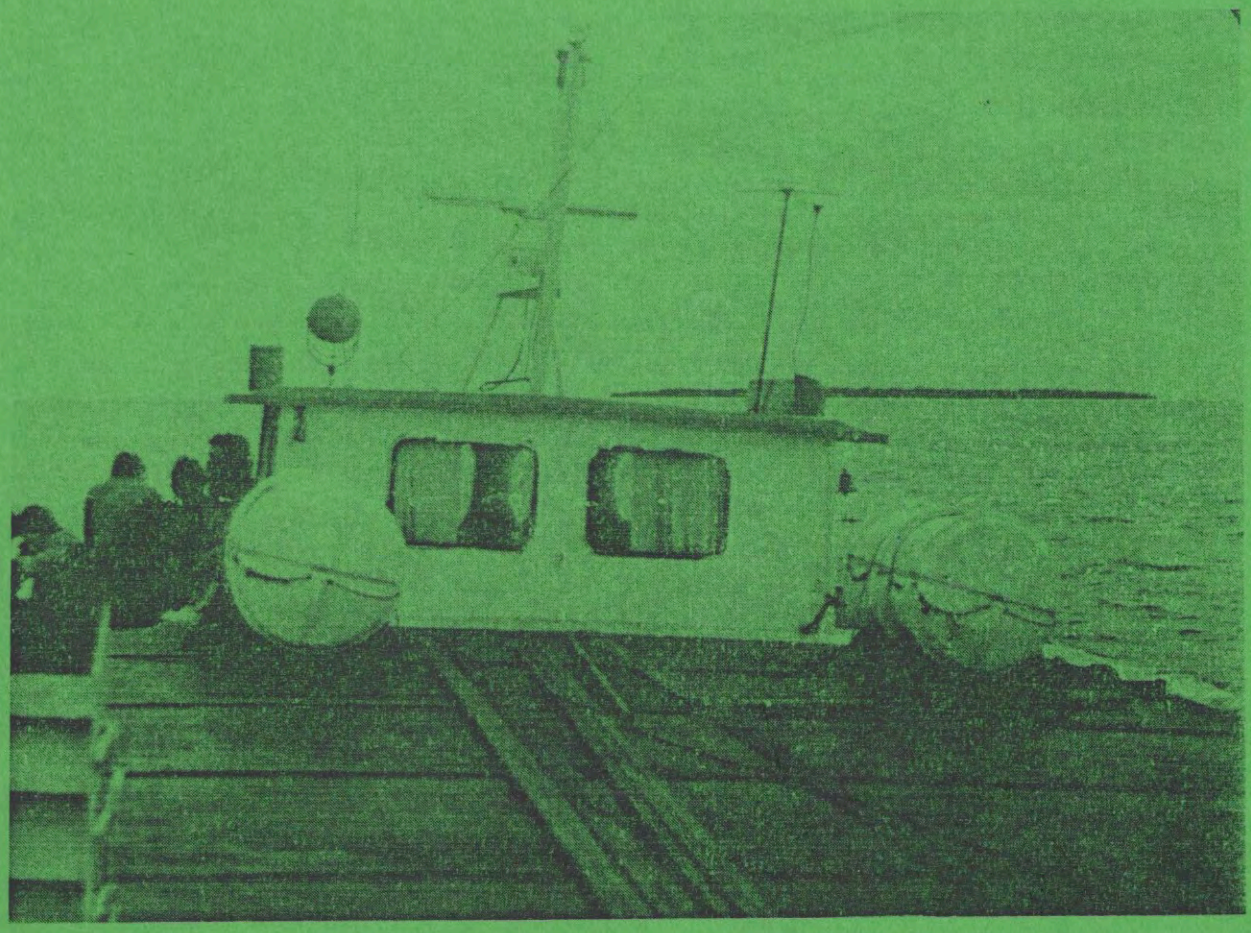
WET PAPER WET PAPER WET PAPER WET PAPER WET PAPER WET PAPER WET PAPER WET PAPER

NORTH WEST ISLAND

Notes for teachers who run excursions.



BOB MOFFATT

This publication is non profit.

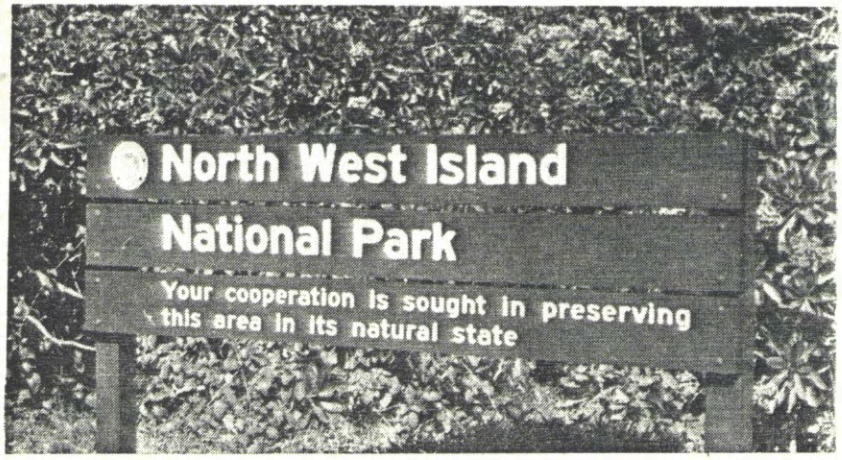
What you have paid for is the time it has taken to photocopy and handmake a single copy.

This content of this material has been developed from the years 1967 - 1990.

Acknowledgement is made of the Project Reef Ed team Ann Byrnes, Kirk Petersen, Graham Morris, Jan Oliver, Jack Marsh, Tony O'Neill and Phil King from the Great Barrier Reef Marine Park Authority with whom the author worked for some time during this period.

Published by
Wet Paper Publications
14 Milbong Terrace
Ashmore 4214

ISBN 1 86283 024 X

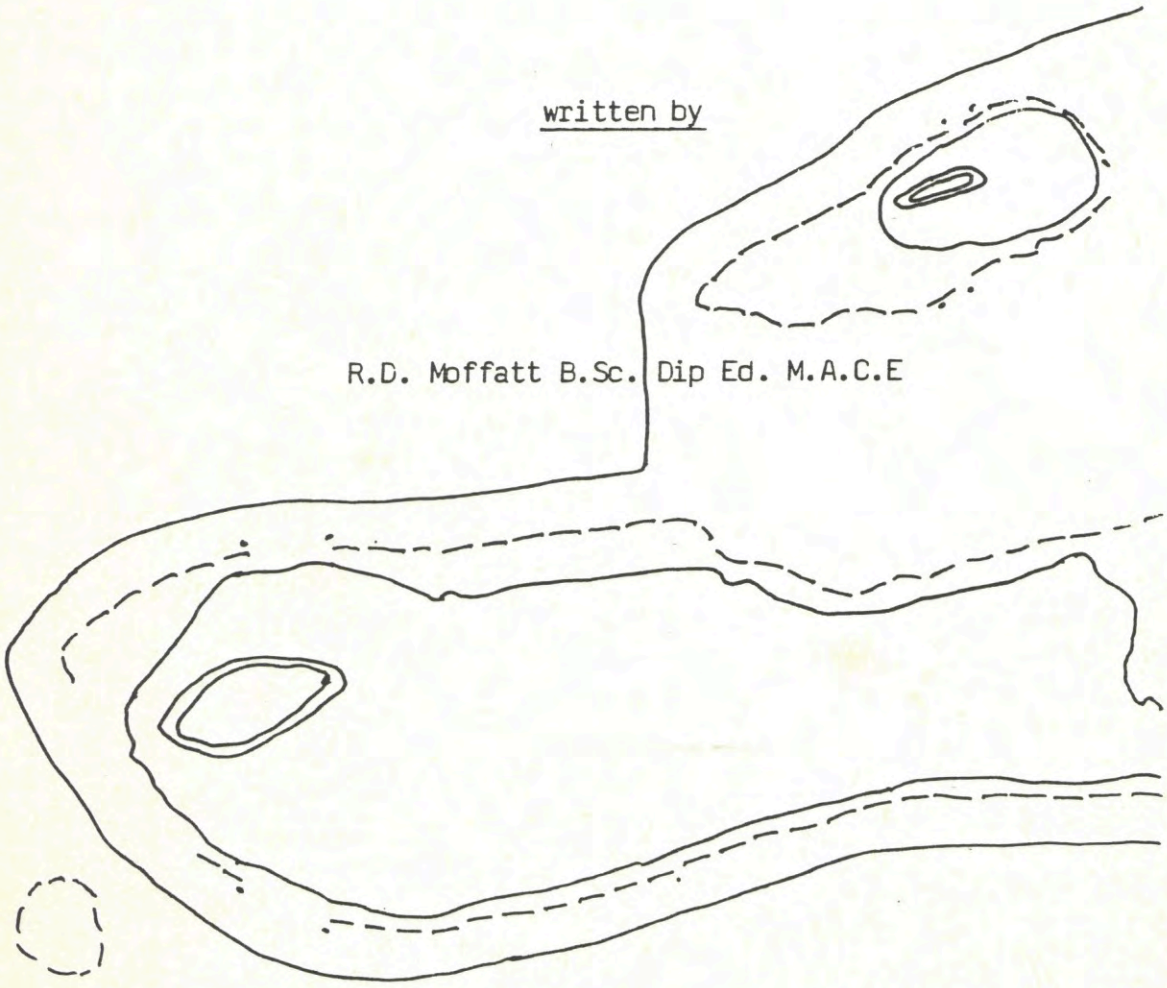


An Education Guide

North West Island National Park

written by

R.D. Moffatt B.Sc. Dip Ed. M.A.C.E



CONTENTS

PROLOGUE

Photo Jim Kneale

Photo 1 "Approaching Rocky NORTH WEST"

The Photograph above is about one Nautical Mile from North West. An air of excitement surrounds the group because an end to the sea sickness is in sight and the adventure is about to begin.

North West Island like so many of the other islands in Australia's Great Barrier Reef, will be heavily used by Australians in the near future for a multitude of purposes.

It is important that Islands such as this be managed in a way as to keep it as natural as possible for future generations.

This educators guide to the island is one small step in that process.

R. MOFFATT

20th December 1985

ACKNOWLEDGEMENTS

The Author wishes to acknowledge the following who assisted in the compilation of the Booklet.

Kirk Petersen (Great Barrier Reef Marine Park Authority)

Len Zell (National Parks and Wildlife Service)

Greg Martin (Smithfield State High School)

David Kopelke (Boyne Island Field Study Centre)

Jim Baker (Gladstone State High School)

Dennis Bridger (Dakabin State High School)

Phil King (Project Reef Ed)

Sue Oats (Benowa State High School)

Kelvin Rodgers (Benowa State High School)

Steve Domm (National Parks and Wildlife Service)

and

The students of Benowa State High and Gladstone State High Schools who so willingly posed for the photographs.

Introduction to the island and reef

Geographic location

North West Island is a member of the Capricorn-Bunker group of islands off Queenslands central coast. It is located 45 nautical miles north east of Gladstone and is situated at 23°18' 151°42' on the Tropic of Capricorn. Diagram 1 below shows its position relative to the other islands and reef in the Capricorn-Bunker group.

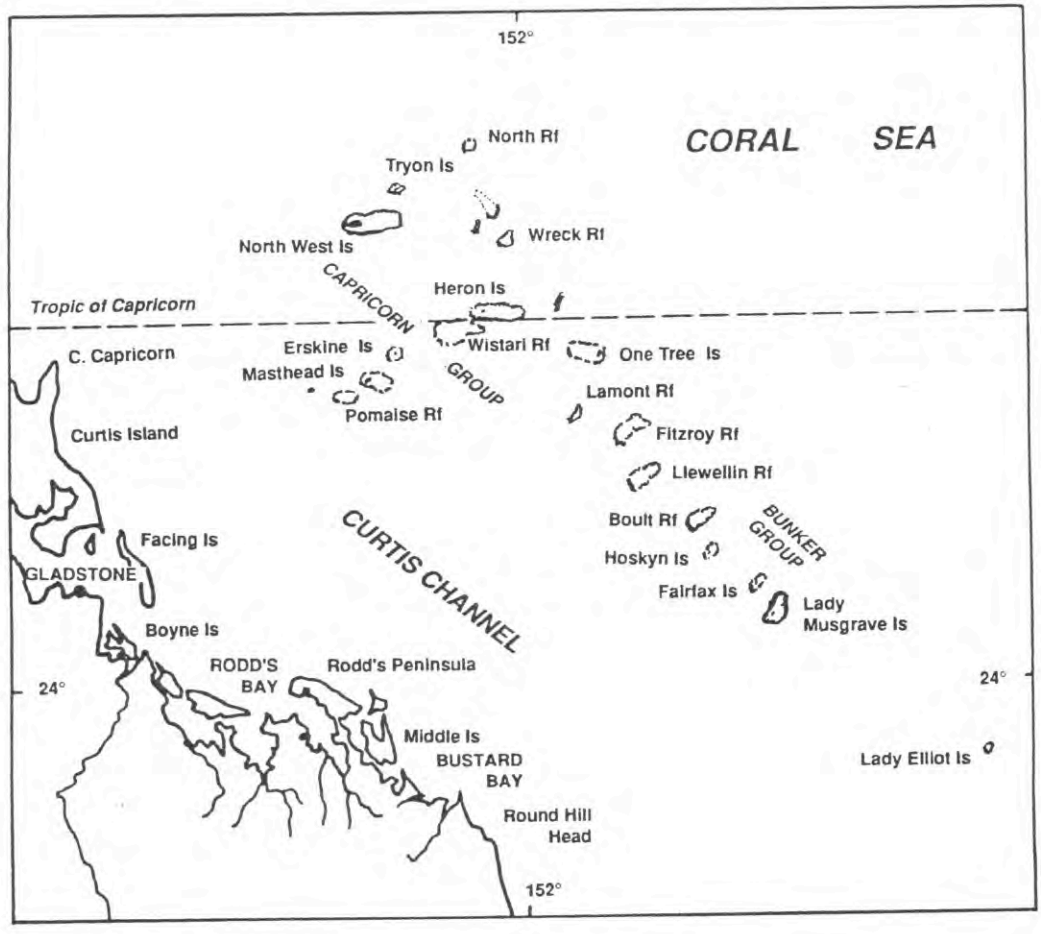


Diagram 1: North West Island Location Map

Description in brief: Size, island character; reef character

The Island is a true coral cay which means it is a "sand island" that has vegetation on it. The whole island has formed on a fossil reef that once was made of living organisms. The cay has an area 101 hectares and is 4.1km in circumference (1984) and is situated on a large platform reef of 2,983 hectares. Diagram 2 over shows the whole reef structure and the position of the cay at the western end of the reef.

The reef is in the shape of a "Fish Tail" and is extremely large by comparison with other reefs in the group. It is bordered by a "Reef Crest" which dries at low tide. Inside this crest is a coral zone which is rich in small coral "Bommies". Inside this is a lagoon which largely has a grit and sand substrate. This dries at low tide. In the centre of the reef are sand spits which are continually changing.

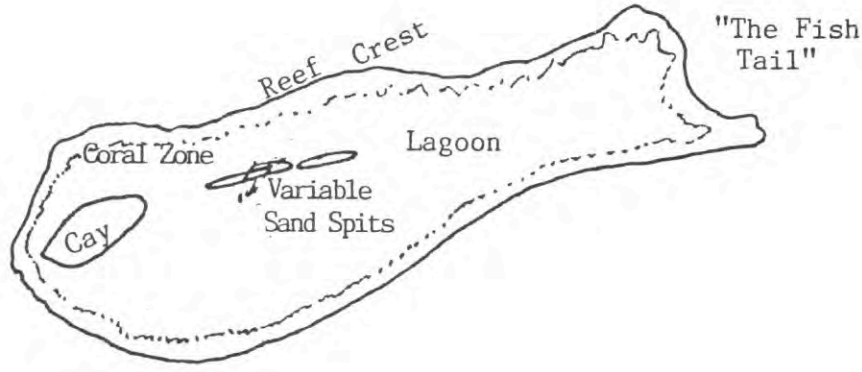
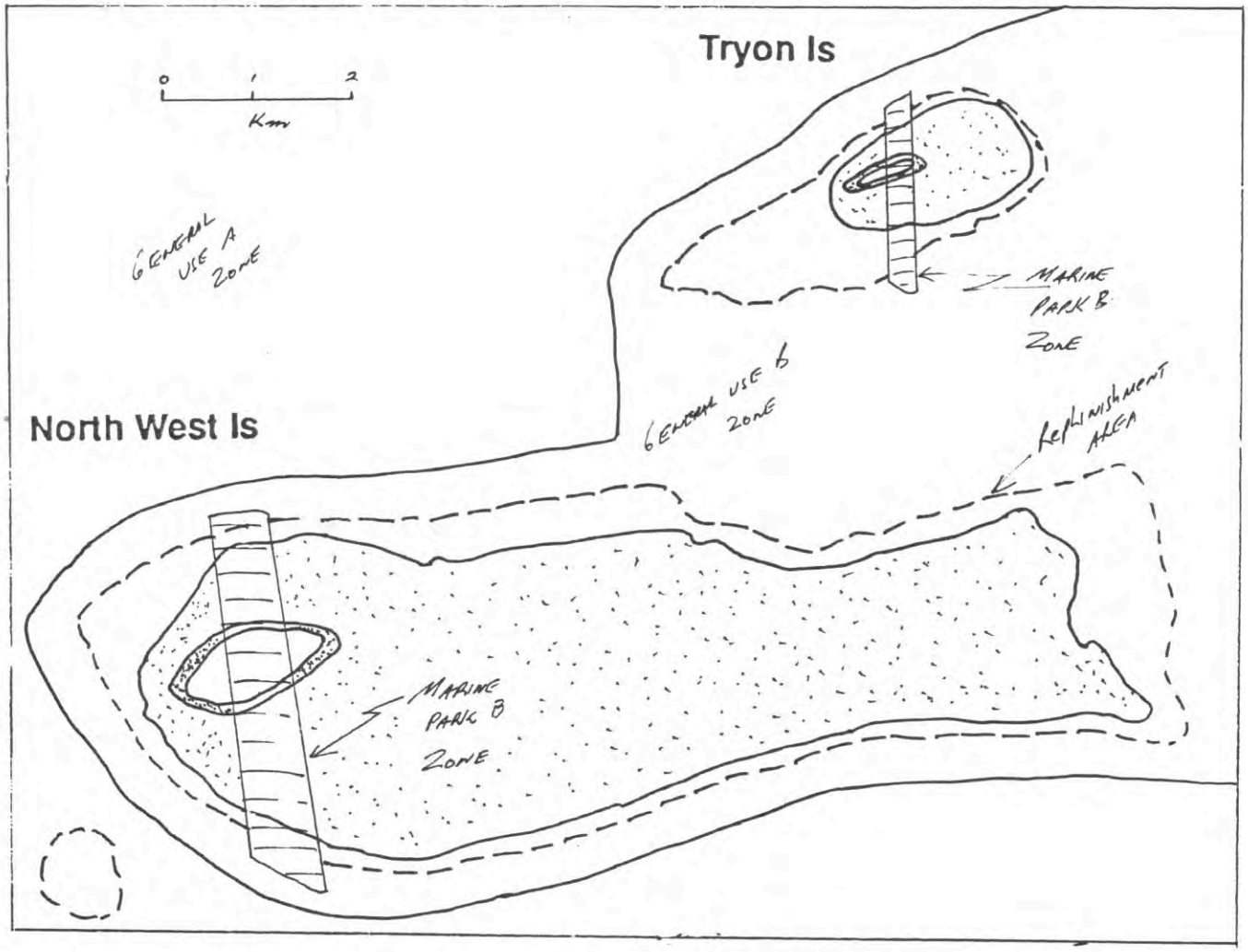
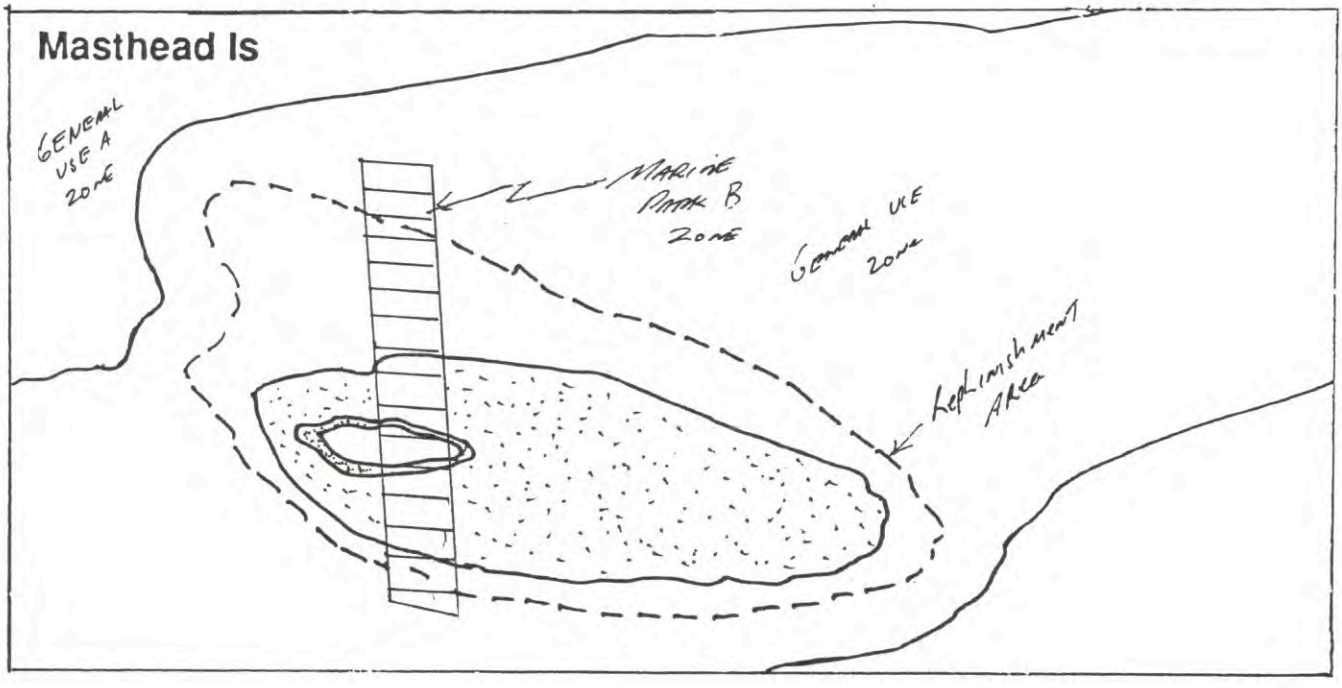
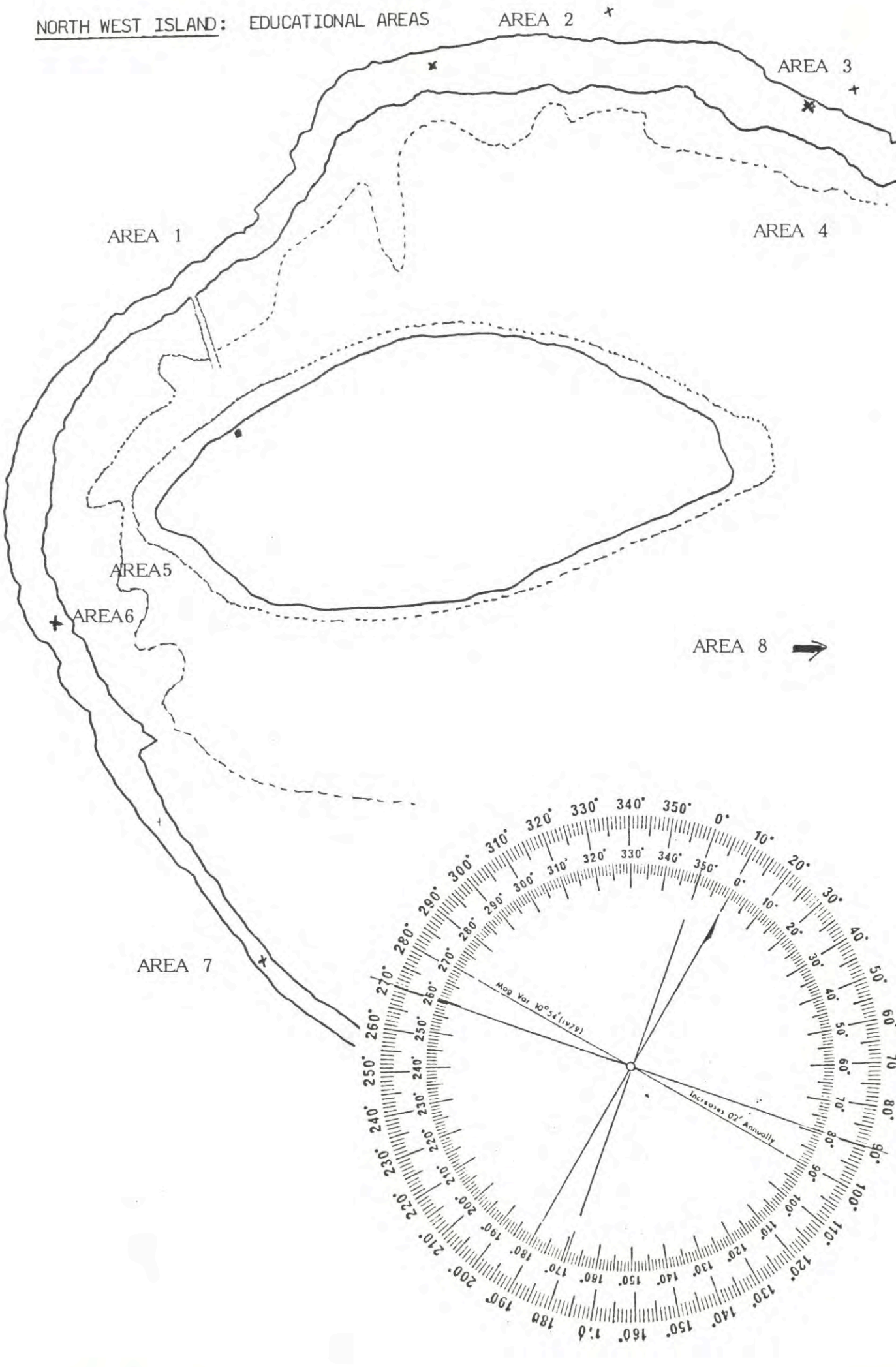


Diagram 2: Brief Description of Reef and Location of Cay


Tryon Is
0 1 2
Km
GENERAL USE A ZONE
MARINE PARK B ZONE
GENERAL USE B ZONE
North West Is
REPLENISHMENT AREA
MARINE PARK B ZONE


Masthead Is
GENERAL USE A ZONE
MARINE PARK B ZONE
GENERAL USE ZONE
REPLENISHMENT AREA

NORTH WEST ISLAND: EDUCATIONAL AREAS



Near the cay and stretching to the reef crest is a man made channel 370M long. The channel does not extend into the reef crest and is marked by a steel channel marker. Sunk into the crest around this area are a series of coral pools ranging in size from 10 metres long to 1 metre long and of average depth 1 metre at low tide. Diagram 3 shows the main features of the cay.

