

**MARINE RESERVE IMPLEMENTATION:
PILBARA**

**RESOURCE ASSESSMENT FIELD SURVEY OF THE
MONTEBELLO/BARROW ISLANDS AND THE DAMPIER
ARCHIPELAGO/CAPE PRESTON REGIONS
14-25 June 1999**

Field Programme Report: MRI/PI/MBI & DA - 20/1999

A collaborative project between
CALM Marine Conservation Branch and the Pilbara Regional Office

A project partially funded through the Natural Heritage Trust's
Coast and Clean Seas Marine Protected Area Programme
Project No: WA9701 and WA9702

**Prepared by K P Bancroft
Marine Conservation Branch**

June 1999



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ACKNOWLEDGEMENTS

Direction

- Dr Chris Simpson - Manager, Marine Conservation Branch (MCB)

CALM collaboration

- Andrew Hill – Senior Marine Planner, MCB
- Dr Sue Osborne – Community Liaison Officer, MCB
- Kevin Bancroft - Marine Conservation Officer, MCB
- Mike Lapwood - Marine Operations Officer, MCB
- Chris Muller – Regional Manager, Pilbara Region
- George Watson – District Wildlife Officer, Pilbara Region
- Geoff Kregor, Ranger-in-Charge, Dampier Archipelago Nature Reserve
- Dr Andrew Burbidge, Senior Research Scientist, CALMScience Division

Funding and resources

- The Montebello/Barrow Island and the Dampier Archipelago/Cape Preston Regions resource assessment field survey is partially funded by two grants of \$64,000 and \$43,000 provided through the Natural Heritage Trust's Coast and Clean Seas Marine Protected Area Program.
- Resources including the Research Vessel *RV Bidthangara*, scientific supervision, technical assistance, logistical support and instrumentation are being provided by the MCB.

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Copies of this report may be obtained from:

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SUMMARY

This report presents details of a resource assessment field survey to be undertaken aboard the research vessel *RV Bidthangara*, along the northwest coast of Western Australia during 14-25 June 1999. The survey, which will improve the knowledge base on the natural, cultural, social and economic resources of the West Pilbara region, will be carried out in the proposed Montebello/Barrow Islands and the Dampier Archipelago/Cape Preston marine reserves.

Environment Australia, under the Natural Heritage Trust's Coast and Clean Seas Marine Protected Area Programme have provided funds that partially resource this field survey. CALM's Marine Conservation Branch and the Pilbara Region are providing the remainder of the resources required for the project. The MCB as part of the Marine Reserve Implementation process, is conducting this project in collaboration with CALM's Pilbara Region. The data collected will contribute to the information requirements for the planning process of the proposed marine reserve areas in the northwest, identified in the Marine Parks and Reserves Selection Working Group Report (CALM 1994).

The objectives of this resource assessment field survey are:

- to undertake ground-truthing to develop a habitat map for currently unmapped areas in the proposed reserve regions;
- to assess the accuracy of existing benthic habitat maps;
- to obtain still photographs and video footage for the public participation and management planning processes, and for future management purposes;
- to investigate the status of the reefs through:
 - an investigation of the extent of known crown-of-thorns sea-star infestations (SW reef off Montebello Islands, Nelson Rocks and Kendrew Island);
 - an investigation of the extent of cyclone damage to the fringing coral reefs (both regions), and;
 - an investigation the extent of recovery of known coral spawn death events (Dugong Reef).
- to raise the community awareness of planning process, in relation to the proposed Montebello/Barrow islands and Dampier Archipelago/Cape Preston marine conservation reserves, through the media;
- to familiarize CALM's planning staff with the major marine habitats and human activities in the region;
- to identify areas of high multiple use (outer reefs, trawl grounds and potential aquaculture);
- to opportunistically consult with mariculture managers (whose leases are likely to be examined during the planning process), charter operators and the recreating public;
- to document incidental sightings of marine fauna, and;
- to record the number of users observed at selected sites throughout the region.

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INTRODUCTION

GENERAL BACKGROUND

This report presents details of a field survey to be undertaken aboard the CALM Marine Conservation Branch (MCB) Research Vessel *Bidthagara* from the 14-25 June 1999, in the waters encompassing the proposed marine conservation reserve areas of the Montebello/Barrow islands and the Dampier Archipelago/Cape Preston region, Western Australia. The field survey primary objective is to assessment of the natural resources of the region, is being carried out in the proposed Montebello/Barrow Islands and the Dampier Archipelago/Cape Preston marine reserves. These areas were recommended in the *Report of the Marine Parks and Reserves Selection Working Group* (CALM 1994) as worthy of consideration for reservation (Figure 1).

The *CALM Act* allows for the establishment of multiple-use marine conservation reserves for the purposes of conservation of marine flora and fauna and public recreation. Commercial activities, such as fishing, aquaculture and petroleum exploration and production, are also acceptable within specific zones of multiple-use marine conservation reserves. The Fisheries Department manages commercial and recreational fisheries in marine conservation reserves.

The *CALM Act* specifies the statutory process for the reservation of marine conservation reserves, including a public planning process for the development of management zoning schemes that allow for the spatial separation of incompatible activities in a marine park. In anticipation of this process the major marine resources and current uses of a number of the areas recommended for reservation in the Marine Parks and Reserves Selection Working Group report, are being identified. As part of the statutory marine conservation reserve pre-declaration process, it is required that the biological, economic, social and cultural resources of a proposed marine conservation reserve be assessed before the Notice Of Intent (NOI) is issued. This process has been designed improve the community's awareness of the issues concerned with the creation of a marine conservation reserve prior the release of the NOI. The data layers provide the basic information for a consultative process resulting in the determination of preliminary boundaries and zonings, so that current users have a clear appreciation of how the proposed marine reserve will affect their current and future activities.

In December 1997, the Western Australian Government, following advice provided by the Western Australian Marine Parks and Reserves Authority, announced that the Montebello/Barrow islands and the Dampier Archipelago/Cape Preston regions as priority areas for the establishment of marine conservation reserves under the *CALM Act*. Designation of the waters of Dampier Archipelago region as a marine conservation reserve was also recommended in the Karratha Area Development Strategy (WAPC 1998).

