

NORTH WEST SHELF  
JOINT ENVIRONMENTAL  
MANAGEMENT STUDY



Data warehouse and metadata  
holdings relevant to Australia's  
North West Shelf

TECHNICAL REPORT No. 5



• P. Brodie • M. Fuller • T. Rees • L. Wilkes

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# NORTH WEST SHELF JOINT ENVIRONMENTAL MANAGEMENT STUDY

Final report

North West Shelf Joint Environmental Management Study Final Report.

List of technical reports

NWSJEMS Technical Report No. 1

Review of research and data relevant to marine environmental management of Australia's North West Shelf.

A. Heyward, A. Revill and C. Sherwood

NWSJEMS Technical Report No. 2

Bibliography of research and data relevant to marine environmental management of Australia's North West Shelf.

P. Jernakoff, L. Scott, A. Heyward, A. Revill and C. Sherwood

NWSJEMS Technical Report No. 3

Summary of international conventions, Commonwealth and State legislation and other instruments affecting marine resource allocation, use, conservation and environmental protection on the North West Shelf of Australia.

D. Gordon

NWSJEMS Technical Report No. 4

Information access and inquiry.

P. Brodie and M. Fuller

**NWSJEMS Technical Report No. 5**

**Data warehouse and metadata holdings relevant to Australia's North West Shelf.**

**P. Brodie, M. Fuller, T. Rees and L. Wilkes**

NWSJEMS Technical Report No. 6

Modelling circulation and connectivity on Australia's North West Shelf.

S. Condie, J. Andrewartha, J. Mansbridge and J. Waring

NWSJEMS Technical Report No. 7

Modelling suspended sediment transport on Australia's North West Shelf.

N. Margvelashvili, J. Andrewartha, S. Condie, M. Herzfeld, J. Parslow, P. Sakov and J. Waring

NWSJEMS Technical Report No. 8

Biogeochemical modelling on Australia's North West Shelf.

M. Herzfeld, J. Parslow, P. Sakov and J. Andrewartha

NWSJEMS Technical Report No. 9

Trophic webs and modelling of Australia's North West Shelf.

C. Bulman

NWSJEMS Technical Report No. 10

The spatial distribution of commercial fishery production on Australia's North West Shelf.

F. Althaus, K. Woolley, X. He, P. Stephenson and R. Little

NWSJEMS Technical Report No. 11

Benthic habitat dynamics and models on Australia's North West Shelf.

E. Fulton, B. Hatfield, F. Althaus and K. Sainsbury

NWSJEMS Technical Report No. 12

Ecosystem characterisation of Australia's North West Shelf.

V. Lyne, M. Fuller, P. Last, A. Butler, M. Martin and R. Scott

NWSJEMS Technical Report No. 13

Contaminants on Australia's North West Shelf: sources, impacts, pathways and effects.

C. Fandry, A. Reville, K. Wenziker, K. McAlpine, S. Apte, R. Masini and K. Hillman

NWSJEMS Technical Report No. 14

Management strategy evaluation results and discussion for Australia's North West Shelf.

R. Little, E. Fulton, R. Gray, D. Hayes, V. Lyne, R. Scott, K. Sainsbury and D. McDonald

NWSJEMS Technical Report No. 15

Management strategy evaluation specification for Australia's North West Shelf.

E. Fulton, K. Sainsbury, D. Hayes, V. Lyne, R. Little, M. Fuller, S. Condie, R. Gray, R. Scott,

H. Webb, B. Hatfield, M. Martin, and D. McDonald

NWSJEMS Technical Report No. 16

Ecosystem model specification within an agent based framework.

R. Gray, E. Fulton, R. Little and R. Scott

NWSJEMS Technical Report No. 17

Management strategy evaluations for multiple use management of Australia's North West Shelf

– Visualisation software and user guide.

B. Hatfield, L. Thomas and R. Scott

NWSJEMS Technical Report No. 18

Background quality for coastal marine waters of the North West Shelf, Western Australia.

K. Wenziker, K. McAlpine, S. Apte, R. Masini

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## ACRONYMS

ACOM	Australian Community Ocean Model
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AGSO	Australian Geological Survey Organisation now Geoscience Australia
AHC	Australian Heritage Commission
AIMS	Australian Institute of Marine Science
AMSA	Australian Maritime Safety Authority
ANCA	Australian Nature Conservation Agency
ANZECC	Australian and New Zealand Environment and Conservation Council
ANZLIC	Australian and New Zealand Land Information Council
APPEA	Australian Petroleum, Production and Exploration Association
AQIA	Australian Quarantine Inspection Service
ARMCANZ	Agricultural Resources Management council of Australia and New Zealand
ASIC	Australian Seafood Industry Council
ASDD	Australian Spatial Data Directory
CAAB	Codes for Australian Aquatic Biota
CAES	Catch and Effort Statistics
CALM	Department of Conservation and Land Management (WA Government)
CAMBA	China Australia Migratory Birds Agreement
CDF	Common data format
CITIES	Convention on International Trade in Endangered Species
CTD	conductivity-temperature-depth
CMAR	CSIRO Marine and Atmospheric Research
CMR	CSIRO Marine Research
COAG	Council of Australian Governments
ConnIe	Connectivity Interface
CPUE	Catch per unit effort
CSIRO	Commonwealth Science and Industrial Research Organisation
DCA	detrended correspondence analysis
DIC	Dissolved inorganic carbon
DISR	Department of Industry, Science and Resources (Commonwealth)
DEP	Department of Environmental Protection (WA Government)
DOM	Dissolved organic matter
DPIE	Department of Primary Industries and Energy
DRD	Department of Resources Development (WA Government)
EA	Environment Australia
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPP	Environmental Protection Policy
ENSO	El Nino Southern Oscillation
EQC	Environmental Quality Criteria (Western Australia)
EQO	Environmental Quality Objective (Western Australia)
ESD	Ecologically Sustainable Development
FRDC	Fisheries Research and Development Corporation
FRMA	Fish Resources Management Act
GA	Geoscience Australia formerly AGSO
GESAMP	Joint Group of Experts on Scientific Aspects of Environmental Protection
GIS	Geographic Information System
ICESD	Intergovernmental Committee on Ecologically Sustainable Development
ICS	International Chamber of Shipping
IOC	International Oceanographic Commission
IGAE	Intergovernmental Agreement on the Environment
ICOMOS	International Council for Monuments and Sites

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IMO	International Maritime Organisation
IPCC	Intergovernmental Panel on Climate Change
IUNC	International Union for Conservation of Nature and Natural Resources
IWC	International Whaling Commission
JAMBA	Japan Australian Migratory Birds Agreement
LNG	Liquified natural gas
MarLIN	Marine Laboratories Information Network
MARPOL	International Convention for the Prevention of Pollution from Ships
MECO	Model of Estuaries and Coastal Oceans
MOU	Memorandum of Understanding
MPAs	Marine Protected Areas
MEMS	Marine Environmental Management Study
MSE	Management Strategy Evaluation
NCEP - NCAR	National Centre for Environmental Prediction – National Centre for Atmospheric Research
NEPC	National Environmental Protection Council
NEPM	National Environment Protection Measures
NGOs	Non government organisations
NRSMPA	National Representative System of Marine Protected Areas
NWQMS	National Water Quality Management Strategy
NWS	North West Shelf
NWSJEMS	North West Shelf Joint Environmental Management Study
NWSMEMS	North West Shelf Marine Environmental Management Study
ICIMF	Oil Company International Marine Forum
OCS	Offshore Constitutional Settlement
PFW	Produced formation water
P(SL)A	Petroleum (Submerged Lands) Act
PSU	Practical salinity units
SeaWiFS	Sea-viewing Wide Field-of-view Sensor
SOI	Southern Oscillation Index
SMCWS	Southern Metropolitan Coastal Waters Study (Western Australia)
TBT	Tributyl Tin
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention of the Law of the Sea
UNEP	United Nations Environment Program
UNESCO	United Nations Environment, Social and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
WADEP	Western Australian Department of Environmental Protection
WADME	Western Australian Department of Minerals and Energy
WAEPA	Western Australian Environmental Protection Authority
WALIS	Western Australian Land Information System
WAPC	Western Australian Planning Commission
WHC	World Heritage Commission
WOD	World Ocean Database
www	world wide web



## TECHNICAL SUMMARY

From the earliest stages of planning the North West Shelf Joint Environmental Management Study it was evident that good management of the scientific data to be used in the research would be important for the success of the Study.

A comprehensive review of data sets and other information relevant to the marine ecosystems, the geology, infrastructure and industries of the North West Shelf area had been completed (Heyward et al. 2006). The Data Management Project was established to source and prepare existing data sets for use, requiring the development and use of a range of tools: metadata systems, data visualisation and data delivery applications. These were made available to collaborators to allow easy access to data obtained and generated by the Study.

The CMAR *MarLIN* metadata system was used to document the 285 data sets, those which were identified as potentially useful for the Study and the software and information products generated by and for the Study.

This report represents a hard copy atlas of all NWSJEMS data products and the existing data sets identified for potential use as inputs to the Study. It comprises summary metadata elements describing the data sets, their custodianship and how the data sets might be obtained. The identifiers of each data set can be used to refer to the full metadata records in the on-line *MarLIN* system.

## 1. INTRODUCTION

As would be expected in an ecosystem-wide study of the North West Shelf marine environment, NWSJEMS drew upon information about the region from a very wide range of sources. Both the information gathered for use in the Study, and the outputs from the Study, are described in the following pages, which comprise a catalogue of NWSJEMS data sets.

This report presents, in the form of an atlas, a concise description of the 285 data sets as they were at the end of the Project in June 2006. It outlines how further information can be sourced from the Study knowledge base.

At the outset of the NWSJEMS the need was recognised to work with data providers to consolidate existing information; to seek expert insights and manage the resources available for the Study. The NWSJEMS Data Management Project was established in a partnership between CSIRO Marine and Atmospheric Research (CMAR) and the then WA Department of Environment and Protection (DEP). National standards for gathering and publishing information about data sets were applied. Licence agreements for data use were negotiated as the data sets were obtained. Material was distributed to researchers according to their requirements. Suitable technologies were set in place to manage the process.

The use of the CMAR metadata tool, *MarLIN*, was important in recording, in a structured and searchable way, the documentation which is required to make a scientific data set easy to find, access, use and re-use. The information resides in a relational database with which the user interacts using *MarLIN* on a web browser. The data-store of metadata can be used in other ways too, and this report is an example of that. It was generated with a subset of the information in *MarLIN*.

The survey data and GIS data sets described here are stored in the *Data Warehouse*, a spatially enabled Oracle repository. User and technical information on the *MarLIN* interface and the *Data Warehouse* and other interactive data tools built for NWSJEMS is in the prior report in this series, *Information Access and Inquiry NWSJEMS Technical Report 4* (2006).

The next chapter describes the process of gathering the data sets required for the Study. The data management strategies that were used are also outlined, but the main focus of the report is the comprehensive listing of data set descriptions in the chapters that follow. Firstly, in Chapter 3, we describe NWSJEMS outputs and associated tools used in and produced during the Project. From Chapter 4, the data sets which were available for, but not all actually used in NWSJEMS are outlined, each chapter roughly reflects the categories explored in the research. The indexes at the end of the report provides a comprehensive list of data sets. However the best option for finding information on material of interest would be to use the on-line search features of *MarLIN*.

## 2. NWSJEMS DATA SETS

### 2.1 Data acquisition

Prior to the commencement of the NWSJEMS a comprehensive review of research and data relevant to the environmental management of the North West Shelf was undertaken (Heyward et al. 2006). The resulting bibliography included published material, grey literature, maps and data products. This review established which of the data sources potentially suited the needs of the various research projects comprising the Study. Data rich and data poor subjects and areas were identified and the process of obtaining data was planned.

Important basic data sets were available from CMAR and Geoscience Australia (formerly AGSO). Others were identified through the Australian Spatial Data directory (ASDD), the Western Australian Land Information System (WALIS) Interragator database and through contact with individual agencies and interviews with data managers within industry, mainly oil, gas and mining companies.

Not all data sets obtained by the Data Management Project were used in the Study, however, all went through the same documentation and data management processes. All data sets registered for the Project are included in this report, which serves to provide a valuable insight into the wide range of data available on the region.

### 2.2 Data management

Once data sets of interest for the NWSJEMS were identified and the priorities set for the acquisition of the information there were two important steps for the Data Management Project. The first was to establish and share information about the data holdings (metadata) within the Study and also with the public. The second was to set up data use agreements and systems for appropriate access for collaborators to the data sets.

#### 2.2.1 Data documentation

##### *MarLIN and the DEP GIS metadata system*

The quality and quantity of data set descriptions provided with data gathered for use in NWSJEMS varied widely. The DEP GIS Section was at the front-line in sourcing data and, in most instances, creating and publishing metadata for the data sets obtained.

There were both state and national information systems through which information about marine data sets can be published. Those used for NWSJEMS data include the Australian Spatial Data Directory (ASDD), Western Australian Land Information System (WALIS) and the CSIRO Marine and Atmospheric Research (CMAR) metadata system, *MarLIN*. The latter are both nodes of the ASDD.

The tool initially of use for DEP was the Australian and New Zealand Land Information Council (ANZLIC) Metadata Tool (*Met Tool*). It conformed to the national metadata standards and was also used by WALIS in its metadata management strategy to

document all State Government data. The *Met Tool* provided a standard export format for interchanging metadata between systems. A combination of batch metadata transfer and manual entry were used to transfer between the DEP and *MarLIN* systems.

Data sets and their associated metadata came primarily from three sources: WA State Government agencies, Commonwealth Government agencies, and industry. A database obtained from WALIS contained all WA state government metadata and was used as the basis for further work. National data sets often had metadata published through the source agencies, or through the ASDD. Data sets obtained from industry were rarely published and whatever documentation and reports were available were used as the basis for the new metadata records.

While all data sets used by the Study have been documented in *MarLIN*, only data sets for which CMAR is custodian are published through the *MarLIN* node of the ASDD. The Data Management Project ensured all other data sets had either already been published through their custodian agencies, or that metadata was created and published on their behalf through WALIS.

This report contains a summary of the data set descriptions contained in *MarLIN*. A script was used to generate the pages in html, normally to be viewed with a web browser. The html in this instance was customised for NWSJEMS, capturing a listing of the selected *MarLIN* fields, and where possible, an image which is related to the data set. The records were collated and the html imported into MS *Word*. There are live links in the document. These will work when it is used electronically and the user has access to the World Wide Web.

A link such as the one following can be used for metadata records available to the public. The required *MarLIN* record number is appended after the '=' to obtain the full metadata record:

[http://www.marine.csiro.au/marq/edd\\_search.Browse\\_Citation2?txtSession=6389](http://www.marine.csiro.au/marq/edd_search.Browse_Citation2?txtSession=6389)

### *Custodial considerations*

Due to the wide range of suppliers of data to the Study, and the variable nature of the metadata, issues of data provenance, and sourcing, needed clarification. On completion of the main phase of data gathering, it appeared there were duplicates. Some had been derived from the common base data sets. The duplicate data sets primarily consisted of many base topographic layers, such as coastlines, coastal features, rivers, and location names. With the rigorous NWSJEMS Data Management Project documentation procedures, duplicate data sets were matched, and the versions from custodian agencies flagged as the source for any non-custodial versions. The documentation process allowed for the most recent data set to be used, as well as the data set closest in source to the custodial agency, adding value to the knowledge base for the Study.

### *Data currency*

While most of the data sets obtained for NWSJEMS were of a fairly static nature, or not about to be updated, a small number were fairly dynamic and changed over time. The two main data sets of a changeable nature were the Petroleum Tenure and Aquaculture Licence area boundaries. Updates to these data sets were identified through the metadata, and changes applied to their currency dates, as well as their metadata dates.

While other data sets may also have been dynamic or have changed during the life of the Study, it was beyond the scope of the NWSJEMS to continually obtain more recent versions.

During data gathering there were cases where data sets still in the process of generation were obtained. Where it was determined they would be useful to the Study in that form the data sets were obtained in their working status.

This applies to a number of data sets obtained from CALM for the Dampier Archipelago and Barrow-Monte Bello marine-park planning studies. They appear with all available metadata from the time they were obtained. The 'metadata completeness' is a useful field here, indicating the status of the data set as a draft. There are also data sets recorded for the Study, which may have subsequently changed. They will not have been flagged here as updated, or changed. In this respect, NWSJEMS data sets represent a snapshot of the best available data at the time of the Study.

### *NWSJEMS content and products*

The data sets actually used by the Study, either in general mapping and information products, or in the Management Strategy Evaluation (MSE) modelling component of the study, are marked with an asterisk (\*) in Index 2. The outputs or products for the NWSJEMS are listed in Index 1.

### **2.2.3 Data licensing**

The process of obtaining data sets from the various sources identified in the review of information (Heyward et al. 2006) required data licensing measures which would cover both the use of the material by NWSJEMS, as well by collaborators, ensuring the data were useable for the life of the Study.

Licensing of NWSJEMS data sets allowed for the Study to make them available to agencies involved, and to some additional agencies identified as being likely also to want to obtain the data sets at that time (OSRA, Coastal Atlas, and WALIS). Supply to third parties normally is beyond the licensing conditions associated with the data sets. Alternatively, such supply of data sets required the notification of original suppliers prior to handing them on to third parties. This was one aspect of the industry licences. Due to the licensing constraints, and the snapshot nature of the data gathering process, those wanting to obtain data shown in this document should refer to the original data suppliers. NWSJEMS generated data sets can, however, be provided to external agencies, and these can be identified through *MarLIN* or the ASDD.

Data licence agreements were developed once the data sets were to be acquired. The requirements of the licence agreement varied according to the type of agency: state government, federal government, or industry.

WA state government data was covered under the WALIS data exchange agreement for non-commercial use of data. All data obtained from WA government agencies was negotiated under this agreement. The agreement allows access to data for the cost of extraction for non-commercial use. Licence agreements with Commonwealth agencies varied.

Licence agreements for the oil and gas sector were initially negotiated with the Australian Petroleum Production and Exploration Association (APPEA). A master

licence agreement was negotiated initially between APPEA, Apache Energy and the Department of Environmental Protection on behalf on JEMS. The aim of the agreement was to make the data as accessible to as many agencies as possible. This agreement was then used as the basis for further licences between other APPEA members.

Data was available to the Study through its host agency in Western Australia, DEP, and collaborators. The DEP already had a large corporate GIS data library which was available to NWSJEMS and provided a solid foundation for the Data Management Project. While the data was available to NWSJEMS, its use was governed by the licence agreements held by the DEP.

## **2.2.4 The data set summary information**

The atlas of data sets from NWSJEMS in the next chapters presents a summary of information extracted from *MarLIN*. Where available, the following information is outlined for each data set. See Appendix C for a description of each field.

**Title**

***MarLIN* record number**

**Data type**

**Originator organisation and custodian**

**Contributors**

**Acknowledgements**

**References**

**Abstract**

**Documentation links**

**Data links**

**Stored data format, stored data volume and stored data documentation**

**Specific software requirements**

**Access constraint**

**Beginning and end date**

**Lineage**

**Completeness**

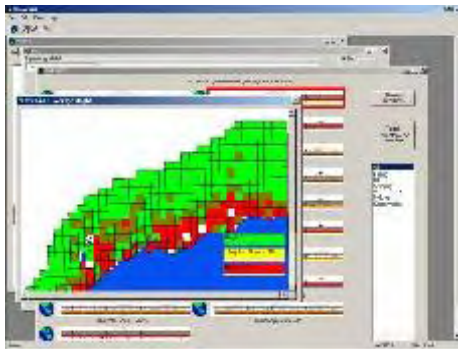
As noted in Section 2.2.1.1 above, further details on each data set can be obtained on-line from *MarLIN* using a web browser.

### 3. NWSJEMS PRODUCTS

The scope of NWSJEMS is well illustrated by the extensive set of 17 technical reports in this series. The real Study outputs are contained in and fully described there. A summary view of the models, tools and underlying data sets is presented below. As with subsequent chapters, the descriptions are generated from the relevant contents of *MarLIN*, the searchable CMAR metadata repository.

The preceding technical report in this series, *Information Access and Inquiry*, contains descriptions of the information systems of importance for NWSJEMS and the tools included below, such as *NWS-InVitro*, *ViewNWS*, *Data Warehouse*, *Data Trawler* and *Connle*, are much more fully described there and elsewhere, the references section indicates a starting point. Some tools are available on-line and can be explored directly by following the url supplied.

#### 3.1 Models, data and tools



#### ***North West Shelf Joint Environmental Management Study: visualisation software – ViewNWS***

**MarLIN record number** 6629

**Data Type**

- Observed Data – field
- GIS
- Aggregated/Derived Data
- Model Data
- Map
- Photograph/s – film or video, stills, Aerial Photograph/s
- Report
- Satellite Image/s
- Software

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Brian Hatfield

**Reference** Hatfield, B. et al. 2006, NWSJEMS Technical Report 17: Management strategy evaluations for multiple use management of Australia's North West Shelf: visualisation software and user guide. CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** NWSJEMS study outputs are accessed using this application which is normally distributed on DVD with the accompanying data sets. *ViewNWS* is a user interface and data set which was designed for the presentation of environmental, social and economic data, the very factors that depict the state of an ecosystem as it evolves in response to natural forcing and human use.

There are several *ViewNWS* Management Strategy Evaluation (MSE) displays which include maps, digital images and time series data. The software is written in Visual Basic and uses ESRI Map Objects for the spatial component.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile, Images – ECW, other; Software using Visual Basic 6 and ESRI MapObjects

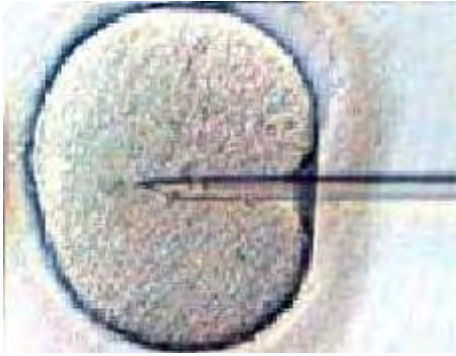
**Stored Data Volume** 2 GB

**Access constraint** No Restrictions

**Lineage** Application developed by CMAR staff

**Completeness** Complete





## **North West Shelf Joint Environmental Management Study: software description – InVitro (2006)**

**MarLIN record number** 6268

**Data Type** Software

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Beth Fulton, Rich Little, Roger Scott, Brian Hatfield, Vincent Lyne, David McDonald, Keith Sainsbury

**References** Gray, R. et al. 2006, NWSJEMS Technical Report 16: Ecosystem Model Specification within an agent based framework, CSIRO Marine and Atmospheric Research, Hobart  
Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The *NWS-InVitro* model is a spatially explicit agent-based biophysical simulation model with adaptive time-steps and asynchronous submodel execution. It has been developed as the basis of the NWSJEMS Management Strategy Evaluation (MSE) study.

The model simulates a range of human activity and principal features of the marine ecosystem in Australia's North West Shelf (NWS) region under a variety of management strategies. The results of the simulations are to be used to assess the relative efficacy and robustness of these strategies across a broad range of environmental and economic conditions.

*NWS-InVitro* takes as input a wide range of environmental/ecosystem data and data concerning human activity. Data typically used to configure the ecosystem and its environment would include bathymetry, rainfall, current fields, contaminant fields, wind, and the distribution and abundance of organisms simulated as well as the usual biological parameters such as mortality and growth rates. Data relating to human activity may include control zones for vessel movement or fishing, historical catch, locations of artefacts (platforms, ports, pipelines, etc), and population time series for ports, though it is not limited to these data.

Data which is characteristically produced in a simulation includes distribution and abundance of simulated species, catch per unit effort (CPUE) history, vessel movement and conflicts, contamination effects, and a range of other data. There is a degree of randomness in some of the process models used to represent the behaviour of components of the simulation, so the output data will differ between runs. These output data sets are meant to be used as a part of large number of runs which encompass the likely variability in the modelled systems. A typical suite of runs will result in over a half a terabyte of output.

See References for information regarding the specific configurations used with respect to parameterisation, input and output data.

**Attributes Overview** Data sets are read and written by the model in a variety of formats. Most of the data are dealt with in one of the following (local) formats: TBL, PT, PFM, PXM or as a parameter file.

**INPUT DATA MODEL GROUP**

**Environments:** bathymetry grid, currents through time, wind time series

**Benthic (sessile) organisms:** distribution grids with abundance, biological parameters

**Fish populations:** locations of centroids, biological parameters

**Prawns, sharks, turtles:** locations of schools, numbers in schools, biological parameters

**Recreational Fishery:** road network, target species, efficiency parameters, and size restrictions (some data is also gleaned from the commercial fin fishery model)

**Fishing Vessels:** Control zones, historical catch and effort data, vessel's physical characteristics (including gear and spotter planes)

**Vessels:** physical characteristics, shipping schedule (routes)

**EPA:** Contamination limits, parameters associated with response to system

**DOT:** list of overflow lanes which may be opened as needed to maximise profit

**WAFMA (finfish & prawn):** historical catch and effort data, control zones, stock estimation parameters, management targets

**Contaminant Production:** contaminant concentration index map timeseries, production level timeseries

**Data loggers:** Locations, sample intervals, attributes sampled

**OUTPUT DATA MODEL GROUP**

**Environments:** Nil

**Benthic (sessile) organisms:** distribution and abundance, height, fragmentation, mortality possibly contaminant contact

**Fish populations:** distribution and abundance, mortality track through time, age structure; possibly contaminant contact

**Prawns, sharks, turtles:** distribution and abundance, mortality track through time; possibly trophic history, possibly contaminant contact

**Recreational Fishery:** Catch, effort, locations of catch

**Fishing Vessels:** Catch, effort, locations of catch, tracks through time

**Vessels:** transit data

**EPA:** Contaminant trigger events, and responses

**DOT:** number of near misses, management actions

**WAFMA (finfish & prawn):** stock assessments, management actions, reported catch & effort data

**Contaminant Production:** contaminant interactions (mortalities) with local system

**Data loggers:** sample levels at locations through time

**Documentation Links**

[Additional data set level metadata for inputs and outputs from InVitro. Currently \(2003/09/01\) a DRAFT document.](#)

**Data Link** [Input Data: Coastline of Western Australia based on the Spatial Cadastral Database](#)

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**Stored Data Format**

DIGITAL – Binary

DIGITAL – Database Files – other

DIGITAL – Images – other

DIGITAL – other

Most of the data are dealt with in one of the following (local) formats: TBL, PT, PFM, PXM or as a parameter file. Specific information regarding the formats for these data are described in files associated with libraries for manipulating them, and queries should be addressed to Randall Gray or Roger Scott.

29 MB of compressed source code, configuration, parameters and data

**Access constraint** For NWSJEMS use only

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**Lineage** Data used in *InVitro* has been sourced for use by NWSJEMS and comes from a variety of sources. Refer to original data documentation for each data set for additional information. Content dates from before February, 2004

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro – Agent parameter files***

**MarLIN record number** 6545

**Data Type**

Observed Data – laboratory  
Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Elizabeth Fulton, Richard Little, Randall Gray, Roger Scott

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The agent files used in the NWSJEMS Management Strategy Evaluation runs each contain the parameters used for that agent-type and taxon (e.g. species). Where data is hierarchical the lower layers are listed under the higher level title. A description of the parameter and notes on the source of the values used are also provided in Technical Report 15 (see Ref). An "&include" entry indicates the parameters from the specified agents file were also loaded when loading the base file.

**Data Link**

[North West Shelf Joint Environmental Management Study – Software Description – InVitro \(2003\)](#)

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** total number of agent files: 102; total size of agent files: 215 kB

**Specific Software Requirements** *InVitro*

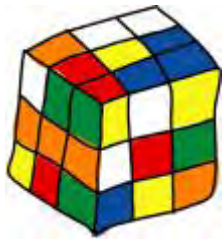
**Access constraint** Confidential – for project use only – not for public release

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**Beginning date** 2002 **End date** 2004

**Lineage** Files generated by modellers

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – 3x3x3 configuration files***

**MarLIN record number** 6546

**Data Type**

Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Elizabeth Fulton, L. Richard Little, Randall Gray, Roger Scott

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart

---

**Abstract** These files comprise the configuration files used in the NWSJEMS MSE runs. A start or end time of 0 indicates that the agent will commence (or end) with the entire simulation rather than on a specific date.

The configuration parameters typically include the latitude and longitude of their starting position or extent, whether they are to be tracked, their periodicity of output and a sting list of other agent types they may be interested in. Some agent types (e.g. anthropogenic ones) will contain a small number of parameters in the config line (e.g. Kalman filter parameters).

**Attributes Overview**

agent type  
taxon or agent name  
start time  
end time  
configuration parameters

**Data Link**

[North West Shelf Joint Environmental Management Study – Software Description – InVitro \(2003\)](#)

---

**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** The number of config files is 227 amounting to 3.8 MB

**Specific Software Requirements** *InVitro*

**Access constraint** Confidential – for project use only – not for public release

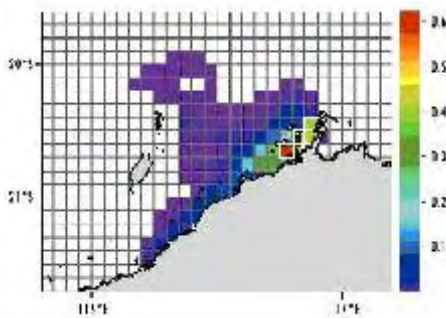
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**Beginning date** 2002 **End date** 2004

**Lineage** Files generated by modellers

**Completeness** Complete

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## **North West Shelf Joint Environmental Management Study: InVitro inputs – water circulation and particle transport**

**MarLIN record number** 6565

**Data Type**

Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Vincent Lyne

**References** Condie, S. et al. 2006, NWSJEMS Technical Report 6: Modelling circulation and connectivity on Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart  
 Herzfeld, M., Waring J., Parslow J., Margvelashvili N., Sakov P., Andrewartha J. 2002, MECO: Model for Estuaries and Coastal Oceans, scientific manual. CSIRO Marine and Atmospheric Research, Hobart  
 Bruce, B.D. et al. 2001, Larval distribution of blue grenadier (*Macruronus novaezelandiae* Hector) in south-eastern Australia: further evidence for a second spawning area. Marine and Freshwaer Research  
 Walker, S.J. 1999, Coupled hydrodynamic and transport models of Port Phillip Bay, a semi enclosed bay in south-eastern Australia. Marine and Freshwaer Research  
 Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart

**Abstract** The model used to compute the currents on the North West Shelf was developed within the then CSIRO Marine Research and is referred to as MECO (Model for Estuaries and Coastal Oceans). It is a general-purpose finite difference hydrodynamic model applicable to scales ranging from estuaries to ocean basins. It has found previous applications in systems such as the Derwent and Huon Estuaries in Tasmania, Gippsland Lakes, Port Phillip Bay (Walker, 1999), Bass Strait, the Great Australian Bight and South-eastern Australia (Bruce et al. 2001), and the Gulf of Carpentaria (Condie et al. 1999). A full description of the circulation model as applied to North West Shelf and descriptions of the spatial and temporal characteristics of the circulation and connectivity can be found in Condie (2006).

**Stored Data Format** DIGITAL – Binary

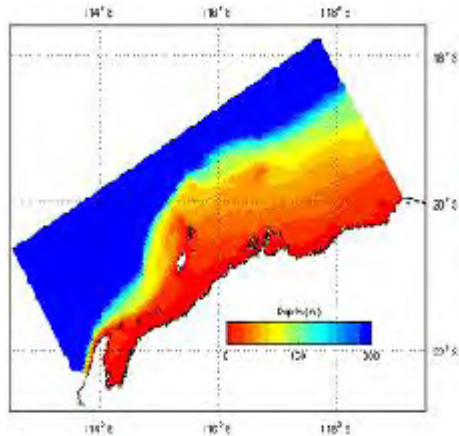
**Stored Data Volume** 16 MB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

**Lineage** Data generated by modellers

**Completeness** Complete



## ***NWSJEMS circulation model outputs: 10 km resolution***

**MarLIN record number** 6038

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Scott Condie, John Andrewartha, Mike Herzfeld

**References** North West Shelf Joint Environmental Management Study Interim Report 2002.  
Condie, SA, C Fandry, D McDonald, J Parslow, & K Sainsbury 2003: Linking Ocean Models to Management on Australia's North West Shelf. Eos, Transact. Amer. Geophys. Union, 84(6) pp.49-53

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**Abstract** The data set comprises output from a circulation model of the NWS based on the three-dimensional non-linear hydrodynamic model referred to as MECO. The model spans the Pilbara and Kimberley coasts (Ningaloo to the Bonaparte Archipelago) with a horizontal resolution of approximately 10 km and vertical resolution expanding from 3 m near the surface to a maximum of 200 m at depths below 1 000 m. Outputs cover the six year period from 1994 to 1999 with hourly outputs of sea level, surface temperature, surface salinity, surface currents, depth-averaged currents, and bottom friction velocity, as well as 10 day outputs of the full 3-dimensional fields of temperature, salinity, and velocity.

---

**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 13.5 GB

**Specific Software Requirements** Require netCDF reader. File configured for viewing with OLIVE

**Stored Data Documentation** Self-describing data format

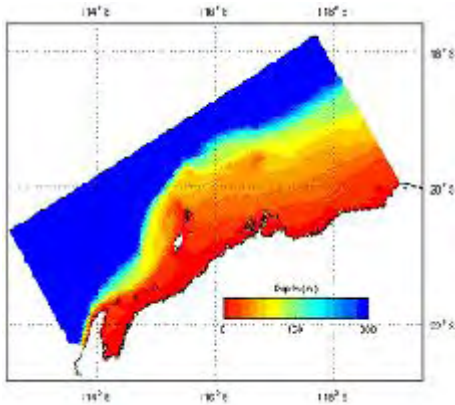
**Access constraint** Permission required from CSIRO and WA Government for external use

---

**Beginning date** 01 January 1994 **End date** 31 December 1999

**Lineage** Model data generated by MECO implemented for the NWS

**Completeness** The data set is complete



## ***NWSJEMS circulation model outputs: 5 km resolution***

**MarLIN record number** 6036

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Scott Condie, John Andrewartha, Mike Herzfeld

**References** North West Shelf Joint Environmental Management Study Interim Report 2002.  
 Condie, SA, C Fandry, D McDonald, J Parslow, & K Sainsbury 2003: Linking Ocean Models to Management on Australia's North West Shelf. Eos, Transact. Amer. Geophys. Union, 84(6) pp.49-53

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**Abstract** The data set comprises output from a circulation model of the NWS based on the three-dimensional non-linear hydrodynamic model referred to as MECO. The model spans the Pilbara coast (Ningaloo to Port Hedland) with a horizontal resolution of approximately 5 km and vertical resolution expanding from 3 m near the surface to a maximum of 200 m at depths below 1 000 m. Outputs cover the period from August 1996 to May 1998 with hourly outputs of sealevel, surface temperature, surface salinity, surface currents, depth-averaged currents, and bottom friction velocity, as well as five day outputs of the full 3-dimensional fields of temperature, salinity, and velocity.

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**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 1.4 GB

**Specific Software Requirements** Require netCDF reader. File configured for viewing with OLIVE

**Stored Data Documentation** Self-describing data format

**Access constraint** Permission required from CSIRO and WA Government for external use

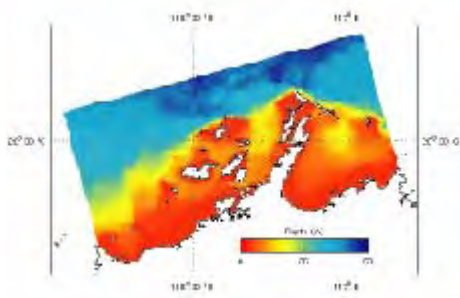
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**Beginning date** 01 August 1996 **End date** 31 May 1998

**Lineage** Model data generated by MECO implemented for the NWS

**Completeness** The data set is complete





## ***NWSJEMS circulation model outputs: 1 km resolution***

**MarLIN record number** 6037

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Scott Condie, John Andrewartha

**References** North West Shelf Joint Environmental Management Study Interim Report 2002.

Condie, SA, C Fandry, D McDonald, J Parslow, & K Sainsbury 2003: Linking Ocean Models to Management on Australia's North West Shelf. *Eos, Transact. Amer. Geophys. Union*, 84(6) pp.49-53

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**Abstract** The data set comprises output from a circulation model of the NWS based on the three-dimensional non-linear hydrodynamic model referred to as MECO. The model spans the Dampier Archipelago region with a horizontal resolution of approximately 1 km and vertical resolution expanding from 1 m at the surface to 5 m at a maximum depth of 50 m. Outputs cover the period from August 1996 to May 1998 with hourly outputs of wind, sealevel, surface temperature, surface salinity, surface currents, depth-averaged currents, and bottom friction velocity, as well as 10 day outputs of the full 3-dimensional fields of temperature, salinity, and velocity.

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**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 1.5 GB

**Specific Software Requirements** Require netCDF reader. File configured for viewing with OLIVE

**Stored Data Documentation** Self-describing data format

**Access constraint** Permission required from CSIRO and WA Government for external use

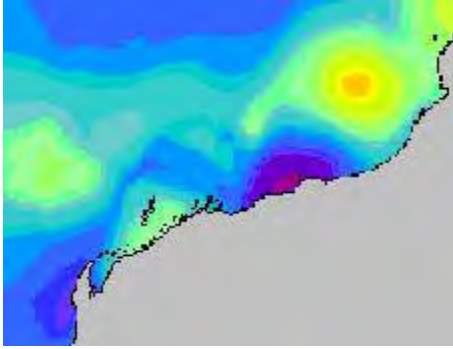
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**Beginning date** 01 August 1996 **End date** 31 May 1998

**Lineage** Model data generated by MECO implemented for the NWS

**Completeness** The data set is complete





## **North West Shelf Joint Environmental Management Study: InVitro inputs – primary production and nutrient cycling**

**MarLIN record number** 6568

**Data Type**

Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributor** Elizabeth Fulton

**References** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart  
Bulman, C. 2006, NWSJEMS Technical Report 9: Trophic webs and modelling of Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart  
Sainsbury, K. J., 1988, The ecological basis of multispecies fisheries, and management of a demersal fishery in tropical Australia. In: Gulland, J. A. (Ed.), Fish population dynamics, (2nd ed.), Chapter 14, pp.349-82, John Wiley & Sons Ltd

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**Abstract** Detailed models, embedded within the MECO circulation model, of the primary production and nutrient cycling on the NWS and a detailed model of the NWS food-web was developed using the *Ecopath-Ecosim-Ecospace* models and software (Bulman et al. 2006). An agent-based model of the food-web was also developed for the NWS, but was found to be slow and inefficient at large scales and it gave very similar outputs to the faster model of Bulman et al. (2006). From examination of all these models it was found that there was very little interaction between the human uses examined by the MSE and primary productivity, nutrient cycling or the food-web. Instead the major affects of the human uses were through the more direct consequences of harvesting, habitat modification and water quality. With respect to fisheries this is consistent with the findings of Sainsbury (1988). So while these other factors were maintained in the MSE model, primary production, nutrient cycling and trophic interactions were not explicitly included.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** parameter file

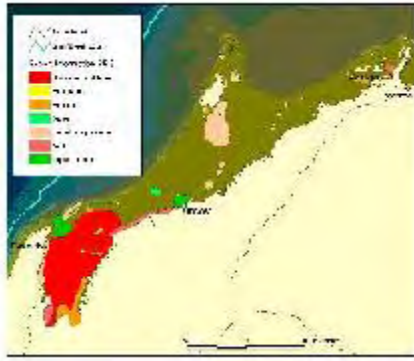
**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Data generated by modellers

**Completeness** Complete



## **North West Shelf Joint Environmental Management Study: InVitro inputs – modelled benthic habitat**

**MarLIN record number** 6624

### **Data Type**

Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Randall Gray

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart

**Abstract** The benthic habitats represented in the MSE include continental shelf seabed habitats, coastal seagrass meadows and mangrove forests. A metapopulation model was used. Due to availability of historical data, models were most fully developed for the continental shelf seabed habitats. Parameter values for the remaining habitat types were derived from available NWS data and scientific literature. Historical extent data was augmented by personal communication through workshops and interviews with residents, divers and scientists with long-term NWS experience. Each habitat type was modelled using the benthic agent model structure.

**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 300 kB

**Specific Software Requirements** *InVitro*

**Access constraint** Release with the permission of the custodian

**Lineage** Data derived from available model output (see *MarLIN* record no. 5968), NWS scientific reports and personal communications

**Completeness** Complete





## ***North West Shelf Joint Environmental Management Study: InVitro inputs – parameter estimation***

**MarLIN record number** 6570

**Data Type**

Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** For continental shelf reef habitat the base-case parameters for the habitat equations were determined by least squares optimisation. The Simplex method of minimising the sum of squares was used to fit the model to the benthos observations, with some parameters constrained to a biologically meaningful range. For the seagrass, macroalgae and mangrove habitats there was considerably less information available from which to estimate model parameters. For these habitats the base-case parameters for the habitat equations were determined from expert information and heuristic fitting to available data on historical cover and distributions.

The pessimistic and optimistic parameterisations were determined by considering the extremes of the relevant parameters in the literature and by exploring the dynamics of the system in the parameter space around the base case results. The pessimistic parameters were selected so that the impact of disturbances on the habitat groups was stronger than in the base case and the rate of recovery was slower. Conversely, in the optimistic specification, the parameters were selected so that impacts were smaller and the rate of recovery faster. However, the parameter selection was constrained such that the resulting habitat cover predictions were plausible given the available data and expert opinion on historical and present habitat cover. Where statistical methods could be applied the 80% confidence interval was used to identify the optimistic and pessimistic bounds. The optimistic and pessimistic bounds were much wider for the seagrass, macroalgae and mangrove habitats than for the continental shelf habitats, because of the different quantity and quality of the information available.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 10 kB

**Specific Software Requirements** *InVitro*

**Access constraint** Release with the permission of the custodian

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**Lineage** Data generated by modellers

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – iconic species dynamics***

**MarLIN record number** 6574

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The iconic species examined in the MSE are turtles and sharks. For both groups the populations (and their spatial dynamics) are represented by the animal agent model for post-juvenile stages, with the blastula agent used for reproduction and spatial dynamics of the early life history stages (up to the age of recruitment to the adult population). This representation enables the best means of handling ontogenetically specific changes in behaviour and rate parameters (such as density dependent effects on natural mortality).

Biological parameter values for the species were taken from the literature and modified slightly during model calibration to give plausible biomass levels under the levels of fishing pressure or catch recorded from the North West Shelf.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** data in config files 10 kB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Data generated by modellers

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – fin fish population dynamics***

**MarLIN record number** 6625

**Data Type**

Observed Data – field  
Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**References** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart  
Gray, R. et al. 2006, NWSJEMS Technical Report 16: Ecosystem model specification within an agent based framework. CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** Fish population dynamics are represented by age-structured models that account for reproduction, natural mortality and fishing mortality. These models are calibrated for the major species groups and are detailed in sections 3 and 15 in the companion model specification report (Gray et al. 2006).

The selection of the parameters for each species was done by running the historical period of the model over a range of values of these parameters, and comparing the initial biomass of the simulation to a range of species biomass that was thought to occur in nature. Parameters were selected at three levels within this range of biomass to give the optimistic, base-case and pessimistic specifications.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 11.2 MB

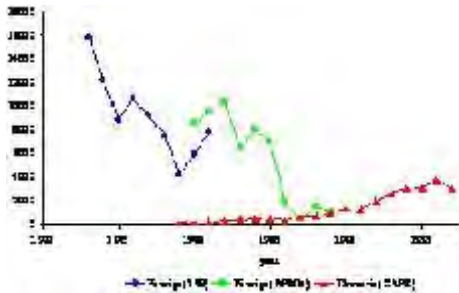
**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Data derived by modellers

**Completeness** Complete



## **Data from the Interim report “The spatial distribution of commercial fishery production in the North West Shelf of Australia, 1973 to 1997” (NWSJEMS Task 2.6)**

**MarLIN record number** 5971

**Data Type** Aggregated/Derived Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Franzis Althaus, Kim Woolley, Xi He

**Acknowledgements** AFMA (T.Skousen) and WA Fisheries (P.Stephenson) provided foreign fisheries data that has been used here

**Reference** Anon. 1973-1981. Annual report of effort and catch statistics by area on Taiwan demersal fisheries. Demersal Fish Research Center, Institute of Oceanography, National Taiwan University, Taipei, Taiwan, Republic of China

**Abstract** The data were summarised to produce an interim report to describe the trawling effort and total catch in the North West Shelf of Australia between 1973 and 1997. It contains foreign and domestic commercial fisheries data from three separate sources: Taiwanese Logbook data (Anon. 1973-1982), foreign (Taiwanese, Chinese and South Korean) trawl data collated by the Australian Fisheries Management Authority (1979-1989), and domestic catch and effort statistics collated by Fisheries, Western Australia (1979-1997). Trawling effort and total catch by year, as well as catches of 22 species categories (mostly family level classifications) are summarised spatially into a 10x10 minute grid scale over part of the NWS region to show spatial distribution.

The original Report produced March 2001 was updated and corrected in 2003. The update refers to an additional section describing the data that was used in NWSJEMS Project 5.

**Stored Data Format** DIGITAL – Database Files – MS Access

**Stored Data Volume** 24 years of trawl fishery data, divided into 22 species groups

**Access constraint** Restricted to the NWSJEMS user group

**Beginning date** 1973 **End date** 1997

**Lineage** Fisheries data were collected by government agencies, summarised and quality checked in the process. The original Report produced March 2001 was updated and corrected in 2003. The corrections made are:

- (1) the Taiwanese total catch was recalculated using all categories reported in the Annual reports (previously invertebrates, ‘dumped’ and ‘other’ were excluded)
- (2) Taiwanese effort data was corrected for logbook recovery rates reported in the Annual Reports

**Completeness** Complete





## **North West Shelf Joint Environmental Management Study: InVitro inputs – prawn biomass estimates**

**MarLIN record number** 6569

**Data Type**

Aggregated/Derived Data

Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**References** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart  
Taylor, B. and Dichmont, C., 2001, Northern Prawn Fishery 2000. Northern Prawn Fishery Assessment Group (NPFAG) Report

Kailola, P.J. et al. 1993. Australian Fisheries Resources. BRS and FRDC, Canberra

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**Abstract** The initial conditions and carrying-capacity estimates for the prawn stocks in *NWS-InVitro* were calculated using catch data and biological information taken from the WA Department of Fisheries (2002) submission to Environment Australia regarding the Exmouth Gulf Prawn Fishery.

This information was converted to total stock sizes using the assessment rule of thumb that catch at Maximum Sustainable Yield equals 12% of virgin biomass and cross-checked using the methods outlined in Taylor and Dichmont (2001). This resulted in an upper bound on the estimate of maximum total biomass of 15 000 t for western king prawns, with a lower bound of 8 000 t and a median of 12 000 t. For the banana prawns the upper bound on biomass was again 15 000 t, but the lower bound was 4 000 t and the median was 8 000 t. All other prawn biological parameters were based on Kailola et al. (1993) and Taylor and Dichmont (2001).

