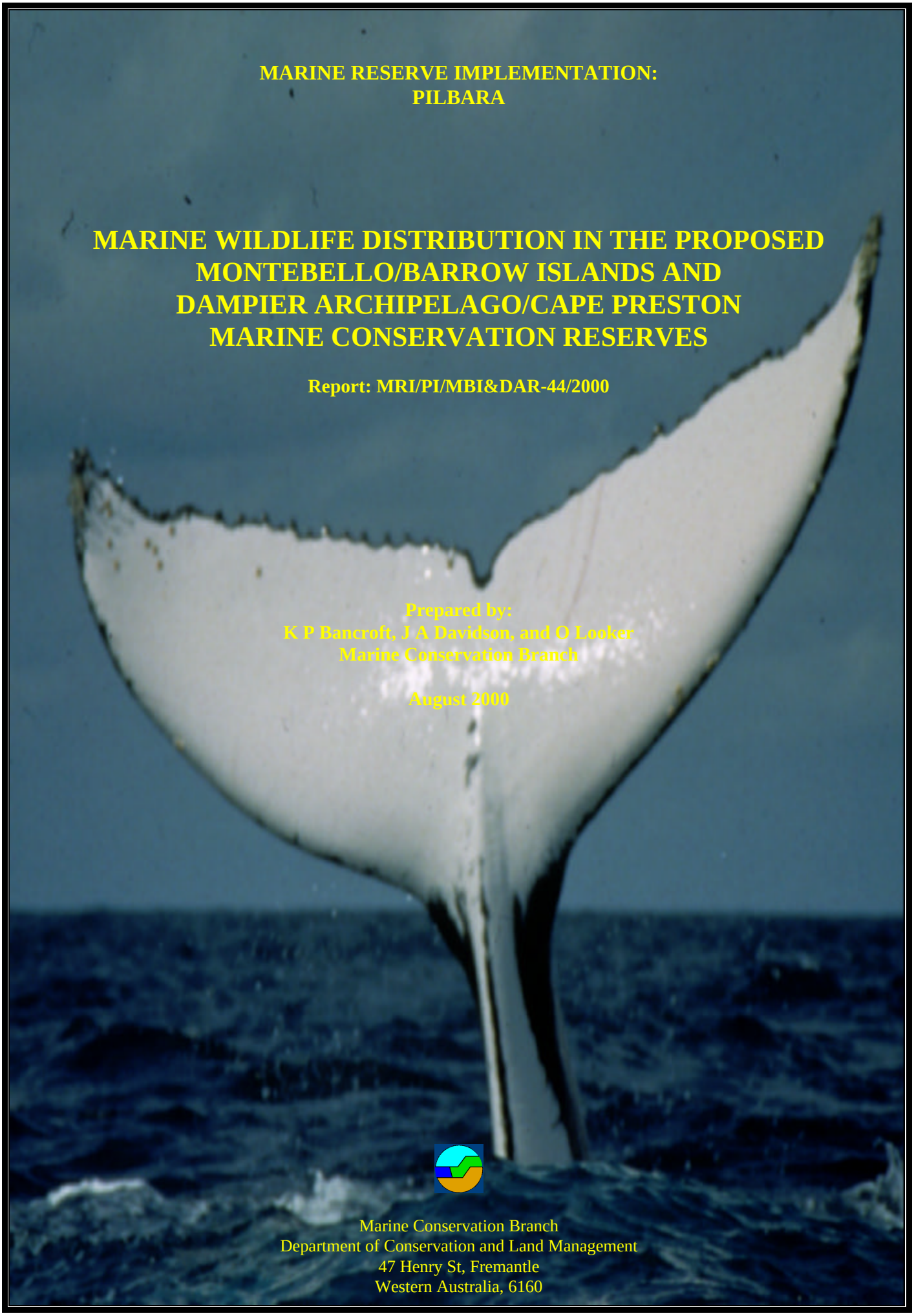

MARINE RESERVE IMPLEMENTATION:
PILBARA

MARINE WILDLIFE DISTRIBUTION IN THE PROPOSED MONTEBELLO/BARROW ISLANDS AND DAMPIER ARCHIPELAGO/CAPE PRESTON MARINE CONSERVATION RESERVES

Report: MRI/PI/MBI&DAR-44/2000

Prepared by:
K P Bancroft, J A Davidson, and O Looker
Marine Conservation Branch

August 2000

Marine Conservation Branch
Department of Conservation and Land Management
47 Henry St, Fremantle
Western Australia, 6160

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Western Australia, 6160

ACKNOWLEDGEMENTS

The Marine Conservation Branch of the Department of Conservation and Land Management would like to thank the following people for their contribution of marine wildlife data for inclusion into the marine wildlife distribution map for the Montebello/Barrow Island and Dampier Archipelago/Cape Preston region:

- Kurt Jenner, Institute of Whale Research;
- Kelly Pendoley, Environmental Consultant;
- Bob Prince, CALM Science;
- Keith Morris, CALM Science;
- Phil Fuller, CALM Science;
- Andrew Burbidge, CALM Science;
- Fran Stanley, CALM Pilbara Region.

Cover. Humpback whale fluke

This report may be cited as:

Bancroft K.P., Davidson J.A., & Looker O. (2000). Marine wildlife distribution in the proposed Montebello/Barrow Islands and Dampier Archipelago/Cape Preston marine conservation reserves. Report: MRI/PI/MBI&DAR-44/2000. August 2000. (Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle, Western Australia, 6160). Unpublished report.