Although there is a large amount of information currently known on the biological resources of the area, the accuracy and comprehensiveness of habitat maps and human usage data for the area is still inadequate. This survey serves to redress these outstanding information requirements.

STUDY AREA

The study area for this resource assessment field survey encompasses the proposed marine conservation reserve areas of the Montebello/Barrow islands and the Dampier Archipelago/Cape Preston region, Western Australia. (Figure 1).

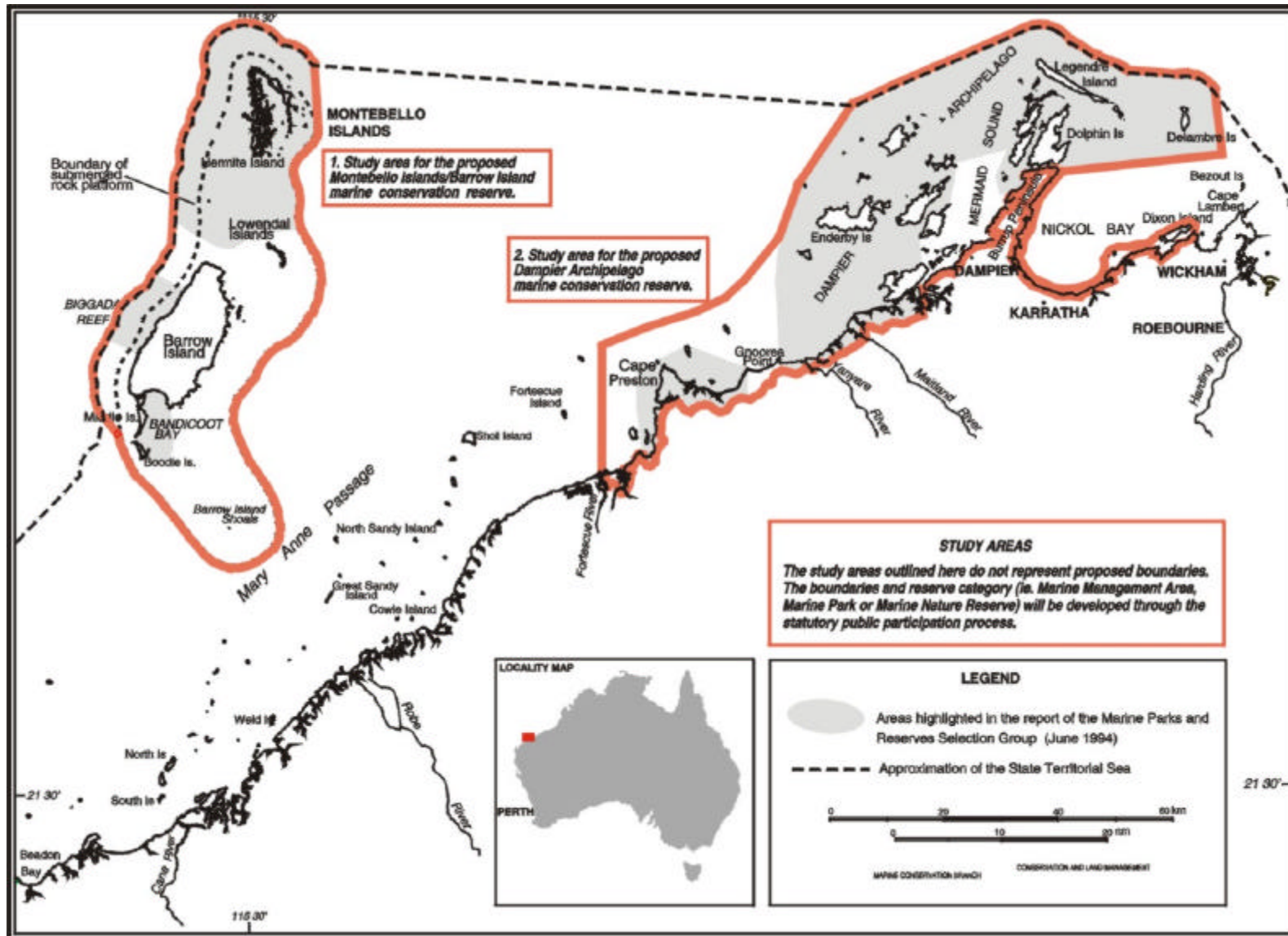


Figure 1: Study site (Montebello/Barrow islands and Dampier Archipelago/Cape Preston regions)

OBJECTIVES

Primary objectives:

The objectives of this resource assessment field survey are:

- to undertake ground-truthing to develop a habitat map for currently unmapped areas in the proposed reserve regions;
- to assess the accuracy of existing benthic habitat maps;
- to obtain still photographs and video footage for the public participation and management planning processes, and for future management purposes;
- to investigate the status of the reefs through:
 - an investigation of the extent of known crown-of-thorns sea-star infestations (SW reef off Montebello Islands, Nelson Rocks and Kendrew Island);
 - an investigation of the extent of cyclone damage to the fringing coral reefs (both regions), and;
 - an investigation the extent of recovery of known coral spawn death events (Dugong Reef).
- to raise the community awareness of planning process, in relation to the proposed Montebello/Barrow islands and Dampier Archipelago/Cape Preston marine conservation reserves, through the media;
- to familiarize CALM's planning staff with the major marine habitats and human activities in the region;
- to identify areas of high multiple use (outer reefs, trawl grounds and potential aquaculture);
- to opportunistically consult with mariculture managers (whose leases are likely to be examined during the planning process), charter operators and the recreating public;
- to document incidental sightings of marine fauna, and;
- to record the number of users observed at selected sites throughout the region.

METHODS

SITE SELECTION

Maps highlighting the broad study areas are presented in Figure 2 & 3.