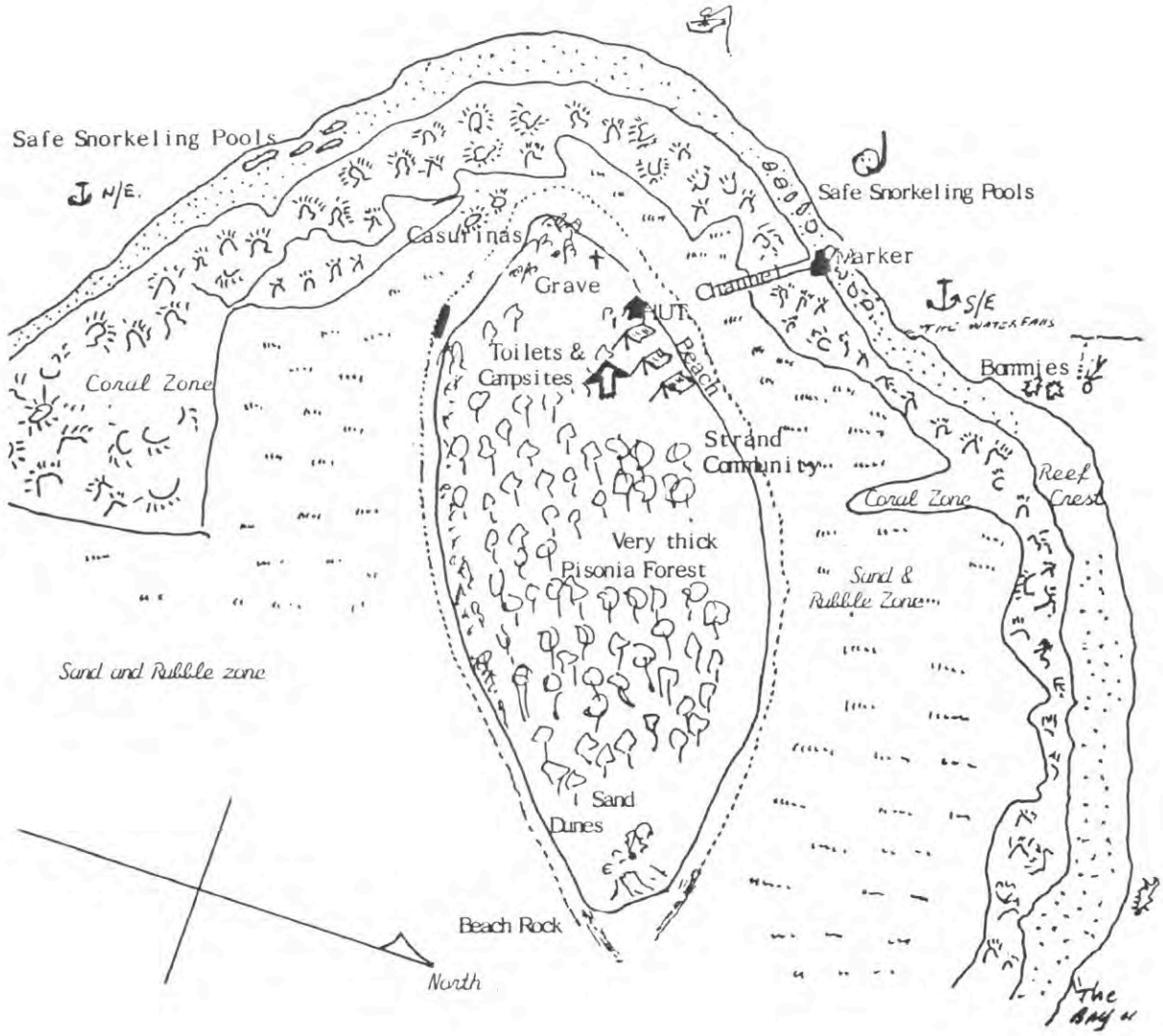


Diagram 3: General Features of Cay and nearby reef.

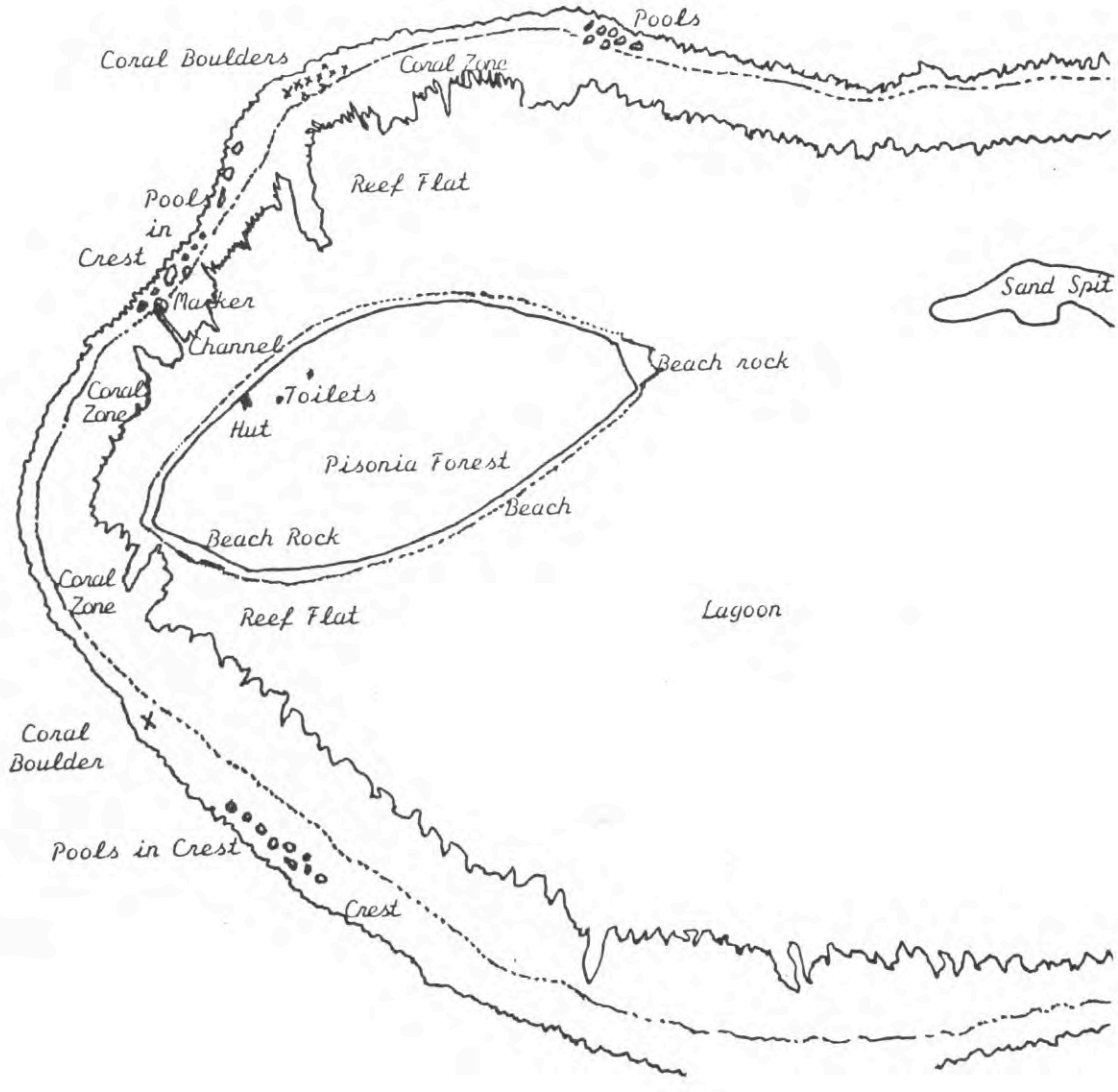
A small survival hut exists on the North Western end of the cay facing the channel. The hut has an unreliable supply of water and contains a set of "island logs". Most visitors to the island write in these logs, the originals of which are now kept in the Gladstone Town Library. To the rear of the hut are two E.C. toilets with concrete floors. Around the hut are the remains of the boilers that were used by the turtle farmers of the 1920's.

Photo 2 : "The Tanby Hilton"

North West Island. Island visitors swimming at high tide. The well vegetated Pisonia forest is depicted behind the hut.

The island is well vegetated by the Pisonia tree which is the dominant tree on the island. At the eastern end of the cay there are small sand dunes which average 3 metres and make up the highest part of the island. The island is surrounded by a beach which is more gritty on the southern side and has 3 strands of beach rock as indicated in the diagram on page 2.

The campsites are located behind the hut and around the toilets. Permits have to be obtained to use these campsites. There is no water on the island.



By whom discovered

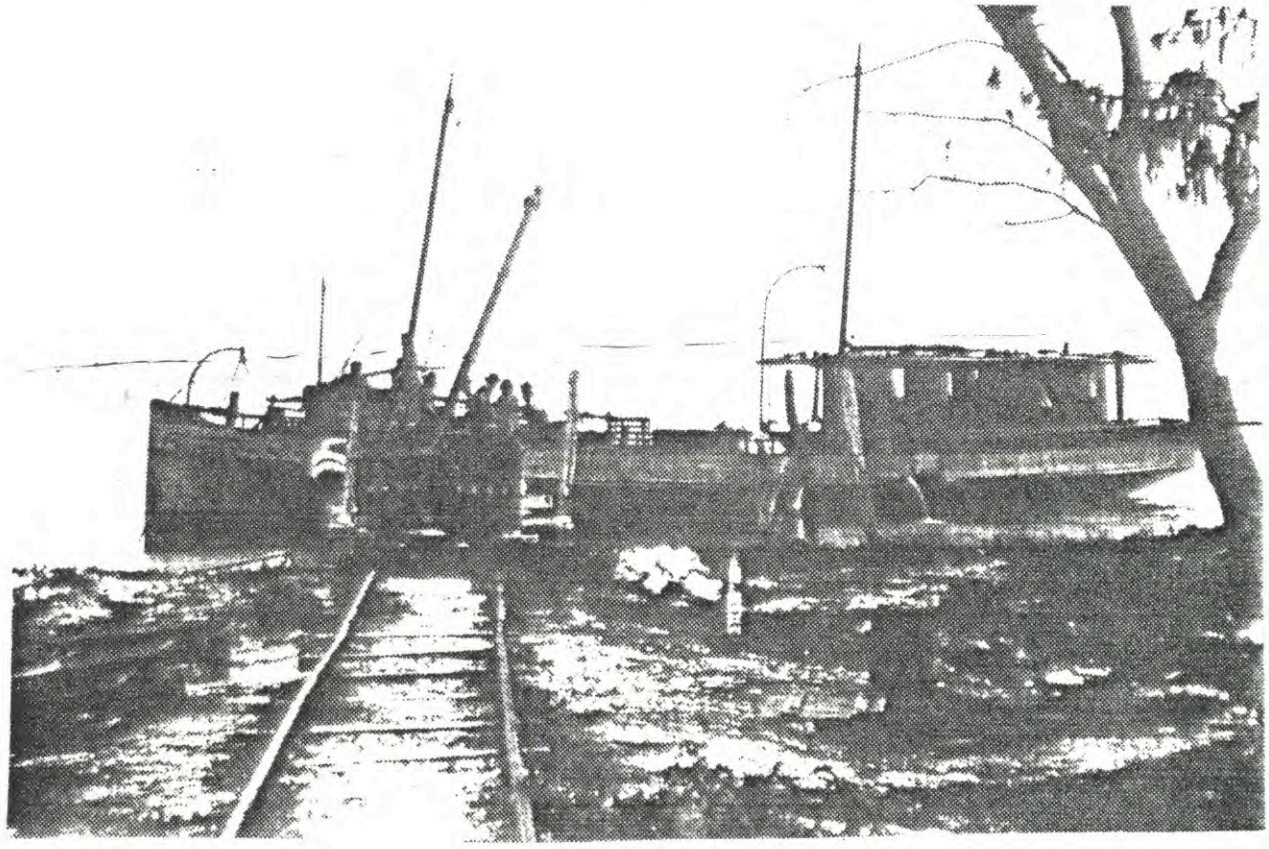
The first recorded sighting of North West Island was made on the expedition of the "Fly" in January 1843.

Subsequent use

The first known use of the island was by guano miners from 1894 to 1900. The guano was exported mainly to New Zealand and up to 1900 many tons left the island. To move the guano a tramline was built over the island and extended over the reef where the channel now exists. A jetty was built at the end of the tramline so that the guano could be loaded into ships. At the height of operations, over 100 were employed including Japanese, Malays, Hindus and whites.

The next known habitation was the turtle canners of the 1910's and 20's. The canners built a small factory on the island and boiled the turtles in large boilers for soup. The shells were also exported for a time but due to the recession of the 1930's operations ceased.

Since the decline in turtle operations there has been no permanent habitation of the island although it is now visited frequently by local fisherman shell collectors and holidays makers. The "logs" of the hut give a sketch account of the activities of island visitors in restoration of "the hut".



Reprint 1. Loading turtle soup, Northwest Island early 1920. Reproduced from, "Exploration North" Qld, National Parks and Wildlife Service. Original Photographs by Betty Tait, Gladstone.

Two local residents Winsor and Thompson bought an old hut from the Friend family in Gladstone and reconstructed it on the island facing the channel. The venture was supposed to be a business but after an argument the partnership dissolved and the hut soon fell into disrepair.
In 1972 a group of local Gladstone residents lead by Cedric Jensen rebuilt the hut and added concrete stumps. Over the years the hut has become a focal point for visitors to the island and many names can be seen carved in its aging timbers.

Present Day Use

Today the island and reef are part of the National Park and the island is used by holiday makers, diving groups, fisherman, and because of its excellent anchorage, is visited by many yachts. Over recent years the island has been used by many school groups.

Value as a student excursion site

Being accessible from Gladstone by barge which can transport camping gear, food, small dingies, motors, water, and having no shops, tourist establishments. It is suitable for a group of up to 50 students wishing to study on unspoilt Barrier Reef Island and Reef.

The cay is a extremely safe and pleasant place to camp. Access to the reef crest is good because of the channel and a large party can conduct a reef walk with minimal damage to the coral. There are excellent snorkelling pools for the teacher and student who do not feel confident in the water or who have a fear of large reef organisms. By snorkelling in these pools everyone on the excursion can gain a good reef experience. The presence of the channel and pools makes this island good for disabled and blind students.

At present the only access is by barge which limits the group size to 50.

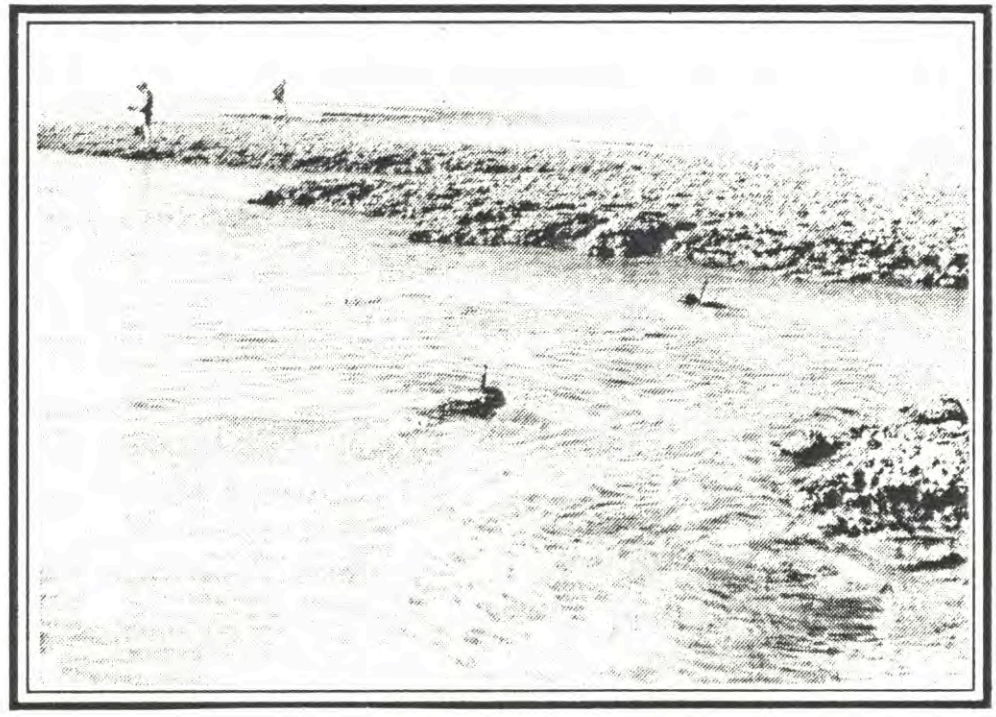


Photo 4 Students Snorkelling off the reef crest at the end of the channel at North West Island.

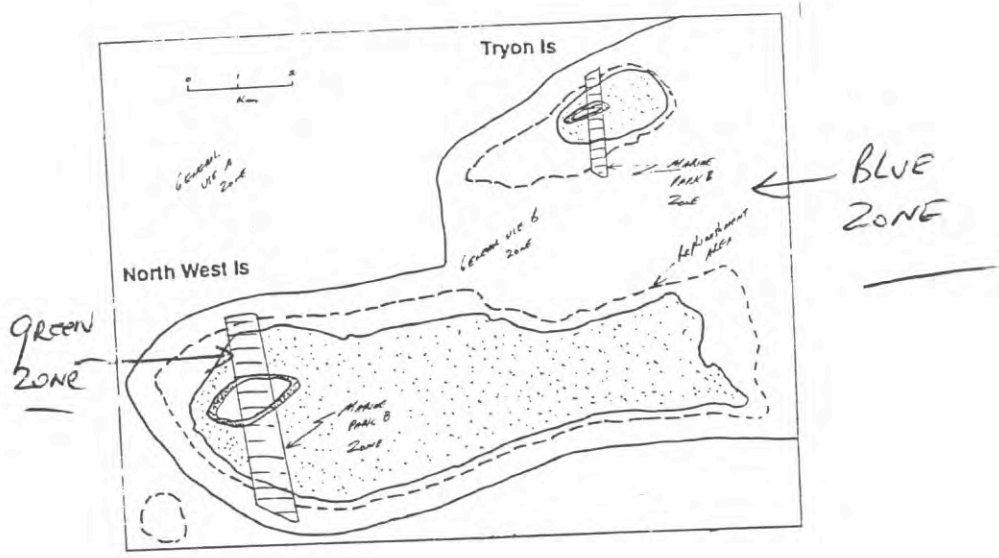
2. Jurisdiction and Management

2.1 Who controls what; who does what

In October 1979, the Capricorn section which includes the Capricorn/Bunker group of reefs was proclaimed as the first section of the Great Barrier Reef Marine Park.

The Great Barrier Reef Marine Park Authority, the responsible Commonwealth Agency, guided by submissions from the general public, prepared a zoning plan designed to protect the natural beauty of the Capricorn Section while allowing reasonable use of its resources.

The National Parks and Wildlife Service is responsible to the Authority for the day to day management. The Service also undertakes management of marine parks under an arrangement with the Co-ordinator General of Queensland, and is directly responsible for the management of most islands.



2.3 Permitted activities on islands and Reefs

As can be seen on diagram 4 North West Island is zoned General Use B. The following activities are allowable:

(a) No permit Required

Snorkelling
Diving
Boating
Line Fishing*
Netting*
Trolling*
Spearfishing*

*Note: For all fishing consult the pamphlet on Fishing in the Capricorn Section. For spearfishing, the National Parks Officers require spearguns to be kept in a boat on the beach.

(b) Permits are required for:

Camping
Conducting an educational programme
Collecting animals and plants
Landing of a helicopter

Permits are available:

For Camping
The National Parks and Wildlife Service
194 Quay Street,
ROCKHAMPTON. QLD. 4700

For an Educational Programme
The Great Barrier Reef Marine Park Authority
P.O. Box 1379,
TOWNSVILLE. QLD. 4810

Cay Vegetation

An aerial photo of most of the coral cays in the southern section of the Great Barrier Reef will show the establishment of a thick forest in the centre of the cay.

Near the edge of the cay, and just above low water, beach rock can usually be found. In some cases this is not actually rock, because a close examination of it reveals that it is the remains of reef organisms cemented together. In other cases the salts formed in the skeletons of living organism dissolves out and under pressure cements together to form limestone. If exposed, it can turn grey and accumulate the remains of other dead materials.

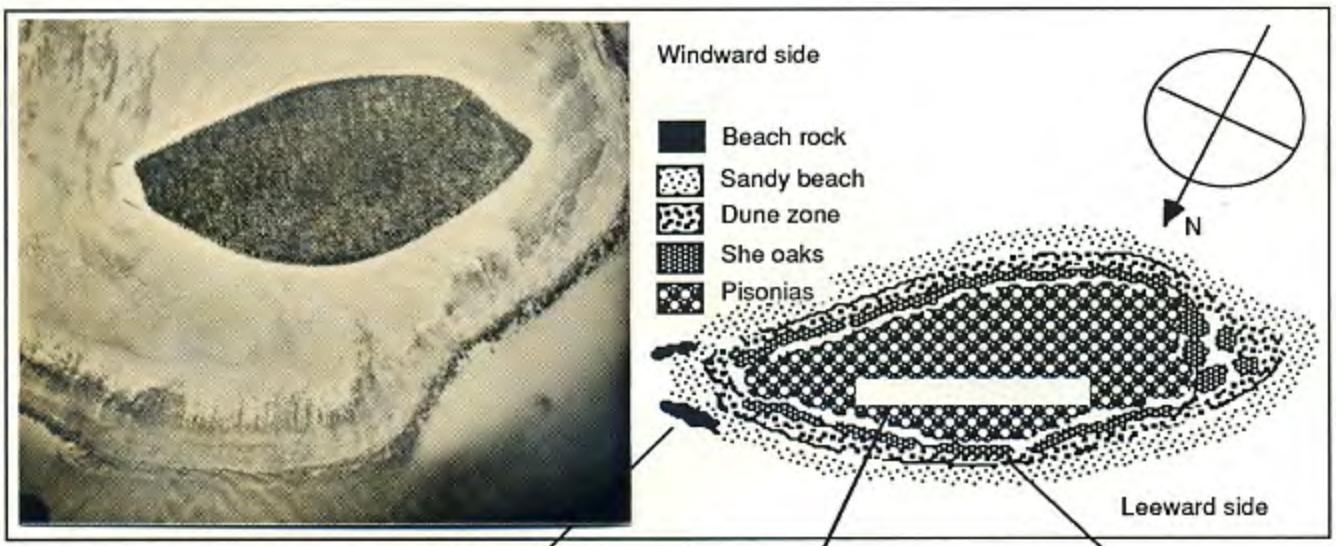


Fig 6.9 Aerial view of a coral cay with the zones interpreted in the illustration to the right

This photo was taken here.

Fig 6.10 Beach rock on North West Island. This photo was taken at the end of the cay.

This photo was taken here.

Fig 6.11 A photo from inside of the cay showing the Pisonia trees. Don't climb these as they break easily.

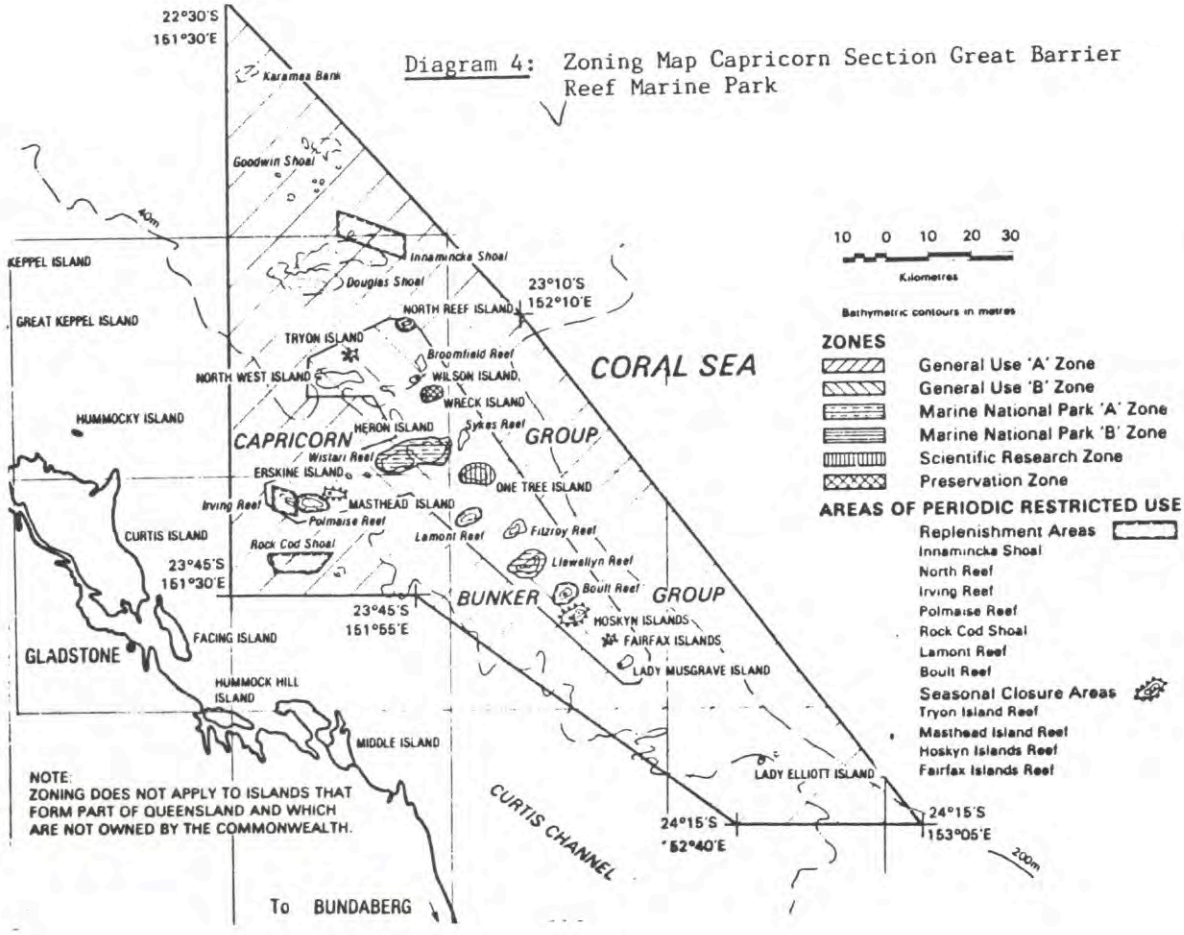
This photo was taken here.

