is generally considered to be the locality where it breeds. 'Home' for many of the humpback whales which migrate along the east Australian coast is the sheltered area within the Great Barrier Reef, particularly between latitudes 16°21'S.

Why do humpback whales, which are found in all oceans of the world, migrate? Their food occurs in polar waters, thousands of kilometres away from temperate waters which apparently are necessary for successful calving. The humpback whales of the southern hemisphere feed almost exclusively on a small crustacean *Euphausia superba*, better known as krill. Large concentrations of krill are present in Antarctic waters and that is where the remnant baleen whale populations, as well as smaller animals such as birds and seals, feed during the summer. On the basis of



these summer feeding concentrations the southern hemisphere baleen whale stocks were classified into six groups or areas by the International Whaling Commission. Those humpback whales which migrate along the east Australian coast form part of the Area V (130°E - 170°W) stock.

In autumn baleen whales leave the feeding grounds and return to warmer waters, where breeding occurs. The migration routes of humpback whales are the best known of all the large whales, as this species tends to remain close to continental shores while in transit between the feeding and breeding grounds.

That tendency was formerly fully exploited by whalers and by the early sixties the southern hemisphere humpback whale stocks were drastically depleted. Whaling stations operated on the east Australian coast from 1952-1962, one at Tangalooma on Moreton Island and the other at Byron Bay. Of the 19 687 humpback whales reported as captured in Area V from 1912-1963, the Tangalooma and Byron Bay stations captured 7 423 or 37% of the total - in ten years!

During the nineteenth century, humpback whales were hunted on their breeding grounds in many parts of the world, but those in the Great Barrier Reef were not hunted at that time. Reef waters were considered too hazardous for sailing vessels and the relative shallowness of the area precluded the presence of the sperm whale, an oceanic species, which was the preferred quarry of the nineteenth century whalers.

Reports we have received indicate that humpback whales congregate in the sheltered waters of the Great Barrier Reef during the months of July to

September. Descriptions of new-born calves, both written and photographic, suggest that the region is a breeding area. Some people, who were familiar with the Reef before whaling began in the fifties, have written telling of the former large concentrations of humpback whales frolicking in areas such as the Whitsundays. The accompanying map of the Great Barrier Reef shows the sites of observation of humpback whales, reported to us between the months of July to September during the last five years.

We consider that the small residual stock of humpback whales that survived at the end of whaling in 1962 has increased slightly in the last twenty years. That opinion is based on the observations made from Point Lookout and Cape Moreton (latitude 27°S) where humpback whales are clearly in transit to and from their breeding grounds. Studies at breeding grounds in other parts of the world e.g. Tonga, Hawaii and the Caribbean point to the difficulty in assessing population sizes when humpback whales frequent the same locality for some weeks or even months. That is not to suggest that observations should be confined to transit zones. One has only to read about the observations and listen to the records of humpback whale songs made by researchers such as Dr. Roger Payne and his wife Katy in Hawaii to realise the wealth of information that the Great Barrier Reef has to offer to those who are interested in humpback whales and their survival.

Dr Paterson can be contacted by writing to:

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ANNERLEY, Q.4103

PLANNING MANAGEMENT AND THE CAIRNS* SECTION

Management of the Cairns Section will be a massive job. Consider the size of the area, the number of reefs and islands it contains, and the number of people using it in so many different ways — so, where do you start to plan the management of the largest marine park in the world?

Planning the management of the Cairns Section had to begin when the Zoning Plan for the Section was starting to take shape. Input based on management considerations is essential to ensure as far as possible that regulations and Zoning Plan provisions are able to be implemented effectively.

It is anticipated that management of the Section will begin later this year, on the same date proposed for the Zoning Plan and regulations to become effective. As was the case with the Capricornia Section, the need for a legal agreement between governments means that it is unlikely that any marine park field staff will be able to be appointed by the anticipated starting date.

As is the case with the Capricornia Section, it is expected that day-to-day management of the Cairns Section will be undertaken by officers of the Queensland National Parks and Wildlife Service, who are subject to the Authority when carrying out these responsibilities.

The main strategy for management of Sections of the Great Barrier Reef Marine Park is management by exception. Because it is not possible to monitor all activities at all times on the Great Barrier Reef, management systems are established which provide information on contraventions of the regulations and Zoning Plans and deviations from the usual pattern of activities associated with the plans. This allows management to concentrate on areas requiring a high level of management effort. In addition the proper use of the Marine Park in accordance with the provisions of Zoning Plans and regulations is reinforced by continuing education and interpretative activities for Reef users.

Patrols by Marine Park Officers, particularly by air, will be an essential part of the overall management strategy for the Cairns Section, as it is in the Capricornia Section. This in turn provides a basis for subsequent activities such as visitor contact, enforcement, monitoring, emergency operations, or more intensive observations and recording.

Enforcement will only be used as a last resort where education, counselling or warnings have failed, or in cases of gross infringements.

Monitoring of the Marine Park is necessary to provide feedback to the Authority and the day-to-day management agency. It is planned that monitoring activities will be undertaken to assess use of the Section, effectiveness of management, impact

of reef users on the Marine Park, and condition of resources.

Effective management of the Marine Park also depends on public awareness and cooperation. A major emphasis in management will therefore be on an education and interpretation program which stimulates the interest, awareness and understanding of visitors. Important elements of the program are likely to be the establishment of a permanent interpretive centre in Cairns and the development of a network of information outlets in coastal towns and on selected islands.



WRECK DISCOVERED

A wreck found late last year by the owners of the Townsville charter boat, *Divemaster*, on Myrmidon Reef, north-east of Townsville was confirmed in December, by marine archaeologists as the 19th Century schooner **Foam**.

The *Foam* was a 'blackbirder' used for transporting black labour from the south sea islands for use in the Queensland cane fields in the late 1800's.

She was wrecked in 1893 while returning black labourers (Kanakas) to the Solomon Islands after their stint in the cane fields. Luckily all ninety-eight people on board survived.

The wreck of the *Foam* has now been declared an historic shipwreck under the Commonwealth Historic Shipwrecks Act 1976.

The owners of the *Divemaster*, John Bates and Tom Good, recently received a reward of \$2000 from the Commonwealth Government in recognition of their efforts to protect part of Australia's marine heritage.

Management strategies for the Cairns Section are based mainly on those being tried and tested in the Capricornia Section. However, the job of managing the Cairns Section will require new methods and ideas as the Section differs in some major ways from Capricornia.

For example, the Cairns Section is three times the size of Capricornia, is contiguous to the coast for 30% of its length, and it has ten times the number of reefs. In addition, the Section has different physical features such as mainland fringing reefs which are accessible by cars as well as boats. Some activities undertaken in the Cairns Section are not found in Capricornia, such as commercial coral collecting, marlin fishing, traditional hunting and fishing, and there are many more tourists, especially day trippers, largely due to the high turnover of visitors to Green Island.

Management of the Cairns Section will be a new and exciting task but will rely on your co-operation, awareness and encouragement to make it effective.

* means Cairns and Cormorant Pass Sections

The Editor, 'Reeflections'

Dear Sir,

To hand your issue featuring Mark O'Connor's 'Putting the Reef into Words'.

Together with his so-called 'Poetry!'.

Blank, or 'free verse' has been likened, correctly, with playing tennis with the net down.

To link O'Connor's name with that of the lyrical Shaw Neilson is bordering upon sacrilege.

We are not impressed.

Yours faithfully,

B. J. Lewis,
Editor,
Proserpine Guardian.

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