Potential sites for the investigation of cyclone damage are:

Montebello/Barrow Islands

- the barrier reefs west of Bluebell Island;
- the barrier reefs east of Trimouille Island;

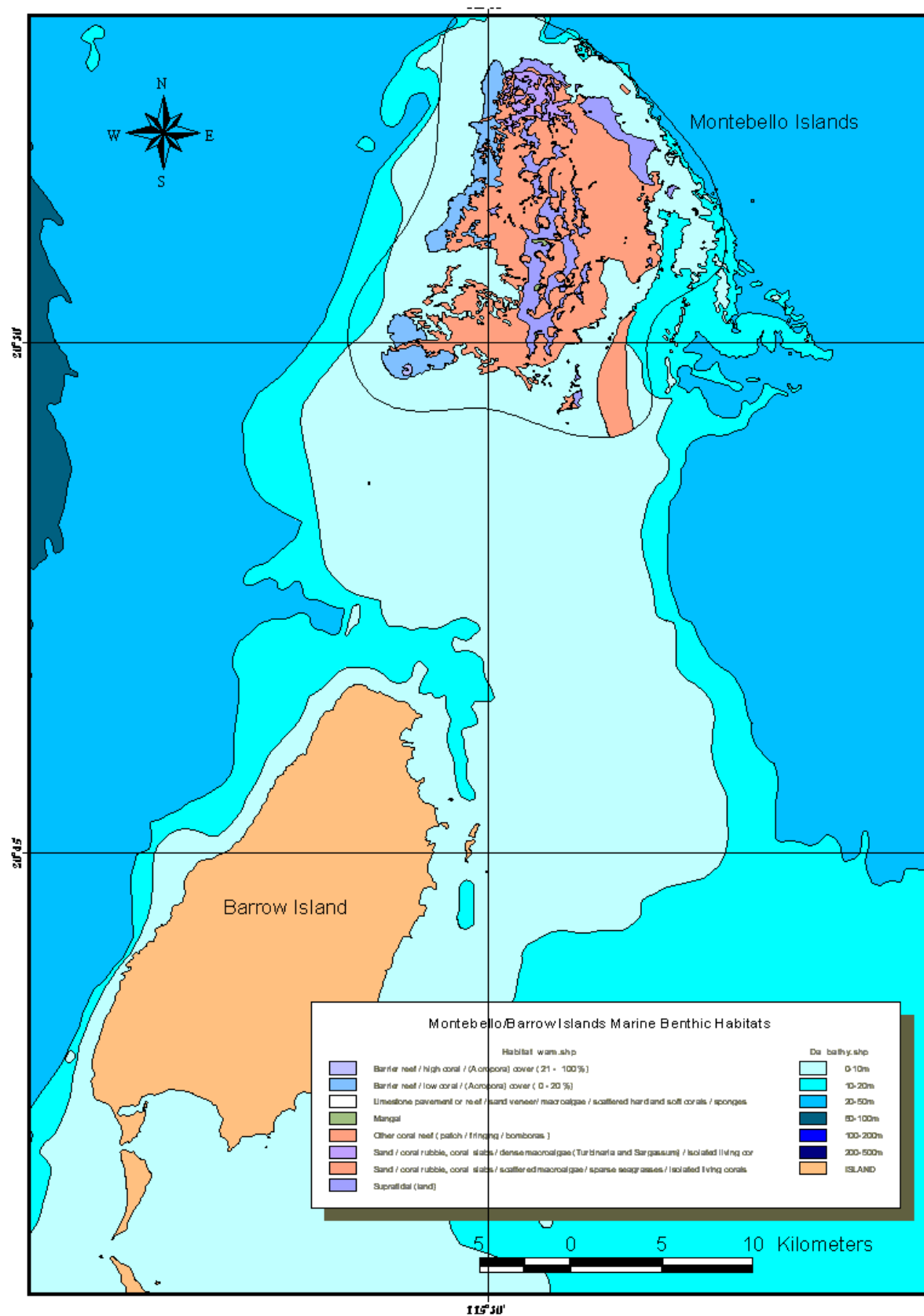


Figure 2: Marine benthic habitats of the Montebello/Barrow Islands region.

