Kimberley Biodiversity Review

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Summary and Recommendations

This document presents a review of ecological value in the Kimberley region of Western Australia prepared by the Department of Environment and Conservation (DEC). This review was initiated at the request of the Standing Inter-Agency Committee when considering industrial development in the Kimberley and the current limited knowledge of environmental and cultural assets contained within the Region. The DEC subsequently supported and guided the review to address what is known of biological value in the Region, the gaps in our knowledge and the best way forward to fill in priority gaps and ensure the Kimberley landscape is managed responsibly.

Issue

The Kimberley Region, in the State's northwest, is a unique and relatively untouched area of Western Australia. Due to its remoteness and rugged terrain, the Kimberley has remained largely undeveloped. It has a unique and rich biodiversity and is an area high in both natural and cultural heritage across terrestrial and marine environments. Values, or assets, in the Kimberley include its rich and relatively untouched mangroves, unique ecosystems represented by rainforest patches, mound springs and the many coastal islands, species richness and diversity in the wetter and more rugged terrain of the northwest, high degree of local endemism and protection from the extent of many threatening processes, so far, due to the remoteness of the region, the sub tropical climate and limited settlement.

Historically the Kimberley has maintained a low population and limited development. Land use practices have included pastoralism, agriculture, pearling, aquaculture and fishing. However, the low number of population centres and the rugged terrain has meant that much of the landscape has remained unused and undeveloped. There are a number of aboriginal groups and settlements in the Kimberley and large tracts of aboriginal land.

Over recent years there has been increasing interest in expansion and development in the Kimberley. Tourism is a growing industry, particularly ecotourism and nature based activities. Aquaculture is also expanding in the Kimberley. However, the largest area of growth that has potential for significant impact is the increasing interest in exploration and mining, particularly for petroleum resources. There are large gas fields in the Browse Basin (offshore of the Kimberley) and while this source of petroleum is in Commonwealth territory, it is likely that any infrastructure to support mining of the resource will be under State jurisdiction.

It is critical that government recognises the unique values encompassed by the Kimberley in a regional context and that adequate measures are put into place to protect these values in the face of this growing interest in development and expansion. The Kimberley contains tropical to sub tropical climate and land systems that include vast woodland, rugged sandstone, large embayments and many archipelago islands. The terrestrial environment can be viewed as a transition zone from sub tropical to tropical and has more in common with the biodiversity of the tropical north than with the rest of WA. The marine environment includes some of the most pristine and interesting coral reef in Australia in the oceanic shoals regions and an unknown, but suspected, high diversity and productivity in the many nearshore and coastal reefs. The marine species also show much in common with the broader indo-pacific region. Thus, the Kimberley must be looked at in a broader context of its value in the Australian and global environment. An ecologically sustainable framework needs to be developed that will facilitate the conservation of ecological values while ensuring there are adequate opportunities for nature appreciation, recreational and commercial activities, research and education.

Methods

This review set about understanding and identifying the many values of the Kimberley and our current level of understanding of these by compiling a bibliography of written reports and papers on the Kimberley and by identifying relevant data sets on its environment. Several recent reviews on various aspects of the Kimberley were instrumental in this regard. As, a great deal of the information on the Kimberley is not published, a number of experts on both the marine and terrestrial environment were also consulted for additional advice and perspective. It is this shared body of knowledge that is reviewed and assessed in the report. This review covers a very broad range of topics and issues in both the marine and terrestrial environment and aims to provide a broad scale assessment of the Kimberley and its ecological assets.

Providing detailed accounts and assessment of each specific asset or specific location are beyond the scope and capacity of this document. However, where possible, references are made to where more detailed information can be found. Table 1 contains a summary of the assessment of ecological value in the Kimberley including both a rating on significance, where it can be assessed, and identification of the priority information that will need to be gathered to fill critical knowledge gaps.

Recommendations

The Kimberley contains many valuable ecological assets and these need to be properly recognised and protected. The following recommendations are the first steps towards ensuring that these values are properly identified, described and protected over the long term.

- Figure 1 presents a composite map highlighting areas noted in this review to contain high ecological values. Development should be strongly discouraged in these areas. This would include: the northwestern corner where the high rainfall and landscape complexity equate to very rich biodiversity; islands for their unique values and ability to act as refuges for many species; rainforest patches and mound springs for the unique biota which they contain; mangrove and mudflats for their high productivity and contribution to important ecosystems; and reef systems along the continental shelf for their scarcity and regional significance. The importance of these areas in terms of their ecological value should be taken into consideration in the assessment of proposals for development or mining.
- Areas of highest conservation value need to be protected. The EPA have made recommendations in the past for the expansion of the reserve system in the Kimberly, as have the DEC (white book). These proposed reserves need to be reviewed given the current level of understanding of the Region and then need to be followed through to create a substantive reserve system that meets CAR standards in the Kimberley.
- Consideration of data management and developing a system to identify and make accessible current and future research in the Kimberley is critical. While such a project is being undertaken for the marine environment (NW inventory), there is no such commitment for the terrestrial component. It is critical for future planning activity and to properly assess development applications and research initiatives that this be undertaken in the first instance. Top priority should be given to the development of a metadata database of terrestrial based research in a format that meets the national standards of metadata and can be accessed and searched by those involved in regional planning, land management, conservation and/or research. Once the meta-databases described above are available, the DEC should ensure that this information is accessed and used when assessing development applications.
- In addition to the above, a very useful tool for both planning and assessment activities would be the conversion of the information collated on research in the metadatabases described above into a GIS format that would be compatible with the SIER index described later in this report. This format would include a GIS layer of shapefiles that would spatially depict where research has taken place in the region of interest with links to information on the project, its objectives, any documents or publications that have resulted from the work and a contact for further information. Such a tool should be considered a priority when collecting this type of information across a broad regional area and should be compatible with other similar spatial datasets held by the DEC.
- Assistance should be sought from proponents in compiling regional information. There is a large amount of grey literature (e.g. unpublished, internal reports) on the Kimberley through environmental consultants working on behalf of the various proponents. It would be useful to the EIA process to be able to capture this information so that there is a better understanding of what has and has not been investigated and over what range. In addition, for future proposals, proponents should be required to provide data in a suitable and compatible digital format to the DEC.
- Consideration should be given to regional scale processes when reviewing development applications and making decisions on development and conservation priorities in the Kimberley. These include such issues as migratory species that have both a national and international significance, including international conventions governing the identification and management of critical habitat (e.g. migratory birds, humpback whales, marine turtles) and processes that have the potential to impact on

large parts of, if not all of, the region such as climate change, fire and invasion of feral pests (e.g. cane toads, cats). These factors need to be considered and managed at a regional level and should be recognised and taken into account by decision-makers.

- Indigenous values and issues were not looked at in this review and are critical to any assessment for future planning in the Kimberley. A thorough review of aboriginal land and social values is required, including identifying important sites or areas and harnessing indigenous knowledge of the land and its biodiversity.
- A number of assets identified in the review are largely unexamined and require further information for any reasonable assessment on their value and priorities for protection. Following are the priority research topics identified, however, these are by no means the only information gaps:
  - Systematic quadrat based survey of the terrestrial environment to assess species status and distribution.
  - Systematic survey of the marine environment, shelf reef system and coastal waters, to develop a thorough understanding of reef and fish biodiversity and community interactions.
  - Establishment of a long term data collection regime through Identification of sufficient reference sites covering all ecosystem types, selected on the basis of a regional scale broadscale survey, to collect time series data of relevant physical/chemical properties of waters and sediment, and measures of health of key biological communities (eg. coral, mangroves, algae and phytoplankton). These reference sites will provide an important baseline to measure trends over time and allow environmental quality guidelines to be developed to support planning, impact assessment and management by the public and private sectors. Ideally, these reference sites should be given tenure to ensure they remain un-impacted in the long term to maximise the benefit and utility of the data collection program over time.
  - Expansion of research effort into unexplored areas and at different times of the year (e.g. wet season).
  - Assessment of the geomorphology of the Kimberley coast and nearshore islands and finer scale soil and geological mapping of the terrestrial environment.
  - Updated mapping and assessments of key habitat including mangrove, seagrass, rainforest and coral reef.
  - Identification of critical habitat of the threatened marine fauna that occurs in the Kimberley, e.g. dugong, marine turtle, humpback whale. This should include recognised breeding and feeding areas and temporal scales for these activities. Further, assessment of the indigenous harvest of dugong and marine turtle is critical to assess and manage population sustainability.
  - Development of a better understanding of physical oceanographic processes in the coastal and offshore environment including particle flow, connectivity and potential for impacts of climate change.
  - Better understanding of island biogeography including species distribution and divergence from mainland populations.
  - Understanding human use patterns in the Kimberley, particularly in the area of tourism and recreational activities and relevant socioeconomic factors and impacts.
- The isolation of the Kimberley and difficult terrain makes research in the Kimberley difficult both financially and logistically. Therefore research should be carefully planned so that it is directed towards key objectives and is not repeating or overlapping with other projects. There is a need for collaborative and coordinated research effort. Development of the above mentioned database will assist in coordinating research effort, however collaboration between State agencies, research institutions and industry should be developed so that research is as effective as possible in broadening our understanding of the region. This may involve larger projects jointly funded that

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Introduction

The Kimberley Region, in the State's northwest, is a unique and relatively untouched area of Western Australia. Due to its remoteness and rugged terrain, the Kimberley has remained largely undeveloped. It has a unique and rich biodiversity and is an area high in both natural and cultural heritage across terrestrial and marine environments. In addition, it is considered to be part of the tropical north of Australia and, in climate and biodiversity, has more in common with the tropical north than with other parts of Western Australia. The Kimberley must not be viewed in isolation as a tropical section of WA, but must be considered in the context of broader Australian ecology and also within the context of the Indo-Pacific Region.

Western Australia is recognized at State, national and international arenas for its biodiversity, both richness and uniqueness and the Kimberley region is a key component of the statewide biodiversity. However, WA also experiences a high level of threat to biodiversity through development and use of natural resources and, although the Kimberley has remained relatively untouched previously, it is coming under increasing pressures from a variety of human impacts associated with development and natural resource use.

The Draft State Biodiversity Conservation strategy highlights the need to improve our understanding and knowledge of biodiversity conservation requirements and to promote conservation through integrated and coordinated resource management and development. Inventory and planning at a regional level are tools used to identify key values, take stock of development and environmental trends and human needs and plan for the future.

While there is a focus on identifying and preserving the unique values of the Kimberley, such a regional planning exercise must also take into account the needs of a growing and developing Western Australia and work towards ensuring development is consistent with the desired environmental outcomes. An assessment of the environmental and ecological values in both the marine and terrestrial environments of the Kimberley, is required now to determine what values are present, how widely they are spread and the management needs to maintain these values into the future. This information would also assist in regional planning which, amongst other things, would assist in identifying the most appropriate locations for development to occur so as not to compromise those identified values. It is recognised that it is not possible to maintain the entire Kimberley as a 'wilderness' area. Rather, competing needs for land use, including conservation should be taken into account in a regional planning exercise to identify the most appropriate sites for reservation, for indigenous community uses and for development. It is important that an all of government approach be taken here so that all perspectives and needs are recognised and considered, including those of the general public, industry, natural resource managers, natural and cultural heritage and indigenous communities.

This report seeks to work towards these goals by identifying known biodiversity or ecological values in the Kimberley that should be preserved and assessing our level of knowledge on the Region such that important information gaps that limit our ability to identify values, and to protect and manage them from anthropogenic threats are highlighted. To meet WA's conservation and environmental protection goals in the Kimberley we must first have a good understanding of the biodiversity and ecosystems that comprise the region and the key factors that control their structure and function so that we may identify where they are found across the landscape and how they can best be managed. Then a strategic approach may be taken to develop conservation and management strategies for the Region that will both preserve the unique values of the Kimberley and allow sensible development and other human activities where appropriate. It is critical that this process has a foundation of strong science to inform decision making and it is equally critical that the Kimberley be viewed as a whole within the context of its role in the tropical northwest and the broader Indo Pacific Region.

1.1 Background and purpose of review

There is a growing interest in access to industrial sites in the West Kimberley region, in particular due to proposed development of the Browse Basin gas field by the petroleum industry. While the Browse Basin is largely in Commonwealth waters, processing facilities to service development are likely to be onshore or on islands under State jurisdiction. It is understood that the development of major gas projects in the Kimberley is a

potential catalyst for other resource related projects and development, e.g. bauxite mining near the Mitchell Plateau.

A 'coarse screen' of ecological values for the West Kimberley Coast based on current existing knowledge was requested so that a strategic means of decision making that was not industry-led could be developed. The main goals of this project are to identify and summarise existing information in the Kimberley region, use this information to assess known ecological values and identify critical information and knowledge gaps. It is recognised that, to be most useful, this information must be easily understood and accessible by those making decisions on future development in the Kimberley Region and to that end, maps are included as a spatial representation of the values discussed, where possible.

1.2 Scope of project

This report focuses on the coastal and marine areas of northwestern WA, however information on the terrestrial environment and greater Kimberley Region, as defined by the Department of Environment and Conservation's regional boundaries, is considered to put the proposed area into a regional context. The greatest focus has gone into areas suitable and likely for speculation by the petroleum industry. Thus the report will cover in as much detail as possible, the coastal and near-shore marine areas of the Kimberley Region from the western extremities of the archipelagos and in-shore islands to a similar distance inland from the coast. Islands further offshore, but considered to be of interest to Industry were also included.

Nineteen sites of particular interest have been identified by at least one proponent within the Petroleum Industry as possible focii of future development proposals. These sites are: Beagle Bay; Emeriau Point; Deep Water Point; Cockatoo Island; Koolan Island; Irvine Island; Langii, Wilson Point; Battery Point; Adele Island; Champagny Island; Bigge Island; Maret Islands; Cape Voltaire; Cassini Island; Troughton Island; Echuca Shoals; Browse Island; Scott Reef. Information on these specific sites has been included wherever possible.

Indigenous issues are a critical element of any regional information gathering exercise and are highly relevant to regional planning for the Kimberley. However, a thorough assessment of these issues is beyond the scope of this assessment. It is recognised that indigenous communities hold valuable information on biodiversity and this resource remains largely untapped. Further, it is recognised that the Kimberley Region includes a number of important cultural heritage sites and aboriginal lands. Indigenous communities will need to be engaged to resolve planning issues for the Kimberley at both broad and site specific scales.

Also outside the scope of this project are the jurisdiction and territorial boundary issues that are relevant to the marine environment, e.g. the North West Shoals, Scott Reef.

2 Aims

The aim of the project is to provide a contemporary understanding of the information that is available on the Kimberley so that the DEC may support and facilitate research to address critical information gaps and provide accurate and relevant advice for the strategic development of the Region. The three main objectives to achieve this aim are:

- To compile a thorough bibliography of publications, reports and studies on the Kimberley, noting key documents with critical information on ecological value, threats and recommendations for future conservation and management of the area.

- To present, in a spatial format, an indication of known ecological values, level of available knowledge, information gaps and limitations on both proponents and the government in making future assessments.

- To prepare a report supporting and explaining the maps described above and including an overview of the Region, the level of information available and making key recommendations that would facilitate sound strategic planning and decision making by government.

3 Methods

This review set about achieving the above objectives through assessing the published and unpublished literature on the Kimberley and through identifying available spatial datasets.

3.1 Literature Review

Several reviews have been conducted in recent years that have captured available information on the Kimberley region (e.g. Wilson 2006, Handasyde 2005, Jones 2006, Stewart et al. 2005, Graham and McKenzie 2004). This literature review was developed by first capturing the reference lists from the reviews noted above and expanding those to include other relevant documents and studies identified through literature searches of the DEC and other libraries and the internet. In addition, a number of experts in the field noted for their research in the Kimberley were contacted and advice sought on key and relevant documents as well as current research and research in progress. References were all entered into a spreadsheet database including title, author and publication details. To aid in sorting literature, between 1 and 3 themes were recorded against each document in the database.

3.2 Spatial Data Review

The spatial representation of this assessment has several components: identifying relevant and useful spatial datasets available on the Kimberley and determining which datasets best demonstrate ecological value and knowledge gaps in the Kimberley. The compilation of datasets was undertaken similar to the literature review and relied heavily on previous projects that have assessed and reviewed spatial data for the Kimberley (e.g. Stewart et al. 2005, Handasyde 2006, WWF 2005). In addition, a number of spatial databases and directories available on the internet were searched to identify further datasets of interest in the Kimberley. The main databases and directories searched included (but were not limited to) WALIS interrogator, Australian Spatial Data Directory, Australian Wetlands Database, Australian Natural Resources Atlas and the Environment Data Directory. These searches identified a number of datasets and reports of varying interest. All datasets were entered into a spreadsheet providing information on name, description of data, custodian, accessibility, whether the dataset includes digital data and its format.

3.3 Review of Environmental Values in the Kimberley

The literature and datasets identified in the above two sections were assessed to provide a broad scale understanding of the Kimberley, its ecological values and the information gaps that must be filled in order to underpin sound decision-making by environmental managers. While it would not be possible to read and digest all of the literature identified, a list of key publications was developed, in consultation with experts. Many of the items on this list included the biological surveys that have been conducted in the area along with several reviews of biodiversity in the marine and terrestrial environment. The full list of key documents can be found in Attachment 1.

In spite of the range of literature available on the Kimberley, it is understood that much information, particularly regarding ecological values and priorities, is held by the scientists and individuals who have devoted their time to exploring and understanding the region. For this reason, in addition to assessing literature, it was deemed important to engage with these experts and gain their collective wisdom on the Region and perceived areas of importance and research priorities. To that end, a range of scientists and land managers were invited to attend a workshop to discuss the project. Individuals who could not attend the workshop were contacted separately to discuss their views on biodiversity in the Kimberley. Outcomes of the workshop have assisted in establishing critical areas in the Kimberley, identifying suitable tools to display values and identifying research gaps and future research priorities. Attachment 2 contains a list of attendees to the workshop, discussion points and outcomes.

4 Literature Review

The bibliography on the Kimberley currently includes 992 entries. Of these, 22 have been identified as key documents that provide reviews of the region or particular aspects of the region, including recommendations on ecological value and reserves for conservation. A further 115 were identified as key survey documents useful in assessing the level of survey effort of fauna and flora that has taken place across the Kimberley in assessing the Regions flora and fauna. As noted above, Attachment 1 contains the list of key documents. The full bibliography is contained within a Microsoft Excel spreadsheet (Attachment 4) and held by the DEC, EMB.

The range of published information on the Kimberley was quite broad covering such topics as fauna and flora surveys, historic exploration notes, aboriginal ethnobotany and economic planning. The Kimberley itself covers such diverse habitats as wetland, savanna and tropical rainforest as well as a range of marine coastal habitats.

This review focussed mainly on the literature that is accessible through publications and government department reports. There is undoubtedly a great deal of grey literature on the Kimberley that is difficult to assess and acquire. For example, projects undertaken by consultants for industry are typically not published and difficult to identify. Further, such information may be of limited value as it is generally site specific and may not meet scientific standards. Essentially, there is more information out there than represented in the literature review, but it will be difficult to capture and to assess. Given that, it would be a very useful exercise to acquire the unpublished reports and information held by various proponents as, in many instances, this is the only available ecological information. It would be worthwhile pursuing an agreement with proponents that future exploration and research reports be provided directly to the DEC.

5 Spatial Data Review

A total of 229 datasets were identified that contained information in the Kimberley across both the marine and terrestrial environment. This includes broadscale datasets that cover a large area beyond the Kimberley such as vegetation mapping of the north end of Australia by the Tropical Savanna CRC and specific datasets for a single project such as fauna records from the Kimberley Rainforest Survey. There was some duplication between the various sources of datasets that were similar but might contain slightly different information. When duplicate datasets were removed, there were 209 datasets remaining. Attachment 3 contains a full list of the 209 datasets along with brief description and custodian. More detailed information on all 229 datasets is held in a Microsoft excel spreadsheet by the DEC, EPASU.

Not all datasets that were identified include spatial data and those that do are stored in a variety of formats. It is a very large task to acquire datasets from many different sources and to compile them into a single compatible format that may be used to display various layers of information through mapping exercises. Because of the magnitude of the task, it was decided in this project to focus on identifying as many datasets as possible, but to acquire or use for mapping purposes those datasets that would be most useful to the exercise and those that could be easily obtained in an appropriate format by the DEC. It should be noted that, when exploring available data, particularly spatial data, it is critical to have a clear idea in mind of the purpose to which that data will be used. This will set limits on the number and type of datasets that may need to be acquired.

5.1 Mapping Ecological Value

The dataset review identified a number of datasets for which there is spatial information, i.e. could be used to map features in the Kimberley. Datasets that were considered to contain information relevant to ecological values and that could be easily accessed by the DEC (either as corporate data or through a license agreement) were obtained and considered for mapping purposes. A full list of datasets considered is in Attachment 3. Discussions at the workshop above highlighted which datasets would be most useful in demonstrating ecological values (e.g. threatened species, rainforest) and growing potential for impacts (e.g. land use).

Maps were created by the IMB section of DEC in ArcGis9 using corporate data and several datasets that were acquired from external or internal sources.

A means of demonstrating the extent of research in the Kimberley and information gaps was also considered. A project has been initiated by the Environmental Protection Authority Service Unit of the DEC: the Spatial Index of Environmental Reports (SIER). The SIER seeks to catalogue in a GIS format those projects which typically go un-catalogued and unused by government agencies. It comprises a database of such projects with a shapefile to depict the location of the project and an associated attributes table with information on the purpose of the project, type of data collected, principle investigator contact details and associated publications.

It was initially proposed to expand this catalogue with key survey and research projects that have been conducted in the Kimberley. However, there were concerns over the misrepresentation of survey effort where several small sites might have been visited, yet a larger area depicted by a shapefile that would cover all sites. While mapping individual survey sites, might overcome this problem, it would not address concerns over ability to detail the specific nature and limitations of various surveys, e.g. all surveys in the dry season only, surveys specific for fish or amphibians, etc. In addition, the large number of research papers identified, even if limited to key survey documents, would have entailed a substantial amount of work to enter into the SIER catalogue. It was decided that expansion of the SIER catalogue, while useful, was not a top priority for this project.

In terms of demonstrating where research has and has not occurred, it was agreed that any spatial representation of survey effort through mapping survey sites or the collection of specimens held by the Museum would always be misleading. Such maps typically demonstrate that research effort has been focussed on more easily accessible areas, e.g. along roads, and in National Parks (Handasyde 2006). In addition, such maps also require the important caveat that just because threatened fauna/ecological valuable features have been found at certain prominent sites does not exclude their presence from many other sites in the Kimberley.

It was therefore agreed that demonstrating survey effort was not appropriate for this study. However, a spatial tool such as the SIER index is still considered a very useful model and one that will be important in assessing the type of research and level of information available about specific areas within a region. Even though time and resources did not allow its expansion for this project, it should be considered a priority, particularly to capture current and future research effort across the Kimberley. There are several projects underway at the moment within the DEC and linkages should be developed between these projects so that products are compatible. Namely, through the regional planning exercises for the southwest marine region, a database has been compiled of relevant marine datasets and marine research and a GIS layer compiled with representation of research projects and associated information, including contact details. This would serve as a good model, along with the SIER index for how information could be compiled and displayed for the Kimberley. An ongoing issue with the development of such a database, and one that will be brought up below, is the long term custodianship and management implications for marinating this information.