Fig 6.12 A view looking out over the dune vegetation. Campers should avoid this as it is fragile and can be destroyed, causing beach ersoion.

2.4 Plan of Management

The plan drawn up by the controlling authorities allows a maximum of 120 people to use the island at any one time. Permits will not be issued for over that number. Permits are also issued to users who demonstrate that their students can adopt a code of behaviour consistent with the activities allowed under their permit for island usage. The relevant authorities reserve the right not to issue permits to individuals or school groups who abuse the privileges of the permit system.

Diagram 4: Zoning Map Capricorn Section Great Barrier Reef Marine Park



Seasonal Closure Areas: prevent where necessary, access to areas important to the breeding of some animals of the reef region e.g. Fish, Turtles, Birds.
Replenishment Areas: in which collecting and fishing, other than trolling, are not permitted, provide for replenishment of depleted marine resource stocks.
Reef Appreciation Areas: where fishing and collecting are not permitted, provide small area on heavily used reefs, in which the public may observe and appreciate relatively undisturbed marine life.

As the island is an important sea bird and turtle rookery, permits are issued on the understanding that users adopt a sensible code of behaviour and camp with the following points in mind.

* There is no water on the island so sufficient water must be taken for the group

* Strictly no animals and plants are to be brought onto the island

* All plants, animals and features of the landscape must remain undisturbed

* Firearms are not allowed and spearguns must be left in a boat on the beach

* All fuel must be brought to the island

* All litter must be removed from the island and must not be buried

* Generators driven by engines are discouraged as are loud cassette players.

* Use the toilet facilities provided

* Avoid fishing at the end of the channel

There is a further section on Conservation Tips but it should be remembered that many people who use the island have come a long way for some peace and quiet, and permits and national parks have been set up specifically for that purpose.

There is provision in the planning for the island for Reef Appreciation Areas. It is planning for no fishing or other activities that may damage these areas. At the time of writing these areas have not yet been decided but it is the feeling of many that the area at the end of the channel and around the pools areas should be set aside with this in mind. National Parks should be consulted for further information.

Ch.3. Natural Features of the Island and Reef

3.1 Topography, geomorphology; gross geological features

The island is a low cay with an area of approximately 101 hectares. It is situated at the western end of the biggest reef in the Capricorn group which has an area of 2983 hectares. The cay also is the biggest in the group. It s upper surfaces are almost flat from irregularities caused by turtles nesting near the margin of the beach. The highest point on the cay is at the eastern end where sand dunes rise to about 3 metres above high tide. The cay consists mainly of calcarious sand with considerable quantities of shells on the southern beach. In the central part there is a fine, brown humus which, according to Cribb (1979), has a ph of approximately 8.

The beach of white sand surrounds the island and is wider on the western and northern regions. Average beach width is 18M. (1984) widest 20.6, narrowest 15.1. The sand on the southern side is mounded more than on the northern side which is closer to the crest and more protected since most of the winds blow from the south east. There are two areas of beach rock. The first and largest is at the eastern end.

Photo 3: "Walking down the track"

This group of students is on their way down the channel shown in diagram 3. The roof of the Tanby can be seen in the background.

Diagram 5: Gross features of the Reef adjacent to the Cay (Moffatt 1980/82)

At the base of the beach lies the reef flat which is a sandy expanse consisting mainly of fine sand, and studded occasionally with broken coral. At high water spring the reef flat is covered by about 3 metres of water and is left dry at low tide. During neep tides the Reef flat is only covered by about .75 metre at High tide. The reef flat on the northern side averages 150 metre, while at the southern side can average up to 500 metres. At the western end, the reef flat is quite small with colonies of coral in quite close.

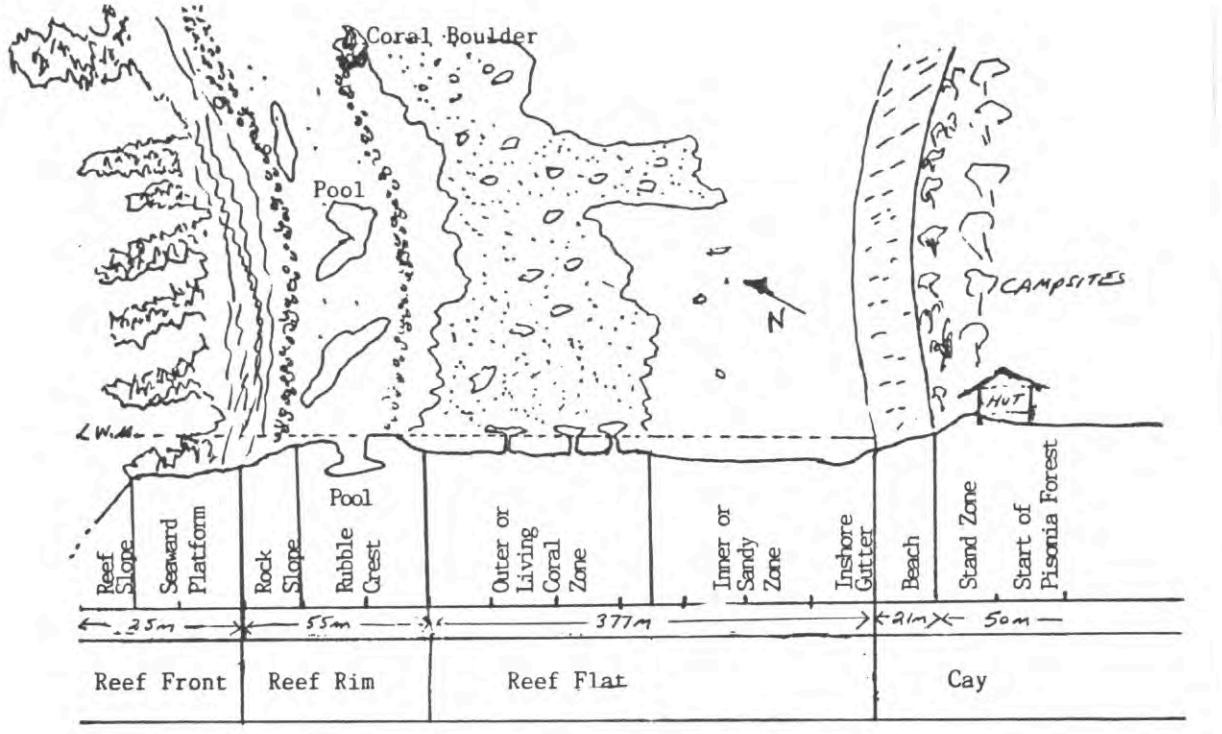


Diagram 6: Crossection of Reef Northern Side of Cay from Hut to Channel Marker (Moffatt 1982/84)

The Coral zone varies markedly in area. It is narrowest at the northern side (30m) and widest at the southernwestern side (260m). As mentioned earlier, a channel has been dug in this zone and extends to the crest on the northern side of the island. The reef crest also varies in width from about 50 metres on the northern side to over 80 metres on the southern sides. On the northern side there are about 20 pools which vary in length from a few metres to over 10 metres. The pools average a metre at low tide. There are 9 pools on the southern side ranging from 5 metres to 40 metres wide and average about 1 metre depth at low tide. Beyond the crest there are good spur and groove developments on all sides of the reef with the predominant areas being the northern side.

At the reef crest on both sides of the reef are a series of coral boulders. These act as good reference points for finding reef appreciation areas. The largest, about 1.5m high, lies almost due North of the hut. Coral Development is quite poor on the northern side but more interesting on the southern side.

The reef slope is quite varied. On the northern side, the slope is marked by numerous bommies that rise from the ocean floor. The sand bottom slopes gradually away to about 25 metres at about 800 metres off the crest. See diagram 6. The southern side is marked by few bommies and a slope which drops off rapidly to 25 metres less than 300 metres in some places. (see diagram 7). On the northern aspect of the slope, there is a great variety of coral growth forms, with many crevices and caves that make for an interesting snorkel. In the bay region on the northern side (see diagram 2) there is a good series of cays for diving.

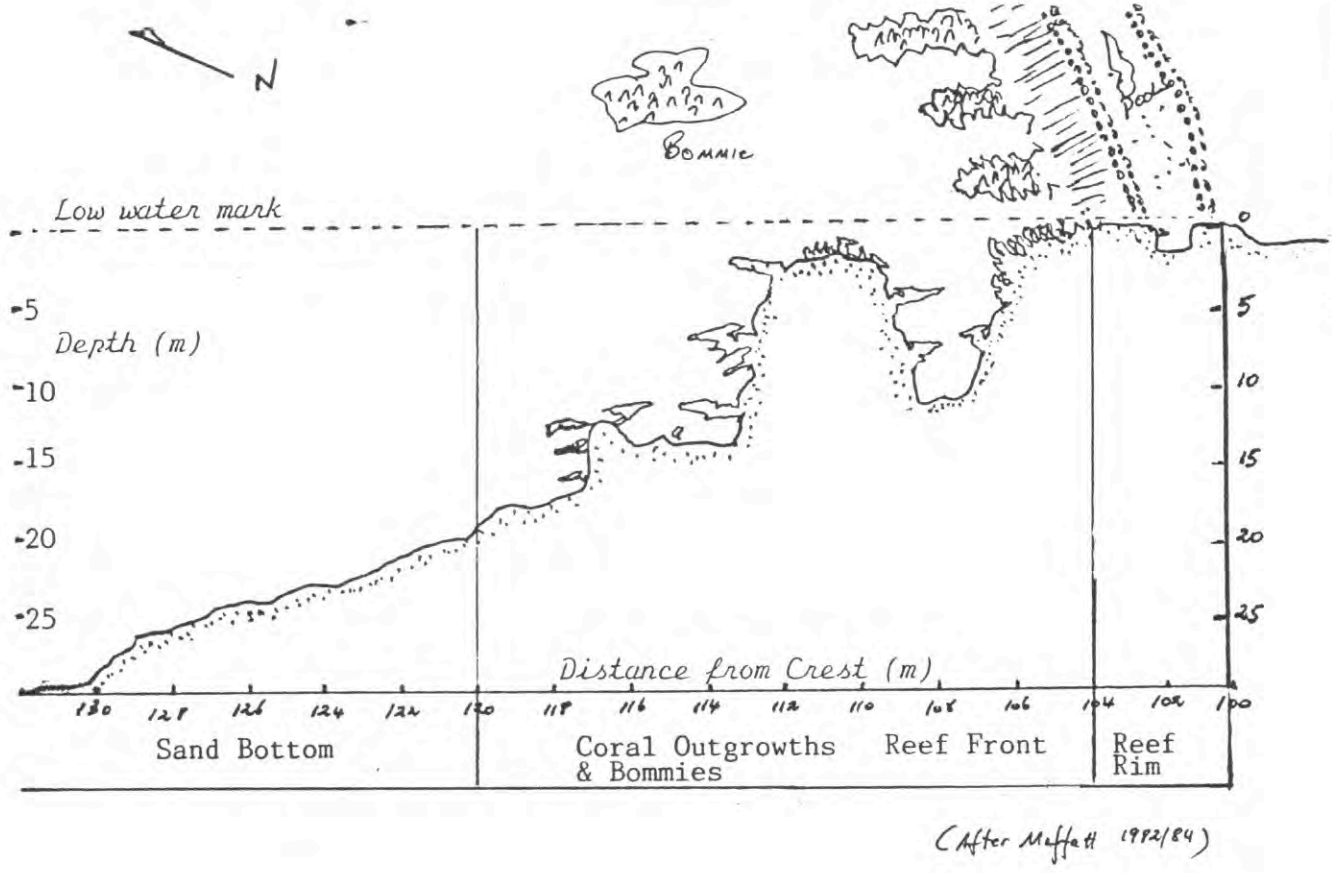
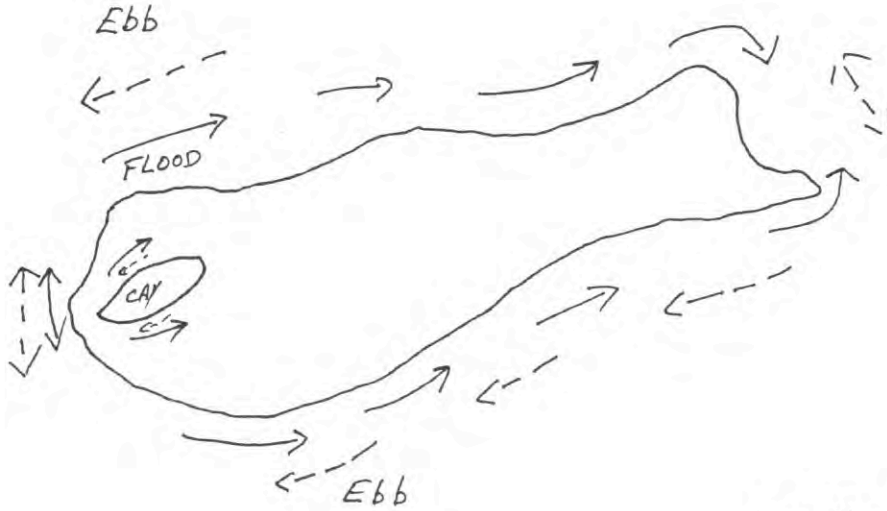


Diagram 7: Crossection of Reef Northern Side of Cay from Crest to Open Sea

3.2 Tides and Currents; weather and climate

Like all other islands off the coast of Queensland the highest tides occur during the day in Summer and at night during winter. This should be remembered if lighting fires on the beach. During the spring tides, the water comes all the way up to the strand vegetation leaving no beach to walk on. During cyclones if a tidal surge occurs, water will enter the cay at its lowest points. At neep tides the water only comes up from the inshore gutter a few metres. The tidal range is about 2 metres for North West Island. This should be remembered when booking your transport over as you may have to unload at night on the high tide. It would be unwise to unload on a spring tide at night because the damage to the strand vegetation would be immense. For further information consult the Tide book but note that North West is about 1 hour ahead of the tides from Gladstone.



(Moffatt 1982/84)

Diagram 8: Currents around North West Island and Reef

The currents around the cay are mild compared to some cays. However this should not be taken too lightly and should always be checked before snorkelling. When anchoring at spring tides, the run is greater compared with neep tides. If there is a reasonable swell running and tides are high, a current seems to form in the inshore gutter area. The speed however rarely exceeds 4 knots.

The climate is like most offshore cays for the Region (warm and dry with ideal water temperatures). In summer months the cay can get quite hot and there is a glare factor to be considered while on the reef. Average winter temperature would be 24°C day and 18°C night, while summer shade averages would be 30°C (day); 22°C (Night). Water temperatures would range from 16°C (Winter) to 27°C (Summer) but would vary where you swam. Sand temp s average 26°C while on the beach it can get quite hot (e.g. in front of hut 41°C midday summer).

Winds are predominat ly from the south east and blow an average 10-20 knots. This makes camping on the northern side of the cay a more popular proposition. There is a good anchorage from strong southeasters at the end of the channel in front of the hut. In northerlies, the southern side offers good protection and the opposite side of the reef offers safe anchorage.

Principal months for rainfall are January and February, when it can rain for many days. Rainfall in these months is largely dependant on the presence of cyclones. Extreme care should be taken if cyclones are about and up to date forecasts can vary hourly.

The cyclone season is from December to April and cyclones can form anywhere off the Capricorn-Bunker group. They are characterised by a low pressure system with pressures ranging from 995-960mb. The lower the pressure the higher the winds, rain and destructive force. Wind gusts of over 150 knots are not uncommon in a cyclone and will strip the island of all leaves, uproot trees and cause tidal surges and large waves. It would be unwise to visit the island in a cylcone and if one is imminent or if one forms it would be advisable to radio for an early pick up.

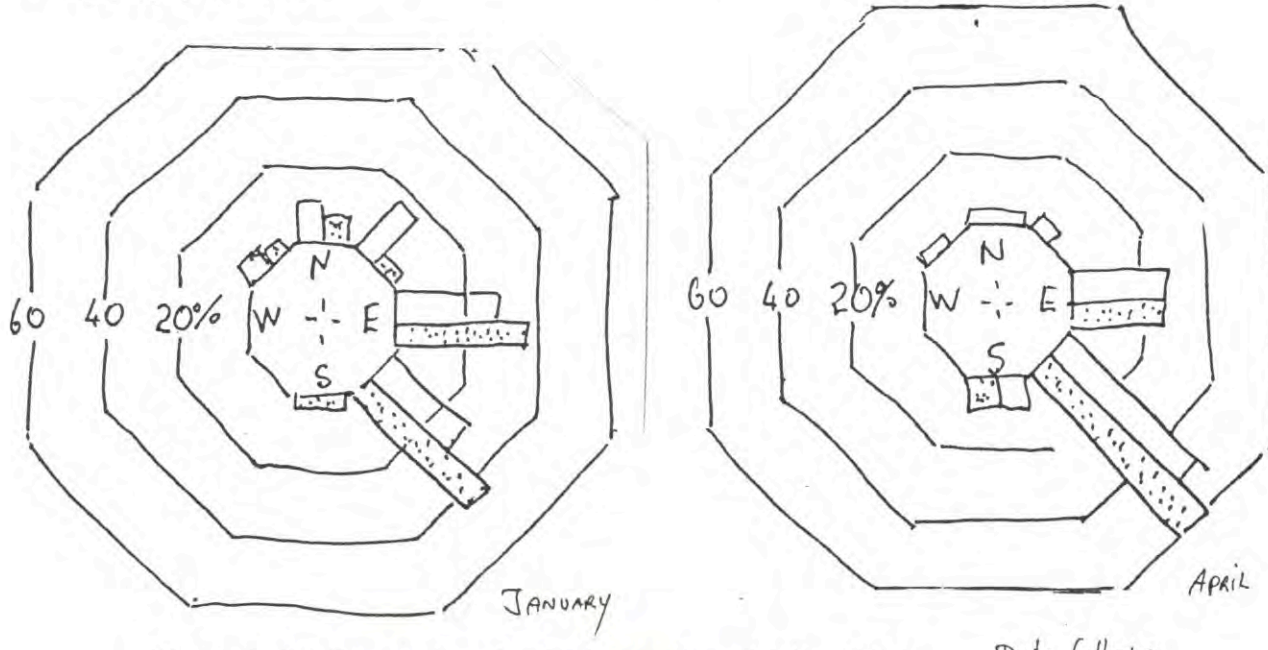
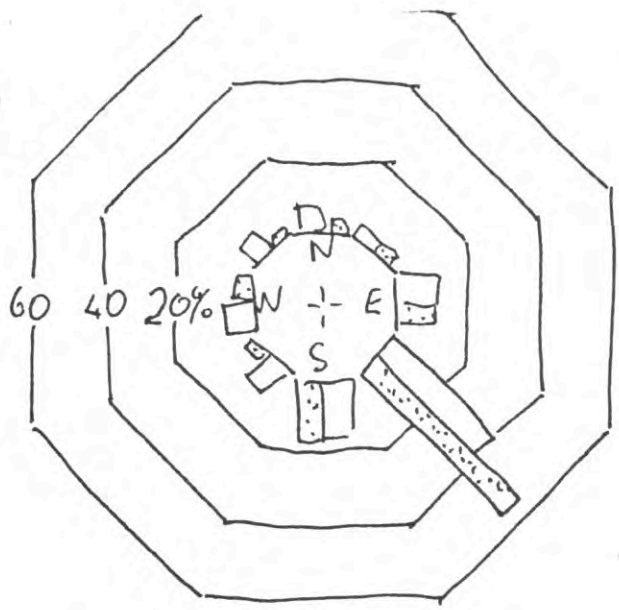


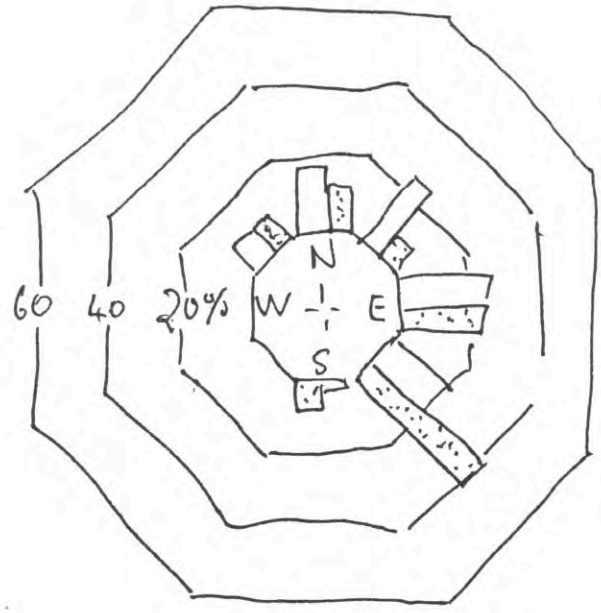
Diagram 9: Predominant wind speed and direction North West Island

Data Collected Heron Is (1972/80)

Diagram 9 (Contd)



JULY



OCTOBER

All Winds Winds over 20Km/hr

Notes: Calm Observations: Jan 5%, April 6%, July 5%, October 4%
% Wind exceeds 20 K. Jan 40%, April 58%, July 50%, October 29%.

The above observations are from Heron Island and are only speculations for North West as there is no weather station on the island.

3.3 Conspicuous aspects of island biota

1. Island Vegetation

The island is dominated by the Pisonia Tree. It forms a dense forest covering almost the entire island. At the western end a small Casurina forest has formed and apart from these 2 trees only patches of other tree are found/

WITH THANKS, DEPT Q LANDS.
1985.

Photo 8 : Aerial View of North West. Note extent of Pisonia forest and Casurina forest at right hand tip of cay

Photo 9: Pisonia Forest

The vegetation consists of a dominant Pisonia forest, a Pisonia strand border, and a strand community as shown in diagram 10.

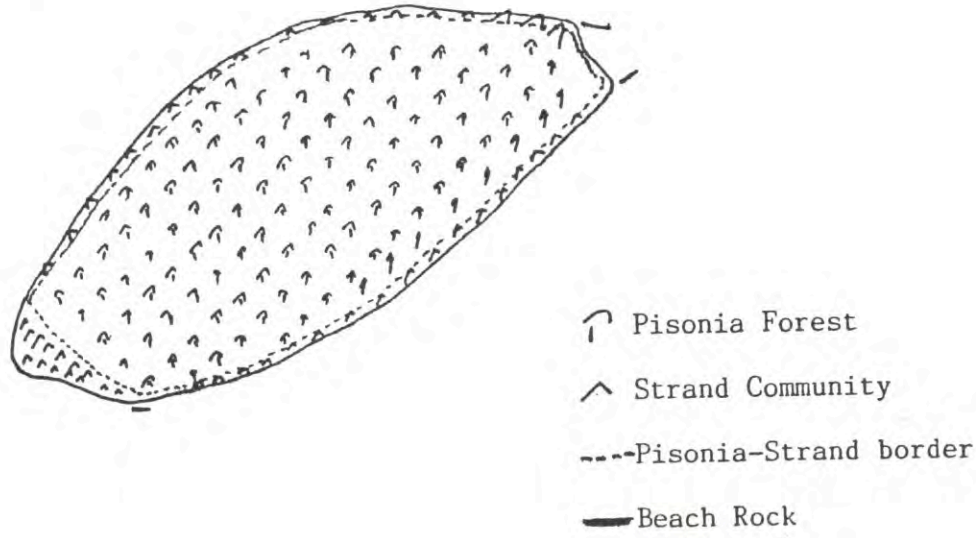


Diagram 10: Vegetation Map [after Cribb 1969]

The effect is called wind shearing and accounts for the fact that the vegetation is different in height and shape from one side to the other.

Other plants that can be found are the screw palm (figure 6.19) and the octopus bush (figure 6.20)

Fig 6.19: A screw palm or breadfruit tree

Fig 6.20: An octopus bush growing on the sand dune

Not everything always goes the plants way. There are other plants that parasitize this vegetation. The devils guts is an example of this which has completly smothered the octopus bush on the windward side of the coral cay.

Fig 6.21: An octopus bush smothered by a parasitic devils guts weed.

Reading activity

Read the pamphlet "Coral cays", produced by the Great Barrier Reef Marine Park Authority, PO Box 1379, Townsville, Qld, 4810.

Typical beach lee side North West island

Most of the island is occupied by a forest Pisonia grandis or Pisonia tree which in many places, is dense enough to exclude all vegetation beneath it. Scattered through the Pisonia forest are occasional trees of Ficus obliqua var petiolari or Fig tree, some which rise to over 10 metres and having well developed aerial roots. Small open places in the Pisonis forest often carry thickets of the orange flowered Abutilon albescens or of the entangled arching stems of Wedelia billora.

Photo 12: Typical Casurina lee side North West with Mutton bird runway

Table 1: Common Names of Plants North West Island

Ficus obliqua	Strangling Fig
Wedalia biflora	Beach Sunflower
Achyryanthes aspera	Chalf Flower
Thaurea involuta	Birds Beak Grass
Celtis paniculata	Native celtis
Pipturus argenteus	Native Mulberr
Spinifex hirsutus	Beach Spinnafex
Sporobolus virginicus	Beach couch
Tornifortia argentia (Argusia)	Octopus Bush
Scaveola taccada	Scented fanflower Cardwells Cabbage
Pandannus	Screw Palm(Breadfruit Tree)
Dodder	

Photo 13: Tornifortia argentia
"Near Hut North West Is."

List of Flowering Plants Found Growing on North West Island: AUGUST 1868

Species marked* are recorded for the first time and names in brackets are those used by White and MacGillivray (1926) and/or MacGillivray & Rodway (1931). List from Cribb, AW 1969 Qld. Nat (4-6) 93.