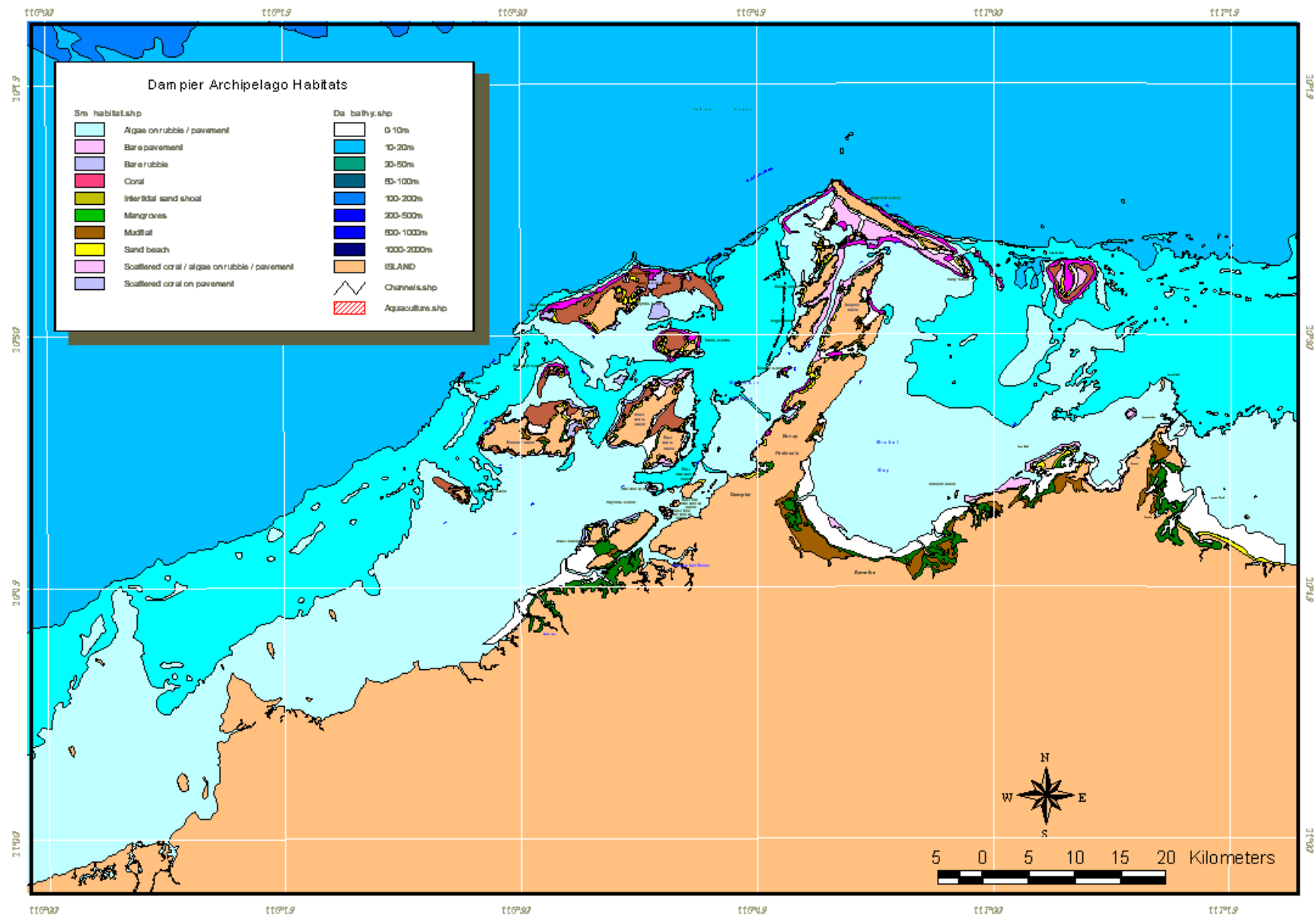


Figure 3: Marine benthic habitats of the Dampier Archipelago/Cape Preston region.

Dampier Archipelago/Cape Preston

- Hamersley Shoal, and;
- Sailfish Reef.

Sites for the investigation of Crown of Thorns infestations is:

- the barrier reef south west of Hermite Island;
- Kendrew Island and;
- Nelson Rocks.

Site for investigation of the coral recovery from a coral spawn death event is:

- Dugong Reef south of Barrow Island.

Areas where habitat mapping is non existent or are known to be inaccurate:

- Cape Preston;
- N.E. Regnard Island.
- West of Bluebell Island

Other sites of interest:

- East Lewis Island;
- Dixon Island, and;
- Cleaverville Beach and the Nickol Bay shoreline.

OPPORTUNISTIC VIDEO IMAGERY

Video imagery will be recorded opportunistically using a Canon MV1 digital video camera. Details for the video imagery will be recorded on video data sheets (Appendix I)

HABITAT MAPPING

Information to assist in the biological verification of marine benthic habitat maps of the Dampier Archipelago/Cape Preston and the Montebello/Barrow Islands regions, will be acquired through video imagery of the major benthic community types (eg seagrass meadows, limestone reefs etc.) and the visually dominant flora and fauna will be recorded using a manually deployed drop-down underwater camera system. The existing benthic habitat maps (Figure 2&3) will indicate the nature of the seabed expected at any particular site. The video camera will be lowered over the side of the field survey vessel and 30 seconds of video imagery of the seabed will be recorded at each site. Site number, date, time, water depth, DGPS coordinates and a description of the habitat will be noted and recorded for each section of video imagery on the standardized habitat data sheets (Appendix II). DGPS coordinates for the site will be recorded at the start and end of 30 seconds of video imagery.

Operating instructions for the drop-down camera and video system are presented as Appendix III.

Operating instructions for the differential GPS are presented in Appendix IV.

PROJECT MANAGEMENT

SURVEY VESSEL

MCB Research Vessel: *RV Bidthangara*

FIELD TEAM

The field team will be comprised of four full-time staff plus occasional involvement from CALM Region staff.

CALM Marine Conservation Branch personnel

Andrew Hill	Project Leader/Marine Planning Officer	Ph (w): 9432 5107 Fax: 9430 5408 Ph (h): 9330 1542 E-mail: <i>andrewhi@calm.wa.gov.au</i>
Dr Sue Osborne	Community Liaison Officer	Ph (w): 9432 5103 Fax: 9430 5408 Ph (h): 9496 0034 E-mail: <i>sueo@calm.wa.gov.au</i>
Kevin Bancroft	Marine Conservation Officer	Ph (w): 9432 5102 Mob: 0417 401 200 Fax: 9430 5408 Ph (h): 9448 8192 E-mail: <i>kevinb@calm.wa.gov.au</i>
Mike Lapwood	Skipper/Dive Supervisor/ Marine Operations Officer	Ph (w): 9432 5108 Mob: 0419 045 285 Fax: 9430 5408 Ph (h): 9307 7631 E-mail: <i>michaella@calm.wa.gov.au</i>

CALM COLLABORATION

CALM Pilbara Region personnel

Chris Muller	Regional Manager	Ph. (w): 9143 1488 Mob: 0418 938 223 Fax: 9144 1118 E-mail: <i>chris.muller@kisser.net.au</i>
George Watson	District Wildlife Officer	Ph. (w): 9143 1488 Fax: 9144 1118
Geoff Kregor	Ranger-in-charge, Dampier Archipelago Nature Reserve	Ph. (w): 9143 1488 Fax: 9144 1118

CALM Science Division

Andrew Burbidge	Senior Research Scientist	Ph. (w): 9405 5109 Fax. 9306 1641 E-mail: <i>andrewb@calm.wa.gov.au</i>
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FIELD ITINERARY

The team will arrive at Dampier on the morning of Monday 14th June 1999 where they will be based for the first 5 days. Surveys in the Dampier Archipelago/Cape Preston region initially will be conducted as day trips with the possibility of occasional overnight stays. On Saturday 19th June 1999 the team will depart for the Montebello/Barrow islands and follow the proposed field itinerary listed in Table 1, weather permitting. The research vessel is due to return on the evening of Thursday 24th June 1999 and the team will then depart for Perth on the afternoon of Friday 25th June 1999.