6 Review of Ecological Values in the Kimberley

A number of reviews have been conducted on the Kimberley region in recent years and there are others currently underway. Rather than repeat the efforts of these previous projects, this report draws upon them and, in some instances, summarises information they contain, whilst referring to them for further detail. For example, Handasyde (2006) presents a thorough review of research and biodiversity information on the terrestrial environment for the Kimberley with the main focus on the mainland and on issues relevant to fire management. Wilson (2006) has prepared a thorough review of the coastal marine habitat of the Kimberley Bioregion (IMCRA), with mention of other adjacent marine bioregions where relevant. This information provides a very good summary of what is known of the marine environment from both historical exploration and current research and rates ecological value, vulnerability and threats. Stewart et

al. (2005) provides an assessment of all datasets available on the Canning Bioregion (IMCRA). This report includes an assessment of the information in terms of knowledge gaps and adequacy of information on marine ecosystem in preparation for marine regional planning.

In addition, the Department of Fisheries is currently reviewing the fish resources of the Kimberley and addressing fishery management issues in the region including making recommendations for use of marine resources. The Kimberley Land Council (KLC) is sponsoring a project on indigenous values, in particular ecological values held by the indigenous community and developing strategies to maintain these values. Finally, the World Wide Fund for Nature (WWF) has recently commissioned a report similar to this one to identify ecological value in the north west coastal area of the Kimberley.

The CSIRO have also recently completed a very large exercise reviewing and compiling marine data and resources on the marine environment of the North West Shelf (North West Shelf Joint Environmental Management Survey (NWSJEMS)). There are a series of 18 Technical reports that cover various aspects of the review. The study area for NWSJEMS focussed on the NWS shelf from North West Cape to Port Hedland, However, a number of studies identified related to marine research that covered the IMCRA NWS region which includes offshore waters of the Kimberley. Heyward et al. (2006) provides an overview of the project including gaps in knowledge and Jernakoff et al. (2006) provide a bibliography of all published and unpublished papers identified through the study.

6.1 Bioregions

Ecosystem based classification systems have been developed to describe marine and coastal environments (Interim Marine and Coastal Regionalisation of Australia (IMCRA)) and terrestrial environments (Interim Biogeographic Regionalisation of Australia (IBRA)). These classification systems incorporate the broad scale and general differences in the relevant environments and aim to provide ecologically meaningful regionalisation. Through this report, information is presented, where relevant according to these boundaries. (Figure 2 depicts both IMCRA and IBRA boundaries for the Kimberley and highlights those discussed in this report).

6.2 Regional Background

6.2.1 General Description of Area

The Kimberley region occupies the northwestern corner of Western Australia, covering approximately 424,500 square kilometres. It comprises a wide variety of landforms and vegetation which support a diverse and rich marine and terrestrial biodiversity. The region is in a remote area of WA and has remained largely undeveloped and uninhabited and, although subject to some landuse practices such as pastoralism, maintains a near pristine natural environment across much of the landscape. Features associated with the Kimberley coast include its magnificent ria coastline with narrow embayments, drowned valleys, tidal lands, fringing mangroves, interconnecting islands and archipelagos (Bradshaw and Weaver 1993, Zell 2003). The terrestrial environment is dominated by tropical woodland savannah and includes such features as rugged ranges, valleys and gorges, rainforest patches, old sea beds and Devonian coral reef.

The Kimberley supports a diverse variety of ecosystems within a tropical savanna landscape that is dominated by open woodlands of eucalypt and acacia with hummock and tussock grassland understory. Terrestrial ecosystems within the Kimberley include extensive coastal archipelagos, tidal plains, mangrove, coastal dunes with vine thickets, rainforest patches, mound springs, red and black soil plains, sandstone and limestone ranges, permanent springs and riparian zones and karst systems. The Region supports a rich and diverse biodiversity that is in many ways more similar to the tropical top end of Australia than to other parts of Western Australia. The Kimberley is also unique in that its fauna assemblage is assumed to be largely intact.

The marine environment is influenced by the large tidal range (5-10m) and includes extensive mud flats, fringing coral reef, numerous coastal and offshore islands and offshore embankments and atolls.

In economic terms, the Kimberley is a dynamic region that has undergone a large amount of change in land use and habitation over recent years. Historically the Kimberley has gone from a land of sole Aboriginal occupation to include pastoralism and pearling and, more recently, resource extraction, agriculture and tourism. As the economic base of the Kimberley grows through these new interests and uses, employment opportunities increase, attracting an increasing number of residents to a once very sparsely populated area.

6.2.2 Climate

The climate of the Kimberley is described as dry monsoonal or dry hot tropical. There are two distinct seasons- a wet and a dry- with several transition periods. Generally the wet season lasts from November to March and the dry from April to October. Annual rainfall occurs in monsoonal summer cyclonic rains. The region ranges from semi-humid in the north to semi-arid in the south with average annual rainfall ranging from 1500mm per annum in the northwest to 350mm per annum in the southern, semi arid areas. Temperatures are high year round, with monthly averages between 25-35°C.

6.2.3 Geology and Geomorphology

The Kimberley has a very unique and complex geology with rocks and formations ranging from extremely ancient to relatively recent. It covers a vast area and a range of ecosystems based on underlying geomorphology, soils and vegetation structure. The IBRA bioregionalisation system takes into account these underlying factors and identifies regions of similar pattern and ecosystem. This system is useful as it identifies broad scale landscape patterns and values in each region and will be used in this report to describe the various bioregions within the Kimberley Region.

The Kimberley Region encompasses 3 IBRA bioregions (Northern Kimberley, Central Kimberley and Dampierland) and parts of an additional 4 bioregions (Victoria Bonaparte, Ord Victoria Plain, Tanami Desert and Great Sandy Desert). The area of interest for this review falls within the 3 IBRA bioregions completely contained within the Kimberley and comprises 4 of the 7 subregions within the bioregions. Figure 2 identifies the IBRA bioregions with the area of interest highlighted. The descriptions provided by Thackway and Creswell (1995) (repeated below) provide a good profile of the region. More detailed descriptions can be found in May et al. (2003) and McKenzie et al. (2003).

Topography of the Kimberley is complex comprising a variety of landforms, soils and geological factors with associated ecosystems and vegetation distribution. Generally the Kimberley includes an array of land forms and ecosystems such as complex ria coastline, river systems, Devonian reef limestone, rainforest patches and grassy woodland. Common vegetation cover includes woodland of varying eucalypts depending on soil type and rainfall, and understories of tall grass species. Pindan, a distinctive vegetation type common in the Dampierland bioregion, comprises red sandy soil, a range of wattle species and grass layer.

Dampierland, in the south west of the Kimberley contains four landforms each with its characteristic vegetation types. These include: quaternary sandplain overlying Jurassic and Mesozoic sandstone with pindan vegetation; quaternary marine deposits over coastal plains with mangal, samphire and grassland communities and low forests; quaternary alluvial plains with Permian and mesozoic sediments of the Fitzroy Trough with tree savannas and riparian forests; Devonian reef limestone with sparte tree steppe and hummock grasses.

The Central Kimberley bioregion covers hilly to mountainous terrain. Siliceous ranges of proterozoic sedimentary rocks and skeletal sandy soils support hummock grass and scattered tree communities. Proterozoic volcanic earths in the valleys support ribbon grass with scattered tree communities and open forests occur along drainage lines.

The northern Kimberley bioregion contains shallow sandy soil on outcrops of proterozoic siliceous sandstone which support savanna woodland over grassland had hummock grasses. Riparian forests

occur along drainage lines. There are extensive mangal systems in estuaries and embayments and islands and numerous small patches of monsoon rainforest.

The marine environment has been similarly assigned an ecosystem based classification scheme; the interim Marine and Coastal Regionalization for Australia (IMCRA) (Interim Marine and Coastal Regionalization for Australia Technical Group 1998). Five of these bioregions are within the northwest Kimberley: Canning, King Sound, Kimberley, North West Shelf, Oceanic Shoals. The following descriptions have been taken from Thackway and Cresswell (1998).

The dominant factor in the extensive and convoluted coastline is the extreme tidal range of 5 to 10m. Coastal vegetation includes mangrove and saline grassland and herbland. Coastal topography also includes extensive sheer cliffs, sandy beaches and embayments.

The Canning bioregion runs from Cape Leveque to Cape Missiessy and includes the Lacepede islands. This region includes embayments and headlands with a wide tidal range (9m) and minimal fluvial run off. The climate is semi arid in the north to arid in the south. Wave energy ranges from low to moderate.

The King Sound region lies between Point Osborne and Shenton Bluff and comprises an open gulf encompassing the Fitzroy estuary and Stokes Bay. The Kimberley region extends from Cape Londonderry to Cape Leveque and includes the Buccaneer Archipelago. This region is characterised by rocky shores, mud flats, mangal, land locked marine and estuarine habitats. It is a remote area that has been little-studied.

The North West Shelf lies between the 30m bathymetric contour and the shelf edge off the Pilbara and Kimberley coast and has diverse benthic invertebrate communities and fish fauna.

The Oceanic Shoals includes submerged and emergent reefs and cays along the outer edge of the continental shelf. Areas of interest within the scope of this report are Seringapatam, Scott Reef, Rowley Shoals reef systems and Browse and Adele Islands

Wilson (2006) provides a good general description of the known marine geomorphology of the Kimberley bioregion and that information is summarised below. For further detail see Wilson (2006), Brooke (1995), (1996), (1997) or the Geological Series Bureau of Mineral Resources explanatory notes.

The Kimberley Basin is a Proterozoic sedimentary basin comprising sandstones, siltstones and some volcanics and intrusive igneous rocks. Surrounding the Kimberley Basin are the King Leopold and Halls Creek oregons, the intensely folded and faulted offshore Browse Basin and Bonaparte Basin.

The shoreline is mostly rocky with high relief. Reef development around the many inner islands appears to be Holocene accretionary veneer of coralgal limestone on a proterozoic base. Offshore platform reefs and banks are built on Cainozoic limestone blocks.

Unlike other parts of the west coast, including the Pilbara, there is no evidence of Pleistocene reef development at or above present sea level. There is evidence that the continental shelf has subsided in the offshore areas, Oceanic Shoals and North West Shelf Bioregions, as the reefs have grown.

6.3 Dominant land use and social values

The Kimberley is one of the most sparsely populated regions within Australia. Populations are centred in the few towns and in aboriginal communities and much of the land is inaccessible. European settlement has led to changes in the Kimberley. It has gone from an area with sole Aboriginal occupation to one where the dominant land use is pastoralism and aquaculture. Current main sources of economic activity are mining, tourism, fishing, irrigated agriculture, pearling, community services and pastoralism.

While pastoralism has been the main land use since early settlement by Europeans, this is slowly changing and there has been significant growth in pearling, fishing, tourism, mining, irrigated agriculture,

and conservation. Another major change in land use has been the interest in establishing and maintaining aboriginal communities away from existing towns.

While the Kimberley is considered by many a 'pristine' environment, this is not entirely the case. There are a variety of land uses present in the Kimberley and their intensity has increased, particularly in recent years. Whereas once the Kimberley was used primarily for agriculture and grazing, which brings its own set of impacts, current uses include substantial growth in tourism, aquaculture and extractive mining. Figures 3, 4 and 4a demonstrate the current land uses and sites where certain activities occur in the Kimberley. While this map demonstrates the variety of land use that occurs and where certain activities might take place, the intensity of land use has not been quantified and is not, therefore displayed. For example, there are large tracts of land identified for the purpose of pastoralism, but there is no information on the stocking rate of this land or the specific areas that may be impacted by cattle. Impacts are likely to be variable across the terrain with the highest level of impact near waterways where animals may congregate or on the fringes of grassland and woodland area where grazing impacts combined with fire regimes may lead to changes in local ecology and population biology.

6.3.1 Pastoralism

As noted above (and displayed in Figure 4), large tracts of land in the Kimberley are under pastoral lease, typically for cattle stations. However, not all pastoral leases are used as such and intensity of use varies. For example, less than 1% of pasture in the North Kimberley and 11% in the West Kimberley is considered to be of high grazing value (Davies 1985).

6.3.2 Fishing and Aquaculture- commercial and recreational

Fishing is both a commercial and recreational activity in the Kimberley region. There are a number of fisheries that operate in the area including prawn trawling, gillnet and barramundi, northern demersal scalefish, mackerel and shark. Management of these fisheries includes permitting and closures to ensure impacts are acceptable and activity is targeted in areas of high species abundance.

Recreational fishing is growing in the region with a seasonal peak in the winter due to increased tourism at that time. Recreational fishing occurs in creek systems, mangroves, rivers, ocean beaches, offshore islands, coral reef systems and the continental shelf waters and targets a variety of species.

Pearling has been a major industry in the Kimberley, particularly near Broome and the Dampier Peninsula. This industry has had a strong and lasting social effect in this area. The decline in wild pearl harvest has been replaced by an increase in pearl oyster farms.

Aquaculture is a growing industry in the north west for both pearl oyster and beche-de mer although production of pearls is the main industry. Wild oysters seeded for pearl production at 80 mile beach and around the Lacepede islands and major hatcheries operate at Broome and King Sound. There are pearl farms along the Kimberley coast, with key areas including the Buccaneer Archipelago, Roebuck Bay and the Montebello Islands. There is recent development in the aquaculture industry for growing trochus, barramundi and black tiger prawns.

6.3.2 Tourism

There has been a recent growth in the tourism industry in the Kimberley based mainly on the increasing interest in ecotourism. The Kimberley is recognized as a 'last frontier', containing a wide array of pristine wilderness, natural attractions and complex landscapes. A variety of visitor experiences are provided in the Kimberley from backpacking to four wheel driving to escorted tours in both the terrestrial and marine environments. Attractions that have been identified as the most important to visitors to the northwest include marine life, beaches, rugged scenery, gorges, wildflowers and forests (Tourism Western Australia

2005). Tourism Western Australia further reports that tourism in the northwest contributed $196 million to the economy in 2001/02.

Marine tourism includes non consumptive forms such as sightseeing along the coast and diving on coral reef and near-shore islands as well as consumptive forms such as game and sport fishing from charter boats or in the estuarine areas of the many rivers (Collins 2007). This form of tourism provides access to sites that would otherwise be inaccessible to tourists (Zell 2003).

Although marine tourism in the Kimberley has not been quantified, anecdotal reports suggested that it was expected to generate $100 million in 2005 (Collins 2007). The growth of marine tourism and its continued good management in the Kimberley will make it an economically dominant industry in the region. However, the rapid and unplanned nature of the growth of this industry means that its sustainability is not assured as impacts increase on potentially sensitive areas. Figure 4a depicts the main marine tourism sites across the Kimberley.

The tourism growth trend is not spread evenly across the region, but is focussed on certain areas. Key spots include both marine and terrestrial sites, each with their own vulnerabilities. Tourism camp sites may cause physical damage including vegetation clearing, entrenched access tracks leading to erosion. There are a unique suite of management issues that come with the management of tourism areas. The fragile and pristine environment of the Kimberley could be vulnerable to increased visitation and thus requires considered management for this industry to be sustainable and conservation objectives met.

6.3.3 Mining/Exploration

Mining and exploration are growing industries in the Kimberley. Over 230 mining tenement applications have been referred to the DEC for advice since 1992 as they include mining on DEC estate or proposed estate in the Kimberley region or have significant biodiversity values or Environmentally Sensitive Areas (ESAs). There is the expectation that mining leases in the Kimberley will increase in the coming years. In 2006 there were active mines or proposals to mine bauxite (Mitchell Plateau), iron ore (Cockatoo and Koolan Islands), natural gas fields (offshore marine), oil fields (Leopold Downs), lead, zinc, diamond, nickel and platinoids (east Kimberley) (DOIR Map of Major Resources 2006). In addition there are port handling facilities at Broome, Derby and Wyndham and power station in the east Kimberley.

Exploration and mining of petroleum resources is imminent at the Browse Gas Field and this will have likely impacts in State waters and on State land where processing facilities are likely to be developed. A proposal for a Liquified Natural Gas (LNG) processing facility on the Maret Islands in the Bonaparte Archipelago has been referred to the EPA for environmental impact assessment. The LNG plant as currently contemplated would require construction of significant marine infrastructure including Material Offloading Facilities, LNG export wharves and natural gas feed lines. In addition to the LNG production facilities, the terrestrial infrastructure would include an air strip, accommodation and administration facilities and a causeway linking North and South Maret Islands. There are active iron ore mining operations at Cockatoo and Koolan Islands in the Buccaneer Archipelago. These mining operations require marine infrastructure including seawalls and export wharves to load iron-ore on to ships for transport overseas. Another iron-ore mine has been proposed for nearby Irvine Island.

6.3.4 Community

The Australian Bureau of Statistics estimated the population of the Kimberley to be 33,705 in 2002 with the majority of people living in urban areas. Of the population in the Kimberley approximately 47% are indigenous people living, often in remote communities, throughout the Kimberley. The indigenous community has a strong connection to the land, particularly in coastal and marine areas and is developing programs to better articulate and understand ecological value. For example the Saltwater Country Project, coordinated by the Kimberly Land Council and Department of Indigenous Affairs, aims to document indigenous natural and cultural values and assets in the northwest coastal and marine environment. There are large tracks of land throughout the Kimberly that are Aboriginal land, particularly

along the coast. Aboriginal heritage sites are noted in figure 5. For the most part, these areas have received little attention in terms of exploration and research since early European settlement.

6.4 Threatening processes

While on a broad scale, the Kimberley is considered to have significant wilderness areas that are relatively untouched and unchanged, impacts from a number of anthropogenic processes are occurring. In part the full impact of these processes has not been identified because of the limited survey and research that has been conducted in the Kimberley. And in part, impacts are still limited relative to the vast area covered by the Kimberley and limited areas in which human occupation and use has occurred. As human development expands in the Kimberley and land use practices continue, the results of these practices will become greater and more evident. Thus there is a need to recognise these processes and ensure there are management and planning practices in place so that the values of the Kimberley are not threatened.

The two most significant threats for the mainland Kimberley are undoubtedly changes to the fire management regime and grazing by introduced ungulates such as cattle. These threats operate at the landscape level and have a number of flow-on effects that impact flora, fauna and ecosystems. Since European settlement the fire regime has changed to one of broadscale, hot, late, dry-season burns, notably in the savannas, that occur frequently. These repeated fires have an impact on the vegetation, changing the grass dynamic, hydrology and erosion processes which in turn affect fauna. Grazing by cattle can lead to degredation where palatable grass species are replaced by unpalatable ones. Soil degradation occurs where vegetation cover is removed resulting in the physical impact of hooves on soil (Davies 1985). Overall impacts result in a simplification of the ecosystem to grassland dominated by annuals and a general reduction in productivity and thus carrying capacity for small mammals (Graham and McKenzie 2003).

Combined impacts of overgrazing and fire can lead to changes in vegetation cover which has a consequent impact on the species that depend on it. Woodland mammal fauna have experienced the highest level of impact and, although the Kimberley is still viewed as having a largely intact mammal fauna, it is likely that species' distribution has contracted in many areas and is becoming limited to the wetter parts of the Kimberley. This decline is likely due to the changes in landscape and habitat brought on by a combination of grazing pressure and fire.

Introduction of other feral pests are also threats in the terrestrial environment, namely cane toads and cats. While foxes are not known to occur in the Kimberley, feral cats are present and have an impact on small mammalian fauna. The introduction of cane toads is perceived as a large threat and there are various management strategies to identify and contain this threat when it occurs.

Weeds pose a threat to the vegetation communities of the Kimberley. Keighery (1999) demonstrated that the Kimberley was relatively weed free compared to the rest of WA and related this to its relatively undisturbed state, leading to the introduction of fewer weeds.

Nothing is known about the introduction of exotic marine organisms to the marine environment as no introduced marine pest surveys have been undertaken in the region and the ability to undertake such surveys is hampered to a great extent by the lack of knowledge of natural biodiversity. However, as with other marine areas, there are potential threats to marine ecosystem integrity and dependent industries such as commercial fishing and aquaculture from introductions through discharge of ballast water containing marine pests or from pests associated with bio-fouling of ship's hulls.

There are increasing pressures from human activities such as tourism, fishing, aquaculture, mining, industrial development and shipping. These activities are generally site specific but may lead to broadscale cumulative impacts over time or destructive impacts on a local level. The Kimberley is facing growth in human development and in human interest such that these activities are increasing each year without a context for their impacts on the environment, particularly at the regional level.

6.5 History of Exploration

A number of expeditions and surveys have been undertaken in the Kimberley since the late 1800's which provide an array of information on land form, soils, and biodiversity. Even so, the Kimberley is generally considered to be largely unexplored territory and its biodiversity to be poorly understood in many respects. This is due to the remote and rugged nature of the Kimberley making many areas virtually inaccessible given logistic and financial constraints. Thus survey effort and research has been sporadic over time and focussed on areas that are at least accessible, namely national parks and areas serviced by roads.

Historical expeditions include botanical collections first carried out in 1819-1821 by Allan Cunningham, followed by collections in 1889-91 by JWO Tepper and 1901 by RM Houe, in 1905-06 by WV Fitzgerald, 1916 by H Basedow and 1921 by CA Gardner. Increased transportation and access to the Kimberley has allowed for more recent collections.

6.6 Assessment of available information on the Kimberley

There is no specific definition that encompasses ecological values and they can be defined and represented in a number of ways. However, for the purposes of this review it is important to establish some criteria so that these factors may be assessed and presented spatially to begin to understand regionally significant areas of the Kimberley and further to identify areas where conservation is critical and others where development is acceptable.

Certain features are widely recognised as containing high ecological value and these are often identified initially in regions to begin to develop an understanding of the corresponding value of areas and vulnerability to impacts. These features are also termed ecological values and defined as the intrinsic physical chemical, geological, and biological characteristics of an area (DEC 2005). The term 'ecological' also highlights that although values may be described individually (e.g. seagrass, mangrove), it is the interaction between plants, animals and their environment and the complex relationships that needs to be recognised and understood to ensure they will all be managed sustainably. Ecological values include species and communities that have a special conservation status (eg. threatened species and communities), endemic species, key structural components of the ecosystem (e.g. mangrove, coral, rainforest), exploited species (e.g. fish, turtles) and key physical-chemical components of the ecosystem (e.g. water quality, geomorphology).

Social values are equally important when considering the management of an area for long term sustainability. These values include cultural, aesthetic, economic and social attributes. While the social aspects must also be taken into account in assessing a region and developing a regional plan, this report focuses on ecological values, e.g. those that play a key role in ecological processes, and encompass the natural range and richness of flora and fauna.

Below the ecological values have been divided into marine and terrestrial. For each value a general background is provided which reviews the current state of knowledge and provides general information. The significance of the value refers to key aspects that are important and need to be recognised and protected where possible. Finally, gaps in knowledge and priorities for research and/or action are included.

6.7 Marine

The Kimberley has a ria coast with narrow embayments, drowned valleys, rocky shores, numerous headlands and many offshore islands. The nearshore waters are very turbid with a tidal range of up to 15m in a low energy system. The mid to outer shelf waters are generally clear.

The marine component of the Kimberley presents at least 2 very different environments with separate values. The nearshore and coastal waters, comprising the Canning, King Sound and Kimberley IMCRA

bioregions, are characterised by turbid waters, low energy and an extreme tidal flux. Conversely, offshore areas in the NWS and OS bioregions comprise an oceanic system with clear waters, some embankments, atolls and offshore islands. It has been noted that biodiversity is rich in the nearshore environment and in the offshore waters beyond 100m depth. However, the area between, in the 30-80m depth zone tends to be nutrient poor and support little biodiversity.