Copies of this report may be obtained from:

Marine Conservation Branch
Department of Conservation and Land Management
47 Henry St., Fremantle, Western Australia, 6160
Ph: 61-8-9432 5100; Fax: 61-8-9430 5408

SUMMARY

Under the State Government's marine conservation strategy, detailed in *New Horizons - the way ahead in marine conservation and management* (WA Government, 1998), there is a requirement for the natural marine resources of proposed marine conservation reserve areas to be assessed.

The Marine Conservation Branch (MCB) of the Department of Conservation and Land Management (CALM) has undertaken the mapping of the distribution of marine wildlife for the study areas of the proposed Montebello/Barrow islands and the Dampier Archipelago/Cape Preston marine conservation reserves.

This information has been compiled and incorporated into a map, which has been prepared as a contribution to the planning processes underway for these two proposed marine conservation reserves. Areas of high conservation value, in relation to marine wildlife, have been delineated.

Data for this exercise has been sourced from existing documentation, and from direct communication from people (internal and external to CALM) with expert knowledge in the distribution of marine wildlife in these two areas.

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1 INTRODUCTION

The Western Australian Government is committed to establishing a statewide representative system of multiple use marine conservation reserves under the Conservation and Land Management *(CALM)* Act 1984 to protect the diverse and valuable natural heritage values of our nearshore marine environment. The *CALM Act* provides the framework for sustainable commercial and recreational use of these resources. In 1986, a Marine Parks and Reserves Selection Working Group (MPRSWG) was established to identify marine areas that where thought to be worthy of consideration for marine reserve status. The MPRSWG identified 70 areas around the Western Australian coast (CALM 1994) which, if reserved, would provide a system of marine conservation reserves that would be representative of all the major ecosystems of the state.

In December 1997, the Western Australian Government, following advice provided by the Western Australian Marine Parks and Reserves Authority, announced the Montebello/Barrow islands and the Dampier Archipelago/Cape Preston regions (MPRSWG recommended areas), as being priority areas for establishment as marine conservation reserves. Subsequently, CALM through the Marine Conservation Branch (MCB), has initiated the planning process for implementing marine conservation reserves in these regions.

Under the State Government's marine conservation strategy detailed in *New Horizons - The way ahead in marine conservation and management* released by the Western Australian Government in 1998 (WA Government, undated), there is a requirement for:

> *"Extensive assessment, community consultation and management planning before a new marine conservation reserve is established."*

An essential component of this is that:

> *"A comprehensive assessment of the area's biological and economic resources, and social values is carried out."*

Since the marine reserve implementation process for the proposed Montebello/Barrow islands and the Dampier Archipelago/Cape Preston marine conservation reserves has been initiated, the MCB has undertaken the mapping of the marine wildlife distributions. The MCB has collated data for the marine wildlife distributions of these regions, from a variety of sources.

This information has been compiled and incorporated into maps, which aims to assist in the planning process by highlight areas of high conservation values.

2 PURPOSE

The purpose of this report is to:

- provide information, in the form of a map, on the marine wildlife distribution in the Dampier Archipelago/Cape Preston and Montebello/Barrow Islands regions;
- document the methods used to produce the information layers;
- document the sources of the marine wildlife information used;

- document the metadata for the GIS information layers, and;
- document the storage location of the GIS information layers;

3 STUDY AREAS

The study areas for this report comprise those pertaining to the respective proposed marine conservation reserves of the Montebello/Barrow islands and the Dampier Archipelago/Cape Preston region, Western Australia (Figure 1).

3.1 MONTEBELLO\BARROW ISLANDS

The study area for the proposed Montebello/Barrow islands marine conservation reserve (Figure 1) lies about 1600 km north of Perth, Western Australia, between 20.29º to 21.16º South and 115.25º to 115.64º East and covers an area of approximately 2099 km^2 of which 1831 km^2 is marine environment.

The area is broadly defined as the waters surrounding the Montebello/Barrow islands region stretching from the Limit of Western Australian State Waters in the north and west, to the ten metre depth contour in the east and south.

3.2 DAMPIER ARCHIPELAGO/CAPE PRESTON

The study area for the proposed Dampier Archipelago/Cape Preston marine conservation reserve (Figure 1) lies about 1,650 kilometres north of Perth, Western Australia, between 20º20' to 21º South and 116º05' to 117º07' East and covers an area of approximately 3025 km^2.

The area is broadly defined as the waters between the Fortescue River to the southwest and Point Samson in the east. The seaward boundary is coincident with the Limit of Western Australian State Waters to the north and includes Delambre Island and nearshore waters in Nickol Bay east to Dixon Island. In the northwest, the boundary deviates off the Limit of State Territorial Waters to follow the 20 m bathymetry until due north of the Fortescue River.