Boating conditions especially in respect to winds and tide conditions, will influence the sequence of activities.

Sea conditions and tides will influence diving activities. Tide charts indicate that neap tides will occur around the Montebello Islands on the 22nd and 23rd June 1999.

Table 1: Field itinerary for the Montebello/Barrow Island and Dampier Archipelago/Cape Preston regions resource assessment field trip, 14-25 June 1999

Date	Activity
11/6/1999	<ul style="list-style-type: none">• Mike Lapwood (MLA) departs Perth by air at 1420 hrs and arrives at Karratha 1630 hrs.• MLA to supervise loading of the <i>RV Bidthangara</i> and to prepare equipment and provisions.
14/6/1999	<ul style="list-style-type: none">• Team departs Perth 0600 hrs and arrives at Karratha 0810 hrs.• 1000 hrs depart Hampton Harbour to ground truth outer Mermaid Sound (10 drop sites)• 1600 hrs return to Dampier via Malus and West Lewis Islands
15/6/1999	<ul style="list-style-type: none">• 0730 hrs depart Hampton Harbour to ground truth Goodwyn Channel (10 drop sites)• 1120 hrs Kendrew Island (Crown of Thorns)• 1330 hrs ground truth Enderby channel (10 drop sites)• 1700 hrs return to Dampier• 1800 hrs low tide walk about
16/6/1999	<ul style="list-style-type: none">• 0730 hrs depart for NE Regnard Island (20 drop sites enroute)• 1200 hrs NE Regnard coral survey• 1400 hrs further 10 drop sites• 1600 hrs make camp at island
17/6/99	<ul style="list-style-type: none">• 0730 hrs break camp• 1000 hrs SW Regnard (10 drop sites)• 1250 hrs SW Regnard coral survey• 1430 hrs Hampton Harbour via 10 m contour (10 drop sites)• 1600 hrs return to Dampier

Date	Activity
18/6/1999	<ul style="list-style-type: none"> • 0730 hrs depart for Hamersley Shoals (coral) • 1100 hrs Nelson Rocks (Crown of Thorns) • 1300 hrs Sailfish Reef coral survey • 1600 hrs return to Dampier & shop for Montebello/Barrow islands
19/6/1999	<ul style="list-style-type: none"> • 0600 hrs depart for Montebellos (10 drop sites on the east) • 1200 hrs arrive Stephenson Channel • PM familiarisation
20/6/1999	<ul style="list-style-type: none"> • 0730 hrs houseboat pearling lease • 0930 hrs NE Trimouille Island coral survey • 1100 hrs ground truth outer NW reef (10 drop sites) • 1600 hrs anchorage at Trimouille Passage
21/6/1999	<ul style="list-style-type: none"> • 0730 hrs depart anchorage for western reefs • 1000 hrs anchor SW reef • 1030 hrs coral survey, Crown of Thorns, photos/video footage • 1600 hrs depart for Stephenson Channel anchorage • 1900 hrs BBQ with Wildlife Branch personnel
22/6/1999	<ul style="list-style-type: none"> • 0900 hrs depart Dugong Reef • 1300 hrs ground truth 10 drop sites south of Dugong Reef • 1500 hrs Dugong Reef coral survey (coral spawn kill) • 1700 hrs anchorage at WAPET camp
23/6/1999	<ul style="list-style-type: none"> • 0800 hrs ground truth 10 drop sites North Barrow Island • 1030 hrs Lowendal Island coral survey • 1700 hrs anchorage at Stephenson Channel
24/6/1999	<ul style="list-style-type: none"> • AM opportunistic photo/video • PM depart for Dampier • Arrive Dampier • Overnight stay at the Dampier Mercure Inn
25/6/1999	<ul style="list-style-type: none"> • Unload <i>RV Bidthangara</i> and load equipment onto pallets • Bulk Equipment leaves Centurian Transport Depot, Karratha, for Perth • Team departs Karratha 1700 hrs and arrives at Perth 1915 hrs

POTENTIAL IMAGES AND VIDEO FOOTAGE

Environmental values

Habitats

Major floral and faunal species

Scenic shots above water

Aerials photos of localities at both regions

Recreational activities

Recreational fishing

Surface water sports

Beach activities

Diving & snorkelling

Boating

Sailing
Anchorages
Four wheel driving

Commercial activities

Petroleum facilities and vessels
Pearling and aquaculture facilities and products
Port infrastructure

Cultural values

Aboriginal middens and rock art
Aboriginal cultural activities
Wrecks
Lighthouses and other structures

Management and science

Boat activities
Scientific diving
Community education
CALM staff interacting with the public

VEHICLE REQUIREMENTS

While the team is in Dampier, a vehicle to be provided by the regional office for the 14th -19th June and on the 24th June 1999.

ACCOMMODATION

Accommodation during the Montebello/Barrow Islands survey will consist of land-based camping and/or sleeping on board the *RV Bidthangara*. Accommodation during the Dampier Archipelago component of the field survey will be at the Australian Institute for Marine Science (AIMS) field station at Dampier. The team will be accommodated at the Mecure Inn Dampier on Thursday 24th June 1999.

Phone contact numbers are:

AIMS Dampier field station	The Esplanade, Dampier	Ph. 9183 1122 Fax. 9183 1085
Mecure Inn Dampier	The Esplanade, Dampier	Ph. 9183 1222

SAFETY

General

Field operations shall be carried out in accordance with departmental procedures and protocols. Overall responsibility for field procedures during this field trip and the personal safety of all team members rests with the Project Leader.

Boating

All boating operations shall be carried out in accordance with Department of Transport regulations and also conform to CALM's Draft Departmental Boating Policy and Procedures (CALM 1997).

Alterations to the itinerary based on safety aspects related to weather conditions and sea-state are the responsibility of the Vessel Master in consultation with the Project Leader.