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 4 MB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Data generated by modellers

**Completeness** Complete





## ***North West Shelf Joint Environmental Management Study: InVitro inputs – contaminant overview***

**MarLIN record number** 6626

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** NWSJEMS included development of explicit models of the interaction of industrial developments which produce contaminant plumes, with the fauna in the waters affected by the plumes. The specific sub-models used in simulating these interactions are described, and avenues for richer models which incorporate sublethal effects, are discussed in Section 10 of the companion operating model report by Fulton (2006).

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** No data

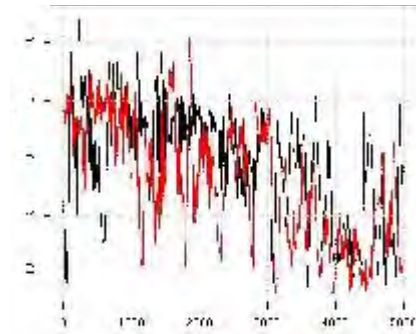
**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Detail in *MarLIN* record numbers 6566, uptake, plume image, time series, 6080, 6081, 6082, 5825, 6057

**Completeness** Complete



## **North West Shelf Joint Environmental Management Study: InVitro inputs – statistical extrapolation of currents**

**MarLIN record number** 6566

**Data Type**

Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Vincent Lyne, Randall Gray, Roger Scott

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart

**Abstract** The application of the MSE modelling approach to the North West Shelf required three scenarios, for currents and contaminants, each spanning four decades to be simulated for many model runs. These scenarios were loosely defined as: 'high winds' to simulate the potential effect of stronger than normal winds; 'normal' where the distributional property of the winds were the same as those experienced currently; 'low winds' where winds were weaker than current conditions.

Three-dimensional simulations of currents and the distributions of contaminants for such periods, at temporal resolutions of at least one hour, would require many months of computer time and, in addition, would generate large quantities of current data which would be impractical to incorporate into the agent-based simulation system *NWS-InVitro*. An alternate approach was required that was:

- 1) relatively fast,
- 2) made efficient use of limited computational resources and,
- 3) accurately represented the modelled currents throughout the study region.

We chose to statistically model the currents by recognising that near the coast the currents were primarily driven by the tides and elsewhere from a combination of tides, winds and boundary forcing. Tide and wind data were available but there was no ready access to the boundary forcing information. This was not considered to be a major deficiency as the boundary forcing derived from a global General Circulation Model was of coarse resolution with inadequate local representation of wind, bathymetry and water mass structure (Scott Condie, pers. comm.).

**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 50 MB

**Specific Software Requirements** *InVitro*

**Access constraint** Release with the permission of the custodian

**Lineage** MECO output (*MarLIN* record no. 6565) prepared for *InVitro* by Vincent Lyne

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro input – modelling and extrapolation of contaminants***

**MarLIN record number** 6572

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Vincent Lyne, Roger Scott

**References** Fandry, C. et al. 2006, NWSJEMS Technical Report 13: Contaminants on Australia's North West Shelf: sources, impacts, pathways and effects. CSIRO Marine and Atmospheric Research, Hobart  
Dritschel, D.G., 1989. Contour Dynamics and Contour Surgery: Numerical algorithms for extended high-resolution modelling of vortex dynamics in two-dimensional, inviscid, incompressible flows. *Comp. Phys. Rep.*, 10

Lyne, V.D. et al. 1994, Research on Jarosite Dumping at Sea. Volume 5: Integrated Biophysical Model Investigations. A Program of Research on Jarosite Dumping at Sea by Pasmenco Metals-EZ. Report Commissioned by the Commonwealth Department of the Arts, Sport, the Environment, Tourism and Territories

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**Abstract** Contaminants were modelled as nested sets of polygons representing plumes of differing concentrations spreading from their source. Nodes of the polygons were advected by the currents and "diffused" at each time step until the contour became so dilute that it was eliminated because the concentrations reached the lower threshold for tracking. Nodes of the plume were also excised if the plume became so thin that the nodes were very close to each other. The temporal spatial footprint is presented as an image time series.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 8 GB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Data created by modellers using MECO statistical model

**Completeness** Complete



## **North West Shelf Joint Environmental Management Study: InVitro inputs – contaminant uptake**

**MarLIN record number** 6633

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**Reference** Hashmi, M.I. et al. 2002, Heavy metal concentrations in water and tiger prawn (*Penaeus monodon*) from grow-out farms in Sabah, North Borneo. *Food Chemistry*, 79, pp 151-156

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**Abstract** Farm A in Hashmi et al. (2002) was used to calibrate uptake for the modelled prawns, and the intent was to use Farm B to validate our model of uptake. The contaminants selected were lead, cadmium and copper. These contaminants were selected mainly because they were metals we were already considering for use in *NWS-InVitro*. Parameters were chosen for the uptake rates of the metals which gave rise to a profile comparable to that for the prawns taken from Farm A. The simulation was run for six years, during which time the contaminate output levels were held constant. Currents were held constant in hourly intervals, as were the plumes they advected and diffused. The simulation tracked the levels of contaminants in the water and in the prawns that passed through the region affected by the plume. A piecewise linear function was introduced to allow the rate of uptake to vary in a controlled way. With much validation, the model provides the best available representation of contaminant impacts on prawns in Nickol Bay. This facilitated relatively straightforward reproduction of the uptake of contaminants.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** data in parameter/agent files

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** The “Contaminant uptake” was not an input per se. The rates of uptake and depuration exhibited from the prawns were calibrated to reflect the data in Hashmi et al. There is very little data to link water column concentrations to concentration in tissue levels in adult prawns, particularly in a variable, coastal environment. Hashmi’s grow-out farms were the best found

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – contaminant time series***

**MarLIN record number** 6632

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**Reference** Fandry, C. et al. 2006, NWSJEMS Technical Report 13: Contaminants on Australia's North West Shelf: sources, impacts, pathways and effects. CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The time series of contaminant concentrations at each location were constructed using the contaminants inventory (see Appendix B of Ref). During the historical years of the model runs actual recorded values were used. During the projected period alternative time series reflecting potential changes due to altered production levels were constructed. These alternative time series were put together by considering the increase in release during past production shifts (a non-linear function due to increasing efficiency and the introduction of new technologies) and applying corresponding increases in step with the 'painted' production scenarios.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 10 kB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** The data for the contaminant time series was generated from a combination of current fields derived from MECO output and the output (flow and load) timeseries associated with each outfall

**Completeness** Complete



## ***Contaminants inventory for the North West Shelf: 1985 to 2001 – polygons***

**MarLIN record number** 6082

**Data Type** GIS

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Chris Fandry, Michael Fuller

**Acknowledgements** Companies supplying annual environmental reports and additional information containing inputs into the marine environment. Refer to database for additional details

**Reference** Fandry, C. et al. 2006, NWSJEMS Technical Report 13: Contaminants on Australia's North West Shelf: sources, impacts, pathways and effects. CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The NWSJEMS Contaminants Inventory contains primary contaminant load data: polygon data shows spatial location of outflows to the marine environment and time series of contaminant shows loads and species of contaminant.

**Attributes Overview** Features link to a contaminants database (Microsoft Access) through the site\_id field, this database must be downloaded separately through the 'NWS Contaminants Input Inventory – Database' MarLIN record no. 6080

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 10 kB of compressed digital data

**Access constraint** For use in NWSJEMS only

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**Beginning date** 15 August 2000

**Lineage** The contaminants inventory is based on historical records and information supplied by industry. The locations were identified from the best available source. Content dates from 1985 to 2001

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – human behaviour and impact***

**MarLIN record number** 6627

**Data Type**

Observed Data – field  
Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. R. Little, Roger Scott

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** Human behaviour and the impact of human activities on the marine environment were represented in the MSE using a combination of analytical decision models, response functions, specified rules and scenarios, and input data. These are detailed in Fulton et al. (2006).

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 100 kB

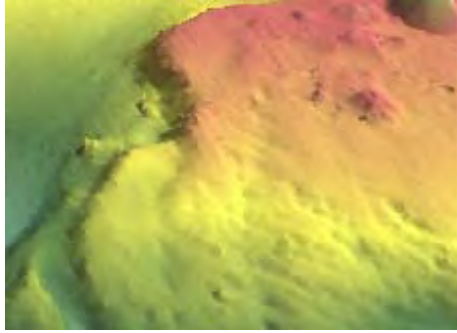
**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Data derived by modellers

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – bathymetry***

**MarLIN record number** 6555

**Data Type** Aggregated/Derived Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Vincent Lyne, Roger Scott

**Acknowledgements** Western Australian Department of Environmental Protection, Geoscience Australia

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The AUSLIG 250k series 1 Topographic data (Geoscience Australia, 2000) was used along with a North West Shelf coastline contour to generate a 0.008 degree grid using the ArcInfo *topogrid* command. This was merged with the AGSO bathymetric 30 second grid (Geoscience Australia) to form a complete bathymetric and topographic grid at 0.008 degree resolution for the complete North West Shelf study area. Finally this grid was projected to a Lambert Conformal Conic projection for use by the model. Conformal projections ensure that scale is invariant in all directions locally, but large grids/areas will be distorted because of differential “stretching” of areas across large scales.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 40 MB

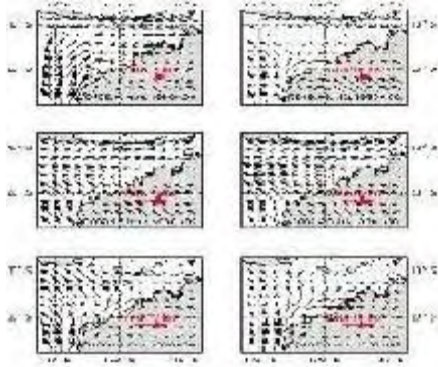
**Access constraint** No Restrictions

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**Lineage** Data derived and aggregated from Geoscience Australia data

**Completeness** Complete





## **North West Shelf Joint Environmental Management Study: InVitro inputs – NCEP winds**

**MarLIN record number** 6571

### **Data Type**

- Observed Data – field
- Aggregated/Derived Data
- Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Randall Gray, Elizabeth Fulton, L. Richard Little, Roger Scott

**References** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation Specification for Australia's North West Shelf. CSIRO Marine and Atmospheric Research, Hobart  
Kalnay, E. et al. 1996, The NCEP/NCAR 40-year reanalysis project. Bull. Amer. Meteor. Soc., 77, pp 437-471

**Abstract** Wind-induced currents are among the strongest currents in the oceanic surface layer. Winds drive ocean currents by transferring momentum to this layer. The important quantity in this process is the wind stress, which is a quadratic function of wind speed.

The data used in this project were produced by the NCEP/NCAR reanalysis project. NCEP and NCAR are cooperating in a project to produce a 40-year record of global analyses of atmospheric fields in support of the needs of the research and climate monitoring communities.

The wind-stress data set covers the period 1965 to 1997 and contains the following fields from which the velocity vector (speed and direction) were calculated:

- zonal wind stress
- meridional wind stress

**Stored Data Format** DIGITAL – Binary

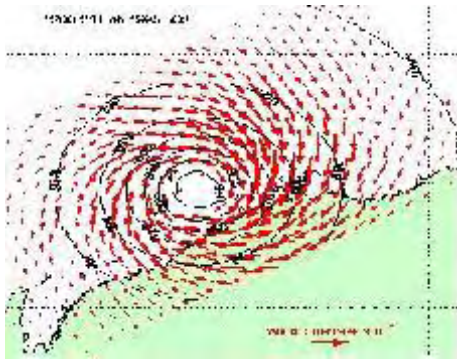
**Stored Data Volume** 1.5 MB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

**Lineage** Data generated by modellers

**Completeness** Complete



## **North West Shelf Joint Environmental Management Study: InVitro inputs – cyclones**

**MarLIN record number** 6628

### **Data Type**

Observed Data – field  
Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Randall Gray, Elizabeth A. Fulton, L.Richard Little, Roger Scott

**Acknowledgements** The source of the original data was the Bureau of Meteorology. John Andrewartha and Franzis Althaus of CMAR downloaded and processed the data

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

**Abstract** Cyclone tracks were constructed using data supplied by the National Climate Centre in the Head Office of the Bureau of Meteorology. These records contained information on the timing, route and intensity of the cyclone, though prior to the advent of GPS and automated monitoring, some of this information was approximate at best. The final footprint of the cyclone used by the Catastrophe agents in *NWS-InVitro* was constructed by mapping a polygon over each leg of a cyclone's route, with the track as the centreline and a width of 30 km on either side of that central track. These footprints and an intensity index were stored in the Cyclone.data and Disaster.data files for use in *NWS-InVitro*.

**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 100 kB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

**Lineage** John Andrewartha down-loaded the data from a BoM web site and Franzis Althaus created an ACCESS table for summarising the data (see *MarLIN* record no. 5970); a subset of the data in the database is relevant to the NWSJEMS Model (Task 2.7). Original point data was then analysed and polygons of each cyclone's route were generated

**Completeness** Complete



## ***North West Shelf Joint Environmental Management Study: InVitro inputs – rainfall time series***

**MarLIN record number** 6567

**Data Type**

Observed Data – field  
Aggregated/Derived Data  
Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Randall Gray, Elizabeth A. Fulton, L. Richard Little, Roger Scott

**Acknowledgements** National Climate Centre in the Head Office of the Bureau of Meteorology

**Reference** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The daily rainfall time series were constructed from records on the rainfall at the Karratha and Port Hedland airports supplied by the National Climate Centre in the Head Office of the Bureau of Meteorology (P. Reid pers. comm.). These data sets ran from 14/12/1971 for Karratha and from 17/7/1942 for Port Hedland. These data sets were merged using:

- an average where a valid entry existed for both time series
- the data as supplied if only one valid entry was present
- the long term average (through multiple years) if no valid entry for that day in that year in either time series.

The resulting combined rainfall series was then converted into a time series of 90 day running sums. Sums rather than averages were used as overall input to the system. These systems are of particular importance for recruitment in the prawn fisheries of the North West Shelf region.

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** 1.1 MB

**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** The daily rainfall time series were constructed from records on the rainfall at the Karratha and Port Hedland airports supplied by the National Climate Centre in the Head Office of the Bureau of Meteorology (P. Reid pers. comm.)

**Completeness** Complete



## **North West Shelf Joint Environmental Management Study: *InVitro* inputs – derived light**

**MarLIN record number** 6573

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Andrew Herzfeld

**References** Fulton, E. et al. 2006, NWSJEMS Technical Report 15: Management Strategy Evaluation specification for Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart  
Herzfeld, M. et al. 2006, NWSJEMS Technical Report 8: Biogeochemical modelling on Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** Light time series were not used within this implementation of *NWS-InVitro*. In its place a simple equation was used to give average light levels derived from the output of the biogeochemical model of Herzfeld et al. (2006).

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**Stored Data Format** DIGITAL – Binary

**Stored Data Volume** No data

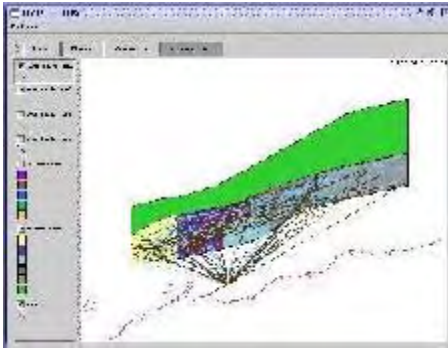
**Specific Software Requirements** *InVitro*

**Access constraint** No Restrictions

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**Lineage** Equation used to give average light, from the Biogeochemical Model output, for input into *InVitro* model. See Ref. Herzfeld (2006) and *MarLIN* record no. 6240

**Completeness** Complete



## **North West Shelf Joint Environmental Management Study: Visualisation software – NWS Technical User Interface**

**MarLIN record number** 6630

**Data Type** Software

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Roger Scott

**References** Hatfield, B. et al. 2006, NWSJEMS Technical Report 17: Management strategy evaluations for multiple use management of Australia's North West Shelf: visualisation software and users guide. CSIRO Marine and Atmospheric Research, Hobart

Brodie, P. et al. 2006, NWSJEMS Technical Report 4: Information access and inquiry. CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** The data-rich screens of the NWS Technical User Interface mainly serve for analysis of raw inputs into *NWS-InVitro*, the spatially explicit agent-based biophysical simulation model at the core of this Study. The software is written in Java.

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**Stored Data Format** DIGITAL – Binary

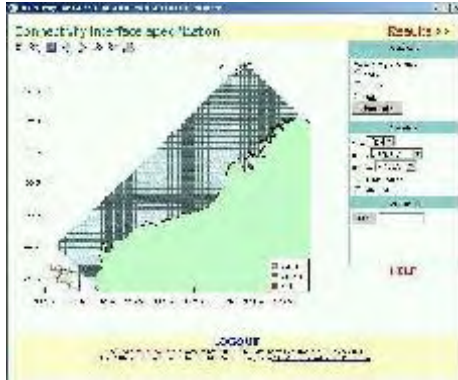
**Stored Data Volume** 600 kB

**Access constraint** Not for public release

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**Lineage** Software written by CMAR staff

**Completeness** Complete



## **Connectivity Interface (NWSJEMS Connle): Dynamic web display of MECO modelled circulation patterns in the Australian North West Shelf area**

**MarLIN record number** 6238

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** John Andrewartha (hydrodynamic modelling); Scott Condie (project leader); Jim Mansbridge (statistical programming); Jason Waring (web interface)

**Acknowledgements** *Connle* was developed as part of the North West Shelf Joint Environmental Management Study. NWSJEMS is jointly managed by the WA DEP and CSIRO, with substantial in-kind contributions from the Australian Institute of Marine Sciences (AIMS), Geoscience Australia (GA), Department of Conservation and Land Management (CALM), WA Fisheries, the Department of Minerals and Energy (DME) and the petroleum industry through APPEA

**References** Condie, S. et al. 2006, Technical Report 6: Modelling circulation and connectivity on Australia's North West Shelf. CSIRO Marine and Atmospheric Research

Condie, S., Fandry, C., D. McDonald, D., Parslow, J., and Sainsbury, K., 2003, Linking ocean models to coastal management on Australia's North West Shelf. *Eos, Transactions, American Geophysical Union*, 84(6), pp.49-53

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**Abstract** The Connectivity Interface or "*Connle*" has been developed as a tool for environmental scientists and managers to investigate the patterns of spatial connectivity on Australia's North West Shelf (NWS). Specifically, it provides the user with an estimate of the probability that any two regions are connected by modelled ocean circulation over a specified dispersion period. These connectivity statistics were computed from the paths of neutrally buoyant particles computed from the "Northwest" circulation model (based on MECO), run over the period from 1994 to 1999.

The circulation model used a rotated latitude-longitude grid, with a horizontal resolution of approximately 10 km and a vertical resolution expanding from 3 m near the surface to a maximum of 200 m at depths below 1 000 m. The model was forced by wind fields from the NCEP-NCAR Reanalysis, while temperature and salinity fields around the lateral boundaries were interpolated from a global circulation model known as the Australian Community Ocean Model (ACOM). Sea levels on the boundaries were also taken from the global model output, with the addition of a tidal component derived from a combination of coastal sea level data and output from a global tidal model.

*Connle* is expected to find applications in areas such as larval dispersion and recruitment studies, and the development of scenarios and risk assessments for contaminant dispersion.

**Data Link** [Link to Connle website](#)

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**Stored Data Format** DIGITAL – Database Files – Oracle

**Stored Data Volume** 35 GB

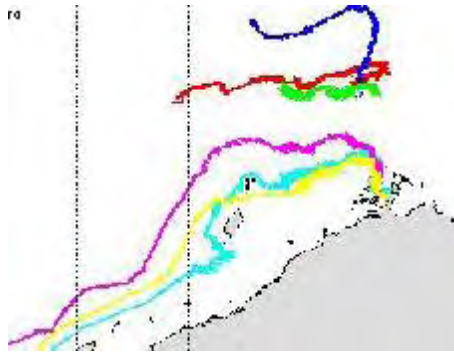
**Specific Software Requirements** Apache, Tomcat (for Servlets and JSP), Oracle, CMRlib  
**Access constraint** Interface is password protected. User must register

---

**Beginning date** 01 January 1994 **End date** 31 December 1999

**Lineage** Connectivity statistics were derived from the MECO hydrodynamic model output

**Completeness** Complete (modelled data)



## ***Dispersion model outputs: trajectories – NWSJEMS Project 2***

**MarLIN record number** 6035

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Scott Condie, John Andrewartha, Jim Mansbridge

**References** North West Shelf Joint Environmental Management Study Interim Report 2002.

Condie, SA, C Fandry, D McDonald, J Parslow, & K Sainsbury 2003: Linking Ocean Models to Management on Australia's North West Shelf. Eos, Transact. Amer. Geophys. Union, 84 (6), pp.49-53

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**Abstract** The data set describes the individual trajectories of 100 000 particles on the NWS. Each particle was advected by currents generated by a 10 km resolution circulation model of the NWS based on the three-dimensional non-linear hydrodynamic model referred to as MECO. The trajectories cover the region off the Pilbara and Kimberley coasts (Ningaloo to the Bonaparte Archipelago). Particle positions were recorded every 3 hours over the period from 1994 to 1999.

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**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 46 GB

**Specific Software Requirements** Require netCDF reader. File configured for viewing with OLIVE

**Stored Data Documentation** Self-describing data format

**Access constraint** Permission required from CSIRO and WA Government for external use

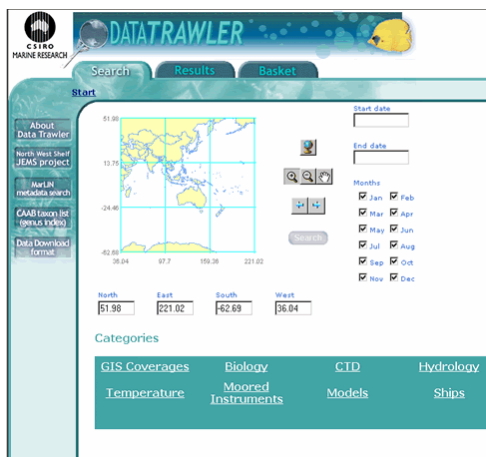
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**Beginning date** 01 January 1994 **End date** 31 December 1999

**Lineage** Model data generated by MECO implemented for the NWS

**Completeness** The data set is complete





## CMAR Data Centre Data Trawler

**MarLIN record number** 6389

**Data Type** Software

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Kim Finney, Brett Miller, Iestyn Parry

**Acknowledgements** NWSJEMS

**References** Brodie, P. et al. 2006, NWSJEMS Technical Report 4: Information access and inquiry, CSIRO Marine and Atmospheric Research, Hobart  
North West Shelf Joint Environmental Management Study Interim Report, June 2002, Hobart

**Abstract** The Data Trawler is a Java application that has been developed under the auspices of the North West Shelf Joint Environmental Management Project (NWSJEMS) and the CMAR Data Centre. This application provides on-line access to the data in the *Data Warehouse*, an Oracle data repository. See *MarLIN* record no. 6390 for details of the *Data Warehouse*.

The *Data Trawler's* primary functions are to allow users to:

**Discover** – Discover data of interest using geographic, temporal and data category search criteria.

**Investigate** – View a brief summary of any s returned which meet the search criteria and display their spatial distribution.

**Download** – Place desired data sets into a data “shopping basket” and then download them to your local computer. To get the full benefit out of using the application a user is required to provide an email address (a logon) and a password. If you are not a CMAR staff member or other authorised user you will be allowed access to the *Data Warehouse* as a “Public User”. Public users have only limited access to the *Data Warehouse* content.

See the Data Link to access the CMR Data Trawler.

**Documentation Link** [Data Trawler – Data Download Format Document](#)

**Data Link** [Login Page of the CMAR Data Trawler](#)

**Stored Data Format** DIGITAL – Database Files – Oracle, GIS – ESRI Shapefile, netCDF

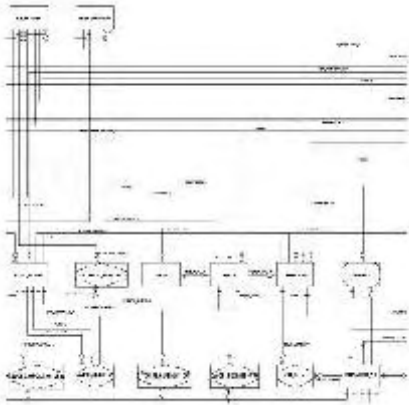
**Stored Data Documentation** See Documentation Link ‘Data Download Format Document’. This document describes the format of the *Data Warehouse* data as it is delivered via the *Data Trawler*

**Access constraint** The user logging onto the Trawler agrees to the Licence Agreement shown on the login page which constrains the use of the data. If other Licence Agreements apply they are supplied with the downloaded data. Enter your email address. If you have one, a password will provide selective access to data not available to the public

**Beginning date** 01 September 2001

**Lineage** The *Data Trawler* was released in September 2001. The application is maintained by the CMAR Data Centre

**Completeness** *Data Warehouse* content is updated when suitable processed/quality controlled data is available



## **CMAR Data Centre Data Warehouse**

**MarLIN record number** 6390

### **Data Type**

- Observed Data – field
- Observed Data – laboratory
- Experimental Data – laboratory
- GIS
- Aggregated/Derived Data
- Model Data
- CMR Vessel Data: CTD
- CMR Vessel Data: Dissolved Oxygen
- CMR Vessel/Station Data: Hydrology
- CMR Vessel Data: Underway
- CMR Moored Instrument Data: Current Meters and Tide Gauges
- CMR Vessel Data: Catch (by voyage)

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Acknowledgements** CMAR, Marine National Facility

**References** Brodie, P. et al. 2006, NWSJEMS Technical Report 4: Information access and inquiry, CSIRO Marine and Atmospheric Research, Hobart  
North West Shelf Joint Environmental Management Study Interim Report, June 2002, Hobart

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**Abstract** The CMAR *Data Warehouse* is an spatially enabled Oracle data repository which contains survey underway, CTD data, hydrological (bottle sample) data, biological catch data from Divisional research vessels, and data from other sources as presently held in the Division's archive. There are GIS layers covering a range of themes obtained from WA agencies and Industry for use in the NWSJEMS project available only to NWSJEMS researchers. Moored instrument data from CMAR research deployments contain currents for various ocean regions.

On-line access to this data is usually with the CMAR *Data Trawler* (see *MarLIN* record no. 6389), a Java application developed under the auspices of the North West Shelf Joint Environmental Management Study (NWSJEMS) and the CMAR Data Centre. Public users have only limited access to Warehouse content.

### **Documentation Links**

[Data Download Format Document](#)

[Warehouse Data Definition Language \(DDL\)](#)

### **Data Link**

[Login Page of the CMAR Data Trawler is used to access content of the Data Warehouse](#)

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**Stored Data Format** DIGITAL – Database Files – Oracle

**Stored Data Volume** 6.8 GB

**Specific Software Requirements** Oracle, *Data Trawler*

**Stored Data Documentation** See Documentation Link ‘Data Download Format Document’. This document describes the format of the Warehouse data as it is delivered via the *Data Trawler*

**Access constraint** The data in the Warehouse is security coded to enable it to be viewed by the public, CMAR Data Centre staff, all CMAR staff or specific project staff. To access data with the *Data Trawler*, the user would enter an email address and, if appropriate, an assigned password. The system can determine the user status: an unregistered user can only access ‘public’ data while a registered user can access other data sets

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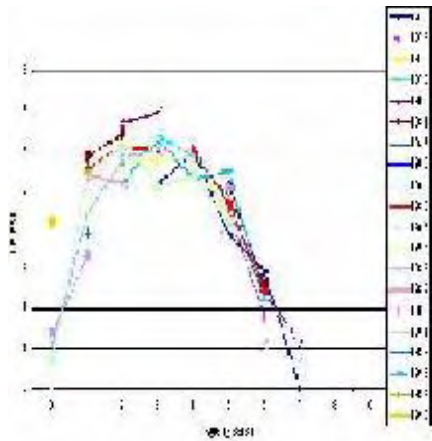
**Beginning date** earliest content dates from 10 August 1907

**Lineage** Quality code flags have been applied to the data within the Warehouse. For details of these flags see the ‘Data Download Format Document’ documentation link. When data is downloaded via the *Data Trawler* it is delivered with all relevant quality control flags

Data processing has been carried out on the data within the Warehouse. Relevant processing reports are provided through the *MarLIN* metadata records for individual data sets. *MarLIN* record identifiers are delivered in the download files from the Warehouse data access tool, the *Data Trawler*, and these id’s can be used to readily view the relevant *MarLIN* record

**Completeness** Quality code flags have been applied to the data within the *Data Warehouse*. For details of these flags see the ‘Data Download Format Document’ documentation link

The *Data Warehouse* is updated on a continual basis as processed/quality controlled data becomes available for the data types which are currently loaded in the Warehouse



## ***NWSJEMS Ecopath with Ecosim model***

**MarLIN record number** 6631

**Data Type**

Model Data  
Software

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Cathy Bulman

**Reference** Bulman, C., 2006. NWSJEMS Technical Report 9: Trophic Webs and Modelling of Australia's North West Shelf. CSIRO Marine and Atmospheric Research

**Abstract** This Ecopath with Ecosim (EwE) model was developed for the North West Shelf and the food web upon which it is based. The fishery of the area has been variable over the years. Bulman attempts to capture the trophic flows and biomasses during the late 1980s. At this time, the foreign fishery had reduced considerably following closures and the domestic fisheries were expanding. Fifteen years of catch and effort data were used to tune the model, i.e. annual fishing effort data were input in order to try to recreate the actual changes in the system caused by fishing.

**Stored Data Format** DIGITAL – other Software

**Stored Data Volume** 140 kB

**Access constraint** Release with the permission of the custodian

**Lineage** Based on the ECOPATH model. See Reference

**Completeness** Complete



## ***NWSJEMS biochemical model data for the Australian North West Shelf 1995 to 1999***

**MarLIN record number** 6240

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

**Contributors** Michael Herzfeld, John Andrewartha

**Abstract** This data set includes output from production runs for the Australian North West Shelf biogeochemical modelling project. The first 3 months of 1995 are simulated where cyclone Bobby traverses the domain. The years 1996 to 1999 are simulated in full. Output is in netCDF format with five day output for all variables, and higher temporal resolution for selected variables (details below). Output is generated with MECO version 4 coupled to the ecological module. Variables modelled include nutrients (ammonia, nitrate nitrogen) and chlorophyll.

### **Attributes Overview**

#### **FILE/DIRECTORY CONTENT**

**bathy** – Bathymetry data.

**tide\_obs** – Tidal constituents and associated files for observation sites on the NWS

**sea\_obs** – Total sealevel (tides + residuals) data for observation sites on the NWS

**sea\_dyn** – Files associated with putting dynamic height into the model forcing

**sea\_meco** – Sea-level files for boundary forcing input to meco

**wind\_obs** – Wind data from observation sites on the NWS

**wind\_meco** – NCEP wind files for input to meco

**wind\_cyc** – Cyclone track data and programs to create cyclone wind data used as input to the meco runs

**wind\_meco\_cyc** – Wind data files from a blending of NCEP & cyclone for input to meco

**press\_obs** – Pressure data from observation sites on the NWS

**press\_meco** – NCEP pressure files for input to meco

**press\_cyc** – Pressure time-series extracted from cyclone model output created in 'wind\_cyc'

**press\_meco\_cyc** – Pressure data files from a blending of NCEP & cyclone for input to meco

**ts\_meco** – Tracer files for input to meco

**wave\_meco** – Wave orbital velocity files for input to meco

**meco** – Directory for meco model runs inc. ts output & plots

**curr\_obs** – Current data from observation sites on the NWS

**particles** – Files and scripts associated with analysing particle track output from meco

**plot** – Misc. plotting files and scripts and ps plots

**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 15 GB of digital data

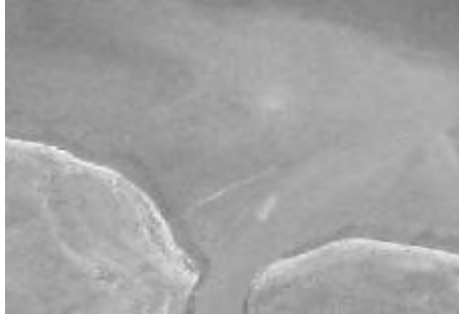
**Stored Data Documentation** refer README file at data location

**Access constraint** NWSJEMS restrictions apply

**Beginning date** 01 January 1995 **End date** 31 December 1999

**Lineage** Biochemical model output produced using the model MECO v4 coupled to ecology module. Input data to drive model located at /home/mgproja/jems

**Completeness** Data set complete



## ***NWSJEMS sediment model data 1995 to 1999***

**MarLIN record number** 6270

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Nugzar Margvelashvili

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**Abstract** Sediment data for the southern North West Shelf (North West Cape to Port Hedland) derived using three-dimensional coupled sediment transport and hydrodynamic models (MECO: Model for Estuaries and Coastal Ocean, version 4). The model data provide description of sediment classes distribution across the shelf. The model output is not suitable for engineering applications. Variables include bottom shear velocities, concentrations of the suspended and bottom sediments, and hydrodynamic information. Horizontal resolution is 5x5 km and/or 10x20 km. Run periods are 20/02/95-04/03/95, 1996, 1998, 1999.

**Documentation Links**

[Margvelashvili N, MECO: User Guide for Sediment Transport Module](#)

[Margvelashvili N, MECOSSED: Model for Estuarine and Coastal Sediment Transport](#)

---

**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 4.5 GB of digital data

**Stored Data Documentation** MECO user guide with general description of the model output files and variables is available on request from the CMAR Environmental Modelling Group, Hobart. Variables for the particular model run are specified in the model parameter file (prm\*\*\*). For the location of the parameter files see section “Specific data location”

**Access constraint** NWSJEMS restrictions apply

---

**Beginning date** 02 January 1982 **End date** 30 December 1999

**Lineage** Sediment model data produced using three-dimensional coupled sediment transport and hydrodynamic models (MECO: Model for Estuaries and Coastal Ocean, version 4). Numerical solutions are computed on fine (5x5 km) and/or coarse (20x10 km) resolution grids. The vertical resolution is the same in each case, expanding from 3 m near the surface to a maximum of 21 m at depth below 200 m. The horizontal resolution in the sediment bed is the same as that in water column. In vertical direction sediments are represented by five layers with variable thickness. The sediment transport model solves an advection-diffusion equation for the mass conservation of suspended and bottom sediments, taking into account the bottom exchanges by resuspension and deposition. No gradient boundary conditions are applied at the open lateral boundaries, and there is no input of sediments through the surface

**Completeness** Data set complete



## ***Sediment data for the North West Shelf of Australia (NWSJEMS Task 2.6)***

**MarLIN record number** 5969

**Data Type** Observed Data – field

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Nugzar Margvelashvili and Richard McLoughlin

**Acknowledgements** Geoscience Australia provided one of the data sets

**References** Jones, H.A., 1973, The Geology of the Arafura Sea. BMR Bulletin 136. Australian Government Publishing Service

McLoughlin, R. J., Young, P. C., 1985, Sedimentary provinces of the fishing grounds of the North West Shelf of Australia: grain-size frequency analysis of surficial sediments. Australian Journal of Marine and Freshwater Research, 36(5): 671-81

---

**Abstract** Sediment data of the NWS of Australia was sourced to be used as environmental variable in analyses of fish/benthos spatial distribution and for input into spatial models.

The Geoscience Australia data was obtained through Nugzar Margvelashvili: The enclosed data from the North West Shelf region comprises data recorded during progress of the study undertaken by the Bureau of Mineral Resources, and was published (Jones, 1973). The *Excel* spread sheet, and database file contain the same information, as that recorded in the Appendix of Bulletin 137, with exception of colour codes and some descriptive information.

The McLoughlin data was obtained from R. McLoughlin through Rob Campbell: Sediment data was collected on CSIRO cruises in the NWS of Australia in the early 1980s; the contains calculated phi-sizes and other statistics used to describe sediments. It was published in McLoughlin (1985).

---

**Stored Data Format** DIGITAL – Database Files – other, MS *EXCEL*

**Stored Data Volume** 76 kB

**Access constraint** No Restrictions

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**Beginning date** 1973 **End date** 1982

**Lineage** Geoscience Australia data: clean

McLoughlin data: some uncertainties about the data do persist

**Completeness** Data set coverage is described in the cited publications



## ***Wave model data 1982 to 1999, Australian North West Shelf***

**MarLIN record number** 5916

**Data Type** Model Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Scott Condie, John Andrewartha

**Reference** Condie, S. A. and Andrewartha, J. R., 2002, North West Shelf Joint Environmental Management Study: Technical Report No. 2.2: Surface Waves. CSIRO Marine Research Report

---

**Abstract** Wave model data for the southern North West Shelf (North West Cape to Port Hedland) were derived using the Shore Protection Manual model and NCEP-NCAR Reanalysis winds. The model data provide a regional description of wave exposure levels across the shelf, but is not suitable for operational or engineering applications. Variables include significant wave height, wave period, wave direction, and wave orbital velocity. Horizontal resolution = 4.4 km. Temporal resolution = 12 hours. Run period = January 1982 to December 1999.

---

**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 1.64 GB of digital data

**Stored Data Documentation** refer references section

**Access constraint** NWSJEMS restrictions apply

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**Beginning date** 02 January 1982 **End date** 30 December 1999

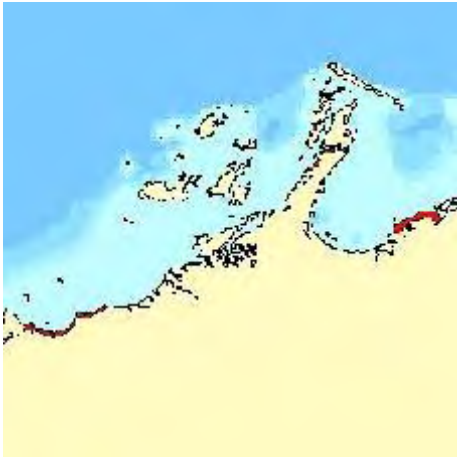
**Lineage** Wave model data produced using the Shore Protection Manual model and NCEP-NCAR Reanalysis wind fields

**Completeness** Data set complete



## 4. COASTAL DEVELOPMENT, INFRASTRUCTURE LAND USE, COASTAL USE (MARINE) DATA SETS

### 4.1 Human use



### ***Distribution of camping and shacks with usage intensity in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5561

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Abstract** Draft GIS layer depicting areas of camping and fishing shacks in the Dampier Archipelago, designated high, medium or low, usage. The attribute data includes source, comments, access (by boat or road or foot). Human use data obtained from the Marine Conservation Branch covers the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 kB of compressed digital data

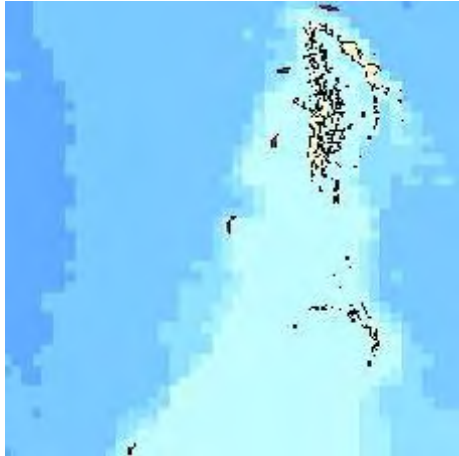
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Consultation with local recreational fishers, tour operators and Pilbara Recreational Fishing Advisory Council resulted in hand drawn maps of areas over nautical chart. They were summarised by regional CALM staff, digitised by CALM MCB office and reviewed by RFAC Chairman (untreated CALM data). Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



## ***Surfing sites in Barrow-Monte Bello Islands Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5759

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Abstract** The surf sites in Monte Bello Islands were identified by CALM staff. Human use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3 kB of compressed digital data

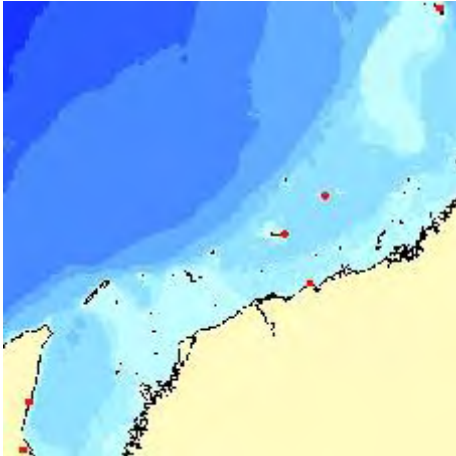
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Data supplied by CALM regional staff, digitised at CALM MCB over bathymetry and interim habitat map. Content dates from before July, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



### ***Helipad locations on the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5767

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Helicopter landing sites within the North West Shelf area from north of Dampier to Ningaloo Reef.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

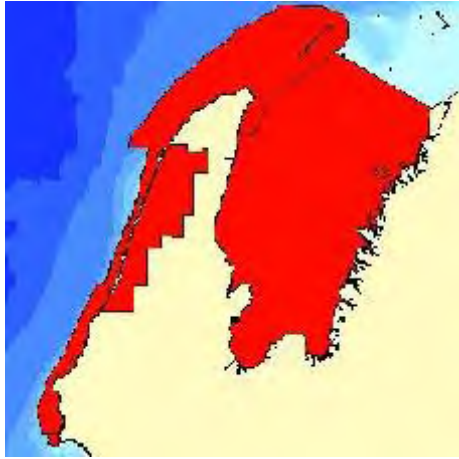
**Stored Data Volume** 1 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the then Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Major recreational sites on the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5768

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Recreational sites of the Ningaloo and Exmouth Gulf regions. Sites include areas suitable for swimming, diving, boating, beachcombing, sightseeing and camping.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 54 kB of compressed data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the then Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Major tourism sites on the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5769

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Tourism sites of the Ningaloo and Exmouth Gulf regions. Sites include Cape Range National Park, Ningaloo Marine Park and Exmouth and surrounding beaches from Coastal Atlas data sets of the North West Shelf Region.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

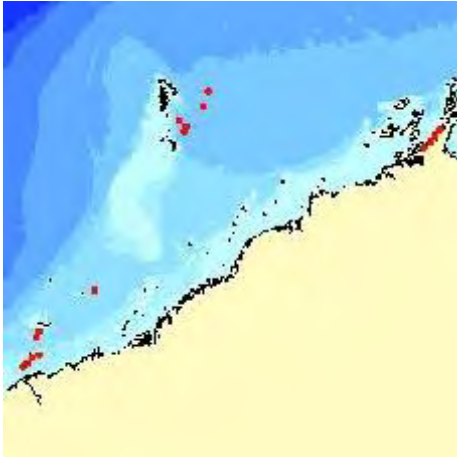
**Stored Data Volume** 2 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Possible helipad locations, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5773

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Possible Helicopter landing sites within the North West Shelf area from Coastal Atlas data sets of the North West Shelf Region.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

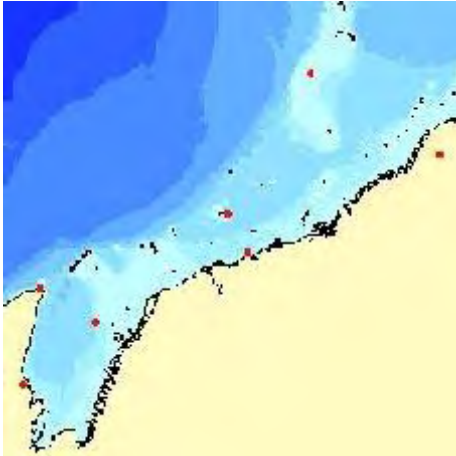
**Stored Data Volume** 2 kB of digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Weather observation sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5790

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Weather observation site locations. Wind surface speed averages and daily mean evaporation reports taken from the stations are provided in the Resource Atlas Report.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

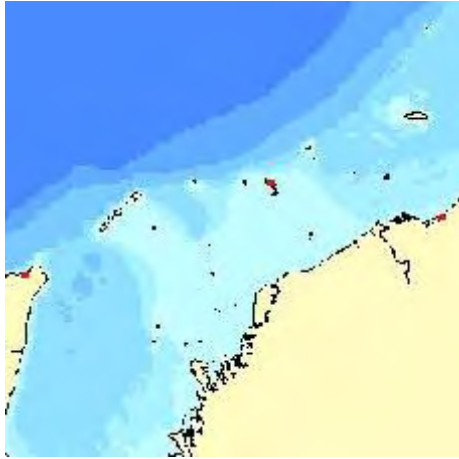
**Stored Data Volume** 1 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Major recreational sites (points), Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5807

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Recreational sites of the Ningaloo and Exmouth Gulf regions. Sites include areas suitable for swimming, diving, boating, beachcombing, sightseeing and camping. Part of the Coastal Atlas data sets of the North West Shelf Region.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 54 kB of compressed digital data

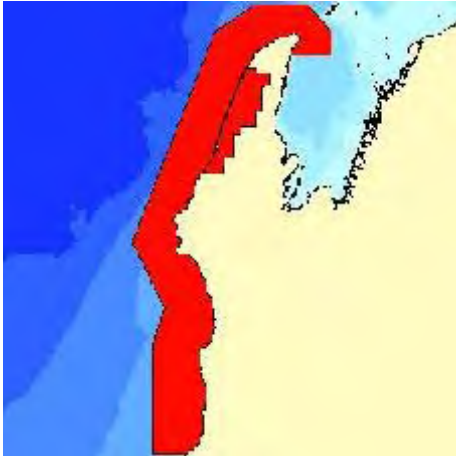
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





### ***Major tourism sites (poly), Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5808

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Tourism sites of the Ningaloo and Exmouth Gulf regions. Sites include Cape Range National Park, Ningaloo Marine Park and Exmouth and surrounding beaches. Part of the Coastal Atlas data sets of the North West Shelf Region.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

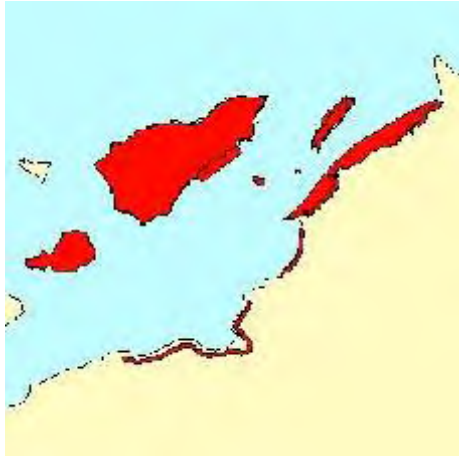
**Stored Data Volume** 17 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Recreational use, Dampier – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5818

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Regions of activity/purpose such as swimming, surfing, skiing and fishing areas around East Intercourse Island.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 91 kB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Content dates from before July, 2001

**Completeness** Complete



### ***Recreational crabbing in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5562

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** GIS layer depicting recreational crabbing in Dampier Archipelago/Cape Preston study area. Human use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas. This comprises a polygon coverage with attributes for source, access and comments.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 8.5 kB of compressed digital data

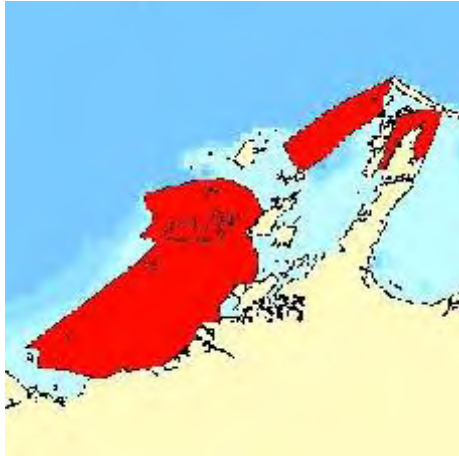
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Information gathered by community consultation, digitised over digital nautical chart, clipped to DOLA coast. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



### ***Areas used for game fishing in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5563

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** GIS layer depicting areas of pelagic and game fishing in the Dampier Archipelago, intermittent use high during tournaments: attribute data includes source and comments.