Information on the marine environment in the Kimberley is limited and generally site specific to several key locations that have been subject to a number of investigations. For example, AIMS has engaged in ongoing research mainly on northwest shoals, Scott Reef, Ashmore Reef and Rowley Shoals. AIMS holds datasets from a number of studies on fish and shark species, benthic habitat and invertebrates conducted at these sites along with research on biological and oceanographic processes. These studies have been in part commissioned by Woodside Pty Ltd who have an interest in developing petroleum resources in the Browse Basin.

6.7.1 Environmental quality

Background

Under the State Water Quality Management Strategy, WA will identify Environmental Values and Quality Objectives for Kimberley marine waters through a review and community consultation process (Department of Environment and Conservation 2006). A separate program would need to be developed and resourced to develop environmental quality criteria (ie for water, sediment and biota) to allow an assessment of environmental quality against the objectives across the Kimberley and to identify where problems may be emerging and management is required to return and/or ensure appropriate levels of environmental quality in the future.

Significance

Although the Environmental Values (EVs) have yet to be determined through a community consultation process, it would be reasonable to expect that the default values would be the five identified for the Pilbara region and the spatial application would follow the approach and principles established through the Pilbara Coastal Waters Consultation Process (DEC, 2006). In essence, it could be anticipated that the five EVs would apply everywhere and the level of ecological protection (LEP) would generally be designated as Maximum or High, except for areas within harbours or marinas where a Moderate LEP would apply or the mixing zones of any wastewater outfalls where a Moderate or Low LEP may be appropriate. The social use values of recreation and fishing and aquaculture would apply everywhere except perhaps in the immediate vicinity of approved wastewater discharges that contained faecal coliforms.

Gaps and Priorities

The consultative process to determine values, objectives and where they apply spatially has been successfully completed for the Pilbara coast (DEC 2006) and the outcomes have been endorsed by the Environmental Protection Authority (EPA). The outcomes provide a basis for proponents to plan their developments and a context within which to prepare and present environmental impact assessment documentation. A proponent should seek to design the project to meet the objectives, but where that is not possible the proponent should describe the degree of non-conformance and represent that spatially. The EPA and Government can then compare the predicted environmental quality as presented in the environmental impact statement against the 'plan' to assist in making judgements on environmental acceptability. The process and the principles used to prepare the draft plan for the Pilbara coastal waters would serve as a good model for a similar process to be undertaken in the Kimberley.

6.7.2 Water and Sediment

Background

There is limited information available on environmental quality (with respect to contaminants) in the Kimberley marine environment. Water quality has been sampled at a number of sites in coastal and offshore waters by AIMS between 1992 and 2003, however these data have not been published and

there is no metadata available to identify parameters tested. There were no sediment quality data or biota quality data located during this review. Data on benthic substrates in the Kimberley are very limited and general in nature, except for several site specific areas, e.g. Scott Reef. It is known that surficial marine sediments are mainly of terrestrial origin (terrigenous) in the coastal and nearshore areas. Moving offshore, there is a change in sediment characteristics, commensurate with a transgression to the offshore North West Shelf and oceanic Shoals bioregions which are characterised by deeper waters and sediment of marine origin including biogenic carbonates.

In addition to providing faunal data, Berry and Marsh (1986) provide a good overview of the origin of the offshore shoals and atolls including Scott Reef. The shelf atolls (e.g. Rowley Shoals, Scott Reef, Ashmore Reef) are unusual in the sense that they have not grown on submerged volcanos but have grown vertically from an essentially flat continental shelf, albeit in spurts related to changing sea-levels over many millions of years. South Scott Reef rises to the surface from water depths of about 400 m on the east to 700 m on the west and has been drilled to over 4700 m below sea level for hydrocarbon exploration. Core analysis shows volcanic basalts at 4279 m overlain with some 2000 m of shelf sediment indicating that the environment was deltaic in the early Jurassic (~200M years BP). Reef derived calcarenite was encountered from the surface down to a depth of 1995 m indicating that the approximately 2km thick atoll structure is essentially bio-genically derived and commenced growing on the deltaic shelf sediments in the mid-Miocene (~15M years BP).

Significance
Too little information to be identified.

Gaps and Priorities
Too little information to be identified.

6.7.3 Mangrove

Background
There are accounts on mangroves dating back to early explorations (e.g. Gardner 1923, Sauer 1965). More recent accounts have been published by Semeniuk (1980, 1982, 1985), Messel et al. (1977), Hanley (1995), Saenger (1996), Thom et al. (1975) and Johnstone (1990). Mangrove zonation and structure are described by Semeniuk et al. (1978), Wells (1981), Hutchings (1995), Hanley (1995), Johnstone (1990) and Saenger (1996), Wells and Slack Smith (1981). The distribution of mangroves around the coast of WA have been assessed by Pedretti and Paling (2001) and by the DEC. Further information on mangroves can be found in Bridgewater and Cresswell (1999) and Johnstone 1990).

There are 18 species of mangrove tree found in Australia and all are represented in the Kimberley. Species diversity declines in more southern latitudes and species and assemblages differ between the Kimberley and the Pilbara and Gascoyne Regions (Pedretti and Paling 2000). Ten of the 18 species only occur in the Kimberley. Well developed and complexly structured mangals are present around the mainland coast of the Kimberley and are particularly well developed in estuaries, larger bays and inlets. Mangals are less well developed in coastal bays and on nearshore islands and are uncommon on outer islands.

Mangroves are generally high in ecological and commercial value as they provide important habitat and nursery areas for a number of fish and invertebrate species. They represent a highly productive environment and provide nutrients to a wide range of species, including migratory birds. Mangroves support a rich and unique ecosystem, characterised by a distinctive suite of invertebrate fauna, much of which has been observed at various sites (Hanley 1995). They also play an important role in protecting the shoreline from erosion. Threats to mangrove communities include cyclones and other natural events, land filling, dredging, deforestation and pollution.

Significance

The mangroves of the Kimberley are considered to be some of the most rich, diverse and untouched mangals around the world as they represent an area that has not been open to deforestation or subject to fragmentation and losses associated with coastal infrastructure developments. Mangroves represent a valuable and nutrient rich ecosystem that supports a wide range of biodiversity.

Gaps and Priorities
There is some information available on mangal ecosystems in the Kimberley, however it is in no way complete. While there are no perceived immediate threats to the mangroves, particularly to the large areas in the gulfs and estuaries, smaller stands such as on the outer islands may be more vulnerable. A better understanding of these productive ecosystems is warranted and should begin by first developing fine scale mapping of mangrove habitat across the Kimberley.

While mapping of the mangroves has been undertaken in the past and the DEC holds a spatial dataset identifying mangrove areas, there is a need to update this dataset and to test its accuracy. Fine scale and accurate mapping of mangroves would provide a reliable record of mangrove areas so that changes and trends may be detected and assessed. This would form a basis from which to assist the ongoing management and conservation of the highly productive mangrove ecosystems in the Kimberley. Unlike subtidal habitats, the intertidal mangrove lend themselves to using aerial and possibly satellite imagery with targeted field work to verify accuracy

6.7.4 Intertidal Flats

Background
Tidal mudflats are a characteristic of the Kimberley, particularly the bays and inlets of the coastal environment. Geomorphology studies of mudflats in Cambridge gulf have been undertaken (Wright et al. 1972, 1973, 1975, Thom 1975, Wolanski et al. 2001). Semeniuk (1980), (1981), (1985) describe sediments of the tidal flats of King Sound. Roebuck Bay in the Canning Region has received a great deal of attention and there is ongoing collaborative research on the invertebrate fauna and relationship with migratory seabirds in this area (de Goeij et al. 2003, Piersma et al. 2006).

While Roebuck Bay studies have identified a high biomass and high biodiversity, this research has not been repeated at other similar sites and it is not known whether this level of biodiversity and productivity is unique to Roebuck Bay or more widespread in tidal flats across the Kimberley.

Although mudflat ecosystems have been extensively studied in Roebuck Bay and other sites in King Sound, and Cambridge–Bonaparte bioregions, there have been no broader regional studies. The majority of research effort in marine communities has focussed on mangroves.

Significance
Intertidal mudflats and the communities they support provide a critical habitat and resources to migratory birds. Sites such as 80 Mile Beach and Roebuck Bay are considered of international significance given the numbers and diversity of migratory birds that feed in these areas seasonally.

Gaps and Priorities
Research on the communities and productivity supported by intertidal flats is limited to several specific locations, e.g. Roebuck Bay and Eighty Mile Beach. This may lead to biases in information and biodiversity assessment. Further, research on the oceanographic and biological processes that support these systems is also limited. Priority research areas for intertidal environments include investigating key intertidal regions in the Kimberley Bioregion to assess invertebrate community structure and interactions and to support this information with related research on oceanographic processes relating to sedimentation and water flow.

6.7.5 Sandy Beaches

Background

Short steep beaches can be found between rocky headlands on the many coastal islands of the Kimberley. These beaches comprise coarse terrigenous material, sometimes including pebble beaches in areas where there are basalt or dolerite outcrops. While beaches typically have a recognisable community of invertebrate species (amphipods and other crustaceans) there have been no studies on beaches within the Kimberley to identify such a suite of organisms. There are some species records from surveys and expeditions, however, there is insufficient evidence of the full taxonomic suite of species and their ecosystems. There are no published reports on rocky shores or sand flats.

Significance
Sand beaches are known nesting sites for turtles and excavation sites have been noted at likely beaches. However, there is no inventory of turtle nesting sites for the Kimberley and only anecdotal information exists. Many of the beaches have features that would be unsuitable for nesting, e.g. no fordune or inundation at high tide. Too little is known of beach ecological communities to identify other values.

Gaps and Priorities
Priorities include identifying beaches suitable for turtle nesting, mapping sites where nesting occurs and conducting a complete inventory of sand beach ecological communities.

6.7.6 Seagrass

Background
Very limited information is available on seagrass in the Kimberley. Seagrass meadows do not appear to be as well developed in the Kimberley as in regions to the south. However, twelve species of seagrass have been identified in the Kimberley Region, with three of these found only in the Kimberley. Generally seagrass species composition is similar to other areas of the Indo Pacific (Walker 1992, 1995).

Seagrass indicative sites have been mapped on the Oil Spill Response Atlas (OSRA) likely based on satellite imagery. General information on seagrass can be found in Kirkman (1997) and Walker and Prince (1987). There is a CAMRIS database of seagrass distribution around Australia held by the Department of Environment and Heritage.

Significance
Seagrass has an important role in coastal ecology; through nutrient cycling, providing food and shelter for fish and other species including dugong and some marine turtles. However, too little is known of seagrass communities in the Kimberley and the biodiversity which they support. Prolific seagrass meadows are known to occur in the Buccaneer Archipelago. Much of the nearshore environment is too extreme for seagrass with high turbidity, tidal flow and freshwater runoff. There is very limited information on deep water seagrass.

Gaps and Priorities
No research has been undertaken on seagrass in the Kimberley, though it is noted as important habitat for dugong, marine turtles and a number of fish species. Priorities would include finescale mapping of seagrass habitat, assessing its role and importance in ecological communities particularly as habitat for dugong, marine turtles and various fish species. Seagrass is also vulnerable to many forms of development such as pollution, dredging and sedimentation. It is therefore important to clearly identify seagrass meadow areas and have a developed understanding of the complex trophic interactions that may be affected by anthropogenic activity, particularly in areas where development may be considered.

6.7.7 Macroalgae

Background
There have been limited collections of macroalgae, mainly undertaken during museum surveys. Walker (1995), (1996), (1997) provide preliminary lists, however taxonomic lists have not been concluded. Preliminary evidence suggests that diversity and abundance of algae is low, possibly due to the extreme

tidal range and turbid environment. Highest diversity and greatest abundance were found in the Buccaneer Archipelago intertidal flats (Wilson 2006).

Significance
Information is too limited to identify values.

Gaps and Priorities
Information is too limited to identify priorities or gaps.

6.7.8 Rocky Shores

Background
A high proportion of the Kimberley shoreline is rocky and comprised of Proterozoic metamorphic and igneous rock. A suite of invertebrate species is usually typical of intertidal rock surfaces and most of these species have been recorded in species lists from various survey expeditions (e.g. Wells 1981, 1992, Wells and Bryce 1995, Bryce 1997, Jones 1997). However, there have been no specific studies on rocky shore communities and there is no information on ecological distribution patterns and community structure.

Significance
Information is too limited to identify values

Gaps and Priorities
While rocky shoreline communities may be a relatively low priority, there is a need to identify the complete suite of organisms and describe distribution patterns and community structure.

6.7.9 Coral Reef

Background
Reefs in the Kimberley fall into two distinct groups- the fringing reefs around coastal islands and the mainland shore and large platform reefs and banks from the OS bioregion. These two categories, as assessed by Wilson (2006), are quite different in composition, diversity and habitat and, as such will be dealt with separately in this section.

The continental shelf off north western Australia is one of the widest in the world and along its edge rise a number of submerged banks, shoals and emergent reefs. The platform reefs are large bioherms and appear to have depth to at least Holocene accretion. The platforms are barren in the middle with coral communities on the margins. There are 13 atolls in the Oceanic Shoals bioregion covering roughly 1500square kilometres (including the Scott Reef system, Rowley Shoals and Ashmore reef system). These reef systems make up a miniscule part of the bioregion and are critical ecologically as stepping stones for larval transport and interconnectivity within the Indo Pacific (C. Simpson pers comm).

Jones (2006) provides a brief assessment of marine research undertaken at a number of sites, including that at the various offshore reefs. Scott Reef is the best studied and coral reef assemblages are well zoned. Long term projects have been undertaken by AIMS and supported by industry at Scott Reef (e.g Morgan 2006, Berry 1986, Hutchins et al.1995, Jones 1973, Kay 1995, Smith et al.2003, 2004). In addition there has been some research undertaken at Montgomery Reef (Walker 1997, Telford 1997), Rowley Shoals (Berry 1982, 1986, CALM 2004, Environment Australia 2000, Hutchins et al.1995, Jones et al.1973, McLoughlin et al.1988) and Ashmore Reef (Berry 1993, 1999, Milton 1999, Rees et al.2003, Smith et al.2005).

Species lists have been recorded for the Rowley Shoals, Scott Reef system and Ashmore reef system (e.g. Berry 1986, Berry 1993) and these typically note the high diversity on the reefs, similarity between reefs and differences to mainland and nearshore reef systems. In particular, Berry (1986) noted that

many species, while new to lists for Australia, were part of assemblages common to the Indo-Pacific putting the Kimberley region into the broader global context of its role in the Indo-Pacific ecosystem.

Research has noted that the reef atolls are in relatively good condition with a high diversity of fish, coral and invertebrate fauna. While Scott Reef system and Ashmore reef system have been exposed to traditional fishing practices, the Rowley Shoals are not and provide a refuge for species of trochus, holothuria and giant clam that have been over-fished in other areas (Gilmour et al. 2007). Benthic habitats and communities have been found to be broadly similar between the various reef systems, though research on Scott Reef has been limited to reef slope (Gilmour et al.2007).

The greatest threats to these emergent reef and atoll communities are large scale disturbances such as thermal induced coral bleaching (from climate change) and cyclonic activity. Other threats common to coral reef systems are disease and outbreaks of coral predator populations. The reef systems are far from the mainland and therefore isolated from many other anthropogenic disturbances (e.g. sedimentation, nutrient flow, etc).

There have been several coral bleaching events at Scott Reef and cyclones at several of the reefs over the last decade and recovery and resilience patterns have been studied (e.g. Smith et al.2003, 2004, Gilmour 2007). The reefs' ability to recover is largely a factor of self seeding and depends on interconnectivity between coral communities within reefs and among reefs within a system. Fish populations are more likely to rely on dispersal and recruitment between reef systems.

Research at Scott Reef has confirmed that there is a high level of biodiversity at the reef and that it is in exceptional condition. A coral bleaching event was noted in 1998 and subsequent recovery of the reef was examined over the following 6 years. Research has included habitat mapping, species identification and zoning, monitoring of physical processes and examining reef connectivity across the broader indo pacific region. These measures have indicated that Scott Reef is an important reef in the oceanic shoals system, it has a high degree of biodiversity, is resilient to disturbance and has an important role to play in connectivity in the indo pacific including species recruitment and larval dispersal.

There are well developed fringing reefs around most of the islands and along the mainland coast, however, little research has been conducted in this habitat. These corals represent a very rich and diverse group that is only beginning to be understood. Blakeway (1997) represents the only published account on coral reefs. Broad scale mapping of coral reef habitat have been prepared, however due to turbid waters and logistics. Further, there has been little investigation into the species of corals making up these communities. The limited evidence suggests these coral communities may be the richest and most diverse in the Region.

Significance

The offshore reefs, atolls and islands occupy a unique and critical ecological role providing the connectivity between the Kimberley and the Indo Pacific. The atolls and reefs coved a very small area of the bioregion and all are considered to be important for their ecological role in larval recruitment and connectivity between reef systems. It is by noting the value and role of these systems in the broader marine environment that we begin to recognise that the Kimberley and WA are not an isolated marine environment, rather they contain elements of a much broader marine ecosystem that may rely on unique features within the Kimberley. There are only 3 emergent reef systems in the North west and the Rowley shoals is the most pristine of the three. However they are all important to the longer term persistence of coral reef atolls in the OS. In particular, longer term dispersal is critical for assisting in the recovery , maintaining species diversity and preventing fixed genetic differences (Gilmour et al.2007). Further the reefs represent long distant stepping stones between reef systems farther south and the Indo pacific. Given their rarity, all reef systems of the north west are considered of great regional significance (Gilmour et al.2007) and, as such any human activity that could result in significant disturbance should be discouraged. Rather, all reef systems should be considered for inclusion in the marine reserve system.

Preliminary evidence from surveys of the fringing reef in nearshore and coastal waters notes a very high diversity in species, however little is known of coral communities, or ecology. This inshore coral system

may be an ecologically very important feature of the Kimberley and it may represent a unique coral system worldwide with high diversity in a low energy and turbid environment.

Gaps and Priorities
Although there has been some research undertaken on the offshore reef systems, there are a number of significant gaps in our knowledge. Habitat mapping and biodiversity surveys of all areas are critical to define baseline population parameters that can be monitored to detect impacts over time, to examine the level of connectivity between reef systems and to detect threats such as coral bleaching, disease and coral predators. Some survey work has been undertaken at each of the reef systems, but to different degrees, and there is still much that remains unknown. For example, replicated surveys of different habitats are required to determine similarity in community within reef systems as well as between reef systems. Habitat mapping and monitoring should cover the range of habitats present, not focus on one particular area. For example, at Scott Reef while there are monitoring programs for the reef slope habitat, there is limited information about community structure of other areas such as lagoon, back reef, reef flat and channel (Gilmour et al.2007). Further research is required at Scott Reef and other reefs to understand oceanographic processes, the role of surface currents in larval dispersal and recruitment between coral reef systems in the Indo pacific. Information on the biodiversity of fish communities at the reef systems is minimal. It would be useful to have contemporary baseline of fish biodiversity from shallow and deep water surveys to assess the uniqueness of the fish communities at each reef system and future changes (Gilmour et al. 2007).

Information on species distribution and movement patterns or connectivity between reef systems is important for those species that are commercially harvested (e.g. trochus, holothuria, sharks). There is a need for sufficient information on spatial patterns in movement or life history characteristics so that management strategies can be implemented that will ensure their sustainability.

While the Museum has collected a number of samples of invertebrate species, including corals from the Kimberley region through various surveys this information remains uncatalogued to some degree and unavailable through a digital database system. A top priority to begin to understand the range of biodiversity present should be to provide funding to the museum to properly collate their current information on fish, molluscs, corals and other invertebrates from the Kimberley Region.

In the nearshore environment, mapping of all corals has yet to be undertaken due in part to the difficulty presented by the turbid environment, making the use of aerial photography limited. An initial assessment of the inshore reefs should be undertaken such as a preliminary mapping project of all fringing reef by a geomorphologist.

Due to the potential importance of this reef system, additional fieldwork to survey inshore coral reefs in a systematic way should be initiated following the above priorities.

6.7.10 Benthic

Background
There is limited information available on the benthic environment of the Kimberley. Broad scale bathymetry is available for most of the region through navigation charts and AMSA.

Significance
There is too little information to identify values.

Gaps and Priorities
There is no finescale bathymetric mapping that is easily accessible. While there have been some site specific studies that would have provided this information, e.g. aquaculture sites and sites proposed for industrial development, this information is not readily available and would be very patchy and site specific. Generally, benthic habitat mapping has not been conducted for the Kimberley region. It would be possible to use naval marine charts, aerial photography or satellite imagery as a base point to identify

habitat such as mud flat, mangal and coral reef. However, the large tidal range and turbid waters of the Kimberley make photographic analysis difficult and its use in benthic habitat mapping, including for coral will be limited in coastal and nearshore waters.

6.7.11 Oceanography and Physical processes

Stewart et al.2005 detail data sources for oceanographic data held for the Canning bioregion. This includes CSIRO databases on regional seas, coastal stations and oceanographic regionalisation, CAMRIS wave and oceanographic datasets, and NOAA surface temperature imagery.

Information on tidal processes has been assessed by Holloway (2001) and Cresswell and Badcock (2000).

Several studies have been conducted in north west shelf area by AIMS on wave and current dynamics and on relationships between reef communities.

Gaps and Priorities
There is a need for a more developed understanding of ocean processes including water circulation and connectivity between various reef systems.

6.7.12 Fauna

The Kimberley marine and coastal environment provides habitat for a variety of important fauna species including migratory birds, seabirds, marine turtles, humpback whales, dugong and benthic intertidal communities. Overall there is a reasonable, though incomplete, taxonomic knowledge of the large and conspicuous marine flora and fauna groups. However representation of other more cryptic or rare groups remain undocumented (Wilson 2006). The majority of this information comes from both early and more recent expeditions and is typically restricted to specimen collections and taxonomic lists, with little detail on known marine ecology and community interactions. Exceptions to this include information on mangrove communities and description of some fringing coral reefs and offshore reefs.

The WA museum holds a database of all fauna specimens from WA including birds, mammals, reptiles, fish, crustaceans, molluscs and other invertebrates. However, this database lists specimen holdings only and does not include information on distribution. Further, specimens have been collected that have not yet been identified and catalogued, making it incomplete. The Australian Biological Resources Study has a published Zoological Catalogue of Australia with taxonomic and distribution information. A publicly available version is available on-line through the DEH, however this catalogue is not yet complete.

6.7.12.1 Invertebrates

There is no spatial dataset of information on invertebrates for the Kimberley, though research has been conducted at a limited number of sites. AIMS has conducted surveys of holothuria and Trochus in the Ashmore and Cartier reefs (Smith et al.2002, Rees et al.2003, Smith et al.2001) and on genetics of pearl oysters in north west WA (Benzie et al.2003). Datasets of survey sites are held by AIMS. Surveys coordinated by UWA and the WA Museum have included collections of invertebrates at a variety of locations along the Kimberley coast and islands (e.g. Wells et al.1989, Morgan 1992, Wells et al.1995, Walker 1997, Walker et al.1997). A number of studies have also been undertaken on benthic invertebrate fauna, mainly in the Roebuck Bay and Eighty Mile beach area due to their importance in the community ecology of these areas (e.g. Piersma and Watkins 1997, Pepping et al.1999, Piersma et al.1999, 2002, deGoeij et al.2003, Wade 2004). The DEC has conducted research and hold a dataset on aquatic invertebrates, water birds and water chemistry of WA wetlands.

Significance
There is too little information to identify values.