Dampier Port can be contacted on VHF channel 10 and is responsible for all shipping movements within Dampier Port boundaries.

Diving

The Dive Supervisor has primary responsibility for all personnel participating in diving operations and for ensuring that all diving operations are conducted according to the CALM dive code (CALM 1998) and to an approved dive plan. The CALM Departmental Diving Officer has approved the dive plan for this survey.

No decompression dives will be undertaken.

Radiation

In the 1950's the Montebello Islands were used as test sites for nuclear weapons. The test sites on Alpha and Trimouille Islands have been identified as 'hot spots' for radiological hazards. This survey does not anticipate landing on either Trimouille or Alpha Island, however all team members will comply with recommendations for safe working outlined in WRS (1993).

Emergency contact numbers are:

Western Radiation Services	(bus hrs)	9470 3000
	(after hrs)	9361 6982
Radiation Health Services	(bus hrs)	9346 2261

COMMUNICATIONS AND EMERGENCY CONTACTS

General

- The survey team will log on with the local volunteer sea rescue upon leaving port and log off upon return.
- Whilst the team are at the Montebello Islands, VHF contact will be maintained with the CALM Wildlife team who are currently on Hermite Island and the Karratha regional office.
- The *RV Bidthangara* is equipped with marine VHF, CALM VHF and HF radios.
- The dive supervisor or field team will be in constant contact with survey vessel/ zodiac dinghy and land based rescue organizations with hand held VHF radio.
- The survey team will have mobile phones however coverage will only be available close to Dampier (Mike Lapwood 0419 045 285, Kevin Bancroft 0417 401 200).
- Wildlife Branch shore based team are on satellite phone coverage 0145 116 462.

If communications with the survey team is required the mobile number should be tried initially and then the satellite phone if necessary. Messages can be left with survey vessel or local CALM

offices. If urgent communications are required the relevant volunteer sea rescue group can be contacted and a message relayed by VHF or HF radio.

CALM offices

Marine Conservation Branch, Fremantle:

Ph: 9432 5100
Fax: 9430 5408
CALM VHF channel 17

CALM Pilbara regional office

Ph: 9143 1488
Fax: 91441118
CALM VHF channels 8, 16, and 22.

Port Authority

Dampier Port Authority
(Roy Gillespie)

Ph. 9159 6556
Fax. 9159 6558
VHF channel 11 and 16

Volunteer sea rescue groups

West Pilbara Sea Search and Rescue (VMR 685)
(Bob Kent)
(Bev Catto)

Ph. 9327 2427
Ph. 9183 1248
27 MHz channel 86
VHF channel 16
HF 4620

Port Walcott Sea Search and Rescue (VMR 689)

Ph. 9187 1949
27 MHz channel 88
VHF channel

Fisheries Western Australia

Karratha District Office

Ph: 9144 4337

Medical services

Fremantle Hyperbaric/Diving Services

Ph. 9431 2233
Ph. 9431 3333

Karratha Hospital

Ph. 9144 0330

Wickham Hospital

Ph. 9187 1405

Dampier Medical Centre

Ph. 9183 1333
Fax. 9183 1075

Karratha St Johns Ambulance (Call)
(Administration)

Ph. 9144 1222
Ph. 9185 1222

Wickham St Johns Ambulance (Call)

Ph. 9187 1405

(Administration)

Ph/Fax. 9187 1043

Media contacts

North West Telegraph (Karratha)

Ph. 9185 2666

ABC Northwest (Karratha)

Ph. 9144 1911

GWN (Karratha)

Ph. 9144 1828

West Australian (Karratha)

Ph. 9185 3629

Mariculture

Morgan & Co

Jamie Morgan

Montebello house boat (Faraday Channel)

Ph. 9184 5175

Survey vessel

RV Bidthangara

HF call sign. VHW6001

BUDGET

This project is partially funded by the National Heritage Trust, Coast and Clean Seas Marine Protected Areas Programme, with in-kind support being provided by CALM's Marine Conservation Branch and CALM's Pilbara Regional Office. The budget breakdown is described in Table 2.

EQUIPMENT

Boating

- *RV Bidthangara* 9.9 m launch
- Zodiac inflatable dinghy & safety gear
- 25 horsepower outboard motor
- 5 x 20 l fuel tanks
- 5 l two-stroke outboard oil
- Hand held VHF radio
- Mooring array

Diving

- Compressor with spares, fuel, etc.
- 5 SCUBA cylinders
- 5 BCDs
- 6 regulator sets
- 1 spare weight belt with 24 lb weight
- Spare weights
- 2 wrist dive computers

- Spare mask and snorkel
- Spare pair of fins
- 1 underwater viewfinder
- 2 dive flags
- Diving spares/repair kit
- Personal dive kits

Drop-down video

- Drop-down video camera & umbilical
- Video recorder/TV
- Backup video/TV
- Backup umbilical cable
- 6 x 180 min VHS tapes
- Clapboard & chalk
- Video data sheets

Table 2: Budget breakdown for the Montebello/Barrow Islands and Dampier Archipelago/Cape Preston regions resource assessment field trip, 14-25 June 1999