Game fishing in Dampier Archipelago Study Area Human Use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 55 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** The original map was drawn by Len Vertigan, RFAC chairman. It was digitised by the CALM MCB office and clipped to DOLA coast. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



### ***Scuba diving sites in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5564

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** GIS layer depicting scuba diving sites in the Dampier Archipelago. Human use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 18 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Draft hand drawn maps were created in consultation with local divers, drawing on top of nautical charts. The areas were summarised by local CALM staff, then digitised over the digital chart at the CALM MCB office. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



## ***Shorebased recreation in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5565

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** GIS layer depicting polygon coverage of different shore-based activities. Attributes include type of activity and intensity of use. Activities include shell collection, daytrips, and motorbike riding. Shorebased Recreation in Dampier/Cape Preston Study Area Human Use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 6 kB of compressed digital data

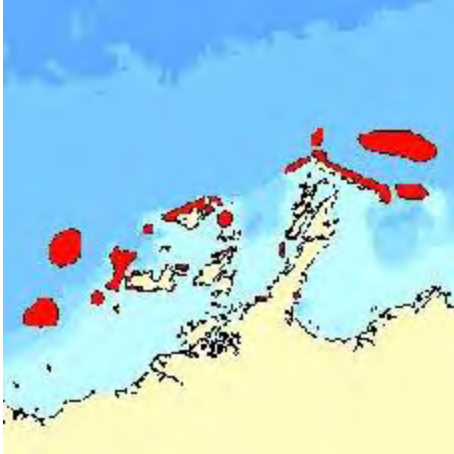
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Information gathered by community consultation, digitised over digital nautical chart, clipped to DOLA coast. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



### ***Spearfishing in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5566

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

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**Abstract** GIS layer depicting spearfishing in Dampier Archipelago/Cape Preston Study Area Human Use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas. A single polygon defines the Study area.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 11 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Original data was drawn on navigation charts during consultation with the community. It was digitised over the digital chart, and reviewed by RFAC. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



## ***Cargo statistics for Dampier Port, North West Shelf of Western Australia – Dampier Port Authority***

**MarLIN record number** 6239

**Data Type** Aggregated/Derived Data

**Originator Organisation** Dampier Port Authority, Western Australia

---

**Abstract** The Dampier Port Authority (DPA) web site indicates it is a State Government authority operating under the Port Authorities Act 1999, and oversees the operations of the Port of Dampier. The Port of Dampier is one of Australia's largest tonnage ports with exports of iron ore, salt, LNG, LPG and condensate totalling 82 million tonnes a year. The value of exports is in excess of \$A5 billion. The port is of high strategic value to Australia.

Microsoft *Excel* files of monthly freight statistics were obtained from the DPA web site. These have been downloaded for NWSJEMS use.

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**Stored Data Format** DIGITAL – Spreadsheets – MS *Excel*

**Stored Data Volume** 71.9 kB compressed digital data

**Specific Software Requirements** Requires Microsoft *Excel*

**Access constraint** This data is publicly available from the Dampier Port Authority web site

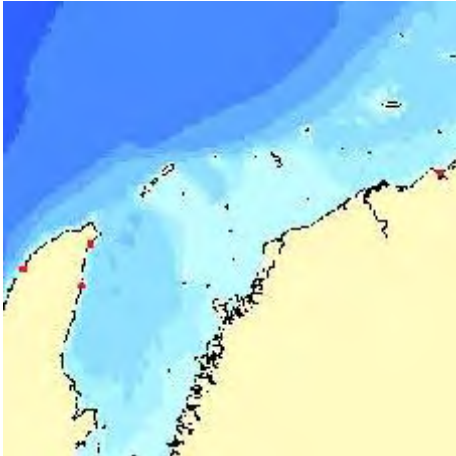
---

**Beginning date** 1988

**Lineage** Data downloaded from Dampier Port Authority web site. Content dates from before August, 2003

**Completeness** Unknown – *Excel* spreadsheets downloaded from web site in current format  
Annual updates are available from web site





### ***Boat launching ramps of the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5763

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Location of boat ramps surrounding Exmouth and Onslow.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

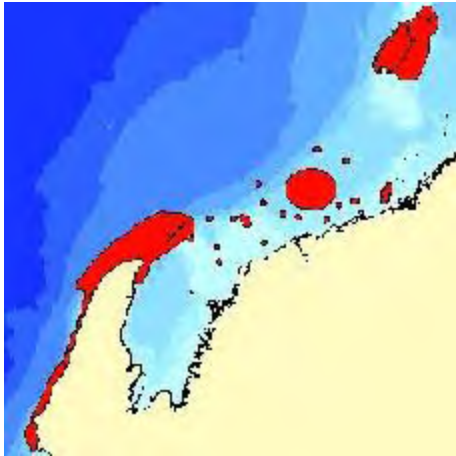
**Stored Data Volume** 1 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Recreational fishing sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5775

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Recreational fishing areas from Barrow Island to Coral Bay.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

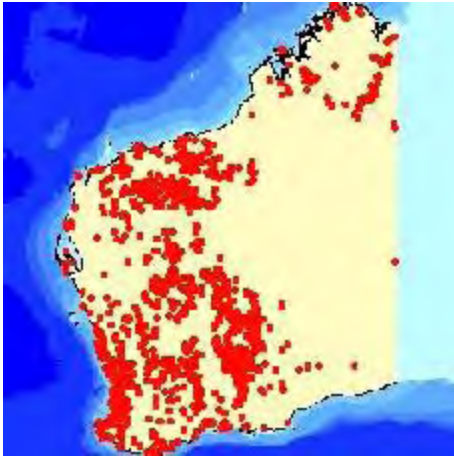
**Stored Data Volume** 54 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



***Atlas of mineral deposits and petroleum fields 1999: Data from MINEDEX database, Western Australia 1999 – Western Australian Department of Minerals and Energy***

**MarLIN record number** 5585

**Data Type** GIS

**Originator Organisation** WA Department of Industry and Resources

---

**Reference** Geographical Survey of Western Australia, 1999, Atlas of Mineral Deposits and Petroleum Fields, Department of Industry and Resources (Australia)

---

**Abstract** GIS layer depicting data from MINEDEX database, Western Australia 1999. The data is held in latitude and longitude coordinates. The data is held in GDA decimal degrees and comprises part of the Atlas of Mineral Deposits and Petroleum Fields 1999.

MINEDEX is a continuously updated textual database containing information on mines and mineral deposits, including information on ownership, location, estimates of resources. Mine operators and contact addresses are included.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 254 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** Metadata in PDF

**Access constraint** For NWSJEMS use only

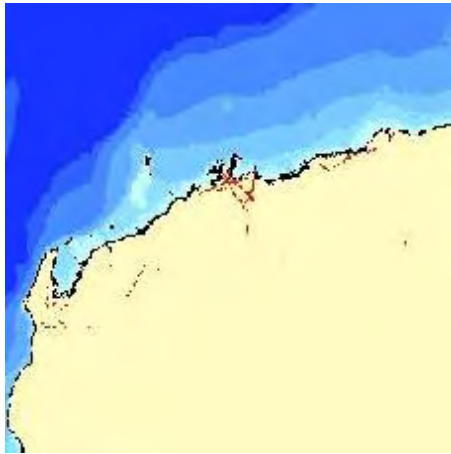
---

**Beginning date** 06 January 1999 **End date** 05 March 1999

**Lineage** Source data for this data package includes sources derived from map products, map line-work was digitised, and the resulting GIS coverages attributed. Transformation from AGD84 to GDA94 was performed using NTV4 distortion model

**Completeness** Data is complete and has been verified

## 4.2 Infrastructure



### ***Cultural hydrology features – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5738

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** This is part of a digital topographic map series showing man made surface hydrology. Features include channels, levees, pipelines, drains and groynes.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 99 kB of compressed digital data

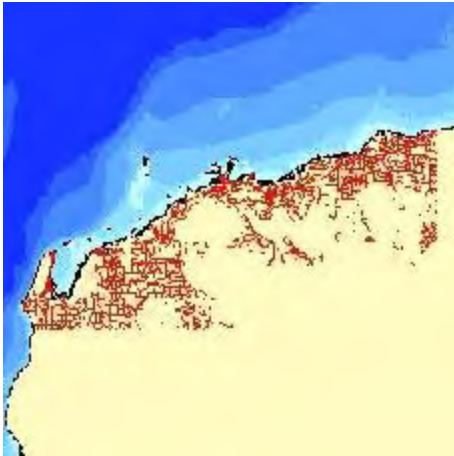
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** The information for this data set was collected using digital photogrammetric techniques or by hand digitising/scanning of existing compilations/repromats. Source materials may be from DOLA or AUSLIG. Content dates from before June, 2001

**Completeness** This is an ongoing series



### ***Cultural features – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5741

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Topographic cultural features including fence lines, embankments, treatment works and quarries.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.7 MB of compressed digital data

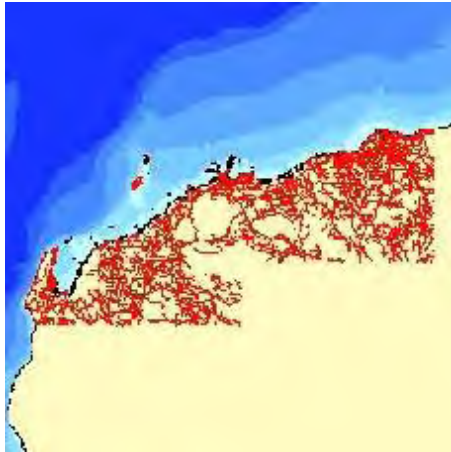
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** This data was acquired by WADEP from DOLA. Microstation DGN files were converted to ESRI shapefiles. Content dates from before June, 2001

**Completeness** Not known



### ***Transport features – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5744

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Transport layers from DOLA topographic data for the NWS area. Features include roads, tracks and railway lines.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 5 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** Data is to be used for NWSJEMS only. This data is available to all members of the WALIS community

---

**Lineage** Microstation DGN files converted to ArcInfo coverages using the layer, level information to extract themes. WA DEP converted the data to shapefiles. Content dates from before June, 2001

**Completeness** Complete for the purposes of the NWSJEMS project. No updates planned



## ***Oil and gas pipelines on the North West Shelf of Western Australia – Apache Energy***

**MarLIN record number** 5796

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** Oil and Gas Pipeline data obtained from Apache Energy.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

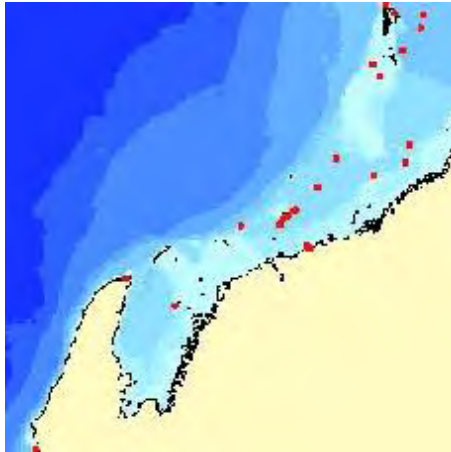
**Stored Data Volume** 78 MB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators

---

**Lineage** The data set was obtained from Apache Energy in its current format. It was superseded by: 'Western Australian Petroleum Pipelines (WAPPIPE)' *MarLIN* record no. 5579. Content dates from before July, 2001

**Completeness** Not known



## ***Lighthouses, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5797

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Lighthouses within the NW Shelf area.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 kB of compressed digital data

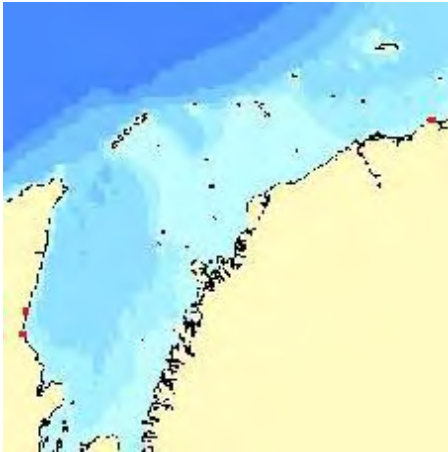
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





### ***Fish processing sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5802

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Fish processing site data was obtained from BHP Petroleum, Custodian Fisheries WA, for the Coastal Atlas Report.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

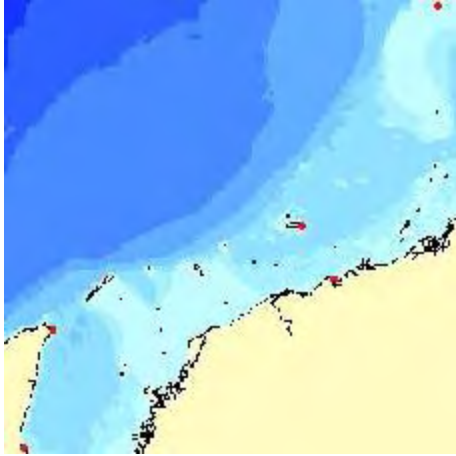
**Stored Data Volume** 1 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Jetties, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5805

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Jetty locations within the NW Shelf area.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Topographic data – cultural features, Dampier – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5814

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Topographic data digitised from February 1996 aerial photographs to a 1:1000 map. The cultural features include buildings, swimming pools, embankments and tanks.

**Documentation Link** [AAM Surveys Documentation](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

Obtained as MapInfo Workspaces. Converted to ArcView shapefiles,

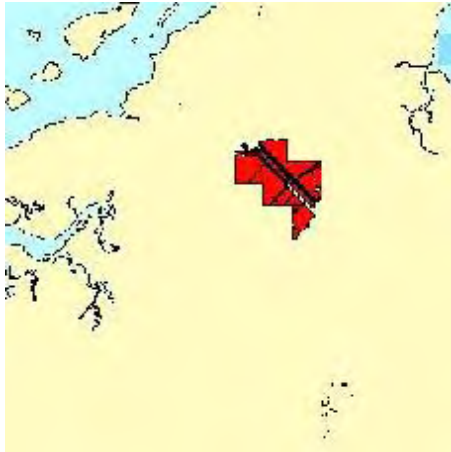
**Stored Data Volume** 1.9 MB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Some MIF files did not convert to shapefiles. Data sets from the different project directories were then merged into one data set for all of the area for the theme type. See document link to AAM Surveys documentation for Source Data details. Content dates from before July, 2001

**Completeness** Complete



## ***Topographic data – surface hydrology, Dampier – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5815

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Hamersley Iron topographic data of surface hydrology polygon features such as reservoirs.

**Documentation Link** [AAM Surveys Documentation](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile. Obtained as MapInfo Workspaces. Converted to ArcView shapefiles

**Stored Data Volume** 0.2 MB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Some MIF files did not convert to shapefiles. 1:1 000 mapping digitised from aerial photography February 1996. See document link to AAM Surveys documentation for Source Data details

**Completeness** Complete



### ***Dredging spoil grounds in Dampier Archipelago – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5816

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Topographic data digitised from aerial photographs, features include borrow pit, spoil grounds, plant and scraping.

**Documentation Link** [AAM Surveys Documentation](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

Obtained as MapInfo Workspaces. Converted to ArcView shapefiles

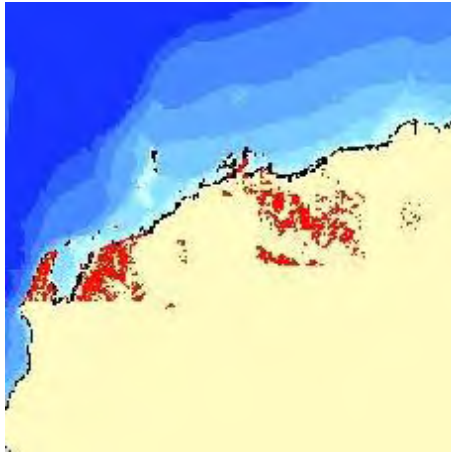
**Stored Data Volume** 90 kB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Some MIF files did not convert to shapefiles. Data sets of same theme type were then merged into a single shapefile. 1:1 000 mapping digitised from above aerial photography February 1996. See document link to AAM Surveys documentation for Source Data details

**Completeness** Complete for the purposes of the NW Shelf Study



## ***Landuse – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5827

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Digital topographic map series showing landuse. Layers include:

Landuse Boundary

Vegetation Boundary

Plantations

Rock Outcrops

Sand Areas

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 7 MB compressed digital data

**Access constraint** For use in the NWSJEMS only

---

**Lineage** The information for this data set was collected using digital photogrammetric techniques or by hand digitising/scanning of existing compilations/repromats. Source materials may be from DOLA or AUSLIG. Content dates from before July, 2001

**Completeness** This is an ongoing series. Complete for the purposes of NWSJEMS



### ***Salt ponds between Dampier and Karratha – Australian North West Shelf – Woodside Petroleum Ltd***

**MarLIN record number** 5576

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** Woodside Petroleum Ltd

---

**Abstract** GIS layer depicting salt ponds over the Dampier Archipelago between Dampier and Karratha.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 6 kB of compressed digital data

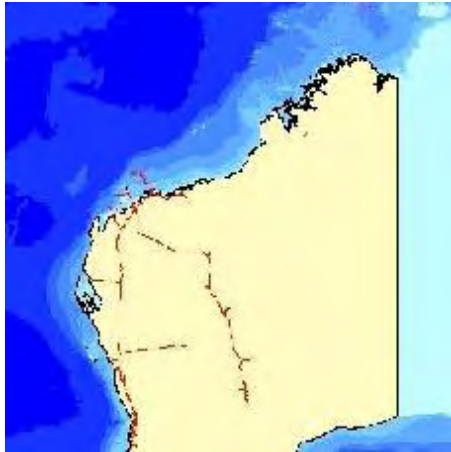
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Obtained from Woodside in current format. Content dates from before March, 2001

**Completeness** Not known



## **Western Australian Petroleum Pipelines (WAPPIPE) – Western Australian Department of Minerals and Energy**

**MarLIN record number** 5579

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** WAPPIPE (Western Australian Petroleum Pipelines) digital data set contains Petroleum Pipelines. The data is held in GDA94 latitude and longitude coordinates. The data set is also available in AGD84.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 700 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

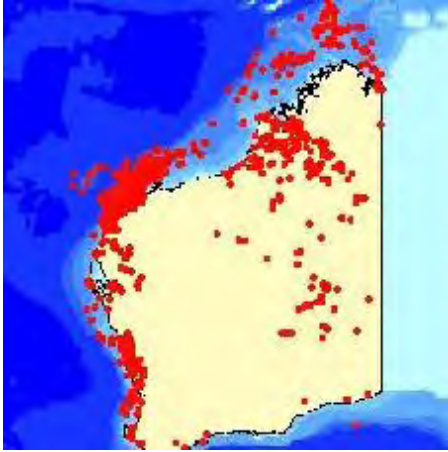
---

**Beginning date** 01 June 1989

**Lineage** Pipeline source data includes precision captured centreline and licence area boundary definitions obtained by various means. They include Applicants/Operators Preliminary/Final co-ordinates digitally supplied and/or digitised or scaled positions. Most have been captured as a centreline, however where there are numerous pipelines/facilities the Licence Area has been captured

**Completeness** Ongoing, Complete for the purposes of NWSJEMS





### ***Wells drilled for petroleum exploration in Western Australia – Western Australian Department of Minerals and Energy***

**MarLIN record number** 5582

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** GIS layer depicting wells drilled for petroleum exploration in Western Australia. Basins and sub-basins with petroleum tenements are shown on enlargements. Well locations and IDs are derived from the WA Petroleum Exploration database (WAPLEX).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 197 kB of compressed digital data

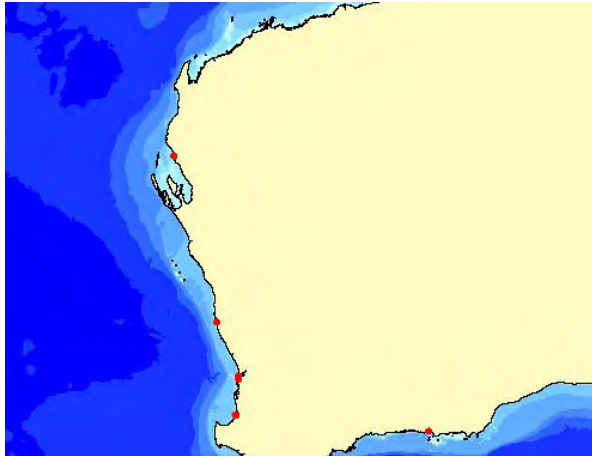
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Well positions are derived from operator's reports. Basins are derived from geological interpretation. Content dates from before March, 2001

**Completeness** Complete



## ***Location of breakwaters, Western Australia, Department of Transport***

**MarLIN record number** 6040

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting breakwaters as line features. A breakwater is defined here as a structure protecting a shore area, harbour, anchorage, or basin from waves.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 114 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation files

Source\_Citation\_Abbreviation: dgn

Source\_Contribution: DOLA Coastline Transport Plans Transport nautical charts

Source\_Scale\_Denominator: 2000

Type\_of\_Source\_Media: digital imagery

Source\_Citation\_Abbreviation: ecw

Source\_Contribution: DOLA metro images, Mosaic 2001

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Process\_Step: Process\_Description: Line features digitised on-screen from digital, georeferenced images

Content dates from before February, 2003

**Completeness** Complete



### ***Location of jetties, Western Australia, Department of Transport***

**MarLIN record number** 6048

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting jetties as line features. Jetty is defined here as a pier, usually of solid construction, intended as a berthing place for vessels.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 100 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format. Source\_Information:

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation

Source\_Citation\_Abbreviation: dgn

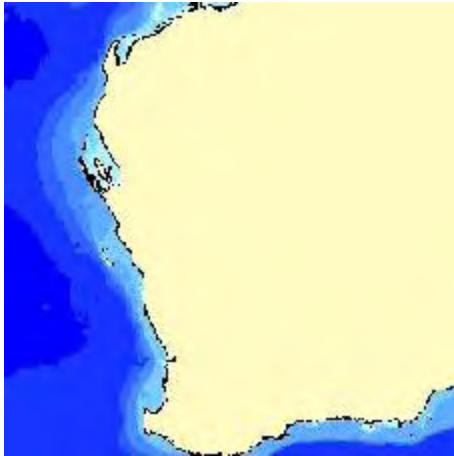
Source\_Contribution: DOLA Coastline Transport Plans Transport nautical charts

Process\_Description: Line features digitised on-screen from digital, georeferenced images

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Content dates from before February, 2003

**Completeness** Complete



## ***Location of boat ramps, Western Australia, Department of Transport***

**MarLIN record number** 6049

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting ramps as line features.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 24 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation

Source\_Citation\_Abbreviation: dgn

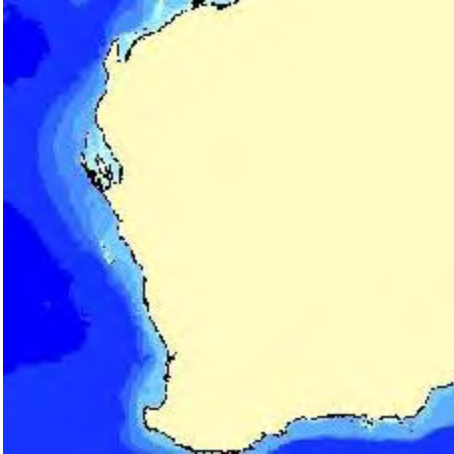
Source\_Contribution: DOLA Coastline Transport Plans Transport nautical charts

Process\_Description: Line features digitised on-screen from digital, georeferenced images.

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Content dates from before February, 2003

**Completeness** Complete



### ***Location of sea walls, Western Australia, Department of Transport***

**MarLIN record number** 6050

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting seawalls (revetments or weirs) as line features. A sea wall is defined as an embankment or wall for protection against waves or tidal action along a shore or waterfront.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 73 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation

Source\_Time\_Period\_of\_Content:

Source\_Currentness\_Reference: publication date

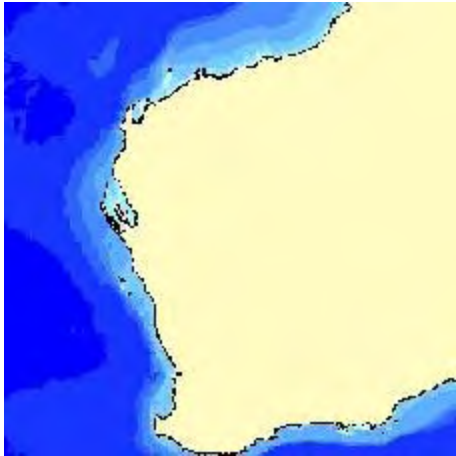
Source\_Citation\_Abbreviation: dgn

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Process\_Description: Line features digitised on-screen from digital, georeferenced images

Content dates from before February, 2003

**Completeness** Complete



## ***Location of slipways, Western Australia, Department of Transport***

**MarLIN record number** 6051

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting slipways as line features. A slipway is defined as a prepared and usually reinforced inclined surface on which keel and bilge-blocks are laid for supporting a vessel under construction.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 13 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format.

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation

Source\_Citation\_Abbreviation: dgn

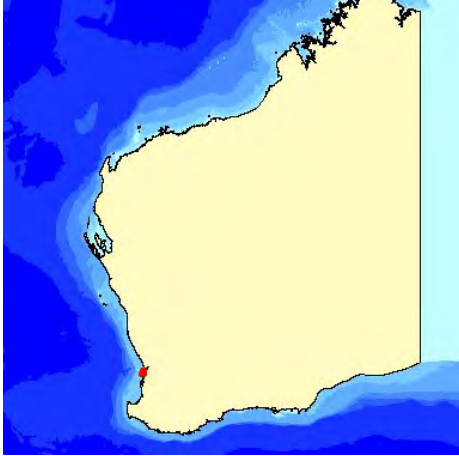
Source\_Contribution: DOLA Coastline Transport Plans Transport nautical charts

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Process\_Description: Line features digitised on-screen from digital, georeferenced images

Content dates from before February, 2003

**Completeness** Complete



## ***Location of wharves, Western Australia, Department of Transport***

**MarLIN record number** 6052

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting wharves as line features. A wharf is defined as a structure serving as a berthing place for vessels.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 31 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation

Source\_Citation\_Abbreviation: dgn

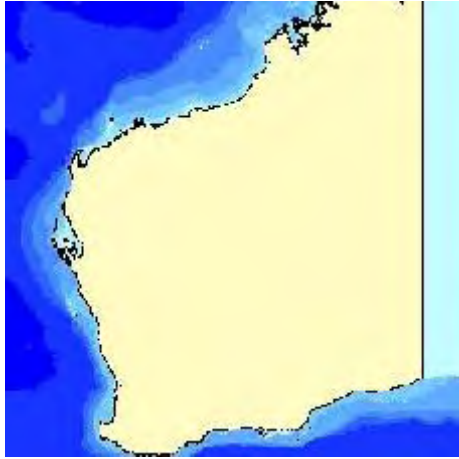
Source\_Contribution: DOLA Coastline Transport Plans Transport nautical charts

Process\_Description: Line features digitised on-screen from digital, georeferenced images.

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Content dates from before February, 2003

**Completeness** Complete



## ***Location of groynes, Western Australia, Department of Transport***

**MarLIN record number** 6053

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Western Australian data set depicting groynes as line features. Groyne (or groin) is defined as a low artificial wall-like structure of durable material extending from the land to seaward for a particular purpose, such as to protect the coast or to force a current to scour a channel. They are sometimes called rip-raps in New England waters.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 70 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

---

**Lineage** Data obtained from the WA Department of Transport in its current format. Source\_Information:

Source\_Scale\_Denominator: variable

Type\_of\_Source\_Media: Microstation

Source\_Citation\_Abbreviation: dgn

Source\_Contribution: DOLA Coastline Transport Plans Transport nautical charts

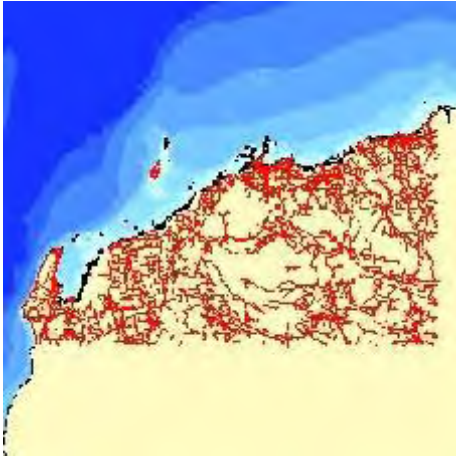
Process\_Description: Line features digitised on-screen from digital, georeferenced images.

Process\_Description: Line features copied from digital CAD files and pasted into shapefiles

Content dates from before February, 2003

**Completeness** Complete





## ***Western Australian generic road centreline data set***

**MarLIN record number** 6060

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** The roads data set, which complies with WALIS specifications, has been built in response to increasing demands from both public sector and industry organisations for an intelligent robust road centreline data set.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 91 kB of compressed digital data

**Stored Data Documentation** A Word document is contained in the download file, it describes the original ArcInfo format but it can be used to deduce codes which have been maintained within the ArcView format

**Access constraint** Data is to be used for NWSJEMS only. Not for use in commercial applications without written permission

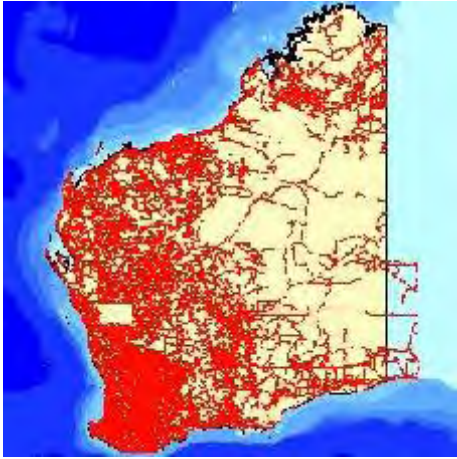
---

**Beginning date** 01 January 1968

**Lineage** The roads data set was compiled from the metropolitan street directory, 1:25 000, 1:50 000 and 1:100 000 digital base data. This information was originally captured photogrammetrically then either scanned or hand digitised and stored in MicroStation design files (DGN) or digitised at source using analytical photogrammetric techniques and translated to DGN format. All DGN files have since been loaded into the Arc/Info environment and roads tagged with road name (Geographic Names Register – GEONOMA ID) via an ArcView application

The version available for use by the NWSJEMS project is in ArcView format. Content dates from before April, 2003

**Completeness** The roads data set has been compiled from the best available digital topographic information. Selected towns were revised in 1999 using cadastral information as a backdrop along with consultation with local government authorities where clarification was required. Maintenance of the data set is ongoing. The spatial completeness of the data set is being addressed locally as new roads are being added



### **Main roads of Western Australia – AUSLIG 1:250 000**

**MarLIN record number** 6144

**Data Type** GIS

**Originator Organisation** Geoscience Australia – includes previous AUSLIG, AGSO

---

**Abstract** Main roads of Western Australia from AUSLIG 1:250,000 topographic data.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 11.7 MB

**Access constraint** For NWSJEMS use only

---

**Lineage** Obtained from AUSLIG in current format. Superseded by: “Western Australian generic road centreline data set” (*MarLIN* record no. 6060). Content dates from before July, 2003

**Completeness** Not known. Refer to AUSLIG Geodata Topo 250K Series 1 for additional information



### ***Topographic data – cultural features (points), Dampier – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5820

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Hamersley Iron topographic data digitised from aerial photography. Cultural point features include: lamp posts, mooring posts, radio towers and pylons.

**Documentation Link** [AAM Surveys Documentation](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

Obtained as MapInfo WorkspacesConverted to ArcView shapefiles,

**Stored Data Volume** 41 kB

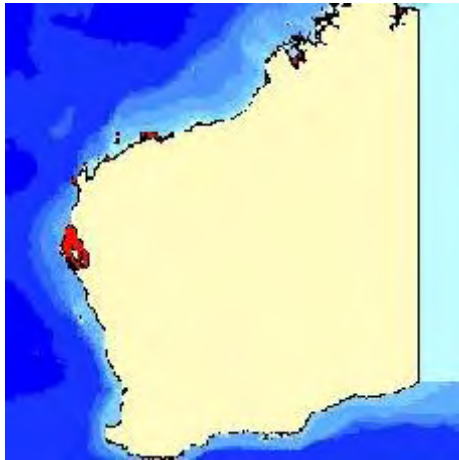
**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Some MIF files did not convert to shapefiles. Common themes combined into a single merged data set. 1:1000 mapping digitised from above aerial photography February 1996. See document link to AAM Surveys documentation for Source Data details

**Completeness** Complete

### 4.3 Zones, Proclaimed areas



#### ***Proclaimed areas under the Marine and Harbours Act – supplied by the WA Department of Conservation and Land Management***

**MarLIN record number** 5737

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** Polygon coverage of land and water areas declared under the Marine and Harbours Act 1981.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** Data capture by Transport WA. Areas defined in Government Gazettes. Coastline used DOLA 1:100 000, DOLA cadastre used for current location and lot boundaries, also DOLA Misc Plans and Diagrams used where cadastre has been modified since areas were gazetted. Content dates from before June, 2001

**Completeness** Complete



## ***Port boundaries in Dampier Archipelago, Australian North West Shelf – WA Department of Conservation and Land Management***

**MarLIN record number** 5751

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** Port of Dampier port limit boundaries as supplied by DOLA, and modified from their .dgn file. Data was cleaned up to generate polygons. The polygon data set was then modified using the cadastre supplied by DOLA and extracted from their SCDB on approx 18 August 1999.

This file covers the water area, seabed & land component. The land component over Reserve 41636 + the VCL, and the water area component over Loc. 42 and Loc. 26 were generated from the SCDB. The PIN number is identified in the attribute PCOV\_ID.

The location of the landward side of the port boundary in this digital data set still needs to be resolved. The dgn file supplied by DOLA had a 20 m buffer against the coastline. This conflicts with the technical description in the Statutory Services Plan 20606. It is suspected that this buffer was created for cartographic presentation on the plan. A methodical interrogation of this landward boundary representation, in conjunction with the HWM and LWM in the DOLA coastline, and the technical description in Plan 20606 still needs to be undertaken.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 68 kB of compressed digital data

**Access constraint** Provided to NWSJEMS by CALM Marine Branch for use by the NWSJEMS

---

**Lineage** Obtained from CALM Marine Conservation Branch in its current format. Superseded by: “Port limits of Western Australian Ports – Transport WA” (*MarLIN* record no. 5823)

**Completeness** Not known



***Industrial zoning for Burrup Peninsula and Maitland Estate –  
Dampier Region of the Australian North West Shelf – WA  
Department of Conservation and Land Management***

**MarLIN record number** 5753

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** Industrial zoning for Burrup Peninsula and Maitland Estate – Dampier

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

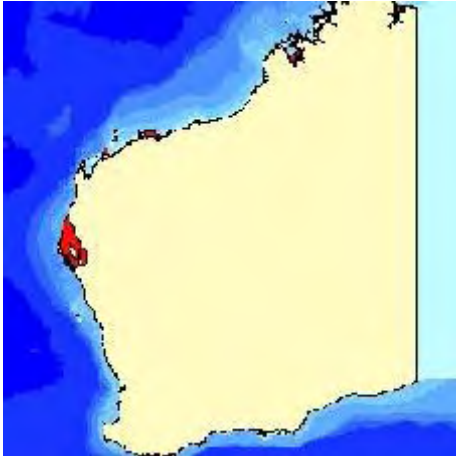
**Stored Data Volume** 75 kB of compressed digital data

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Obtained from CALM Marine Conservation Branch in its current format. DGN file obtained from DRD. The CALM data set is not as current as the DRD version but will be used until the DRD version has been converted and verified. Content dates from before July, 2001

**Completeness** Not known



## ***Ports of Western Australia under the Shipping and Pilotage Act – WA Department of Transport***

**MarLIN record number** 5757

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Polygon coverage of ports declared under the Shipping and Pilotage Act, 1967.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1.98 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

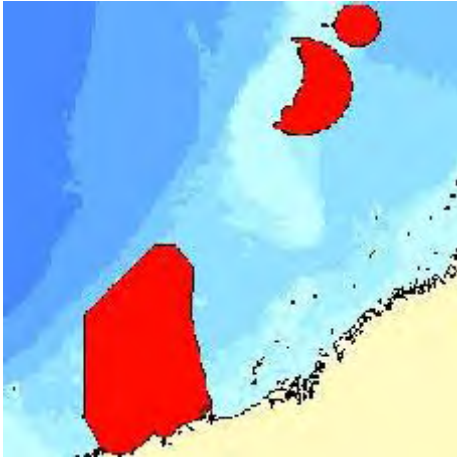
**Access constraint** For use in NWSJEMS only. The data set is a positional representation only

---

**Beginning date** 10 June 2000

**Lineage** Data capture by Transport WA. Areas defined in schedule to the act, amendments and additions to port boundaries defined in government Gazettes. Coastline used DOLA 1:100 000. Data set projection is based on geographicals (AGD84). Content dates from before July, 2001

**Completeness** Complete



### ***Port limits of Barrow Island, Varanus Island and Onslow, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5772

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Port limits for Barrow Island Port, Varanus Island and Onslow Port.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 37 kB of compressed digital data

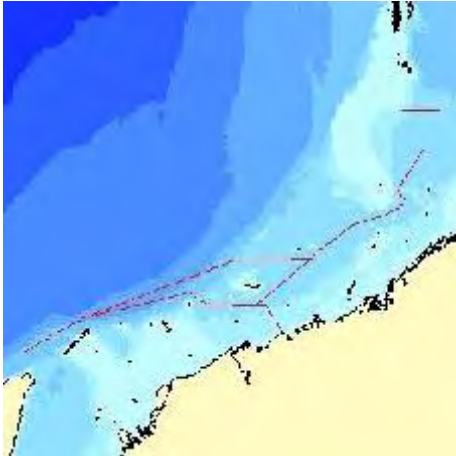
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





### ***Ship navigation areas, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5779

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Navigation areas within the North West Shelf area.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 MB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Port limits – Onslow to Dampier, Western Australian North West Shelf – Apache Energy***

**MarLIN record number** 5813

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** Port Limits obtained from Apache Energy.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

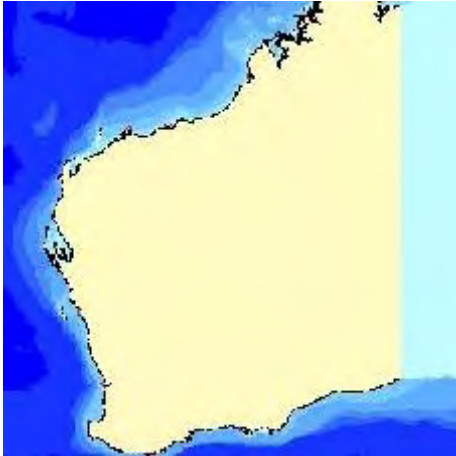
**Stored Data Volume** 35 kB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators

---

**Lineage** Data set obtained from Apache Energy in its current format. Original data obtained from BHP and modified by Apache. Content dates from before July, 2001

**Completeness** Not known



### ***Port limits of Western Australian ports – Transport WA***

**MarLIN record number** 5823

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Port limits for ports of Western Australia. This includes boundaries of the areas controlled by the various port management authorities.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 16 kB of compressed digital data

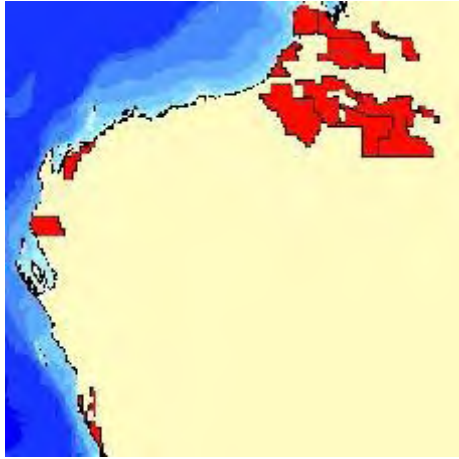
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data set has been obtained by the DEP from an unknown source. The custodian must be acknowledged on any reports using it

---

**Lineage** Data obtained from the WA Department of Transport in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Petroleum titles – petroleum applications portion of Western Australian Petroleum Map (WAPMAP)***

**MarLIN record number** 6010

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** WAPMAP (Western Australian Petroleum Map) digital information contains petroleum titles together with any gazetted release areas. The data is held in GDA94 latitude and longitude coordinates. This record refers to the application portion of the WAPMAP.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

The data is held in GDA94 latitude and longitude coordinates (decimal degrees)

**Stored Data Volume** 200 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

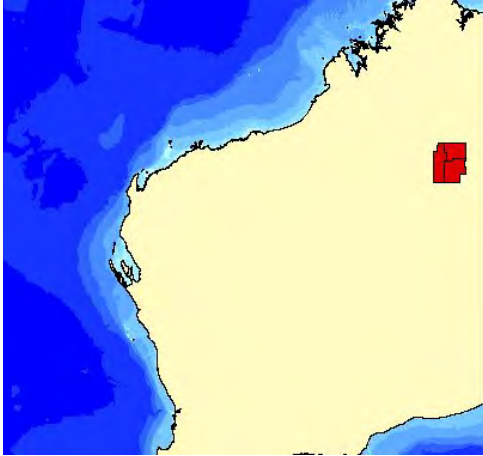
**Access constraint** For use in the NWSJEMS only

---

**Beginning date** 01 June 1989

**Lineage** Petroleum title source data includes precision captured title and boundary definitions based on 5 by 5 minute graticular blocks while incorporating digital AMBIS data sourced from Geoscience Australia (see AMBIS statement in positional accuracy). It also includes data that has been extracted from databases maintained by the Department. Content dates from before October, 2002

**Completeness** The data set is complete and has been verified



### ***Petroleum titles – petroleum onshore release portion of Western Australian Petroleum Map (WAPMAP)***

**MarLIN record number** 6011

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** WAPMAP (Western Australian Petroleum Map) digital information contains Petroleum titles together with any gazetted release areas. The data is held in GDA94 latitude and longitude coordinates. This record refers to the onshore release areas portion of the WAPMAP.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

The data is held in GDA94 latitude and longitude coordinates (decimal degrees)

**Stored Data Volume** 20 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

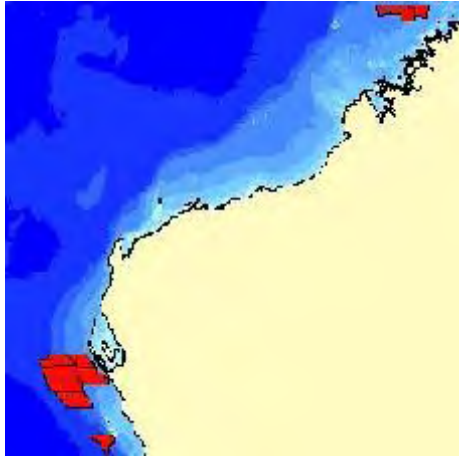
**Access constraint** For use in the NWSJEMS only

---

**Beginning date** 01 June 1989

**Lineage** Petroleum Title source data includes precision captured title and boundary definitions based on 5 by 5 minute graticular blocks while incorporating digital AMBIS data sourced from Geoscience Australia (see ambis statement in positional accuracy). It also includes data that has been extracted from databases maintained by the Department. Content dates from before October, 2002

**Completeness** The data set is complete and has been verified



## ***Petroleum titles – petroleum re-release portion of Western Australian Petroleum Map (WAPMAP)***

**MarLIN record number** 6012

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** WAPMAP (Western Australian Petroleum Map) digital information contains petroleum titles together with any gazetted release areas. The data is held in GDA94 latitude and longitude coordinates. This record refers to the re-release areas portion of the WAPMAP.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

The data is held in GDA94 latitude and longitude coordinates (decimal degrees)

**Stored Data Volume** 20 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

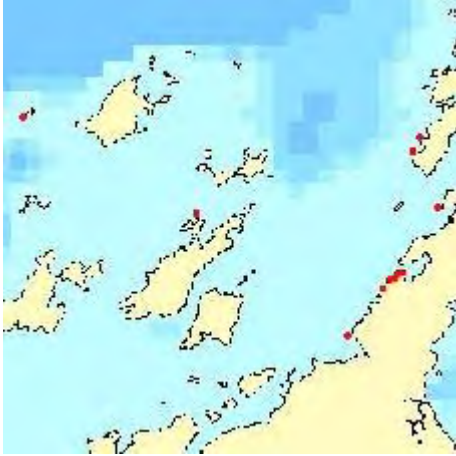
---

**Beginning date** 01 June 1989

**Lineage** Petroleum Title source data includes precision captured title and boundary definitions based on 5 by 5 minute graticular blocks while incorporating digital AMBIS data sourced from Geoscience Australia (see ambis statement in positional accuracy). It also includes data that has been extracted from databases maintained by the Department. Content dates from before October, 2002

**Completeness** The data set is complete and has been verified

## 5. CONTAMINANT/POLLUTANT, SOURCE, DISCHARGE, SEDIMENT AND WATER CONCENTRATION DATA SETS



### ***Chemical and Environmental Monitoring of Mermaid Sound (ChEMMS) database, Western Australian North West Shelf, Woodside Petroleum Ltd***

**MarLIN record number** 6057

**Data Type** GIS

**Originator Organisation** Woodside Petroleum Ltd

---

**Abstract** Chemical and Environmental Monitoring of Mermaid Sound (ChEMMS) Database contains data used for ChEMMS reporting by Woodside. Data stored includes a range of locations around Mermaid Sound on the Dampier Archipelago and for a range of types including water quality, sediment quality, fauna. Parameters measured include: hydrocarbons, heavy metals, and nutrients.