Abutilon albescens Miq. (A. indicum G. Don, A. graveolens W. & Arn.)
Achyranthes aspera L.
*Amaranthus virdis L.
*Bidens pilosa L.
Boerhavia repens L. (B. diffusa L.)
*Brassica tournefortii Gouan
*Cakile edentula (Bigel). Hook
*Canavalia maritima (Aubl.) Thou (C. obtusifolia DC)
Capsicuni frutescens L. (C. fastigiatum Blume)
Cassytha filiformis L.
Casuarina equisetifolia L. var. incana Benth
Celtis paniculata (Endl) Planch
*Cenchrus echinatus L.
*Cocos nudifera L.
Eleusine indica (L.) Gaertn.
*Erigeron floribundus (H.B.K.) Schultz-Bip
Euphorbia atoto Forst. f.
*Euphorbla hirta L.
Euphorbia tannensis Spreng (E. cremophila A. Cunn.)
Ficus obliqua Forst. f. var. petiolaris (Benth) Corner (F. platypoda A. Cunn. var. petiolaris benth.)
Fieus opposita Miq.
Gnaphalium inteo-albun L.
*Iponioea batatas Lam.
*Ipomoea alba L. (possibly as I. grandiflora Lam.)
Lepturus repens. R. Br.

Photo 14: Students departing from walk from lee to windward side. Note: Tornifortia in foreground is much smaller.

Photo 15: Dodder, Strangling Tornifortia

*Lycopersicon esculentum Mill.
Pandanus sp.
Pipturus argenteus (Forst. f) Webb
Pisonia grandis R. Br. (P. brunoniana Endl.)
Plumbago seylancia L.
Scaevola taccada (Gaertn). Roxb (S.koenigii Vahl)
*Sisymbruim orientale L.
Solanum nigrum L. (S.pterocaulon Dunal)
Spinifes hirsutus Labill
Sporobolus virginicus (L.) Kunth
Suriana maritima L.
Thuarea involuta (Forst). R. & S. (T. sarmentosa Pers)
Tournefortia argentia L.f
Tribulus cistoides L.
Wedelia billora DC

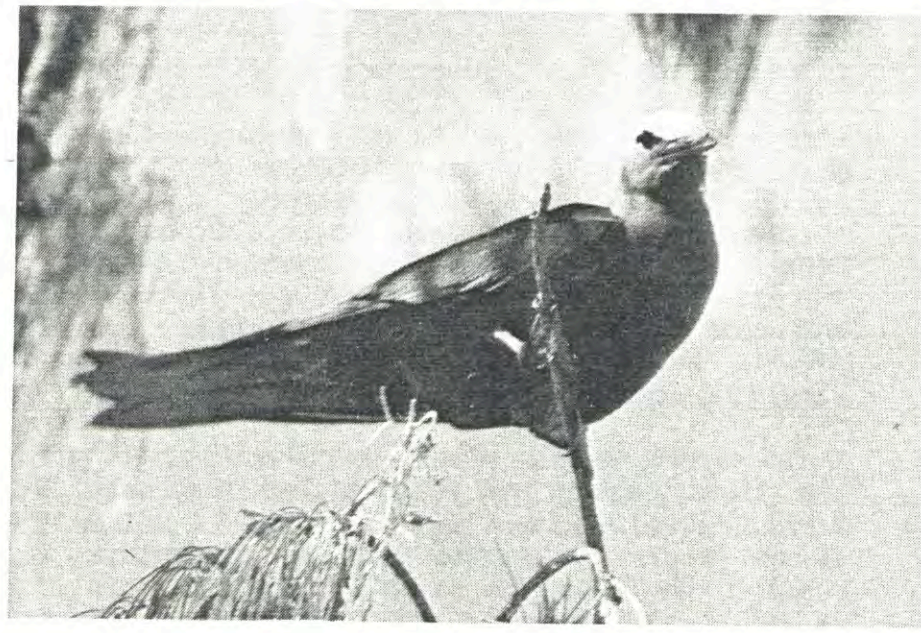


Photo R. Schmidt.

Photo 17 Noddy Terns North West

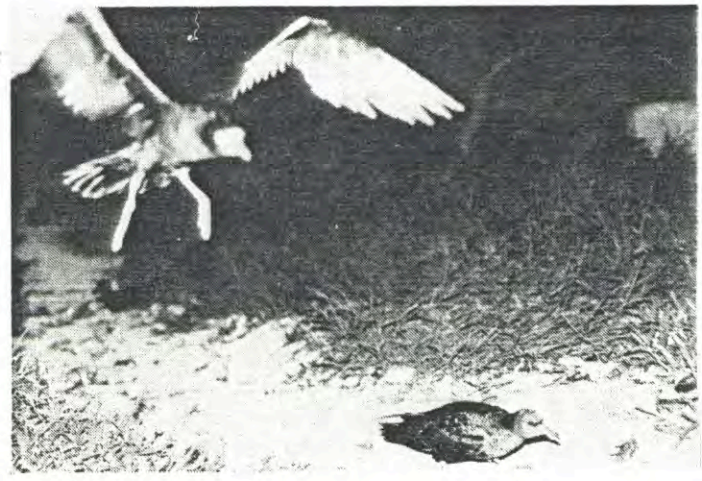


Photo 18 Wedge Tailed Shearwater take off 4 am North West

2. Island Bird Life

North West Island is ranked as the fifth most important breeding site in Queensland. It supports principal breeding colonies of wedge-tailed shearwaters and white capped noddy terns, a major breeding colony of crested terns and a viable breeding colonies of reef herons, silver gulls and bridled terns. Extremely conspicuous are the chickens which were believed to be introduced by the Guano miners at the end of the last century. These roost over the island in the trees at night and forage during the day and come quite close to a camp site. There have been efforts to reduce their numbers so their presence would vary. No land rails are found due to the cats.

White capped noddies, Reef Herons and silver gulls nest in the trees, while the wedge-tailed shearwater (or mutton bird), makes a burrow and the chick is raised there until it can fly. The mutton bird is a migratory bird which comes to the island to raise its young. Where it does this is called a Rookery and the importance of this island lies in the number of rookeries that exist and the number of birds it can support.

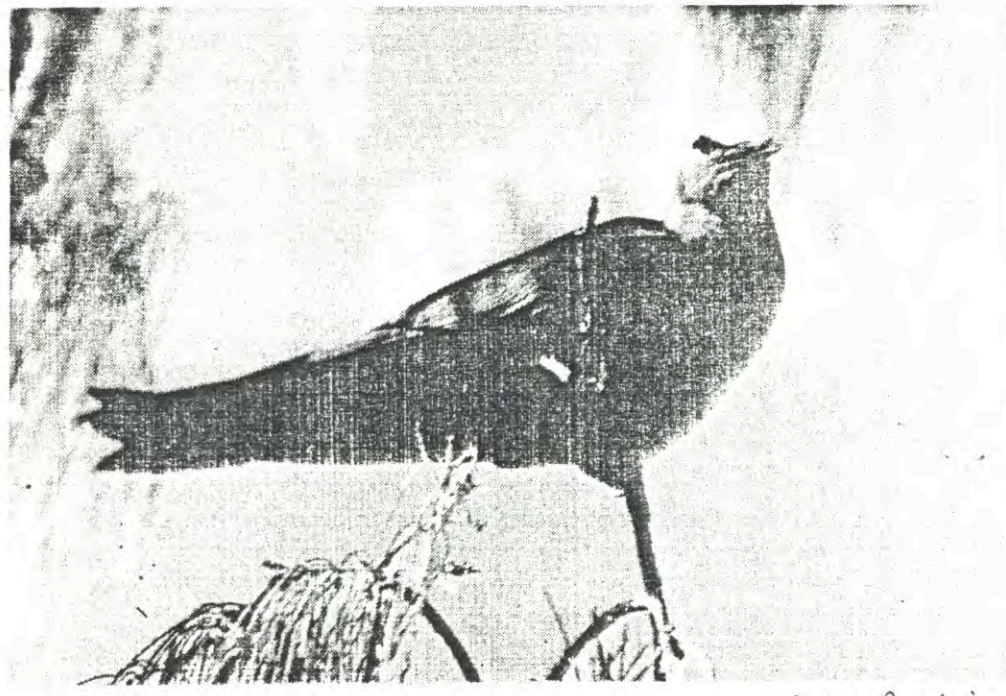
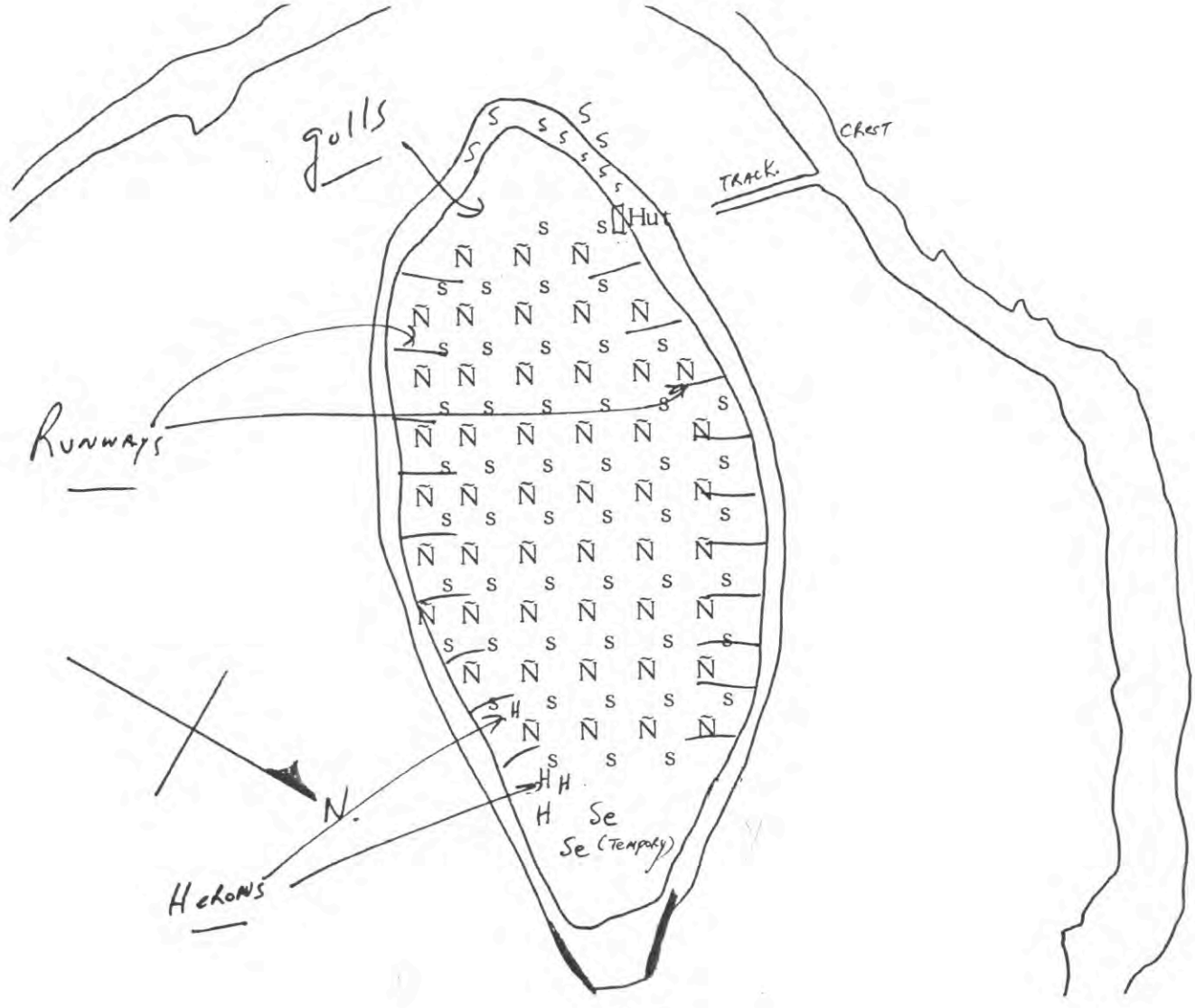


photo R. Schmidt

White Caped Noddy Tern

The birds are critical to the conservation of the island because they are the only means by which the nutrients are transfered from the sea to the land. They are the means by which the sand is fertilised to support the vegetation that supports them. They are also the means by which the seeds are transported from one cay to another. Often this has devastating effects for the birds as you will witness if you visit the island at Christmas. The Pisonia has an extremely sticky seed which is designed to stick to the bird so as to enable its dispersal. However if too many of these seeds become stuck to the bird, the end result is death because the bird cannot fly.



Code: Ñ Noddy Terns H Reef Herons S Silver Gulls
s Wedge-tailed shearwares Se Sea eagles

Diagram 11 Rookeries North West Island 1985

Bird List North West Island by Cameron, Qld. Nat (4-6) 1969

Bird List from North West Island

Silver eye	Forest Kingfisher
Red-crowned Pigeon	Mangrove Kingfisher
Lesser Frigate-Bird	Bronze-Cuckoo (sp?)
Little Pied Cormorant	Satin Flycatcher
Sooty Tern	Magpie-Lark
White-capped Noddy	Black-faced Cuckoo-Shrike
Silver Gull	Reef Warbier
Pied Oystercatcher	Silvereye
Sooty Oystercatcher	Olive-backed Orio
Tattler (sp?)	Spangled Drongo
Grey Plover (?)	Pied Currawong
Reef-Heron	INTRODUCED
White-breasted Sea-Eagle	Feral fowls

BIRD CALENDER NORTH WEST ISLAND

Jan Feb Mar Aprl May Jun Jly Aug Sept Oct Nov Dec	BIRD ON ISLAND
********** **********	Wedge Tailed Shearwater
********** **********	White capped Noddy Tern
**********	Silver Gull
**********	Feral Fow l
?	Reef Heron
?	Sea Eagle

?
There are other bird species but these are the most common and any visitor to the island would easily be able to see these in season.

3. Island Turtles

As mentioned earlier, the island had a turtle cannery in the early part of this century. North West Island supports a principal nesting area for green turtles and a minor nesting area for loggerhead turtles.

Turtle Calendar North West Island

Jan	Feb	Mar	Aprl	May	Jun	Jly	Aug	Sept	Oct	Nov	Dec	TURTLE ON ISLAND
**********								**********				Loggerhead Turtle
								(Mating in Lagoon)				
**********								**********				Green Turtle

Note: (i) Only the females come ashore to lay eggs, the males arrive in the waters around the island early September and depart late November after mating.

(ii) For further information see Exploration North, "a natural History of Qld" by N.PWS.

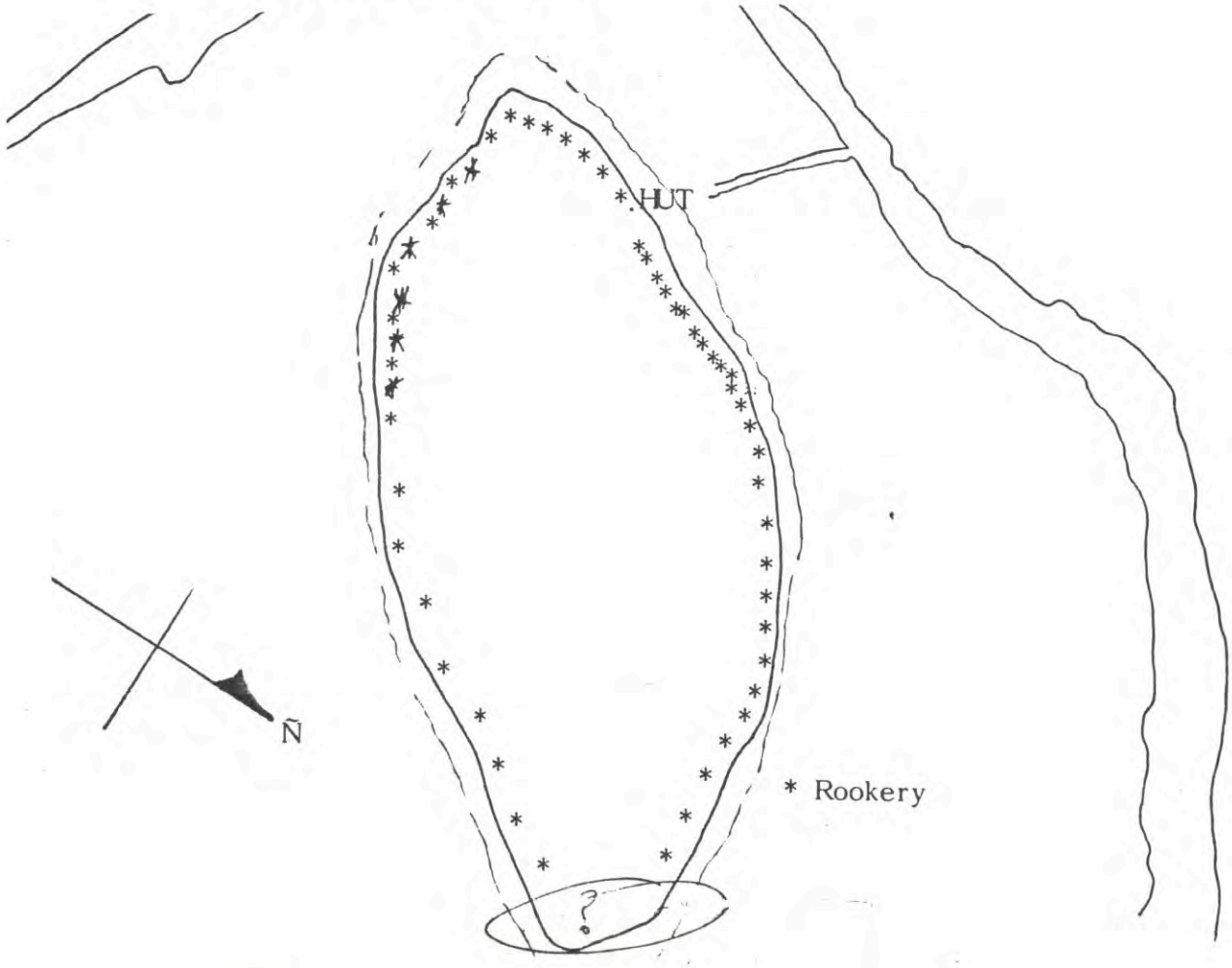


Diagram 12: Turtle Rookeries North West Island

4. Other Island Life

The island is inhabited by other life:

Large cockroaches, ants, butterflies can be found inside the cay as well grasshoppers. Mice have been found in the hut and the island has a large population of ferral (wild) cats which come into the campsite at night to forage for food. These have been seen to bite the Mutton bird young and suck the blood in times of drought.

There are a number of spiders that build their nests between the Pisonias and Casurina tree near the foreshore and centipedes can also be found around the campsite. There are also mosquitoes in the summer months. Also found flies and dragon flies.

Near the bases of the larger trees in sheltered areas of the cay can be found toadstools and other fungi. Lizards are also found.

5. Conservation Notes

Most of the above have been introduced by people visiting the island. It may be well to discuss a few simple conservation notes in the hope that by the time you read this there are no wild dogs, snakes or other land creatures that could ruin such a delicate ecosystem.

1. Dogs, cats, or pets will introduce ticks, worms, parasites on a scale never before experienced by the island and would devastate the bird population that breed there and so must not be brought onto the island.

2. Wood on the island forms homes for lizards and other insects and naturaly occurring composts to provide fertiliser for the trees. All wood must be brought to the island, and all cooking should be done on gas or fuel stoves. Clean wood must be brought so as not to introduce borers to the cay. It is recommended that all cooking be done on fuel stoves.

3. Take all rubbish home with you. Burning of rubbish is not recommended because people forget to digout the pit thoroughly when finished and bits of alfoil scraps are left.

4. Don't collect anything. Take plenty of photos. Permits are required to collect anyway. Encourage all in your party that if you find a nice looking shell, leave it for someone in the future to see.

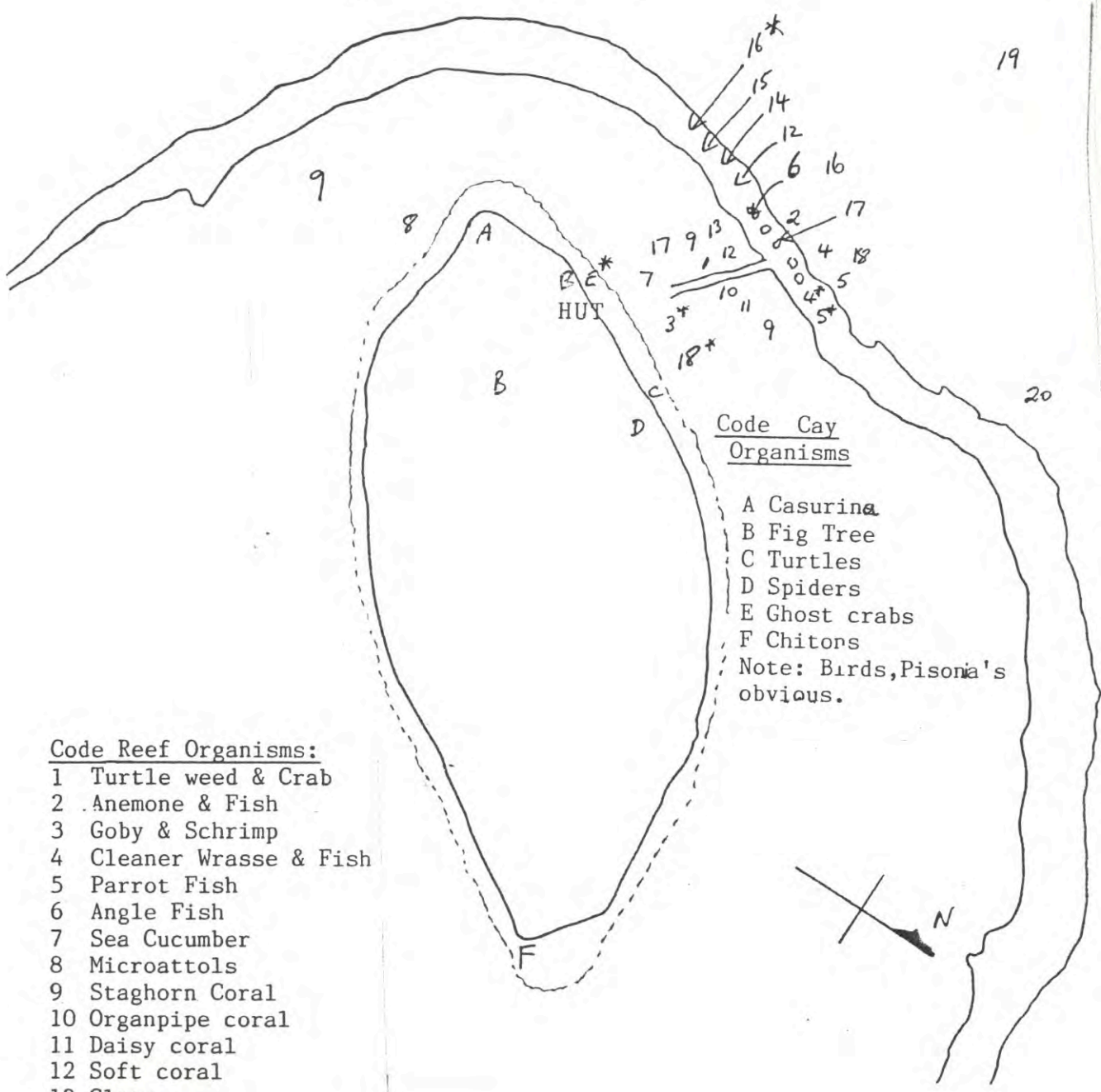
5. Take special care of the birds and turtles when they are on the island. Don't scare the birds because every time they leave their nests, the chance of the eggs being broken increases as well as does the chance of a fledgeling ejecting its parents. Don't handle the young birds also for the same reason. Don't feed the birds as this makes them dependent on people. Sea gulls are a good example of how people have influenced the evolution of this bird and now seagulls are regarded as a pest. They fly in and kill the young birds and eat baby turtles as they scurry down the beach after hatching.

6. Read up on the hints for turtle watching from a pamphlet produced by the National Parks and Wildlife Service. Don't shine torches into the turtles eyes as it will probably cause her to return to the sea and not lay her eggs for another year.

3.4 Consipicous aspects of Reef Biology

1. Main Reef Habitats

A habitat is a physical place where an organism lives. There are places on the reef where organisms live and there are also undefined physical boundaries which are hard, for us mortals, to see. An attempt is made here to try to isolate some of the main living places on the reef at North West so that, with some degree of certainty , you may be able to find the animals or plants that follow. The diagram below is presented in the knowledge that there is a good example of that organism there. Obviously the organisms will be found elsewhere. (An asterisk * means also found at low tide). Note: The list is not complete.



Code Reef Organisms:

1 Turtle weed & Crab
2 Anemone & Fish
3 Goby & Schrimp
4 Cleaner Wrasse & Fish
5 Parrot Fish
6 Angle Fish
7 Sea Cucumber
8 Microattols
9 Staghorn Coral
10 Organpipe coral
11 Daisy coral
12 Soft coral
13 Clams
14 Linkea
15 Algae
16 Comb Jellies
17 Worms
18 Stingray
19 Whales
20 Bigger fish

Diagram 13: Possible Habitats for Reef Organisms North West Island

Moffatt (1982/84)

2. Reef Top Zonation

From the information so far presented, it should be apparent that the reef is divided into a number of descrete zones:

(a) The Reef Flat of
- inner sandy zone
- outer coral zone

(b) Reef Rim of
- the rubble crest
- the rock slope

(c) Reef Front of
- Seaward platform
- the reef slope

3. Common Reef Organisms

1. Macroalgae (AFTER CRIBB 1969)

Common macroscopic species on the reef flat are Halimeda opuntia, Halimeda tunia Caulerpa racemosa, Chlorodesmis comosa, Boodelea composita, Dictyosphaeria Cabernosa, Colpomenia sinuosa, Hydrocalthrus calthatus, Chnoospora implexa, Sargassum polycystum, Turbinaria ornata, Gelidiella acerosa, Amphiroa foliacea, Hypnea sp., Ceratodictyon spongiosum, Laurencia obtusa.

An olive-faun fur of small, filamentous algae which covers many dead coral surfaces contains species such as Ectocarpus indcus and Herposiphonia tennelia. The sandy floor of the reef flat is usually bare of microscopic algae apart from occasional plants of Halimeda cylindracea and Caulerpa cupressoides.

Near the beach, Microcoleus lyngbyaceus commonly forms a sparse rusty brown stain-like stratum over the sane.

2. Invertebrates

All invertebrate groups are represented, which is characteristic of the reef ecosystem. Because of the inconvenience of the camping situation for microscopes, readers are referred to the main section of the handbook for microscopic plankters. The following list represents what most people can see with some Scientific background in classification and from reading generally before a visit.