Budget Item		CALM in kind (\$)	MPA Funds (\$)	Total costs (\$)
<u>Travel</u>				
Vehicles	CALM vehicle - \$0.45 @ km for 500 km		225	225
Air fares	5x return airfare Perth -Karratha @ \$635		2103	2103
Accommodation	5 persons @ \$100/week at AIMS		500	500
	7 person nights @ \$75 at Karratha Motel		525	525
	Sub-total		3353	3353
<u>Staff</u>				
Chris Simpson	7 days @ \$918	6426		6426
Andrew Hill	14 days @ \$710	9940		9940
Sue Osborne	14 days @ \$611	8554		8554
Kevin Bancroft	19 days @ \$494	5776	3610	9386
Mike Lapwood	18 days @ \$424	4698	2934	7632
Camping allowance	7 days x 5 staff @ \$23.25		811	811
	7 days x 4 staff @ \$18		500	500
Diving allowances	24 dives x 5 staff @ \$4.39		528	528
	Sub-total	35394	8383	43777
<u>Vessel & other equipment</u>				
<i>RV Bidthangara</i>	14 days @ \$500	7000		7000
Diesel fuel	1500 L @ \$1		1500	1500
Inflatable & 25 hp o/b	14 days @ \$100	1400		1400
Fuel & oil	100 L @ \$1		100	100
DGPS unit	14 days @ \$120	1680		1680
Dive compressor	7 days @ \$100	700		700
Handheld VHF radio	14 days @ \$15	210		210
Dropdown camera	14 days @ \$50	700		700
Video/TV	14 days @ \$50	700		700
Backup video/TV	14 days @ \$50	700		700
Charts, aerial photos, etc...			200	200
Hire of camping equipment		200		200
Transportation			600	600
	Sub-total	13290	2400	15690
<u>Consumables</u>				
HVS video tapes	15 @ \$5		85	85
Digital video tapes	15 x DVM-E60 @ \$25		375	375
Slide film	20 x Fuji Sensia 200 & processing		700	700
Victualling (Montebello)	5persons x 5 days @ \$37/day		925	925
Provisions (Dampier)	4persons x 9 days @ \$37/day		1332	1332
Other consumables	pencils/chalk/erasers/batteriesetc		500	500
	Sub-total		3567	3567
<u>Contingency</u>				
Contingency	Administration, overruns etc.		2500	2500
	Sub-total		2500	2500
TOTAL		48684	20553	69537

Video camera

- 2 x Canon MV1 digital video camcorder, with batteries (6), battery charger (1), remote control and accessories
- 2 x Amphibico Explorer MV1 housing
- 2 x SunRay underwater lighting system with battery pack, rechargeable batteries (6), battery charger (2), and spare lamps
- Instruction manuals
- 15 x 60 min digital video tapes
- Housing O-ring kits and silicone grease
- Cleaning kit

Still photography

- 1 x Nikonos V camera, SB102 strobe unit,
- Nikonos close up kit
- 28 mm lens
- 15 mm lens & viewfinder
- Canon EOS camera and lens
- 20 rolls of 36 exposure slide film - Fuji Sensia 200 (10)
- Kit of camera spares

Safety

- Comprehensive diving first aid kit
- Emergency response flow-sheet
- Emergency contact flow chart
- Patient information log
- Log sheets for accidents
- Oxygen therapy equipment
- Spare oxygen D cylinder
- 3 diver safety sausages
- Sunscreen

Information

- Marine Charts
- Field identification guides for tropical marine fishes, macro-algae, seagrasses, benthic invertebrates
- CALM GIS habitat maps

- Aerial photographs
- Habitat data log sheets
- Miscellaneous stationary
- Laptop computer and accessories
- 10 high density discs
- Portable overhead projector
- 100 *New Horizons* booklet
- 100 *Marine Reserves* pamphlet

Position fixing

- 1 Garmin hand held GPS
- DGPS (Trimble Scoutmaster GPS with an Omnistar demodulator unit) with 2x 12 v batteries
- Battery charger

Mechanical/electrical repairs

- Comprehensive electrical repair kit

Camping equipment

- Engels fridge/freezer
- 2 x eskies
- 4 x drink coolers
- 2 x gas stoves, cylinders & leads
- 3 x dome tents
- 4 x inflatable mattresses
- pots, pans, cutlery etc.
- bucket, bowl
- Bush shower

Accessories

- 40 AA batteries
- 30 C batteries
- 20 D batteries
- 4 x 6 volt batteries

DATA MANAGEMENT

FIELD PROGRAMME REPORT

Hard copies of the Field Programme Report will be held at three following locations:

1. Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle Western Australia, 6160.
2. Woodvale Library, Science and Information Division, Ocean Reef Rd., Woodvale, Western Australia, 6026.
3. Archives, Woodvale Library, Science and Information Division, Ocean Reef Rd., Woodvale, Western Australia, 6026.

The Marine Conservation Branch will hold digital copies of the Field Programme Report at three locations:

1. The Marine Conservation Branch Server:
[\\StreetTalk\User Data@FREM.MCB@CALM \[T:\Reports\MRI\MRI_2099\MRI_2099.doc\]](\\StreetTalk\User Data@FREM.MCB@CALM [T:\Reports\MRI\MRI_2099\MRI_2099.doc])
2. MCB Server full backup tape [\[T:\Reports\MRI\MRI_2099\MRI_2099.doc\]](T:\Reports\MRI\MRI_2099\MRI_2099.doc)
3. CD-ROM [\[Reports\MRI\MRI_2099\MRI_2099.doc\]](Reports\MRI\MRI_2099\MRI_2099.doc) held at the branch office

VIDEO RECORDS

Collected video footage will be held at two locations:

1. Video masters (Hi8 or Digital) to be archived at the CALM Information Management Branch, Como.
2. VHS copies to be stored at CALM Marine Conservation Branch, Fremantle.

SLIDE RECORDS

All photographic slides to be stored at CALM Marine Conservation Branch, Fremantle and recorded on the MCB slide database.

REPORT DISTRIBUTION

Copies of this report will be distributed to:

- Chris Simpson, Manager, Marine Conservation Branch
- Chris Muller, Manager, Pilbara Region
- Geoff Kregor, Ranger-in-Charge Dampier Archipelago Nature Reserve
- George Watson, District Wildlife Officer, Pilbara Region
- Andrew Burbidge, Senior Research Scientist, CALM Science Division
- All survey team members (4)

Abridged copies of this report will be distributed to:

- WAPET
- Montebello Safaris
- Apache
- Fisheries WA
- Morgan & Co

PUBLICITY/EDUCATION

PUBLIC RELATIONS OPPORTUNITIES

It is intended that a short article regarding the field survey will be placed in the local newspaper The North West Telegraph. Opportunities for radio interviews will be identified and utilized (eg. Radio West Broadcasters, ABC regional office).

EDUCATION OPPORTUNITIES

No education opportunities have been identified.