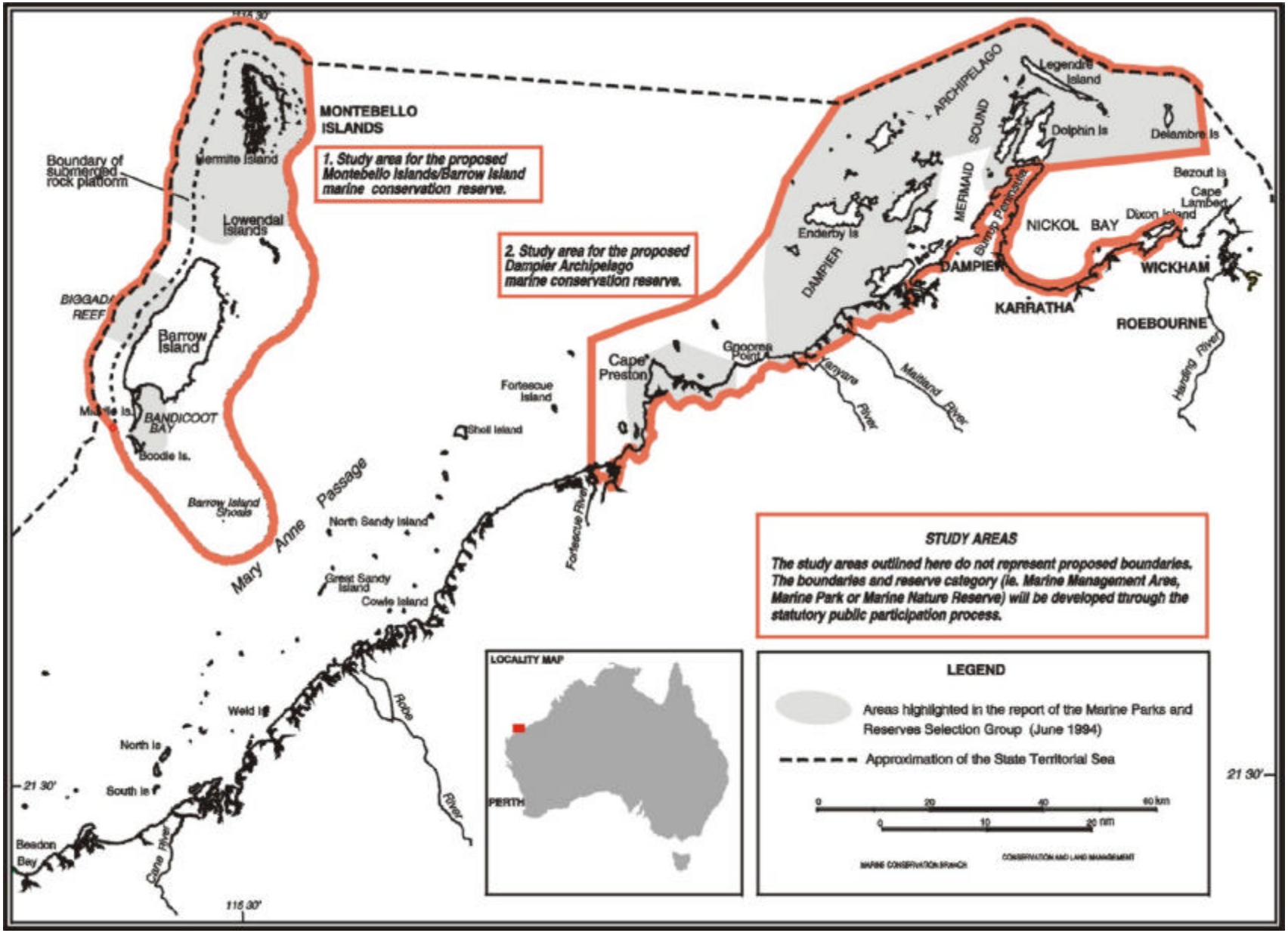

Figure 1. Study areas: Montebello/Barrow islands and the Dampier Archipelago/Cape Preston regions.

4 METHODS

4.1 INFORMATION SOURCES

Data layers such as distribution(s), breeding/nesting areas, aggregations and migratory pathways of the various marine wildlife (whales, dugongs, turtles, seabirds) that occur in the study areas were gathered from a range of sources both internal and external to CALM.

4.1.1. Whales

Mr Curt Jenner (Institute of Whale Research, WA) provided data on migratory pathways and important resting areas of Humpback Whales. These data were derived both from anecdotal information and from published research (Jenner *et al*., 2000).

4.1.2. Dugongs

Dr Bob Prince (CALM Science), Mr Keith Morris (CALM Science) and Mr Curt Jenner provided data on Dugong migration and occurrence. These data were derived mainly from anecdotal information and recent unpublished survey data held at the offices of CALM Science.

4.1.3. Marine turtles

Ms Kelly Pendoley (Environmental Consultant), Ms Fran Stanley (CALM Karratha), Dr Bob Prince and Mr Keith Morris provided data on turtle nesting and aggregation. These data were derived either from anecdotal information or from recorded sightings.

4.1.4. Seabirds

Dr Andrew Burbidge (CALM Science) and Mr Phil Fuller (CALM Science) provided the information on locations of seabird nesting areas from the CALM Seabird Database.

4.2 MAPPING

Information layers were constructed using ArcView Geographical Information System (ESRI) software.

A compilation of the data collected was 'heads up' digitised at a scale no greater than 1:30000. GeoTiff images (Seafarer, Australian Hydrographic Office) were used as the base layer.

More detailed descriptions are provided in the metadata pertaining to each individual data layer (see Appendices I & II)

5 RESULTS

The full set of marine wildlife distribution data acquired in this study has been presented in the two respective maps for the Montebello/Barrow Islands and Dampier Archipelago/Cape Preston regions (Figures 2 & 3). These highlight areas of high conservation value associated, for example, with turtle nesting and aggregation, seabird breeding/nesting, dugong occurrence, seasonal humpback whale migration and humpback cow and calf resting.

6 METADATA

The simplest definition of metadata is 'data about data'. It describes the content, quality, currency and availability of data. A 'metadata' description of a particular data set will typically include detailed information on data collection methods, processing history, content, quality, accuracy, geographic extent and contact (source) information pertaining to the data. This information is important so potential users of existing data can assess its suitability for other purposes.

The metadata associated with the marine wildlife distribution data presented in Figures 2 and 3 are presented in Appendix I (humpback whales), Appendix II (dugongs) and Appendix III (marine turtles).

7 DATA MANAGEMENT

7.1 REPORT

Hard copies of this supplementary report will be held at the 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.