Coelenterates (See over)

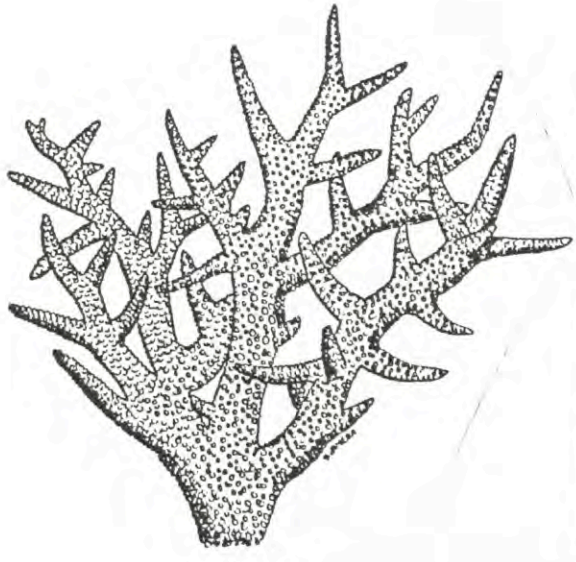
Phylum Cnidaria

Class Hydrozoa: These are found predominantly in the pools and just off the crest. Of note is the stinging hydroid and fire coral.

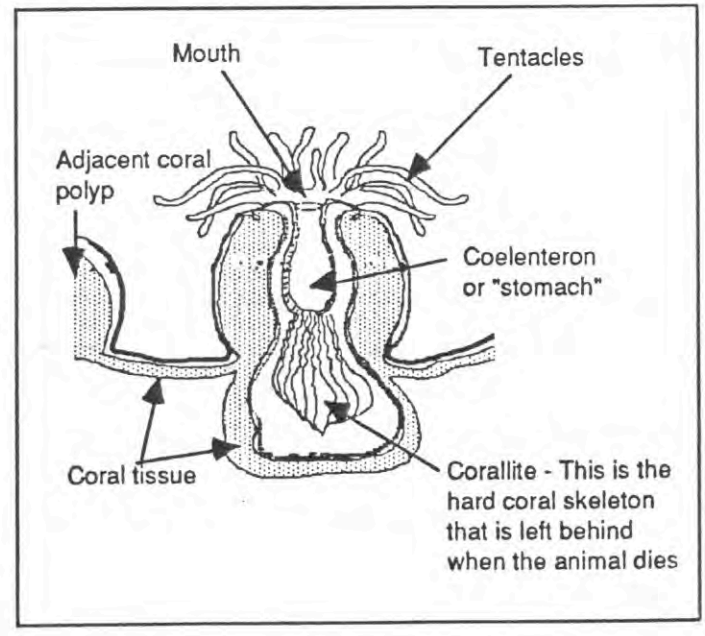
Class Scyphozoa: These can best be seen snorkelling at high tide in the lagoon off the crest at low tide or on the crest of high tide. The latter makes an interesting high tide activity where students can float or stand on the crest observing the "jellyfish like" animals float or swim by. Of note is the box jelly fish which is present in the summer months, sometimes after northerlies and comes in close to shore in calm conditions. Local reports however seem to indicate that the jelly fish doesn't come this far out.(It would be wise to take a bottle of vinegar out with you whenever snorkeling.)

Class Anthozoa: These can be seen anywhere on the reefflat or off the crest. The group contains the corals and anemones. If you walked out to the crest along transect A or beside the channel you would see Portities (the microattoll coral), Acropora (the branching coral), Goniopora (Daisy coral), Tubiphora, (Organpipe coral), Sarcophyton (a soft coral).

If you were to walk along the crest you would see, in the crevices the small pink knobbly coral (Pocillopora or Aeropose) and Green Rubbery soft coral (Lobophyton).



A coral clump



The coral polyp

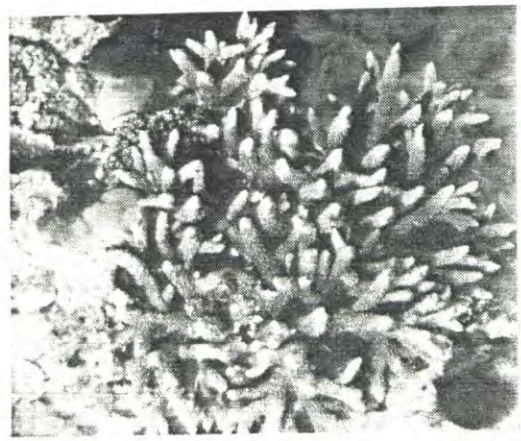


Photo 20: Typical Coral (inner Coral Zone)

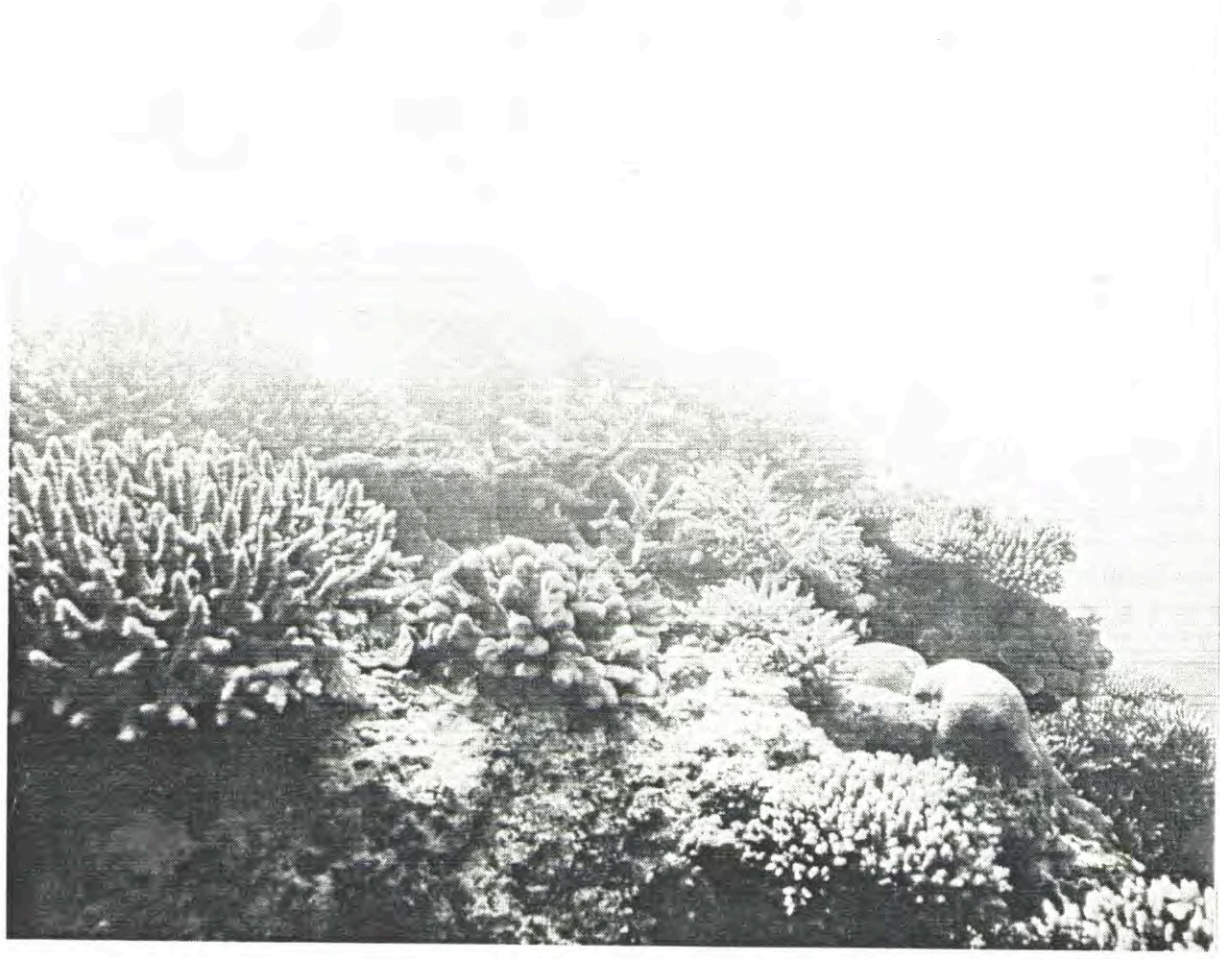


Photo 21: Typical Coral (Outer Coral Zone)

Photo 22: Soft Coral: Reef Crest

Finally if you were to snorkel off the crest at low tide you would see the plate coral (Montipora), Mushroom coral (Fungia).

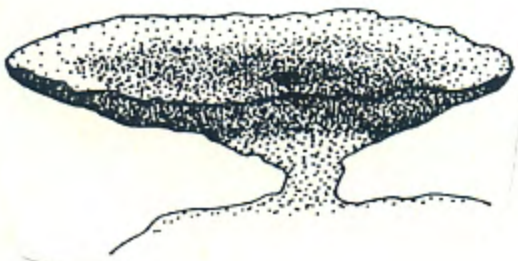


Photo 23: Plate Coral (Inner Coral Zone)

Phylum Ctenophora

These are the comb jellyfish and can be best seen snorkelling at high tide either on the crest or just outside the campsite.

The Sponges
Phylym Porifera

These are the sponges which can be seen on the reef walk out to the crest. They can also be seen snorkelling in the pools at low tide.

The Worms
Phylum Platyhelminthes

These are the flat unsegmented worms which can be found under boulders or in small crevices amongst corals on the reef flat. Typical of the type that can be found is Pseudoceeros.

Phylum Nemertea

The ribbon worms can also be found under boulders on a reef walk. Sometimes called the proboscus worms, these animals feed by extending their "mouths" out of their stomachs and eating other minute animals under the boulder or crevice.

Phylum Annelida

The majority of worms you will see will belong to this group. They are the segmented worms and belong to the Class Polychaeta which means many bristles. Polychaete worms can be found either free swimming in crevices in the pools or under coral boulders on the walk out to the crest. To see them requires patience in careful observation. Turn over a boulder and look carefully for the animal. Don't pull at it for it will break off, but let it crawl onto your hand. These worms defence is to break off and regrow another part. The process is called Regeneration. Always turn back the bounder to prevent all the animals that live under it from drying out.

Another worm you will see, or parts of it at least, will be the tube work Reterebella queenslandica. You will see the long tenticles of it spread out under or beside the bounder.

Finally perhaps the most easily see of the worms while snorkelling in the reef pools on the crest are the small fan worms Spirobranchus. If you look carefully at the coral while snorkelling you will see the fans come out to feed on the plankton.

The Crustaceans

Phylum Crustacea (Arthropoda)

Representatives of this phylum are found in nearly all habitats (cay, reef flat and crest.) Any reef walk will uncover numerous crabs, and at night a wide variety of shrimp can be seen on the crest at low tide. A snorkel at high tide will reveal a shrimp which lives with a small whitish fish, the goby and a walk around the cay at night shows the ghost crab and its burrow. So diverse are the representatives that the drawings over do not give the phylum justice.

Phylum Insecta

Found almost exclusively on the cay, the insect population is quite small. Many of the species have come with people and it is a shame to realise that every time we come to the cay, no matter how careful we are, more and more insects will be introduced. Common species that can be found are" Mosquitoes, centipedes, cockroaches, butterflies, spiders.

Phylum Chilopoda

Photo 24 Centipede North West Island

Phylum Mollusca

For many years North West Island was used as a popular shell collecting area, so much so that there are few large shells left. It is a good example of what over collecting can do to a reef and should serve as an example of why we need National Parks and rules governing their use.

There is however a colony of very large Chitons on the beach rock at the south eastern end of the island. On this patch of beach rock are also periwinkles and limpets.

On a reef walk many more shells can be found. The large, greenlipped clam Tridacna, cowrie, Cypaea, Razor clam, Cockel shell, Stromb shell and Cone shell can all be found on a reef walk to the crest. At low tide, it you dig in the sand just up from the inshore gutter, you will probably find pippies. If you are lucky enough to see any large shells, have a good look for the mantle, note the colours and how it encases the shell, and then put the shell back so that others can see it some time in the future.

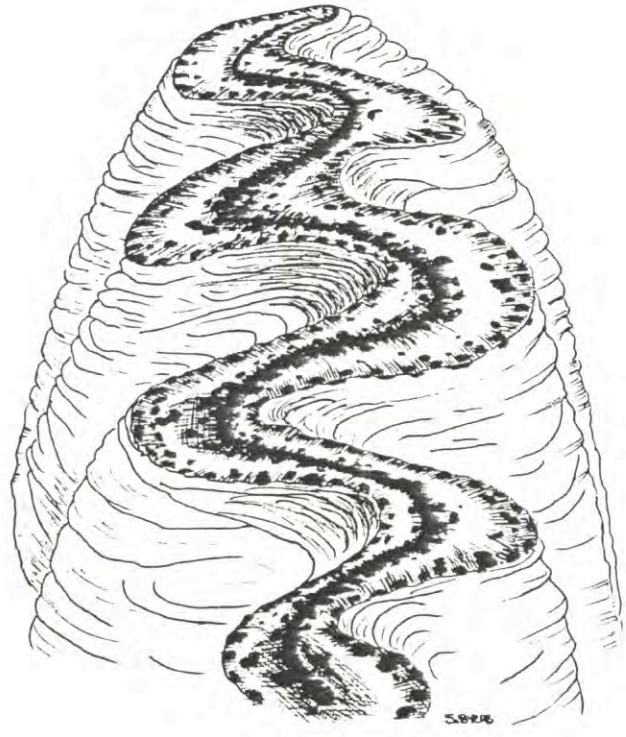


Photo 25..... (CLAM)

Of course there are other representatives of the Phylum other than shells. The colourfull nudibranchs or spanish dancers are common in reef pools or in the outer coral zone. Finally you may be lucky to see a cuttlefish in a snorkel over the crest or an octopus in a pool.

Phylum Echinodermata

Nearly all Australians have heard about the crown of thorns starfish and of the devastation it can cause to reefs. North West Island is relatively free of the starfish however it does have other interesting Echinoderms or spiny skinned animals.

On your first reef walk one of the first animals you will encounter will be the seacucumber, Holothuria. These animals have often been called the vacuum cleaners of the reef because of the large volume of sand they consume while eating. If you look carefully you can see the pile of sand that the animal leaves behind after it has strained all the food it needs out of the sand it "eats".

Further out on your walk you will see sea urchins in amongst the corals. If you turn these over being careful of the spines you will see the mouth. The animal has a set of jaw like structures which helps the animals feed.

As you walk along the crest in the direction of the coral boulders you will notice the distinctive blue starfish, Linkea, and you should find a pincushion starfish or sand dollar starfish. Also if you look carefully in reef pools along this walk many different brittle stars can be found under coral boulders or in reef pool crevices. A careful study of the colour will reveal the intricate colour adaptions that these animals have.

3. Fish

Over the years North West Island has been a very popular fishing place and the consequences of this are evident as soon as you get under the water. Compared with the fish that can be seen at "the Bommie" at Heron Is., North West is very barren The best place to see any bigger fish is at the bommies up from the boulders due north of the campsite. Even then the variety is disappointing.

Smaller fish are very plentiful. A snorkel out over the inner reef flat at low tide will reveal a small whitish fish, the Goby. Watching the housekeeping of these fish makes for an interesting 10 minutes just floating over the burrow. Also conspicious on such a snorkel are the Puffer fish. A good place to see these is on a medium tide snorkel around the microattols on the south western corner.

Further out on this snorkel you will come to large beds of branching corals. Butterfly fish, Parrot fish and trigger fish are very common. Around the coral clumps you will also see the banded pullers or humbug fish.

At high tide, stingrays can be seen cruising near the shore line. When you walk in the water just shuffle your feet and they will move along. They are probably searching for the pippies or other small molluscs that were mentioned earlier in the Molluscs section. The rays need to keep swimming to stay afloat and occasionally will lie on the bottom to regain energy.

A snorkel over the crest will be an experience few of us will forget if a reef shark is seen. In the history of the Great Barrier Reef, no diver has ever been killed by a shark. In fact they are so well fed that they will rarely approach you. Common sharks are the white tipped or black tipped sharks which are characterised by the colour of the top of their dorsal fin. These are completely harmless if left alone. Other sharks seen have been, Thresher, Tiger and Bronze Whalers.

As mentioned earlier the island is a major breeding ground for the green turtle and minor important site for the logger-head. In the summer months the female comes ashore to lay her eggs. You should read the pamphlet on hints for turtle watching before you go turtle spotting at night.

Also the island is ranked fifth most important breeding site for birds in Queensland with the Noddy Tern building its nest in the trees and the Mutton bird or wedgetailed shearwater in the ground.

Turtle Hatchling (North West Is)

Hints for turtle watching

Nesting Adults

In southern Queensland, sea turtle nesting is a nightly occurence on the main turtle rookeries from late November to January.

Nesting turtles are most likely to be encountered from about one hour before to about two hours after a night high tide. More turtles can be expected on nights when the high tides occur near midnight than when the high tides occur near dawn and dusk. Tide times are available from tide table books, local newspapers or from local resort notice boards or managements.

The urge to lay eggs brings the females out of the ocean into the environment of the beach. Adult turtles are timid animals being easily disturbed at any stage from leaving the water until the eggs are actually laid. Consideration is needed for these aquatic animals which, for the most of their lives, do not leave the sea.

Hatchling turtles

The emergence of hatchling turtles from their nests and their rush to the sea can be witnessed from mid January until late March, the hatchlings usually leave their nests at night.

Most clutches leave their nests in haste, taking only a few minutes to reach the water. There are no special tide times for good viewing of hatchlings. The best times vary between turtle rookeries eg. 8.00pm. to midnight at Mon Repos, 5.00pm. to midnight at Heron Island (Eastern Standard Times). Bright lights can attract the hatchlings away from the sea and hence increase mortality among the hatchlings.

How to find nesting turtles

- Walk the beach at about high tide mark, looking for the turtle tracks. These will be about 1 metre wide.

- Lights can disturb turtles so keep lights off while walking the beach. The turtles tracks are easily seen without lights.

- Follow the tracks carefully and quietly up onto the dune to locate the turtle. Try to avoid excess movement, especially in front of the turtle.

- Wait quietly, sitting behind the turtle until she has started laying her eggs, ie. When she is sitting still after a long period of throwing sand forward off the hind flippers. Once the turtle is actually laying she is not normally disturbed by lights, gentle touching or noise.

- Dig out gently behind the turtle to observe the eggs as they drop. Now is the time to turn on your lights to examine the turtle closely. Flashlight photographs can be taken at this time without fear of disturbing the turtle.

Precautions to observe to increase the success of your turtle watching.

Turtles are easily disturbed by lights, noise and movement especially when leaving the water, crossing the beach and digging the nest.

Therefore:

- Keep the use of lights to a minimum while you are walking along the beach.

- Do not approach closely or shine lights on the turtle leaving the surf or moving up the beach.

- Wait until the turtle is laying her eggs before shining lights on her, or touching her.

- Avoid excess noise and sudden movements.

- Keep dogs away from the turtles. Dogs are not permitted on national parks or environmental parks.

The larger the crowd that gathers, the more likely the turtle will be disturbed. Please be patient while the turtle performs her nesting ritual.

Turtles are totally protected.

It is an offence to interfere with turtles or their eggs in a national park or an environmental park without a special permit from the Queensland National Parks and Wildlife Service. Elsewhere in Queensland it is an offence for a person to have turtles or their eggs in his possession without a permit from the Queensland Department of Primary Industries. Do not dig up nests after the turtle has left, this can cause the death of the eggs, unless special precautions are taken.

Sea Turtle Species.

Seven species of sea turtle are recognised throughout the world. Of these, six are found in Australian waters and breed on our beaches.

From National Parks and Wildlife Service Pamphlet. "Hints for Turtle Watching" 1982.

Queensland National Parks and Wildlife staff employed in the project, numerous student and teacher voluntary assistants work within the project, making their contribution towards the conservation of Queensland sea turtles. At the same time, the volunteers learn at first hand the biology of sea turtles and experience something of the problems of routine biological research under field conditions.

Turtle tags

Do not remove the tags from the turtles. The number on the turtle tag is the only way the researchers can identify individual turtles and so keep accurate records. If a tagged turtle is found, please record the number of the tag, the date and the beach, and pass this information to the research team at Mon Repos or Heron Island.
Alternatively contact:
Queensland Turtle Research
Queensland National Parks and Wildlife Service. Pallarenda, Townsville, Qld, 4810.

Capricorn Bunker Group Turtle Rookeries

Heron Island is a small sand cay 1.7km in circumference approximately northeast of Gladstone. It is one of 12 similar coral islands in the Capricorn and Bunker Groups of the southern Great Barrier Reef. Two species of sea turtles nest on all these islands each summer in varying numbers. These islands together constitute one of the world's major breeding areas for both species. The most important islands in the area for green turtle nesting are North West, Hoskyn and Wreck Islands while Wreck, Tryon, Masthead and Erskine Islands are the most important island loggerhead turtle rookeries.

Heron Island, with its tourist resort and research station, provides convenient facilities from which to observe the nesting sea turtle, typical of the southern Great Barrier Reef.

North West Island is available for camping during the turtle nesting season. Camping permits are obtainable from Queensland National Parks and Wildlife Service (Head office: PO Box 190 North Quay, Qld 4000;
Rockhampton office: PO Box 1362 Rockhampton 4710.)

Wreck Island is totally closed to public visitation.

Green turtle. Usually the most common turtle on Heron Island with over 50 females ashore nightly at peak season in most years. Between 20 and 1200 green turtles have been recorded nesting on Heron Island in any one summer. Up to several thousand may nest on North West Island in a good season with as many as 400 ashore per night.

Loggerhead turtle. May not be seen nesting every night of the summer breeding season on Heron Island. Rarely more than 6 are seen in any one night with between 30 and 90 nesting per season. In a good season over 1000 loggerhead turtles nest on Wreck Island. Only occasional loggerheads nest on North West Island.

The Capricornia Marine Park is important for sea turtles because:

- The Capricorn Bunker Group of islands form one of the few major green turtle breeding areas in the world. North West, Wreck, and Hoskyn Islands are the most important of the southern Great Barrier Reef green turtle rookeries.
- The Capricorn Bunker Group of Islands form one of the few major loggerhead breeding areas in the world; it supports the largest breeding population in the Pacific Region. Wreck, Tryon, Masthead and Erskine Islands are the most important of these southern Great Barrier Reef loggerhead turtle rookeries.
- The lagoonal reefs of the area are principal sites for green turtle courtship activity in the southern Great Barrier Reef.
- The reefs of the area are the year round grounds for tens of thousands of immature and adult green, loggerhead and hawksbill turtles. These feeding turtles nest elsewhere in Queensland.

Queensland National Parks and Wildlife Service
PO Box 190
North Quay, Qld, 4000 BP 29 Sept 82

As mentioned earlier, the island has been fished heavily over the past 60 years by line and spearfishermen. This has resulted in a lowering of the diversity in fish populations. However most people who go camping in the Capricorn Bunker Group, rate North West Island very Highly as an asthetically pleasing island to camp on because of its size, and very good vegetation cover.

Ch.4. HOW THIS ISLAND AND REEF ARE USED TODAY AND IN THE PAST

4.1 Man made features of the island and reef

There are relatively few, apart from the remains of the old turtle boilers a grave and and the hut. There is a set of toilets constructed by the National Parks and Wildlife Service and a marker at the end of the channel. There are some parts of the old railway track in the reef crest in the channel and old pieces of iron scattered through the island.

Photo 25 "The Tanby Hilton"
The Water tank on the left has an unreliable source of water

4.2 Present uses

1. There is no tourist establishment . There is no water, phone or electricity. There are no facilities for the storage or removal of waste. There are however two toilets [EC].

2. Research and Education

   Because of the above there are no research or education facilities. All equipment must be transported to the island.

3. Fishing

   Fishing is allowed but a reef appreciation area is trying to be established at the end of the channel and 1 kilometer North of it. Fishermen are asked not to fish there. And for the safety of others asked to clean their catch out to sea away from swimmers and snorkelers.

4. Diving

PHOTO 26: Student Research Inner Coral Zone

Local groups use the bay area on the north side where local charter boat operators report good canyon diving.

4.3 Historical Notes

The following notes have been taken from Cribb, A.B. (Qld. Nat. History 19 (4-6) 82-85 1969.

HISTORICAL NOTES ON NORTH WEST ISLAND

By A.B. Cribb

Discovery

The first recorded sighting of North West I. was made on the expedition of the "Fly", under the command of Captain F.P. Blackwood, which in January 1843, surveyed the islands to which the name Capricorn Group was given. The results of this survey formed the basis of the Admiralty chart of the area and of a short description in the Australia Directory Vol. 2 (1859) published by the Admiralty. Jukes (1847), the naturalist of the expedition, did not mention the island by name in his journal and presumably did not land on it.

Guano mining

The first known habitation of the island was by guano miners, and information on this period has been obtained from records in the Queensland Archives (file LAN/AKI).

Although North West Is. was under licence from 1894 until 1900 to J.T. Arundell & Co., London, and to its successor. The Pacific Islands Co. Ltd., London it was worked for guano only from 1898 until 1900. The guano was exported mainly to New Zealand and, up to February 1900, 4146 tons had left the island. However, the quality was poor, there being an average phosphate of lime content of only 53.95% compared with 63.53% from the Bunker Group of islands, and this led the company to press the Queensland Government to halve the normal royalty of five shillings per ton on guano exported from North West Is. Work at this time was still going on actively, and "The Brisbane Courier" of 9th Feb. 1900 reported that "There are 107 Japanese, Malays, and Hindus, also five white men employed. A tramline is laid right across the island for the conveyance of the guano, which is shipped from a jetty 1050 yards in length, extending to the edge of the reef."

There is, at present, a track in the reef flat cleared of coral and running from the site of the former turtle factory to the rubble crest of the reef. Although believed by some to have been cut to facilitate the loading of guano, according to Webb (1969), a member of the 1925 expedition mentioned later, it was cl[illegible]red by fishermen some time after 1931.

Turtle canneries

The next habitation seems to have been concerned with the exploitation of turtles. Barrett (1910) reporting a visit to the island that year, states that "Here in the season, Capt. Thos Owens preserves turtle flesh and soup - an industry which under supervision, should be encouraged." Nothing further could be learned of the extent or duration of this operation.

A second turtle soup venture was established in the nineteen twenties. Roughley (1936) states that it operated between January 1924 and February 1928, operating each year from the beginning of November till the end of February. According to Golding (1968), it was started by a man named Marsh but subsequently bought by Poulson who eventually transferred it to Heron Is. Musgrave and Whitley (1926) give an account of the canning process. Golding states that big stocks of turtle soup were brought to Gladstone and stored but that there was no demand for it and a fire in the building destroyed most of the stocks.