NOTE: Data between years is not necessarily comparable due to differences in sampling and analysis techniques used over time. Please refer to the original reports for details on the sampling techniques used.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile, DIGITAL – Spreadsheets – MS *Excel*

**Stored Data Volume** 60 kB of compressed digital data

**Access constraint** Permission for use must be obtained from Woodside Offshore Petroleum. The data has been obtained specifically for use by NWSJEMS only. See Licence Agreement link for conditions of data use

---

**Beginning date** 01 January 1983

**Lineage** Obtained from Woodside in its current format. Database content has been entered up to 1995

**Completeness** Ongoing sampling data will be added as it is made available



## ***Contaminants input inventory, database of contaminants and sources, Western Australian North West Shelf***

**MarLIN record number** 6080

**Data Type** GIS

**Originator Organisation** CSIRO Marine and Atmospheric Research, Western Australian Department of Environment

---

**Contributors** Chris Fandry, Michael Fuller

**Acknowledgements** The companies supply annual environmental reports and additional information relating to inputs into the marine environment. Refer to database for additional details

**Reference** Fandry, C. et al. 2006, NWSJEMS Technical Report 13: Contaminants on Australia's North West Shelf: sources, impacts, pathways and effects. CSIRO Marine and Atmospheric Research, Hobart

---

**Abstract** This Access database contains the NWSJEMS Contaminants Inventory of data from 1985 to 2001. Spatial information is contained in related shapefile data sets described in *MarLIN* (see Attributes).

**Attributes Overview** The NWSJEMS Contaminants Input Inventory database contains information to be linked to shapefiles with the spatial location of contaminants sources. See the related point, line and polygon contaminants records (respectively *MarLIN* records 5825, 6081 and 6082).

The database contains attributes of recorded and estimated contaminant contributions to the environment for each site over a given time period. Additional information for each record include “\_ER” – Estimated (E) or Recorded (R) value to include forecasts of contaminant inputs, and “\_UNITS” to identify the rate of input. Additional information is stored in the CONTAMINANT\_KEY table containing description of the abbreviations, and NWShelf\_Sources table containing additional information for each site in the database including contact details in the agency the data was obtained from.

---

**Stored Data Format** DIGITAL – Database Files – MS *Access*

**Stored Data Volume** 121 kB of compressed digital data

**Access constraint** For use in the NWSJEMS only

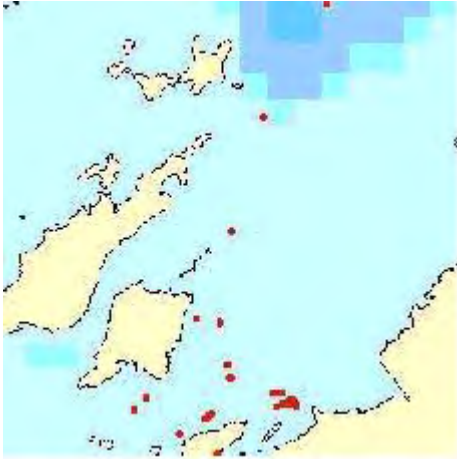
---

**Beginning date** 15 August 2000

**Lineage** Contaminants inventory based on historical records and information supplied by industry as well as information on contaminants extracted from reports held within the then WA Department of Environmental Protection

**Completeness** Complete for the purposes of the study





### ***Sediment contaminant sampling sites, Dampier – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5819

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Sediment contaminant sites (site no., depth, location). Source - HA-2619 Sediment Contaminants Progress Report 1.

---

**Stored Data Format** DIGITAL - GIS - ESRI Shapefile obtained as MapInfo Workspaces. Converted to ArcView shapefiles and projected into AMG zone 50

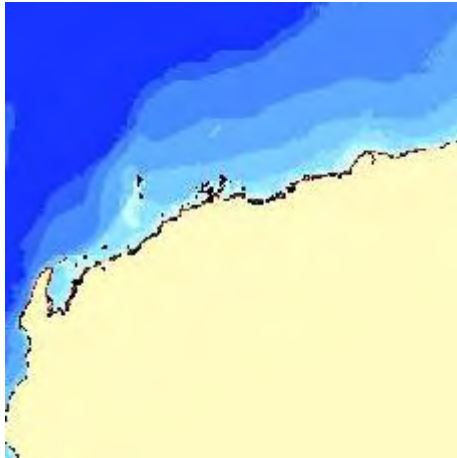
**Stored Data Volume** 11 KB of compressed digital data

**Access constraint** NWSJEMS only

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. MIF file originally in Decimal Degrees. Converted to AMG 50. Assumed datum to be AGD66. Content dates from before July, 2001

**Completeness** Complete



### ***Discharges by groundwater to the marine environment in the Pilbara region, Western Australian North West Shelf***

**MarLIN record number** 5826

**Data Type** GIS

**Originator Organisation** WA Department of Environment

---

**Abstract** Loadings into the marine environment from groundwater sources. This is a preliminary assessment of the discharge of nitrogen by groundwater to the marine environment in the Pilbara region from Water & Rivers Commission, WA. Commissioned by DEP NWSMEMS.

---

**Stored Data Format** DIGITAL - GIS - ESRI Shapefile

**Stored Data Volume** 11 KB of compressed digital data

**Access constraint** For use in the NWS JEMS only

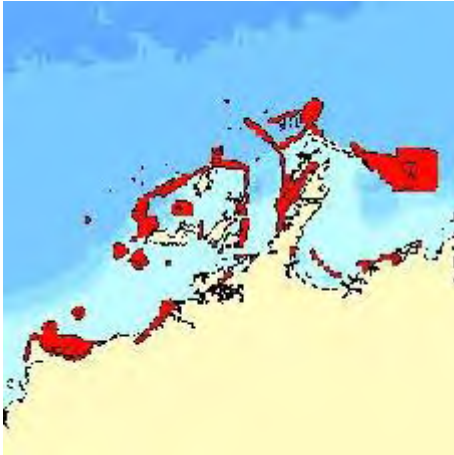
---

**Beginning date** 01 Jan 2000

**Lineage** Report commissioned by DEP Marine branch to identify groundwater loadings. ArcView shapefiles digitised of the approximate coastline and groundwater recharge areas by NWSJEMS GIS staff. Content dates from before July, 2001

**Completeness** The report and associated data sets are preliminary only

## 6. FISHERY, CATCH EFFORT, GEAR TYPE DATA SETS



### ***Recreational line fishing intensity in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5560

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** GIS layer depicting recreational line fishing intensity in the Dampier Archipelago Study Area. Areas of recreational line fishing in the Dampier Archipelago (designated high, medium or low); attribute data includes source, comments, access (by boat, road or foot). Human use data obtained from Marine Conservation Branch covering the Monte Bello Islands and Dampier Archipelago Marine Reserve implementation areas.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 30 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** The data was prepared in consultation with local recreational fishers, tour operators and Pilbara Recreational Fishing Advisory Council. It was summarised by regional staff, digitised by CALM MCB office and reviewed by the Chairman of the RFAC. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



## **Taiwanese fishing on the Australian North West Shelf – 1973 to 1981**

**MarLIN record number** 5367

**Data Type** Observed Data – field

---

**Contributors** Kim Woolley (Data entry)

**References** Annual Reports of Effort and Catch Statistics by Area on Taiwan Demersal Fish Fisheries, 1973-81 (publ. 1974-82), Demersal Fish Centre, Taiwan

Sainsbury, K. J., 1991, Application of an experimental approach to management of a tropical multispecies fishery with highly uncertain dynamics. In: Daan, N and Sissenwine, M P (Eds.). ICES Marine Science Symposium, 193: 301-320

---

**Abstract** Summaries of Taiwanese catch compositions and numbers of hauls, for 13 1/2 by 1/2 degree squares over the North West Shelf between 1973 and 1981, by year and species (for 13 species and 4 families). The original data was published in Annual Reports of the Demersal Fish Center, National Taiwan University in 1974 to 1982 and have been re-entered at CSIRO Marine Research into an Access database. This data was updated and corrected in 2003. The corrections made are: (1) the previously excluded categories of invertebrates, 'dumped' and 'other' were added; (2) effort data was corrected for logbook recovery rates reported in the Annual Reports. Summaries of these data for the entire North West Shelf area (aggregated over all squares) have previously been published in Sainsbury (1991).

---

**Stored Data Format** DIGITAL – Database Files – MS Access

**Stored Data Volume** Summary data for 13 squares only. File size (within Access database) is 0.8 MB (0.2 MB compressed)

**Specific Software Requirements** Requires MS Access

**Stored Data Documentation** Refer to references and documentation link

**Access constraint** Release with the permission of the custodian

---

**Beginning date** 1973 **End date** 1981

**Lineage** Data from published sources. The data file was updated and corrected in Sept 2003

**Completeness** Complete so far as is known. There is poor species resolution



## **Japanese fishing on the Australian North West Shelf – 1959 to 1963 – data summary**

**MarLIN record number** 5366

**Data Type**

Observed Data – field

Aggregated/Derived Data

---

**Contributors** Kim Woolley (Data entry)

**References** Sainsbury, K.J., 1991, Application of an experimental approach to management of a tropical multispecies fishery with highly uncertain dynamics, *Ices Marine Science Symposium*, 193: 301-320  
Robins, J., 1969, North-West trawl fishing. *FINS (Fishing Industry News Service)*, WA 2: 5-13

---

**Abstract** Japanese total catches (of Lethrinids – target spp.) and numbers of hauls for 13 1/2 by 1/2 degree squares over the North West Shelf between 1959 and 1963 are summarised here. Catches are totalled over all years. The original data were published in Robins (1969) and the summaries are available in Sainsbury (1991) – see references. A digital copy of these data is held by Xi He's NWSJEMS project team in Hobart, contact F. Althaus or K. Woolley if access is required.

---

**Stored Data Format** DIGITAL – Spreadsheets – MS *Excel*

**Stored Data Volume** Summary data for 13 squares only – 0.2 MB compressed

**Stored Data Documentation** Refer to references

**Access constraint** Release with the permission of the custodian

---

**Beginning date** 1959 **End date** 1963

**Lineage** Data from published sources

**Completeness** Complete so far as is known



## **Soviet fishery data – Australian waters – 1965 to 1978**

**MarLIN record number** 5365

**Data Type** Observed Data – field

---

**Contributors** Tony Koslow, Peter Last, Alan Williams, Paul Sabourenkov

**References** Koslow J.A., Last P., Williams A., Sabourenkov P., 1998, Exchange and analysis of historical Soviet fishery survey data from the waters around Australia. FRDC Project Report no. 93/239, CSIRO Marine Laboratories

---

**Abstract** This data set comprises catch compositions and trawl locations from 35 cruises of Russian fishery research vessels carried out in Australian waters between March 1965 and April 1978, containing some 4,000 demersal trawls, mostly on the Australian continental shelf, in particular the Great Australian Bight, Australian North West Shelf, and the Gulf of Carpentaria, but also on the east and west coasts, in Bass Strait, and around Tasmania. Most records include catch composition by species (presence/absence but not weight), also some data on length frequency, maturity and diet of commercially important species. The data set is an aggregate data set from cruises of the vessels Berg-1, Berg-2, Seskar, Raduga, Lira, Berg-3, Korifei, Sutchan, Pr. Deruygin, Prometey, SETM 8-449, Alba, Poseidon, Equator, Shantar, Bacaevo, Kamensky, Tichookeanscy, Pulk, Meridian and Mys Tichy. The data were obtained by exchange with Soviet scientists in the mid 1990s and has had CSIRO species codes incorporated. The data set is now in an Oracle database in Hobart, and analyses/summaries of the data are given in the accompanying report (see References).

A MS *Access* version of the data set has been compiled for use within the North West Shelf-JEMS study. This version is available on-line for researchers in the NWSJEMS study.

---

**Stored Data Format** DIGITAL – Database Files – MS *Access*

DIGITAL – Database Files – Oracle

**Stored Data Volume** 16 MB when in MS *Access* (compressed to 3 MB)

**Specific Software Requirements** Requires MS *Access*

**Stored Data Documentation** Details in FRDC project report

**Access constraint** Release with the permission of the custodian

---

**Beginning date** 13 March 1965 **End date** 01 April 1978

**Lineage** Data received from Soviet researchers via Dr E. Nossov and K. Zgurovsky, and entered into Oracle database at CSIRO Marine Laboratories. Where possible, taxonomic IDs were re-identified in Hobart by Drs Peter Last and Alan Williams, and identifications confirmed where possible against known distributions for the species concerned. See the project report for full details

**Completeness** Complete so far as is known

## **AFMA foreign fishing data set – Australian North West Shelf – 1974 to 1990 (confidential data)**

**MarLIN record number** 5330

**Data Type** Observed Data – field

**Originator Organisation** Australian Fisheries Management Authority

---

**Abstract** Foreign Fishing Data for 1974 to 1990 received from AFMA in May 2000 for use in the North West Shelf JEMS study. Data is held by trawl haul with nine different gear types specified. Data is held for 68 species and 45 families. Log (location) data is contained in one excel (multi-sheet) file. The large catch data set is broken into two excel (multi-sheet) files. The catch data can be linked to the log data via the vessel name, date of fishing and the operation number.

Summary data from these files have been extracted by Xi He's group and are held in their MS *Access* database. Please contact F. Althaus or K. Woolley, Hobart if additional information on this data set is required.

---

**Stored Data Format** DIGITAL – Spreadsheets – MS *Excel*

**Stored Data Volume** 38 MB of compressed digital data

**Specific Software Requirements** Requires Microsoft *Excel*

**Stored Data Documentation** See Documentation Link for Data Description

**Access constraint** Confidential data set. For NWSJEMS use only

---

**Beginning date** 1974 **End date** 1990

**Lineage** Data as received from AFMA, May 2000

**Completeness** Patchy data for 1974-78, good cover for 1979-85, less cover for 1986-89



## ***Domestic fishing on the Australian North West Shelf 1984 to 1999 – 1 degree data ex WA Fisheries (confidential data)***

**MarLIN record number** 5368

**Data Type**

Observed Data – field

Aggregated/Derived Data

**Originator Organisation** WA Department of Fisheries

---

**Contributors** Peter Stephenson – WA Fisheries (supply of the data)

---

**Abstract** Summaries of domestic catch compositions and effort in days, for 1 by 1 degree squares over the North West Shelf between 1984 and 1999, by year and species, extracted from WA Fisheries CAES database and supplied for use within the NWSJEMS project. Data are given from 17 different fishing methods. Note: this data set is confidential and available for authorised users within the NWSJEMS project only.

---

**Stored Data Format** DIGITAL – Database Files – MS *Access*

**Stored Data Volume** Summary data for 1° squares by year

**Access constraint** Confidential – not for public release

---

**Beginning date** 1984 **End date** 1999

**Lineage** Data as supplied by WA Fisheries, August 2000, ported into MS *Access*

**Completeness** Complete so far as is known





## ***Domestic fishing on the Australian North West Shelf 1989 to 1999 – 1/6 degree data ex WA Fisheries (confidential data)***

**MarLIN record number** 5369

**Data Type**

Observed Data – field

Aggregated/Derived Data

**Originator Organisation** WA Department of Fisheries

---

**Contributors** Peter Stephenson – WA Fisheries (supply of the data)

---

**Abstract** Summaries of domestic catch compositions and effort in hauls, for 1/6 by 1/6 degree (10 min) squares over the North West Shelf between 1989 and 1999 (except for 1991), by year and species, extracted from WA Fisheries Logbook database and supplied for use within the NWSJEMS project. Data are given from trawl operations only for 10 species plus total catch. Note: this data set is confidential and available for authorised users within the NWSJEMS project only.

---

**Stored Data Format** DIGITAL – Database Files – MS *Access*

**Stored Data Volume** Summary data for 1/6° squares by year

**Access constraint** Confidential – not for public release

---

**Beginning date** 1989 **End date** 1999

**Lineage** Data as supplied by WA Fisheries, August 2000, ported into MS *Access*

**Completeness** No data for 1991, other years complete

## 7. CSIRO TRAWL SURVEY DATA SETS



### ***Biological data from CMR research vessels from the Australian North West Shelf, Part I (1982 to 1997 “North West Shelf Study” database)***

**MarLIN record number** 5416

**Data Type** Observed Data – field

**Originator Organisation** CSIRO Marine and Atmospheric Research

---

#### **Contributors**

Rob Campbell (former project data manger), Franzis Althaus, Kim Woolley

**References** Davis T., Sainsbury K. et al. 1982, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Cronulla

Davis, T., Stevens J., West G., et al. 1983, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Cronulla

Sainsbury, K. et al. 1986, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Hobart

Sainsbury, K. et al. 1987, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Hobart

Sainsbury, K. et al. 1988, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Hobart

Whitelaw, W. et al. 1989, Cruise Report Pride of Eden (unpub), CSIRO Division of Fisheries Research, Hobart

Whitelaw, W. et al. 1990, Cruise Report FRV Southern Surveyor (unpub), CSIRO Division of Fisheries Research, Hobart

Whitelaw, W. et al. 1991, Cruise Report FRV Southern Surveyor (unpub), CSIRO Division of Fisheries Research, Hobart

Whitelaw, W. et al. 1997, Cruise Report FRV Southern Surveyor (unpub), CSIRO Marine Research, Hobart

Campbell, R., 1994 draft ms., CSIRO North West Shelf Research Cruise and Commercial Database Holdings. 41 (copies held in Divisional Data Centre, and Xi He group)

Sainsbury, K. J., 1991, Application of an experimental approach to management of a tropical multispecies fishery with highly uncertain dynamics. In: Daan, N and Sissenwine, M P (Eds.). ICES Marine Science Symposium, 193: 301-320

---

**Abstract** This is a compilation data set containing all vessel-collected and centrally held biological data from CMR voyages forming part of the 1982 to 1997 “North West Shelf Study”. The data were extracted from the master North West Shelf Database (as described by R. Campbell, 1984 unpublished, with additional data from 1995 and 1997) for the use of the NWS Joint Environmental Management Study, and have been subject to additional maintenance with some new information added by Xi He’s group. This version of the data is a copy of the MS *Access* files held by Xi’s group as at October 2000, with no

additional quality checks.

Data represented are operation, species, and length-frequency data from Soela voyages SO 5/82, SO 6/82, SO 1/83, SO 2/83, SO 3/83, SO 4/83, SO 5/83, SO 6/86, SO 7/87, SO 5/88, Pride of Eden PoE 4/89, Southern Surveyor SS 02/90, SS 04/91, SS 08/95 and SS 07/97. Biological data from other CSIRO voyages through this region but not part of this series of cruises has been extracted separately as a complementary data set to the present one (see separate *MarLIN* record no. 5415 “Biological data from CMR research vessels, North West Shelf, part II”). In addition to the trawl station and catch data, details of photographic stations is included along with recently compiled data from detailed analyses of the underwater photographs carried out subsequent to the original data collection.

Additional information regarding individual components of this data set is contained in separate *MarLIN* metadata records which exist for each voyage (e.g. “Soela Voyage SO 5/82 Biological Data Overview”, etc.), and in the cruise report for each voyage. Information regarding the photographic analyses is held by Xi He’s group.

---

**Stored Data Format** DIGITAL – Database Files – MS *Access*

Data have been exported from original Oracle database into a MS *Access* database, which has been copied and compressed for distribution

**Stored Data Volume** Approx. 37 MB data when uncompressed

**Stored Data Documentation** Refer documentation link

**Access constraint** These data sets are normally accessible only by arrangement with individual scientists and/or relevant custodian

---

**Beginning date** 25 September 1982 **End date** 01 September 1997

**Lineage** Data source: original field data and collections

For full details, refer to documentation

**Completeness** Data set complete so far as is known. For full details, refer to relevant cruise summaries



## **Biological data from CMR research vessels from the Australian North West Shelf, Part II (CMR data extract of “BIODATA” database)**

**MarLIN record number** 5415

**Data Type** Observed Data – field

**Originator Organisation** CSIRO Marine and Atmospheric Research

---

**References** Sainsbury, K., Brown, P. et al. 1978, Cruise Summaries FV Courageous (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
 Sainsbury, K., Stanley, C., et al. 1979, Cruise Summaries FV Courageous (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
 Young, P. et al. 1979, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
 Sainsbury, K., Okera, W., West, G., et al. 1980, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
 Dunning, M., Sainsbury, K., et al. 1982, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Cronulla  
 Davis, T. et al. 1984, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Hobart

---

**Abstract** This is a compilation data set containing all vessel-collected and centrally held biological data from CMAR voyages which have passed through the North West Shelf study area (approximately the spatial extents 18°S, 23°S, 112°E, 120°E), additional to those represented in the “North West Shelf Database” (see separate *MarLIN* metadata records 5416 and 5417). The data were extracted from the CMAR Data Centre’s “BIODATA” database (see separate *MarLIN* metadata record 5025) for the use of the NWSJEMS.

Data comprise operation, species, and length-frequency data from Courageous voyages Cour 034, Cour 035, Cour 036, Cour 049 and Cour 052 (1978-1979), and Soela voyages SO 1/79, SO 4/80, SO 5/80, SO 7/80, SO 2/82, SO 4/82, and SO 1/84. Additional information regarding individual components of this data set is contained in separate *MarLIN* metadata records which exist for each voyage (e.g. “Soela Voyage SO 1/79 Biological Data Overview”, etc.), and in the cruise report for each voyage.

---

**Stored Data Format** DIGITAL – Spreadsheets – MS *Excel*. The data have been exported from an Oracle database as MS *Excel* tables

**Stored Data Volume** Approx. 12 MB data

**Stored Data Documentation** See References

**Access constraint** These data sets are normally accessible only by arrangement with individual scientists and/or relevant custodian

---

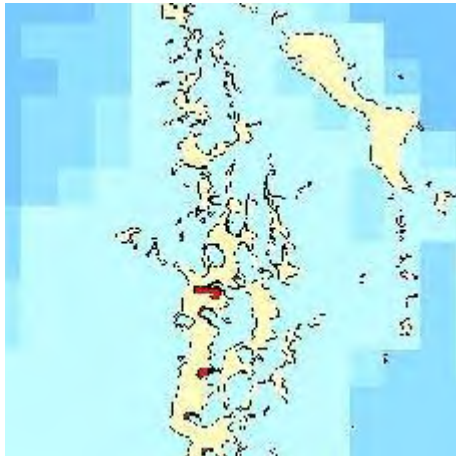
**Beginning date** 02 May 1978 **End date** 25 February 1984

**Lineage** Data source: original field data and collections. For full details, refer to documentation

**Completeness** Data set complete so far as is known. For full details, refer to relevant cruise summaries

## 8. COASTAL HABITATS, MANGROVE, SEA GRASS, CORAL (DIRECT OBSERVATION), HIERARCHAL HABITAT UNIT POLYGON, AERIAL PHOTOGRAPHY, SATELLITE IMAGERY, SURVEY (ANIMAL) DATA SETS

### 8.1 Flora



#### ***Mangroves community boundaries – Monte Bello Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5533

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting mangrove occurrences on the Monte Bello Islands.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 kB of compressed digital data

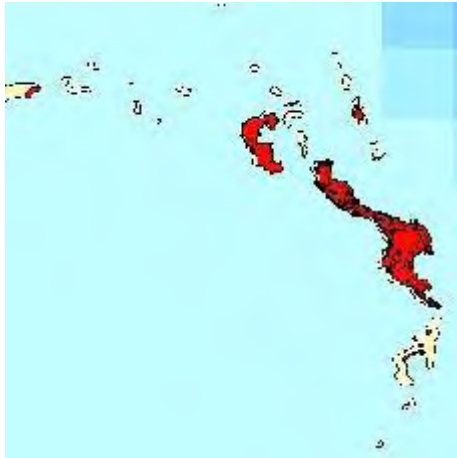
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Mangroves community boundaries – Varanus Island, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5534

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting mangrove areas on Varanus Island digitised from aerial photographs.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 kB of compressed digital data

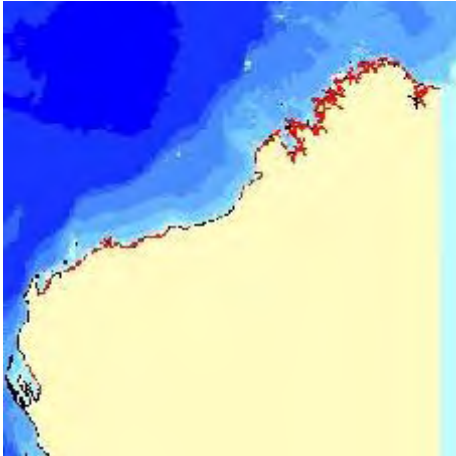
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Mangroves along the Northern Western Australian coastline – WA Department of Conservation and Land Management***

**MarLIN record number** 5736

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** Areas of extensive and intermitten mangroves along the West Australian coastline. This data set is a line coverage using segments to represent areas of mangrove. This is not an aerial coverage.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

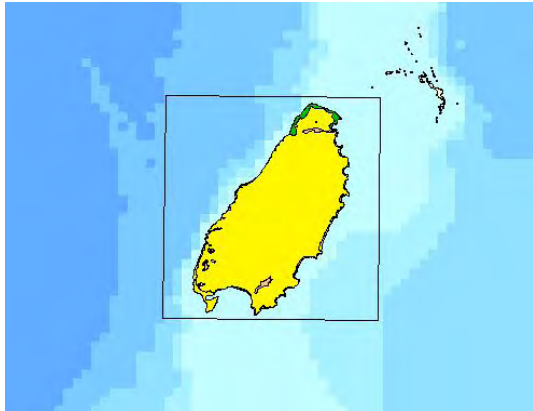
**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data captured from AUSLIG 1:250 000 coastline appropriate areas

Marine Resources Map of Western Australia 1986, Howard Jones, Fisheries WA. Content dates from before June, 2001

**Completeness** Complete



## ***Vegetation communities of Barrow Island – Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5761

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Vegetation communities on Barrow Island from the Coastal Atlas data sets of the North West Shelf Region.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 83 kB of compressed digital data

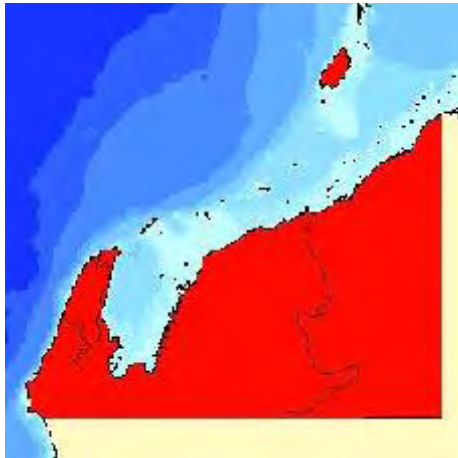
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





### ***Plant species (classification 1) for the North West Shelf region of Western Australia – BHP Petroleum***

**MarLIN record number** 5766

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Flora Species Classification for the NW Shelf area. Coverage 1. look-up table not yet linked (bhp\_tables.mdb, taxon description, Family).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 70 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Vegetation communities – South Muiron Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5782

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** The data set of vegetation complexes of South Muiron Island. Includes vegetation types with no attributes.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

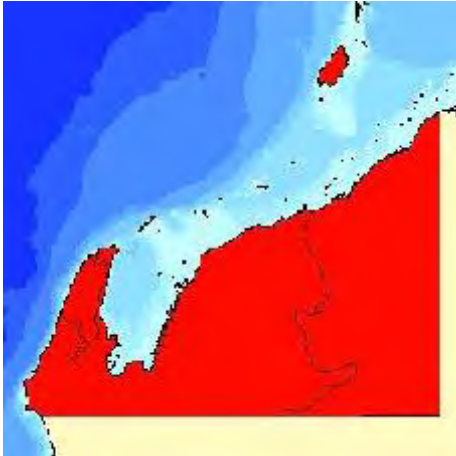
**Stored Data Volume** 67 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Flora species (classification 2), Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5803

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Flora Species Classification for the NW Shelf area. Coverage 2 look-up table not yet linked (bhp\_tables.mdb, taxon description, family).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

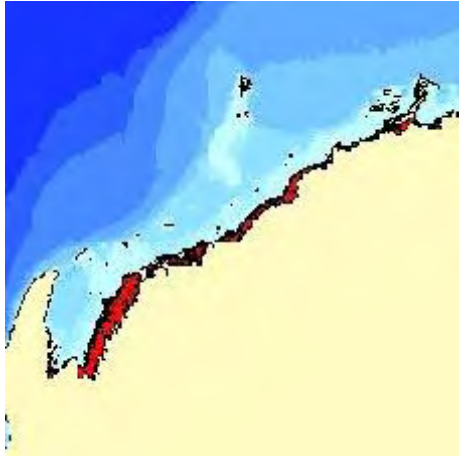
**Stored Data Volume** 70 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Mangroves and coastal salt flats, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5809

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Mangrove areas and Coastal salt flats extending from Karratha to the bottom of the Exmouth Gulf.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

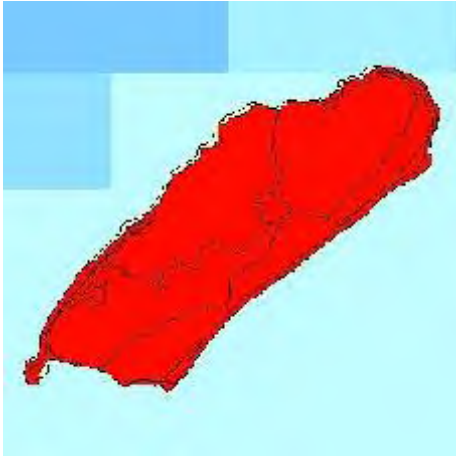
**Stored Data Volume** 333 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. It is superseded by: “Natural Hydrology Features, Polygons – Topographic Data at 1:100 000 scale – WA Department of Land Administration” (*MarLIN* record no. 5740). Content dates from before July, 2001

**Completeness** Not known



### ***Vegetation communities on North Muiron Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5812

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Vegetation complexes of North Muiron Island.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

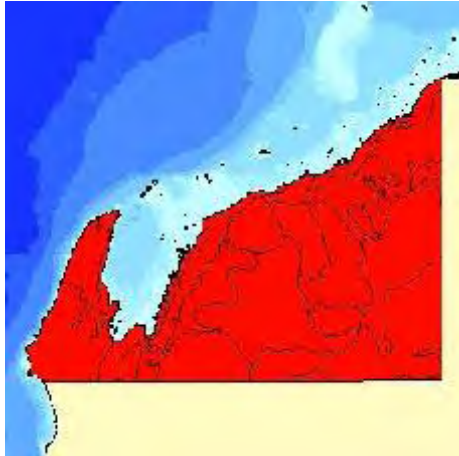
**Stored Data Volume** 30 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Vegetation communities, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 6054

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Mainland vegetation communities from Exmouth to South of Dampier. Grassland, shrubland and vegetation mosaics are present.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

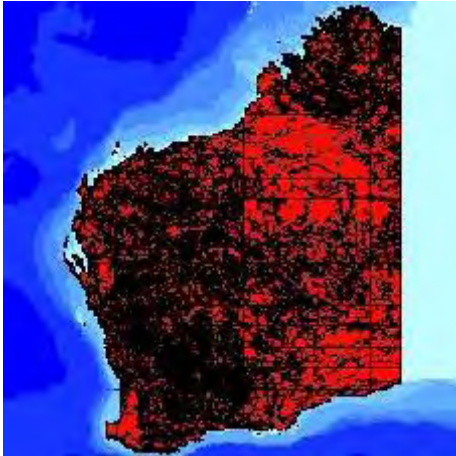
**Stored Data Volume** 64 MB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Superseded by “Beard’s vegetation classification” (see *MarLIN* record no. 6055). Content dates from before April, 2003

**Completeness** Not known



### ***J.S. Beard's vegetation classification, Western Australia***

**MarLIN record number** 6055

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** A digital representation of Beard's vegetation map of the state of Western Australia (available metadata is for the 1:3 000 000 data set).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

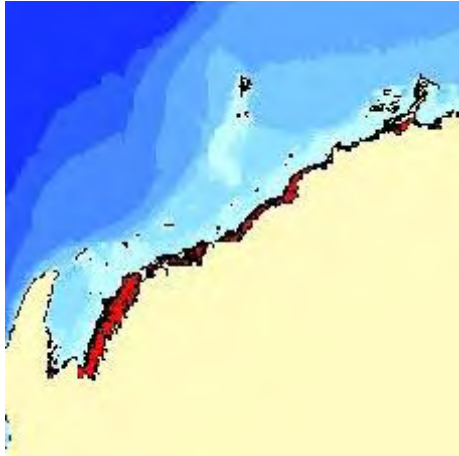
**Stored Data Volume** 67 MB of compressed digital data

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** The Beard's Vegetation Classification data set is a 1:3 000 000 digital representation of Beard's vegetation map of the state of WA. The coverages in this data set are a direct copy of Beard's vegetation map having been scanned into digital form for entry into ArcInfo. The coverages used include- Vegetation, Vegetation Classification, Broad Structural Classification and Vegetation Structural Detail (Available lineage is for the 1:3 000 000 data set). Content dates from before April, 2003

**Completeness** Not documented



### ***Mangroves and salt flats between Ningaloo and Dampier Archipelago, Australian North West Shelf***

**MarLIN record number** 6071

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** Mangroves and Salt Flats between Ningaloo Reef and Dampier Archipelago.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.3 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators. For information on access to the data please contact the Data Manager NWSJEMS

---

**Lineage** Data set obtained from Apache Energy in current format. Content dates from before May, 2003

**Completeness** Not known



## 8.2 Fauna



### ***Turtle nesting beaches and Shearwater rookeries in Dampier Archipelago, Western Australian North West Shelf – Woodside Petroleum Ltd***

**MarLIN record number** 6145

**Data Type** GIS

**Originator Organisation** Woodside Petroleum Ltd

---

**Abstract** Location of turtle nesting beaches around the Dampier Archipelago. Includes attributes of turtle species and whether the beach is a major or minor nesting site. Also includes Wedge-Tailed Shearwater rookeries.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

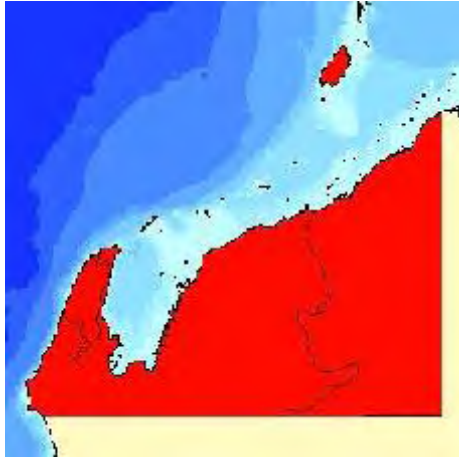
**Stored Data Volume** 28 kB of compressed digital data

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Obtained from Woodside in current format. Content dates from before July, 2003

**Completeness** Not known



### ***Bird presence/absence on offshore islands of the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5762

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Bird Community data, noting presence and absence of species (family and common name also given, occurrence, resident or migratory, breeding season and protection status) for offshore islands.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

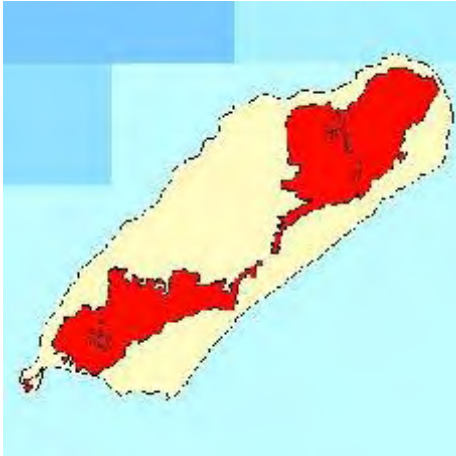
**Stored Data Volume** 69 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Shearwater population of North Muiron Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5771

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Shearwater survey at North Muiron Island.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

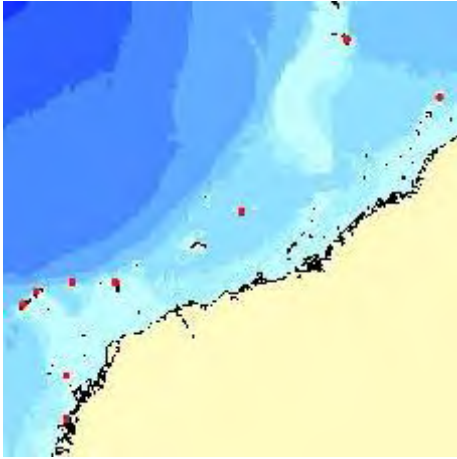
**Stored Data Volume** 28 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Seabird breeding sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5776

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Seabird breeding sites.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 6 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Shearwater locations – Serrurier Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5778

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Shearwater presence on Serrurier Island (no attributes).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 6 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Shearwater locations – South Muiron Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5780

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Shearwater presence at South Muiron Island (no attributes).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 68 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Turtle locations – South Muiron Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5781

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Turtle presence at South Muiron Island (no attributes).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

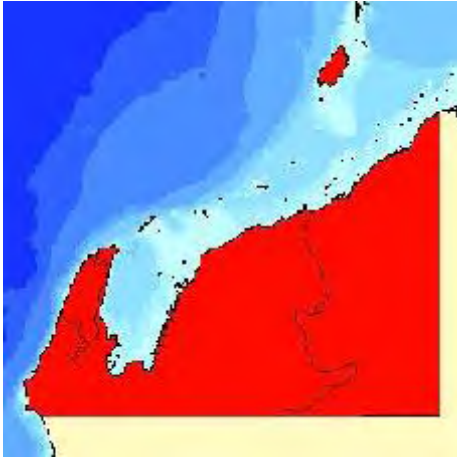
**Stored Data Volume** 17 kB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Terrestrial mammal distribution, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5785

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Distribution of terrestrial mammals within the North West Shelf Study area. Attributes include taxon, family, common name, protection status and breeding season in a look-up table.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 68 kB of compressed digital data

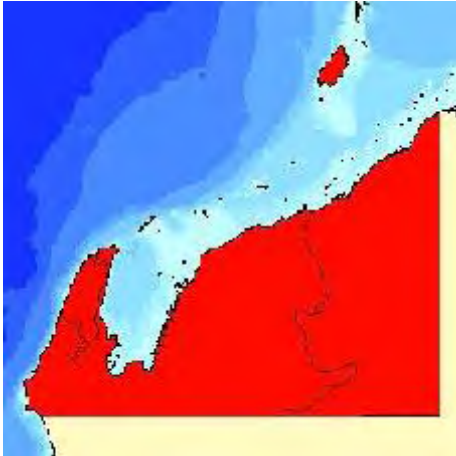
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





### ***Terrestrial reptile distribution, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5786

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995. North West Shelf Environmental Resource Atlas Report. Report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Terrestrial Reptile Distribution within the North West Shelf Study area. Attributes include taxon, family, common name, protection status and breeding season in a look-up table.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

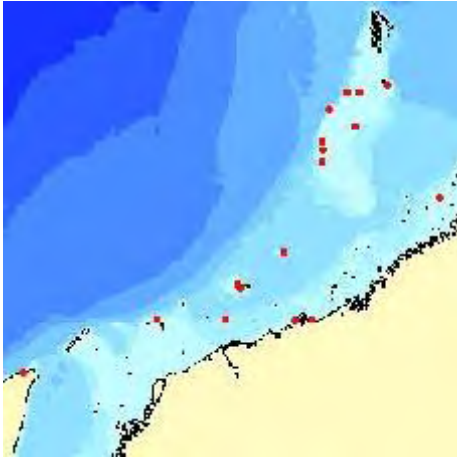
**Stored Data Volume** 68 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Turtle breeding sites of the North West Shelf of Western Australia – BHP Petroleum***

**MarLIN record number** 5788

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Location of breeding sites for green, flatback and hawksbill turtles within the North West Shelf (Barrow Island and nearshore Pilbara islands).

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 kB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Turtle locations on North Muiron Island, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5811

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Turtle Areas on North Muiron Island.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

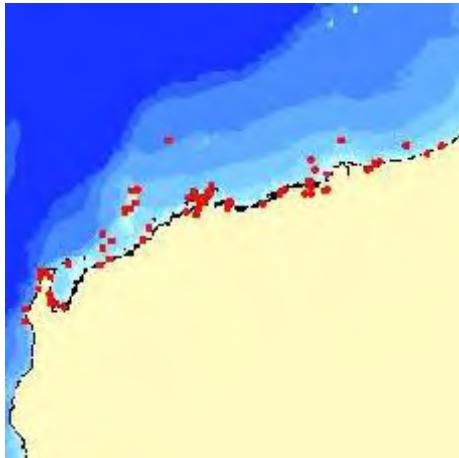
**Stored Data Volume** 12 kB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



### ***Survey location data – Birds – Western Australian Museum Species Collection database***

**MarLIN record number** 6041

**Data Type** GIS

**Originator Organisation** Western Australian Museum

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**Abstract** Survey location data of birds from the WA Museum Species Collection database.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 12 kB compressed data

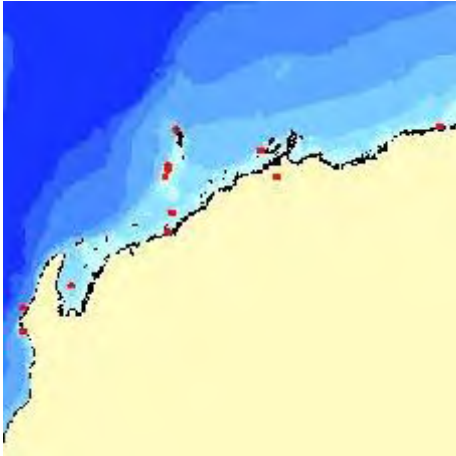
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Lineage** Obtained from WA Museum as dBaseIV files. Converted to ArcView shapefiles using the LONGDEC and LATDEC fields. Content dates from before February, 2003

**Completeness** Not known



### ***Survey location data – Cetaceans – Western Australian Museum Species Collection database***

**MarLIN record number** 6042

**Data Type** GIS

**Originator Organisation** Western Australian Museum

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**Abstract** Survey location data of cetaceans from the WA Museum Species Collection database.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3 kB compressed data

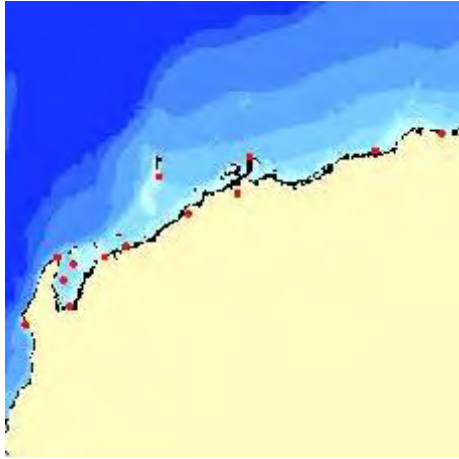
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Lineage** Obtained from WA Museum as dBaseIV files. Converted to ArcView shapefiles using the LONGDEC and LATDEC fields. Content dates from before February, 2003

**Completeness** Not known



### ***Survey location data – Dugongs – Western Australian Museum Species Collection database***

**MarLIN record number** 6043

**Data Type** GIS

**Originator Organisation** Western Australian Museum

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**Abstract** Survey location data of dugongs from the WA Museum Species Collection database.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3 kB compressed data

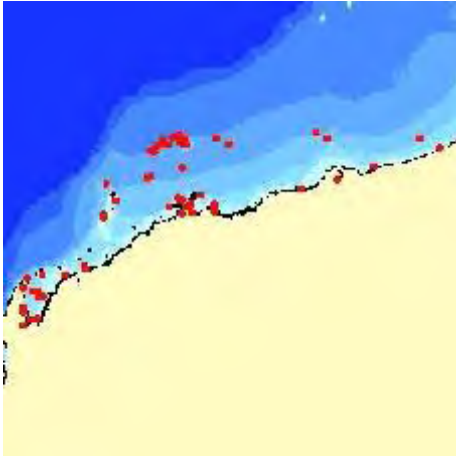
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Lineage** Obtained from WA Museum as dBaseIV files. Converted to ArcView shapefiles using the LONGDEC and LATDEC fields. Content dates from before February, 2003

**Completeness** Not known



### ***Survey location data – Sea snakes – Western Australian Museum Species Collection database***

**MarLIN record number** 6044

**Data Type** GIS

**Originator Organisation** Western Australian Museum

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**Abstract** Survey location data of sea snakes from the WA Museum Species Collection database.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 7 kB compressed data

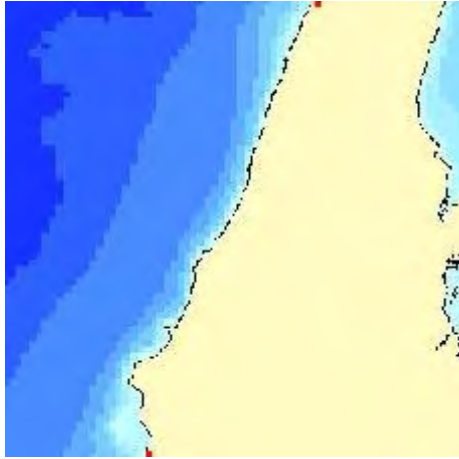
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Lineage** Obtained from WA Museum as dBaseIV files. Converted to ArcView shapefiles using the LONGDEC and LATDEC fields. Content dates from before February, 2003

**Completeness** Not known



### ***Survey location data – True seals – Western Australian Museum Species Collection database***

**MarLIN record number** 6045

**Data Type** GIS

**Originator Organisation** Western Australian Museum

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**Abstract** Survey location data of true seals from the WA Museum Species Collection database.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 kB compressed data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

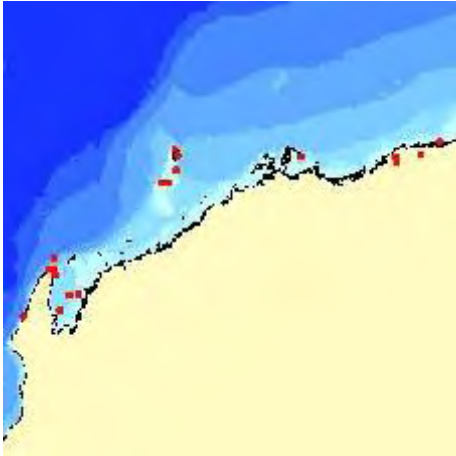
**Access constraint** For NWSJEMS use only

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**Lineage** Obtained from WA Museum as dBaseIV files. Converted to ArcView shapefiles using the LONGDEC and LATDEC fields. Content dates from before February, 2003

**Completeness** Not known





### ***Survey location data – Turtles – Western Australian Museum Species Collection database***

**MarLIN record number** 6046

**Data Type** GIS

**Originator Organisation** Western Australian Museum

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**Abstract** Survey location data of turtles from the WA Museum Species Collection database.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 kB compressed data

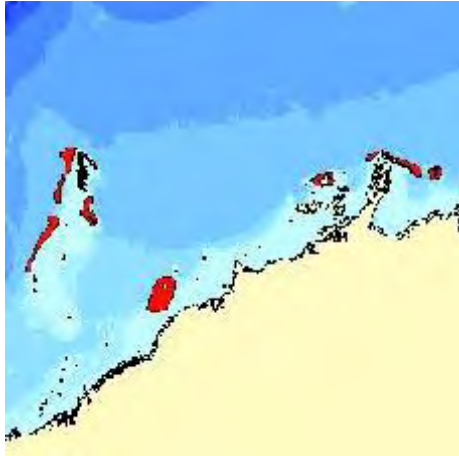
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Lineage** Obtained from WA Museum as dBaseIV files. Converted to ArcView shapefiles using the LONGDEC and LATDEC fields. Content dates from before February, 2003

**Completeness** Not known



## ***Turtle nesting beaches of significance and common turtle aggregation areas over the North West Shelf of Western Australia***

**MarLIN record number** 6047

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Abstract** This data set 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 data set also contains a descriptive location of the areas over which nesting takes place.