Digital copies of this supplementary report will be held at the following directory pathways:

1. The Marine Conservation Branch on-site: CD-ROM [mri_4500]

2. The Marine Conservation Branch off-site: CD-ROM [mri_4500]

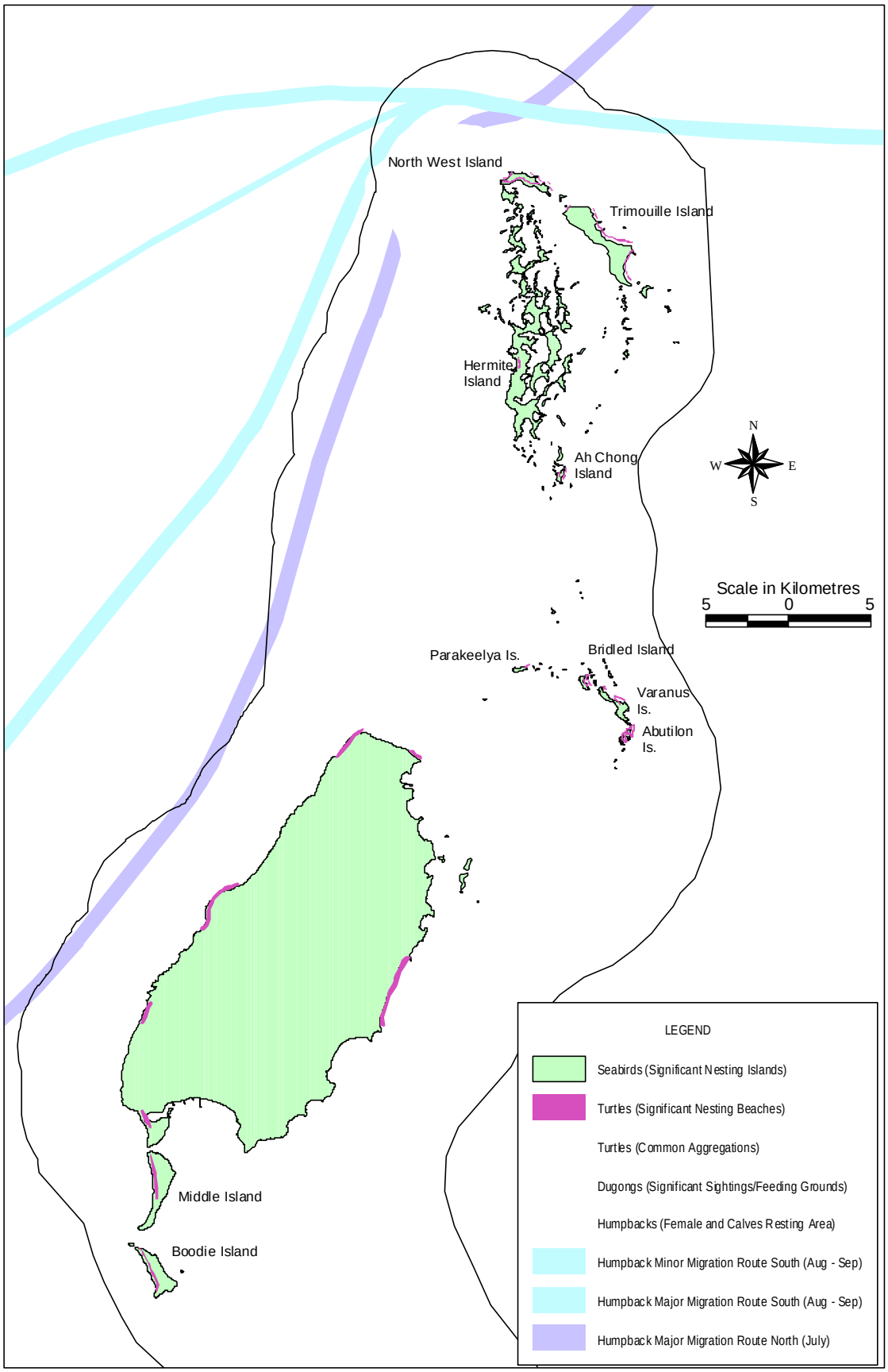

Figure 2. Marine wildlife distribution map for the Montebello/Barrow Island region.