Gaps and priorities
Priorities should include improving our understanding of dominant taxa and their distribution and completing species lists for the Kimberley. This may be initiated by supporting the WAM to identify and catalogue the specimens that it already holds for the Kimberley that have yet to be examined.

6.7.12.2 Mammals

A number of marine mammal species are known to occur in the Kimberley region including dugong, humpback whales, the snubfin dolphin as well as several other species of delphinid. These species are important because of their iconic status and public appeal and also for their conservation value. Dugong and humpback whales are specially protected species in WA due to their threatened status. The snubfin dolphin has recently been recognised as a new species in Australia (Beasley et al.2005).

Generally, information on the status and critical habitat requirements of these species is very limited in the Kimberley. While these species are all identified as important to the region and given conservation consideration in the assessment of marine resources for reserve status and development, we know little about population abundance, distribution and habitat requirements. Certain areas may be expected to be important for these species, e.g. sea grass beds as suitable foraging sites for dugong, however there has been little research effort to support this (e.g. Prince 1986, Marsh et al.2001).

Humpback whales migrate annually to northern tropical waters for calving and breeding activity. Jenner et al. (2001) report that Camden Sound in the Kimberley is an important calving ground for this species. They also note the seasonally high concentrations of whales during migratioin near the Lacepede Islands and offshore of King Sound. However the migration route is not well understood, nor have all critical habitat areas for resting and calving been identified. The Centre for Whale Research (WA) has conducted further research effort in the NW area, however this data is not publicly available.

The dugong is considered vulnerable under international conventions and is afforded special protection under the Wildlife Conservation Act in WA. Dugong are primary grazers feeding on seagrass. Populations have been subject to traditional harvest in the Kimberley and were originally managed under the Department of Fisheries. While some limited research has been undertaken to assess populations and critical habitat, this work has been limited due to lack of funding and access (Prince 1986). There are seagrass communities known to be used by dugong, however there is insufficient information to detect trends in seagrass distribution and habitat loss or degradation. A better understanding is required of dugong population, demographics, habitat requirements and annual take. Prince has recommended an expansion of the dugong research program active in the northwest cape area. NAILSMA have initiated research into the dugong population and sustainable harvest, however this project is in early stages.

There are populations of snubfin dolphin, recently identified as taxonomically unique to Australia, and found in coastal waters of the north (Beasley et al.2005). This species has received limited attention to date, however a research program is currently underway by Deakin Univeristy to examine its distribution, abundance and general ecology and interaction within the Kimberley coastal environment (D. Thiele pers. Comm.).

Significance
All species noted above are considered to be threatened fauna and afforded legislative protection. Critical habitat for these species including foraging, resting and breeding areas have, to some degree, been identified.

Gaps and Priorities
Priorities include identifying population distribution and abundance and habitat use; understanding the traditional take of dugong and assessing the sustainability of this harvest. Some information may be available through the Centre for Whale Research on the distribution and critical habitat of humpback whales and other species as they have conducted a number of surveys both independently and under contract to industry on marine fauna in the Kimberley (C. Jenner Pers. Comm.).

6.7.12.3 Reptiles

Background
There are 6 species of marine turtle that occur in the Kimberley and all are listed as threatened species in WA and nationally. While there are broader research programs on turtle stock assessment, distribution and habitat use in WA, there has been limited focus and effort on populations and sites in the Kimberley. A database of turtle nesting sites exists for WA and is managed by the DEC, however, to date there is little information on sites in the Kimberley and there is no quantification of nesting populations at any site, nor have all potential nesting sites been documented. There is a current study on the nesting activities of flatback turtles at Cape Dommett that has identified seasonal nesting patterns (Koch CDU).

Turtle harvest is a traditional activity for the indigenous people of the Kimberley and continues to occur. However, this harvest has not been quantified and has an unknown impact on turtle populations (Limpus 2002, Prince 1994).

Significance
The region is particularly important for those species with significant nesting sites in the region such as the green and flatback and possibly the olive ridley turtles.

Gaps and Priorities
Gaps in knowledge on these species in the Kimberley are significant. Information is required on population or stock assessment, distribution and habitat requirements. Quantification of dugong and turtle harvest by traditional hunters is also required to ensure such harvest is sustainable. Limpus (2001) also outlines further key gaps in information on turtles in Western Australia which would require effort in the Kimberley region. Research programs are initiating to begin to understand these issues. For example, NAILSMA and saltwater country project both include effort to assess local populations of dugong and nesting turtles and quantification of harvest.

6.7.12.4 Fish

Background
Datasets on fish distribution around Australia have been documented by CSIRO and by WA and National Fisheries for commercial and species of interest. Most research on marine fish in the Kimberley region has been undertaken by the Department of Fisheries (DoF) and is strongly biased towards commercially fished species. DoF research has included investigating population parameters and catch rates of the key species for commercial and recreational fishing in both inshore and offshore areas of the Kimberley (Newman et al.2003, Newman et al.2001).

WAM has also gathered data on marine fish species (Hutchins 1999, 2003, Morgan 1992, Newman and Dunk 2002, 2003, Ovenden et al.2002) and a number of studies by AIMS of reef communities at offshore reefs have targeted fish species (e.g. Smith et al.2004).

Significance
There is a high biodiversity of fish species in the Kimberley and Pilbara region with latitudinal having a strong influence on species composition, i.e. there is a distinct difference in species composition between northern latitudes of the Kimberley and the more southerly Pilbara region (Travers et al.2006).

Gaps and Priorities
Newman et al. (2003) make a number of recommendations for priority research that will inform fisheries management such as estimating biological parameters of key species, evaluating and assessing recreational and aboriginal netting activities and determining the genetic stock, structure of key species in nearshore waters.

6.7.12.5 Shorebirds and Seabirds

Background

There is a reasonable amount of published literature on sea and shorebirds in the Kimberley, particularly from the Canning Bioregion as there are several sites of national and international significance for migratory and shore birds (e.g. Roebuck Bay and Eighty Mile Beach). Long term research programs have been active through the Broome Bird Observatory, Birds Australia and the Wader group (e.g. Storr 1980, Johnstone 1990, Woinarski 19 92, Watkins 1993, Tulp and DeGoeij 1994, Collins 1995, Barrett et al. 2003, Hickey et al. 2003). A survey of seabird breeding islands has been conducted by Burbidge and McKenzie (1978)

Significance
The Kimberley is an important site for seabirds and migratory shorebirds and a large variety and number of these species are present in the Kimberley on a seasonal basis. There are a number of recognised sites where migratory birds congregate, feed and breed in the Kimberley. This habitat is of national and international importance under such bilateral agreements as JAMBA (Agreement between the government of Australia and the Government of Japan for the protection of Migratory Birds in Danger of Extinction) and CAMBA (Agreement between the government of Australia and the Government of Republic of China for the protection of Migratory Birds in Danger of Extinction). These agreements list the bird species which migrate between Australia and other Asian countries and require both parties to protect the birds and protect and conserve their habitats. The northwest of Australia is a first stopping point for many of these bird species on their migratory route from southeast asia. The islands of the Kimberley and intertidal coastal environment and wetlands contain a number of important areas, not all of which have been identified, where these species congregate, feed and rest.

Gaps and priorities
As there is some data on known breeding sites and resting areas, research priorities should focus on monitoring these sites to detected changes over time in response to ecological or human factors. Migratory routes of species covered by JAMBA and CAMBA should be clearly identified, including critical habitat for those species that stop off in NW Australia to rest, feed or breed.

6.8 Terrestrial

Most of the research conducted in the Kimberley on both fauna and flora has come about through survey projects run by the DEC (formerly CALM) and WAM. These projects have covered fairly large areas, but have been predominately located in reserve estate and areas of biodiversity interest (e.g. Mitchell Plateau (Western Australian Museum 1981), Drysdale River (Kabay and Burbidge 1977, Edgar Ranges (Mckenzie 1981, Dampier Peninsula (McKenzie 1983 and Prince Regent River (Miles and Burbidge 1975). In addition, extensive surveys have been conducted on rainforests (McKenzie et al.1991) and islands (Burbidge and McKenzie 1978) in the Kimberley. These surveys have added greatly to our knowledge of species distribution in the Kimberley, both fauna and flora and have documented a rich and distinctive biota with more similarities to northern tropical bioregions than other parts Western Australia.

A number of species are considered endemic to the region, including 230 plant species (Wheeler 1992). No summary of the endemic fauna has yet been constructed, however there is believed to be high short range endemism in some invertebrates (e.g. land snails) and at least 16 fish, 10 frog, 31 reptile, 2 bird and 6 mammal species are considered endemic to the Region (WWF AA0706). A number of these species are associated with the rugged sandstone and high rainfall areas of the north Kimberley.

6.8.1 Vegetation

Background
The Kimberley includes such vegetation associations as grassland, grassland with associated woodland, hummock grasslands, mosaic communities, shrublands, woodlands, mangroves, rainforest.

Vegetation mapping is available across the entire region at the 1:250,000 scale (Beard 1979). More recent vegetation mapping has been conducted by the Tropical Savana CRC, however this mapping is not at a finer scale. The Department of Agriculture has completed some land unit mapping in discrete areas. In addition, Behn (2001) has used remote sensing to map forest cover in the Kimberley as part of

a national exercise (NORFOR). Satellite images from the dry season only were used and, while broadscale mapping of mangrove, rainforest and vine thicket was considered adequate, satellite images could not be used to reliably discriminate between types or height classes of woodland trees.

Significance
184 vegetation associations are present in the Kimberley and only 51 of these are represented in the reserve system.

Gaps and priorities
A key priority for the Kimberley is the adequate representation of vegetation communities in the reserve system. A number of recommendations for proposed reserve have been made and are cited elsewhere in this review. These proposed reserves should be enacted and appropriate management plans developed for each.

The broad scale mapping by Beard may be suitable for making assessments on a broad scale basis, but it does not provide a fine scale representation of existing vegetation. This means that while a large area may be depicted as woodland, if smaller areas are examined in more detail, finer gradations and a mosaic of ecological communities are identified. While broad scale information is useful, it has its limitations and finer scale assessment is needed to assess ecological value and true representativeness.

6.8.2 Rainforest Patches

Background
There are more than 1500 rainforest patches scattered across the Kimberley with a distinct structure and floristic composition that support fauna not found in surrounding savanna. Most patches are in the remote northwest, high rainfall areas. Patch size varies, with an average size of 2.5 ha. Between 1987 and 1989 a broad scale ecological survey was undertaken of the Kimberley rainforest. Data was collected on compositional patterns of biota, disturbance and physical characteristics of the environment. The results of this survey provide information on soil and landform, invertebrate and vertebrate fauna, floristics and vegetation structure and spatial distribution of rainforest patches (McKenzie et al.1991).

Significance
The many small rainforest patches identified and assessed by McKenzie et al. (1991) also present unique and important value. These patches provide haven for species during the dry season, allowing species to persist in areas where they otherwise might not. Further, they support their own unique communities and contain a high level of short range endemism in the invertebrate fauna. Fire and introduced cattle both have inter related impacts on rainforest patches.

Generally, rainforest patches are not well represented in the reserve system and are vulnerable to disturbance because of the small size of many patches.

Gaps and priorities
As noted, rainforest patches are not well represented in the reserve system and the top priority should be to enact reserve proposals put forward by the EPA 1981, Burbidge et al.1991 and McKenzie and Belbin 1991) to ensure that this important element of the Kimberley ecosystem is preserved.

6.8.3 Islands

Background
There are over 1000 islands in the Kimberley that vary in size and topography. Only 343 of these are larger than 20ha (Burbidge 2004). The numerous islands in the Kimberley play an important role in the conservation of native Australian mammals (Burbidge 1991). The islands have remained, for the most part free of feral pests. Larger islands in particular will be important in this regard as they may be more

likely to provide adequate habitat to sustain viable populations and communities. Thus any development of islands should be carefully considered to ensure that islands of similar size and habitat are preserved. A number of islands have a high conservation value as they support breeding sites for seabirds and marine turtles and may provide refuges for species whose populations have declined on the adjacent mainland.

Koolan Island has a long history of mining and exploration and, as such, also has the most thorough inventory of wildlife of islands in the Kimberley. A study in 1995 assessed the recovery of the island since the previous closure of the mine 29 years previously (Keighery et al. 1995, McKenzie et al.1995). This survey found 282 plant taxa in five major vegetation units, with 12 new weeds identified. Fauna surveys have identified 59 invertebrate species (including 8 land snails), 1 amphibian, 35 reptiles, 116 birds and 18 mammals. Eight species have been introduced including 4 invertebrates and 4 mammals. The vegetation structure and underlying geology was similar to that found on the mainland in nearby sites as were fauna collections. Only one native plant species was known to be restricted to Koolan Island, otherwise the vegetation was considered to be sub humid rainforest species which occur widely across the Kimberley. Several species of endemic land snail and one reptile were found on the island.

Significance

The islands in general are considered a high value for the Kimberley as they contain a variety of ecosystems, high species diversity and provide an area where these species can persist without the impacts and disturbance caused by human activities on the mainland (Burbidge and McKenzie 1978). The laterite islands represent a very small proportion of islands and should, at the very least, be further assessed to identify ecological values unique to these islands. The richness of fauna on Koolan is deemed to be a good indication that rugged sandstone islands support complex fauna. Islands also represent important refugia for fauna that may be pushed to the extreme limits of their range on the mainland. This factor may become important over time as distribution of species on the mainland contracts and as impacts from feral animals causes species decline. However, it is important to first identify the genetic variation that exists between island and mainland populations and ecosystems that have developed rather than viewing islands as a safe haven for displaced mainland species. Islands are important for biodiversity, genetic diversity, refuge, short range endemism, relief from pressure of tourism ferals. Islands represent a unique environment and are important to indigenous communities.

Islands play an important role in the conservation of native Australian fauna (Burbidge 1991). Australian mammal fauna generally has declined since European settlement, with the introduction of feral animals as a key factor. Islands provide a pristine ecosystem where exotics have not been introduced and native populations have been maintained. Conservation measures such as reservation and careful management can preserve these populations as well as provide refugia for species threatened on the mainland. In addition, the separation of island fauna from mainland means that there are likely to be genetic differences between mainland and island species, giving island species a high conservation value.

Gaps and Priorities

Little is known of most of the islands. Another island survey is planned to take place over the next 3 years that will visit 123 islands, some that have been visited on previous surveys. Future needs should include further island surveys to expand our understanding of island biodiversity and comparison with comparable mainland sites. There is a need for better understanding of island biologic and dynamics including comparison with mainland species communities and genetics and the impacts of tourism.

Conservation through reservation and proper management is also critical to the long term sustainability of island populations. Islands in the Kimberley need to be well represented in the reserve system and management measures such as limiting development and ensuring quarantine measures are in place are important to ensure that island biota remains relatively untouched and free from feral invasions. Burbidge and McKenzie (1978) make a number of recomendaitons for the inclusion of specific islands into the reserve system and also note that, at the very least, all islands offshore of the Kimberley that are not reserved for some other purpsoe should be declared Class B Reserves.

6.8.4 Flora

In 1998 the Kimberley was considered to contain 2,025 native species of vascular plan. These species comprise 167 families and are dominated by grasses, pea flowers, sedges, eucalypts and paperbarks and wattles. Many species are poorly known and collected and therefore it is difficult to determine the level of endemism present in the Kimberley Flora. The Region's plants bear stronger similarities with vegetation systems across the top end of Australia than they do with other vegetation communities within WA.

Collections of flora in the Kimberley began in 1819 and have continued, boosted by improvements to transportation and access to the Region in the 1960s. The best full records of flora in the Kimberley are contained in "Flora of the Kimberley Region and Broome and Beyond.

Flora of the Kimberley defines 4 phytogeographic districts, 3 of which are covered in the scope of this study: Gardner, Fitzgerald, and Dampier botanical districts. The Gardner botanical district is dominated by savannah woodland but also includes woodland, riverine woodland, small patches of vine thicket, hummock grassland and mangrove communities. Tree and grass species vary with soil and landform. The Fitzgerald botanical district is dominated by tree savannah with trees lower and more scattered than in the Gardner district. Dominant tree species are eucalypts with more diversity in the south. Shale soils support tree and grass steppe.

The Dampier botanical district vegetation is mainly pindan and pindan woodland which is dominated by acacia species. This district also includes low tree savannah, riverine woodland fringing major rivers, grass savannah on clay plains, steppe hummock grass in the ranges and mangrove and samphire communities in sheltered inlets.

Significance

As of 1997 there were 4 species of Declared Rare Flora in the Kimberley and a further 99 species listed as priority flora. 37 of these species are considered under threat as there are very few known populations. The remaining species are not considered to be under immediate threat. There are also 11 threatened ecological communities (TEC), with an additional 46 communities at risk.

The Kimberley is also characterized by the numerous small rainforest patches with their distinctive floristic composition and fauna assemblages which are quite different to surrounding savannah. These patches are not dependent on the annual rainfall, but are often supported by another water source and may be deciduous during the dry months. The greatest number of such patches are found in the wetter north west coast area of the Kimberley.

Gaps and Priorities

There is a need for more detailed and longer term studies on the structure and distribution of flora communities. Many of the surveys and collections have occurred during the dry season, meaning that much of the wet season flora may have been missed. There is also a need for a more developed understanding of the ecological processes affecting flora in the Kimberley and changes that may be either man induced or a result of natural or global change. Dedicated research effort is needed into the relationship between fauna and floral dispersal and pollination mechanisms and impacts of changed community structure through variation in fire regime, and its consequent impacts on both flora and fauna.

6.8.5 Fauna

Surveys of fauna in the Kimberley have identified 72 species of native mammal, 295 bird species (many of these short or long term visitors), 178 species of reptile 39 species of amphibian and 12 species of frog. In the Australian Mammal Audit (McKenzie and Burbidge) the Kimberley shows a rich mammal fauna with high endemism in some areas and low attrition rates. Of note, there have been no mammal extinctions in the Kimberley, though the status and distribution of a number of CWR mammals is of

concern (Burbidge and McKenzie 1989). Further, the Kimberley has the highest diversity of frog species in WA.

Fauna assemblages found in the Kimberley are often not found in areas further south in WA. This is in part due to the difference in fauna assemblages of different climates and changes in assemblage coincide with rainfall (Woinarski 1992). Species in more arid climates tend to be broader ranging and wetter areas have a higher biodiversity. It is believed that European settlement and the introduction of feral animals as well as other habitat disturbance have led to a large decline in the abundance of native fauna species (Kitchener 1978, McKenzie 1981). This issue has not received adequate attention to identify the relationships between fauna and vegetation communities and the affects of grazing. While it is often noted that mammal fauna in the Kimberley has remained intact and that this is likely due to the limited disturbance experienced by fauna in relatively undeveloped areas, this may be misleading as the much of the Kimberley remains unexplored and there has been little work in the way of systematic survey across the Kimberley. In fact, it is suggested that the distribution of many mammal species is shrinking, pushing species into wetter and more rugged areas. In fact, Burbidge (unpub) noted that all records of ground dwelling mammals in the north Kimberley have been recorded within 20km of the coast, i.e. in a narrowing fringe likely associated with high rainfall and rugged terrain.

Significance
126 species are listed as endangered fauna in the Kimberley and 4 as rare. Species diversity is highest in coastal, high rainfall areas and sandstone ranges (Woinarski 1992).

Gaps and Priorities
While there have been a number of fauna surveys by the DEC and WAM over the years, many of these have focused on conservation reserves and most have been limited in time and scope. For example, Handasyde (2006) used a map of the location sites for specimens from the Kimberley held by WAM to represent survey effort as both WAM and DEC scientists lodge specimens with the WAM. From the distribution pattern of specimens, it can be noted that most specimens were collected in conservation reserves or along roads, e.g. the places people were most likely to be. Figure 6, shows a similar trend in the distribution of threatened fauna and ecological communities. There are large tracks of land with minimal sample collection and likely minimal or nonexistent survey effort. There is a need for extensive and systematic surveys to assess species, population levels, distribution, conservation status and habitat requirements across the entirety of the Kimberley. Without this information the long term status, real distribution and potential decline of many species remains unknown.

In addition to general species surveys, further work on short range endemics such as land snails and other invertebrates is needed in the Kimberley. The presence of short range endemics is often used as an indication of biodiversity and priority areas. A high degree of short range endemism has been noted in land snails, particularly in the rain forest patches of the Kimberley and islands. Further work should be undertaken to develop an understanding of the importance of these species and whether they may be useful as indicators of habitat change.

Similar to comments noted above, expansion of the reserve system is required to provide adequate and representation of fauna in the Kimberley. Transitional areas between species assemblages and arid, inland areas of the northwest are poorly reserved.

6.8.6 Wetlands and Estuaries

Background
Information is available on ground water and drainage basins through several national sources. The OzEstuaries Database is an online database holding data on all Australian estuaries. Information is presented via searchable map interface, based on estuary condition assessment. The site provides access to information on each estuary from the National Land and Water Resources audit 2001 and the Australian Estuarine Database (Digby) Survey 1998.

There are 80 sites listed for the study region. The condition of most sites is pristine, with 4 considered to be largely unmodified and one (Drysdale river) modified. Condition modifiers include land uses such as mining, urban and grazing and catchment hydrology, dam. There is no data on water quality or sediment for any site in the northwest Kimberley.

The Wetlands Database Project 2005, hosted by the DEC provides an online information tool on all wetlands in WA. Reports can be generated by specific wetland and include information on the site, tenure, hydrology, geomorphology, flora and fauna.

The Australian Wetlands Database contains information on wetlands of international (Ramsar) and national importance. The database contains information on physical and ecological features, threatened flora and fauna, migratory fauna, social and cultural values, threats and management activities. The WWF have recently undertaken an NHT funded project on establishing priorities for wetland conservation and management in the Kimberley Region (Vernes 2007). This project sought to develop a database of current information on wetlands across the Kimberley to identify threats, uses, and cultural and biological values. This information is intended to be used to establish priorities for wetland management in the Kimberley catchments. Threats to wetlands include grazing pressure from cattle and feral stock, groundwater extraction for agricultural and mining purposes, changed river flows, unsustainable tourism activities, and impacts on vegetation from changed fire regimes (Vernes 2007)

Significance
Wetlands are an important resource for waterbirds and provide refugia during the dry season for many species. Many wetlands are recognised for their significance at a global level and are listed under the Ramsar Convention. These wetlands are recognised as nationally significant and are provided additional protection under the EPBC Act. There are four Ramsar wetlands in the Kimberley. Only one of these sites is within a nature reserve. However, nature reserves and marine parks recommended in Burbidge 1991 and Wilson 1994 would cover all, or significant portions, of the remaining 3 sites. A further 21 sites are considered nationally important wetlands.

In addition to their ecological significance, wetlands hold high social value including fishing, bird watching, tourism and indigenous heritage.

Gaps and Priorities
Priorities for wetland conservation have been assessed by the WWF (Vernes 2006). This report suggests monitoring water quality is a good indicator of wetland health and recommends that there is a need to continue to monitor wetlands in the Kimberley as, while most wetlands were in good condition, there was indication of some degradation, in particular in areas subject to disturbance by cattle. Further, Vernes (2007) notes that a much information on wetlands, in particular ecological, is held by local people and programs to uncover this information as well as involve aboriginal communities in wetland management and monitoring should be encouraged.