This data set is complemented by two other marine wildlife data sets compiled over the same region – a polygon data set detailing humpback whale migration routes and resting areas, and a polygon data set detailing areas of significant dugong sightings and/or significant dugong feeding grounds.

These data sets were developed to assist in the planning process for the implementation of a proposed Dampier Archipelago/Cape Preston marine conservation reserve and a proposed Monte Bello/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 data set was digitised and attributed by Oliver Looker in June-July 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 60 kB compressed

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Beginning date** 01 June 2000 **End date** 30 Jul 2000

**Lineage** 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 (Monte Bello 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

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

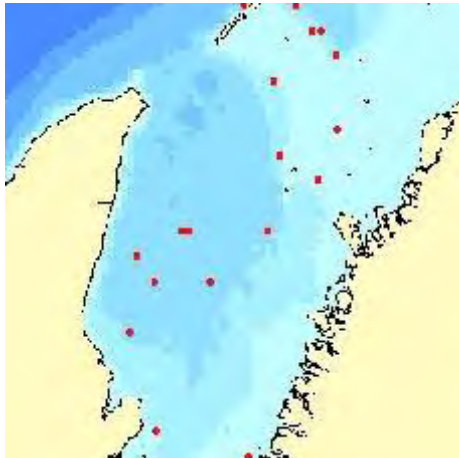
from each source was hand drawn onto the hardcopy base maps, and then consolidated into a single base map.

Polygons were digitised on screen over the georeferenced Seafarer GeotIFF raster images. Monte Bello and Barrow Island data sets were digitised over images A00061.tif and A00742.tif, and the Dampier Archipelago data set 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.

Due to inconsistency in the datums of the base images (see details above), the digitised data sets were converted to a standard datum (WGS84) using the 3 parameter datum conversion functionality of Arcview3.2.

Data sets were unioned to produce a single regional data set

**Completeness** The data set is complete for the North West Shelf only. Further data collection needs to be undertaken to improve the quality of the information



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – cetaceans, Pilbara coastal and offshore region – Exmouth***

**MarLIN record number** 6068

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing point locations of Cetaceans identified in the Exmouth region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 10 kB of compressed digital data

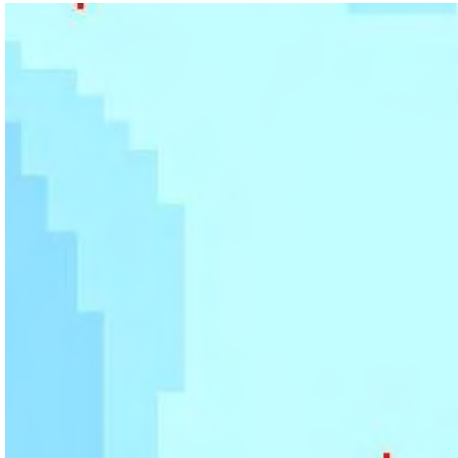
**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from visual observations recorded to multi-track tape, and reviewed against real time key records for the same transects. Elapsed time on transect is to provide position along track for the individual records. The offshore extent of transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey. Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – dugongs, Pilbara coastal and offshore region – Exmouth***

**MarLIN record number** 6069

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing point locations of dugongs identified in the Exmouth region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 9 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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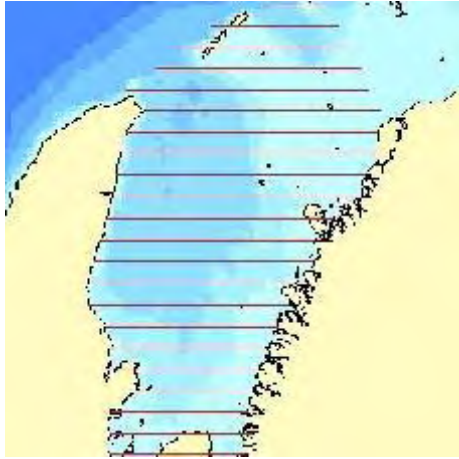
**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – aerial transects, Pilbara coastal and offshore region – Exmouth***

**MarLIN record number** 6070

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing locations of transects flown in the Exmouth region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 10 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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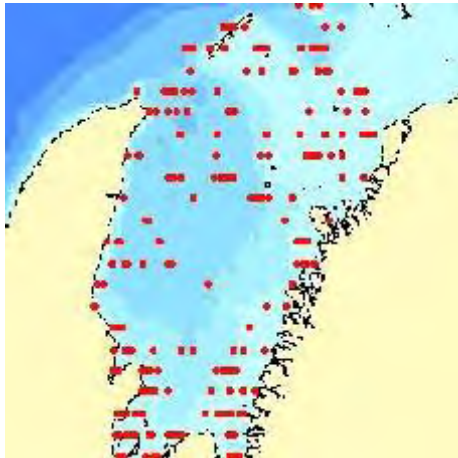
**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – turtles, Pilbara coastal and offshore region – Exmouth***

**MarLIN record number** 6074

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

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**Abstract** Data set showing point locations of turtles identified in the Exmouth region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 20 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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**Beginning date** 07 April 2000 **End date** 15 April 2000

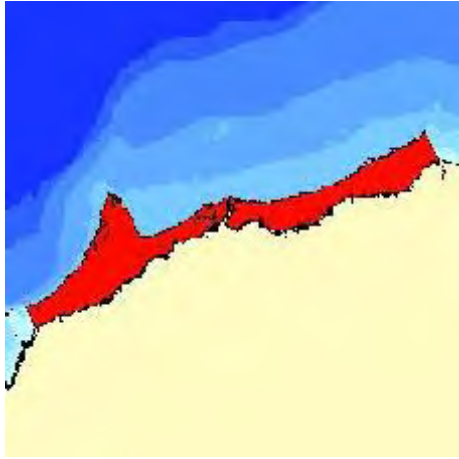
**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area





## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – study area, Pilbara coastal and offshore region – Pilbara***

**MarLIN record number** 6075

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing the study area in the Pilbara region for aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 157 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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**Beginning date** 07 April 2000 **End date** 15 April 2000

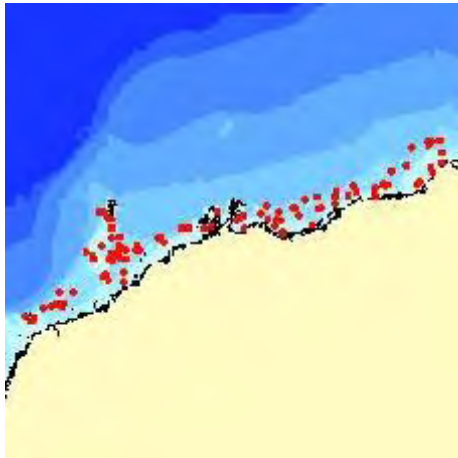
**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area





## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – cetaceans, Pilbara coastal and offshore region – Pilbara***

**MarLIN record number** 6076

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

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**Abstract** Data set showing point locations of Cetaceans identified in the Pilbara region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 14 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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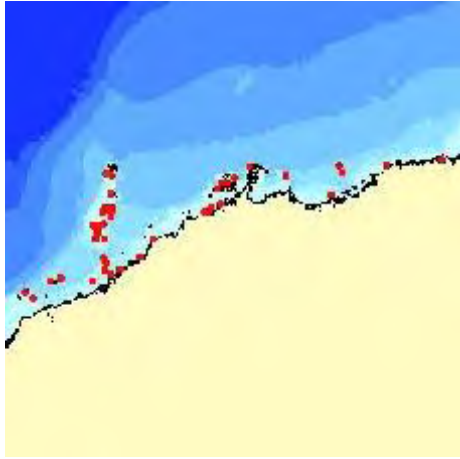
**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – dugongs, Pilbara coastal and offshore region – Pilbara***

**MarLIN record number** 6077

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing point locations of Dugongs identified in the Exmouth region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 11 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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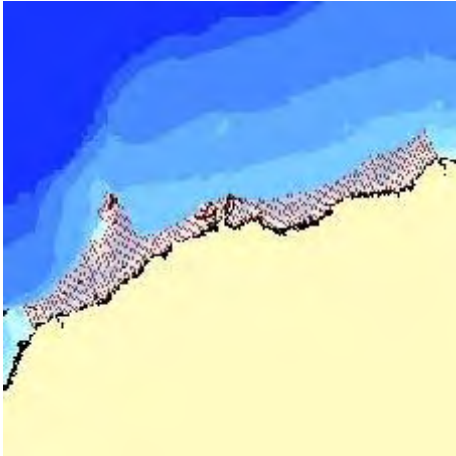
**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – transects, Pilbara coastal and offshore region – Pilbara***

**MarLIN record number** 6078

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing the transects flown in the Pilbara region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 16 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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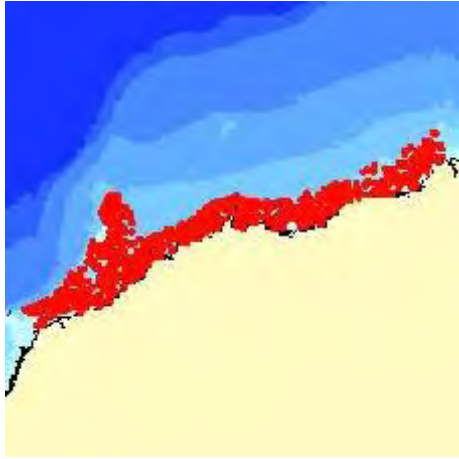
**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – turtles, Pilbara coastal and offshore region – Pilbara***

**MarLIN record number** 6079

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing point locations of turtles identified in the Pilbara region during aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 85 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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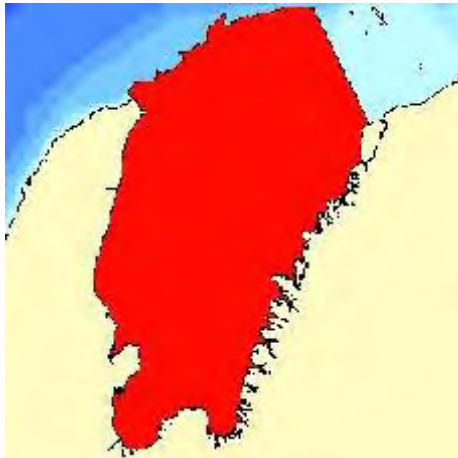
**Beginning date** 07 April 2000 **End date** 15 April 2000

**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been done for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area



## ***Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna – study area, Exmouth Gulf coastal and offshore***

**MarLIN record number** 5758

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Contributors** Data set originally supplied by Prof. Helene Marsh – Professor of Tropical Environmental Studies and Geography, James Cook University

**Acknowledgements** Data acquisition was supported from Environment Australia, Marine Species Protection Program via a Funding Agreement with Department of Conservation and Land Management

**Reference** Prince, R. I. T. (2001). Aerial survey of the distribution and abundance of dugongs and associated macrovertebrate fauna - Pilbara coastal and offshore region, WA. Completion Report to Environment Australia. Department of Conservation and Land Management, Perth

---

**Abstract** Data set showing the study area in the Exmouth Gulf region for aerial surveys.

Coastal waters of Western Australia from North West Cape to the De Grey River mouth, including Exmouth Gulf and the adjacent offshore islands, and extending seaward to the 20 m isobath, were covered by aerial strip transect survey over the period 7 through 15 April 2000. The primary survey target was the dugong. The main secondary survey targets were sea turtles, small and large cetaceans, and the larger filter feeding Elasmobranchs – the whale shark and manta ray. The field work was done April 2000.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 61 kB of compressed digital data

**Access constraint** The authors and agencies involved must be acknowledged on any products created using this data. For NWSJEMS use only. See Licence Agreement for other conditions of use

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**Beginning date** 07 April 2000 **End date** 15 April 2000

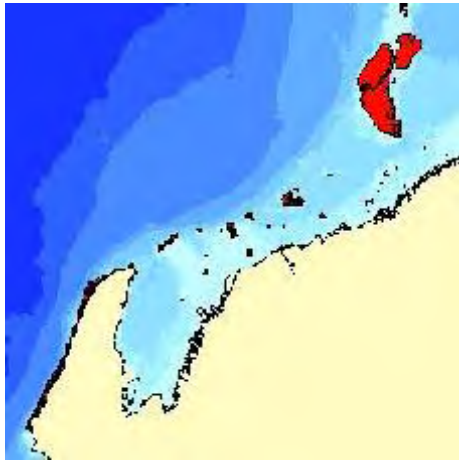
**Lineage** Data came from on task visual observations recorded to multi-track tape, and reviewed against real time key records for same transects. Elapsed time on transect to provide position along track for the individual records.

The offshore extent of the transects have been clipped to the 20 metre bathymetric contour

**Completeness** Complete for the purposes of the survey.

Dugong as primary target surveys at this scale would normally be undertaken at five year intervals – 1989, 1994, and 1999 have now been for the Shark Bay, Ningaloo Reef, and Exmouth Gulf overlap area

### 8.3 Coastal habitat (general)



#### ***Marine habitats, Ningaloo to Barrow Island – Australian North West Shelf – Apache Energy***

**MarLIN record number** 6072

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** Marine benthic habitats from Ningaloo Reef offshore to Barrow Island. Nearshore coastal waters are not included. This data set, to some extent a subset of “Marine Habitats – Ningaloo to Dampier” *MarLIN* record no. 5536, does however contain some data around Barrow Island not in the other data set.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 MB of compressed digital data

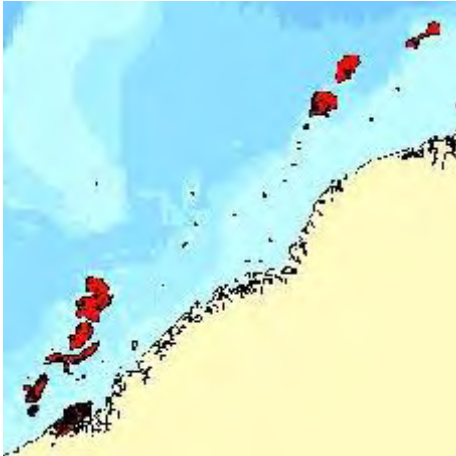
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before May, 2003

**Completeness** Not known



### ***Benthic habitats – Mangrove and Mary Anne Island Groups, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5526

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting habitats interpolated by Bowman Bishaw and Gorham (consultants) for Tap Oil Nolan-1 and Lindsay-1 Environmental Management Plan. Habitat data for Mangrove Islands include: coral communities, intertidal reef, intertidal mud flats, intertidal sand, mangrove communities, saline flats, shallow reef flats, shallow subtidal sand and supratidal areas.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.4 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

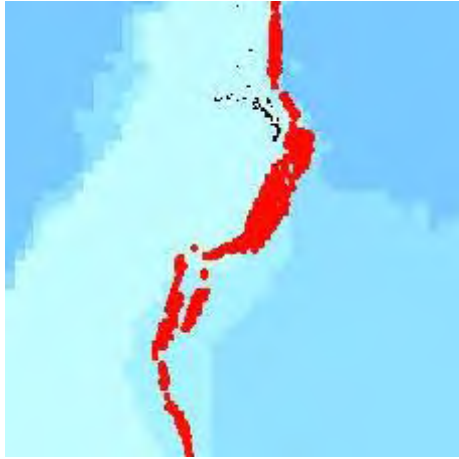
**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Data collected to complete report for Tap Oil: “Environmental survey of two proposed exploratory well sites in EP 396 and EP364”. Content dates from before February, 2001

**Completeness** Not known





## ***Bommies – Barrow Island, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5527

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting bommies around Barrow and Lowendal Islands derived from seismic surveys.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

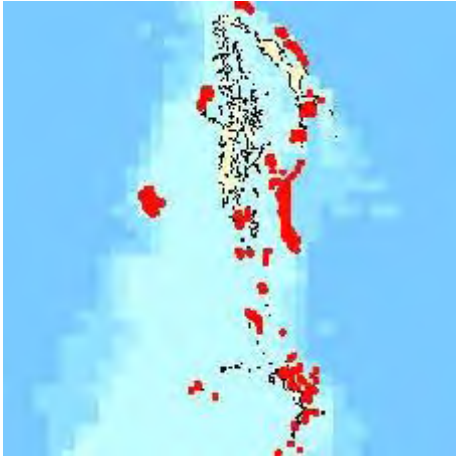
**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known





### ***Coral bommies – Lowendal and Monte Bello Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5528

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting bommies around Lowendal and Monte Bello Islands. The data set has been interpreted by Scott Langtry, the data are from both CSIRO and WA Museum.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.02 MB of compressed digital data

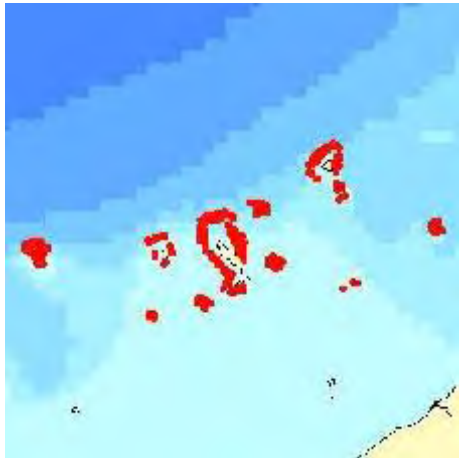
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Coral bommies – Serrurier Island, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5529

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting bommies identified from TP6 Seismic Scouting survey – Serrurier Island.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.05 MB of compressed digital data

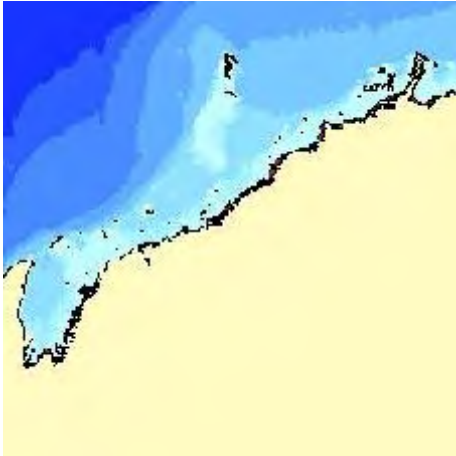
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



## ***Coastal mudflats along the Australian North West Shelf – Apache Energy***

**MarLIN record number** 5530

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting coastal mudflats – AUSLIG & 1994 Leprovost Dames & Moore Map. AUSLIG 1:100 000 coastline is used.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Superseded by: 'Topographic Data – 1:100 000 – Hydrology Themes (DOLA)' *MarLIN* record no. 5740. Content dates from before February, 2001

**Completeness** Not known



### ***Coral rubble – Lowendall Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5531

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting coral rubble around Monte Bello Islands Survey 2.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 18 MB of compressed digital data

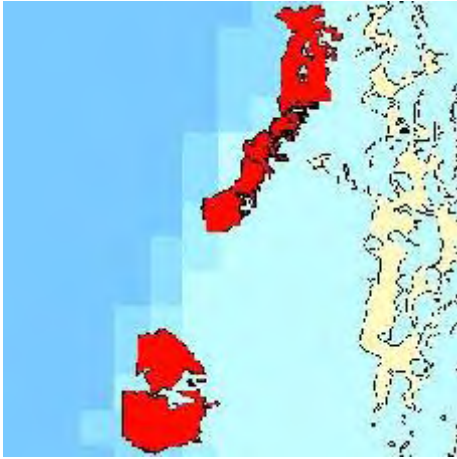
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Coral rubble – Monte Bello Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5532

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting coral rubble around Monte Bello Islands Survey 1. It has been modified by NGIS Australia (consultants).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

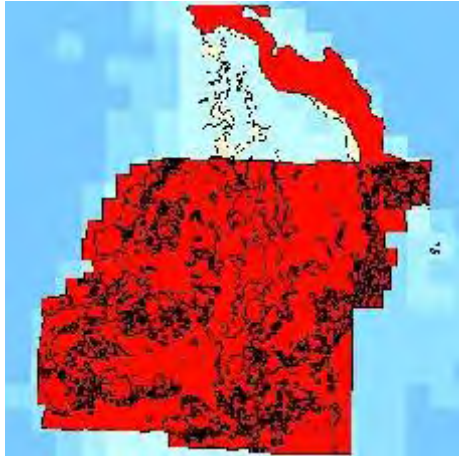
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Marine habitats – Monte Bello Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5535

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting shallow water benthic habitats off Monte Bello Islands Survey 2.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3 MB of compressed digital data

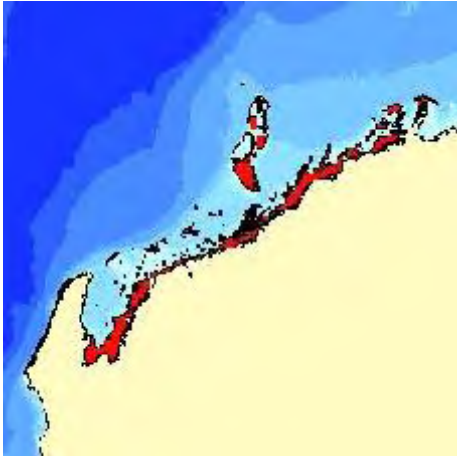
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Marine habitats – Ningaloo to Dampier, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5536

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting marine benthic communities for the North West Shelf from Dampier Archipelago to Ningaloo Reef. It includes BHP benthic habitats over Ningaloo Reef Marine Park and Distribution of Coastal Marine Habitats between North West Cape and Dampier Archipelago.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

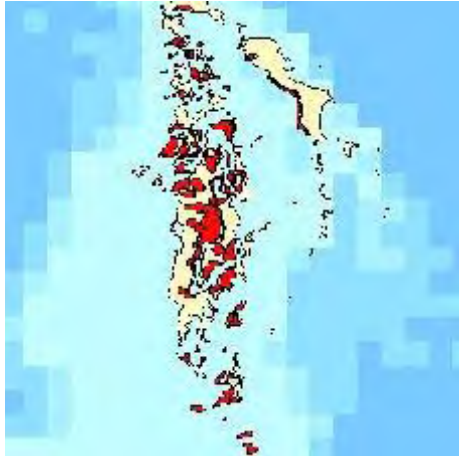
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



## ***Shoals – Monte Bello Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5537

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting Monte Bello Islands – Shoals.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.001 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

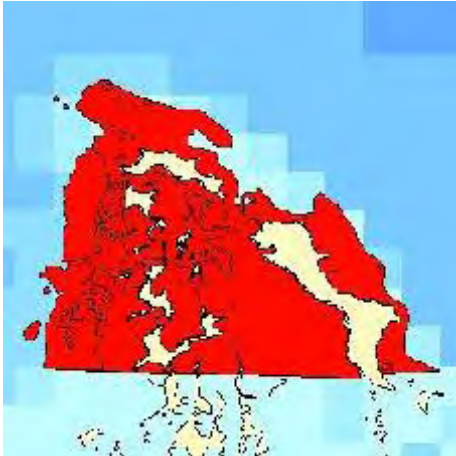
**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known





### ***Benthic habitats – Monte Bello Islands, Australian North West Shelf – Apache Energy and WA Museum***

**MarLIN record number** 5538

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting Benthic Habitats of the Monte Bello Islands mapped by the WA Museum. This data set fills the gap between the other Apache Energy benthic habitat data sets covering the Monte Bello Islands.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.01 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

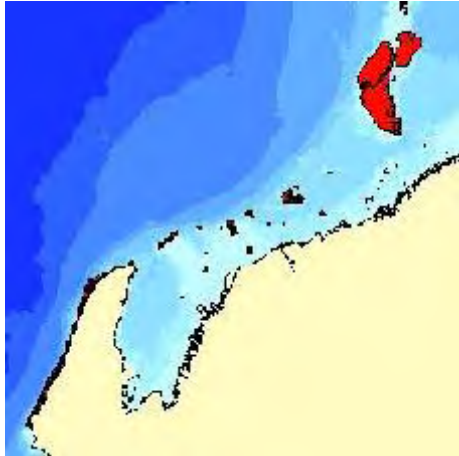
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Benthic habitats, shallow water coastal – Australian North West Shelf – BHP Coastal Resource Atlas***

**MarLIN record number** 5539

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** The GIS layer depicting Shallow Water Coastal Habitats, outlining supratidal areas, sandy beaches, intertidal limestone pavements, coral communities, mangroves, mudflats and intertidal sand areas Ningaloo to the Monte Bellos.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

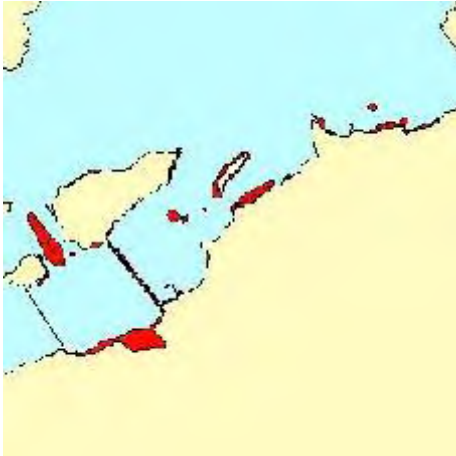
**Stored Data Documentation** No documentation received with data set

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. It has been superseded by: “Marine Habitats of regions of the North West Shelf of Western Australia” (*MarLIN* record no. 5793). Content dates from before February, 2001

**Completeness** Not known



### ***Benthic habitats – East Intercourse Island, Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5540

**Data Type** GIS

**Originator Organisation** Hamersley Iron

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**Abstract** Marine Benthic Habitats from a survey of Dampier Harbour, April 1995, with land, soil & vegetation types shown.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Data set obtained by CSIRO from WA DEP. WA DEP obtained data set from Hamersley Iron in MapInfo format. Converted by WA DEP to ArcView shapefiles using ArcView MIFSHAPE converter

**Completeness** Not known



### ***Benthic habitats, line transects – East Intercourse Island, Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5541

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Marine Benthic Habitats identified from line transects. Data set shows different habitat types using transects from two locations, East Intercourse Island and Parker Point.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

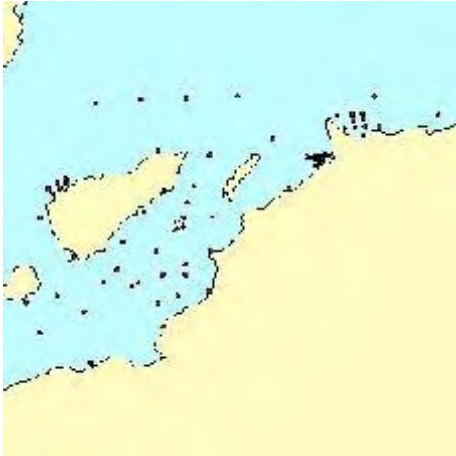
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the Licence Agreement

---

**Lineage** Data set obtained by CSIRO from WA DEP. WA DEP obtained data set from Hamersley Iron in MapInfo format. Converted by WA DEP to ArcView shapefiles using ArcView MIFSHAPE converter  
Content dates from before February, 2001

**Completeness** Not known



### ***Benthic habitats, point samples – Dampier Harbour, Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5542

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Marine Benthic Habitats and Sediment Descriptions in and around Dampier Harbour.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.004 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

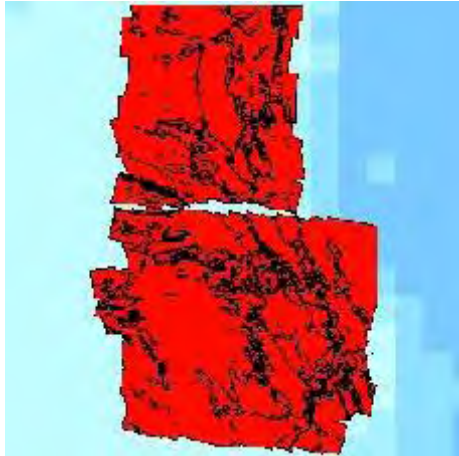
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the licence agreement

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**Lineage** WA DEP obtained data set from Hamersley Iron in MapInfo format. Converted by WA DEP to ArcView shapefiles using ArcView MIFSHAPE converter. Content dates from before February, 2001

**Completeness** Not known



### ***Shallow water benthic habitats – Lowendall Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5543

**Data Type** GIS

**Originator Organisation** Apache Energy

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**Abstract** GIS layer depicting Shallow Water Marine Benthic Habitats – Lowendall Islands.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 18 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



### ***Benthic habitats – Dampier Archipelago, Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5659

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Dampier Archipelago Marine Benthic Habitats. Coarse scale benthic habitat mapping of Dampier Archipelago. This data set is very similar to the Woodside/Department of Environment and Heritage habitat map of Dampier Archipelago, but appears to be at a much smaller scale (lower resolution). The coordinate system of the data set appears to be out by around 2 to 3 km. No additional work will be done on this data set. The Woodside Dampier benthic habitats data set will be used.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** refer custodian

**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the Licence Agreement

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**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Content dates from before May, 2001

**Completeness** Complete



## ***Major marine habitats of the Cape Preston/Dampier Archipelago/Cape Lambert Area of the North West Shelf of Western Australia – CALM***

**MarLIN record number** 5734

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** This data set consists of polygons detailing the major marine habitats of WA's Cape Preston/Dampier Archipelago/Cape Lambert area, complemented by a linework data set detailing onshore coastline habitats of the same area. These data sets were developed to assist in the planning process for the implementation of a proposed Dampier Archipelago/Cape Preston marine reserve. Habitats are identified at a broad scale only and are suitable for regional analysis and representation. Habitats were compiled by:

- i) gathering and assessing all available marine habitat data over the area,
- ii) standardising the data sets,
- iii) unioning the data sets,
- iv) comparing and prioritising the data sets based on attribute and spatial accuracy,
- v) assigning a habitat classification based on the draft CALM standardised broadscale marine benthic habitat classification system,
- vi) review of the compiled data set primarily for attribute accuracy and secondarily for spatial accuracy.

This was undertaken using CALM ground-truth information, reference data sets, and expert knowledge to review the attribution and model additional habitat polygons. The data set was compiled by Mark Sheridan under direction from Ray Lawrie. Habitat attribution was undertaken by Kevin Bancroft. The habitat classification system was developed by Dr Chris Simpson and Kevin Bancroft. The project was undertaken in phases over the period September 1999 to August 2000.

**Documentation Link** [Data Quality Report \(from CALM's original metadata record\)](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 2 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** Data is to be used for NWSJEMS only

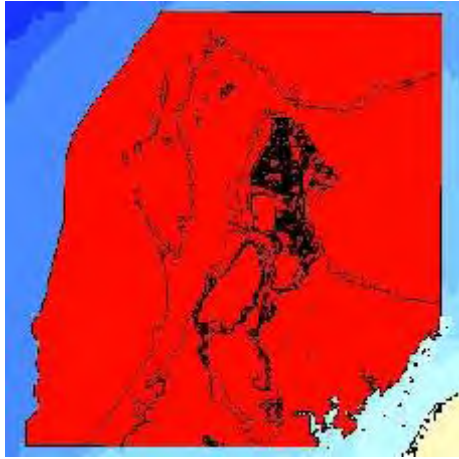
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**Lineage** All available marine habitat data sets existing over the North West Shelf region were gathered from a variety of sources in the public and private sectors. These included Apache Energy, Department of Environmental Protection, Department of Conservation and Land Management, WA Museum, CSIRO, Australian Petroleum Production and Exploration Association (APPEA), AUSLIG, Woodside Petroleum, BHP, Bowman Bishaw Gorham, and LeProvost Dames and Moore. A total of 21 existing data sets were



gathered that covered various parts of the region, with many of these data sets overlapping in spatial extent

**Completeness** Further work could be done on delineation and ground-truthing of many habitat features, particularly those that have been modelled and are of extensive area, and those that are less substantial in size, e.g. shoreline reefs. Many major sand patches are still incorporated in the 'Macroalgae (limestone reef)' classification and need to be delineated



## ***Major marine habitats of the Monte Bello/Lowendal/Barrow Islands area of the North West Shelf of Western Australia – CALM***

**MarLIN record number** 5735

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Abstract** This data set consists of polygons detailing the major marine habitats of WA's Monte Bello/Lowendal/Barrow Island's area. The data set is complemented by a linework data set detailing onshore coastline habitats of the same area (hab\_montes\_onshoredmmyyyy\_amg50\_agd84). These data sets were developed to assist in the planning process for the implementation of a proposed Monte Bello/Barrow Island marine reserve. Habitats are identified at a broad scale only and are suitable for regional analysis and representation. Habitats were compiled by:

- i) gathering and assessing all available marine habitat data over the area,
- i) standardising the data sets,
- ii) unioning the data sets,
- iii) comparing and prioritising the data sets based on attribute and spatial accuracy,
- iv) assigning a habitat classification based on the draft CALM standardised broadscale marine benthic habitat classification system,
- v) review of the compiled data set primarily for attribute accuracy and secondarily for spatial accuracy.

This was undertaken using CALM ground-truth information, reference data sets, and expert knowledge to review the attribution and model additional habitat polygons. The data set was compiled by Mark Sheridan under direction from Ray Lawrie. Habitat attribution was undertaken by Kevin Bancroft. The habitat classification system was developed by Dr Chris Simpson and Kevin Bancroft. The project was undertaken in phases over the period September 1999 to August 2000.

**Documentation Link** [Data Quality Report \(from CALM's original metadata record\)](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 8 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

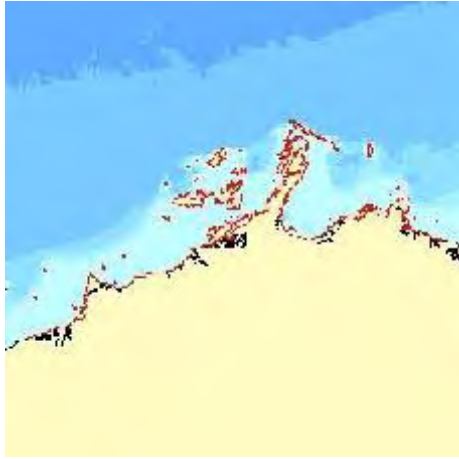
**Access constraint** Data is to be used for NWSJEMS only

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**Lineage** All available marine habitat data sets existing over the North West Shelf region were gathered from a variety of sources in the public and private sectors. These included Apache Energy, Department of Environmental Protection, Department of Conservation and Land Management, WA Museum, CSIRO, Australian Petroleum Production and Exploration Association (APPEA), AUSLIG, Woodside Petroleum, BHP, Bowman Bishaw Gorham, and LeProvost Dames and Moore. A total of 21 existing data sets were gathered that covered various parts of the region, with many of these data sets overlapping in spatial

extent. Content dates from before June, 2001

**Completeness** Further work could be done on delineation and ground-truthing of many habitat features, particularly those that have been modelled and are of extensive area, and those that are less substantial in size, e.g. shoreline reefs. Many major sand patches are still incorporated in the 'Macroalgae (limestone reef)' classification and need to be delineated



## ***Onshore coastline habitats of the Cape Preston/Dampier Archipelago/Cape Lambert area of the Australian North West Shelf – WA Department of CALM***

**MarLIN record number** 5749

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** This data set consists of linework detailing the onshore coastline habitats of WA's Cape Preston/Dampier Archipelago/Cape Lambert area and covers approximately 836 kilometers of coastline. The data set is complemented by a polygon data set detailing the major marine benthic habitats of WA's Cape Preston/Dampier Archipelago/Cape Lambert area (hab\_dampierddmmyy\_amg50\_agd84). These data sets were developed to assist in the planning process for the implementation of a proposed Dampier Archipelago/Cape Preston marine reserve.

The coastline is delineated into areas of Beach, Rocky shore, Beach + Rocky shore, Mangal, or Salt marsh and attributed accordingly. Lines are further attributed with direction the habitat is facing, habitat length (metres), and beach width (maximum and average in metres). The base coastline linework was provided by the then Department of Land Administration (DOLA). A source attribute has been added to each line based on DOLA's coastline source and/or method used to derive the coastline linework in any area.

Habitats were identified from primarily from hard copy aerial photography. Beach widths were measured from the aerial photography using a scale rule, and a scaled adjustable magnifying glass where necessary. Habitat facing directions were determined using a transparency of a compass rose (360 degree circle).

The data set was compiled by Oliver Looker in June – July 2000

**Documentation Link** [Data Quality Report \(from CALM's original metadata record\)](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.5 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

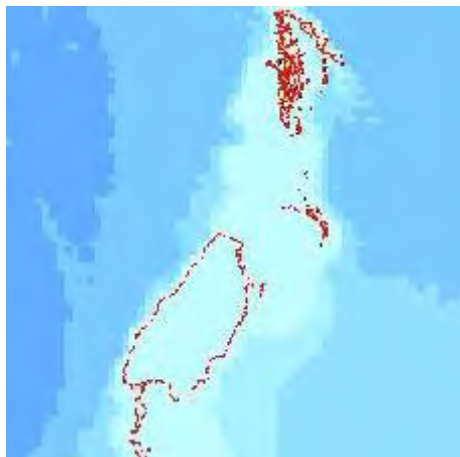
**Access constraint** Data is to be used for NWSJEMS only

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**Beginning date** 22 September 1993 **End date** 17 September 1994

**Lineage** See Document Link to "Data Quality Report" for details of parameter accuracy

**Completeness** Further work on ground-truthing could improve this data set



## ***Onshore Coastline Habitats of the Monte Bello/Lowendal/Barrow Islands area of the Australian North West Shelf – WA Department of CALM***

**MarLIN record number** 5750

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** This data set consists of linework detailing the onshore coastline habitats of WA's Monte Bello Islands, Barrow Island and Lowendal Islands and covers approximately 384 kilometers of coastline. The data set is complemented by a polygon data set detailing the major marine benthic habitats of the same area (hab\_montesddmmyyy\_ams50\_agd84). These data sets were developed to assist in the planning process for the implementation of a proposed Monte Bello/Barrow Island marine reserve.

The coastline is delineated into areas of 'Beach', 'Rocky shore', 'Beach + Rocky shore', or 'Mangal' and attributed accordingly. Lines are further attributed with direction the habitat is facing, habitat length (metres), and beach width (maximum and average in metres). The base coastline linework was provided by Apache Energy coastline data sets. The DOLA coastline was not used due to the much lower resolution in this area. A source attribute has been added to each line based on Apache Energy's source data set.

NOTE: Since the compilation of this data set, DOLA have reviewed the coastline in this area and have now incorporated the Apache coastline linework data into the statewide DOLA coastline data set.

Habitats were identified from aerial photography. Beach widths were measured from the aerial photography using a scale rule, and a scaled adjustable magnifying glass where necessary. Habitat facing directions were determined using a transparency of a compass rose (360 degree circle).

The data set was compiled by Kristin Milton and Oliver Looker in July 2000.

**Documentation Link** [Data Quality Report \(from CALM's original metadata record\)](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.5 MB of compressed digital data

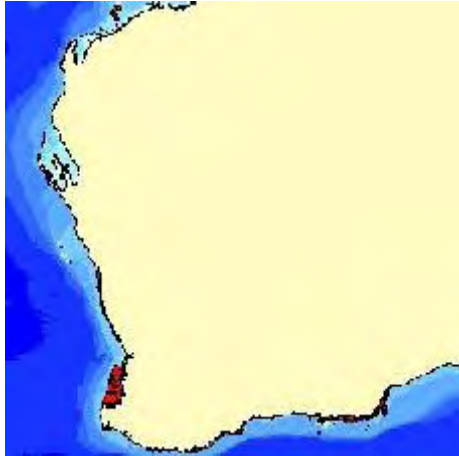
**Access constraint** Data is to be used for NWSJEMS only

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**Beginning date** 30 August 1994 **End date** 17 September 1994

**Lineage** Obtained from CALM Marine Branch in its current form. Follow Documentation Link for further details

**Completeness** See Data Quality Report at Documentation Link



## ***Marine habitats of regions of the the North West Shelf of Western Australia***

**MarLIN record number** 5793

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

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**Abstract** Marine Habitat mapping created by Hugh Kirkman (CSIRO) for various locations around Western Australia. It includes the following communities on the North West Shelf:

Ningaloo Reef – Northern Section

Murion Islands

Offshore Islands

Lowendall Islands

Barrow Island

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

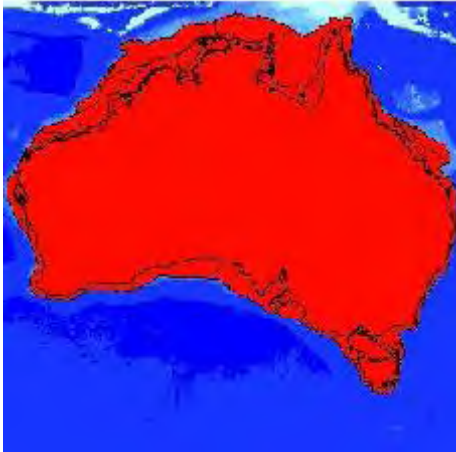
**Stored Data Volume** 8 MB of compressed digital data

**Access constraint** For use in the NWSJEMS only

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**Lineage** Obtained from CALM Marine Branch in its current form. Content dates from before July, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



## ***Interim Marine and Coastal Regionalisation for Australia (mesoscale) (IMCRA)***

**MarLIN record number** 5829

**Data Type** GIS

**Originator Organisation** Environment Australia

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**Acknowledgements** Data set originally supplied by Project Officer, Environment Australia

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**Abstract** A Regionalisation of the Australian coastal waters to the Australian 200 metre isobath derived from biological and physical data, (e.g. coastal geomorphology, tidal attributes, oceanography, bathymetry, intertidal invertebrates).

Attributes include: named regions and their location within provinces. Data were compiled for Version 3.1 from the most up-to-date data available as of 7 March 1997. The meso-scale regionalisation was compiled from information supplied to Environment Australia by the relevant State, Northern Territory and Commonwealth marine research and management agencies. The outer seaward extent for the meso-scale IMCRA coverage is defined by the 200 m isobath except where this boundary extends beyond the Australian Exclusive Economic Zone (AEEZ). Attributes in the coverage include:

VERSION-NO = the version number of the coverage

CONT\_NAME = the name of the IMCRA region

CONT\_NAME-EXT = the name of IMCRA region with a three letter code

**Documentation Link** [IMCRA Technical Group Report](#)

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4.7 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** Individual data custodians must be acknowledged in any use of the data

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**Beginning date** 01 May 1995 **End date** 07 March 1997

**Lineage** Two main approaches were used in integrating data existing data received from State and Northern Territory marine conservation agencies. Available regionalisation boundaries and descriptions were interpreted/integrated and transferred onto paper maps, and then these boundaries were digitised; and where local and sub-regional-scale GIS were available, these data/regions were aggregated to derive coarser meso-scale map unit boundaries using a combination of paper-based maps and GIS

**Completeness** Complete as at 7 March 1997 (version 3.1) for all of Australia. Inshore estuarine areas only covered for the Northern Territory in this version



## ***Aerial photography and mosaics – Dampier North to DeGrey River, Australian North West Shelf***

**MarLIN record number** 6007

**Data Type**

Observed Data – field  
Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

**Abstract** This metadata record refers to the aerial photography, DEP-produced mosaic and official DOLA mosaic and associated Digital Elevation Models (DEMs) for Dampier North to DeGrey River Water penetration aerial photography.

Aerial photography: Dampier North to DeGrey River Water penetration aerial photography obtained through the WA State Land Information Capture Program (SLICP) and coordination of the the WA Land Information System (WALIS) Marine Group for use by NWSJEMS.

The photography has been selected to cover coastal and nearshore areas between the Dampier Archipelago and DeGrey River for coastal habitat mapping and change analysis. The flights were at times selected to maximise water penetration. This includes low sun angle, light winds and low tide. The photography complements other flights in the area including photography flown for CALM Marine for Marine Park Planning. The photography captured at Scale 1:40 000 and scanned to provide 1 metre pixel size. DOLA Job Numbers WA4610©, WA4646©, WA4647©

The DOLA mosaic: Source mosaic Dampier\_Degrey.ecw 020295 010361 Dampier\_north -Degrey river mouth (2156) aerial photographic mosaic from Dampier Archipelago to the DeGrey River.

Accuracy +/- (m) 5

Ground Resolution (m) 0.85

Scan Resolution: 1200dpi/ 21 um

Datum GDA94

Projection MGA50 (but is also stored as Lat/Long GDA94)

RC30, 13247, 152.98mm

**Stored Data Format** DIGITAL – Images – ECW

DIGITAL – Text Documents – ASCII

**Stored Data Volume** 3 GB of image data

**Specific Software Requirements** Requires ERViewer

**Stored Data Documentation** Associated files containing GPS centre, camera info and flight diagram were received and are stored with the data

**Access constraint** Available to DEP and NWSJEMS staff

**Beginning date** 25 July 2001 **End date** 20 October 2001

**Lineage** Coastal water penetration aerial photography commissioned by NWSJEMS through DOLA



SLICP Programme for coastal habitat mapping and bioregionalisation. Original film negatives and digital scanned from the originals. Obtained from DOLA aerial photography as TIFF images scanned from source photography. TIFF images have been converted to ECW files

**Completeness** Digital attribute information is available for all projects known to have been flown since 1947 where archive film survives. All Western Australia except desert areas have regularly re flown images, some areas with annual or biannual coverage



## ***Aerial photo mosaic – Dampier to Cape Preston, 1:25,000, Australian North West Shelf***

**MarLIN record number** 6008

**Data Type**

Observed Data – field  
Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

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**Abstract** 1:25 000 photo mosaic for map area Preston (2156) 1:100 000 sheet 00007400, sourced from WA Department of Land Administration (WA DOLA).