REFERENCES

- CALM (1994). A representative marine reserve system for Western Australia. Report of the Marine Parks and Reserves Selection Working Group. Department of Conservation and Land Management. June 1994.
- CALM (1997). Safe boating in CALM. Draft policy and procedures manual for marine operations. Department of Conservation and Land management. December 1998.
- CALM (1998). Safe work in CALM. A code of practice: Scientific diving. Department of Conservation and Land management. September 1998.
- WA Govt. (1998). New Horizons. The way ahead in marine conservation and management. Prepared for the Western Australian Government by the Department of Conservation and Land Management.
- WAPC (1998). Karratha area development strategy. Western Australian Planning Commission. April 1998. 82p.
- WRS (1993). Radiation hazard assessment and programme for the Montebello Islands. Prepared by Western Radiation Services Perth WA for the Western Australian Department of Conservation and Land Management. May 1993.

APPENDICIES

APPENDIX I: VIDEO DATA SHEET

VIDEO DATA SHEET

Project					Field Survey			
Site No.		Site Name		Date		Recorder		
Start time		Finish time		Depth (m)		Visibility (m)		

Video System															
Focus mode				Exposure mode				Program mode				White balance mode			
Auto	<input type="checkbox"/>	Manual	<input type="checkbox"/>	Auto	<input type="checkbox"/>	Manual	<input type="checkbox"/>	Sports	<input type="checkbox"/>	High-speed	<input type="checkbox"/>	Auto	<input type="checkbox"/>	Outdoor	<input type="checkbox"/>
Lens system				Filters								Lights			
Wide-angle	<input type="checkbox"/>	Zoom-macro	<input type="checkbox"/>	None	<input type="checkbox"/>	Red	<input type="checkbox"/>	Yellow	<input type="checkbox"/>	Orange	<input type="checkbox"/>	On	<input type="checkbox"/>	Off	<input type="checkbox"/>

Video operator		Tape no.					Height above substrate (cm)	
Time coding for all video footage at site:		From:	: : :				To:	: : :
Transect time coding	Start		Finish				Total time (mins/secs)	
T1	: : :		: : :				.	
T2	: : :		: : :				.	
T3	: : :		: : :				.	

Notes:



Marine Conservation Branch, Department of Conservation and Land Management

APPENDIX II: HABITAT MAPPING DATA SHEET

			° E
DEPTH (m)		TIME	
BIOLOGICAL ASSEMBLAGE		
		
		
		
		
		
RECORDER		OBSERVATION METHOD	
VIDEO TAPE No.		DATE	
SITE		REGION	
DGPS/GPS		DATUM	

SITE ID			
HABITAT TYPE			
SUBSTRATE TYPE			
LAT	° S	LONG	° E
DEPTH (m)		TIME	
BIOLOGICAL ASSEMBLAGE		
		
		
		
		
		
RECORDER		OBSERVATION METHOD	
VIDEO TAPE No.		DATE	
SITE		REGION	

DGPS/GPS		DATUM	
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APPENDIX III: DROP-DOWN CAMERA AND VIDEO INSTRUCTIONS

Setup

1. Connect sheathed coax cable to splitter box and camera
2. Ensure the sheath is tied to the camera in a way that prevents any load on the coax itself
3. Connect splitter box to TV/video unit via short lead (aerial in socket)
4. Connect TV/video unit to 12 volt power supply
5. Tune TV to channel 0
6. Connect camera power leads to 12 volt battery
7. Ensure that the polarity of the battery leads are correct or the 1 amp splitter box fuse will rupture

Operation

1. Write site number, date and location on the clapper board
2. Place clapper board in front of the camera and record for about 30 seconds then press pause
3. Lower camera to the bottom and press pause to recommence recording.
4. Record about 30 seconds of benthic habitat footage
5. Fill out habitat data sheet
6. Switch video and camera power off
7. Retrieve camera
8. Check footage regularly to ensure correct operation

Equipment Care

1. Don't allow twists or knots in the cable. Figure eight the cable on the deck or in a nally bin
2. Don't step on the cable
3. Clean and silicon grease camera connection plug daily
4. Do not use CRC, WD40 or similar on electrical connections
5. Don't attach weights or other objects to camera or cable
6. Beware of propeller
7. Don't allow camera to hit the side of the boat when deploying or retrieving
8. Don't allow camera to hit or drag along bottom
9. Always keep remote control in sealed plastic bag (one drop from a wet hand will destroy it)
10. 240 volt power is not to be used on boats. Use only 12 volt power supply
11. Keep splitter box and batteries in a dry place
12. Disconnect power to camera when not in use

APPENDIX IV: DIFFERENTIAL GPS OPERATIONAL INSTRUCTIONS

Note: These instructions should be used in conjunction with those supplied by Scoutmaster and Fugro (kept with unit).

Warning! Don't mess with the settings on the Omnistar demodulator (black box) if you don't know what you are doing! Technical settings instructions provided with the unit are to be used only in conjunction with verbal advice from Fugro (93210284) or Tim Daly (CALM MCB 94325106).

1. Plug in mushroom aerial and check that button aerial is still plugged in. Note: Scoutmaster aerial (button type) should have as clear a view of the sky as possible. The DGPS aerial (mushroom type) must have a clear view to the north east sky.
2. Press scoutmaster on button. Wait a few seconds and check that display is indicating LOC.
3. Press return and then wait for at least three satellites. This could take from 30 seconds to 10 minutes depending on satellite availability and location of the DGPS unit.
4. When you have at least 3 satellites you will be given a GPS coordinate. When you have this press the big red button and wait for the GPS coordinate to become a DGPS coordinate. **Note: When the red button is on it is costing about \$20 per hour.**
5. If the scoutmaster is disconnected from it's power source for more than about 30 minutes it may cause some settings to default back to the factory pre-set. The main problem is that the mapping datum reverts back to a North American setting. The danger is that the unit will give coordinates as usual but there will be some error. **Check datum prior to use (WGS 84).** If the main battery is to be disconnected for charging then connect the backup battery to maintain power to the unit or remove the power adapter from the Scoutmaster and install the AA battery pack.