6.9 Data management

Data and information management is an on-going issue for State government departments, including those who collect the data and those who use it to inform decision–making processes. Government departments often rely on the best available information to make important decisions on planning, development, conservation and management. Yet, often this information can be difficult to identify and to access. For example, research conducted by Universities, particularly students, may go unpublished except in theses and research conducted by environmental consultants on behalf of industry is often contained only in internal reports that are not provided to government. Thus, there is a great deal of research that my have taken place, be it physical, ecological or social, that remains unrecorded, unrecognised and difficult to access.

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inherently complex range of habitats and ecosystems where there are significant gaps in our knowledge due to this complexity and to the remoteness of the area. A systematic program of research similar to that described for the State in the Biodiversity Conservation Strategy (DEC 2004) is required to fine tune our knowledge and understanding of ecosystems, their role and importance and that of the species they comprise.

Existing national parks, conservation parks and nature reserves in the Kimberley, cover 2.3 million hectares. There is one marine park (Rowley Shoals) that covers 87,632 hectares. The current reserve system does not reflect the variety and richness of biodiversity in the Kimberley, a number of ecosystems are not covered in the system. In the recent CAR analysis only 51 out of 184 vegetation classes . and 6.5% of the land is included in the current reserve system. The amount in reserve varies by IBRA region, with Northern Kimberley receiving the most cover (14.6% and Dampierland the least (1%). Central Kimberley (4.4.%), Ord Victoria (5.9%) and Victoria Bonaparte (5.8%) all have relatively low amounts of coverage.

While various review exercises have made recommendations to expand the reserve system so that it provides a representative sample of the many values in the Kimberley, these recommendations have yet to be actioned (EPA 1981, Burbidge et al.1991). This is in part due to competing land use and concerns raised by the mining industry, pastoral industry and native title. Identification of land worth conserving is dynamic and changing according to the Draft Regional Plan for the Kimberley. The Plan notes that previous recommendations for reserve have been limited to unencumbered land and did not include pastoral land or land with mining interest. There is currently a process underway reviewing the reserve system in the Kimberley with a view to update current recommendations and action them. Until this process is complete and the features of the Kimberley are preserved through an adequate and representative reserve system, it is critical that identified features be recognised in the context of their importance in the Kimberley landscape and not in isolation and that proponents be discouraged from selecting sites where these values have been identified.

6.11 Ecological values

Figure 6 contains a map of locations where threatened fauna and threatened ecological communities have been identified, including known habitat for dugong and marine turtles.

Unique habitat features, particularly those limited spatially to small significant areas or those vulnerable to disturbance are also used to demonstrate ecological values. A number of landscape features, and ecological communities they support, have been identified as containing special values in the Biodiversity Audit 2002. These include:

- stranded remnants of Devonian barrier reef system
- Rainforest patches
- Mound springs and swamp rainforest
- Camballin Floodplain
- Grasslands associated with black soils of Roebuck plains
- Extensive coastal mudflats which support numerous migratory birds at Roebuck Bay and Eighty Mile Beach
- Sunken coastline with extensive coastal archipelagos
- Numerous islands forming a microcosm of the Region and an opportunity to protect intact ecosystems
- Tropical laterite flora with palm dominated landscape unique in WA
- Cape Bougainville rainforest on laterite and volcanic is the largest single rainforest patch in the Kimberley

- A largely intact flora and fauna in the north west margin of the Mitchell subregion
- Exposed folding of the rock strata of the King Leopold Ranges
- Many island and mainland beaches for their potential as turtle nesting sites
- Cave systems – e.g. Lawford Ranges
- Rivers passing through the Devonian reef creating spectacular gorges, eg. Windjana and Geikie gorge
- Claypans
- High species and ecosystem diversity in sandstone communities and laterite rainforests,
- Reef systems along the continental shelf edge (Rowley Shoals, Scott Reef, Ashmore)

Figure 6 includes such habitats for which spatial information is available, e.g. mangrove, rainforest, seagrass, coral reef. Datasets used to make this map are limited, provide information at a broad scale only and are likely incomplete. While more detailed information has been gathered on some specific sites, this is not always available in a digital format, or made available to the DEC. Thus, this map provides information on a minimum representation of these habitats and biodiversity values.

While any planning exercise for the Kimberley would need to take account of recognised important features and ensure that their conservation is assured through appropriate management or other planning mechanisms, in the interim, this report stands to, at the very least, highlight these features so that current planning and development activities take them into account in the broader context of the Kimberley region. However, it should also be recognised, that future planning activities should work towards improving this information in terms of its accuracy and completeness for a comprehensive picture of the Kimberley.

Depicting threatened fauna and recognised valuable features of the Kimberley is useful in identifying critical areas, however, it has its limitations. For example, it has been noted that threatened species are not necessarily good measures of ecological value in the Kimberley due to the lack of information on the Kimberley and the likelihood that species lists are far from complete. Further, areas that contain a rich and diverse fauna and flora should also be recognised as ecologically important.

While there are limitations to information on species richness in the Kimberley due to lack of systematic survey effort, several landscape and climate features can be used as surrogates to identify spatially where biodiversity richness is expected, i.e. rainfall and geology. The highest rainfall areas and landscape that is complex with rugged terrain are both considered to contain higher levels of biodiversity richness and abundance. Figure 7 demonstrates these features and it can be seen that the northwest section of the Kimberley comprises both the wettest and the most rugged terrain. This part of the Kimberley is recognised within the scientific community as one of exceptional species richness, abundance and significance. While populations have notable declined in some parts of the Kimberley, the northwest corner has not experienced such declines, in fact it has been noted that the range of some species has retracted to within this area, likely due to the combined impacts of grazing pressure and changed fire regimes. Thus the northwest corner of the Kimberley is likely a biologically very important area as a biodiversity hotspot and as a refuge for species whose distribution is declining elsewhere. In the absence of better information on species and habitat distribution and status, this entire area should be given careful consideration regarding development activities.

6.12 Information Gaps/Limitations to decision-making

While there is a reasonable amount of published and unpublished data and information on the Kimberley, data is patchy with varying levels of resolution. Most information is at either a broad spatial scale with little resolution or is at a specific local site. For example, there is extensive research and documentation

of ecological communities in Roebuck Bay due to ongoing research programs whereas many other areas remain unstudied. Further, the majority of research at this site has focussed on sediment communities.

Additionally, there is information on specific sites in the Kimberley that is not readily accessible for various reasons. For example, research conducted by consultants for industry is not in the public domain and is often difficult to identify, acquire and assess in terms of quality and scientific rigour. Further, such site specific research often does not contain a landscape or regional context, limiting the value of the information. Historic data and private research are also often not stored in forms that can be easily accessed and searched. For example, the WAM holds all voucher specimens for marine and terrestrial fauna, yet many have yet to be identified and catalogued in the digital database. Accounts of historical expeditions and research that predates the use of GIS technology also has limitations in its availability for use in current GIS formats. This is a limitation in data usefulness and will be addressed later under priority gaps.

Knowledge gaps have been noted throughout this report. This section will summarise the gaps, in particular noting broad areas or themes where information is limited, and also discuss the limitations these place on regional and local decision-making.

6.12.1 Terrestrial

As demonstrated in Figure 6 and throughout the literature, research and survey effort in the Kimberley has been limited in scope and scale. Survey effort has generally focused on DEC estate and more accessible areas, e.g. Mitchell Plateau, Drysdale. Coastal surveys have been limited to the accessible and productive Roebuck Bay, Scott Reef and some islands. The central Kimberley remains largely unexamined as do the vast tracks of aboriginal land along the northwest coast. Further, Figure 6 and figures in Handasyde (2006) also demonstrate that a number of specimens (and thus species information) have been collected along roads, providing another bias in the information.

There are also limitations to the information from areas that have been studied reasonably well. For example, surveys have typically been limited to the dry season which may result in fauna and flora not identified that are more prevalent during the wet season. Further, survey effort has not been conducted in a systematic design across the Kimberley. Nor has there been repeated survey effort to detect changes over time and to provide information on the status of key species. Even for areas that have been surveyed, coverage of taxa is selective, not comprehensive.

Overall, there are gaps in species inventory, distribution and status across the Kimberley Systematic quadrat based surveys are required to fill in this information gap and provide data on assessable levels of biodiversity. Key research areas are those vulnerable to exploration and/or development along the coast, the Central Kimberley as it is largely unexplored and aboriginal land.

In addition, there is limited understanding of ecological processes, and how these are affected by disturbance and by human impacts. Research is required on ecological communities and the processes that support them. This is critical in biodiversity hotspots such as rainforest patches and in the river systems. Improved understanding of the biodiversity, current trends and the ecological processes that support them will provide for better decision making in the regional planning process.

Spatial information on the Kimberley, particularly that identifying and mapping habitat and physical characteristics is limited and at a broad scale. This type of information is very useful in identifying key areas based on environmental features and processes. Maps for regional vegetation, soil and environmental geology do not exist at a better than 1:250,000 scale. Finer scale mapping is required to assist in planning exercises and to be used as surrogates for other limited information on biodiversity (McKenzie et al. 2003).

Limited information is available on threats and threatening processes in the Kimberley. While it is recognised that grazing pressure and fire regime represent key pressures to wildlife, a full understanding of these processes and the intensity of their impact across the Kimberley is lacking. There is a need to determine appropriate fire regimes and to develop our understanding of the distribution and abundance of large introduced herbivores and their impacts on biodiversity. Overall, there is a need for clearer understanding of the interaction between fire, weeds, and grazing and the combined impacts on biodiversity.

6.12.2 Marine

There are a number of significant gaps in our knowledge of the marine environment in the northwest that are relevant and necessary to regional planning, biodiversity conservation and environmental protection and management. The following list identifies the overall issues of concern, while numerous specific issues have been highlighted in the appropriate sections above:

- There are practically no data available for water, sediment and biota quality for any part of the marine environment of the west Kimberley. These data would be required to establish appropriate water quality and sediment quality criteria to support environmental impact assessment and management.
- The across-shore turbidity gradient which is obvious from aerial and remote sensed imagery has clear implications for benthic community structure, particularly autotrophic organisms, but has not been characterised. Good quality information on suspended solid and turbidity regimes and the flow-on implications for light and sedimentation at the seabed, and the factors that control these variables, is needed to understand the key determinants of ecosystem structure and function. These factors will vary spatially and are likely to display significant seasonality, particularly in the coastal waters influenced by riverine discharges.
- Identification of sufficient reference sites covering all ecosystem types, selected on the basis of a regional scale broadscale survey, should occur as soon as possible. A long term data collection regime should then be established, focussing on these reference sites, to collect time series data of relevant physical/chemical properties of waters and sediment, and measures of health of key biological communities (eg. coral, mangroves, algae and phytoplankton). These reference sites will provide an important baseline to measure trends over time and allow environmental quality guidelines to be developed to support planning, impact assessment and management by the public and private sectors. Ideally, these reference sites should be given tenure to ensure they remain un-impacted in the long term to maximise the benefit and utility of the data collection program over time.
- The extreme tidal range in the Kimberley has implications for the accuracy of coastal mapping. More fine scale and potentially accurate mapping of the coastline would be valuable;
- There are gaps in habitat spatial information, including marine substrate. Even the best studied habitat types (mangrove, estuary and wetlands) are patchy and incomplete across the region. Information is very poor on coral reef, macroalgal, deep water systems, and seagrass assemblages, e.g. subtidal habitats generally. The use of satellite imagery could be a cost effective means of updating and improving broad-scale environmental mapping in some circumstances.
- There is limited information on biological communities. With the exception of fish assemblages (e.g. Newman et al.2003) little effort has been made to survey fauna across the region. Spatial datasets of fauna distribution tend to reflect the site specific survey effort that has been the norm.
- There is minimal information on species of conservation significance such as dugongs and turtles. These species are of particular concern as they are harvested by indigenous communities and, along with a lack of data on distribution and critical habitat, there is limited information on harvest rates that could be used to determine the long term sustainability of populations.
- There is very limited information on marine flora.
- Bathymetry data are available, but not in the required detail for conservation planning and modelling of oceanographic processes. Finer scale bathymetry would be useful for a range of management and

planning exercises, including understanding and modelling biophysical and oceanographic processes important to the biodiversity and health of the system.

- Our understanding and assessment of fringing coral reef in the coastal and nearshore environment is a serious limitation. Very little work has been done in this area and these reefs remain largely unmapped and unexplored. Limited data suggests they represent a vastly different coral community to the offshore coral communities and are likely a rich coral reef province beyond that recognised.
- The research on islands has been limited and needs to be broadened to take into account the variety in island geology and consequent ecosystems. For example, there are very few laterite islands in the Kimberley. These islands should be assessed for impacts post wet season when water runoff may increase impacts. In addition, comparable areas on the mainland should be examined in comparison with island ecology.
- Due to the significant growth in tourism and visitation to the Kimberley it is important to gain a better understanding early on about tourism activities, hotspots and the types of pressures being placed on local environments. This applies to both terrestrial and marine environments.

6.13 Research priorities

Based on the gaps noted above research priorities in the Kimberley can be readily identified. Discussion with experts has identified the following as top priorities in both identifying and managing ecological value in the Kimberley:

Thorough inventory of all research and information in both the marine and terrestrial format in a format that may be queried and added to over time, e.g. an accessible and searchable metadata database. While such a project is underway for the marine environment, a similar project is required for the terrestrial information:

- Systematic quadrat based survey of fauna across the landscape and assessment of the status of fauna populations and changes noted over time.
- Better understanding of inshore coastal habitats including mapping of benthic communities, seagrass, coral reef and mangroves
- Assessment of the inshore reef communities
- Soil and geological mapping of the terrestrial environment at a finer scale than 1:250,000 is required for appropriate vegetation and ecosystem mapping to have value.
- Better understanding of the distribution and habitat requirements of large fauna species that may depend on specific habitat in the Kimberley for a part of the their life history, e.g. migratory birds, marine mammals, marine turtles
- Development of a better understanding of the physical oceanographic processes in the near shore environment
- Mapping geomorphology in the marine environment to improve our understanding of the island system in the Kimberley as well as the differences between nearshore and offshore environments
- Better understanding of island biogeography including species distribution and comparison with the mainland
- Clear understanding of human use patterns in the Kimberley particularly in the area of tourism and recreational activities and relevant socioeconomic factors
- Systematic survey across all habitat types in the shelf reef systems to develop a thorough picture of reef and fish biodiversity and communities.

- Further research to examine connectivity between the outer reef systems.

7 Recommendations

It should be noted that the Kimberley is a very rich and valuable landscape with much to offer and also much to lose if development outpaces regional planning and careful decision-making for the conservation of valuable biodiversity, ecosystems and landforms. As a very minimum the following should be considered to ensure that the Kimberley maintains its unique wilderness characteristics and can continue to sustain the wide array of values that it contains:

- Figure 1 presents a composite map highlighting areas noted in this review to contain high ecological values. Development should be strongly discouraged in these areas. This would include: the northwestern corner where the high rainfall and landscape complexity equate to very rich biodiversity; islands for their unique values and ability to act as refuges for many species; rainforest patches and mound springs for the unique biota which they contain; mangrove and mudflats for their high productivity and contribution to important ecosystems; and reef systems along the continental shelf for their scarcity and regional significance. The importance of these areas in terms of their ecological value should be taken into consideration in the assessment of proposals for development or mining.
- Areas of highest conservation value need to be protected. The EPA have made recommendations in the past for the expansion of the reserve system in the Kimberly, as have the DEC (white book). These proposed reserves need to be reviewed given the current level of understanding of the Region and then need to be followed through to create a substantive reserve system that meets CAR standards in the Kimberley.
- Consideration of data management and developing a system to identify and make accessible current and future research in the Kimberley is critical. While such a project is being undertaken for the marine environment (NW inventory), there is no such commitment for the terrestrial component. It is critical for future planning activity and to properly assess development applications and research initiatives that this be undertaken in the first instance. Top priority should be given to the development of a metadata database of terrestrial based research in a format that meets the national standards of metadata and can be accessed and searched by those involved in regional planning, land management, conservation and/or research. Once the meta-databases described above are available, the DEC should ensure that this information is accessed and used when assessing development applications.
- In addition to the above, a very useful tool for both planning and assessment activities would be the conversion of the information collated on research in the metadatabases described above into a GIS format that would be compatible with the SIER index described later in this report. This format would include a GIS layer of shapefiles that would spatially depict where research has taken place in the region of interest with links to information on the project, its objectives, any documents or publications that have resulted from the work and a contact for further information. Such a tool should be considered a priority when collecting this type of information across a broad regional area and should be compatible with other similar spatial datasets held by the DEC.
- Assistance should be sought from proponents in compiling regional information. There is a large amount of grey literature (e.g. unpublished, internal reports) on the Kimberley through environmental consultants working on behalf of the various proponents. It would be useful to the EIA process to be able to capture this information so that there is a better understanding of what has and has not been investigated and over what range. In addition, for future proposals, proponents should be required to provide data in a suitable and compatible digital format to the DEC.
- Consideration should be given to regional scale processes when reviewing development applications and making decisions on development and conservation priorities in the Kimberley. These include such issues as migratory species that have both a national and international significance, including international conventions governing the identification and management of critical habitat (e.g. migratory birds, humpback whales, marine turtles) and processes that have the potential to impact on

large parts of, if not all of, the region such as climate change, fire and invasion of feral pests (e.g. cane toads, cats). These factors need to be considered and managed at a regional level and should be recognised and taken into account by decision-makers.

- Indigenous values and issues were not looked at in this review and are critical to any assessment for future planning in the Kimberley. A thorough review of aboriginal land and social values is required, including identifying important sites or areas and harnessing indigenous knowledge of the land and its biodiversity.
- A number of assets identified in the review are largely unexamined and require further information for any reasonable assessment on their value and priorities for protection. Following are the priority research topics identified, however, these are by no means the only information gaps:
  - Systematic quadrat based survey of the terrestrial environment to assess species status and distribution.
  - Systematic survey of the marine environment, shelf reef system and coastal waters, to develop a thorough understanding of reef and fish biodiversity and community interactions.
  - Establishment of a long term data collection regime through Identification of sufficient reference sites covering all ecosystem types, selected on the basis of a regional scale broadscale survey, to collect time series data of relevant physical/chemical properties of waters and sediment, and measures of health of key biological communities (eg. coral, mangroves, algae and phytoplankton). These reference sites will provide an important baseline to measure trends over time and allow environmental quality guidelines to be developed to support planning, impact assessment and management by the public and private sectors. Ideally, these reference sites should be given tenure to ensure they remain un-impacted in the long term to maximise the benefit and utility of the data collection program over time.
  - Expansion of research effort into unexplored areas and at different times of the year (e.g. wet season).
  - Assessment of the geomorphology of the Kimberley coast and nearshore islands and finer scale soil and geological mapping of the terrestrial environment.
  - Updated mapping and assessments of key habitat including mangrove, seagrass, rainforest and coral reef.
  - Identification of critical habitat of the threatened marine fauna that occurs in the Kimberley, e.g. dugong, marine turtle, humpback whale. This should include recognised breeding and feeding areas and temporal scales for these activities. Further, assessment of the indigenous harvest of dugong and marine turtle is critical to assess and manage population sustainability.
  - Development of a better understanding o physical oceanographic processes in the coastal and offshore environment including particle flow, connectivity and potential for impacts of climate change.
  - Better understanding of island biogeography including species distribution and divergence from mainland populations.
  - Understanding human use patterns in the Kimberley, particularly in the area of tourism and recreational activities and relevant socioeconomic factors and impacts.
- The isolation of the Kimberley and difficult terrain makes research in the Kimberley difficult both financially and logistically. Therefore research should be carefully planned so that it is directed towards key objectives and is not repeating or overlapping with other projects. There is a need for collaborative and coordinated research effort. Development of the above mentioned database will assist in coordinating research effort, however collaboration between State agencies, research institutions and industry should be developed so that research is as effective as possible in broadening our understanding of the region. This may involve larger projects jointly funded that

examine physical and ecological parameters on a larger scale. Priority tasks that will move progress this issue would include

- Development of a Kimberley Research Plan that prioritises research projects, potential partners and estimates costs.
- Kimberley symposium providing a forum for the presentation of recent and current research, a joint assessment of the knowledge gaps and the development of linkages and collaboration between researchers, departments and industry in addressing these gaps
- Development of a guidance statement by the DEC which will assist industry to direct research so that it may meet DEC information needs for assessing impacts at a more regional level.

8 References

Beard JS 1979. Vegetation survey of Western Australia: Kimberley. University of Western Australia Press, Perth.

Beasley, I, Robertson, KM, Arnold, P. 2005. Description of a new dolphin, the Australian Snubfin Dolphin, *Orcaella heinsohni* sp. N. (Cetacean , Delphinidae). Marine Mammal Science 21(3): 365-400.

Berry PF and Marsh LM (1986). History of investigation and description of the physical environment. In: Berry PF (ed) 1986. Faunal Surveys of the Rowley Shoals, Scott Reef and Seringapatam Reef North-western Australia. Records of the Western Australian Museum, Supplement No 25. Western Australian Museum, Perth.

Burbidge, AA, McKenzie, NL, Kenneally, KF. 1991. Nature conservation reserves in the Kimberley, Western Australia Department of conservation and Land Management. 164 pp.

Burbidge, AA. North Kimberley Mammal Status survey. CALM/Tropical Savannas CRC. Unpublished.

Burbidge, AA and McKenzie, NL. 1978. The islands of the North-west Kimberley Western Australia. Wildlife Research Bulletin. 7.

Department of Environment and Conservation. 2005. Management plan for the Ningaloo Marine Park and Muiron Islands Marine Management Area 2005-2015.

Department of Environment and Conservation. 2004. Towards a Biodiversity Conservation Strategy for Western Australia. Government of Western Australia.

Environmental Protection Agency. 1981. Conservation Reserves for Western Australia: System 7. Department of Conservation and Land Management.

Fox, NJ, Beckley, LE, 2005. Priority areas for conservation of Western Australian coastal fishes: a comparison of hotspot, biogeographical and complementarity approaches. Biological Conservation 125: 399-410.

Gilmour, J, Cheal, A, Smith, L, Underwood, J, Meekan, M, Fitzgibbon, B, Rees, M. 2007. Data compilation and analysis for Rowley Shoals: Mermaid, Imperieuse and Clerke reefs. Report for the Department of the Environment and Water Resources.

Goudie, AS, Sands, MJS. 1988. Kimberley, Australia, 200 : the geomorphology and biology of the Kimberley Region, north-western Australia : a preliminary bibliography royal Botanic Gardens, Kew. 23 leaves.

Graham, G, McKenzie, NL. 2003. A conservation case study of Western Australia's Mitchell subregion (North Kimberley 1) in 2003. Department of Conservation and Land Management. 56 pp.

Graham G.. 1994. A Biological Survey of the Cockburn Ranges. February - April 1994.. Department of Conservation and Land Management. Unpublished report.

Graham, G. 1992. A biological survey of the Lawford Range area, Kimberley region, 16-20 March 1992 Department of conservation and land management, Perth. 21pp.

Graham, G. 1992. A biological survey of the Silent Grove area (Mt Hart Station) Kimberley Region. Department of Conservation and Land Management.

Graham, G. 1994. A biological survey of Mirima National Park, December 1993- January 1994. Department of Conservation and Land Management.

Handasyde, T. 2005. Report on compilation of Kimberley biodiversity and natural resource management data and associated information.. Kimberley Regional Fire Management Project, Natural Heritage Trust.

Heyward, A, Revill, A, Sherwood, C. 2006. Review of research and data relevant to marine environmental management of Australia's North West Shelf. Technical Report 1. CSIRO.

How, R, Schmitt, L, Teale, R, Cowan, M. Appraising vertebrate diversity on Bonaparte islands, Kimberley, Western Australia.