Musgrave and Whitley (1926) report 22-25 turtles as a good day's catch producing about 900 tins of soup, while Napier (1934) records the killing of 150 female turtles per week during the last season of operation which, according to

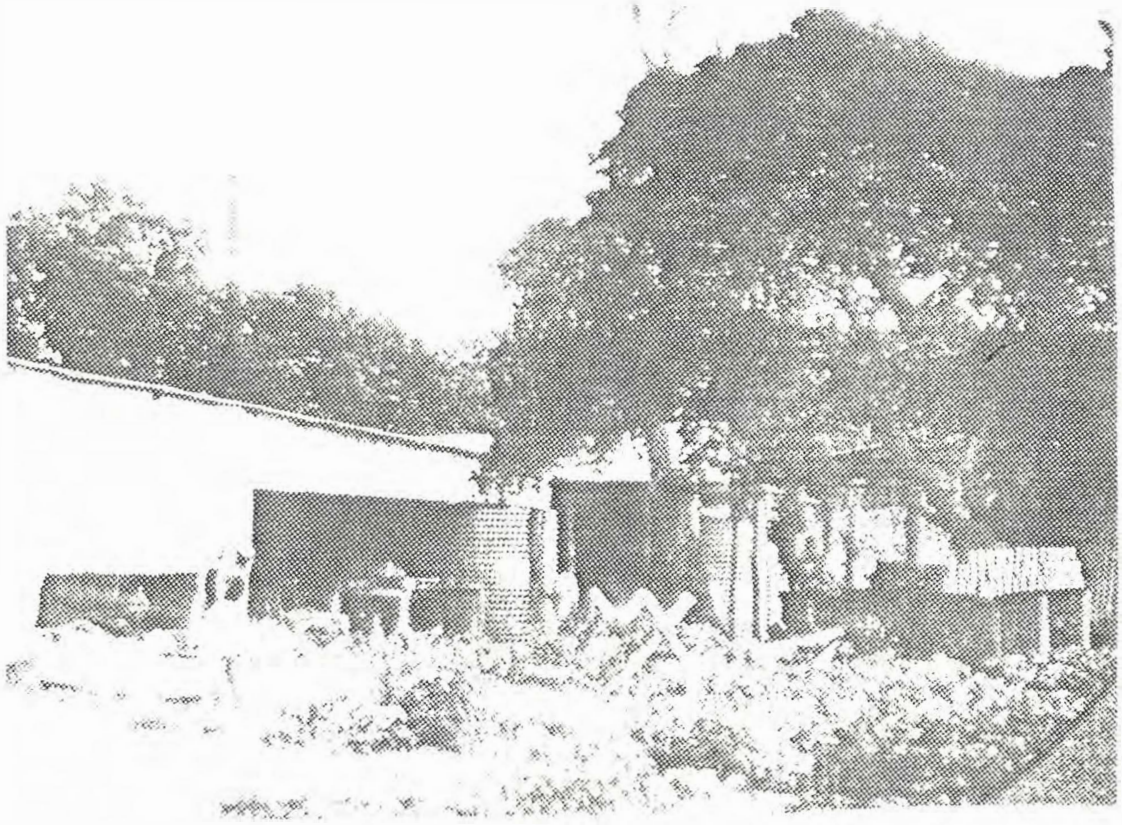


Photo 28 of Turtle Cannery North West Island (Permission from Miss Betty Tait, Gladstone. Source: Exploration North, National Parks and Wildlife Service (Brisbane).

Roughley (1936), yielded 70,000 twelve ounce tins, the greatest output achieved. There seems to be no record of the effect of this slaughter on the turtle population at North West Is. but Morehouse (1933), referring to Heron I, where also a factory operated for a time, states that "During the 1928-29, season, so scarce did the turtles become towards the end of the season that periodic visits had to be made to nearby islands ---".

Feral fowls and cats

Feral domestic fowls and cats occur on the island. both Nebe (1928) and Napier (1934) record the suggestion that the feral fowls on the island were descended from survivors of a wreck many years previously, while Musgrave (1926a) states that the domestic cats and fowls were liberated by former owners of the turtle factory. However, according to Golding (1968), the fowls appear to have been brought from Java and left behind by the guano miners.

The origin of the cats is in doubt, but since they were established in 1910 and had, by that time, exterminated the Banded Landrail it seems likely that they also were left behind by guano miners.

Graves

Golding (1968) states that there are three graves on the island, two of Japanese and one of a girl. There are also earlier references to a grave on the island: Barrett (1910) reports the grave of a child "fenced from the wild, and with a white cross guarding the dreamless head..."; Napier (1934), reporting a visit of 1927, writes of "the little wooden cross and rotting rail that marked a long forgotten grave" of a child, her name "graved upon the rail in letters fading fast."

Photo 29: Grave : 400 m west of Hut.

"On the present visit one grave was seen amongst Tournefortias near the north west edge of the cay. This was enclosed by an old picket fence and bore the name Sundvall on the wooden cross at the head. A search of records in the Registrar General's Office revealed that the occupant of this grave is Dorothea Lillie Augusta Sundvall, infant daughter of Carl August Sundvall, captain of the barque Limari which State Archives show was one of the ships engaged in transporting guano from the island. The child was born at sea and died on board six days later on 5th October, 1899 of "convulsion in the stomach".

The present

Since the removal of the turtle factory there seems to have been no habitation of a permanent nature although the island is visited frequently for varying periods by fishermen, shell collectors and skin divers.

Photo 30: Remains of Turtle Boilers at Rear of Hut

Previous scientific work

PREVIOUS SCIENTIFIC WORK

There has been considerable earlier scientific interest in the island and two expeditions of some note.

The first of these, organised by the R.A.O.U. in 1910, let to a report on the birds by Campbell & White (1910) and general accounts by Barrett (1910, 1919).

The expedition of the Royal Zoological Society of N.S.W. in 1926 organised by the Hon. Secretary, E.F. Pollock, contained one present member of the Queensland Naturalists' Club, Miss Hilda Geissmann, now Mrs. H. Curtis of Mt. Tamborine. This expedition resulted in the publication of a series of papers in the Australian Zoologist by Musgrave (1926a, 1926b, 1926c), Gilbert (1926), Whitley (1926), Iredale (1926), Livingstone (1926), Hedley (1926), White and MacGillivray (1926) and McNeill (1926) as well as to some popular accounts e.g. Geissmann (1926), Musgrave and Whitley (1926) and Gilbert (1928). Most previous references to the island and to records of organisms from the area were listed in the bibliography prepared by Musgrave (1926c).

MacGillivray & Rodway (1931), who were members of another expedition organised by Pollock in 1927, provide a comprehensive list of vascular plants of the Capricorn and Bunker Groups. Nebe (1928) provides notes on turtle canning, and Mapier (1934), in a non-scientific book, records observations made on this trip.

Steers (1937) makes brief reference to North West I. and later (1938) provides a short description and a map of the cay. Yonge (1930) refers to the reef at the island and supplies photographs of the reef and of one of the large negro heads.

Brief references to the island are made also by Harrington (1920), Boardman (1929), Roughley (1936) and Gillett & McNeill (1962).

4.4. Impact of Human Use

It is hard to judge the impact on a year by year basis because no real study has ever been done. The following comments have been gathered over the years from regular uses of the island.

a. More insects have been introduced due to Mans presence. Ants, centipedes, mice, cockroaches have been introduced. The effects are unknown.

b. Ferral cats were introduced by the early users. These kill baby mutton bird chicks and result in a high mortality rate. Efforts are being made to rid the island of these animals.

c. Chickens were also introduced by the guano miners and turtle canners. The effect of the chickens could be to sustain the cat population when the shearwaters migrate or harbour parasites that could kill adult or chick birds. Asthetically it is a bit annoying to wake to the sound of roosters crowing. McBride (et al) has done significant work on the social behaviour of chickens on this island.

d. There are few big fish to be seen while snorkelling as mentioned earlier. This has been caused by overfishing but then still there. However many will tell you that the fishing is still good and there has been no impact. Such statements on both sides of the coin result from the lack of Scientific research into impact by fishing. Interested readers are referred to the Coral Trout studies that are being undertaken by GBRMPA.

e. Around the camp site over the years, many pieces of home made furniture have accumulated. Unfortunately many uneducated campers of the past cut down Pisonia trees to make camp furniture and bush toilets. Many have carved their names in the trees and left souvenirs of past conquests. Some campers bring their own "furniture" which, in the past, has consisted of old drums and steel supports for tables. These have accumulated in the camp sites and can become rusty and detract from the overall appearance.

f. In the inshore area there are some concrete blocks which locals use for moorings.

g. Around the island are dozens of star pegs left behind by surveyors who have not bothered to pull them out after use. These are not only an eyesore but also very dangerous as they can cause a nasty gash in a foot. So either wear shoes while walking around the island or keep a sharp eye out.

4.5 Present management plans

There is no seasonal closure on North West Inland at present. It is open all year round for campers or user groups provided permits are obtained.

There is however a limit of 100 at any one time and so there is a limit to the number of permits that can be issued at once.

Ch.5. USING THIS ISLAND AND REEF FOR EDUCATIONAL PURPOSES

5.1 How to get there from the mainland

The only access is by boat. For groups of 40 or more the only access in one trip is by barge. Speed boats and catamarans take about 2-3 hours from Gladstone or Rockhampton and barge about 6-7 hours. These times are for good weather and depend also on the size of the group and the amount of gear taken.

The predominant winds are south east. A good trip with moderate seas would be a forecast of 5-10 knots. A moderate trip with forecast 10-15 knots or 15-20 knots. A rough trip would be 20-25 knots and if you are keen 25-30 knots. Above this you should stay in port overnight or until the weather abates.

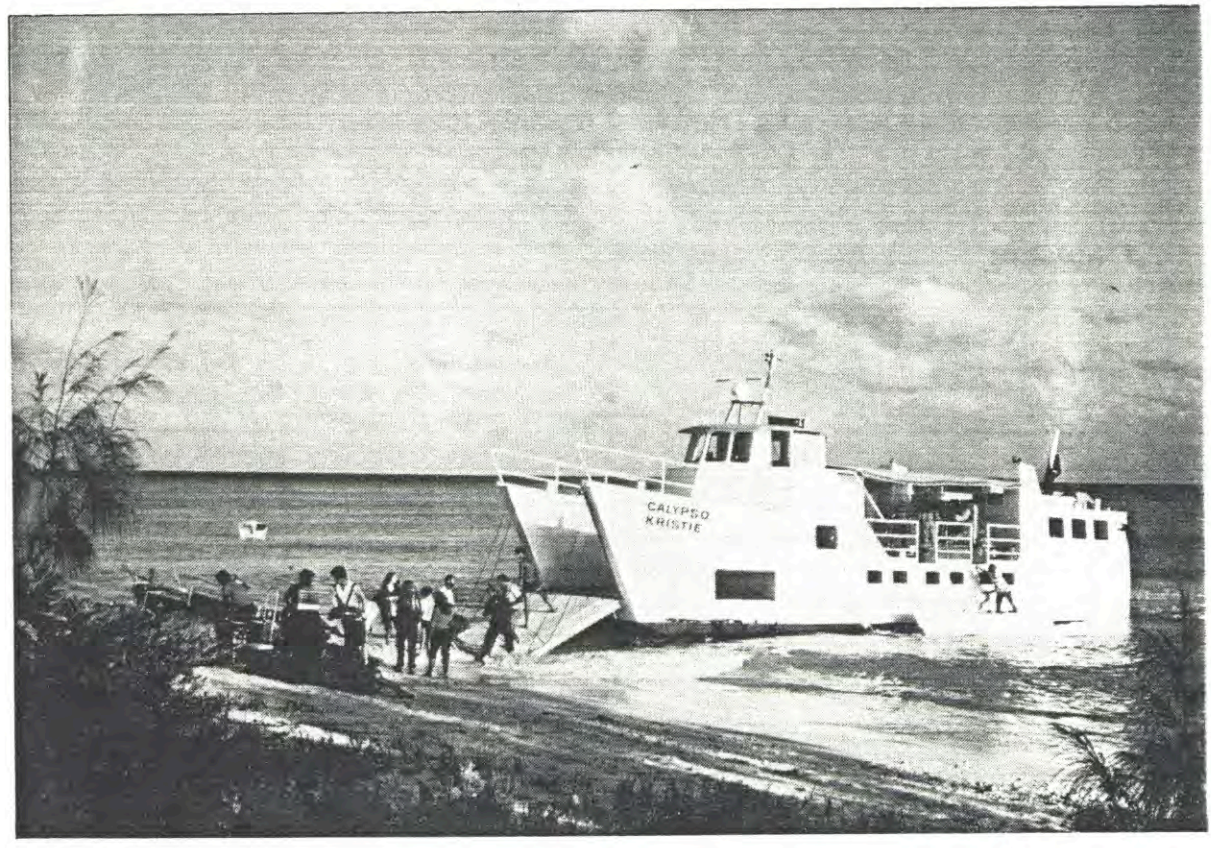


Photo 31: Typical Arrival at High Tide

There are some tides vessels cannot make the crest and you should plan your trip around the tides well in advance before your visit to make sure you get the best booking. You may have to load at night so make sure that everything is well protected. If it is raining make sure you are prepared, large plastic bags are good for putting sleeping bags in and covering food.

Some Handy Hints to Assist your Voyage

Three (3m) aluminium dingies with small outboards transport well; Air beds are handy to sleep on for travelling; deck space on vessels is at a premium so it is advisable to check with local operators; if you are a school teacher, then make sure the vessel you travel in has a current certificate of survey; make sure you have 2 staff who can stay alert all the trip in all weather conditions and who do not get seasick.

Some trips can take longer than expected. Sleeping is an excellent activity at night and should be encouraged. That way you know where everybody is. Make sure the students have access to warm clothing, somewhere to lie down if necessary, sea sickness pills or a bucket and towel.

5.2 Living at this island

1 Camping

As mentioned earlier the island is a wilderness island with no facilities and special considerations have to be observed.

If the barge is taken then loading is done at high tide straight onto the beach. Warn students about the ramp which can get slippery and does move with the waves. Don't start the trip with a gashed foot.

If you go by launch the boat will anchor at the crest and loading is done from there by dingy. This for a large group will take time and is not as easy as loading on the beach.

Once unloaded decide on the campsite. If you are arriving at night and are unfamiliar with the island then it would be unwise to start to select a campsite. Just camp on the beach under the big Fig Tree (see photo 32) and wait till daylight. You will probably do more damage and risk the safety of your party if you don't.

Photo 32: The Big Fig Near Hut

As mentioned earlier be prepared for the worst of weather. There is an area around the hut under a large fig tree which is a good point to sleep people in the dark and there is a large area directly behind the hut for a large campsite. Depending on your own preference, there are plenty of campsites around the hut.

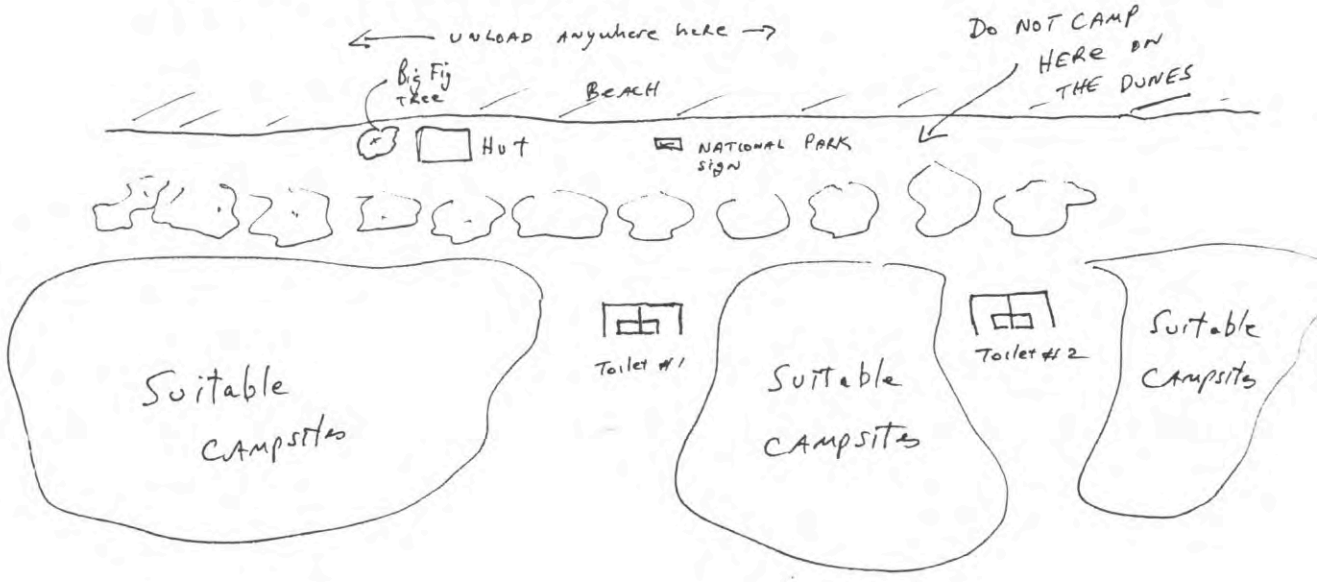


Diagram 14 Mud map of toilets and campsites North West Island

Choosing your site

Be careful of old Pisonia Trees which may break in the wind.

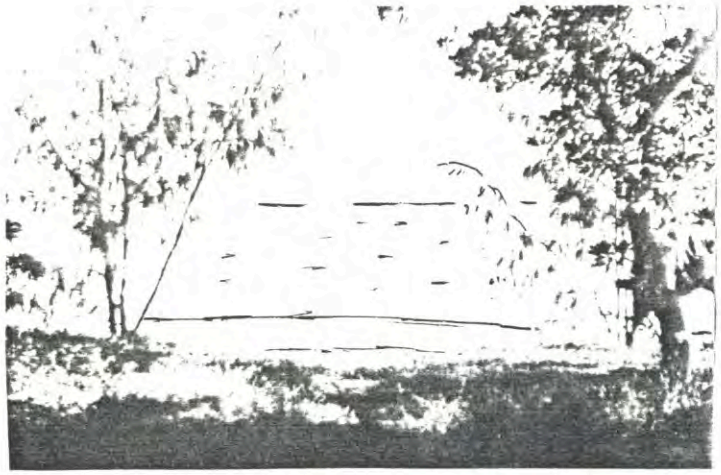


Photo 33

Select an area that is well protected and not in mutton bird runways. These can be picked by gaps in the trees on the fore dunes and "walkways" into the pisonia forest. (see photo 33)

Also look out for mutton bird holes and allow easy access for the birds.

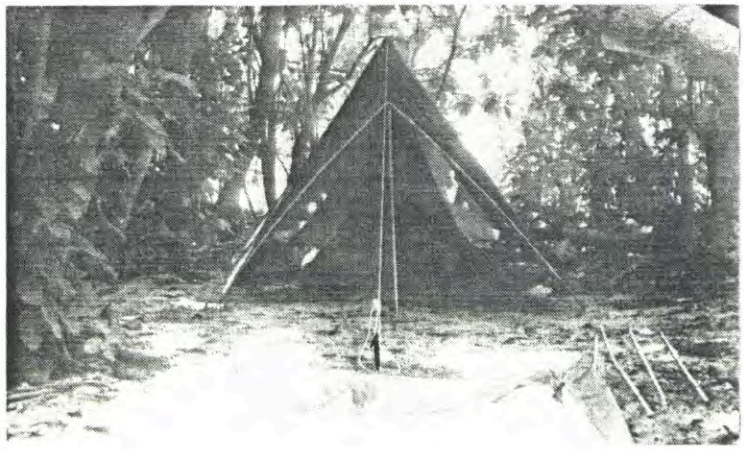


Photo 34

Nylon tents that can be washed are useful because noddy tern guano will accumulate on your tent over the cay and have to be removed with ease. (see photo 34)

SUGGESTIONS ON EQUIPMENT

The photographs below show a range of lightweight camping equipment for a group of 8-10 people that is inexpensive and logistically possible to carry to this island.

Photograph 35 shows: Small buckets with lids that can be used for washing up, cleaning fish, storing fresh water. Small Double Burner Gas Stoves can cook a meal quickly for the group. Billies from Beetroot tins are robust and cheap, while the local milk vendor will lend you some milk crates for storage, tables or chairs. Also shown are rubbish bins which make safe storage for food, clothes or vegetables.

PHOTO 35

Photograph 36 shows: Five litre water containers. This is a useful size because it can be issued to each member of your group for the whole trip as a ration. As a guide, allow 1 gall. (4 litres) per person per day.

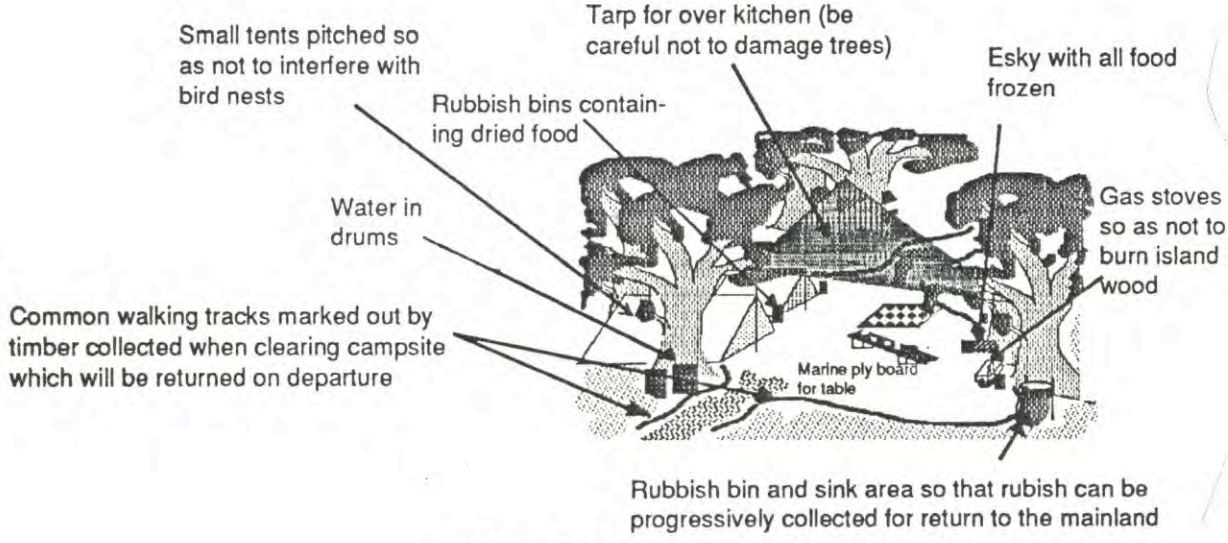


Photo 36

Photo 37 Hints: Canopy over kitchen area, Tents in trees away from Mutton Bird Runways, Food in Rubbish Bins and crates, Eskies burried.

Canopies:

These are useful to keep rain off and make things a bit more comfortable. Light flys are excellent. No poles are needed as the pisonias are quite high and the fly can be tied up. Make sure you dont damage trees and take all string with you when you leave.

For up to date information about radios/reserve contact:

The Officer in Charge
Boyne Is. Field Study Centre
Boyne Island via GLADSTONE

Here are some safety hints!

1. Make sure of the competance of your staff. Snorkelling, diving, sea travelling, first aid, radio communications are but a few of the necessary qualities.
2. Currents around the cay are variable.
3. Surf over the crest varies with weather.
4. Warn students about coral cuts and the need for their prompt treatment.
5. Warn students about the need to wear sandshoes on the reef.
6. Advise students to shuffle their feet so as not to step on stingrays.
7. Warn students about cone shells, stonefish, hydroids.
8. Advise students to wear gloves when snorkelling.
9. Do a safety drill on the vessel you travel on and watch the ramp when unloading as it gets quite slippery and people are excited.
10. Do a thorough camp drill.
11. A basic resuscitation course is also recommended for all participants.
12. Take a whistle and set up signal commands e.g. one - (stop and listen) two - (come to whistle blower).
13. Check radio schedules and keep them.

Special Considerations for Camping

1. If you take canvas tents then prepare for a lot of washing and rewaterproofing when you return. The noddy tern guano is thick. It's best to take nylon tents and flys. Ground sheets are handy.

2. Take sand pegs, leave all small metal pegs at home. Wooden ones can be made quite inexpensively

3. Arrange with the local milk board to lend you 30-40 milk crates. Then take some planks. They are invaluable for tables, chairs and preparation areas.

4. Take all fuel. Make sure the fuel is clean and free from termites and ants. Take all gas for all cooking.

5. Students should be encouraged to take torches for lights. (This saves on breaking gas lights)

6. A 27 mhz radio is the minimum safety requirement. See the Air Sea Rescue or contact the Boyne Is. Field Study Centre if you don't have one. Better still (if you can afford it) a 2m band VHF set (about $500) will allow you to talk day and night.

7. Arrange with NP&WS for a visit. Also they have a surveillance plane which flies twice/three times a week. Take some flares just in case.

8. Arrange with the helicopter people at Gladstone airport for a back up stand by. It would be unwise to go unless you have checked on these details on this back up.

9. Take a well equipped first aid kit and see a medical practitioner about additional supplies for this kit.

10. Detergents and most shampoos will lather in water. Soap does not lather well.

11. Emergency

a. Tell the Air Sea Rescue (VM4RG) you are going.

b. Make a daily radio schedule with Yeppoon.

c. Advise the Helicopter Service you are going and find out the cost of a beach rescue. Talk this over with your P&C.

d. Familarise yourself with the radio local frequencies.

If the Air Sea Rescue decides that a rescue is decided necessary then they will contact the local Police and you will not have to pay. If a rescue is deemed not necessary they will ring the Helicopter Service who will send a helicopter and you will pay for helicopter hire.

A helicopter rescue will cost about $600.

Radio (27 mhz set)

Chatter Frequency is 27.91

Trawler Frequency is 27.82

Calling and Emergency Frequency is 27.88

Accommodation in Gladstone

Rocky Glen Hotel Motel
Dawson Road,
GLADSTONE. QLD. 4680
Ph. 079 - 722977

Boyne Island Field Study Centre
Boyne Island Via Gladstone

Ocean View Hotel-Motel,
35 Yaroon Street,
GLADSTONE. QLD. 4680
Ph. 079 - 722166

Close to wharf

Tanyalla Conference Centre,
TANNUM SAND.
Ph. 079 - 73 7217

For Bus people out of town

Restaurants

Tulips: (will open for meal)

1984

Medical Aid

Tank Street Medical Centre, Ph. 72 1677
Gladstone Hospital

Food

Big W
Fruit Bowl
Supervalue

Blue & White Cabs Ph.72 1800
27 Chapple Street,

Port Curtis Dairy
6 Short Street,
GLADSTONE.