---

**Stored Data Format** DIGITAL – Images – ECW

**Stored Data Volume** 400 MB of image data

**Specific Software Requirements** Requires ERViewer

**Stored Data Documentation** A text file was received and is stored with the data set which describes for example focal length, camera type, accuracy and resolution

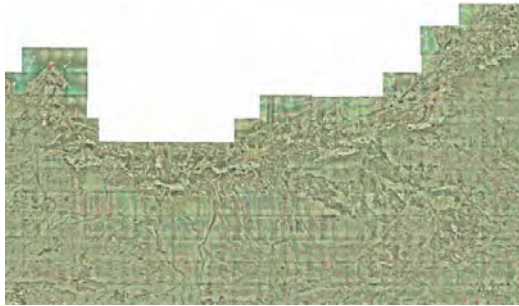
**Access constraint** Imagery available for NWSJEMS. Copyright provisions apply to commercial applications

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**Beginning date** 05 August 2000 **End date** 05 August 2000

**Lineage** Original film negatives and digital scanned from the originals

**Completeness** Digital attribute information is available for all projects known to have been flown since 1947 where archive film survives. All Western Australia except desert areas have regularly reflight images, some areas with annual or biannual coverage



## ***Aerial photo mosaic – Roebourne Sherlock 1:25 000, Australian North West Shelf***

**MarLIN record number** 6009

**Data Type**

Observed Data – field  
Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

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**Abstract** 1:25 000 photo mosaic for map area Sherlock (2456) 1:100 000 sheet 00007700, sourced from WA Department of Land Administration (WA DOLA).

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**Stored Data Format** DIGITAL – Images – ECW

**Stored Data Volume** 600 MB of image data

**Specific Software Requirements** Requires ERViewer

**Stored Data Documentation** A text file was received and is stored with the data set which describes for example focal length, camera type, accuracy and resolution

**Access constraint** Imagery available for NWSJEMS. Copyright provisions apply to commercial applications

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**Beginning date** 06 August 2000 **End date** 07 August 2000

**Lineage** Original film negatives and digital scanned from the originals

**Completeness** Digital attribute information is available for all projects known to have been flown since 1947 where archive film survives. All Western Australia except desert areas have regularly reflown images, some areas with annual or biannual coverage



## **LANDSAT imagery – 1:250 000 Tiles – Australian North West Shelf**

**MarLIN record number** 5312

**Data Type** Aggregated/Derived Data

**Originator Organisation** WA Department of Land Administration

**Acknowledgements** Environment Australia – Data set coordination; WA Department of Land Administration – reformatting

**Abstract** This data set comprises 1:250 000 tiles constructed from resampled LANDSAT TM (Thematic Mapper) images from 1990, developed by Environment Australia for use in the Australian Coastal Atlas project. The LANDSAT scenes comprise 6 bands (bands 1-5 and band 7) and can be visualised using ArcView software. The data have been obtained from EA for use in the NWSJEMS study and are stored on CD-ROMs in Hobart in ArcInfo BIL format. There are 14 relevant tiles (1.5 by 1 degree), each approx. 180 MB in size, equivalent to the standard 1:250 000 named regions Ningaloo; Yanrey; Jurabi Point; Onslow; Yarraloola; Pyramid; Marble Bar; Barrow Island; Dampier; Roebourne; Port Hedland; Bedout Island; and Rowley Shoals, covering approx. 200 km offshore and 200 to 300 km inshore.

**Graphic Links**

[equivalent 1:250 000 map sheets by name](#)

[sample image \(created from bands 3,2,1\) – Onslow region](#)

**Documentation Link** [Background information on Landsat data \(from AUSLIG/ACRES\)](#)

**Stored Data Format** DIGITAL – Images – BIL (DISIMP)

**Stored Data Volume** 2.5 GB: 14 tiles of approx. 180 MB each (5 CD-ROMs)

**Specific Software Requirements** Requires software capable of reading BIL image files

**Stored Data Documentation** files need .BIL extension to be used, also access to header information stored separately at [http://www.marine.csiro.au/datacentre/nws\\_data/cmr\\_data/images\\_aca\\_hdrs/](http://www.marine.csiro.au/datacentre/nws_data/cmr_data/images_aca_hdrs/)

**Access constraint** Made available for use by NWSJEMS study participants. For any other use consult custodian for details

**Beginning date** 1990 **End date** 1990

**Lineage** Data originally purchased by ERIN from Australian Centre for Remote Sensing (ACRES) for the Australian Coastal Atlas project. Scenes are derived from ACRES level 10 processed TM images, then resampled by WA DOLA to WGS84 datum. Bands 1 through 5 and 7 are present; for water features, bands 3, 2, 1 (R, G, B) are suggested as appropriate; for land features, bands 7, 4, 1 (R, G, B)

**Completeness** Images are composites from various dates (no further details available)



### ***Benthic habitats of the Dampier Archipelago, Australian North West Shelf – Woodside Petroleum Ltd***

**MarLIN record number** 5573

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** Woodside Petroleum Ltd

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**Abstract** GIS layer depicting Dampier Archipelago marine habitats.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 346 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

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**Lineage** Obtained from Woodside Offshore Petroleum as part of the development of the NWSMEMS. The data is originally based on unpublished mapping conducted by the Department of Conservation and Environment (DEP) based on interpretation of colour aerial photography with limited ground truthing. Update by LeProvost Dames and Moore (consultants) for Woodside using re-interpretation of aerial photography, pre-existing knowledge of the area (consultant), marine habitat surveying of selected areas and the (1996) Port of Dampier Environmental Management Plan. Content dates from before March, 2001

**Completeness** Complete



## ***Underwater video – Fisheries WA Field Surveys – Pilbara 2002***

**MarLIN record number** 6039

**Data Type** Photograph/s – film or video

**Originator Organisation** WA Department of Fisheries, CSIRO Marine and Atmospheric Research

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**Contributors** Melanie Martin, Helen Webb

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**Abstract** Underwater video captured as part of field surveys undertaken by Fisheries WA. Drop-down video footage, video and still camera images were taken at sites surveyed by Fisheries WA as part of their annual field surveys. Video footage was captured from tape and converted to MPG format and representative frames from each movie to image files. GPS coordinates are available for each location. The datum used was the Australian Geodetic (1984) datum. Data from field sheets and interpreted from the video has been entered into a database which accompanies the imagery.

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**Stored Data Format** DIGITAL – Database Files – MS *Access*

DIGITAL – Images – BMP

mpg video format

**Stored Data Volume** 3 GB of digital data

**Access constraint** No Restrictions

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**Beginning date** 21 February 2002 **End date** 16 March 2002

**Lineage** Video footage was captured using drop-down video camera on Sony Digital-8 video

**Completeness** Complete



## ***Aerial photo mosaic – Cape Lambert to Dixon Island, Western Australian North West Shelf***

**MarLIN record number** 6056

**Data Type** Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

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**Abstract** Aerial photography project P114.00 (ASDD abstract)

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**Stored Data Format** DIGITAL – Images – ECW

DIGITAL – Images – TIFF

**Stored Data Volume** 59 MB of compressed digital data

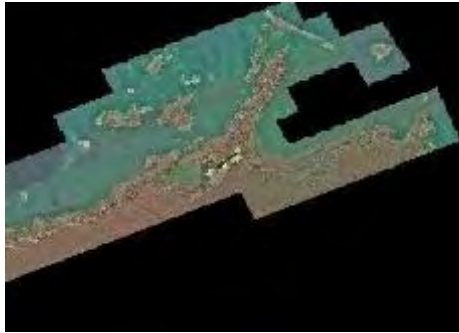
**Access constraint** Imagery available for NWSJEMS team. Contact project's data team for details to access data online. Copyright provisions apply to commercial applications

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**Beginning date** 07 May 1974 **End date** 07 May 1974

**Lineage** Original film negatives and digital scanned from the originals

**Completeness** Digital attribute information is available for all projects known to have been flown since 1947 where archive film survives. All Western Australia except desert areas have regularly reflighted images, some areas with annual or biannual coverage



## ***Aerial photography and mosaics – Dampier Archipelago, Australian North West Shelf***

**MarLIN record number** 6061

**Data Type**

Observed Data – field  
Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

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**Abstract** This metadata record refers to the Aerial Photography and official DOLA Mosaic (as well as associated DEM's) for Dampier.

Aerial Photography – Dampier Archipelago water penetration aerial photography obtained through the WA State Land Information Capture Program (SLICP) and coordination of the the WA Land Information System (WALIS) Marine Group for use by NWSJEMS. The photography was flown during selected times to maximise water penetration. This includes low sun angle, light winds and low tide. The photography complements other flights in the area including photography flown for CALM Marine for Marine Park Planning. The DOLA Mosaic –

Source Mosaic Dampier\_Archipelago.ecw-020293-000437.00 Dampier\_Archipelago (2156,2256)

Date October 2001

Scale 1:40,000

Accuracy +/- (m) 5

Ground Resolution (m) 0.8

Scan Resolution 1200dpi / 21 um

Datum GDA94

Projection MGA50

RC30, 13247, 152.98 mm

---

**Stored Data Format** DIGITAL – Images – ECW

**Stored Data Volume** 3 GB of image data

**Specific Software Requirements** Requires ERViewer

**Stored Data Documentation** Associated files containing GPS centre, camera info and flight diagram were received and are stored with the data

**Access constraint** Source and rectified imagery available fpr NWSJEMS

---

**Beginning date** 16 October 2001 **End date** 21 October 2001

**Lineage** Original film negatives and digital scanned from the originals. Obtained from DOLA aerial photography as TIFF images scanned from source photography. TIFF images have been converted to ECW files

**Completeness** Digital attribute information is available for all projects known to have been flown since 1947 where archive film survives. All Western Australia except desert areas have regularly reflown images, some areas with annual or biannual coverage





***High resolution aerial photography – Burrup Peninsula,  
Western Australian North West Shelf – Woodside Energy Ltd***

**MarLIN record number** 6062

**Data Type**

Observed Data – field  
Aerial Photograph/s

**Originator Organisation** Woodside Petroleum Ltd

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**Abstract** High resolution aerial photography received from Woodside Energy Limited covering the Burrup Peninsula. Imagery includes time series over quarries and major works as part of the LNG plant expansion for calculation of cut/fill volumes. There are monthly mosaics over key locations (Quarry, King Bay Supply Base, LNG Plant, and imagery from 1978).

---

**Stored Data Format** DIGITAL – Images – ECW

**Stored Data Volume** 85.8 MB

**Specific Software Requirements** Requires ERViewer

**Access constraint** Supplied for distribution to the WALIS Marine Group and WALIS Community Data Quality. This copy for NWSJEMS use only

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**Beginning date** 01 November 1978

**Lineage** Obtained from Woodside Energy Limited in current format. Content dates from before May, 2003

**Completeness** NA



## ***Video transect analysis of subtidal habitats in the Dampier Archipelago – Woodside Petroleum Ltd***

**MarLIN record number** 6073

**Data Type** Experimental Data – field

**Originator Organisation** Western Australian Museum

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**Abstract** The Western Australian Museum of Natural Science applied for and received a grant from Woodside Offshore Petroleum Pty Ltd to undertake a biological survey of the Dampier Archipelago over a 4 year period. The first survey, during September October 1998, included 35 intertidal and subtidal habitats of the islands at the northern end of the Burrup Peninsula while the second trip, during August September 1999, included 35 stations around the islands to the west.

The subtidal survey utilised a 25 m transect along which much of the collection was undertaken to facilitate a semi-quantitative assessment of the various faunal groups. Twenty six of the stations during the second survey were also video taped in triplicate for assessment of habitat type based on percentage cover of functional groups.

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**Stored Data Format** DIGITAL – Database Files – MS *Access*

DIGITAL – Spreadsheets – MS *Excel*

DIGITAL – Text Documents – MS *Word*

**Stored Data Volume** 790 kB compressed data

**Specific Software Requirements** Requires word, *Excel* and access to view data

**Access constraint** This data set has been obtained for NWSJEMS use only. Public release is expected once a final report is published. The report was being drafted May 2003

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**Beginning date** 01 September 1998

**Lineage** Obtained from WA Museum in current format. See R11mjxx.doc for details on this data set.

Contact: diana.jones@museum.wa.gov.au. Content dates from before May, 2003

**Completeness** Complete for the purposes of the NWSJEMS



## ***Database of data and images extracted from reports on benthic habitats over the Western Australian North West Shelf***

**MarLIN record number** 6084

**Data Type**

GIS

Photograph/s – stills

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Michael Fuller

**References** Detailed references are held within the NWSJEMS bibliography and specifically referenced within the data set

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**Abstract** Database of data and images extracted from reports on benthic habitats. As part of the habitat characterisation project of NWSJEMS, reports were identified as a major source of information available to support habitat mapping of the region. The database was created to store textual information extracted from the reports, and the storage locations of images from scanned pictures from the reports.

The database contains a range of information including habitat descriptions, substrate types, community information and depth. All sites are also georeferenced with the latitude and longitude from which the observations were made.

---

**Stored Data Format** DIGITAL – Database Files – MS Access

DIGITAL – Images – JPEG

Database also refers to the NWSJEMS Procite Bibliography through the Procite ID and reference title.

**Stored Data Volume** 13 MB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Habitat information was entered from reports. Content dates from before June, 2003

**Completeness** The database is currently complete for the purposes of NWSJEMS. Additional information may be entered after the study as it becomes available if required



## ***Aerial photography – 1974 (WA1514) – Dampier Archipelago, Western Australian North West Shelf***

**MarLIN record number** 6265

**Data Type**

GIS

Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Aerial photography over Dampier Archipelago, obtained for the Pilbara Feasibility Study (Dampier). The approximate area covered is from West Intercourse Island to King Bay at scale 1:20 000, taken on date – 7/5/1974. Images were obtained from the Western Australia Department of Land Administration (DOLA) and scanned at 400 DPI on flat bed scanner. Images are stored as 24 bit colour.

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**Stored Data Format** DIGITAL – Images – TIFF

**Stored Data Volume** 850 MB compressed

**Access constraint** For NWSJEMS use only

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**Beginning date** 07 May 1974 **End date** 07 May 1974

**Lineage** Hard copy prints obtained from DOLA by the DEP and scanned on a flat bed scanner at 400 DPI. Images saved as 24 bit TIFF. This mosaic of images was created using 2001 aerial photography (Dampier Archipelago) as the source of spatial control

**Completeness** Complete for the purposes of the NWSJEMS



## ***Aerial photography – 1980 (KNC951, KNC952) – Dampier Archipelago, Western Australian North West Shelf***

**MarLIN record number** 6266

**Data Type**

GIS

Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

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**Abstract** This aerial photography over Dampier Archipelago originates from Kevron Aerial Surveys for the Department of Conservation and Environment. Images are at scale 1:12 500, taken on the following dates: KNC951 – 07/05/1980; KNC952 – 08/05/1980. Images were scanned at 800DPI on flat bed scanner, and stored in 24 bit colour. Approximate centres are available as an ArcView Shapefile.

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**Stored Data Format** DIGITAL – Images – TIFF

**Stored Data Volume** 2 GB compressed

**Access constraint** For NWSJEMS use only

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**Beginning date** 07 May 1980 **End date** 08 May 1980

**Lineage** Hard copy prints obtained from DOLA by the DEP and scanned on a flat bed scanner at 800 DPI. Images saved as 24 bit TIFF. Images were mosaiced using 2001 aerial photography (Dampier Archipelago) as the source of spatial control

**Completeness** Complete for the purposes of the NWSJEMS



## ***Aerial photography – 1994 (WA940591, WA940592) – Pilbara region – Western Australian North West Shelf***

**MarLIN record number** 6267

**Data Type**

GIS

Aerial Photograph/s

**Originator Organisation** WA Department of Land Administration

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**Abstract** Aerial photography over Pilbara region. Images cover the approximate area from West Pilbara Coast and Islands and West Quobba to North West Cape. Images are at scale 1:20 000. They were scanned at 400 DPI on flat bed scanner and are stored as 24 bit colour. Approximate centres are available as an ArcView Shapefile.

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**Stored Data Format** DIGITAL – Images – TIFF

**Stored Data Volume** 15 GB compressed

**Access constraint** For NWSJEMS use only

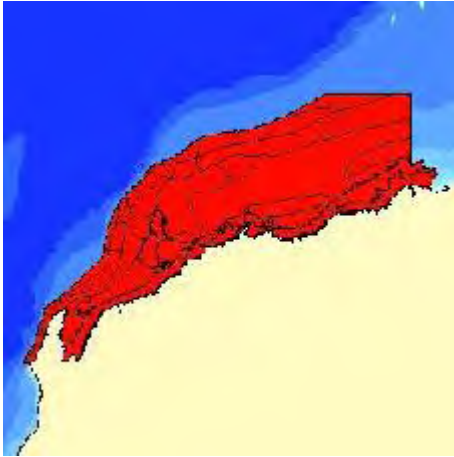
---

**Beginning date** 1994 **End date** 1994

**Lineage** Hard copy prints obtained from DOLA by the DEP and scanned on a flat bed scanner at 400 DPI. Images saved as 24 bit TIFF. Images were mosaiced using 2001 aerial photography (Dampier Archipelago) as the source of spatial control

**Completeness** Complete for the purposes of the NWSJEMS

## 9. SHELF HABITAT, DIRECT OBSERVATION, EXPERT INFORMATION, HIERARCHAL HABITAT UNIT POLYGON DATA SETS



### ***Bioregionalisation of the North West Shelf – NWSJEMS Project 4***

**MarLIN record number** 5972

**Data Type** GIS

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Vincent Lyne, Mike Fuller, Melanie Martin

**References** Lyne et al. 2006, NWSJEMS Technical Report 12: Ecosystem characterisation of Australia's North West Shelf, CSIRO Marine and Atmospheric Research, Hobart

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**Abstract** GIS layer depicting application of CSIRO level 3 bioregionalisation derived from visual inspection of satellite imagery, aerial photography and existing habitat and topographic mapping.

From the integration and analysis of available data, mapping layers containing relevant information for the various Levels of the hierarchical classification were generated. The study region lies within the Level 1 North-Western Province of the IMCRA (1988) classification, which extends from North West Cape, to Cape Leveque. The Level 2, Biomic structure of the region contains 3 sub units:

1. The level 2A units consist of demersal shelf and coastal zone.
2. Level 2B units identified are: coastal, consisting of estuaries, lagoons and embayments at less than 10 m depth; subtidal nearshore, covering the depth range 10 to 20 m; further offshore are the inner shelf (20 to 70 m), mid-shelf (70 to 120 m) and outer shelf biomes (120 to 200 m) (the precise boundaries are still subject to analysis).
3. The level 2C units consist of broad alongshore categorisation based on distinct basement structural features and their corresponding collection of biological attributes. The units identified were: Carnarvon, Pilbara and Canning.

The most detailed level of classification obtained for the region was to Level 3. Data availability allowed mapping to 3 levels for the coastal zone, and 1 level for the offshore areas. Data used for the offshore analysis consisted of trawl records for fish species. Existing geomorphic and topographic mapping, combined with aerial photography and imagery was used for the inshore mapping. Information obtained from the expert information project also provided assistance for determining mapping units for levels 2 and 3 of the classification.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 864 kB

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For NWSJEMS use only

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**Lineage** Data digitised on DOLA 1:100 000 with coastline as baseline. Reports and suitable NWSJEMS data sets used. Additional information obtained from NWSJEMS Project – Expert information. Content dates from before June, 2002

**Completeness** Incomplete



## 10. OCEANOGRAPHIC FIELDS (CIRCULATION, DISPERSAL), CSIRO VOYAGE DATA SETS



### ***Australian North West Shelf current meter and tide gauge (mooring) data – 1995***

**MarLIN record number** 5632

**Data Type**

Observed Data – field

CMR Moored Instrument Data: Current Meters and Tide Gauges

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**References** Holloway et al. 1995, Cruise Summaries RV Franklin (unpub.), CSIRO Marine Research, Hobart

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**Abstract** This data set comprises part of the current meter and tide gauge data collected from the Australian North West Shelf during January to March 1995. There are two moorings with six current meters and one tide gauge represented in this data set. Parameters typically recorded in current meter data comprise east-west and north-south velocity components, water temperature, pressure, and salinity at a nominal depth for each current meter. The data have been processed and are archived as part of the holdings of the CMR Data Centre in Hobart.

**Data available via [Data Trawler](#)** – Access: Public

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**Stored Data Format** DIGITAL – Database Files – Oracle

**Stored Data Volume** 850 kB

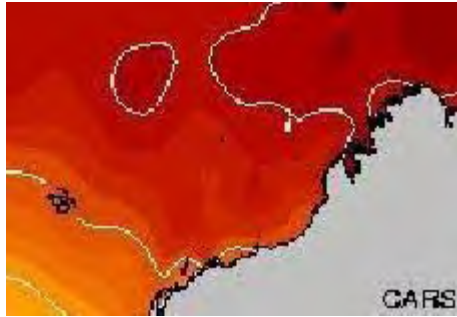
**Access constraint** Release with the permission of the custodian

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**Beginning date** 13 January 1995 **End date** 04 March 1995

**Lineage** Data were processed according to then-current Divisional procedures

**Completeness** These data sets may not necessarily be complete owing to inherent problems with collecting moored data. Consult custodian for more details



## ***North West Shelf high resolution climatology (related to CARS)***

**MarLIN record number** 5963

**Data Type** Aggregated/Derived Data

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Acknowledgements** Extensive use was made of: NODC World Ocean Database 98, and CSIRO CMR CTD and Hydrology archives, NIWA hydrographic data, and Antarctic CRC hydrographic data

**References** Ridgway K.R., J.R. Dunn, and J.L. Wilkin, Ocean interpolation by 4-dimensional weighted least squares – application to the waters around Australasia. submitted to J. Atmos. Ocean. Tech., 2001  
J.R. Dunn and K.R. Ridgway, Mapping ocean properties in regions of complex topography, Deep Sea Research Part I Oceanographic Research, 49 (3) (2002) pp. 591-604

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**Abstract** NWS CARS is a set of maps of temperature, salinity, dissolved oxygen, nitrate, phosphate and silicate at 10 day intervals through the year, generated using Loess mapping from all available oceanographic data in the region. It covers the region 108.25-131E, 25-8S, on a 1/8 degree grid, and on 56 standard depth levels. The data was obtained from the World Ocean Atlas 98 and CSIRO Marine and NIWA archives. Fields of estimated mixed-layer depth are also provided.

**Documentation Link** [Related documentation: details for CARS Atlas and methodology](#)

---

**Stored Data Format** DIGITAL – netCDF

**Stored Data Volume** 22.9 MB

**Specific Software Requirements** Matlab routines are available, but not essential. File configured for MECO input. File configured for viewing with OLIVE

**Stored Data Documentation** See Documentation link

**Access constraint** Supplied for use of NWSJEMS. Non-commercial use by permission of the NWSJEMS data custodian

---

**Beginning date** 1900 **End date** February 2001

**Lineage** Source data was ship-based CTD and hydrology casts from the CSIRO Marine archives (1985-ongoing) and the NODC World Ocean Database 98 (WOD98), which was a collation of all possible casts from all countries, from earliest records (1990) to 2001. Casts were interpolated to 56 standard depths, “loess” mapped to 1/8 degree grid

**Completeness** NA



***Cyclone data: MS Access database of the cyclone data from BOM (Bureau of Meteorology) websites (NWSJEMS Task 2.6)***

**MarLIN record number** 5970

**Data Type** Observed Data – field

**Originator Organisation** Bureau of Meteorology

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**Contributors** John Andrewartha

**References** CMR CD-ROM of the data

BoM web site

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**Abstract** The tracks and strengths of cyclones in the NWS region were sourced from the BoM web site to be used as input for models of the dynamics of the benthic community.

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**Stored Data Format** DIGITAL – Database Files – MS Access

**Stored Data Volume** data of 870 cyclones

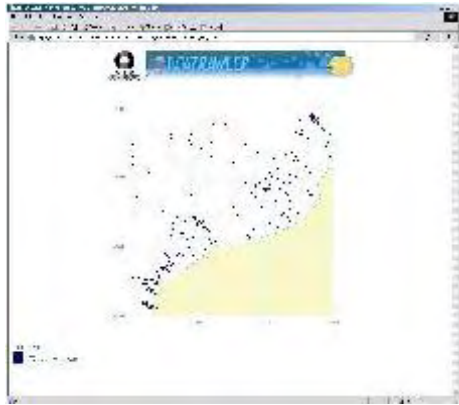
**Access constraint** No Restrictions

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**Beginning date** 1907 **End date** 1998

**Lineage** John Andrewartha down-loaded the data from a BoM web site and Franzis Althaus created a ACCESS table for summarising the data; in the database is a subset of data that is relevant to the NWSJEMS Model (Task 2.7)

**Completeness** Complete



## **CTD data – Australian North West Shelf**

**MarLIN record number** 5310

**Data Type** Observed Data – field

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**References** Forbes, A. et al. 1986, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Hobart

Davis, T., Meyers, G., Forbes, A., Cresswell, G.R. et al. 1987, Cruise Summaries RV Franklin (unpub), CSIRO Division of Oceanography, Hobart

Tomczak, M. et al. 1994, Cruise Summaries RV Franklin (unpub), CSIRO Division of Oceanography, Hobart

McIntosh, P.C., Wijffels, S., Brunskill, G.J. et al. 1996, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

Cresswell, G.R. et al. 1999, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

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**Abstract** This data set contains all non-embargoed ctd data for the spatial extents 14°S, 24°S, 112°E, 123°E. The data was extracted from the CMR Data Centre's on-line archive for the use of the NWS Joint Environmental Management Study. It is a compilation data set with the data having been collected on multiple ships on numerous voyages as well from coastal stations. This data set potentially contains subsets of Research Vessel Voyage data sets which are registered elsewhere within *MarLIN*. Other records within the data set are not registered elsewhere within *MarLIN*.

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**Stored Data Format** DIGITAL – Database Files – Oracle

**Stored Data Volume** 52 MB

**Stored Data Documentation** [Data Trawler – Data Download Format Document](#)

**Access constraint** For NWSJEMS use only

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**Beginning date** 17 September 1986 **End date** 12 November 1996

**Lineage** Processing reports are available for some of the data in the composite data set. Check *MarLIN* records for individual voyages represented within data set to ascertain whether processing reports are available. No additional QC was performed for this extraction

**Completeness** All data in the archive covering the requested area was extracted, except for Franklin voyages 1999. For data quality, see processing reports where available



## **Hydrology data – Australian North West Shelf**

**MarLIN record number** 5311

**Data Type** Observed Data – field

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**References** Sainsbury, K., Brown, P. et al. 1978, Cruise Summaries FV Courageous (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
Sainsbury, K., et al. 1979, Cruise Summaries FV Courageous (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
Jitts H., Tranter, D., Newell, B. et al. 1963, Cruise Reports HMAS Diamantina (unpub), CSIRO Division of Fisheries and Oceanography, Melbourne  
Newell, B., et al. 1964, Cruise Reports HMAS Diamantina (unpub), CSIRO Division of Fisheries and Oceanography, Melbourne  
Chittleborough, R., et al. 1969, Cruise Reports HMAS Diamantina (unpub), CSIRO Division of Fisheries and Oceanography, Melbourne  
Cresswell, G.R., Cowper, T.R. et al. 1971, Cruise Reports HMAS Diamantina (unpub), CSIRO Division of Fisheries and Oceanography, Melbourne  
Meyers, G., Cresswell, G.R., Mackey, D. et al. 1987, Cruise Summaries RV Franklin (unpub), CSIRO Division of Oceanography, Hobart  
Holloway, P., Furnas, M. et al. 1995, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart  
De Deckker, P., Fletcher, R., Brunskill, G.J. et al. 1996, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart  
Bone, Y., et al. 1999, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart  
Davis, T., et al. 1987, Cruise Summaries FRV Soela (unpub), CSIRO Division of Fisheries Research, Hobart  
Hamon, B., et al. 1976, Cruise Summaries RV Sprightly (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla  
Edwards, R., Thompson, R., et al. 1982, Cruise Summaries RV Sprightly (unpub), CSIRO Division of Fisheries and Oceanography, Cronulla

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**Abstract** This data set contains all CSIRO Marine Hydrology data for the spatial extents 14°S, 24°S, 112°E, 123°E. Separate *MarLIN* metadata records exist for each of the Hydrology voyages and these records contain additional information. The Hydrology voyages in the area of interest together with their relevant *MarLIN* record identifiers are as follows: COUR 34/78(5055), COUR 36/78(5053), COUR 49/79(5045), CS-NIC-ALL (6024), DM 02/60(5131), DM 02/61(5153), DM 03/61(5155) DM 01/62(5157), DM 01/64(5197) DM 04/71(5900), DM05/71(5901), FR 04/87(4824), FR 09/87(4263), FR 10/87(4284), FR 01/95(4707), FR 02/95(4721), FR 04/95(4712), FR 02/96(4655), FR 04/96(4663), FR 09/96(4697), FR 04/99(5367), SO 01/87(5078), SP 24/76(6134), SP 04/82(6206) and SP 05/82(6207). The data is available via the *Data Trawler*.

---

**Stored Data Format** DIGITAL – Database Files – Oracle

**Stored Data Volume** 6 MB

**Stored Data Documentation** [Data Trawler – Data Download Format Document](#)**Access constraint** None

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**Beginning date** 25 July 1936 **End date** 31 December 1999**Lineage** All relevant Hydrology data has been loaded into the *Data Warehouse*. Processing reports are available for some of the data in the composite data set. Check *MarLIN* records for individual voyages represented within data set to ascertain whether processing reports are available**Completeness** For data quality, see processing reports where available



## ***Underway data – Australian North West Shelf***

**MarLIN record number** 5413

**Data Type**

Observed Data – field

CMR Vessel Data: Underway

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Refer to processing reports

**References** Meyers, G., Morris, R., Cresswell, G.R., Mackey, D. et al. 1987, Cruise Summaries RV Franklin (unpub), CSIRO Division of Oceanography, Hobart

Holloway, P., Furnas, M., Wijffels, S., De Deckker, P. et al. 1995, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

De Deckker, P., Opdyke, B.N., Brunskill, G.J., Fletcher, R., McIntosh, P.C., Wijffels, S. et al. 1996, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

Bone, Y., Cresswell, G.R. et al. 1999, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

Collins, L., Heinson, G., Wijffels, S., Pattiaratchi, C. et al. 2000, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

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**Abstract** This record refers to all CSIRO Marine Underway data for the spatial extents 14°S, 24°S, 112°E, 123°E. Separate *MarLIN* metadata records exist for each of the Underway voyages and these records contain additional information. The Underway voyages in the area of interest together with their relevant *MarLIN* record identifiers are as follows: FR 04/87(4821), FR 05/87(4826), FR 09/87(4264), FR 10/87(4285), FR 01/95(4708), FR 02/95(4722), FR 03/95(4739), FR 04/95(4714), FR 10/95(4761), FR 02/96(4656), FR 03/96(4660), FR 04/96(4664), FR 05/96(4668), FR 06/96(4676), FR 09/96(4698), FR 04/99(5277), FR 05/99(5346), FR 05/2000 (5359), FR 06/2000 (5357), FR 08/2000 (54949), FR 09/2000 (5496) and FR 10/2000 (5497).

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**Stored Data Format** DIGITAL – Database Files – Oracle

**Stored Data Volume** 167 MB

**Access constraint** None

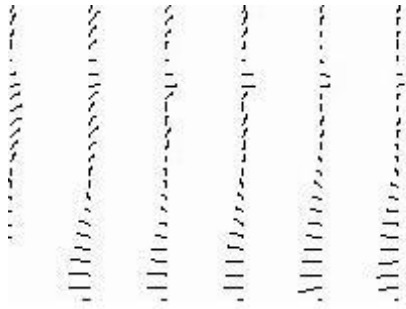
---

**Beginning date** 12 March 1987 **End date** 31 December 2000

**Lineage** All relevant underway data has been loaded into the *Data Warehouse*. Check individual *MarLIN* records for processing reports

**Completeness** Refer to documentation





## **Franklin ADCP data from the Australian North West Shelf – CMR Data Extract – 1987 to 1996**

**MarLIN record number** 5414

**Data Type**

Observed Data – field

CMR Vessel Data: ADCP

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**References** Meyers, G., Cresswell, G.R., Mackey, D. et al. 1987, Cruise Summaries RV Franklin (unpub), CSIRO Division of Oceanography, Hobart  
 Holloway, P., Furnas, M. et al. 1995, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart  
 De Deckker, P., Opdyke, B.N., Brunskill, G.J., Fletcher, R., McIntosh, P.C., Wijffels, S. et al. 1996, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

---

**Abstract** This is a compilation data set containing all non-embargoed ADCP (acoustic doppler current profiler) data from all “Franklin” voyages which have passed through the North West Shelf study area (approximately the spatial extents 18°S, 23°S, 112°E, 120°E). The data were extracted from the CMAR Data Centre’s on-line archive for the use of the NWS Joint Environmental Management Study. Separate *MarLIN* metadata records exist for each ADCP voyage and these records hold additional information. The ADCP voyages together with their relevant *MarLIN* record identifiers are as follows: FR 04/87(4820), FR 09/87(4216), FR 10/87(4281), FR 01/95(4705), FR 02/95(4719), FR 04/95(4710), FR 02/96(4654), FR 03/96(4657), FR 04/96(4661), FR 05/96(4665), FR 06/96(4670), and FR 09/96(4695).

**Documentation Link** [ADCP Data Format Description](#)

---

**Stored Data Format** DIGITAL – Text Documents – ASCII, On-line

**Stored Data Volume** 12 voyages – 7.5 MB of data (1.9 MB when compressed)

**Stored Data Documentation** Format description available; see “Documentation Link”

**Access constraint** Release with the permission of the custodian

---

**Beginning date** 12 March 1987 **End date** 22 November 1996

**Lineage** Data source: original field data. Processing history: refer to individual voyage processing reports, as available

**Completeness** Refer to documentation





## **Franklin Expendable Bathythermograph (XBT) data from the Australian North West Shelf – CMR data extract – 1987 and 1996**

**MarLIN record number** 5418

**Data Type**

Observed Data – field

CMR Vessel Data: XBT

**Originator Organisation** CSIRO Marine and Atmospheric Research

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**Contributors** Refer to cruise report

**References** Meyers, G., Mackey, D. et al. 1987, Cruise Summaries RV Franklin (unpub), CSIRO Division of Oceanography, Hobart

Wijffels, S. et al. 1996, Cruise Summaries RV Franklin (unpub), CSIRO Marine Research, Hobart

---

**Abstract** This is a compilation data set containing all vessel-collected and centrally held Expendable Bathythermograph (XBT) data from CMR voyages across the North West Shelf. Additional information regarding this data set is contained in separate *MarLIN* metadata records for each voyage. The voyages together with their *MarLIN* identifiers are as follows: FR 04/87(4825), FR 10/87(4283) and FR 06/96(4677).

**Documentation Link** [Format description](#)

---

**Stored Data Format** DIGITAL – Text Documents – ASCII

**Stored Data Volume** 3 files, 5 MB of data approx. when uncompressed

**Stored Data Documentation** Format description available; see “Documentation Link”

**Access constraint** Release with the permission of the custodian

---

**Beginning date** 12 March 1987 **End date** 11 June 1996

**Lineage** Data source: original field data

Data processing and quality control: according to current CMR Data Centre XBT data processing manual.

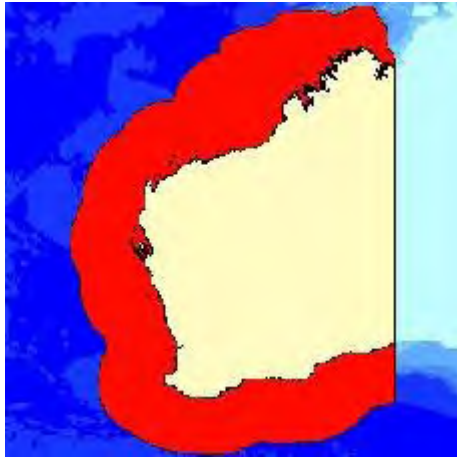
For full details, refer to documentation

**Completeness** Data set complete so far as is known, for the three voyages specified

For full details, refer to voyage summaries and/or processing reports, as available

## 11. MANAGEMENT ZONE, MPA, FISHERY MANAGEMENT ZONE, WATER AND SEDIMENT QUALITY ZONES DATA SETS

### 11.1 Fishery areas (including licence areas)



#### ***Beche-de-mer fishery licence area – Fisheries Western Australia***

**MarLIN record number** 5654

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the beche-de-mer (sea cucumber) fishery (FBL Endorsement).

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

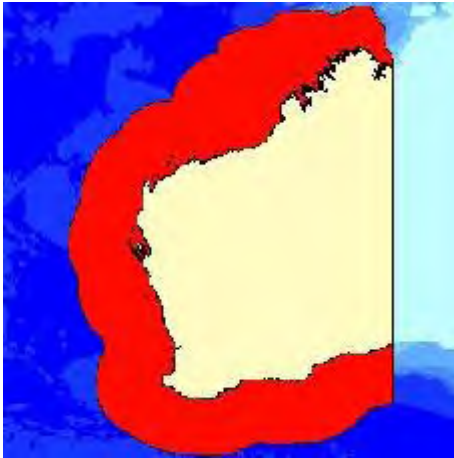
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source for this data was information provided by Jenny Shaw at Fisheries Western Australia and the beche-de-mer Fishing in Western Australia General Management Agreements. The coverage features were created using Arc/Info GIS. The coverages used in its creation were the AUSLIG 1:100 000 metre coastline and the 200 nautical mile limit. The beche-de-mer FBL Endorsement does not allow fishing in Marine Parks such as Ningaloo, Shark Bay and the Dampier Archipelago. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Dead coral and dead sea sponge collection licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5656

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Dead Coral & Dead Sea Sponge Collection (Commercial Fishing Licence Endorsement).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

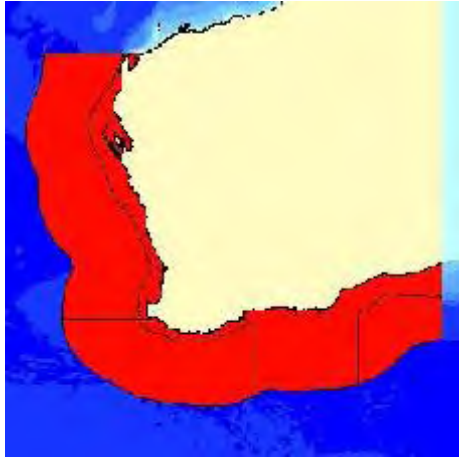
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, verification and attribution



## ***Deep sea crab fishery area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5657

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Deep Sea Crab Developmental Fishery (FBL Endorsement).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Exmouth Gulf prawn managed fishery licence area, Western Australia – Fisheries Western Australia***

**MarLIN record number** 5658

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Exmouth Gulf Prawn Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

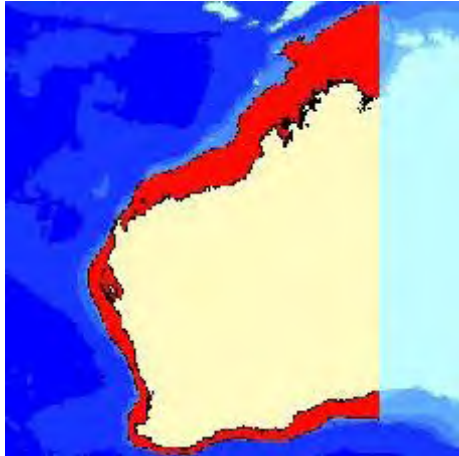
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source of this data was the Exmouth Gulf Prawn Limited Entry Fishery Notice 1989 (Notice No. 394). The coverage features were created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 m coastline and the 200 m isobath. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***Marine aquarium managed fishery licence areas of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5660

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries Licence Areas for the Marine Aquarium Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

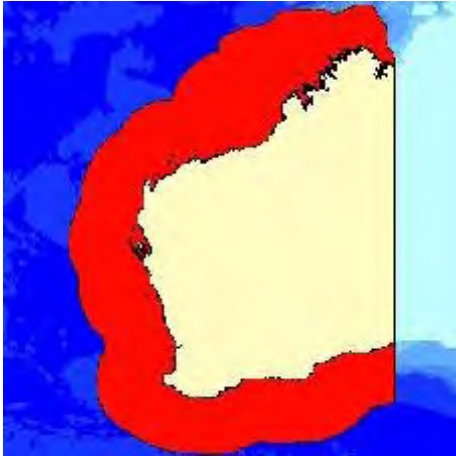
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data was the Marine Aquarium Fish Limited Entry Fishery Notice 1995. (Notice No. 728). The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Mud crab boat fishery licence area (FBL endorsement) of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5661

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of Fisheries Licence Areas for the Mud Crab Fishing Boat Licence Endorsement.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

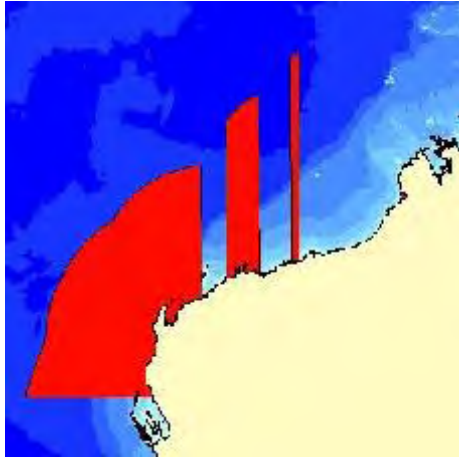
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** Source documentation regarding FBL Endorsements unknown, information regarding this data set was provided by Jenny Shaw from Fisheries WA. The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, Verification complete and Attribution complete



## ***Mud crab managed fishery of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5662

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the closure areas and the area to be fished by authorisation only for the Mud Crab Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

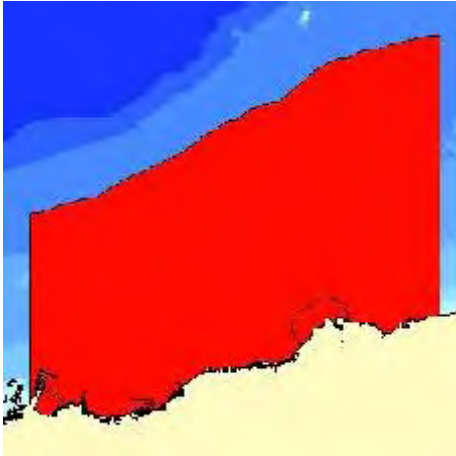
**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data set was the Notice for Mud Crabs (Prohibitions in Derby area) Notice No.194. Also the Crab Fishing Restrictions (Roebuck Bay) Notice 1992, Notice No. 539. The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, Verification complete and Attribution complete





### ***Nickol Bay prawn managed fishery licence area, North West Shelf of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5663

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Nickol Bay Prawn Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.3 MB of compressed digital data

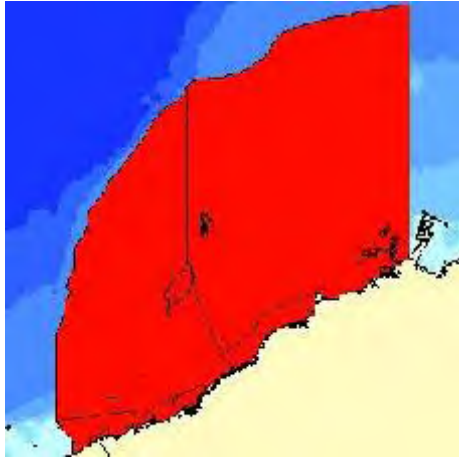
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data was the Nickol Bay Limited Entry Fishery Notice 1991, (Notice No. 488). The coverage features were created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 m coastline and the 200 m isobath. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Onslow prawn managed fishery licence area, North West Shelf of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5664

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Onslow Prawn Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.4 MB of compressed digital data

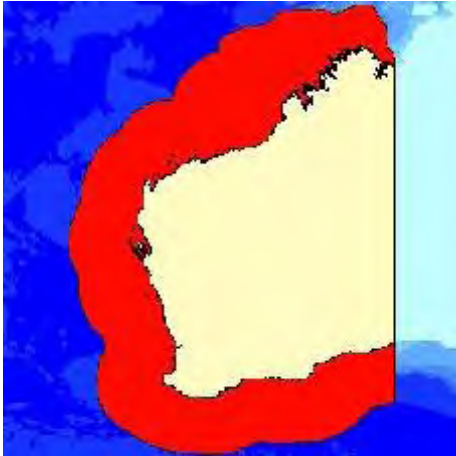
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data was the Onslow Prawn Limited Entry Fishery Notice 1991, (Notice No. 477). The coverages used in its creation included the AUSLIG 1:100 000 m coastline and the 200 m isobath. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***Oyster pickers licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5665

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of Fisheries Licence Area for the Oyster Pickers (Fishing Boat Licence Endorsement).