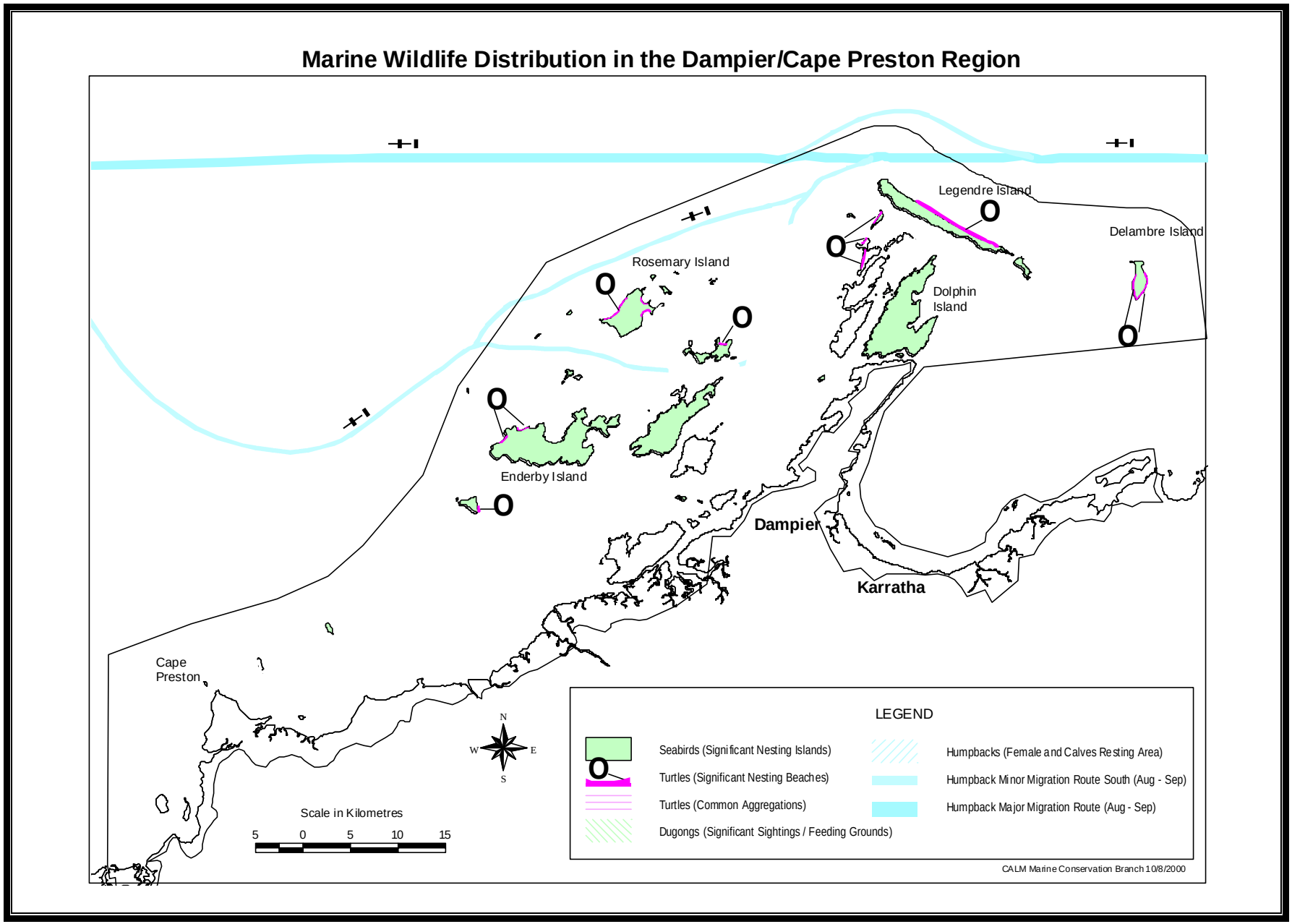

Figure 3. Marine wildlife distribution map for the Dampier Archipelago/Cape Preston region.

3. MCB homepage on the Department of Conservation and Land Management Intranet CALMweb: http://calmweb.calm.wa.gov.au/drb/ncd/mcb/rep_pdf/mri_reps/mri_2000/mrirep00.htm#mri_4400

7.2 GIS LAYERS

The data presented in the form of GIS information layers will be stored digitally at the following directory pathways:

1. The Marine Conservation Branch Server:
   GIS Data@FREM.SHARED@CALM on 'StreetTalk'
   [L:\Marine_Information\Data\Production\Marine_Biology\Fauna\CALM\]

2. The MCB Server full backup DAT tape:
   [L:\Marine_Information\Data\Production\Marine_Biology\Fauna\CALM\]

3. On GIS Information Server:
   [H:\Marine_Information\Data\Production\Marine_Biology\Fauna\CALM\]

8 REFERENCES

WA Government (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.

Jenner, C., Jenner, M-N. and McCabe, K. (2000). Geographical and temporal movements of humpback whales in Western Australian waters- A preliminary report and description of a computer assisted matching system.

APPENDICES

APPENDIX I. METADATA FOR HUMPBACK WHALE DISTRIBUTIONS IN THE MONTEBELLO/ BARROW ISLANDS AND THE DAMPIER ARCHIPELAGO/ CAPE PRESTON REGIONS

DATASET	
Title	Humpback whale migration routes and resting areas over the North West Shelf of Western Australia (**Whaleshumpback_mbi+da_20102000_ll_wgs84**)
Custodian	Department of Conservation and Land Management (CALM)
Jurisdiction	Western Australia
DESCRIPTION	
Abstract	This dataset consists of polygons detailing the north and south migration routes, and the female and calf resting areas of the humpback whale (*Megaptera novaengliae*) over the North West Shelf of Western Australia. The dataset also contains months of the year during which these activities take place. This dataset is complemented by two other marine wildlife datasets compiled over the same region - a polygon dataset detailing significant turtle nesting beaches and common aggregation areas, and a polygon dataset detailing areas of significant dugong sightings and/or significant dugong feeding grounds. These datasets were developed to assist in the planning process for the implementation of a proposed Dampier Archipelago/Cape Preston marine conservation reserve and a proposed Montebello/Barrow Island marine conservation reserve. Humpback whale migration routes and resting areas are identified at a broad scale only and are suitable for regional analysis and representation. Humpback whale migration routes and resting areas were compiled on base maps by Kevin Bancroft in consultation with Curt Jenner of the Centre for Whale Research (WA) Inc. The dataset was digitised and attributed by Oliver Looker in June-July 2000.
Search Word(s)	
Geographic Extent Name(s)	Pilbara (nearshore) (PIN) and Pilbara (offshore) (PIO) IMCRA regions
DATA CURRENCY	
Begin Date	01/06/2000
End Date	30/07/2000