General Information

Gladstone City Council Ph. 079 72 2202
101 Goondoon Street,
GLADSTONE. QLD. 4680

Gladstone Post Office Ph. 079 72 1133
Goondoon Street,
GLADSTONE. QLD. 4680
Ph. 079 - 72 1133

Gladstone Police Station Ph. 079 72 1122
Yarroon Street,
GLADSTONE. QLD. 4680

Gladstone Railway Station
Toolooa Street, Ph. 079 - 72 1044 (Enq)
GLADSTONE. QLD. 4680 Ph. 079 - 72 1415 (Ticket)

State Emergency Service
Lamington Drive, Ph. 079 - 79 1122
GLADSTONE. QLD. 4680 Ph. 079 - 79 1054

Day and Grimes,
Travel Service, Ph. 079 - 722577
136 Goondoon Street, Ph. 079 - 72 2459 (A.H.)
GLADSTONE. QLD. 4680

Gladstone Airport (Helicopter)
Airport Office Clinton
GLADSTONE QLD 4680 Ph. 079 - 78 1177

1985

Pats Bait and Tackle
(undercover parking)
Bait general fishing boating gear

Air Sea Rescue
P.O. Box 797,
GLADSTONE. QLD. 4680
(for Radio/Rescue
Information

(phone: (079) 72 2684, 723 843

Taxi Companies

Shell Service Station
Cnr. Herbert & Goondoon St.,
GLADSTONE

079 72 3671
(Car Storage also contact the
Charter Boat operator)

Diving Equipment
The Diving Academy
Compressors etc
Goondoon Street
GLADSTONE QLD 4680

Inform
1985

5.3 Using boats at this island and reef

1. Availability of boats for use at this reef

All boats have to be taken to the reef. If the barge is taken then 3 m dingies are recommended because

* they fit into the well section of the barge
* more than 1 can be taken
* two can be strapped onto the top deck
* larger boats eg. 3.6 m, take up the whole room and make packing difficult
* aluminium is very good for hauling over the crest at low tide and a 3 m boat is light so a few students can carry it. Larger boats are difficult to manoeuvre.

Inflatable boats are good for small groups and are ideal as a snorkelling and diving boat. They are expensive and have limited use for students who tend to need more robust materials to work with.

Because the island is a wilderness island, all tools, petrol, radios and safety equipment needs to be taken.

2. Currents and tides

The spring tides at North West are about 4.9 m with the highs coming all the way up the grassed area in front of the camping sites. Never leave your boat on the beach at night during spring tides. Either anchor it well in the lagoon or pull it well up under the She oaks otherwise you will loose it.

Note that in winter the tides are higher at night than in summer so do not use the daytime high tide as a guide to tide height.

The low tides make the crest dry and the best way out at low tide is down the channel. Again an aluminium dingy is ideal because it can be pulled in the shallow water. When you get to the crest at low tide there is about 20 metres to low water.

Be careful of the coral when launching your boat at low tide. Lift your boat well clear and drop it in. Don't step on the edge of the coral or it will break and gash your leg. It also damages the coral.

Currents around the cay are quite mild, because of the large size of the cay. However wave size and wind can make any area dangerous and students would be illadvised to go out of the lagoon area in rough weather.

So that damage from boats can be minimized, it is a feature of the users of the cay that the channel be used at all times. It is free from bommies, and has an old boiler marking the entrance.

3. Channels, Markers and Anchorages

The practice of tying boats to trees should be avoided because it not only damages trees but may sink your boat, or seriously hurt people as they walk around the island. All boats should be either anchored in the lagoon with two lines or dingies hauled up above high tide mark at night.

If you look carefully in the shoreline gutter just to the right of the hut you will find a piece of concrete that can be used as a mooring.

For keeled boats the best anchorages can be found off the crest as indicated in the diagram below. North West is a well established safe anchorage from strong winds. For S/E the northern side is used, for N/E the south western side and so on.

Surveyed Vessels out of Port Gladstone (at time of publication)

* CalypsoKristae (John McGregor) - The Barge -
* Cap Star (Kev Binn)
* Norval (John Gleeson)
* Naulis Barny Pt. Engineering (Nick Scheony)
* Marlin I (Don Kendick)
* Tropic Rover (Ron Eibull)
* Sea Hunt (Ron Marky)
* Pearl Bay (Laurie Pearl)
* Pentana (John Pugh)
* Australiania (Max Allen)
* Rigel Hunt (Maurice McGee)
* Sonya (Frank Warburton)
+ Odessa

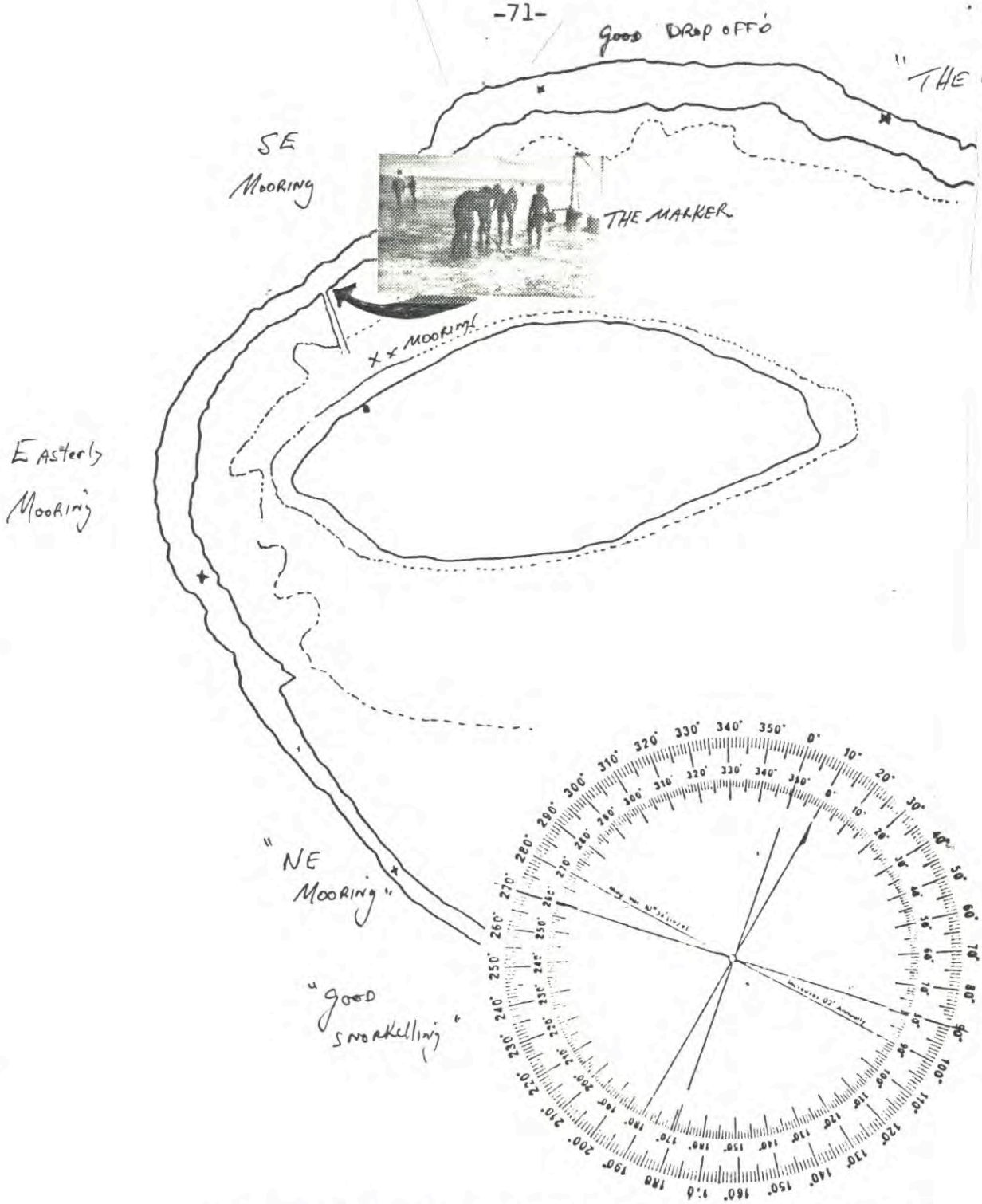


Diagram 15 Anchorages, Channels and general features of North West Island

5.4 Costs (Note: As of time of publication) 1984

The barge and the catamaran cost about $50 per head (student rate) (maximum) hire is $2,000 $100 per head adult.

Launches cost about $1,000 per day but can only carry 16.

Helicopters cost about $500 per hour for 2-3 people and are restricted by weight.

There is no charge for the use of the island just get a PERMIT.

Other Costs

If you have to start from scratch with your first aid kit allow about $100.

If you hire a radio allow about $20.

Dry ice is expensive. For 50 about 3kgs will last a week with the menu suggested in the appendix.

Petrol for boats will vary with current prices. To do all activities with a boat for a week allow 5 galls. If you plan to go to the fishtail allow an extra 5 galls.

An all up budget for a week camping from Sydney by bus, using boats and menu appendixed in 1985 should cost no more than $140, for a group of 45 students and 5 staff.

Mainland Travel	Bus	$ 50
Barge Travel	Boat	$ 50
Food	Appendix	$ 30
Misc (Petrol, First aid, Radio, Handouts)		$ 10
TOTAL EX SYDNEY COST		$140

This was 1985 $s

There are many ways to reduce this by fund raising, and parents donating food, or taking your bus driver, borrowing a radio, borrowing a first aid kit, having the P&C pay for the handouts, taking 50 - all members of the party over 40 travel free so thats a saving of $500 immediately.

By far camping is the most inexpensive way to see the reef. It is also an excellent education for students to experience how to use a wilderness area. This saves making resorts on islands for people who do not have the skills to survive in a wilderness area. It also is an important lesson for mainlanders who use National Parks. It saves bulldozing down trees to make roads for cars etc. so that people can get into a National Park.

6. STUDENT LEARNING ACTIVITIES AT THIS ISLAND AND REEF

6.1 Reef Educational Areas

Ten areas suitable for reef appreciation have been identified by Moffatt (1977-84). Note: A Rating scale of 1-7 is used to indicate the potential of the area. 1 (Gladstone Harbour) would be very poor, while 7 excellent (Outer Barrier).

Area 1 Around the SE anchorage near the MARKER.

Area 2 Near a prominent coral boulder north of the campsites on the reef crest.

Area 3 Two large coral bommies bearing 170^{o} on top of eastern end of cay, about 15-20m off crest.

Area 4 An area of outer coral zone coral just East of Area 3 extending for about 50-80m shorewards.

Area 5 An area of inshore coral micro attols very close to shore at western end of cay extending for 200 metres towards prominent coral boulder.

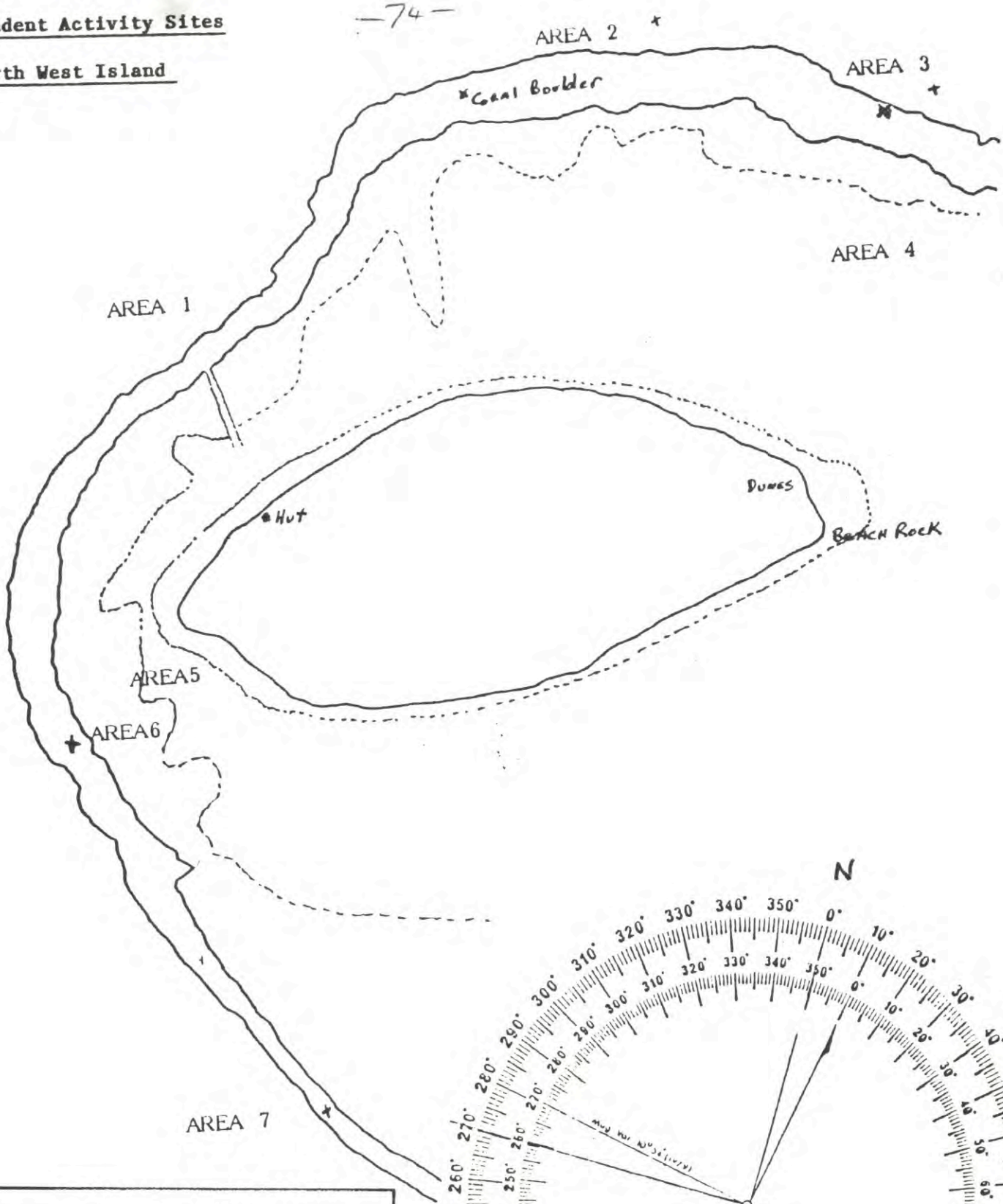
Area 6 A small area of staghorn coral beds about 300m east of prominent coral boulder and about 30m inside crest zone.

Area 7 An area of about 10 pools sunken into crest starting at bearing 12^{o} on eastern tip of cay and finishing at bearing 0^{o} on eastern tip of cay.

Area 8 The Fish Tall. See separate diagram.

Student Activity Sites

North West Island



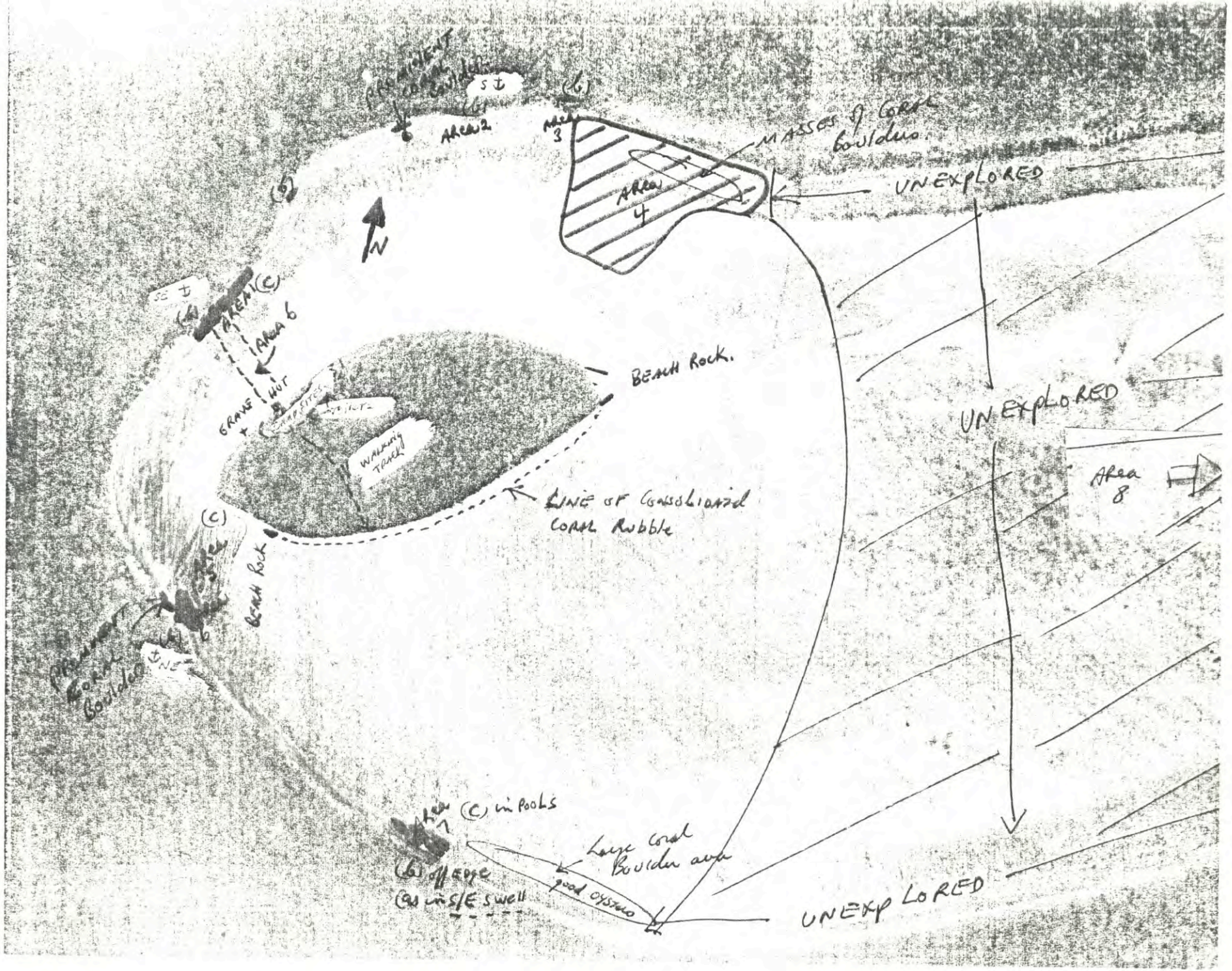
Notes:

Title of Research Project.....

Students Name.....

NORTH WEST ISLAND EDUCATION AREAS

THE FISH TAIL


Area 2
Area 3
Area 4
MASSES of CORAL boulders
UNEXPLORED
N
BEACH ROCK.
GRAVE
HUT
WALKING TRACK
LINE of Consolidated CORAL Rubble
UNEXPLORED
Area 8
BEACH ROCK
Large Coral Boulder area
good oysters
UNEXPLORED

Area 1: (rated as a 2)

Is located directly in front of the old channel leading out from the Tanby Hilton. It takes about 10-15 minutes to reach from the hut and contains 9 small to medium sized pools located in the reef crest. These pools are extremely safe for small children and non swimmers who want to see small fish and coral. Near the reef crest and extending seawards are many crevices and bommies. The area is poor in coral and fish diversity but is useful as an introductory area for a first snorkel activity. Currents are very mild here and quite safe for snorkelling at all tides. This area would suit most of the first activities and feeding of fish with other fish caught in a bait net is quite profitable. A feeding station is being attempted around the marker and fishing is being discouraged for this reason.

Photo 38: Students Preparing to Snorkel Area 1

This area is the closest to the camp site which makes it ideal for manta tow and night time activities. It takes about 8-10 minutes to tow two people out to the crest and back in a 12 foot dinghy with a 6 h.p motor.

At the end of the channel is a temporary marker erected by local Gladstone residents. It serves as a good place for people to hang hats, shoes, and other apparel.

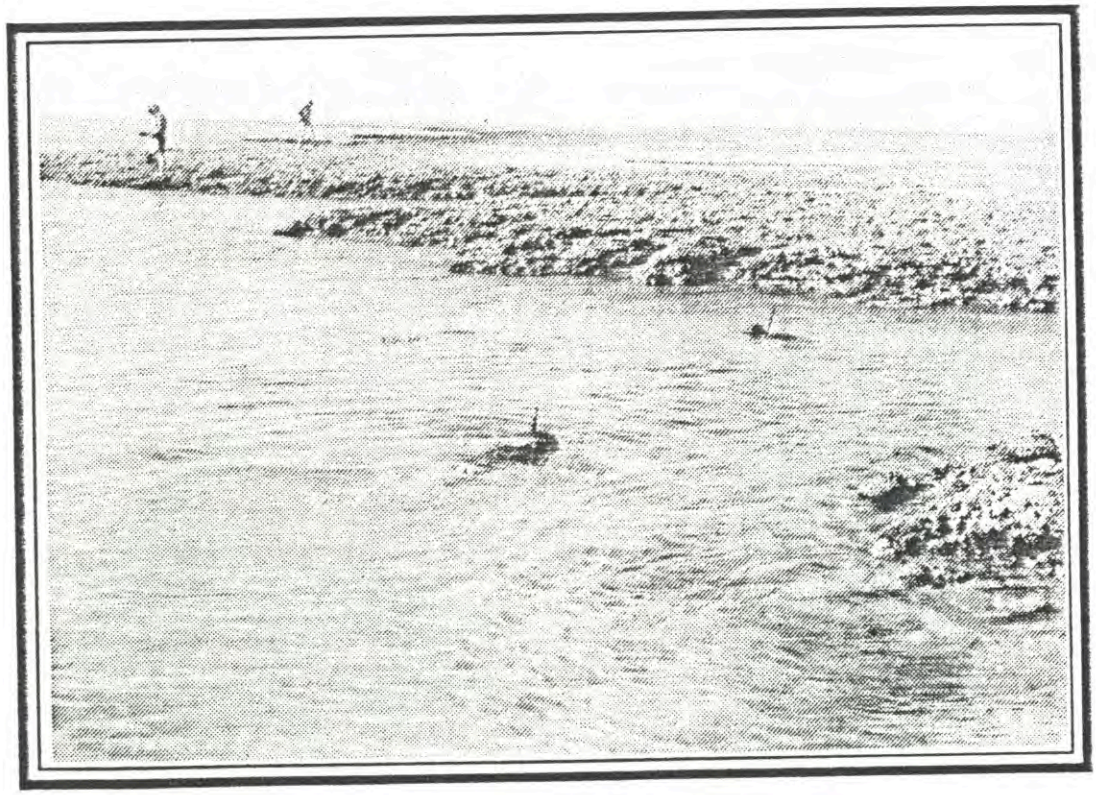


Photo 39: Spur and Grove Section Area 1 allows Students to study coral formations

Area 1 allows easy, quick access to an area which shows all the features of a coral cay. The pools in the crest are ideal for disabled people or for those who don't want to venture out.

Photo 40: Typical Pool Area 1

The pools are covered at high tide but can be safely studied because of mild currrents and quick access to the beach.

Photo 41: The same area - Mid Tide

Area 2:

This area can be located about 200 metres north of a prominent coral boulder near the southern anchorage for the cay. Bearing 135° on eastern end of cay tip and 205° on marker. The area is rated 3.5 with many interesting caves and bommies. A fair range of soft and hard corals can be found with average fish diversity. Bommies are located about 40 metres off the crest. Rates as an average to experienced snorkel site.

Photo 42: Walking to Area 2 past "the Waterfalls". The Boulder can be seen in the background.

It takes about an hour from Area 1 to Area 2. Along the way you will pass the "the waterfalls area" which demonstrates the effect of water emptying from the lagoon.

Area 3:

Located about 500 metres north of area 2 bearings 160° on eastern tip of cay and 225° on the marker. Two very large bommies can be found with good coral diversity but poor large fish diversity. On a good day this is about the best close snorkelling site rated 3.5 and advanced snorkelling due to the depth of water and distance from the campsite. The bommies are located about 15 metres off the crest.

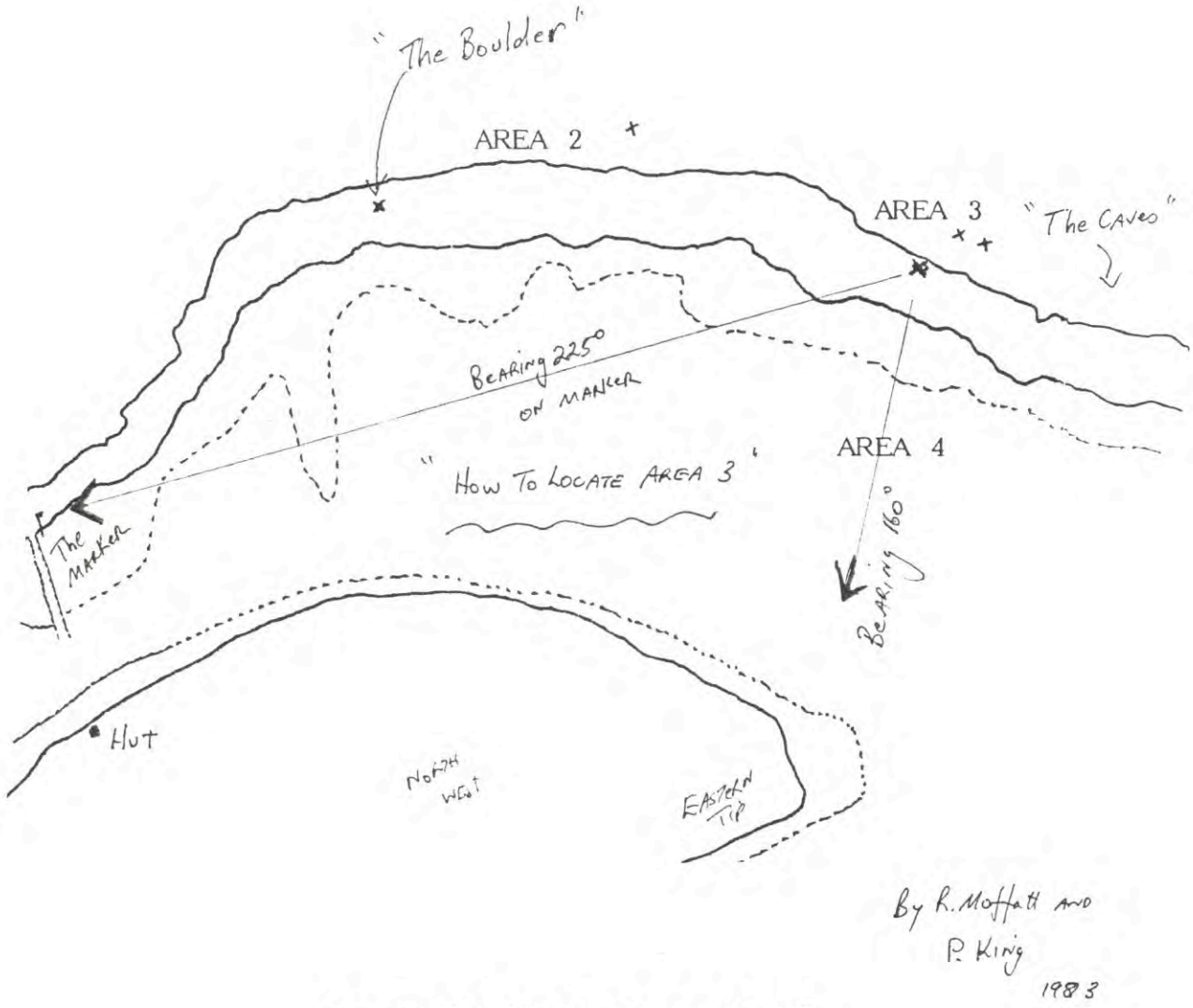


Diagram 16: The Bommies - Area 3

Area 4:

Located inside the reef crest from Area 3. The area is an interesting walk back to the cay. It contains many species of acropora.