How, RA, Cowan, MA. 2006. Collections in space and time: geographical patterning of native frogs, mammals and reptiles through a continental gradient. Pacific Conservation Biology. 12:111-133.

Hutchins, JB. 2001. Biodiversity of shallow reef fish assemblages in Western Australia using a rapid censusing technique. Records of the Western Australian Museum. 20. 247-270.

Jernakoff, P, Scoitt, L, Heyward, A, Revill, A, Sherwood, C. 2006. Bibliography of research and data relevant to marine environmental management of Australia's North West Shelf. Technical Report 2. CSIRO.

Kabay, ED, Burbidge, AA. 1977. A Biological Survey of the Drysdale River National Park, North Kimberley, WA in 1975.. Wildlife research bulletin, Western Australia. 6. 1-133.

Keighery, GJ. 1999. Weed surveys in the Kimberley. Boab Bulletin. 35:3-4.

Keighery, GJ, Gibson, N, Kenneally, K F. 1995. Biological Inventory of Koolan Island. 1 flora and vegetation. WA Museum. 17. 237-248.

May, JE and McKenzie, NI. 2003. A biodiversity audit of Western Australia's 53 biogeographically subregions in 2002. Department of conservation and land management, Perth.

McKenzie, NL, Johnston, RB, Kendrick, PG. 1991. Kimberley rainforests of Australia. Surrey Beatty and Sons, Chipping Norton.

McKenzie, NL, May, JE, McKenna S. 2003. Bioregional summary of the 2002 Biodiversity audit for Western Australia.. Department of Conservation and Land Management, Perth.

McKenzie, NL. 1983. Wildlife of the Dampier Peninsula, south-west Kimberley, Western Australia Wildlife research bulletin, Western Australia. pp(some col.), maps.

McKenzie, NL, Fontanini, L, Lindus, NV, Williams, MR. 1995. Biological inventory of Koolan Island, WA: Zoological notes. Records of the Western Australian Museum. 17:249-266.

National Land And Water Resources Audit. 2002. Australian terrestrial biodiversity audit 2002. National land and waters resources audit 2002, Commonwealth government, Canberra.

Pedretti, YM, Paling, EI. 2001. WA mangrove assessment project 1999-2000. Murdoch University, Perth.

Speck, NH. 1964. General report on lands of the West Kimberley area, W.A. CSIRO, Land Research Series 9.

Stewart, R, Fitzgerald, K, Kindleysides, P. 2005. Biophysical resource assessment: Canning coast, WA. Marine Conservation Branch, DEC, and Natural Heritage Trust Rivercare Program.

Thackway, R, Cresswell, ID. 1998. Interim Marine and Coastal Regionalisation for Australian ecosystem-based classification for marine and coastal environments. Environment Australia, commonwealth Department of Environment, Canberra.

Tourism Western Australian 2005. Kimberley Tourism Fact Sheet 2005. Tourism Western Australia. Perth.

Thom, BG, Wright, LD, Coleman, JM. 1975. Mangrove ecology and deltaic-estuarine geomorphology: Cambridge Gulf-Ord River, Western Australia. Journal of Ecology 63: 203-232.

Tyler, I. 1997. Geology and landforms of the Kimberley. Landscope. 12. 16-21.

Vernes, T. 2006. Establishing priorities for wetland conservation and management in the Kimberley. Interim report: phase 2 field studies. Kimberley Wetlands Project. WWF Australia.

Vernes, T. 2007. Establishing priorities for wetland conservation and management, Kimberley. WWF Australia newsletter. wwf.org.au/ourwork/water/kimberleywetlands/

Vigilante, T. Saltwater Country Project: database of natural and cultural values for the North Kimberley coast. Natural Heritage Trust Saltwater Country Project.

Walker, DI, Wells, FE, Hanley, JR. 1996. Marine Biological Survey of the Eastern Kimberley, Western Australia. University of Western Australia, Perth, Unpub Report. WA Museum Library. UR 353.

Walker, DI. 1997. Marine Biological Survey of the Central Kimberley coast, Western Australia. November - December 1996. University of Western Australia, Perth, Unpub report, WA Museum library UR 377.

Wells FE. 1989. Survey of the invertebrate fauna of the Kimberley Islands, Western Australia. A report to the National Geographic Society. Western Australian Museum unpub report. UR 219.

Wells, FE, Hanley, JR, Walker DI. 1995. Marine biological survey of the southern Kimberley, Western Australia 1994. Western Australian Museum, Perth. Unpublished report. UR286.

Western Australian Museum, Field Museum of Natural History. 1981. Biological Survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia: papers resulting from a joint field expedition by the Western Australian Museum and the Field Museum of Natural History, Chicago, 1976-1977. Western Australian Museum, Perth.

Wheeler JR, Rye, BL, Koch, BL, Wilson, AJG, Western Australian Herbarium. 1992. Flora of the Kimberley Region. Western Australian Herbarium, Como.

Wilson, B. 2006. Coastal marine habitats, flora and fauna of the Kimberley Region. Report to INPEX.

Wilson, BR. 1994. A representative marine reserve system of Western Australia. Report of the Marine Parks and Reserves Working Group. Department of conservation and land Management, Perth. Unpub Report.

Table 1: Summary of ecological values, their relative significance and the critical information gaps identified in this review

Attribute	Significance	Information Gaps
Marine		
Environmental quality	Yet to be determined	A consultative process to determine Environmental Values (EVs), objectives and where they apply spatially is required, similar to that recently completed for the Pilbara
Water and Sediment	Too little information to be identified	Baseline data is required to begin establishing appropriate water and sediment quality criteria. Ongoing data will then be required to measure trends over time.
Mangrove	High	There is a need for accurate and finescale mapping of mangrove habitat across the Kimberley. A better understanding of these mangrove system productivity and ecological processes is required. Baseline and ongoing information is required in key reference sites to measure trends over time in community health
Intertidal Flats	High	Information is limited to several known productive sites (e.g. 80 mile beach, roebuck Bay) and needs to be expanded to include other productive and areas across the Kimberley. Information on oceanographic processes relating to sedimentation and water flow is required. Baseline and ongoing information is required in key reference sites to measure trends over time in community health
Sandy Beaches	Moderate- as site for turtle nesting	There is very limited information on turtle nesting sites across the Kimberley and no information on sandy beach communities.
Seagrass	Too little known	There is a need for finescale mapping and assessment of the importance of seagrass in ecological communities, e.g. foraging sites for dugong and turtles, habitat and nursery areas for fish and invertebrate species Baseline and ongoing information is required in key reference sites to measure trends over time in community health
Macroalgae	Information is too limited to identify	There is a need for identification of this habitat in the marine environment through habitat mapping. Baseline and ongoing information is required in key reference sites to measure trends over time in community health
Rocky Shores	Information is too limited to identify	Identification of the complete suite of organisms and describe their

		distribution and community structure is needed
Coral Reef - nearshore	Potentially High, but information is too limited to identify	In the nearshore environment, mapping of all corals has yet to be undertaken due in part to the difficulty presented by the turbid environment, making the use of aerial photography limited. An initial assessment of the inshore reefs should be undertaken such as a preliminary mapping project of all fringing reef by a geomorphologist. Due to the potential importance of this reef system, additional fieldwork to survey inshore coral reefs in a systematic way should be initiated following the above priorities. Baseline and ongoing information is required in key reference sites to measure trends over time in community health
Coral Reef - offshore	High	Habitat mapping and biodiversity surveys of all areas are critical to define baseline population parameters that can be monitored to detect impacts over time, to examine the level of connectivity between reef systems and to detect threats such as coral bleaching, disease and coral predators. Further research is required at Scott Reef and other reefs to understand oceanographic processes, the role of surface currents in larval dispersal and recruitment between coral reef systems in the Indo pacific. Collation and processing of all samples held by the Museum would assist in developing an understanding of our current level of knowledge of the biodiversity present in this environment Baseline and ongoing information is required in key reference sites to measure trends over time in community health
Benthic	Too limited to identify values	Finescale bathymetric or habitat mapping that is easily accessible is needed.
Oceanography and Physical processes	Too limited to identify values	There is a need for a more developed understanding of ocean processes including water circulation, suspended solid and turbidity regimes and connectivity between various reef systems.
Fauna		
Invertebrate	Too limited to identify values	Identification of dominant taxa, their distribution and abundance. Development of complete species lists for the Region.
Mammals	High – threatened fauna species	Identification of critical habitat for protected and threatened fauna, e.g. whale breeding grounds, dugong habitat. Priorities include identifying population distribution and abundance and habitat use; understanding the traditional take of dugong and assessing the sustainability of this harvest.
Turtles	High	Information is required on population or stock assessment, distribution and habitat requirements. Quantification of turtle harvest by traditional hunters is

		also required to ensure such harvest is sustainable.
Fish	High Biodiversity, distinct from other regions	Information required to properly manage relevant fisheries includes estimating biological parameters of key species, evaluating and assessing recreational and aboriginal netting activities and determining the genetic stock, structure of key species in nearshore waters.
Seabirds and shore birds	High	As there is some data on known breeding sites and resting areas, research priorities should focus on monitoring these sites to detected changes over time in response to ecological or human factors. Migratory routes of species covered by JAMBA and CAMBA should be clearly identified, including critical habitat for those species that stop off in NW Australia to rest, feed or breed.
Terrestrial		
Geology	High	Mapping of physical characteristics such as geology and soil at a scale finer than 1:250,000 is needed.
Vegetation		A key priority for the Kimberley is the adequate representation of vegetation communities in the reserve system. Finer scale and complete assessment of vegetative cover is needed to identify habitats, assess ecological value and true representativeness.
Rainforest Patches	High	Need for adequate representation in reserve system and ongoing systematic survey to determine the status of ecological communities, including fauna.
Islands	High	There is a need for better understanding of island biologic and dynamics including comparison with mainland species communities and genetics and the impacts of tourism. Conservation through reservation and proper management is also critical to the long term sustainability of island populations. Islands in the Kimberley need to be well represented in the reserve system and management measures such as limiting development and ensuring quarantine measures are in place are important to ensure that island biota remains relatively untouched and free from feral invasions.
Flora	Too limited to identify – some TEC and threatened species	There is a need for more detailed and longer term studies on the structure and distribution of flora communities. Many of the surveys and collections have occurred during the dry season, meaning that much of the wet season flora may have been missed. There is also a need for a more developed understanding of the ecological processes affecting flora in the Kimberley and changes that may be either man induced or a result of natural or global change. Dedicated research effort is needed into the relationship between fauna and floral dispersal and pollination mechanisms and impacts of changed community structure through variation in fire regime, and its

		consequent impacts on both flora and fauna.
Fauna		There are large tracks of land with minimal sample collection and likely minimal or nonexistent survey effort. There is a need for extensive and systematic surveys to assess species, population levels, distribution, conservation status and habitat requirements across the entirety of the Kimberley. Without this information the long term status, real distribution and potential decline of many species remains unknown. A high degree of short range endemism has been noted in land snails, particularly in the rain forest patches of the Kimberley and islands. Further work should be undertaken to develop an understanding of the importance of these species and whether they may be useful as indicators of habitat change. Need for adequate representation through reserve system.
Wetlands and Estuaries	High	Continue with water monitoring programs. Harness breadth of knowledge of ecological parameters of wetlands held by indigenous communities.

ATTACHMENT 1

Key Documents for the Kimberley Review – Reviews, Surveys and Reserve Recommendations

REVIEWS

Ecologia Environment. 2005. Browse onshore gasplant environmental constraints map. Ecologia Environment for Woodside.

Fox, N.J. and Beckley, L.E. 2005. Kimberley marine biophysical resource assessment . Report for WA Dept of Conservation and Land Management, 16pp. + CD database.

Goudie, AS, Sands, MJS. 1988. Kimberley, Australia, 200 : the geomorphology and biology of the Kimberley Region, north-western Australia : a preliminary bibliography royal Botanic Gardens, Kew. 23 leaves.

Graham, G, McKenzie, NL. 2003. A conservation case study of Western Australia's Mitchell subregion (North Kimberley 1) in 2003. Department of Conservation and Land Management. 56 pp.

Handasyde, T. 2005. Report on compilation of Kimberley biodiversity and natural resource management data and associated information.. Kimberley Regional Fire Management Project, Natural Heritage Trust.

May, JE and McKenzie, NL. 2003. A biodiversity audit of Western Australia's 53 biogeographically subregions in 2002. Department of conservation and land management, Perth.

McKenzie, NL, Johnston, RB, Kendrick, PG. 1991. Kimberley rainforests of Australia. Surrey Beatty and Sons, Chipping Norton.

McKenzie, NL, May, JE, McKenna S. 2003. Bioregional summary of the 2002 Biodiversity audit for Western Australia.. Department of Conservation and Land Management, Perth.

Newman, SJ, Young,
GC. 2004. Characterisation of the inshore fish assemblages of the Pilbara and Kimberley Coasts. WA Department of Fisheries. Perth.

National Land And Water Resources Audit. 2002. Australian terrestrial biodiversity audit 2002. National land and waters resources audit 2002, Commonwealth government, Canberra.

Pedretti, YM, Paling, EI. 2001. WA mangrove assessment project 1999-2000. Murdoch University, Perth.

Speck, NH. 1964. General report on lands of the West Kimberley area, W.A. CSIRO, Land Research Series 9.

Stewart, R, Fitzgerald, K, Kindleysides, P. 2005. Biophysical resource assessment: Canning coast, WA. Marine Conservation Branch, DEC, and Natural Heritage Trust Rivercare Program.

Thackway, R, Cresswell, ID. 1998. Interim Marine and Coastal Regionalisation for Australian ecosystem-based classification for marine and coastal environments. Environment Australia, commonwealth Department of Environment, Canberra.

Tyler, I. 1997. Geology and landforms of the Kimberley. Landscope. 12. 16-21.

Vigilante, T. Saltwater Country Project: database of natural and cultural values for the North Kimberley coast. Natural Heritage Trust Saltwater Country Project.
Wheeler JR, Rye, BL, Koch, BL, Wilson, AJG, Western Australian Herbarium. 1992. Flora of the Kimberley Region. Western Australian Herbarium, Como.

Wilson, B. 2006. Coastal marine habitats, flora and fauna of the Kimberley Region. Report to INPEX.

SURVEYS

Barrett, RL, Start, AN 2001. Flora of the Yampi Sound Defence training Area. Report to Australian Heritage Commission. Botanic Gardens and Parks Authority. Perth. 2001.

Beard JS 1979. Vegetation survey of Western Australia: Kimberley. University of Western Australia Press, Perth.

Beard, JS. 1979. Vegetation and flora of the Mitchell Plateau area, north Kimberley district, Western Australia. Vegmap publications, Applecross. 43.

Berry P.F. (Ed). Faunal surveys of the Rowley Shoals, Scott Reef and Seringapatam Reef north-western Australia. Records of the Western Australian Museum Supplement 25.

Berry, PF. 2005. Marine faunal survey of Ashmore Reef and Cartier Island: northwestern Australia. Records of the Western Australian Museum, Supplement. 44.

Bradley AJ, Kemper CM, Humphreys WF, How RA. 1987. Small mammals of the Mitchell Plateau region, Kimberley, Western Australia. Australian Wildlife Research 14. 397-414.

Bryce, C, Hutchins, B, Fromont, J. 1997. Restricted marine biological survey of the "garden bottom" of Beagle Bay: a joint survey involving the Western Australian Museum and Arrow Pearls Pty Ltd. Western Australian Museum.

Burbidge, AA. North Kimberley Mammal Status survey. CALM/Tropical Savannas CRC. Unpublished.

Burbidge, AA and McKenzie, NL. 1978. The islands of the North-west Kimberley Western Australia. Wildlife Research Bulletin. 7.

Chapman, A. 1993. Mammals of the Munja-Walcott Inlet area, West Kimberley, Western Australia. Western Australian naturalist. 19. 140-146.

Ecologia Environment 2004. Beagle Bay "Big Tree Country" Timber Plantation: Fauna Assessment Survey. Unpublished Report for Tropical Timber Plantations Pty Ltd.

Fitzgerald, K., Western Australia. Dept. Of Agriculture, 1992. A review of the major groundwater resources in Western Australia Geological Survey of Western Australia for the Kimberley Water Resources Development Office.

Forbes S.J., Kenneally K.F. And Aldrick S.M.. A botanical survey of Vansittart Bay and Napier Broome Bay, north Kimberley, Western Australia.. Western Australian Naturalist. 17. 129-200.

Graham G.. 1994. A Biological Survey of the Cockburn Ranges. February - April 1994.. Department of Conservation and Land Management. Unpublished report.

Graham, G. 1992. A biological survey of the silent grove area (mt Hart Station) Kimberley Region. Department of Conservation and Land Management.

How, R, Schmitt, L, Teale, R, Cowan, M. Appraising vertebrate diversity on Bonaparte islands, Kimberley, Western Australia.

Kabay, ED, Burbidge, AA. 1977. A Biological Survey of the Drysdale River National Park, North Kimberley, WA in 1975.. Wildlife research bulletin, Western Australia. 6. 1-133.

Keighery, GJ, Gibson, N, Kenneally, K F. 1995. Biological Inventory of Koolan Island. 1 flora and vegetation. WA Museum. 17. 237-248.

Kenneally, K, Coate, K, Gueho, R, Grosse, D. 1994. Wildlife and wilderness of the east Kimberley: expedition report. Department of Conservation and land management. Landscope expeditions 5. 8.

Kenneally, K, Coate, K. 1994. Birds and botany of the north Kimberley, expedition report 1994. Department of Conservation and Land Management Landscope Expeditions

Kenneally, KF, Edinger, DC. 1993. A botanical survey of Walcott Inlet, Kimberley, Western Australia. Western Australian naturalist. 19. 84-99

Kenneally, KF. 1972. Kimberley Islands expedition. Swans. 3. 31-32.

McKenzie, NL, Fontanini, L, Lindus, NV, Williams, MR. 1995. Biological inventory of Koolan Island, WA: Zoological notes. Records of the Western Australian Museum. 17. 249-266.

McKenzie, NL. 1981. Wildlife of the Edgar Ranges area, south-west Kimberley, Western Australia. Wildlife research bulletin, Western Australia. 10. 71 pp.

McKenzie, NL. 1983. Wildlife of the Dampier Peninsula, south-west Kimberley, Western Australia Wildlife research bulletin, Western Australia. pp(some col.), maps.

Messel, H, Burbidge, AA, Fuller, PJ. 1987. Tidal waterways of the Kimberley surveyed during 1977, 1978 and 1986 Surveys of tidal waterways in the Kimberley region, Western Australia and their crocodile populations: monograph. 357 pp.

Miles JM, Burbidge A.A.. 1975. A biological survey of the Prince Regent River Reserve, Northwest Kimberley, Western Australia. Wildlife Research Bulletin Western Australia (Department of Fisheries, Perth). 3. 1-115.

Morgan, DL, Allen, MG, Bedford, P, Horstman, M. 2004. Fish fauna of the Fitzroy River in the Kimberley region of Western Australia including the Bunuba, Gooniyandi, Ngarinyin, Nyikina and Walmajarri. Records of the Western Australian Museum. 22. 147-161.

Morgan, GJ. 1992. Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report. UR8.

Palmer C.. Kimberley Regional Fire Management Project: Beagle Bay Wildlife Survey.. Sustainable Fire Management For The Kimberley Region Of Western Australia..

Palmer C.. Kimberley Regional Fire Management Project: Yampi 1 (Rock) Wildlife Survey. Sustainable Fire Management For The Kimberley Region Of Western Australia..

Palmer C.. Kimberley Regional Fire Management Project: Yampi 2 (Eucalypt) Wildlife Survey.. Sustainable Fire Management For The Kimberley Region Of Western Australia..

Rees, M, Colquhoun, J, Smith, LD, Heyward, A. 2003. Surveys of trochus, holothuria, giant clams and the coral communities at Ashmore Reef, Cartier Reef and Mermaid Reef, northwestern Australia. Australian Institute of Marine Science.

Sawle, M. 1988. A survey of rare and uncommon mammals in the Kimberley region of Western Australia, May-July 1988 M. Sawle. Murdoch, WA. 57.

Skewes, TD, Gordon, SR, McLeod, IR, Taranto, TJ, Dennis, DM. 1999. Survey and stock size estimated of the shallow reef (0-15 m deep) and shoal area (15-50m) marine resources and habitat mapping within the timor Sea: Habitat mapping and coral dieback. Fisheries Resource Research Fund, CSIRO Marine Research.

Smith, L, McAllister, F, Rees, M, Colquhoun, Gilmour, J. 2006. Benthic habitat survey of Scott Reef (0-60m). Australian Institute of Marine Science.

Smith, LD, Rees, M, Colquhoun, J, Heward, AJ. 2005. Survey of beche-de-mer and Trochus populations at Ashmore reef: baseline survey. Beagle, Darwin. Supplement 1. 177-183.

Smith, M. 1998. The Monitoring River Health Initiative and aquatic macroinvertebrates in the Kimberley region of Western Australia Limnology of the Fitzroy River, Western Australia : a technical workshop (1998). 11-12.

Walker, DI, Wells, FE, Hanley, JR. 1996. Marine Biological Survey of the Eastern Kimberley, Western Australia. University of Western Australia, Perth, Unpub Report. WA Museum Library. UR 353.

Walker, DI. 1997. Marine Biological Survey of the Central Kimberley coast, Western Australia. November - December 1996. University of Western Australia, Perth, Unpub report, WA Museum library UR 377.

Wells FE. 1989. Survey of the invertebrate fauna of the Kimberley Islands, Western Australia. A report to the National Geographic Society. Western Australian Museum unpub report. UR 219.

Wells, FE, Hanley, JR, Walker DI. 1995. Marine biological survey of the southern Kimberley, Western Australia 1994. Western Australian Museum, Perth. Unpublished report. UR286.

Western Australian Museum, Field Museum of Natural History. 1981. Biological Survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia: papers resulting from a joint field expedition by the Western Australian Museum and the Field Museum of Natural History, Chicago, 1976-1977. Western Australian Museum, Perth.

Williams A.A.E.. Lacepede Islands, July 1987.. CALM Unpublished Report..

Willing, T, Dureau, D. 2000. Botanical survey for proposed Tropical Timber Plantation, Beagle Bay, West Kimberley, WA. Conservation and Land Management, Broome

Willing, T. 2000. Kimberley Coast: Cape Domett to King George River botany survey report: 18-21 February 2000. Department of Conservation and land management.

Willing, T. 2001. Ashmore Reef and Kimberley Offshore Islands botany survey report: 22-25 February 2001. Department of Conservation and land management.

RESERVE RECOMENDATIONS

Burbidge, AA, McKenzie, NL, Kenneally, KF. 1991. Nature conservation reserves in the Kimberley, Western Australia Department of conservation and Land Management. 164 pp.

Environmental Protection Agency. 1981. Conservation reserves for Western Australia : system 7 Dept. of Conservation and Land Management.

Wilson, BR. 1994. A representative marine reserve system of Western Australia. Report of the Marine Parks and Reserves Working Group. Department of conservation and land Management, Perth. Unpub Report.