DATASET STATUS	
Progress	Complete
Maintenance & Update Frequency	As required
ACCESS	
Stored Data Format	DIGITAL ArcView shapefile, in geographical co-ordinates based on the datum World Geodetic System of 1984 (WGS84). NONDIGITAL hardcopy compiled basemaps
Available Format Type	DIGITAL ArcView 3.2 shapefile
Access Constraint	Data available for external use subject to transfer fee and license conditions. Data is not to be distributed without authorisation from CALM. Contact CALM's database administrator for further details.
DATA QUALITY	
Lineage	1. Base maps were plotted using Seafarer GeotTIFF raster images of nautical charts produced by the Australian Hydrographic Office. The following charts were used to produce A0 base maps at scales indicated below: i) AUS00061 (Montebello Islands, datum: WGS84) at approx 1:20 000 using AUS00061.tif, ii) AUS00742 (Rosemary Island to Barrow Island, datum: WGS84) at approx 1:125 000 using AUS00742.tif, iii) AUS00057 (Dampier Archipelago, datum AGD66) at approx 1: 50 000 using AUS00057.tif. 2. Curt Jenner of the Centre for Whale Research (WA) Inc. was consulted to provide information on migratory pathways and important resting areas of humpback whales. This information was provided based on published research (*Jenner et al, 2000*) and anecdotal information. Information was hand-drawn onto the hardcopy base maps. 3. Polygons were digitised on screen over the georeferenced Seafarer GeotTIFF raster images. Montebello and Barrow Island datasets were digitised over images A00061.tif and A00742.tif, and the Dampier Archipelago dataset was digitised over the image A00057.tif. The hard copy base maps were used as a reference in this process. Digitising was undertaken on screen at a maximum zoom scale no greater than 1:30 000. 4. Due to inconsistency in the datums of the base images (see details in 1. above), the digitised datasets were converted to a standard datum (WGS84) using the 3 parameter datum conversion functionality of Arcview3.2. 5. Datasets were unioned to produce a single regional dataset.

Positional Accuracy	Hard copy base maps on which source datasets were drawn were produced at various scales from approximately 1:20 000 to 1:125 000. The data was drawn on the base maps to approximate positions only. Digitising was undertaken on screen at a maximum zoom scale no greater than 1:30 000. The migration paths were drawn as arrows to be indicative of the routes taken by the humpback whales. The directions of the migration paths can be considered accurate, however the widths of the migration paths were loosely interpreted to provide a visual representation of their extent. In reality, the migration paths are not confined to these areas only. Female and calf resting areas were drawn as polygons to indicate the general area under which this activity takes place. The positional accuracy of polygons is dependant on the positional accuracy of the digital chart images on which the polygons were digitised. The chart images on which the polygons were digitised are georeferenced based on the geographic co-ordinates contained in the chart image. Details on the number and location of rectification points is not known (the Australian Hydrographic Office would need to contacted to obtain this information). This positional accuracy needs to be taken into consideration when plotting this dataset over other georeferenced backdrops e.g. Landsat images.
Attribute Accuracy	The Centre for Whale Research (WA) Inc has many years experience in monitoring the migration paths and behaviour of humpback whales along the WA coast. The attribute information in this dataset was provided based on published research (*Jenner et al, 2000*) and anecdotal information. The accuracy of the attribute information varies depending on the amount of observation in any particular area, and the available anecdotal evidence. An assessment of the attribute accuracy in any particular area can be obtained from Curt Jenner. For clarification of detail in any particular area, refer to hardcopy compiled base maps.
Logical Consistency	The logic is consistent in the attribution of the data. Wherever dual attribution exists for a polygon, a '+' has been used to delimit the dual attributes. Any subsequent attributes that are directly related to this dual attribution are also delimited by a '+'.
Completeness	The dataset is complete for the North West Shelf only. Further data collection needs to be undertaken to improve the quality of the information. The dataset will be upgraded as priorities, time and resources permit.
CONTACT INFORMATION	
Contact Organisation	Department of Conservation and Land Management, Marine Conservation Branch
Contact Position	Marine GIS Co-ordinator
Mail Address 1	47 Henry Street
Mail Address 2	
Suburb or Place or Locality	Fremantle

State or Locality 2	WA
Country	Australia
Postcode	6160
Telephone	08 9432 5109
Facsimile	08 9430 5408
Electronic Mail Address	rayl@calm.wa.gov.au
METADATA DATE	
Metadata Date	20/10/2000
ADDITIONAL METADATA	
Additional Metadata	Refer to: *Bancroft K.P., Davidson J.A., & Looker O. (2000). Marine wildlife distribution in the proposed Montebello/Barrow Islands and Dampier Archipelago/Cape Preston marine conservation reserves. Report: MRI/PI/MBI&DAR-44/2000. August 2000. (Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle, Western Australia, 6160). (Unpublished report).* *Jenner, C., Jenner, M-N. and McCabe, K. (2000). Geographical and temporal movements of humpback whales in Western Australian waters - a preliminary report and description of a computer assisted matching system.*

APPENDIX II. METADATA FOR DUGONG DISTRIBUTIONS IN THE MONTEBELLO/ BARROW ISLANDS AND THE DAMPIER ARCHIPELAGO/ CAPE PRESTON REGIONS