Photo 43: Typical of Area 4. Large areas of Staghorn and Stumpy Knobly Coral.

If reef walkers take a coral viewer then it can provide many hours of interesting viewing.

It is worth noting the time it takes to travel between these places. As a guide, 1 km per hour:

Hut - Area 1 - 15 minutes
Area 1 - Area 2 - 1 hour
Area 3 - Area 4 - 15 minutes
Area 4 back to the Beach Rock on the cay about 40 minutes.

Area 5:

Located just off the Beach on the westernside of the cay. Walk around the cay westwards from the Hut and just as you pass the tip and head off towards the coral boulder visible on the crest.

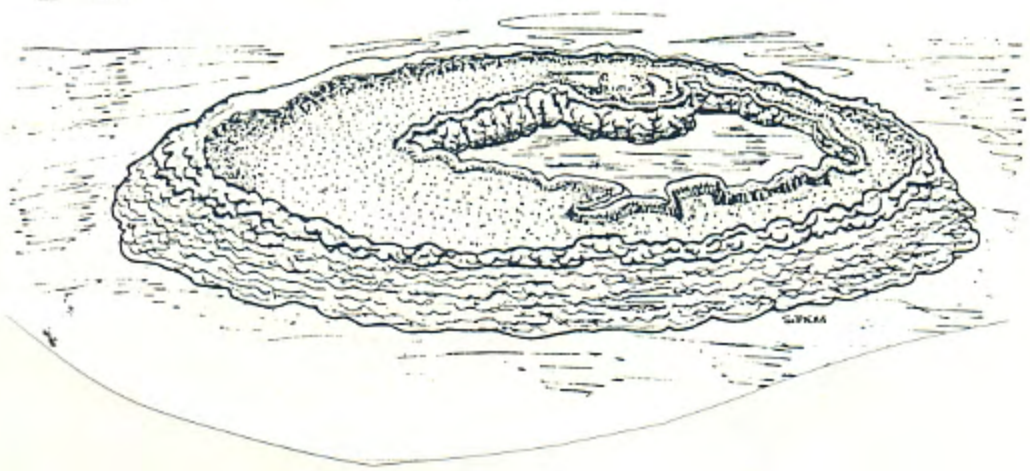


Photo 44: Area 5 Just off the Beach - western side of Cay. Note the micro attols.

Here the outer coral zone extends very close to the beach. Many micro attols of the coral poritas can be seen. This massive species of coral grows to form a flat topped mass which dies as it reaches the level of low water but continues sideways. Hundreds of these micro attols can be found close inshore and it is an excellent area for study if strong northerly winds are experienced. Many species of clam are seen here and small toad fish seem to be in abundance. The micro attoling extends almost to the crest where the Acropora seems to take over. This area would be an excellent high (neep tide) or medium (spring tide) snorkel. The area extends out to a prominent coral boulder.

Area 6:

About 200 metres east of the coral boulder and about 20 metres in from the crest. An excellent bed of Acropora can be found. This area makes a good medium tide snorkel and is good coral viewing in north to north easterlies. It would take about an hour to reach from the camp site.

Area 7:

Between area 6 and 7 the crest gets quite wide. In some places it reaches 50 metres and is very barren. It takes about 20 minutes to walk to Area 7. Here the first pool can be found at bearing 12° on the eastern tip. A general description of the pools is as follows:

1st	6m x 6m	Lots of dead coral at bottom
2nd	15m x 15m	Good demonstration pool for an introductory talk
3rd	6m x 6m	Fair diversity
4th	40m x 40m	A very interesting pool with long and irregular shapes. Good diversity. An excellent site to do an underwater mapping and study.
5th	5m x 5m	Fair
6th	5m x 5m	Fair
7th	30m x 5m	Good
8th and 9th	5m x 5m	Fair.

Photo 45: Typical Pool Area 7

This area is extremely safe. The pools are set well into a very wide crest. They would allow non swimmers the chance to experience under water activities in real safety.

About here a dead coral boulder zone starts and is about the limit of time you would have here with a walking party. It takes about $^{3}/_{4}$ hour to walk back to the cay through a very narrow outer coral zone and over a very uninteresting rubble and sandy zone. The walk back is very arduous and is a good test of physical stamina. Guaranteed to tire out the over zealous student.

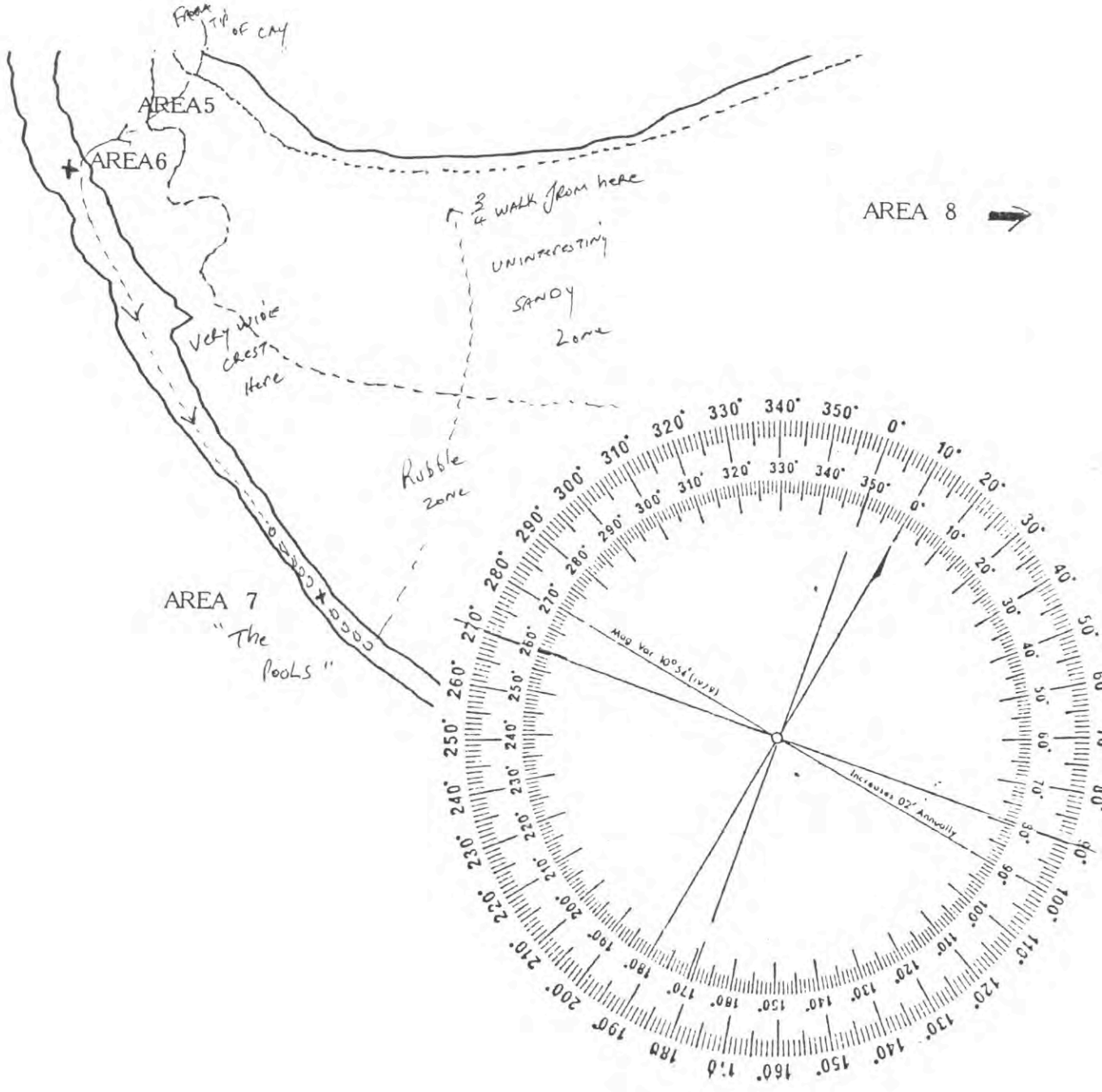


Diagram 17. The Pools area Southern Section North West Island

Area 8:

The fish tail. This area requires a boat and full day with a high tide in the morning and afternoon. It takes about 2 hours in a 12 foot dinghy with 3 people and a 6 h.p outboard. You would leave in the morning, fish with the tide, snorkel and reef walk at low tide, snorkel and reef walk at low tide and return with the tide in the afternoon. The area has an excellent plate coral with many crayfish.

6.2 REEF WALKING

Photo 45 Students prepare for reef walk: Note the absence of hats.

The following section describes 3 possible reef walks that you could do with your students using the 10 areas.

(a) Northern Side Walk

Start at the channel. Have students take their face masks and snorkels and wear sandshoes and protective clothing.

Photo 46: Students Head out for Reef Walk

Walk out to the channel and to the crest pointing out the various zonation patterns as you go. Then walk North East along the crest past an area called the "waterfalls" noting the reef structure and occasionally looking into the pools. Walk all the way up to the coral boulder and examine its structure.

Now walk on for about 500 metres and turn back towards the cay. As you pass the outer coral zone you can find good examples of the different variety of corals. Be careful when walking out not to walk on top of the corals.

Then walk back to the camp sites along the beach. The walk is a leisurely 3 hours.

If you wish you could go for a snorkel in the pools that are 500m past the coral boulder or the more able snorkelers could see if they could find the bommies that are just off the crest at a bearing of 170 on the tip of the cay.

(b) THE CHANNEL WALK

This is possibly the most obvious and will become part of the daily routine. However it could be the first one that you do and should serve to be an introductory one pointing out different conservation strategies and zonation and diversity concepts. Look for evidence of the old train lines that the turtle canners used to transport their wares to the crest. Also you could do a transect each year you go to compare changes in the distribution and abundance of reef organisms.

Photo 47: Students prepare to channel walk. A boat is handy for this walk because students can store gear in it when they go for a snorkel at the end.

Photo 48: Students on the channel walk can stop to complete worksheets or take observations.

Photo 49: At the end of the study they can relax in the pools or over the crest.

(c) THE SOUTHERN SIDE WALK

Walk around the cay going west from the hut. As you pass the western tip you will see a large coral boulder. Walk on until you are half way between the tip and the beach rock and head out towards the boulder. This also makes an ideal snorkel about mid tide. As you go point out the large variety of Porities corals and get students to snorkel for a while around the colonies. Now walk out to an area just inside the boulder. You may have to vear off a little south and you should come to one of the best Acropora gardens on the island. Have students snorkel around the Acropora and compare the diversities and abundance of animals and plants at the previous locations.

Now walk along the crest south and notice how the crest widens. Keep walking until you come to the Crest Pools that were described in Area 7. Have students cool off in these before walking back. Which will take about 1 hour.

Photo 50 The beach rock on the southern side walk

The whole walk is about 4 hours and will tire out an over enthusiastic group.

6.3 Snorkelling and SCUBA

SCUBA is not recommended for this island as it has few really spectacular areas that warrant taking all the gear necessary as well as camping. For a small student party it may be justified but for a party of over 30 it would be impractical. Plus the fact that many people use the island for peace and quite and the sounds of generators running day and night to fill 30-40 tanks is rather offputting.

SNORKELLING is a different matter. There are many places where primary school students can safely snorkel or for the more advanced there are a number of snorkel trails that could be made.

The Pools Snorkel

Perhaps the best and most easily accessible area is right in front of the channel in the pools in the crest. Here all ranges of people can snorkel in the safety of a confined area from the elderly to young children. For the more advanced, a snorkel off the edge of the crest will demonstrate the concepts of reef geomorphology as well as introduce concepts of different adaptations to that of the pools and coral zones. The area is well suited to longer term projects such as mapping a reef pool or reef pool ecology. The area is marked by the old boiler mark at the mouth of the channel and the pools can be studied at all tides if that becomes part of the project.

There are two other Pools areas that are within walking distance. These are in Area 3 and Area 7 as described earlier.

The Bommies Snorkel

Two areas of bommies can be found on the Northern Section of the cay.

These can be reached by boat in about 10 minutes on high tide or can be walked to in about an hour at low tide. They are described as Area 3 in the previous section and are of poor quality if you want to see big fish.

It would be advisable to have a boat moored to one of the bommies if you were contemplating this activity and a line run out to the crest. The bommies are interesting from a geomorphological viewpoint in that there are many caves, crevices and canyons. Coral diversity is poor but there is a high diversity in small fish.

Snorkelling off the Crest

The crest slope just north of the channel is a fair snorkel. There are many spur and groove structures as well as isolated small bommies. A good activity may be to set up a snorkel trial. Walk up to the areas just passed the waterfalls and have students drop into the water just off the crest. Now snorkel back along with the tide to the channel mark. This can take about 3 hours if done at a casual rate. Wetsuits will have to be worn for this activity.

6.4 Cay Activities

Five areas have been identified by Moffatt (1977 - 84)

Area 1 Around the Campsite
Area 2 The Casuarina grove at the western end
Area 3 The southern side
Area 4 The Dunes area at the Eastern tip
Area 5 The walking track through the centre of the island.

Area 1:

The area is particulary good for two reasons. you can point out the impact by Man as well as observing the natural flora and fauna carefully while eating and relaxing. The area also has evidence of the ugliness of Man. Many names can be seen carved on the trees, nails driven into trees and old rubbish tins, cans and glass bottles that were left in the "Bash Burn and Bury" Please do not follow this bad example. All rubbish is to be taken back. Most school groups will come by barge. Try to clean up the big items of rubbish and take them back to some deep water and sink them on the return journey. See how clean you can make the island because there is a fair deal of rubbish still burried which is gradually being unearthed by the mutton birds and turtles.

There is evidence of the turtle canners also to the rear of the hut.

Here the remains of the boilers can be found.
To the west of the hut, a grave can be found.

There are also evidences of some elaborate campsites to the west of the camp area.

Area 2:

This is the thickest area of she-oaks to be found on the island. It may form part of a vegetation study with students estimating the distribution and abundance of co-existing species.

The area could provide a reasonable campsite for a small party or could be used as a survival overnight campsite. The vegetation is markedly varied from the remainder of the cay.

Photo 50: Students walk through the Cay

Photo 51: The track is marked with Red Ribbons

Area 3:

The southern side vegetation is pitted with Pandannas, Casuarina, Argusia and Pisonia. As you walk around the cay point out the Mutton Bird runways and how they stop just short of the strand line vegetation.

Along the walk the slope of the beach changes as well as the distribution of beach rock. Notice the strangling vine (Dodder check) that envelopes many of the scrubs.

Area 4:

At the eastern tip can be found the "Dunes Area". This is the highest part of the cay and reaches at the highest point 5 metres. The vegetation is extremely thick and a good activity might be to ask students to compare eastern and western ends. The introductory cay walk is designed to highlight this as well as compare the northern and southern parts.

Photo 52: The Dunes Area.

The largest of the Argusias can be found here and Pisonias can be seen growing to the beach. Further around can be found large Casuarina weaping over the beach. Once again ask students to compare the distribution, abundance and size.

The area also has the largest amount of beach rock on the cay. Two large spurs point out towards Heron Island. It may serve useful to point this out to students as well as the particular angle that the two spurs point. Notice the amount of sand trapped in between the spurs. You could measure this each year to estimate any changes. Examine the sand also and notice the courseness of the texture. Examine the beach rock and notice also the distribution and abundance of the species of shelled animals as well as the pink algae.

Area 5:

If you wish to go through the island then there has been some attempt made to create a walking track. Large numbers of students should not walk this track when mutton birds are nesting as the damage to chicks and parents will be horrendous.

The track starts about 50m west of the toilets closest to the hut, at a tree with blue paint. Follow the trees with the blue and red spray can marks through the island to the other side.

The walk will reveal the islands Fig trees as well as demonstrating the guano piles that were sought in the early days. In the eastern centre of the cay can be found the remains of the old tram lines and it is believed to contain a grave according to Golding 1978.

There is also a small rookery of sea eagles that roosts near the eastern tip [check] and a small colonies of reef herons have been reported.

The walk may reveal the ferral cats that were introduced and the chickens that inhabit the Pisonias at night. NPWS have made attempts to eradicate these animals but the success is unknown at time of writing. The cats are particularly hard to catch as are the roosters which seem to have become well adapted to their new home.

Photo 53: End of Day

Page 96 - need to locate

APPENDIX

Great Barrier Reef Marine Park
Capricornia Section

APPLICATION FOR PERMIT

NOTE

- Permits are required only for certain specified activities in certain zones or areas of periodic restricted use. Refer to the addresses on page 3 for further information.
- A further permit may be required from the State of Queensland in relation to certain areas and activities within them. Refer to page 3 for further information.
- Permits are free.

July, 1981

APPLICATION

I hereby apply for permission to use or enter the Great Barrier Reef Marine Park — Capricornia Section for the purposes set out below:

NAME: .....

(Title) (Surname) (Given Names)

HOME ADDRESS: .....

..... POSTCODE ..... TELEPHONE .....

CONTACT ADDRESS: .....

..... POSTCODE ..... TELEPHONE .....

NUMBER OF PEOPLE FOR WHICH PERMIT IS SOUGHT: .....

GROUP NAME, if appropriate: (e.g. association, club, school etc.) .....

ZONES(S) TO BE USED OR ENTERED: (See map on back of form) .....

PURPOSES FOR USE OR ENTRY: (Show main purposes and details of proposed activities for each zone for which use or entry is proposed)

(If insufficient space, please attach further information)

REEFS OR SHOALS ON OR NEAR WHICH USE OR ENTRY IS PROPOSED:

(Give name or position) .....

TIME PERIOD FOR WHICH PERMISSION IS SOUGHT:

From: ..... / ..... / ..... to ..... / ..... / .....

MEANS OF TRANSPORT TO BE USED: (Place X in appropriate boxes)

TYPE: Vessel ☐ Aircraft ☐

TYPE OF USE: Private ☐ Charter ☐ Other Commercial ☐ Research ☐

DETAILS OF VESSEL/AIRCRAFT: (e.g. name, size, type, registration number)

PROPOSED MOVEMENTS IN ZONE(S) TO BE USED OR ENTERED: .....

(Proposed movements may be drawn on map of Section provided on the back of this form)

....

(Signature) (Date)

NOTES

- Marine Park permits will be issued for a maximum of twelve months, but may be renewed.
- The permit may be issued subject to certain conditions e.g. provision of data on trip undertaken, notification of park management agency.
- Permits issued must be available at all times in the Marine Park for inspection.
- Furnishing false or misleading information in a permit application is an offence. Penalty $1,000.
- Permits may be cancelled if conditions are not met or an offence is committed.
- Applications may be lodged at or forwarded to:

The Chairman
Great Barrier Reef Marine Park Authority
Melton Place, 67-71 Denham Street
P.O. Box 1379
TOWNSVILLE, QLD. 4810

Chairman
Queensland Fish Management Authority
Transport House
230 Brunswick Street
P.O. Box 344
FORTITUDE VALLEY, QLD. 4006

Director of Marine Parks
Queensland National Parks and Wildlife Service
MLC Centre
239 George Street
P.O. Box 190
BRISBANE, QLD. 4000

District Patrol Officer
Queensland Boating and Fisheries Patrol
Yarroon Street
GLADSTONE, QLD. 4680

Regional Superintendent
Queensland National Parks and Wildlife Service
194 Quay Street
P.O. Box 1362
ROCKHAMPTON, QLD. 4700

District Patrol Officer
Queensland Boating and Fisheries Patrol
S.G.I.O. Building
Bourbong Street
BUNDABERG, QLD. 4670

The Chairman
Lands Administration Commission
Queensland Lands Department
Land Administration Building
130-148 George Street
BRISBANE, QLD. 4000

QUEENSLAND PERMITS

A separate permit may be required:

(a) from Queensland National Parks and Wildlife Service for island national parks.
(b) from Queensland Lands Department for other islands.
(c) from Queensland Department of Primary Industries (Division of Dairying and Fisheries) in relation to activities in certain other areas.
(d) from Water Quality Council of Queensland in relation to waste discharge.

If you wish to apply for such a permit to complement this Marine Park permit application, please fill in the following:

AREA(S) PROPOSED FOR ACTIVITY: .....

.....

ACTIVITY PROPOSED: (include any proposed camping arrangements) .....

.....

(If insufficient space, please attach further information)

The details given above will be forwarded to the appropriate agency for consideration for issue of a permit.

REFERENCES

BARRETT, C. (1910) Narrative of the expedition to the islands of the Capricorn Group. Emu 10 (3): 181-194, pls 15-18.

BARRETT, C. (1919). In Australia wilds. Pp. 1-230. Melbourne Publishing Co., Melbourne.

BOARDMAN, W. (1929). The reef builder. Aust. Mus. Mag. 3 (12): 400-403

CAMPBELL, A. J. & WHITE, S.A. (1910). Birds identified on the Capricorn Group during Expedition of R.A.O.U., 8th to 17th October, 1910. Emu 10 (3): 195-204, pls 19-25.

GEISSMANN, H. (1926). How the turtle makes her nest. The Queenslander, Jan. 16, 1926, No. 5987:21, 41.

GILBERT, P.A. (1926). The biology of North-west Islet, Capricorn Group, (B.) Birds, Aust. Zool. 4(14): 210-226, pls 30-32.

GILBERT, P.A. (1928). Peeps into sea-bird home life. Aust. Mus. 3(5): 158-160.

GILBERT, K & McNEILL, F. (1962) The Great Barrier Reef and adjacent isles. Pp i-xiii + 1 + 1-209, 1pl Coral Press, Sydney.

GOLDING, W.R. (1968) Personal communication.

MARRINGTON, H.R. (1928) The Great Barrier Reef. Aust. Nat. 7(3): 33-36.

MEDLEY, C. (1926) The biology of North-west Islet, Capricorn Group, (G.) Corals Aust. Zool. 4 (4): 249-250.

IRELAND, T. (1926) The biology of North-West Islet, Capricorn Group, (D.) Marine molluscs, Aust. Zool. 4 (4): 237-240,pl 35.

JUKES, J.B. (1847). Narrative of the surveying voyage of H.M.S. Fly, commanded by Captain F.P. Blackwood, R.N. ---. Vol 1. Pp i-xii + 1 +1-423, 10pls, map. T & W Boone, London.

LIVINGSTON, A.A. (1926). The biology of North-west Iset, Capricorn Group, (F.). Bryozoa, Aust. Zool. 4 (4): 247-248.

McBRIDE, G. et al (in press) The social organisation and behaviour of the feral domestic fowl.

MacGILLIVRAY, W.D.K. & Rodway, F.A. (1931). Plants on islands of the Bunker and Capricorn Group, Rep. Gt. Barrier Reef Comm. 3 No. 7:58-63.

McNEILL, F.A. (1926). The biology of North-west Islet, Capricorn Group (J) Crustacea. Aust. Zool. 4 (5): 299-318, pl.41.

MOREHOUSE, F.W. (1933) Notes on the Green Turtle (Chemonia mydas). Rep. Gt. Barrier Reef Comm. 4 (1) No. 1:1-22, pls 1-3.

MUSGRAVE, A. (1926a) The biology of North-west Islet, Capricorn Group. A. Narrative Aust. Zool 4 (4): 199-209, pls 25-29.

MUSGRAVE, A. (1926b). The biology of North-west Islet, Capricorn Group (E.). Insects. Aust. Zool 4 (4): 241-246, pl 36.

MUSGRAVE, A. (1926c). The biology of North-west Islet, Capricorn Group (1). Bibliography. Aust. Zool 4 (4): 253-255.

MUSGRAVE A & WHITLEY, G.P. (1926) From sea to soup. Aust. Mus. Mag. 2 (10): 331-336.

NAPIER, E. (1934). On the Barrier Reef. Pp i-xii + 1-201, 18 pls, map. Angus and Robertson, Sydney.

NEBE, J. (1928). A naturalist's holiday on the Great Barrier Reef. Qld. Nat. 6 (6): 102-108, 2pls.

ROUGHLEY, T.C. (1936) Wonders of the Great Barrier Reef Pp i-xii + 1-282, pls 1+1-50. Angus and Robertson, Sydney.

STEERS, J.A. (1937). The coral island and associated features of the Great Barrier Reef. Geogrl J. 89 (1): 1-28, 6pls, map; (2):119-139, 4pls.

STEERS, J.A. (1938). Detailed notes on the islands surveyed and examined by the Geographical Expedition to the Great Barrier Reef in 1936. Rep Gt. Barrier Reef Comm. 4 (3) No. 7:51-104.

WEBB O. (1969) Personal communication.

WHITE, C.T. & MacGILLIVRAY W. (1926). The biology of North-west Islet, Capricorn Group (H) Botany Aust. Zool. 4 (4): 251-252.

WHITLEY, G.P. (1926) The biology of North-west Islet. Capricorni Group (C) Fishes. Aust. Zool 4 (4): 227-236, pls 33-34.

YONGE, C.M. (1930) A year on the Great Barrier Reef Pp i-xx + 1-246, pls 1-69, maps A-F, Putnam. London.