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

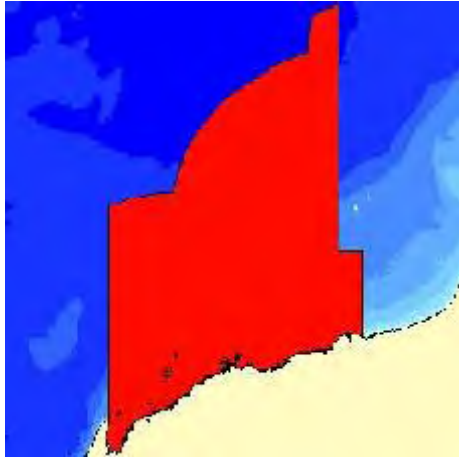
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 m coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Complete



### ***Pearl oyster fishery licence area (zone 1) of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5666

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Areas for Zone 1 of the Pearl Oyster Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.8 MB of compressed digital data

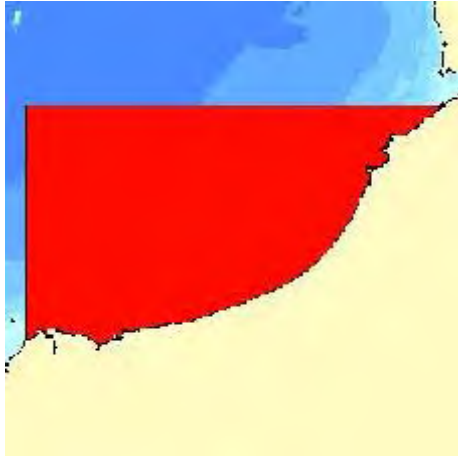
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data is the Pearling Act 1990, Pearling (Declaration of Zones) Notice 1991 and the Pearling (Declaration of Zones) Amendment Notice 1997. The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 metre coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***Pearl oyster fishery licence area (zone 2) of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5667

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Areas for Zone 2 of the Pearl Oyster Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.8 MB of compressed digital data

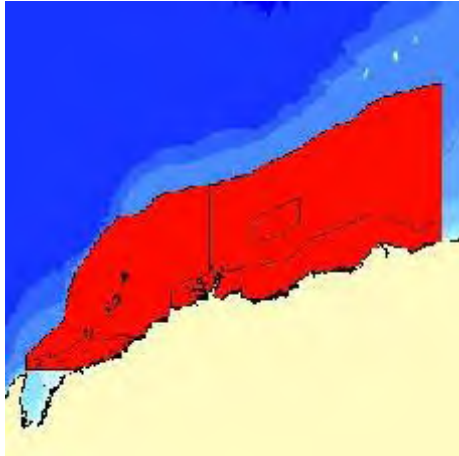
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data is the Pearling Act 1990, Pearling (Declaration of Zones) Notice 1991 and the Pearling (Declaration of Zones) Amendment Notice 1997. The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 metre coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Pilbara fish trap fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5669

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Areas for the Pilbara Trap Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.7 MB of compressed digital data

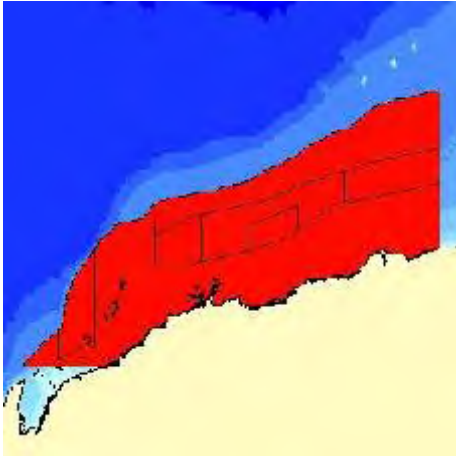
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, verification and attribution



## ***Pilbara fish trawl fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5670

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Pilbara Fish Trawl Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.7 MB of compressed digital data

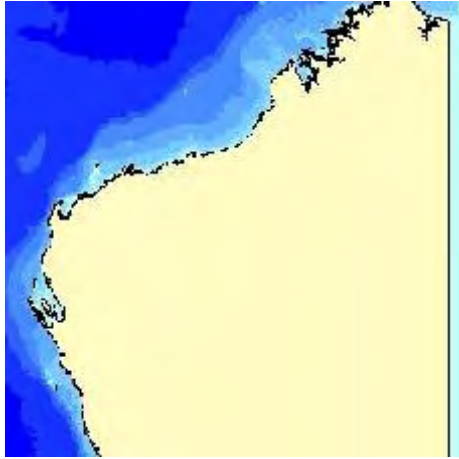
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data set was the Pilbara Fish Trawl Fishery Notice 1992 (Notice No. 545) and Pilbara Fish Trawl Fishery – Directions to Licensing Officers (Notice No. 546 & 699). The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***Reef top mollusc closures areas of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5671

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the closure areas for Reef Top Mollusc Collection licence.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.3 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

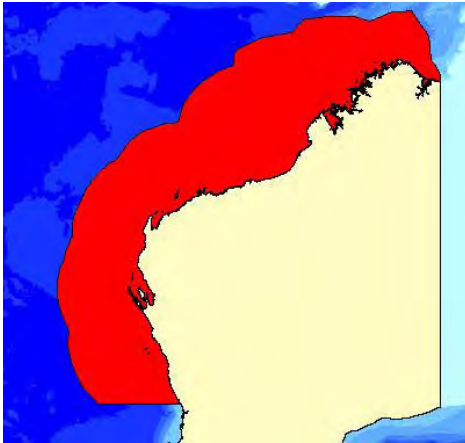
**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created in ArcInfo GIS using a population centre point coverage from the geonoma data set. A 5 km buffer was generated around all coastal towns within the Reef Top Mollusc licence area. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution





### ***Reef top mollusc fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5672

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of Fisheries Licence Area for the Reef Top Mollusc Fishery (Fishing Boat Licence Endorsement).

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

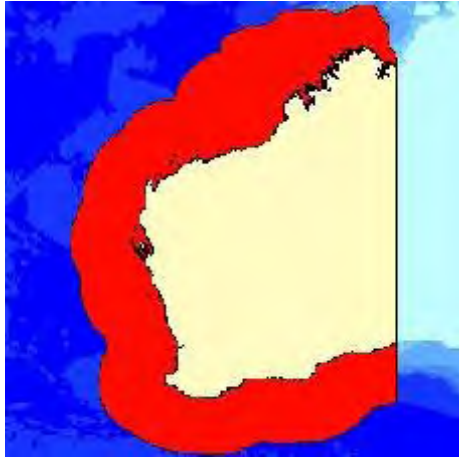
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created in ArcInfo GIS using the AUSLIG 1:100 000 coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Sea urchin (FBL endorsement) licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5673

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Sea Urchin Fishery (FBL Endorsement).

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

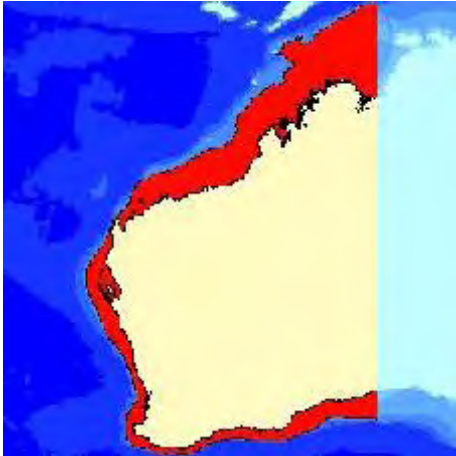
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 metre coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***Specimen shell managed fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5674

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of Fisheries Licence Area for the Specimen Shell Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

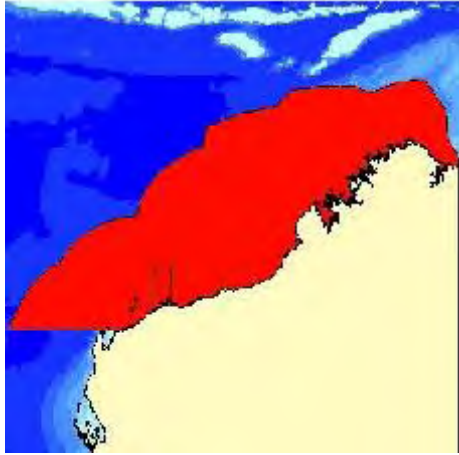
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data is the Specimen Shell Limited Entry Fishery Notice 1995 (no. 689). The coverage features were created in ArcInfo GIS using the AUSLIG 1:100 000 coastline and the bathymetric 200 metre limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***Tropical rock lobster fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5675

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Tropical Rock Lobster Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

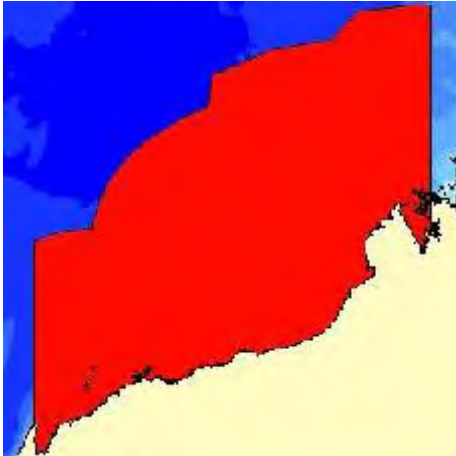
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created using Arc/Info GIS. The AUSLIG 1:100 000 metre coastline was used in the creation of this coverage. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



## ***WA north coast shark fishery licence areas of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5677

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Areas for the North Coast Shark Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1.5 MB of compressed digital data

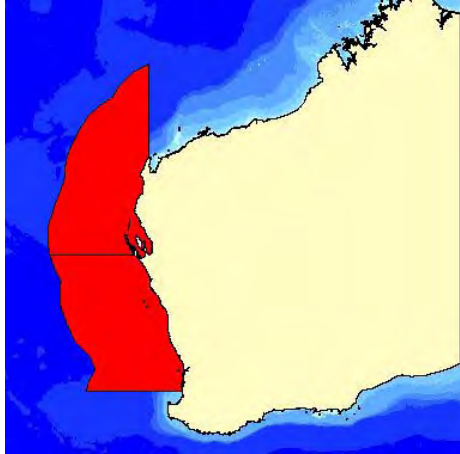
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data is the Fisheries Department of Western Australia research reports 1995 to 1996. These documents have been prepared for use within the WA Fisheries Department and are not formal publications. The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 metre coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***West coast demersal gillnet and demersal longline interim managed fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5678

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the West Coast Demersal Gillnet & Demersal Longline Interim Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.5 MB of compressed digital data

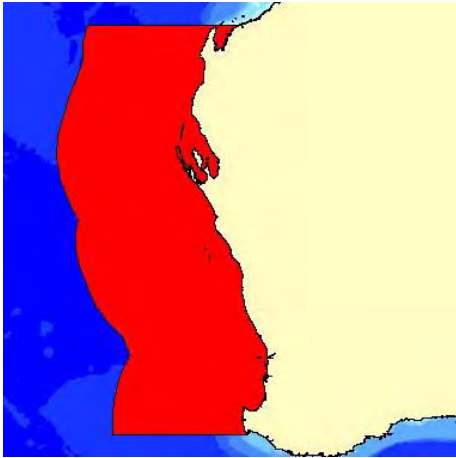
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data set was the West Coast Demersal Gillnet & Demersal Longline Management Plan 1997 and the North West Coast Shark Fishing (Prof) Gear Prohibition Notice 1993. Notice No. 601. The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 metre coastline and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***West coast rock lobster licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5679

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the West Coast Rock Lobster Managed Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.7 MB of compressed digital data

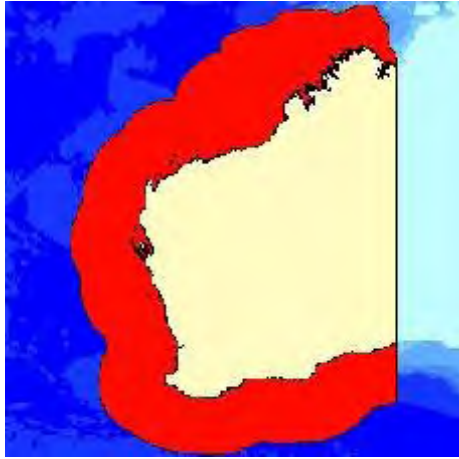
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this data was the West Coast Rock Lobster Limited Entry Fishery Notice 1993 (Notice No. 620). The coverage features were created using Arc/Info GIS. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Wet line fishery licence area of Western Australia – Fisheries Western Australia***

**MarLIN record number** 5680

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Wet Line Fishery.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

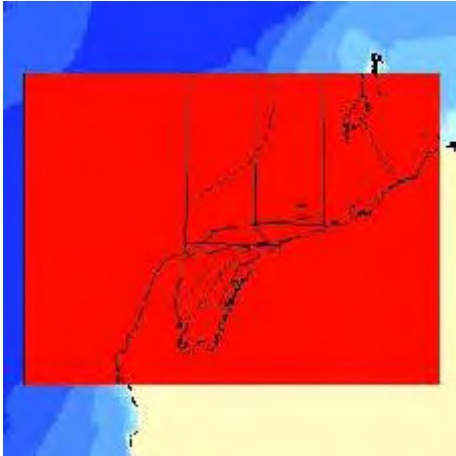
**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The coverage features were created in ArcInfo GIS using the AUSLIG 1:100 000 coastline and the amblims 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Complete





### ***Commercial fishing areas, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5800

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Exmouth Gulf and Onslow – Boundaries of areas licenced for commercial fishing.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

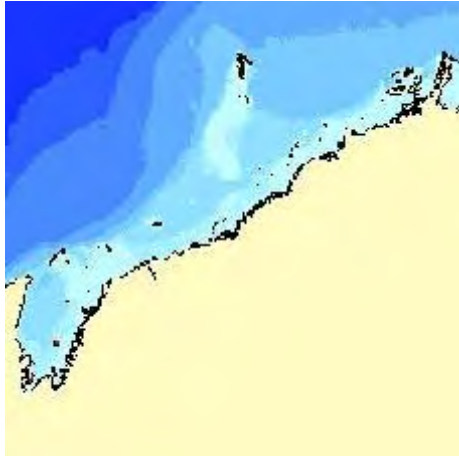
**Stored Data Volume** 212 kB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format for the Coastal Atlas Report. Superseded by Fisheries WA data sets. Content dates from before July, 2001

**Completeness** Not known



### ***Aquaculture licence sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5804

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

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**Abstract** Aquaculture licence areas within the Coastal Atlas study area of the North West Shelf Region.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

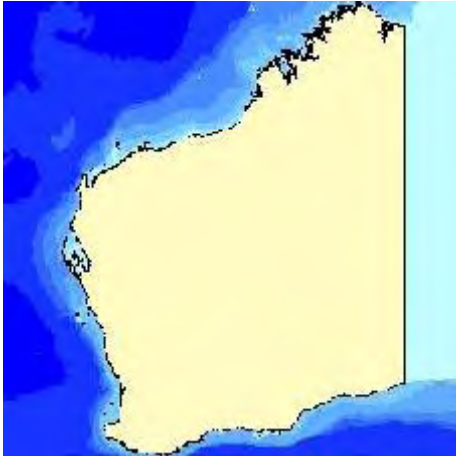
**Stored Data Volume** 3 kB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known



## ***Aquaculture licence and pearling lease boundaries database – Western Australia – Fisheries WA***

**MarLIN record number** 5329

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

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**Abstract** GIS layer depicting all Fisheries WA Aquaculture Licences and applications, Pearl Farm Lease boundary information.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.2 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

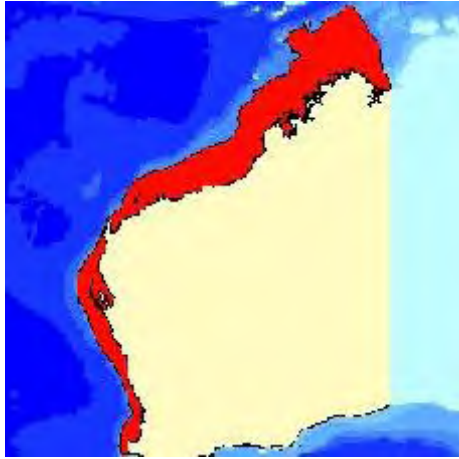
---

**Beginning date** 31 December 1986

**Lineage** Data as supplied by WA Fisheries, the digital data has been converted from Microstation .dgn format into ArcView .shp format in 1998. Subsequent data has been directly into ArcView in GDA94 (datum). Digital data output is in 3 decimal places.

**STATUS OF THE DATA:** This data is indicative only – a disclaimer applies. Although the database has been carefully established from legislative materials (e.g. Management Plans for particular fisheries) and periodically maintained. This data set has been developed in conjunction with Jenny Shaw, Fisheries WA. It has been included in the WA Coastal Resource Atlas database, for use within the WA Marine Emergency Operations Centre. Content dates from before June, 2000

**Completeness** The data needs to be verified by relevant Pearling and Aquaculture Development Officers. Each input of data Transport WA is input at its best known coordinates, and is assessed and transformed back to AGD84. The data in the database's records can only be checked when a print is made, sent back to Fisheries WA where it should be checked by the custodian and corrections are made if necessary. Only then it can be submitted as correct to the leasee applicant



### ***Abalone licence area (zone 3) – Western Australia – Fisheries Western Australia***

**MarLIN record number** 5647

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for zone 3 of the Abalone Managed Fishery.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

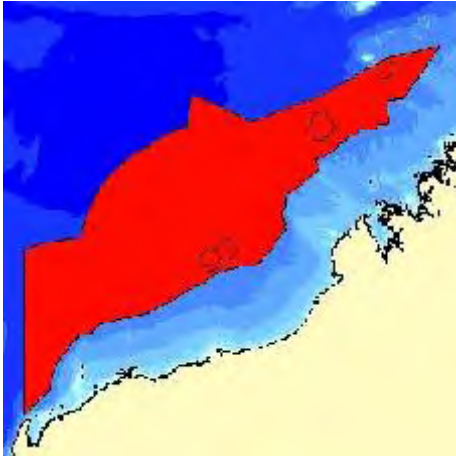
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source of this data is the Abalone Limited Entry Fishery Principal Notice – 1992. The coverage features were created in Arc/Info GIS using the AUSLIG 1:100 000 coastline and the 200 m isobath. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Complete



### ***Australian Fisheries Management Authority (AFMA) – north west slope trawl licence area – Fisheries Western Australia***

**MarLIN record number** 5648

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the North West Slope Trawl Fishery in WA waters under Commonwealth jurisdiction.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

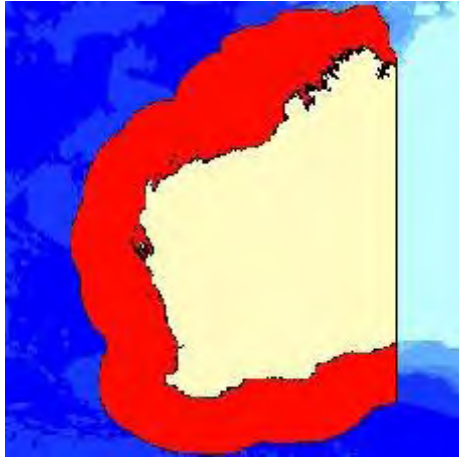
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source of this information was the Australian Fisheries Management Authority Annual Report 1994/95 (coordinates received from Alex Fry: AFMA). The coverage was created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 metre coastline, the 200 metre isobath and the 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Complete



### ***Australian Fisheries Management Authority (AFMA) – southern bluefin tuna licence area – Fisheries Western Australia***

**MarLIN record number** 5649

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the North West Slope Trawl Fishery in WA waters under Commonwealth jurisdiction.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

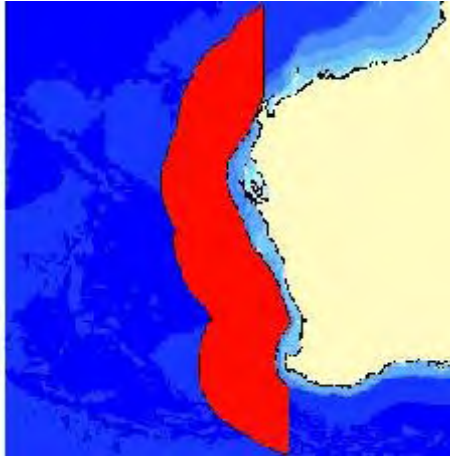
**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source of this information was the Australian Fisheries Management Authority Annual Report 1994/95 (coordinates received from Alex Fry: AFMA). The coverage was created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 metre coastline, the 200 metre isobath and the 200 nautical mile limit. It should be noted that Fisheries under Commonwealth jurisdiction are not necessarily confined to WA waters, the Southern Bluefin Tuna Fishery for example, continues east. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Aust Fisheries Management Authority (AFMA) western deepwater trawl licence area – Fisheries Western Australia***

**MarLIN record number** 5650

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries Licence Area for the Western Deep water Trawl Fishery in WA waters under Commonwealth jurisdiction.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** The source of this information was the Australian Fisheries Management Authority Annual Report 1994/95 (coordinates received from Alex Fry: AFMA). The coverage was created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 metre coastline, the 200 metre isobath and the 200 nautical mile limit. It should be noted that Fisheries under Commonwealth jurisdiction are not necessarily confined to WA waters, the Western Deepwater Trawl Fishery for example, continues east. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Aust Fisheries Management Authority (AFMA) western tuna and billfish fishery licence area – Fisheries Western Australia***

**MarLIN record number** 5651

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries Licence Areas for the Western Tuna and Billfish Fishery.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

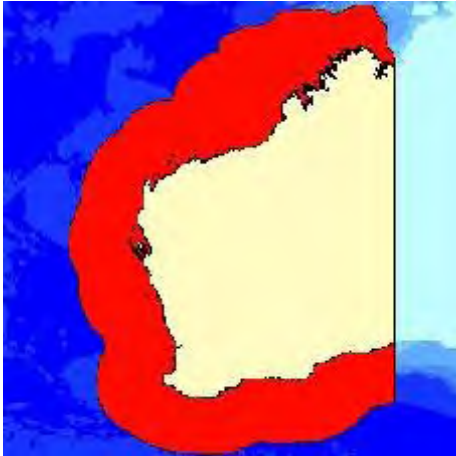
**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source of this information was the Australian Fisheries Management Authority Annual Report 1994/95 (coordinates received from Alex Fry: AFMA). The coverage was created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 metre coastline, the 200 metre isobath and the 200 nautical mile limit. It should be noted that Fisheries under Commonwealth jurisdiction are not necessarily confined to WA waters, the Western Deepwater Trawl Fishery for example, continues east. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, verification and attribution





## ***Australian herring fishery licence area – Fisheries Western Australia***

**MarLIN record number** 5652

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of Fisheries Licence Areas for the Australian Herring Interim Managed Fishery (FBL Endorsement).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 4 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

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**Lineage** No documentation available regarding FBL Endorsement, information provided by Jenny Shaw, Fisheries WA. Designated Fishing Zones and Not Proclaimed Areas from Fisheries File 5/49 F 152. The coverage features were created using Arc/Info GIS. Coverages used in its creation included the AUSLIG 1:100 000 metre and the offshore 200 nautical mile limit. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, verification and attribution



## ***Beach seine Exmouth Gulf licence area – Fisheries Western Australia***

**MarLIN record number** 5653

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** This data set is a polygon coverage of the Fisheries licence areas for the Exmouth Gulf Beach Seine Managed Fishery.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

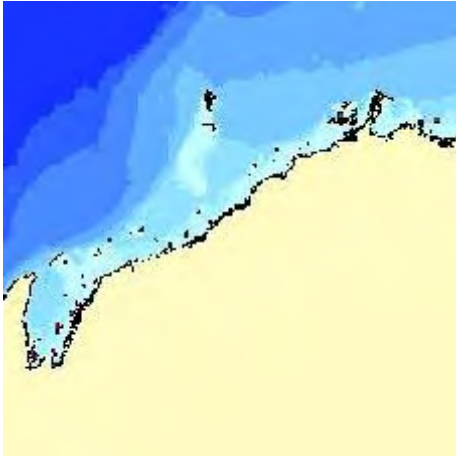
**Stored Data Documentation** No documentation received with data set

**Access constraint** This data is indicative only, a disclaimer applies. For use in NWSJEMS only

---

**Lineage** The source of this data is the Exmouth Gulf Beach Seine Directions to Licensing Officers (Notice No. 412). The coverage features were created using Arc/Info GIS. The coverages used in its creation included the AUSLIG 1:100 000 metre coastline and the 200 metre isobath. The data was compiled from Management Plans, Orders and Notices as published in the Government Gazette. The data was verified by Jenny Shaw and various Research Officers, Policy Officers and Field Officers. Periodic changes are made to the legislation relating to each fishery and these will be reflected in updates of the licence areas. Content dates from before May, 2001

**Completeness** Classification complete, awaiting verification and attribution



### ***Aquaculture sites, December 1998 – Australian North West Shelf – Apache Energy***

**MarLIN record number** 6143

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** Aquaculture areas as of December 1998. Supplied by Fisheries Western Australia.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.167 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Superseded by data supplied by Fisheries WA. Content dates from before July, 2003

**Completeness** Not known



### ***Areas used for aquarium collection in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM***

**MarLIN record number** 5559

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** GIS layer depicting Dampier Archipelago Aquarium Collection. data obtained from Marine Conservation branch covering the Monte Bello Islands and Dampier Archipelago marine reserve implementation areas.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3.5 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with file

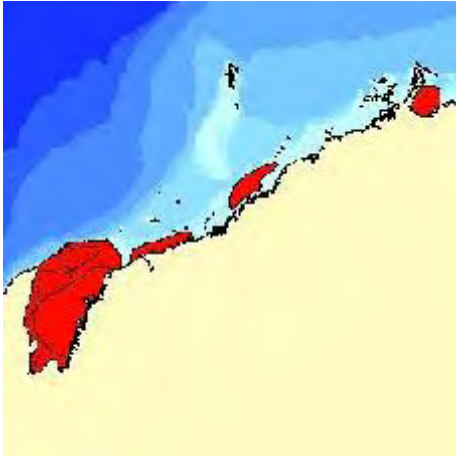
**Access constraint** For NWSJEMS only. Data sets are indicative only and have been compiled by CALM using a selection of local experts and in consultation with commercial operators

---

**Lineage** Hand drawn maps were created in consultation with local divers, drawing on top of nautical charts. The areas were summarised by local CALM staff, then digitised over the digital chart at the CALM MCB office.

The data is still in the process of being checked. Content dates from before March, 2001

**Completeness** Draft version of data set obtained for NWSJEMS use only



***Fisheries resource zones – king prawn and sea mullet –  
Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5765

**Data Type** GIS

**Originator Organisation** BHP Petroleum

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**References** Bowman Bishaw Gorham, 1995. North West Shelf Environmental Resource Atlas Report.  
Report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** King prawn and sea mullet resource zones.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 43 kB of compressed digital data

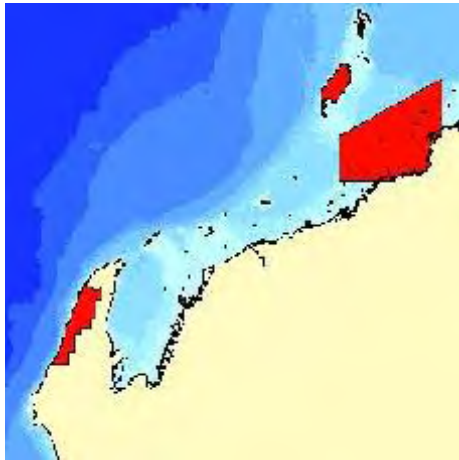
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP  
Petroleum and Custodian Fisheries WA in the current format for the Coastal Atlas Report.  
Superseded by WA Fisheries data sets. Content dates from before July, 2001

**Completeness** Not known

## 11.2 Managed Waters/Reserves



### ***CALM tenure of the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5764

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995. North West Shelf Environmental Resource Atlas Report. Report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Tenure areas outlining nature reserves, island nature reserves, conservation parks, coastal parks and national parks.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 94 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format for the Coastal Atlas Report. Superseded by: “WA Department of Conservation and Land Management – Managed Lands and Waters – Western Australia” (*MarLIN* record no. 5331). Content dates from before July, 2001

**Completeness** Not known



### ***Marine parks of the Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5770

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** CALM Marine Parks.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

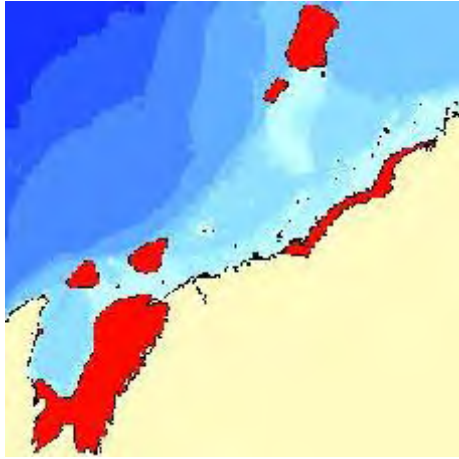
**Stored Data Volume** 16 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Superseded by: “WA Department of Conservation and Land Management – Managed Lands and Waters – Western Australia” (*MarLIN* record no. 5331). Content dates from before July, 2001

**Completeness** Not known



## ***Proposed marine parks, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5774

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Proposed marine parks for WA.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 19 kB of compressed digital data

**Access constraint** For NWSJEMS use only

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**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





## ***Ningaloo Marine Park, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5810

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Ningaloo Marine Park and Conservation zones. State and Commonwealth jurisdiction areas are outlined.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

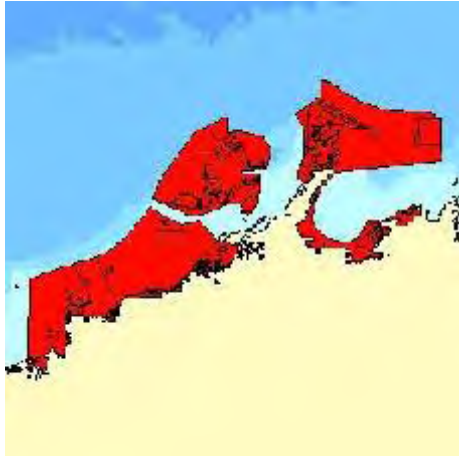
**Stored Data Volume** 43 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Superseded by: “WA Department of Conservation and Land Management – Managed Lands and Waters – Western Australia” (*MarLIN* record no. 5331). Content dates from before July, 2001

**Completeness** Not known



## ***Proposed Dampier Archipelago/Cape Preston Marine Conservation Reserve (second draft), Western Australian North West Shelf***

**MarLIN record number** 6013

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** Proposed Dampier Archipelago/Cape Preston marine conservation reserve (second draft) – zones + outer boundary + internal non-reserve polygons. Reserve developed by the Advisory Committee (meeting seven, 14-15 May 2002) for consideration and input from stakeholders.

This data set was compiled primarily for an approximate assessment of reserve total area and general use zone area. It was done rapidly, and should not be used for further work. It is a unioned data set of the zone boundaries from meeting 7 (ac-meeting07\_dar\_20020710\_amg50\_agd84), the outer boundary from meeting 7 (area-temp\_dar\_20020704\_amg50\_agd84), and had internal polygons of nature reserves, etc added. Unallocated crown land within the general use area above HWM has been included in this data set.

NOTE: These areas are at a draft stage and are indicative only. They have arisen out of discussion by the Advisory Committee (at the meeting of 14 to 15 May 2002) as part of a suite of strategies to manage the conservation values of the area. The extent and location of these areas is subject to further discussion by the Advisory Committee, following consultation with, and input from stakeholders. Zoning options will be further considered following input from the community. The boundaries and reserve category (e.g. Marine Management Area, Marine Park or Marine Nature Reserve) will be further developed following input on these proposed zones, through the statutory public participation process.

**Documentation Link** [Accompanying Documentation from CALM](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 600 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** See Document link

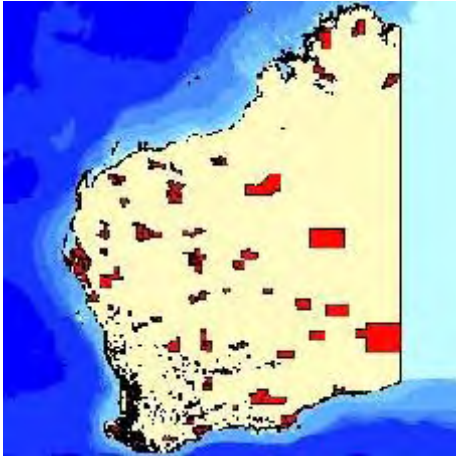
**Access constraint** For use in NWSJEMS only. The linked CALM documentation must be read before this data is used by members of the NWSJEMS team. This data set is not to be distributed

---

**Beginning date** 14 May 2002

**Lineage** Obtained from CALM Marine Branch in its current form. For additional information see Documentation link to CALM document. Content dates from before October, 2002

**Completeness** This data set is only in draft form, the data is indicative only and is subject to consultation



### ***WA Department of Conservation and Land Management – managed lands and waters – Western Australia***

**MarLIN record number** 5331

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** CALM managed lands and waters within Western Australia, obtained for use in the NWSJEMS project. Tenure categories include national parks, nature reserves, conservation areas, forests and other reserves/lease and freehold areas managed by CALM. This responsibility is vested under the CALM Act and the Wildlife Conservation Act.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 6 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

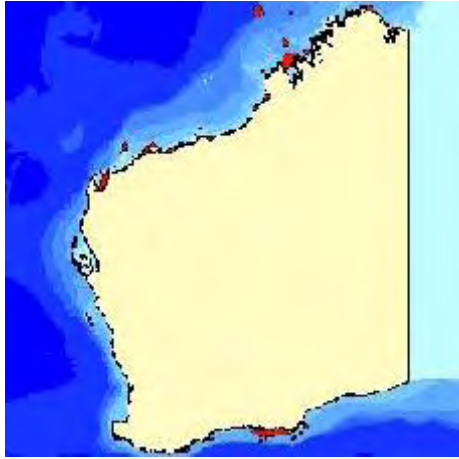
**Access constraint** Data is to be used for NWSJEMS only

---

**End date** 1998

**Lineage** Derived from CALM's Tenure Information System from data supplied by Dept of Land Administration

**Completeness** Graphic component as at date of data set acquired from DOLA. Attribute data more timely, but value adding not linked to graphics until next SCDB acquisition from DOLA



## ***Proposed representative marine reserve system for Western Australia – WA Department of Minerals and Energy***

**MarLIN record number** 5332

**Data Type** GIS

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** This data set portrays an overview of proposed marine parks in WA. These have been detailed in the Wilson report of 1994 which outlines the boundaries of suitable sites. They have been graphically depicted on a state-wide map to provide an easy means of visualising the gazetted information.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.6 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** For NWSJEMS only

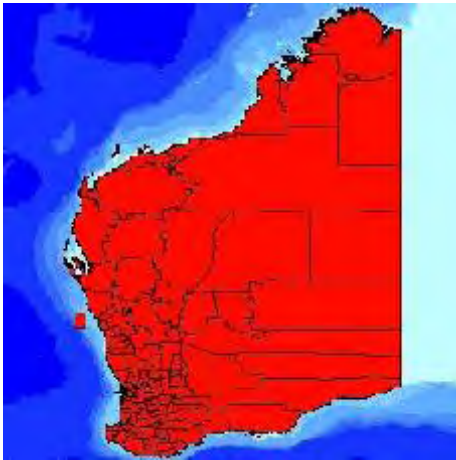
---

**Beginning date** 1994 **End date** 1994

**Lineage** This data set is a compilation of various CADSCRIPT files held by CALM. There were over thirty separate files (one of each area) that defined the proposed marine park boundaries. They were all merged together in an Alber's Equal Area Projection file and suitably colour coded to represent the differing types of Marine Park. The data was received by WADEP in Microstation format and was converted to ArcView shapefiles and then acquired by the NWSJEMS CMR Data Team

**Completeness** As parks become vested under the Marine Parks Act, their position and attributes will be updated onto the original .DGN file

### 11.3 Miscellaneous zones and sites



#### ***Local government authority boundaries of Western Australia – Department of Land Administration***

**MarLIN record number** 5544

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** A digital representation of the Local Government Authority boundaries for the state of Western Australia. Locality boundaries are being progressively added.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

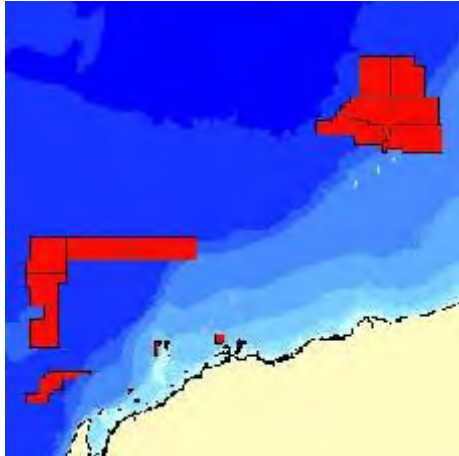
**Stored Data Documentation** No documentation received with data set

**Access constraint** No Restrictions

---

**Lineage** The data was digitised from the most accurate maps available and validated against technical descriptions in the Government Gazette (WA DEP). Content dates from before February, 2001

**Completeness** Complete



### ***Commonwealth release areas portion of Western Australian Petroleum Map (WAPMAP) – WA Department of Minerals and Energy***

**MarLIN record number** 5655

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** WAPMAP (Western Australian Petroleum Map) digital contains petroleum titles together with any gazetted release areas. The data is held in GDA94 latitude and longitude coordinates. This record refers to the release areas data set.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 20 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

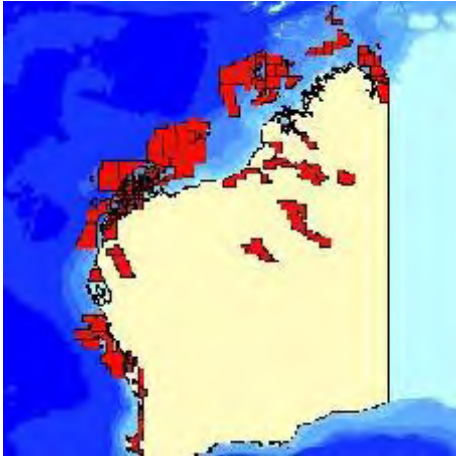
**Access constraint** For use in the NWSJEMS only

---

**Beginning date** 01 June 1989

**Lineage** Petroleum title source data includes precision captured title and boundary definitions based on 5 by 5 minute graticular blocks while incorporating digital AMBIS data sourced from Geoscience Australia, (see below). It also includes data that has been extracted from databases maintained by the Department. Content dates from before May, 2001

**Completeness** The data set is complete and has been verified



### ***Petroleum titles portion of Western Australian Petroleum Map (WAPMAP) – WA Department of Minerals and Energy***

**MarLIN record number** 5668

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** WA Department of Industry and Resources

---

**Abstract** WAPMAP (Western Australian Petroleum Map) digital contains petroleum titles together with any Gazetted release areas. The data is held in GDA94 latitude and longitude coordinates.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

The data is held in GDA94 latitude and longitude coordinates (Decimal Degrees).

**Stored Data Volume** 360 kB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Access constraint** For use in the NWSJEMS only

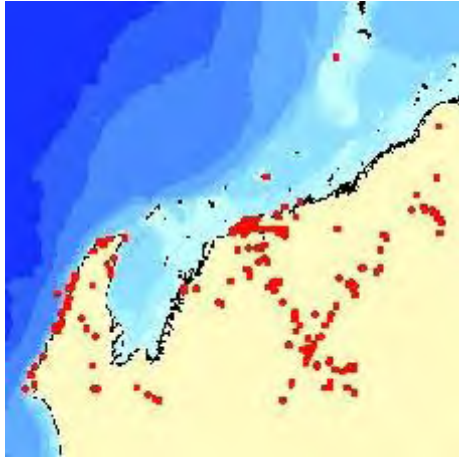
---

**Beginning date** 01 June 1989

**Lineage** Petroleum Title source data includes precision captured title and boundary definitions based on 5 x 5 minute graticular blocks while incorporating digital AMBIS data sourced from Geoscience Australia, (see ambis statement in positional accuracy). It also includes data that has been extracted from databases maintained by the Department. Content dates from before May, 2001

**Completeness** The data set is complete and has been verified

There are plans to integrate WAPMAP with TENGRAPH, (the electronic on-line Mineral Title registrar that has replaced the analogue system of Public Plans)



### ***Aboriginal heritage sites of the Western Australian North West Shelf, Dampier to Ningaloo – BHP Petroleum***

**MarLIN record number** 5760

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995. North West Shelf Environmental Resource Atlas Report. Report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Aboriginal heritage sites within the NW Shelf.

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**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 12 kB of compressed digital data

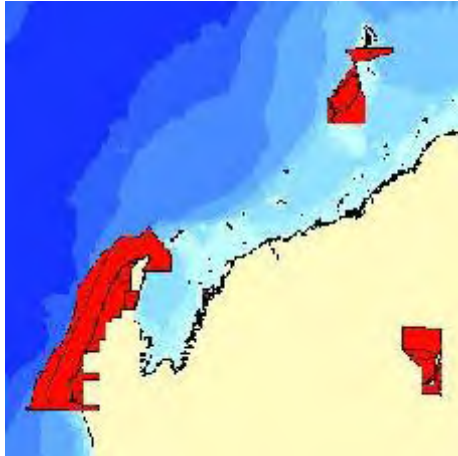
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





## ***Australian Heritage Council sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5795

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Australian Heritage Council sites.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 332 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Superseded by: “WA Department of Conservation and Land Management – Managed Lands and Waters – Western Australia” (*MarLIN* record no. 5331). Content dates from before July, 2001

**Completeness** Not known



### ***Australian Nature Conservation Agency sites, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5799

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Australian Nature Conservation sites on the NW Shelf of Western Australia.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 5 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known

## 12. INFORMATION LAYERS, TOPOGRAPHY, BATHYMETRY, INDEXES

### 12.1 Bathymetry



#### ***Detailed bathymetric contours of the Western Australian North West Shelf – Apache Energy***

**MarLIN record number** 5681

**Data Type**

Observed Data – field  
GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting offshore bathymetric contours.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.3 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

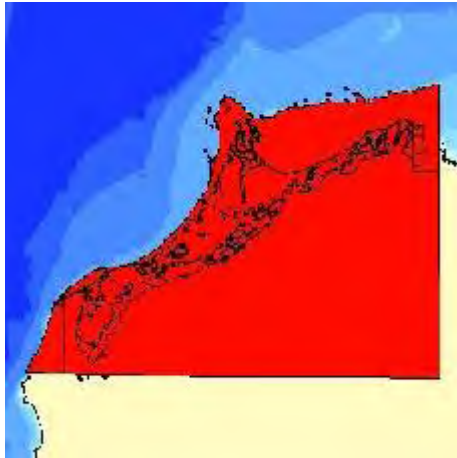
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before May, 2001

**Completeness** Not known



### ***Detailed bathymetric polygons of the Western Australian North West Shelf – Apache Energy***

**MarLIN record number** 5682

**Data Type**

Observed Data – field  
GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting offshore bathymetric polygons of 5 to 10, 10 to 20, 20 to 50 metres.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.4 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

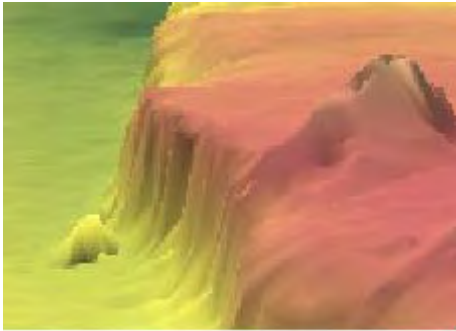
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before May, 2001

**Completeness** Not known



### ***Fine scale bathymetric data – Dampier Region of the Australian North West Shelf – WNI***

**MarLIN record number** 5745

**Data Type** Aggregated/Derived Data

**Originator Organisation** WNI (now MetOcean Engineers)

---

**Abstract** Fine-scale bathymetry data set covering the Dampier Region. The data set has been acquired from WNI for use in the NWSJEMS project.

---

**Stored Data Format** DIGITAL – GIS – other

**Stored Data Volume** 810 kB

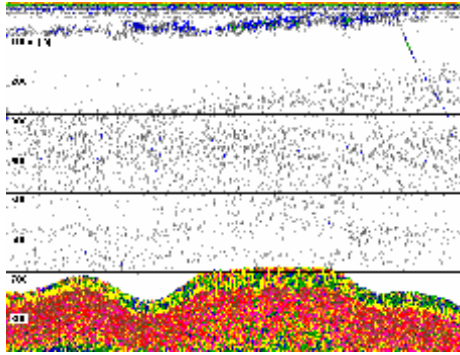
**Stored Data Documentation** No documentation received with data set

**Access constraint** For NWSJEMS use only

---

**Lineage** Not known. Contact WNI for additional information. Content dates from before June, 2001

**Completeness** Not known



## **Gravity, magnetic and bathymetry grids from levelled data for southwest Australia – southern region**

**MarLIN record number** 5830

**Data Type** Aggregated/Derived Data

**Originator Organisation** Geoscience Australia – includes previous AUSLIG, AGSO

---

**Abstract** The Australian Geological Survey Organisation (AGSO) has produced a set of digital bathymetry, gravity and magnetic grids for the southwest quadrant of Australia (24 to 46°S, 106 to 140°E), using all available land, marine and satellite data. The work was done in cooperation with Desmond Fitzgerald & Associates (DFA), and with significant bathymetric data input from the Australian Hydrographic Office (AHO). The results were obtained by performing a network adjustment on marine ship-track data, and combining these with onshore and satellite-derived data.

This CD contains the following directories:

data: data distribution images in TIF and JPEG format showing ship tracks

doc: documentation file as plain text

grids: data grids in band-interleaved by line format

images: images of grids in TIF and JPEG format

Copyright, Commonwealth of Australia, 1999

---

**Stored Data Format** DIGITAL – Images – JPEG

DIGITAL – Images – TIFF

DIGITAL – Text Documents – ASCII

**Stored Data Volume** 279 MB

**Stored Data Documentation** Documentation is in plain text files on the CD ROM. Some further details may be available from the Data Centre CD List

**Access constraint** This data is licenced for use by JEMS under the terms described in [Deed for access to confidential data for study purposes](#).

---

**End date** 1998

**Lineage** Source Database:

GA 'Mardat' marine shiptrack database

GA Australian National Gravity Database

GA National Airbourne Geophysical Database

AHO Natmap and other chart data

AUSLIG, AGSO, CRES 'Geodata' 9" digital elevation model

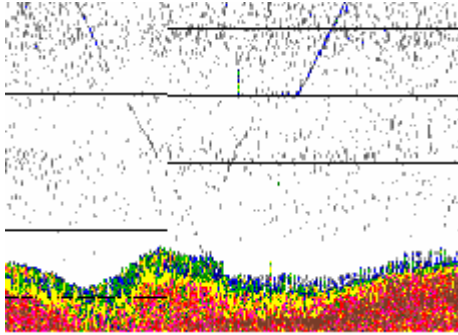
NGDC 'Geodas' shiptrack database

SIO R/V Melville swath surveys

Smith & Sandwell (1995) 'Geosat 7.2' world gravity grid

Smith & Sandwell (1997) 'Topo 6.2' world topography grid

**Completeness** Not known



## ***Gravity, magnetic and bathymetry grids from levelled data for northwest Australia version 2 – North West Shelf***

**MarLIN record number** 5831

**Data Type** Aggregated/Derived Data

**Originator Organisation** Geoscience Australia – includes previous AUSLIG, AGSO

---

**Abstract** The Australian Geological Survey Organisation (AGSO) has produced The data are gravity, magnetic and bathymetry grids at 1km resolution covering the NW Australian quadrant, both offshore and onshore, within the bounds 8°-24°S, 106°-143°E.

The grids were developed by AGSO working in co-operation with Desmond Fitzgerald and Associates and the Australian Hydrographic Office. They represent a major upgrade of marine ship-track potential field and bathymetry data in Australian waters west of 143°E for the purpose of developing fundamental products for geological interpretation. In integrating data from many sources, levelling techniques have been developed to correct crossover and other errors, and the ship-track data have been merged with satellite and high-resolution onshore sources. Version 1 of these gridded data was released in April 1999.