DATASET	
Title	Areas of significant dugong sightings and/or significant dugong feeding grounds over the North West Shelf of Western Australia (**dugongs_mbi+da_20102000_ll_wgs84**)
Custodian	Department of Conservation and Land Management (CALM)
Jurisdiction	Western Australia
DESCRIPTION	
Abstract	This dataset consists of polygons detailing dugong feeding grounds and areas of significant dugong sightings over the North West Shelf of Western Australia. The dataset also contains a descriptive location of these areas. This dataset is complemented by two other marine wildlife datasets compiled over the same region - a polygon dataset detailing humpback whale migration routes and resting areas, and a polygon dataset detailing turtle nesting beaches of significance and common turtle aggregation areas. These datasets were developed to assist in the planning process for the implementation of a proposed Dampier Archipelago/Cape Preston marine conservation reserve and a proposed Montebello/Barrow Island marine conservation reserve. This dataset was compiled on base maps by Kevin Bancroft in consultation with Dr Bob Prince (CALM Science), Keith Morris (CALM Science), Curt Jenner (Centre for Whale Research (WA) Inc.), and Fran Stanley (CALM Karratha). The dataset was digitised and attributed by Oliver Looker in June-July 2000.
Search Word(s)	
Geographic Extent Name(s)	Pilbara (nearshore) (PIN) and Pilbara (offshore) (PIO) IMCRA regions
DATA CURRENCY	
Begin Date	01/06/2000
End Date	30/07/2000

DATASET STATUS	
Progress	Complete
Maintenance & Update Frequency	As required
ACCESS	
Stored Data Format	DIGITAL ArcView shapefile, in geographical co-ordinates based on the datum World Geodetic System of 1984 (WGS84). NONDIGITAL hardcopy compiled basemaps
Available Format Type	DIGITAL ArcView 3.2 shapefile
Access Constraint	Data available for external use subject to transfer fee and license conditions. Data is not to be distributed without authorisation from CALM. Contact CALM's database administrator for further details.
DATA QUALITY	
Lineage	1. Base maps were plotted using Seafarer GeotTIFF raster images of nautical charts produced by the Australian Hydrographic Office. The following charts were used to produce A0 base maps at scales indicated below: i) AUS00061 (Montebello Islands, datum: WGS84) at approx 1:20 000 using AUS00061.tif, ii) AUS00742 (Rosemary Island to Barrow Island, datum: WGS84) at approx 1:125 000 using AUS00742.tif, iii) AUS00057 (Dampier Archipelago, datum AGD66) at approx 1: 50 000 using AUS00057.tif. 2. Dr Bob Prince (CALM Science), Keith Morris (CALM Science), and Curt Jenner (Centre for Whale Research (WA) Inc.), and Fran Stanley (CALM Karratha) were consulted to provide information on dugong feeding grounds and areas of significant dugong sightings. This information was provided based on anecdotal information, data from recent surveys, and data held at the offices of CALM Science. Information from each source was hand-drawn onto the hardcopy base maps, and then consolidated into a single base map. 3. Polygons were digitised on screen over the georeferenced Seafarer GeotTIFF raster images. Montebello and Barrow Island datasets were digitised over images A00061.tif and A00742.tif, and the Dampier Archipelago dataset was digitised over the image A00057.tif. The hard copy base maps were used as a reference in this process. Digitising was undertaken on screen at a maximum zoom scale no greater than 1:30 000.

	4. Due to inconsistency in the datums of the base images (see details in 1. above), the digitised datasets were converted to a standard datum (WGS84) using the 3 parameter datum conversion functionality of Arcview3.2. 5. Datasets were unioned to produce a single regional dataset.
Positional Accuracy	Hard copy base maps on which source datasets were drawn were produced at various scales from approximately 1:20 000 to 1:125 000. The data was drawn on the base maps to approximate positions only. Digitising was undertaken on screen at a maximum zoom scale no greater than 1:30 000. The positional accuracy of polygons is dependant on the positional accuracy of the digital chart images on which the polygons were digitised. The chart images on which the polygons were digitised are georeferenced based on the geographic co-ordinates contained in the chart image. Details on the number and location of rectification points is not known (the Australian Hydrographic Office would need to contacted to obtain this information). This positional accuracy needs to be taken into consideration when plotting this dataset over other georeferenced backdrops e.g. Landsat images.
Attribute Accuracy	The experts consulted in the acquisition of this data have many years experience in monitoring the dugong populations over the North West Shelf. The accuracy of the attribute information varies depending on the amount of observation in any particular area, and the available anecdotal evidence. An assessment of the attribute accuracy in any particular area can be obtained from the individual expert who identified data in a particular area. Refer to hardcopy compiled base maps for further detail.
Logical Consistency	The logic is consistent in the attribution of the data.
Completeness	The dataset is complete for the North West Shelf only. Further data collection needs to be undertaken to improve the quality of the information. The dataset will be upgraded as priorities, time and resources permit.
CONTACT INFORMATION	
Contact Organisation	Department of Conservation and Land Management, Marine Conservation Branch
Contact Position	Marine GIS Co-ordinator
Mail Address 1	47 Henry Street
Mail Address 2	
Suburb or Place or Locality	Fremantle
State or Locality 2	WA
Country	Australia
Postcode	6160

Telephone	08 9432 5109
Facsimile	08 9430 5408
Electronic Mail Address	rayl@calm.wa.gov.au
METADATA DATE	
Metadata Date	20/10/2000
ADDITIONAL METADATA	
Additional Metadata	Refer to: *Bancroft K.P., Davidson J.A., & Looker O. (2000). Marine wildlife distribution in the proposed Montebello/Barrow Islands and Dampier Archipelago/Cape Preston marine conservation reserves. Report: MRI/PI/MBI&DAR-44/2000. August 2000. (Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle, Western Australia, 6160). (Unpublished report).*

APPENDIX III. METADATA FOR MARINE TURTLE DISTRIBUTIONS IN THE MONTEBELLO/ BARROW ISLANDS AND THE DAMPIER ARCHIPELAGO/ CAPE PRESTON REGIONS