McKenzie, NL and Belbin, L. 1991. Kimberley rainforest communities: reserve recommendations and management considerations.. in Kimberley Rainforests Australia, Eds McKenzie, Johnston, Kendrick. 1991 Surrey Beatty & Sons. xiv, 490

ATTACHMENT 2

KIMBERLEY REVIEW WORKSHOP
Thursday, 1 March, 10:00 am

Attendees:
Norm Caporn - DEC
Peter Walkington - DEC
Kevin Kenneally - DEC
Tony Start - DEC
Greg Keighery- DEC
Lesley Gibson - DEC
Cam Sim - DEC
Steve Newman - DoF
Diana Walker - UWA
Luke Smith - AIMS
Barry Wilson – Murex Consulting
Kelly Waples - DEC

Apologies:
Andrew Burbidge – DEC
Gary Whisson – DEC
Stephen Van Leeuwen - DEC
David Morgan – Murdoch

Purpose
The workshop was organized to harness the collective knowledge of the Kimberley held by the many scientists and experts who have explored the region. Discussions at the workshop were guided to address the following issues:

- Identifying areas of high value and detailing why
- Considering the best means to depict high value areas in a spatial format, e.g. setting criteria or priorities to define biodiversity value
- Identifying areas/topics where there is insufficient information to make any value judgments
- Determining whether mapping survey effort provides a realistic portrayal of current level of knowledge
- Critically reviewing where and what research is required to fill gaps

Outcomes
Discussions at the workshop remained predominantly at a high level, considering broad values of the Kimberley and what is needed to identify and support the critical values this region represents. There was uniform concern that development pressure is outpacing science and our understanding of the biodiversity of the region, and its importance both on a regional and global scale.

Experts were loathe to pinpoint specific areas of value, rather preferred highlighting biodiversity hotspots at the regional level and noting the real need for an overall careful and critical assessment of the Region before development pressures increase further. Key gaps and initial steps to begin to fill these gaps, both at a broad and specific level were noted.

Attachment 3

List of all datasets identified through this review based on Handasyde 2006, WWF 2006, Stewart et al 2005 and internet searches. Further details on the datasets are held in an excel spreadsheet by the EMB.

Theme	Name	Description	Custodian
Fauna	Aboriginal names for animals	list of aboriginal names for sp	Andrew Burbidge, DEC
Fauna	Assessment of vertebrate fauna of the Yampi Sound Defence Training area (YSTA) Derby WA	Site data only entered. Species data in report	Western Australian Museum
Fauna	Australian National Insect Collection (ANIC)	Structured text data from insect specimen labels obtained from the ANIC, indicators of environmental health	CSIRO
Fauna	Biodiversity audit	A statewide audit performed by CALM per region.	CALM
Fauna	Bird Atlas 2	Atlas of Australian birds, includes information on taxa, collector, dates, location.	Birds Australia
Fauna	Camaenid Land Snail work.		N.McKenzie
Fauna	Checklist of the birds of Australia	checklist of bird sp	Andrew Burbidge, DEC
Fauna	Comparison of fauna recorded at two sites in Drysdale River National Park.	396 records entered by Darwin. Birds are common name only.	Woinarski, J & Start, A.N.
Fauna	CSIRO Australian National Wildlife Collection, Birds and Mammals from Register	Point locality data from data sheets. CSIRO collection.	CSIRO
Fauna	Ecological comparison of three species of tree-rat on the Mitchell Plateau (includes other species trapped).	24 records. Data extracted from "Ecological comparison of three species of tree-rat on the Mitchell Plateau, WA." Kerle, J.A. n.d. Unpublished report to the Science and Industry Endowment Fund.	Anne Kerle
Fauna	Fauna/fire in Mirima National Park. Honours project, McQuarie University	31 records, 17 specimens vouchered in WA Museum.	T.Partridge
Fauna	Fire and Fauna in Purnululu (Bungle Bungle) National Park, East Kimberley - in progress.	Research work (PhD) ~ Thalie Partridge	Thalie Partridge
Fauna	Freshwater fish research (sharks, sawfish).		Dave Morgan
Fauna	Freshwater turtle and dugong management research (Masters project, Edith Cowan University).		Z.Evans.

Theme	Name	Description	Custodian
Fauna	Freshwater Turtle research work		Nancy Fitzsimons/T.Tucker, University of Canberra.
Fauna	Golden bandicoot survey work.	Hard copy only.	G. Graham
Fauna	Gouldian finch work		WWF - TSN
Fauna	Gouldian finch work	1839-1998	P.Dostine
Fauna	Habitat/Fauna Site Data	specimens and locational info on fauna, not necessarily lodged in NT museum	DIPE
Fauna	Kimberley '88 - Royal Geographic Society/LinnaeanSociety	Records entered from report. Co-ords assigned. WAM data checked and field added with modifications.	Maryane (Sawle) Mills
Fauna	MacroInvertebrate data	MacroInvertebrate data collected by Dave Morgan	Murdoch University
Fauna	MacroInvertebrate data	MacroInvertebrate data collected by Andrew Storey	UWA
Fauna	Mammal Status Survey	Mammal surveys to attempt to compare current mammal status in the Kimberley with previous (1970's '80's) surveys (flora data also collected) .	Start A.N.
Fauna	Mammals on Australian islands	maintain records of mammals on islands	Andrew Burbidge, DEC
Fauna	Movements, nest sites and feeding behaviour of the tropical scaly-tailed possum (Wyulda squamicaudata).		Runcie, M.J.
Fauna	Ningbing Range survey.	Bird, Flora and Camaenid Land Snail data.	N.McKenzie
Fauna	Ord Riparian Zone Project - Tropical Savannas CRC/CALM.		Tony Start, CALM
Fauna	ORD RIVER STAGE 2: M2 Development Area: Terrestrial Biological Assessment -Addendum A: Regional Bi di it & R i	154 records. Data extracted from 'OBPAuditSpeciesDataFromDNA. mdb'.	Garry Connell, Ecologia
Fauna	ORD RIVER STAGE 2: Terrestrial Biological Assessment.	2114 records. Data extracted from 'OBPAuditSpeciesData.mdb'	Garry Connell, Ecologia
Fauna	OZCAM	Australian Museums on-line faunal database, includes information on taxa, collector, dates, location	Various state museums
Fauna	Purnululu Fauna Monitoring(fauna monitoring and feral cat assessment)	Approx. 8 sites. Some data entered by T.Partridge. See Metadata file.	A.Thomson
Fauna	Refugia for biological diversity in arid and semi-arid Australia	digitised boundaries for refugia cited in Morton et al 1995. 9 refugia categories defined	DEH

Theme	Name	Description	Custodian
Fauna	Rock Ringtail Possum - genetic relatedness (University of Hawaii).	Data not acquired.	Berryman,J.R.
Fauna	Roebuck Bay Intertidal Zones: Shore Birds	Distribution and feeding patterns of Shore Birds on Intertidal Zones in Roebuck Bay, Western Australia	G Pearson, DEC
Fauna	Seabird breeding islands database	Maintains breeding records of seabirds (and some other species) on Western Australian islands.	Andrew Burbidge, DEC
Fauna	Species richness and ranges - eucalyptus, land birds and butterflies	species richness and ranges as per ERIN database at July 1993	DEH
Fauna	Survey of Python distribution and status in Western Australia	compilation of all python sightings	David pearson, DEC
Fauna	The macroecology and conservation of the antilopine wallaroo (Macropus antilopinus). School of Tropical Biology, James Cook University.	Data not acquired.	Ritchie, E.
Fauna	Tryphocaria antennal length. Survey of beetle dimensions in relation to sex.		DEC
Fauna	Water bird records for Kimberley.	2,500 waterbird records for Kimberley. Coordinates not assigned. An example of data available. Contact S.Halse for further details	Stuart Halse, CALM
Fauna	Western Australian Museum specimen data.	Site locations of all specimens held by the WA museum and entered in Faunabase	
Flora	"Assessment of the Distribution and Status of Arnhem Cypress Pine Callitris intratropica (R.T.Baker & H.G.Sm.) in the Kimberley Region of Western Australia".	47 survey sites (143 quadrats) were assessed throughout the Kimberley. Site data entered digitally.	G. Graham
Flora	Acacia Names Database	acacia names	Bruce Maslin, DEC
Flora	Allozyme database for genetic diversity in threatened species.		DEC
Flora	Allozyme database for genetic diversity in widespread WA plant species		DEC
Flora	Allozyme database for mating system analysis		DEC
Flora	Amphipogon species (Poaceae), descriptive database		DEC
Flora	Australian Virtual Herbarium	Herbarium collections from state and national herbaria	Various state Herbaria - Council

Theme	Name	Description	Custodian
			of the Heads of Australian Herbaria
Flora	Bibliographic database of the family Asteraceae, tribe Astereae		DEC
Flora	CALM monitoring (fire) sites on Curtin Defence Department Land, Yampi Sound Defence Training Area and King Leopold Range	Yampi - 6 sites (4 years data and photos). Curtin - 4 sites. King Leopold - 2 sites.	
Flora	Card index of toxic Australian plants		DEC
Flora	Census of lichens for Western Australia		DEC
Flora	Chloroplast RFLP diversity in WA flora	genetic diversity	DEC
Flora	DELTA dataset of WA Threatened Flora species	flora dataset- DRF	
Flora	Descriptive database of genera in the family Asteraceae tribe Astereae		DEC
Flora	Descriptive database of the genus Olearia.	flora descriptive	DEC
Flora	Fire research sites.	160 fire research sites throughout the Kimberley.	A.Craig
Flora	Flora of the Yampi Sound Defence training Area.		Barrett, R.L., Barrett, M.D., Start, A.N. and Dixon, K.W.
Flora	Flora/Fire sites in Mirima N.P.	Mirima Flora Site locations received from Darwin, 2003. Coordinates have been converted to dec. degrees for OBP Audit (site location data has been truncated). Site data received from T.Start in 'KimberleySites_TStart.xls',	A.N.Start
Flora	FloraBase - Information of the Western Australian flora		
Flora	Incidence of Bullseye Borer across a rainfall gradient in 20-30 year old karri regrowth		DEC
Flora	Kimberley Regional Herbarium (Derby, DAWA) data.	866 records (753 records without coordinates)	Department of Agriculture, Derby
Flora	Kimberley Regional Herbarium (Kununurra, CALM) data.	Data list for plant specimens held at CALM, Kununurra. Some of this data is quite old. Lat and Longs may not therefore be available and ID of many specimens has not been verified.2823 records (includes 199 records without co-ordinates).	CALM

Theme	Name	Description	Custodian
Flora	Kimberley Regional Herbarium (Kununurra, DAWA) data.	2079 plant specimens held at Department of Agriculture, Kununurra with coordinate data. Are additional records without coordinates. Some data is quite old. ID of many specimens has not been verified.	Department of Agriculture, Kununurra
Flora	KRFMP Flora	6 site surveys	KRFMP (Carol Palmer)
Flora	Land unit mapping site information		Manager, Land Resource Assessment and Monitoring, Department of Agriculture Western Australia
Flora	List of plant specimens recorded at Bachsten Creek, (additional to specimens held in WA Herbarium and Kimberley Regional Herbarium Kununurra).		T. Handasyde
Flora	National Vegetation Information System (NVIS)	Pre-European and present native vegetation. Published Data - Stage 1, Version 2, National Land and Water Resources Audit.	DEH
Flora	Native and introduced plant species in Western Australia which may cause allergenic or irritant reactions in man.		DEC
Flora	Nomenclature database of Australian Olearia.	flora database	
Flora	Nuclear RFLP diversity in WA flora	genetic diversity	DEC
Flora	Observational records of plant species recorded on north Kimberley AQIS survey, 2002 (additional to specimens held in WA Herbarium and Kimberley Regional Herbarium Kununurra).	Collected between Karacutta (Karakatta) Bay and Koolan Island	
Flora	Ord Riparian Zone Project - Tropical Savannas CRC/CALM.		Tony Start, CALM
Flora	Ord Stage 2 Conservation area and Wolf Creek Crater National Park.	Flora lists for work done for Ord Stage 2 conservation Areas and Wolf Creek Crater N.P. various sites. Data not entered.	T. Vernes
Flora	Purnululu monitoring sites.	17 sites. Originally installed as Department of Agriculture rangeland monitoring photo sites.	
Flora	Purnululu rehabilitation sites.	24 sites. Photo sites of rehabilitation areas.	
Flora	Rare flora population data	Information on the population, location, habitat, biology and the management strategies for rate (Threatened) floral species	CALM

Theme	Name	Description	Custodian
Flora	Resistance of Jarrah to Phytophora cinnamomi - Field Validation trials		DEC
Flora	Specimen database of the genus Olearia.	flora database	
Flora	Stipeae species of Australia (Poaceae), descriptive database.		DEC
Flora	Thysanotus species (Anthericaceae), descriptive database		DEC
Flora	Vegetation extent (National land and Water Resources Audit 2001) - WA	A dataset containing vegetation extent polygons from the mapping of remnant vegetation in WA.	DAWA
Flora	VHS Phytophthora detection database.	soil and root samples for phytopherora	Francis Tay, DEC
Flora	WAGENERA, a descriptive database of Western Australian Plant Families and Genera		DEC
Flora	Wattles: Descriptive data of four Australian species of Acacia.	description of wattle	Bruce Maslin, DEC
Flora	Western Australian Rangeland Monitoring System (WARMS) data. Site data is used to derive trends in vegetation (based on species recorded on 5 x 50m transects). Photographic record kept of each site.	384 WARMS sites (there are an additional 736 Pastoralists PhotoMonitoring sites however many of these do not have co-ordinates). bio-physical data for each site. 6900 plant species records from sites.	Department of Agriculture, WA. (Andrew Craig/Phil Thomas).
Geology	Kimberley Division: soil classification (burvill); soil erosion surveys (medcalf); classification base lines (richter) in the ord river basin (1944)		
Geology	West Kimberley - Erosion and Range Condition Report.	survey of land use, fauna, geomorph, soil and erosion	Agriculture WA
Heritage	Aboriginal Sites Register System	Includes, but is not limited to, information on the register of Places and Objects maintained under the AHA	DIA
Heritage	Commonwealth Heritage List Database	Locational and attribute information for places on the Commonwealth Heritage List (Indigenous, natural and historic)	DEH
Heritage	Register of the National Estate	Land Tenure	DEH
Heritage	World Heritage Areas Australia	Spatial database of all 16 WHA properties	DEH
Hydrology	Australian River Assessment System (AusRivAS) National River Health Database	System for assessing health/condition of rivers and streams based on in-stream biota, water quality + habitat. Database contains spatially referenced datasets describing site info, water chem, flow + in-stream habitat conditions, macroinvertebrate	CALM/DEH

Theme	Name	Description	Custodian
		community assemblage data.	
Hydrology	Drainage Divisions, Basins and Water Catchment Boundaries	The drainage divisions, basins and water catchment boundaries of WA defined at varying scales.	DoE
Hydrology	Facilities Mapping System (Water Data)	Spatial representation of the Water Corporation's water assets	WC
Hydrology	Hydrography, Linear Features	1) Rivers LINEAR FEATURES contains natural LINE water features 2) Rivers POINT FEATURES point water features represented by lines, 3) Pipelines	DoE
Hydrology	Kimberley River Health sites	Kimberley River Health site location and data collected & received	Stuart Halse, CALM
Hydrology	Lake Gregory	Sampling of water chemistry and benthic and planktonic invertebrates at numerous sites between Oct 1989 and Aug 1993, plus extensive waterbird surveying over several years.	S Halse, DEC
Hydrology	Monitoring River Health Initiative (MRHI)	River health and condition through macro-invertebrate and water chemistry parameters	CALM, Stuart Halse
Hydrology	Rivers 25k Lines-DOLA	Natural water features mapped by DOLA at best available scale.	DOLA/DPI
Hydrology	RIWI Act, Surface Water Areas	Area boundaries of areas proclaimed under the RIWI Act	DoE
Hydrology	SOE 2001 Australian Rivers Assessment System (AusRIvAS) Band (Observed:Expected) Scores	These datasets comprise a number of shapefiles that contain O/E band scores for basins, test and reference sites and streams using the Australian Rivers Assessment System.	DEH
Hydrology	WA Drainage	Water courses in WA	DOLA/DPI
Hydrology	WA Hydrogeology	Hydro-geological map of WA, published in 1989.	DoE
Hydrology	WA Rivers	Map of named rivers and creeks across WA	DOLA/DPI
Hydrology	Water Information System - Groundwater	Contains groundwater information for the state.	DoE
Hydrology	Water Information System - Surface Water	Contains surface water information for the state.	DoE
Hydrology	WIN Sites (Water and Rivers Commission)	Shows WIN site data and their loctions for sites operated by the DOE	DoE
Land	1" Digital elevation model	1 arc-seconds (30m resolution)	DIGO

Theme	Name	Description	Custodian
Land	3" Digital elevation model	3 arc-seconds (90m resolution)	Geoscience Australia
Land	Australia - Assessment of River Condition (Reach and Basin) - 2001	Assessment incorporates a range of attributes that are considered to indicate key ecological processs at the river reach and basin levels.	DEH
Land	Digital Topographic Data - 1:50 000 (AUSLIG)	Digital topographic map series showing cultural features, relief, drainage and veg cover	DOLA
Land	GEODATA TOPO 250K Series 2 Topographic Data	Medium scale vector representation of the topography of Australia.	Geoscience Australia
Land	Geology (1:2,500,000)	Distribution and age of major stratigraphic, intrusive and medium to high-grade metamorphic rock units of onshore Australia	Geoscience Australia
Land	Inventory sites for land unit mapping of Carlton Hill, Ivanhoe, Bow River and Violet Valley stations. Inventory sites encompass significantly more area than these properties and would be good resource for further land unit mapping.	Includes standards and forms used for land unit mapping, details of work, methodology, issues, etc.	Manager, Land Resource Assessment and Monitoring, Department of Agriculture
Land	Kimberley Region Terrain Studies for Army, 1983	survey to verify terrain data	Ag WA
Land	Land System mapping	Currently being upgraded against 1:50,000 topo's.	DAWA
Land	Land unit mapping		Manager, Land Resource Assessment and Monitoring, Department of Agriculture
Land	North Kimberley - Lands and Pastoral Resources	land system mapping based on Speck	Agriculture WA
Land	Regolith Terrains of Australia (National Geoscience Dataset)	dominant topography, geology and regolith	Geoscience Australia
Land	Relative relief and landform	A relative relief and landform map of Australia	DEH
Land	Resource inventory and condition survey of the Ord River Regeneration Reserve.	Land unit maps form part of this report.	de Salis, J., Department of Agriculture Western, Australia
Land	West Kimberley Rangelands Survey	land system mapping based on Speck	Agriculture WA

Theme	Name	Description	Custodian
Marine	Aust Fisheries Management Authority (AFMA) Northern Prawn	polygon coverage of fishery licence area	Fisheries WA, GIS Coord
Marine	Banana Prawn Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Barramundi Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Black Snapper Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Blue-spotted/Lesser spangled Emperor Dist.	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Brown Tiger Prawn Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Coral Prawn (M. cassissima)	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Coral Prawn Distribution (M.palmensis)	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Coral Trout or Leopard Trout Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Endeavour Prawn Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Estuary Cod Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Giant Threadfin Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Gold Band Snapper or Jobfish	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Grooved Tiger Prawn Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Interim marine and coastal regionalisation of Australia	shape files for all regions of IMCRA	DEH, info@erin.gov.au
Marine	Kimberley Gillnet & Barramundi	polygon coverage of fishery licence area	Fisheries WA, GIS Coord
Marine	Kimberley Prawn Managed Fishery	polygon coverage of fishery licence area	Fisheries WA, GIS Coord
Marine	Marine Habitats of Western Australia	Polygons delineating the broad-scale regional marine habitats (Community level) of selected areas in Western Australia, mostly in existing and proposed marine conservation reserve areas. Habitat mapping was carried out by various organisations, including DEC, using a range of methodologies over many years.	R Lawrie , DEC
Marine	Mud Crab Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Mud Crab Fishery	fishery boundaries	Fisheries WA, GIS Coord
Marine	Northern Demersal Scalefish Managed Fishery	polygon coverage of fishery licence area	Fisheries WA, GIS Coord
Marine	Pearl Oyster Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord

Theme	Name	Description	Custodian
Marine	Pearl Oyster MF	polygon coverage of fishery licence area	Fisheries WA, GIS Coord
Marine	Rakin Cod Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Red Emperor Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Red throat Emperor	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Red-spot Emperor Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Roebuck Bay Intertidal Zones: Benthos	Records of invertebrates species in Roebuck Bay Intertidal Zones.	G Pearson, DEC
Marine	Roebuck Bay Intertidal Zones: Sediments	Nature and distribution of sediments in Roebuck Bay Intertidal Zones.	G Pearson, DEC
Marine	Roebuck Bay Intertidal Zones: Water Quality	Baseline nutrient levels for Roebuck Bay Intertidal Zone	G Pearson, DEC
Marine	Roebuck Bay Intertidal Mudflats	invertebrate communities of tropical intertidal mudflats	G Pearson, DEC
Marine	Saddle-tail Snapper Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	School Mackerel Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Spangled Emperor or Nor-West Snapper	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Spanish Mackerel Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Threadfin (salmon/bluenose salmon)	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Threadfin Bream Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Trochus Distribution	polygon coverage of distribution	Fisheries WA, GIS Coord
Marine	Tropical Rock Lobster Fishery	polygon coverage of fishery licence area	Fisheries WA, GIS Coord
Marine	Victoria-Bonaparte Mudflat Monitoring	Waterbirds and aquatic invertebrates using the mudflat, including their conservation value and biogeographic affinities. Aquatic invertebrates collected at five sites. Waterbirds surveyed from the air and ground over several days in Feb and April 1993	S Halse, DEC
Survey	A biological Survey of Mirima National Park. December 1993 - Jan 1994	Hard copy only.	G. Graham
Survey	A Biological Survey of the Cockburn Ranges. February -April 1994.	48 individual? pit-fall traps with fence (chk. GG). Trapping - approx. 14 days each trap. Birds, reptiles, bats, veg.	G. Graham
Survey	A Survey of the Wildlife and Vegetation of Purnululu (Bungle Bungle) National Park and adjacent areas.*	768 records in OldKimberleyFaunaRecords20050 730.mdb. Need to check how these relate to 3 .xls files (filed under Purnululu).	