---

**Stored Data Format** DIGITAL – Images – JPEG

DIGITAL – Images – TIFF

DIGITAL – Text Documents – ASCII

**Stored Data Volume** 604 MB

**Stored Data Documentation** Documentation is in plain text files on the CD ROM. Some further details may be available from the Data Center CD List

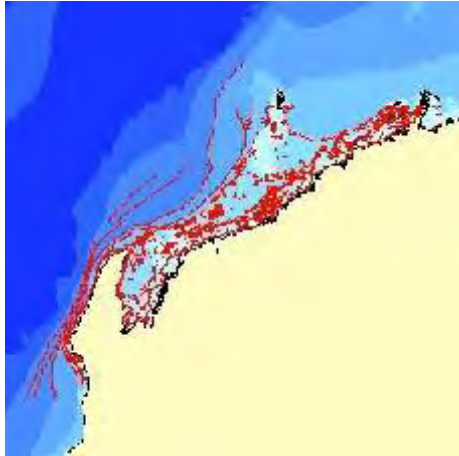
**Access constraint** This data is licenced for use by JEMS under the terms described in [Deed for access to confidential data for study purposes](#)

---

**End date** 2000

**Lineage** AGSO used multiple data sources. See documentation on CD ROM for details

**Completeness** Not known



### ***Bathymetric contours – Australian North West Shelf – from BHP Coastal Resource Atlas***

**MarLIN record number** 5314

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Bathymetry data set, with depth contours of 5, 10, 20, 50, 100, 200, 300 metres, covering onshore and offshore areas of the NW Shelf from North of Dampier to Ningaloo Reef. The data set has been acquired from BHP for use in NWSJEMS.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.5 MB compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

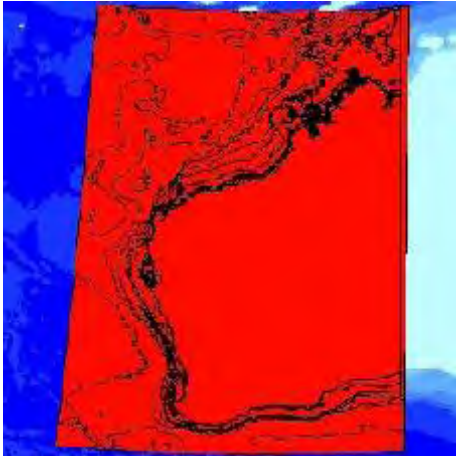
**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before June, 2000

**Completeness** Not known





### ***Bathymetry represented as depth regions – Western Australia***

**MarLIN record number** 5323

**Data Type** GIS

**Originator Organisation** WA Department of Planning and Infrastructure

---

**Abstract** Deepwater bathymetry polygons data set. The data set polygons were interpolated from WA Department of Transport and Royal Australian Navy soundings, levels and probes. Some contours have been digitised.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.2 MB compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

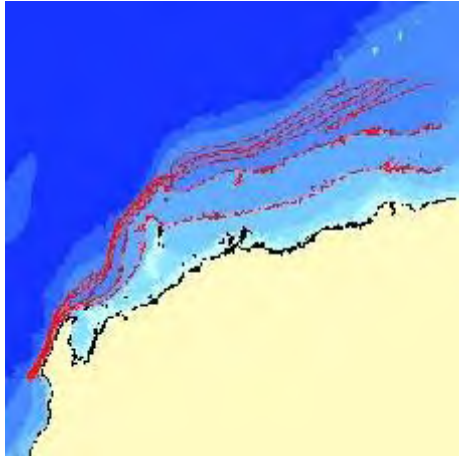
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only. Some of the RAN soundings from which this data set was compiled are restricted

---

**Lineage** Data was collected through field study, using maps and aerial photo interpretation. The field research (bathymetry and topography) used hydrographic surveying techniques while the aerial photography used remote sensing technology. Content dates from before June, 2000

**Completeness** Not known



## ***Bathymetry – Australian North West Shelf – Apache Energy***

**MarLIN record number** 5325

**Data Type**

Observed Data – field  
GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting offshore bathymetry from 50 metres to 300 metres in 50 metre increments.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.2 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before June, 2000

**Completeness** Not known



***Bathymetric contours from dredging spoil ground –East Lewis Island, Dampier Archipelago – February 1998 – Hamersley Iron***

**MarLIN record number** 5326

**Data Type**

Observed Data – field  
GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Bathymetry data set from East Lewis Spoil Ground comprises bathymetric contours prior to disposal of dredge spoil.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.2 MB compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Data obtained by WA DEP from Hamersley Iron for NWSJEMS as MapInfo. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Content dates from before June, 2000

**Completeness** Complete for the purposes of the NWSJEMS



***Bathymetric soundings from dredging spoil ground –  
East Lewis Island, Dampier Archipelago – February 1998 –  
Hamersley Iron***

**MarLIN record number** 5327

**Data Type**

Observed Data – field

GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Bathymetry data is from East Lewis Spoil Ground with bathymetric soundings prior to disposal of dredge spoil.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.5 MB compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

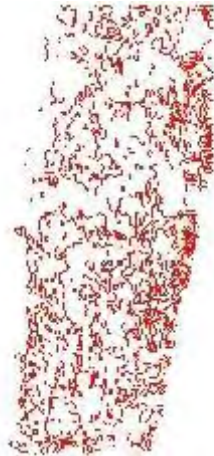
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Content dates from before June, 2000

**Completeness** Complete for the purposes of the NWSJEMS



***Bathymetric contours from dredging spoil ground –  
East Lewis Island, Dampier Archipelago – November 1998 –  
Hamersley Iron***

**MarLIN record number** 5328

**Data Type**

Observed Data – field

GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Bathymetry contours of East Lewis Spoil Ground taken after spoil dumping. Bathymetric contours are from a hardcopy map.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.2 MB compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation received with data set

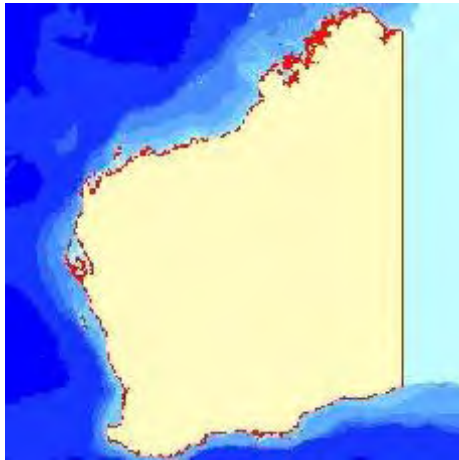
**Access constraint** For use in the NWSJEMS only. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Original bathymetric contours digitised from hardcopy map. Content dates from before June, 2000

**Completeness** Complete for the purposes of the NWSJEMS

## 12.2 Coastline



### ***Coastline of Western Australia – 1:100 000 – 1999 – Department of Land Administration***

**MarLIN record number** 5333

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Digital coastline coverage, including all inlets, estuaries and islands (except for Barrow Island). Original information sourced from DOLA topographic data as Microstation files (WADEP has converted these files into ArcView shape files).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 7 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation supplied with data set

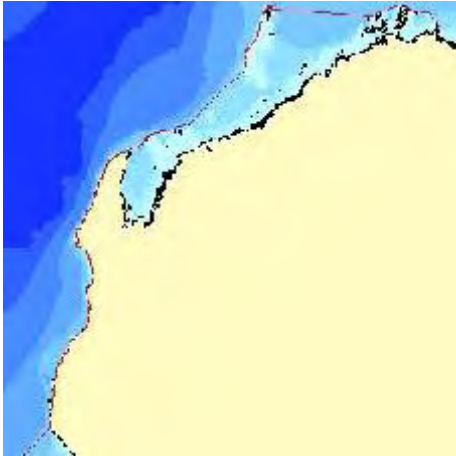
**Access constraint** Data is to be used for NWSJEMS only

---

**End date** 01 July 1999

**Lineage** The best available linework was used from DOLA topographic series as Microstation files. Some additional lines were created as connectors and topological correctness was ensured to allow complete polygons to be constructed. No duplicate arcs. Arcs attributed to dgn level, data source and coast class (e.g. coastline, inlet, island). Polys attributed according to data source and coast class. Barrow Island added from DOLA topographic sheets as it did not exist on COMP\_COAST layer

**Completeness** The most up to date coastline coverage in WA as of 1/7/99



### ***Baseline, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5798

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Coastal Atlas data sets of the North West Shelf Region.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

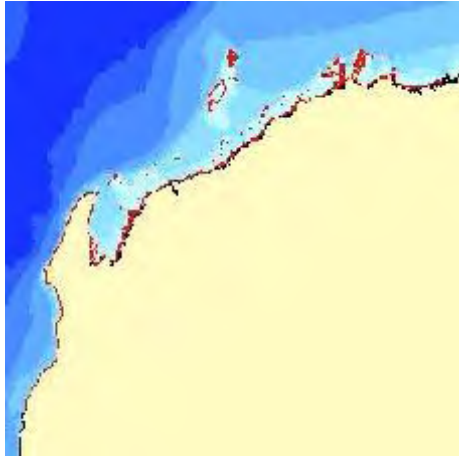
**Stored Data Volume** 27 MB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Superseded by: “Coastline of Western Australia based on the Spatial Cadastral Database” (*MarLIN* record no. 6058). Content dates from before July, 2001

**Completeness** Not known



## **Coastline, Western Australian North West Shelf – BHP Petroleum**

**MarLIN record number** 5806

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** AUSLIG coastline, obtained from BHP Petroleum, Custodian AUSLIG, for the Coastal Atlas Report.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 230 kB of compressed digital data

**Access constraint** For NWSJEMS use only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Superseded by: “Coastline of Western Australia based on the Spatial Cadastral Database” (*MarLIN* record no. 6058). Content dates from before July, 2001

**Completeness** Not known





### ***Beaches – Monte Bello Islands, Australian North West Shelf – Apache Energy***

**MarLIN record number** 5524

**Data Type** GIS

**Originator Organisation** Apache Energy

---

**Abstract** GIS layer depicting beaches on the Monte Bello Islands.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.001 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

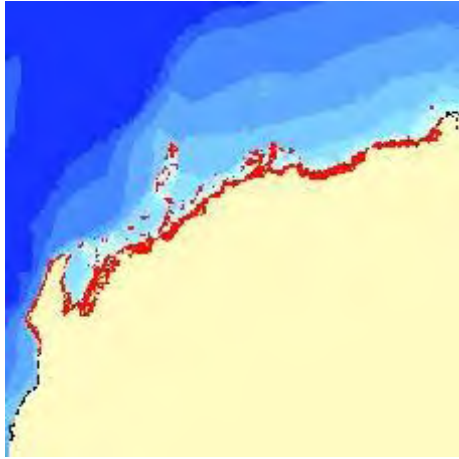
**Stored Data Documentation** No documentation received with data set

**Access constraint** For use in the NWSJEMS only

---

**Lineage** Data set obtained from Apache Energy in its current format. Content dates from before February, 2001

**Completeness** Not known



## ***Coastline of Western Australia based on the Spatial Cadastral database***

**MarLIN record number** 6058

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Coastline extracted from the Western Australian Spatial Cadastral database. The coastline as represented on property boundaries.

NOTE 1: This coast is being continually upgraded and will be modified as the spatial accuracy is improved. e.g. when new more detailed mapping data is obtained. Changes in the coastline also occur due to natural and man-made forces. Coastline accuracy in areas is improved by DOLA on an 'on demand' basis when upgrades are required by users. Updates may have been done in Mandurah area (Mandurah South and East at 1:2 000 capture scale) since this file was extracted from DOLA's system. Also Jurien area is being attended to as at 31 May 2001. Thus, if spatial accuracy is an issue, then it is best to consult with DOLA (John Fenner) on the coast in a particular area at the time most relevant to the issue being resolved.

NOTE 2: Bruce Clark informs us that the AUSLIG AMBIS coast data set has apparently got a better LWM definition in many areas, particularly over some of the northern WA offshore islands. They are awaiting a GDA94 transformed AMBIS data set to assess the full nature and extent of the discrepancies, and will then work on a program to rectify these.

NOTE 3: This coastline data set is referred to by DOLA as the Cadastral coast. It is different to DOLA's Topographic coast. The Topographic coast has been digitised/sourced from topographic maps/data and is the same coast as that on the WALIS clearinghouse.

NOTE 4: The eastern-most extent of the coastline in this data set does not align with WA border. The WA border has not been included in this data set.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 24 MB of digital compressed data

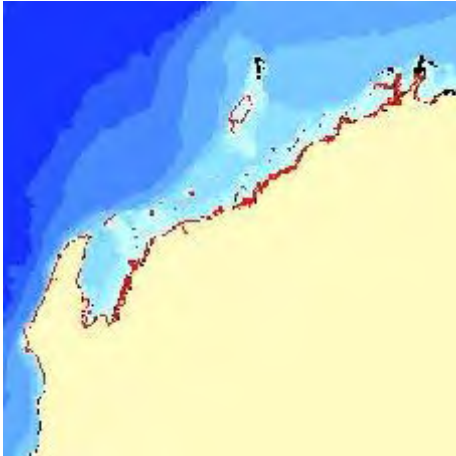
**Access constraint** Data is to be used for NWSJEMS only

---

**End date** 28 February 2001

**Lineage** See abstract

**Completeness** This was DOLA's best available coastline as of 28 February 2001



### ***Coastline classification, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5801

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** Coastline (type – island, mainland). Obtained from BHP Petroleum, custodian AUSLIG, for the Coastal Atlas Report.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 151 kB of compressed digital data

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known

## 12.3 Topography



### ***Topographic data – spot heights, Dampier – Western Australian North West Shelf – Hamersley Iron***

**MarLIN record number** 5817

**Data Type** GIS

**Originator Organisation** Hamersley Iron

---

**Abstract** Hamersley Iron Topographic Data Spot Heights 1:1000 mapping digitised from above aerial photography February 1996. See Documentation link for AAM Surveys metadata.

**Documentation Link** [AAM Surveys Documentation](#)

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

Obtained as MapInfo Workspaces Converted to ArcView shapefiles

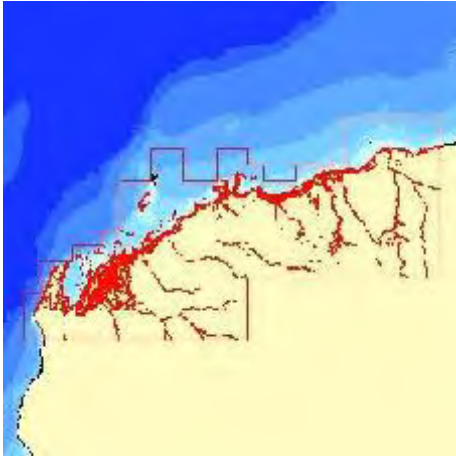
**Stored Data Volume** 0.3 MB of compressed digital data

**Access constraint** This data has been supplied to the North West Shelf Joint Environmental Management Study and its collaborators. Any mapping products must contain the disclaimer included in the licence agreement

---

**Lineage** Obtained from Hamersley Iron in MapInfo format. Converted to ArcView shapefiles using ArcView MIFSHAPE converter. Some MIF files did not convert to shapefiles. See document Link to AAM Surveys documentation for Source Data details. Content dates from before July, 2001

**Completeness** Complete



***Natural hydrology features, arcs – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5739

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Digital topographic map series showing hydrology. The features include: mangroves, coastal salt flats, areas subject to inundation, lakes – perennial and non perennial, major water course (perennial and non perennial), natural pools (perennial and non perennial), reef areas, sand swamp (perennial and non perennial), tidal flats.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 10 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

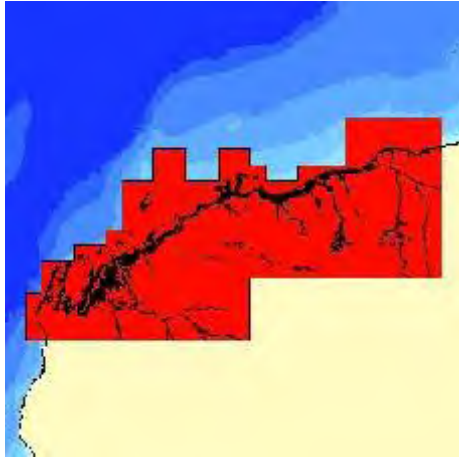
**Stored Data Documentation** No documentation supplied with data set

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** The information for this data set was collected using digital photogrammetric techniques or by hand digitising/scanning of existing compilations/repromats. Source materials may be from DOLA or AUSLIG. Content dates from before June, 2001

**Completeness** This is an ongoing series



***Natural hydrology features, polygons – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5740

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Digital topographic map series showing hydrology. The features include: mangroves, coastal salt flats, areas subject to inundation, lakes – perennial and non perennial, major water course (perennial and non perennial), natural pools (perennial and non perennial), reef areas, sand swamp (perennial and non perennial), tidal flats.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 16 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

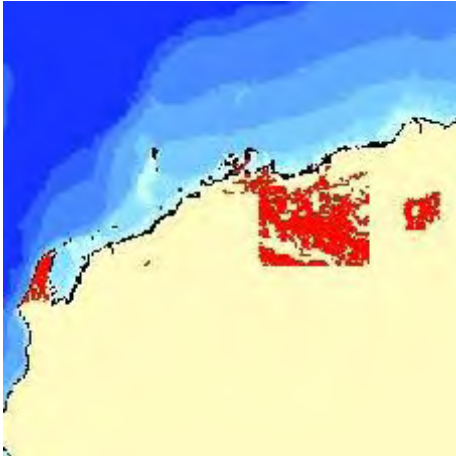
**Stored Data Documentation** No documentation supplied with data set

**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** The information for this data set was collected using digital photogrammetric techniques or by hand digitising/scanning of existing compilations/repromats. Source materials may be from DOLA or AUSLIG. Content dates from before June, 2001

**Completeness** This is an ongoing series



***Contours at 50 metre intervals – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5742

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Topographic contours of 50 metre intervals.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation supplied with data set

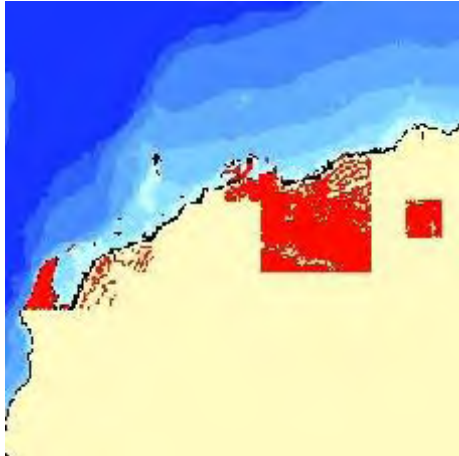
**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** This data was acquired by WADEP from DOLA

Microstation DGN files were converted to ESRI shapefiles. Content dates from before June, 2001

**Completeness** This is missing data from -21°S, 114°E to -22.5°S, 117°E



***Contours at 10 metre intervals – topographic data at 1:100 000 scale – WA Department of Land Administration***

**MarLIN record number** 5743

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Topographic contours of 10 metre intervals (excluding multiples of 50 metres which are contained in an associated data set).

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation supplied with data set

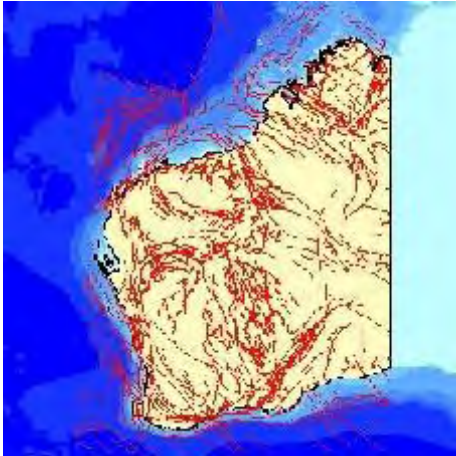
**Access constraint** Data is to be used for NWSJEMS only

---

**Lineage** This data was acquired by WADEP from DOLA. Microstation DGN files were converted to ESRI shapefiles. Content dates from before June, 2001

**Completeness** This is missing data from -21°S, 116°E to -22°S, 117°E





***Atlas of Mineral Deposits and Petroleum Fields 1999:  
geological linework structures Western Australia 1999 –  
Western Australian Department of Minerals and Energy***

**MarLIN record number** 5587

**Data Type** GIS

**Originator Organisation** WA Department of Industry and Resources

---

**Reference** Geographical Survey of Western Australia, 1999, Atlas of Mineral Deposits and Petroleum Fields, Department of Industry and Resources (Australia)

---

**Abstract** GIS layer depicting geology line work structures, Western Australia. The data is held in latitude and longitude coordinates. The data is held in GDA decimal degrees.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.7 MB of compressed data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** Unknown

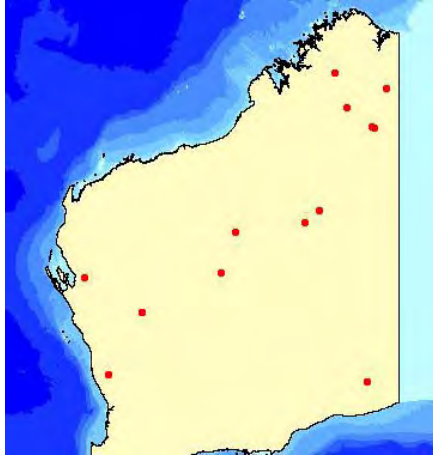
**Access constraint** For NWSJEMS use only

---

**Beginning date** 06 January 1999 **End date** March 1999

**Lineage** Source data for this data package includes sources derived from map products, map line-work was digitised, and the resulting GIS coverages attributed. Transformation was from AGD84 to GDA94 using NTV4 distortion model

**Completeness** Data is complete and has been verified



***Atlas of Mineral Deposits and Petroleum Fields 1999: point locations of syenite, diatremes and impact structures, Western Australia 1999***

**MarLIN record number** 5589

**Data Type** GIS

**Originator Organisation** WA Department of Industry and Resources

---

**Reference** Geographical Survey of Western Australia, 1999, Atlas of Mineral Deposits and Petroleum Fields, Department of Industry and Resources (Australia)

---

**Abstract** GIS layer depicting point locations of syenite, diatremes and impact structures. The data is held in latitude and longitude coordinates. The data is held in GDA decimal degrees.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 10 kB

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** Unknown

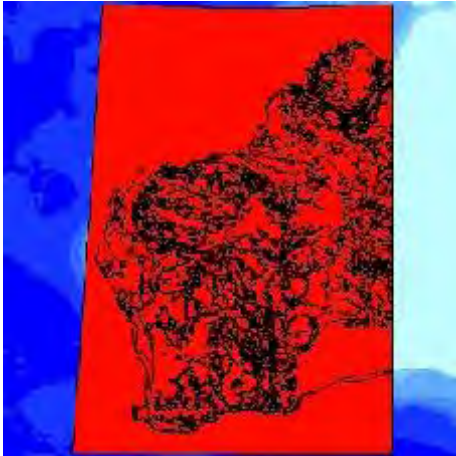
**Access constraint** For NWSJEMS use only

---

**Beginning date** 06 January 1999 **End date** March 1999

**Lineage** Source data for this data package includes sources derived from map products, map line-work was digitised, and the resulting GIS coverages attributed. Transformation was from AGD84 to GDA94 using NTV4 distortion model

**Completeness** Data is complete and has been verified



***Atlas of Mineral Deposits and Petroleum Fields 1999: state geological polygons, Western Australia 1999 – Western Australian Dept of Minerals and Energy***

**MarLIN record number** 5590

**Data Type** GIS

**Originator Organisation** WA Department of Industry and Resources

---

**Reference** Geographical Survey of Western Australia, 1999, Atlas of Mineral Deposits and Petroleum Fields, Department of Industry and Resources (Australia)

---

**Abstract** GIS layer depicting State Geological Polygons, Western Australia. The data is held in latitude and longitude coordinates. The data is held in GDA decimal degrees.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 3.87 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** Metadata in PDF

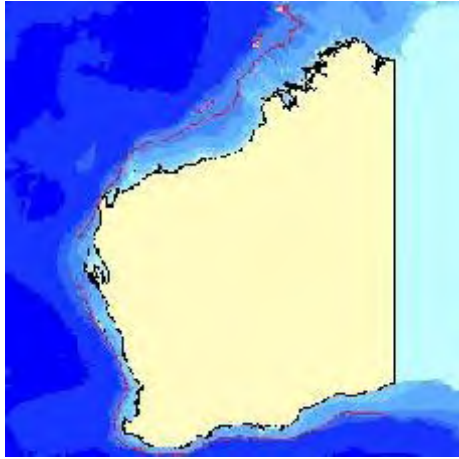
**Access constraint** For NWSJEMS use only

---

**Beginning date** 06 January 1999 **End date** 05 March 1999

**Lineage** Source data for this data package includes sources derived from map products, map line-work was digitised, and the resulting GIS coverages attributed. Transformation was from AGD84 to GDA94 using NTV4 distortion model

**Completeness** Data is complete and has been verified



***Atlas of Mineral Deposits and Petroleum Fields 1999: thickness of Phanerozoic, Neoproterozoic and bathymetric contours, Western Australia 1999***

**MarLIN record number** 5591

**Data Type** GIS

**Originator Organisation** WA Department of Industry and Resources

---

**Reference** Geographical Survey of Western Australia, 1999, Atlas of Mineral Deposits and Petroleum Fields, Department of Industry and Resources (Australia)

---

**Abstract** GIS layer depicting contour thicknesses of Phanerozoic and Neoproterozoic layers and Bathymetric depths. The data is held in latitude and longitude coordinates. The data is held in GDA decimal degrees.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 0.003 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** Not supplied

**Access constraint** For NWSJEMS use only

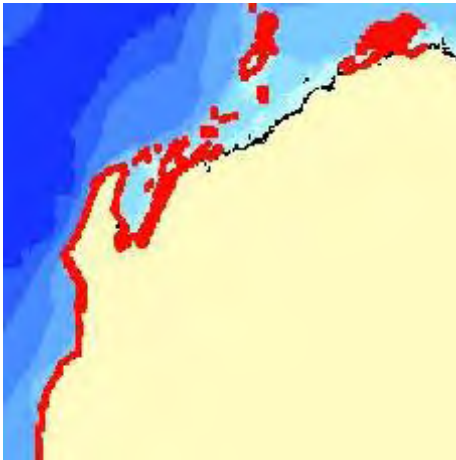
---

**Beginning date** 06 January 1999 **End date** March 1999

**Lineage** Source data for this data package includes sources derived from map products, map line-work was digitised, and the resulting GIS coverages attributed. Transformation was from AGD84 to GDA94 using NTV4 distortion model

**Completeness** Data is complete and has been verified

## 12.4 Indexes



### ***Aerial photography index – Western Australia – WA Department of Land Administration***

**MarLIN record number** 5792

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Index of aerial photographs obtained by DEP containing information on DOLA job, run and photo number. Also contains information on other formats the photos are available in – e.g. scanned image, rectified image.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

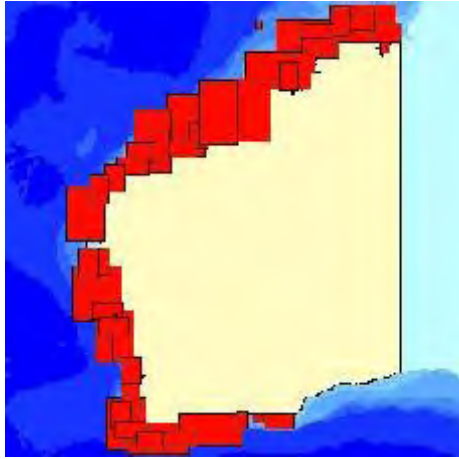
**Stored Data Volume** 39 kB of digital data

**Access constraint** For use in NWSJEMS only

---

**Lineage** Converted from DGN files obtained from DOLA of aerial photo run sheets. Converted to shapefiles and additional attributes added. Content dates from before July, 2001

**Completeness** In progress



## **Royal Australian Navy digital charts (Seafarer) – index – Western Australia**

**MarLIN record number** 5821

**Data Type** GIS

**Originator Organisation** Australian Hydrographic Office

---

**Contributors** Data set originally supplied by Licensing and Contracts Officer, Royal Australian Navy Hydrographic Service

---

**Abstract** Royal Australian Navy digital charts produced by the Australian Hydrographic Service. Electronic charts including Seafarer which are intended for use in chart plotter systems. Some copies of the charts have been converted to GIS format for use in ArcView GIS by NWSJEMS project. Includes the GIS index of Seafarer Charts.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile. Original format is as Seafarer Digital Charts, converted to GIS compatible format using Seafarer and GhostScript for Postscript to Bitmap conversion

**Stored Data Volume** 12 kB of compressed digital data

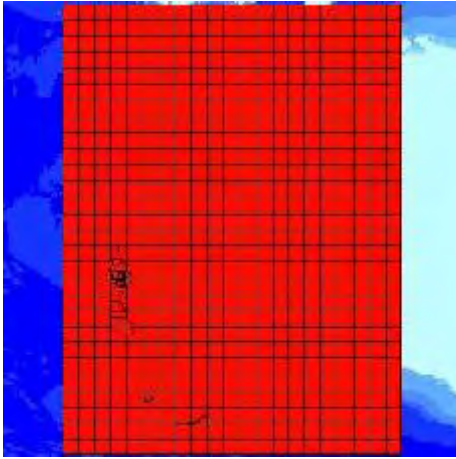
**Stored Data Documentation** c/o NWSJEMS Data Team

**Access constraint** RAN and Seafarer product must be acknowledged when creating products incorporating these images. Seafarer obtained primarily for Oil Spill response by DEP – ESD Marine Branch. This copy for use within CMAR for NWSJEMS only

---

**Lineage** Original format here is from Seafarer, georeferenced using best available coastline. Content dates from before July, 2001

**Completeness** Each image is complete as it obtained from RAN and Seafarer product



## ***Catch and effort reporting regions, 60 Nm grid – Fisheries Western Australia***

**MarLIN record number** 5828

**Data Type** GIS

**Originator Organisation** WA Department of Fisheries

---

**Abstract** The 60 Nm grid covers the entirety of W.A. It is generated to cover the coastal waters of WA utilised by commercial fishers. The full extent of the main grid containing these blocks is: -9°S 124°E to 36°S 130°E. The grid graticule has 1° tickmarks on the latitudinal (X, °E) and longitudinal (Y, °S) axis. Each 1° block in the 1° grid (referred to as the 60 Nm grid, because 1° latitude at Equator equals approx. 60Nm) is identified using a 5 digit number based on the lat. & long. coordinates of the NW corner of that block, e.g: 31250, where the NW corner of the block is 31° S and 125°E, Only the last 2 digits (25) of the longitude were used. The fifth digit is used for defining blocks (sub-blocks) that are not standard (i.e. not 1° x 1°) or are areas of special interest, such as special fishing zones, estuaries, embayments and lakes, and were created to provide greater detail of Catch and Effort (C&E) reporting.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 59 kB of compressed digital data

**Access constraint** Released with permission of responsible parties

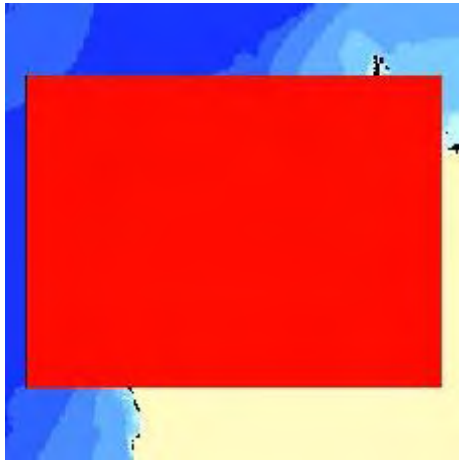
---

**Beginning date** 01 January 1975

**Lineage** Data set supplied by Mr Chris J. DIBDEN: T.O./Acting GIS Coordinator, Fisheries WA, Bernard Bowen Research Institute. The grid was created to facilitate the reporting of the areas fished by commercial fishers. Content dates from before July, 2001

**Completeness** Complete for the purposes of the current requirements of reporting commercial fishing activities in Western Australian coastal and inland waters

## 12.5 Study areas



### ***BHP Coastal Resource Atlas – study area boundary, Western Australian North West Shelf – BHP Petroleum***

**MarLIN record number** 5784

**Data Type** GIS

**Originator Organisation** BHP Petroleum

---

**References** Bowman Bishaw Gorham, 1995, North West Shelf Environmental Resource Atlas Report. Unpublished report for BHP Petroleum Pty Ltd, Perth

---

**Abstract** The boundary of the BHP Resource Atlas Report study, from South of Dampier to Coral Bay, extending beyond Barrow Island.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 kB of compressed digital data

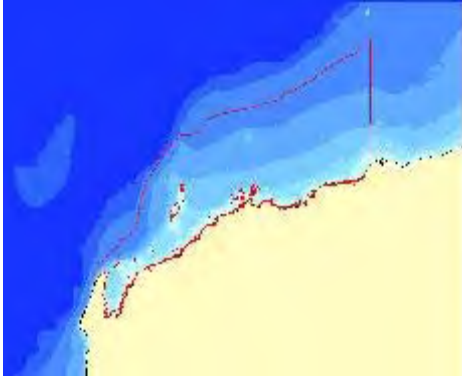
**Access constraint** Internal Use

---

**Lineage** Data set supplied to the Western Australian Department of Environmental Protection by BHP Petroleum in its current format. Content dates from before July, 2001

**Completeness** Not known





## ***Study area boundary – North West Shelf Joint Environmental Management Study***

**MarLIN record number** 6004

**Data Type** GIS

**Originator Organisation** WA Department of Environment

---

**Abstract** Official NWSJEMS Study Area boundary. Bounding box extends from west of North West Cape to Port Hedland. This study area boundary is based on the extent of data used for modelling purposes.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 5 kB of compressed data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

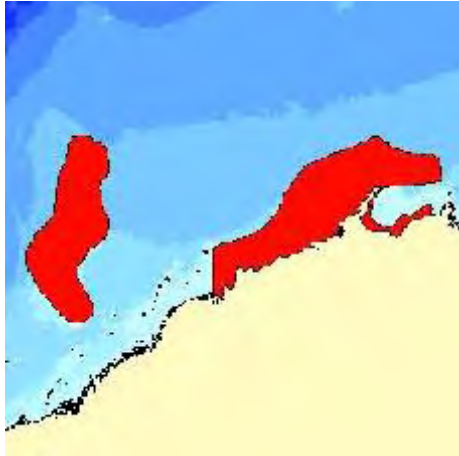
**Stored Data Documentation** No documentation supplied with data set

**Access constraint** Created for use by the NWSJEMS project. No restrictions apply

---

**Lineage** Created from a combination of coastline features for the northern and southern extents, and Transport WA for the 200 metre bathymetric contour. The landward extent was hand digitised. Content dates from before August, 2002

**Completeness** Complete for the purposes of the NWSJEMS. Some modification may occur at a future date as required



### ***Marine Park study areas, Dampier and Monte Bello Islands region, Western Australian North West Shelf***

**MarLIN record number** 5824

**Data Type** GIS

**Originator Organisation** WA Department of Conservation and Land Management

---

**Abstract** The Pilbara study areas here are for proposed marine conservation reserves over the Monte Bello/Barrow/Lowendal Islands and the Dampier Archipelago as at 28/07/1999. The study areas are indicative only and do not represent proposed reserve boundaries. The boundaries and reserve category (e.g. Marine Management Area, Marine Park or Marine Nature Reserve) will be developed through the statutory public participation process. Data is projected to AMG Zone 50 from Australian Geodetic Datum 1984.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 18 kB of digital compressed data

**Access constraint** For use in the NWSJEMS only

---

**Beginning date** 28 July 1999

**Lineage** Obtained from CALM Marine Branch in the current form. Content dates from before July, 2001

**Completeness** In progress

## 12.6 Information (general)



### ***Australian Bureau of Statistics – Census data for Western Australia – 2001***

**MarLIN record number** 6059

**Data Type**

GIS

Aggregated/Derived Data

**Originator Organisation** Australian Bureau of Statistics

**Abstract** CDATA 2001 is a desktop software package which uses a Geographic Information System (GIS) to map 2001 census data. Developed jointly by the Australian Bureau of Statistics and MapInfo Australia, CDATA 2001 allows users to choose the demographic characteristics of interest; select the geographic areas required and produce the related thematic maps, graphs and reports. The data contained within the DEP is the converted and projected MapInfo files and tables.

Tabular data has been extracted for the Basic Community Profile (BCP) and the Time Series Profile (TSP). Table and field definitions are also available in the tablename\_structure.txt files. These describe the contents of each table, and the fields within each table.

**Stored Data Format** DIGITAL – Database Files – MS *Access*

DIGITAL – GIS – ESRI Coverage

DIGITAL – GIS – ESRI Shapefile

DIGITAL – GIS – MapInfo TAB format

DIGITAL – Text Documents – ASCII

**Stored Data Volume** 3.5 GB of digital data

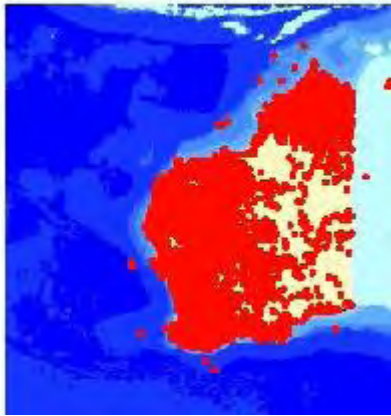
**Stored Data Documentation** Documentation is stored with data

**Access constraint** Strictly for use in NWSJEMS only

**Beginning date** 01 January 2001

**Lineage** Data supplied as C-Data product. Extraction of relevant attribute information performed in C-Data application. Contact ABS for additional details. Content dates from before April, 2003

**Completeness** Contact ABS for additional details



## ***Geographic Names of Western Australia (GEONOMA) – WA Department of Land Administration***

**MarLIN record number** 5733

**Data Type** GIS

**Originator Organisation** WA Department of Land Administration

---

**Abstract** Official Geographic Names database, containing both road and toponomy (place/feature) names for Western Australia. GEONOMA – Geographic Names.

---

**Stored Data Format** DIGITAL – GIS – ESRI Shapefile

**Stored Data Volume** 1 MB of compressed digital data

**Specific Software Requirements** Requires software capable of reading ArcView shapefiles

**Stored Data Documentation** No documentation supplied with data set

**Access constraint** No restrictions

---

**Lineage** Data collected from many different maps of various types and scales. Maps were chosen on the basis of being 'best' for a particular region. All officially approved geographic names are captured. Historical and colloquial names are captured and distinctly categorised. Content dates from before June, 2001

**Completeness** All available information verified manually at time of inclusion

### 13. CONCLUDING REMARKS

The establishment of the Data Management Project as a formal part of the NWSJEMS provided a solid foundation for supply of information to the other projects within the Study. Adequate documentation is essential during all stages of the data lifecycle. From the outset the two major study collaborators developed the procedures and tools for obtaining, documenting and disseminating data. The vision with which this research infrastructure was conceived served not only for the life of the Study. It has provided systems and resources which are also of use for further projects, particularly those using a marine ecosystem-based or multiple-use management approach.

Much time and effort was put into obtaining existing data in preparation for the NWSJEMS. The integration of the wide variety of data sources into a common data management framework simplified the access and provision of data for all other projects in the Study. As a result of the review and management of existing information, researchers were able to utilise these resources, rather than gather new information.

The importance of streamlining licence agreements became evident when obtaining data from the wide variety of sources used by the NWSJEMS. Existing agreements and processes within state government often facilitated data access from these sources. The establishment of a template agreement with industry sources, while initially time-consuming, expedited the process for subsequent data requests.

While many data sets were obtained from contributors, the total number of unique data sets was relatively small, as many were subsets for individual project areas.

The lasting outcome of the NWSJEMS content management system is that all the data inputs are now identifiable on publicly accessible data directories. NWSJEMS data products will be available from CMAR, the custodian. Because the supply of data to third parties is restricted through licence agreements, this should not be seen to provide a 'one stop shop' for data sets of this region, rather, a major source of information on the available data sets and how to obtain them.

## REFERENCES

*ANZLIC Metadata Guidelines: Core Metadata Elements for Geographic Data in Australia and New Zealand (Version 2)*, February 2001.

<http://www.anzlic.org.au/asdi/metagrp.htm>

Brodie, P., M. Fuller, 2006. *Information Access and Inquiry. NWSJEMS Technical Report 4*. CSIRO Marine and Atmospheric Research, Hobart

Heyward, A.J., A.T. Reville, C.R., Sherwood, 2006. *Review of Research and Data Relevant to Marine Environmental Management of Australia's North West Shelf. NWSJEMS Technical Report No. 1*. CSIRO Marine and Atmospheric Research, Hobart

*MarLIN* metadata records available to the public are accessed through a url ending with the *MarLIN* record number–

[http://www.marine.csiro.au/marq/edd\\_search.Browse\\_Citation2?txtSession=6389](http://www.marine.csiro.au/marq/edd_search.Browse_Citation2?txtSession=6389)

*North West Shelf Joint Environmental Management Study Interim Report*, June 2002.

Rees, A.J.J., K. Finney, June 2000. Biological Data and Metadata Initiatives as CSIRO Marine Research, Australia. *Oceanography*, Vol. 13, No.3, 60-65.

Rees, A.J.J., M.M. Ryba, November 1998, *MarLIN – a metadatabase for research data holdings at CSIRO Marine*, paper presented at Australasian Marine and Coastal Data Management Conference, Hobart.

[http://www.marine.csiro.au/datacentre/ext\\_docs/marlinpaper.htm](http://www.marine.csiro.au/datacentre/ext_docs/marlinpaper.htm)

## APPENDIX A: MARLIN SUMMARY DATA DICTIONARY

Below is a description of the fields contained in the data sets summaries between chapter 3 and chapter 10. This is a sub-set of the fields available in the full *MarLIN* metadata record for each data set.

**Table 1:** *MarLIN* summary data dictionary.

Element	Definition	Field Type	Field Length
Title	A unique full name for the data set.	VARCHAR2	160
<i>MarLIN</i> record number	A number allocated to an individual data set within the CMR <i>MarLIN</i> system.	NUMBER	7
Data type	Selected from a predefined list of data types.	VARCHAR2	15
Originator organisation and custodian	The organisation responsible for creation and custodianship of the data set.	VARCHAR2	120
Contributors	Names of people contributing intellectual property represented in the data set. Not usually known for data sets originating outside of CMR.	VARCHAR2	2000
Acknowledgements	Credits relevant to data set e.g. organisations which supplied all or part of data or funded its collection.	VARCHAR2	2000
References	Published references in which part or all of the data are presented.	VARCHAR2	2000
Abstract	A brief text description of the data set. Where known this should include what, where, when, how and why collected. Where data sets were supplied to the project with the originating organisations metadata, this metadata became the basis for the <i>MarLIN</i> record including the abstract.	VARCHAR2	2000
Documentation links	Hyperlinks to relevant documentation.		
Data links	Hyperlinks to data set or to description of how to obtain data.		
Beginning date	Earliest date of data in the data set.	DATE	
Ending date	Latest date of data in the data set.	DATE	
Stored data format	The format in which the data set is stored by the JEMS Project Team.	VARCHAR2	2000
Stored data volume	The volume of the data set stored by the JEMS Project Team.	VARCHAR2	2000
Specific software requirements	Names of any proprietary software required to view the data set.	VARCHAR2	2000
Stored data documentation	Reference to any documentation which describes the data set in terms of formats, naming conventions etc.	VARCHAR2	2000
Access constraint	Any restrictions, disclaimers or legal prerequisites applying to the use of the data set.	VARCHAR2	500
Lineage	A brief explanation of the history of the data set. This includes the date the data set was acquired by the project.	VARCHAR2	2000
Completeness	A brief assessment of the completeness of the data set e.g. listing known gaps. The existence of probable updates is also noted.	VARCHAR2	2000

## INDEX 1: NWSJEMS PRODUCTS

This is the index to the NWSJEMS data products.

Data set	MarLIN record no.	Page number
<b>Models, data and tools</b>		
North West Shelf Joint Environmental Management Study: Visualisation software – <i>ViewNWS</i>	6629	7
North West Shelf Joint Environmental Management Study: software description – <i>InVitro</i> (2006)	6268	9
North West Shelf Joint Environmental Management Study: <i>InVitro</i> – agent parameter files	6545	11
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – 3x3x3 configuration files	6546	12
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – water circulation and particle transport	6565	13
NWSJEMS circulation model outputs: 10 km resolution	6038	14
NWSJEMS circulation model outputs: 5 km resolution	6036	15
NWSJEMS circulation model outputs: 1 km resolution	6037	16
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – primary production and nutrient cycling	6568	17
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – modelled benthic habitat	6624	18
North West Shelf benthic habitat dynamics model 2002 (NWSJEMS task 2.7) – model outputs	5968	19
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – parameter estimation	6570	20
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – iconic species dynamics	6574	21
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – fin fish population dynamics	6625	22
Data from the Interim Report “The spatial distribution of commercial fishery production in the North West Shelf of Australia, 1973 to 1997” (NWSJEMS Task 2.6)	5971	23
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – prawn biomass estimates	6569	24
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – contaminant overview	6626	25
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – statistical extrapolation of currents	6566	26
North West Shelf Joint Environmental Management Study: <i>InVitro</i> input – modelling and extrapolation of contaminants	6572	27
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – contaminant uptake	6633	28
North West Shelf Joint Environmental Management Study: <i>InVitro</i> Inputs – Contaminant time series	6632	29
Contaminants inventory for the North West Shelf: 1985 to 2001 – polygons	6082	30



North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – human behaviour and impact	6627	31
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – bathymetry	6555	32
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – NCEP winds	6571	33
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – cyclones	6628	34
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – rainfall time series	6567	35
North West Shelf Joint Environmental Management Study: <i>InVitro</i> inputs – derived light	6573	36
North West Shelf Joint Environmental Management Study: visualisation software – NWS Technical User Interface	6630	37
Connectivity Interface (NWSJEMS <i>ConnIe</i> ): Dynamic web display of MECO modelled circulation patterns in the Australian North West Shelf area	6238	38
Dispersion model outputs: trajectories – NWSJEMS Project 2	6035	40
CMAR Data Centre <i>Data Trawler</i>	6389	41
CMAR Data Centre <i>Data Warehouse</i>	6390	42
NWSJEMS Ecopath with Ecosim model	6631	44
NWSJEMS biochemical model data for the Australian North West Shelf 1995 to 1999	6240	45
NWSJEMS sediment model data 1995 to 1999	6270	46
Sediment data for the North West Shelf of Australia (NWSJEMS Task 2.6)	5969	47
Wave model data 1982 to 1999, Australian North West Shelf	5916	48

## INDEX 2: NWSJEMS DATA SET LISTING

The following data sets were sourced and described with a view to their potential use in NWSJEMS.

Data set	<i>MarLIN</i> record no.	Page number
<b>COASTAL DEVELOPMENT, INFRASTRUCTURE, LANDUSE, COASTAL USE (MARINE)</b>		
<b>Human use</b>		
Distribution of camping and shacks with usage intensity in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM	5561	49
Surfing sites in Barrow-Monte Bello Islands Marine Reserve Implementation Area, Australian North West Shelf – CALM	5759	50
Helipad locations on the Western Australian North West Shelf – BHP Petroleum	5767	51
Major recreational sites on the Western Australian North West Shelf – BHP Petroleum	5768	52
Major tourism sites on the Western Australian North West Shelf – BHP Petroleum	5769	53
Possible helipad locations, Western Australian North West Shelf – BHP Petroleum	5773	54
Weather Observation Sites, Western Australian North West Shelf – BHP Petroleum	5790	55
Major recreational sites (points), Western Australian North West Shelf – BHP Petroleum	5807	56
Major tourism sites (poly), Western Australian North West Shelf – BHP Petroleum	5808	57
Recreational use, Dampier – Western Australian North West Shelf – Hamersley Iron	5818	58
Recreational crabbing in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM	5562	59
Areas used for game fishing in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM	5563	60
Scuba diving sites in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM	5564	61
Shorebased recreation in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM	5565	62
Spearfishing in Dampier Archipelago Marine Reserve Implementation Area, Australian North West Shelf – CALM	5566	63
Cargo statistics for Dampier Port, North West Shelf of Western Australia – Dampier Port Authority	6239	64
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