DATASET	
Title	Turtle nesting beaches of significance and common turtle aggregation areas over the North West Shelf of Western Australia (**turtles_mbi+da_20102000_ll_wgs84**)
Custodian	Department of Conservation and Land Management (CALM)
Jurisdiction	Western Australia
DESCRIPTION	
Abstract	This dataset consists of polygons detailing significant turtle nesting beaches, and common turtle aggregation areas of flatback, green, and hawksbill turtles over the North West Shelf of Western Australia. The dataset also contains a descriptive location of the areas over which these activities take place. This dataset is complemented by two other marine wildlife datasets compiled over the same region - a polygon dataset detailing humpback whale migration routes and resting areas, and a polygon dataset detailing areas of significant dugong sightings and/or significant dugong feeding grounds. These datasets were developed to assist in the planning process for the implementation of a proposed Dampier Archipelago/Cape Preston marine conservation reserve and a proposed Montebello/Barrow Island marine conservation reserve. Significant turtle nesting beaches, and common turtle aggregation areas were compiled on base maps by Kevin Bancroft in consultation with Kelly Pendoley (Environmental Consultant), Dr Bob Prince (CALM Science), Fran Stanley (CALM Karratha), and Keith Morris (CALM Science). The dataset was digitised and attributed by Oliver Looker in June-July 2000.
Search Word(s)	
Geographic Extent Name(s)	Pilbara (nearshore) (PIN) and Pilbara (offshore) (PIO) IMCRA regions
DATA CURRENCY	
Begin Date	01/06/2000
End Date	30/07/2000

DATASET STATUS	
Progress	Complete
Maintenance & Update Frequency	As required
ACCESS	
Stored Data Format	DIGITAL ArcView shapefile, in geographical co-ordinates based on the datum World Geodetic System of 1984 (WGS84). NONDIGITAL hardcopy compiled basemaps
Available Format Type	DIGITAL ArcView 3.2 shapefile
Access Constraint	Data available for external use subject to transfer fee and license conditions. Data is not to be distributed without authorisation from CALM. Contact CALM's database administrator for further details.
DATA QUALITY	
Lineage	1. Base maps were plotted using Seafarer GeotTIFF raster images of nautical charts produced by the Australian Hydrographic Office. The following charts were used to produce A0 base maps at scales indicated below: i) AUS00061 (Montebello Islands, datum: WGS84) at approx 1:20 000 using AUS00061.tif, ii) AUS00742 (Rosemary Island to Barrow Island, datum: WGS84) at approx 1:125 000 using AUS00742.tif, iii) AUS00057 (Dampier Archipelago, datum AGD66) at approx 1: 50 000 using AUS00057.tif. 2. Kelly Pendoley (Environmental Consultant), Dr Bob Prince (CALM Science), Fran Stanley (CALM Karratha), and Keith Morris (CALM Science) were consulted to provide information on significant turtle nesting beaches and common turtle aggregation areas. This information was provided based on anecdotal information, data from recorded sightings, and data held at the offices of CALM Science. Information from each source was hand-drawn onto the hardcopy base maps, and then consolidated into a single base map. 3. Polygons were digitised on screen over the georeferenced Seafarer GeotTIFF raster images. Montebello and Barrow Island datasets were digitised over images A00061.tif and A00742.tif, and the Dampier Archipelago dataset was digitised over the image A00057.tif. The hard copy base maps were used as a reference in this process. Digitising was undertaken on screen at a maximum zoom scale no greater than 1:30 000.

	4. Due to inconsistency in the datums of the base images (see details in 1. above), the digitised datasets were converted to a standard datum (WGS84) using the 3 parameter datum conversion functionality of Arcview3.2. 5. Datasets were unioned to produce a single regional dataset.
Positional Accuracy	Hard copy base maps on which source datasets were drawn were produced at various scales from approximately 1:20 000 to 1:125 000. The data was drawn on the base maps to approximate positions only. Digitising was undertaken on screen at a maximum zoom scale no greater than 1:30 000. The positional accuracy of polygons is dependant on the positional accuracy of the digital chart images on which the polygons were digitised. The chart images on which the polygons were digitised are georeferenced based on the geographic co-ordinates contained in the chart image. Details on the number and location of rectification points is not known (the Australian Hydrographic Office would need to contacted to obtain this information). This positional accuracy needs to be taken into consideration when plotting this dataset over other georeferenced backdrops e.g. Landsat images.
Attribute Accuracy	The experts consulted in the acquisition of this data have many years experience in monitoring the turtle populations over the North West Shelf. The accuracy of the attribute information varies depending on the amount of observation in any particular area, and the available anecdotal evidence. An assessment of the attribute accuracy in any particular area can be obtained from the individual expert who identified data in a particular area. Refer to hardcopy compiled base maps for further detail. In some cases, more than one source was used to confirm a significant turtle nesting beach. Refer to hard copy base maps for further details.
Logical Consistency	The logic is consistent in the attribution of the data. Wherever dual attribution exists for a polygon, a '+' has been used to delimit the dual attributes. Any subsequent attributes that are directly related to this dual attribution are also delimited by a '+'.
Completeness	The dataset is complete for the North West Shelf only. Further data collection needs to be undertaken to improve the quality of the information. The dataset will be upgraded as priorities, time and resources permit.
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Additional Metadata	Refer to: *Bancroft K.P., Davidson J.A., & Looker O. (2000). Marine wildlife distribution in the proposed Montebello/Barrow Islands and Dampier Archipelago/Cape Preston marine conservation reserves. Report: MRI/PI/MBI&DAR-44/2000. August 2000. (Marine Conservation Branch, Department of Conservation and Land Management, 47 Henry St., Fremantle, Western Australia, 6160). (Unpublished report).*