Theme	Name	Description	Custodian
Survey	Biological Inventory of Koolan Island	Hard copy only.	Keighery, G.J., et al & McKenzie, N.L.
Survey	Biological survey of the Drysdale River National Park, North Kimberley, Western Australia, 1975	Dataset not originally digitised, some records have been extracted from old Kimberley survey reports and compiled by the Biodiversity Section of the 'Dept.of Planning and Environment/Scientific Services/Natural Systems Division', Darwin.	DEC
Survey	Biological survey of the Prince Regent River Reserve, north-west Kimberley, Western Australia, 1974	Dataset not originally digitised, some records have been extracted from old Kimberley survey reports and compiled by the Biodiversity Section of the 'Dept.of Planning and Environment/Scientific Services/Natural Systems Division', Darwin.	DEC
Survey	Biological survey of Yampi Defence Department Land.		ECOZ: Preece N.,et al?
Survey	Botanical survey of Vansittart Bay and Napier Broome Bay, northern Kimberley Western Australia.		DEC
Survey	Botanical survey of Walcott Inlet, Kimberley Western Australia.		DEC
Survey	Bucaneer Biological Survey	Plants and animals on islands of Bucaneer Archipelago	N McKenzie. Burbidge, DEC
Survey	Devonian Reef Ranges of Kimberley (Limestone): Soil Chemical Analysis, Birds and Bats	Quadrats data on flora, vertebrates and land snails taken from sites on and adjacent to ranges covering Oscar, Napier and Nimbing Ranges fringing the Kimberley Plateau	Stuart Halse, DEC
Survey	Kimberley Mound Spring Survey	Diversity and conservation status of invertebrate assemblages of mound springs in the Kimberley Region of the north-west of Western Australia. Invertebrates collected either by sweeping with 50 um mesh net, or scooping several litres of water from natural pools or dug holes through 50 um mesh net. Water chemistry samples taken at one of the invertebrate collection sites per mound spring. Invertebrates identified to species level.	Norm McKenzie, DEC
Survey	Kimberley Rainforest Survey	rainforest survey	Norm McKenzie, DEC
Survey	Kimberley Regional Fire Management Project: Bachsten Creek Wildlife Survey.		Carol Palmer

Theme	Name	Description	Custodian
Survey	Kimberley Regional Fire Management Project: Beagle Bay Wildlife Survey.		Carol Palmer
Survey	Kimberley Regional Fire Management Project: Bohemia Downs Wildlife Survey		Carol Palmer
Survey	Kimberley Regional Fire Management Project: Edgar Range Wildlife Survey	12/08/2002 - 16/08/2002	Carol Palmer
Survey	Kimberley Regional Fire Management Project: Joon Joon Wildlife Survey	26/05/2002 - 30/05/2002	Carol Palmer
Survey	Kimberley Regional Fire Management Project: Mount Elizabeth Wildlife Survey		Carol Palmer
Survey	Kimberley Regional Fire Management Project: Yampi 1 (Rock) Wildlife Survey.		Carol Palmer
Survey	Kimberley Regional Fire Management Project: Yampi 2 (Eucalypt) Wildlife Survey.		Carol Palmer
Survey	Notes on the vegetation and flora of the Cape Londonderry Peninsula, North Kimberley, Western Australia, 1978		DEC
Survey	Old Kimberley Surveys. Biological Survey of Mitchell Plateau and Admiralty Gulf, Kimberley.*	Dataset not originally digitised, some records have been extracted from old Kimberley survey reports and compiled by the Biodiversity Section of the 'Dept. of Planning and Environment/Scientific Services/Natural Systems Division', Darwin.	WA Museum.
Survey	Old Kimberley Surveys. Fauna Survey of the Argyle Diamond Project.*	Dataset not originally digitised, some records have been extracted from old Kimberley survey reports and compiled by the Biodiversity Section of the 'Dept. of Planning and Environment/Scientific Services/Natural Systems Division', Darwin.	G. Harold
Survey	Old Kimberley Surveys. Islands of the Nth. West Kimberley	Dataset not originally digitised, some records have been extracted from old Kimberley survey reports and compiled by the Biodiversity Section of the 'Dept. of Planning and Environment/Scientific Services/Natural Systems Division', Darwin.	Burbidge & McKenzie
Survey	Wildlife of the Dampier Peninsula, South-west Kimberley, Western Australia, 1983		DEC

Theme	Name	Description	Custodian
Tenure	CALM Science Supplement Core	calm regions and beard class	DEC
Tenure	Collaborative Australian Protected Area Database (CAPAD) 2000	Provides spatial and attribute information about government vested protected areas (PAs) for biodiversity conservation in different jurisdictions in Australia.	DEH
Tenure	Land Tenure	Land tenure Australia wide	AUSLIG
Tenure	Land Tenure in Australia Rangelands (1955-2000)	Snapshots of land tenure per decade to illustrate broad scale land tenure changes across Australia's rangelands.	NLWRA
Tenure	Location of Aboriginal Communities	Location of Aboriginal communities in WA.	DIA
Tenure	National Native Title Register (Determinations) - boundaries and core attributes	Boundaries of claimant and non-claimant native title applications that have been determined in part or full with information about that determination	NNTT
Threat	Species Profile and Threats Database (SPRAT)	Information on plant and animal species listed under the EPBC Act 1999, along with select non-Australian species required for various legislative, treaty and international agreement purposes.	DEH
Threat	West Kimberley Erosion and Range Condition Report	Survey of land use, fauna, geomorphology, vegetation, soil properties and erosion status to compile a resource inventory for evaluation of land use planning, erosion hazard evaluation and an evaluation of grazing.	DAWA
Topo	Digital Topographic Data - 1:50,000 - Cultural and Hydro Features	Digital topographic map series showing cultural and hydrographic features at 1:50,000	DOLA/DPI
Vegetation	NFI Forest Complexes Kimberley	Forest mapping from satellite imagery	DEC IMB Steve Jones
Vegetation	NFI Mudflats, Mangroves and Rainforest	Forest mapping from satellite imagery	Dec IMB Steve Jones
Vegetation	Salinity Action Plan	8 Mound Springs	UWA
Vegetation	The vegetation of the Kimberley area, 1979. Vegetation Survey of Western Australia, 1:1,000,000 Vegetation series	Based on Beard 1979	DEC
Vegetation	Vegetation mapping		Tropical Savannas CRC/EPA
Vegetation	Western Australian Herbarium Specimen Database (WAHERB)	Label data associated with the 500,000 plant specimens housed in WA Herbarium.	CALM
Wetlands	Aquatic invertebrates, waterbirds and water chemistry	Wetlands. Rivers. Aquatic invertebrates. Waterbirds. Water chemistry. Physical and chemical parameters. Wetland location.	Stuart Halse, DEC

Theme	Name	Description	Custodian
		Wetland description and categorisation	
Wetlands	Aquatic invertebrates, waterbirds and water chemistry	Wetland location, description and categorisation, aquatic invert, waterbirds, phys and chem parameters.	CALM
Wetlands	Directory of Important Wetlands in Australia Spatial Database	Polygon coverage of wetlands in Directory. Point coverage of centre of Ramsar site	DEH
Wetlands	Estimated Area of Wetlands	The area covered by each of 17 wetland types.	CSIRO Wildlife and Ecology
Wetlands	Ramsar Sites WA	Official boundaries of the 9 wetland areas proposed in Feb 1990 by WA government for listing as Wetlands of International Importance under the Ramsar Convention	CALM

ATTACHMENT 4

This reference list should be considered a living document. It is by no means an exhaustive search of the literature on the Kimberley region. Rather it represents an aggregate of bibliographies from several reviews of the Kimberley (e.g. Handasyde 2005, Wilson 2006 and Jones 2006) and additional library searches. It is still in draft format and is likely to include some errors. Please send any corrections or additions to kelly.waples@dec.wa.gov.au.

Key for "Type" (B=Book; J=journal; R=Report; D=Discussion Paper; M=Monograph; P=Proceedings; T=Thesis; MP=Map; O=Other)

Author	Year	Title	Publication	Vol	No	Pages	Type
	1902	Exploration in the Kimberley district of Western Australia	Geographical journal	20		456-457	J
		Medusa Banks, Kimberley Division [cartographic material]. - Scale 1:253,440	Australia 1:253,440			1 map : b&w	MP
Abbott I.	1979	The distribution and abundance of seabirds at sea and on islands near the mid and north-western coasts of Australia.	Corella	3		93-102	J
Abel, N, Ryan, S	1996	Sustainable habitation in the rangelands : proceedings of a Fenner Conference on the Environment, Canberra 29th and 30th October, 1996	Fenner Conference on the Environment, Canberra 29th and 30th October, 1996				P
ACIL Economics and Policy Pty Ltd	1993	Fitzroy Valley irrigation : a conceptual study	Kimberley Water Resources Development Advisory Board				R
Acil Economics And Policy Pty Ltd, Kimberley Water Resources Development Office (W.A.),	1990	Kimberley Pipeline Environmental Advisory Committee report	Kimberley Water Resources Development Office			75pp	R
Addison, J	1997	A guide to mechanical rangeland regeneration.	Bulletin 4334, Agriculture Western Australia	4334			J
Akerman, K	1975	The double raft or kalwa of the west Kimberley	Mankind.	10		p. 20-23	J
Akerman, K, Bindon, P	1983	The edge-ground stone adze and modern counterparts in the Kimberley region, Western Australia	Records of the Western Australian Museum.	11		p. 357-373	J
Aldrick, JM	1990	Soils of the Ivanhoe Plain, East Kimberley, Western Australia	Department of Agriculture Technical Bulletion	82			J
Allan, G, Willson, A	1995	Learning more about fire in the Top End: processing and interpreting spatial and temporal fire history data	Proc. 2nd North Australian Remote Sensing and GIS Forum, 18-20 July 1995	0		21-26	P

Author	Year	Title	Publication	Vol	No	Pages	Type
		derived from NOAA AVHRR images.	Darwi				
Allchurch J.		Channel response to accelerated erosion in the upper catchment of the Ord River, Western Australia.	Unpublished Honours Thesis, University of Western Australia.				T
Allen, GR, Leggett, R	1988	A collection of freshwater fishes from the Kimberley region of Western Australia	Records of the Western Australian Museum	14		527-545	J
Allen, GR, Swainston, R	1988	The marine fishes of north-western Australia: a guide for anglers and divers	Western Australian Museum				B
Altman, J. C.	1985	An Aboriginal economic base : strategies for remote communities : extracts / from the report of the Committee of Review of Aboriginal Employment and Training Programs	East Kimberley working paper			52 p.	O
Altman, J. C.	1987	The economic impact of tourism on the Warmun (Turkey Creek) community, East Kimberley	East Kimberley working paper			68 p.	O
Altman, J. C.	1987	The potential for reduced dependency at Aboriginal communities in the East Kimberley Region	East Kimberley working paper			22 p.	O
Andersen, AN	1992	The rainforest ant fauna of the northern Kimberley region of Western Australia (Hymenoptera: Formicidae)	Journal of the Australian Entomological Society	3		187-192	J
Andersen, AN	1999	Fire management in northern Australia: beyond command and control	Australian Biologist	12	1	63-70	J
Andersen, AN, Braithwaite, RW	1992	Burning for conservation of the Top End's savannas.	In: I. Moffat, A. Webb (eds), Conservation and Development Issues in North Australia. NARU			117-122	B
Andersen, AN, Burbidge, AH	1991	The ants of a vine thicket near Broome : a comparison with the northwest Kimberley	Journal of the Royal Society of Western Australia.	73		79-82	J
Andrew, Mh	1986	Survivorship of the grass Enneapogon purpurascens in the Victoria River District, North-West Australia.	Australian Rangeland journal	9		63-66	J
Andrew, MH, Corfield, JP	1984	Crustaceans	In Chalmers, CE, and Woods PJ. Draft coastal management plan, shire of Broome. Department of Conservation and Environment Bulletin	166		1-42	R
Andrew, MH, Corfield, JP	1990	Ecology of mid-grass pastures - north-west Australia.	Dowling, P.M. and Garden, D.L. (eds) Native Grass Workshop Proceedings, 16-17 Oct. 1990, Dubbo, NSW.			152-153	P

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Andrew, MH, Mott, JJ	1983	Annuals with transient seed banks: the population biology of indigenous Sorghum species of tropical north-west Australia.	Australian Journal of Ecology	9		265-276	J
anon	2000	Wetlands nominated by the Government of Western Australia for inclusion on the list of Wetlands of International Importance Ramsar Convection.	Department of Conservation and Land Management				R
Anon	0	Geological history of the Kimberley region	Dept of Minerals and Energy, Western Australia	0			R
Anon.		Further notes on Northern Territory and Kimberley birds. Addendum.	Australian Bird Watcher	4		84-95	J
Arndt, W	1961	Indigenous sorghum as food and in myth: the Tagoman tribe.	Oceania	33		109-112	B
Ash, AJ, Bellamy, JA, Stockwell, TGH	1994	State and transition models for rangelands. 4. Application of state and transition models to rangelands in northern Australia.	Tropical Grasslands	29		223-228	J
Ash, AJ, McIvor, JG, Andrew, MH	1997	Building grass castles: integrating ecology and management of Australia's tropical tallgrass rangelands.	Rangeland Journal	19	2	123-144	J
Atkins, KJ	2005	Declared rare and priority flora list February 2005	Department of Conservation and Land Management				R
Aumann T.	1989	Notes on the birds of the upper and middle reaches of Kimberley rivers during the dry season, 1989.	Australian Bird Watcher	14		51-67	J
Australian Institute of Marine Science		Mapping the shallow habitats (0-60m) of Scott Reef: Progress Report	Report for the Browse Joint Venture Partners				R
Baker, B, Price, O, Connors, G	2001	A biodiversity data assessment of the Ord-Bonaparte Region	Parks and Wildlife Commission of the Northern Territory				R
Baker, L, Woenne-Green, S, Mutitjulu Community	1992	The role of Aboriginal ecological knowledge in ecosystem management.	In: J. Birckhead, T. De Lacy and L. Smith (eds), Aboriginal involvement in parks and protected areas. Proc. conf. at Charles Sturt University, July 22-24, 1992. Australian Studies Press.			65-73	B
Balanggarra & Wunambal-Gaambera Traditional Owners, Wightman, G, Mangolamarra, S,		North Kimberley Traditional Owners Land and Sea Management Project Final Report.	Kimberley Land Council and Tropical Savannas CRC.				R

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Smith, D							
Bannister, J.L.	1969	A List of Species of Mammals Collected by W.H. Butler for the Archibold Collections of the American Museum of Natural History and for the Western Australian Museum 1963-66.	WA Musem Annual Report 1966/67				R
Bannister, J.L.	1994	Continued increase in humpback whales off western Australia	Report of the International Whaling commission	44		309-310	R
Barker, WR	1990	New taxa, names and combinations in Lindernia, Peplidium, Stemodia and Striga (Scrophulariaceae) mainly of the Kimberley Region, Western Australia	Journal of the Adelaide Botanic Gardens.	13		79-93	J
Barrett, G, Silcocks, A, Barry, S, Cunningham, R, Poulter, R	2003	The new atlas of Australian Birds.	Birds australia, Hawthorn East, Victoria				B
Barrett, RL, Start, AN	2001	Flora of the Yampi Sound Defence training Area.	Report to Australian Heritage Commission. Botanic Gardens and Parks Authority. Perth. 2001				R
Barrow, L	2005	Invertebrates and Fire in Purnululu National	Masters/Honours Thesis, Macquarie University				T
Basedow, H	1918	Narrative of an expedition of exploration in north-western Australia ; A synopsis of the geology of the north-western Australian coastal districts	Proceedings of the Royal Geographical Society of Australasia	18		105-295	J
Bassett-Smith, PW	1899	On the formation of the coral-reefs on the NW coast of Australia	Proceedings of the Zoological Society of London			157-159	J
Battye, JS, Fox, MJ	1985	The history of the north west of Australia embracing Kimberley, Gascoyne and Murchison Districts	Hesperian, Carlisle			318	B
Beard JS	1976	The monsoon forests of the Admiralty Gulf, Western Australia.	Vegetatio	31		177-192	J
Beard JS	1979	Vegetation survey of Western Australia: Kimberley	University of Western Australia Press, Perth				B
Beard, JS	1977	Kimberley [cartographic material] : vegetation survey of Western Australia	Western Australia 1:1,000,000 vegetation series				MA

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Beard, JS	1979	Vegetation and flora of the Mitchell Plateau area, north Kimberley district, Western Australia	Vegmap publications, Applecross.			43	M
Beard, JS	1979	Vegetation survey of Western Australia: Kimberley	University of Western Australia				M
Beard, JS, Clayton-Greene, KA, Kenneally, KF	1984	Notes on the vegetation of the Bougainville Peninsula, Osborn and Institute Islands, north Kimberley district, Western Australia	Vegetatio	57		3-13	J
Beard, JS, Kenneally, KF	1993	Dry coastal ecosystems of northern Australia	In E. Vander Maarel (ed) Ecosystems of the World 2B. Elsevier. Amsterdam.			239-258, maps	B
Behn, G	2001	Mapping forest cover, Kimberley region of Western Australia	Australian forestry	64		80-87	J
Benl, G	1988	Ptilotus crispus, a new species of Amaranthaceae in the Kimberley division of Western Australia	Nuytsia	6		319-323	J
Berggren, M	1997	The shrimps of the reefs off the Kimberley, WA	In D. Walker (ed) marine biolgoical survey of the central kimberley caost, Western Australi. UniveristyofWestern Australia, perth. Unpublished report. Western Australian Museum Library UR 377			86-90	R
Bernard, HM	1896	The genus *Turbinaria*. The genus *Astreopora*.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	2		1-166	J
Bernard, HM	1897	The genus Montipora, the genus Anacropora.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	3		1-192	J
Bernard, HM	1903	The family Poritidae, I. the genus Goniopora.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	4		1-166	J
Bernard, HM	1905	The family Poritidae, II. the genus Porites Pt 1. Porites of the Indo-Pacific region.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	5		1-303	J
Bernard, HM	1906	The family Poritidae, II. the genus Porites Pt II. Porites of the Atlantic and West Indies with European fossil forms. The genus Goniopora, a supplement to vol IV region.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	6		1-173	J
Berry P.F.	1986	Faunal surveys of the Rowley Shoals, Scott Reef and Seringapatam Reef north-western Australia.	Records of the Western Australian Museum	Supplement 25			J
Berry, PF	2005	Marine faunal survey of Ashmore Reef and Cartier Island: northwestern Australia	Records of the Western Australian Museum, Supplement	44			J
Bindon, P	1978	A survey for aboriginal sites in Central Dampier Land	Unpublished report for Esso exploration				R

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Bittrich, Volker, Western Australian Herbarium,	1989	Hibbertia hooglandii (Dilleniaceae), a new species from the Kimberley region, Western Australia / J.R. Wheeler	Nuytsia. - Vol. 7 (1989)			69-73, maps	J
Black, S	2001	Vine thickets on Dampier Peninsula	Landscope. - Vol. 16, no. 4 (2001)	16		47	J
Black, S	2002	Working with the Kimberley community to conserve rangeland TECs	WATSNU	9	2	1-2	J
Black, S.	2003	CALM north Kimberley mammal survey	Great escape	Sept emb er		2	J
Blakeway,D	1997	Scleractinian corals and reef development	In D. Walker (ed) marine biolgoical survey of the central kimberley caost, Western Australi. UniveristyofWestern Australia, perth. Unpublished report. Western Australian Museum Library UR 377			77-85	R
Boer, B		The legal framework affecting Aboriginal people in the east Kimberley	East Kimberley working paper			89 p.	O
Bolger, A		The effect of public sector activity on Aborigines in the East Kimberley. Part I, public sector agencies in the East Kimberley	East Kimberley working paper			40 p.	O
Bolger, A		The effect of public sector activity on Aborigines in the East Kimberley. Part II, Aboriginal communities in the Kimberley	East Kimberley working paper			63 p.	O
Bolton, BL, Latz, PK	1978	The western hare-wallaby, Lagorchestes hirsutus (Gould) (Macrpodidae), in the Tanami Desert.	Australian Wildlife Research	5		285-293	J
Booz, EB	1996	National Geographic's Last wild places	National Geographic			272 : col. ill.	J
Bowler, SW	1958	Fauna reports: report of the patrol in the Wyndham, Halls Creek, Fitzroy Crossing, Derby and Broome Districts, August 23- Sept 18 1958	Department of Fisheries				R
Bowler, SW	1961	Fauna reports: report of the patrol in the Broome, Derby, Fitzroy Crossing, Halls Creek and Wyndham districts, Augsut 25- Sept 21 1961.	Department of Fisheries				R
Bowler, SW	1965	Fauna reports : report of the patrol in the Murchison, Pilbara [i.e. Pilbara] and Kimberley, Sept. 14-Nov. 10, 1964	Department of Fisheries			32, 26, 22, 34, 43	R

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Bowman, DMJS	1988	Stability amid turmoil?: towards an ecology of north Australian eucalypt forests.	Proceedings of the Ecological Society of Australia	16		149-158	J
Bowman, DMJS	1992	A burnt out case? Reply to Lonsdale and Braithwaite (1991)	Australian Journal of Ecology	18		103-106	J
Bowman, DMJS	1992	Monsoon forests in north-western Australia. II. Forest savanna transitions.	Australian Journal of Botany	41		89-102	J
Bowman, DMJS Panton, WJ	1993	Decline of Callitris intratropica R.T. Baker & H.G. Smith in the Northern territory: implications for pre- and post-European colonization fire regimes.	Journal of Biogeography	21		373-381	J
Bowman, DMJS, Panton, WJ	1993	Factors that control monsoon-rainforest seedling establishment in north Australian Eucalyptus savanna.	Journal of Ecology	81		297-304	J
Bradley AJ, Kemper CM, Humphreys WF, How RA	1987	Small mammals of the Mitchell Plateau region, Kimberley, Western Australia.	Australian Wildlife Research	14		397-414	J
Braithwaite, RW	1992	Black and green.	Journal of Biogeography	20		113-116	B
Braithwaite, RW	1990	Australia's unique biota: implications for ecological processes.	Journal of Biogeography	18		347-354	J
Braithwaite, RW	1988	Burning for conservation in the north.	NT Rural News (March)			31-32	B
Braithwaite, RW	1991	Aboriginal fire regimes of monsoonal Australia in the 19th century.	Search	23		247-249	A
Braithwaite, RW, Muller, WJ	1997	Rainfall, groundwater and refuges: predicting extinctions of Australian tropical mammal species.	Australian Journal of Ecology	22		57-67	J
Brennan, G	1995	The Kimberley Pastoral Industry: an overview	Range Management Newsletter	Nov		11-13	J
Bridgewater, PB	1985	Variation in the mangal along the west t of Australia.	J of the Ecological society fo Australia	13		243-256	J
Bridgewater, PB, Cresswell, ID	1999	Biogeography of mangrove and saltmarsh vegetation: implications for conservation and management in Australia	Mangroves and Salt Amrshes	`3		117-125	J
Brockman, FS, Crossland, C, House, FM	1902	Report on Exploration of North-West Kimberley.	Government Printer, WA. 1902.				R

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Brockway, GE	1959	Visit of Conservator and party to the Kimberleys	Forest notes.	1		26-32	J
Brook, G	1893	The genus Madrepora.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	1		1-112	J
Brooke BP	1996	Geomorphology	In Wells, FE, Hanley JR and Walker DI. Survey of the marine biota of the southern Kimberley isalnds. Western Australian Museum, Perth, unpublihed report UR286				B
Brooke BP	1997	Geomorphology of the islands and inner shelf reefs of the central Kimberley coast	In D. Walker (ed) marine biolgoical survey of the central kimberley coast, Western Australia. Univeristy of Western Australia, Perth. Unpublished report. Western Australian Museum Library UR 377			13-39	B
Brooker, MIH, Done, CC	1986	Eucalyptus ceracea, E. rupestris and E. chlorophylla (Myrtaceae), three new species in the Kimberley Division of Western Australia	Nuytsia	5		381-390	J
Brooker, MIH, Slee, A V	1994	Eucalyptus series Brevifoliae (Myrtaceae), a new series of northern Australian eucalypts	Nuytsia	9		307-314	J
Brown, JR, Ash, AJ	1996	Pastures for prosperity. 4. Managing resources: moving from sustainable yield to sustainability in tropical rangelands.	Tropical Grasslands	30		47-57	J
Brown, RS	1988	Draft management plan for the control of barramundi gillnet fishing in the Kimberley	Fisheries Management paper. Fisheries Department, WA				R
Bryce, C	2000	Kimberley sea slugs: a walk on the slimy side.	Western Fisheries magazine	Autumn		34-37	J
Bryce, C, Hutchins, B, Fromont, J	1997	Restricted marine biological survey of the "garden bottom" of Beagle Bay: a joint survey involving the Western Australian Museum and Arrow Pearls Pty Ltd	Western Australian Museum				B
Bryce, CW, Fromont, J	1997	Garden bottom of Beagle Bay	Western Australian Museum, Perth. Unpub. Report UR377				R
Bryce, CW, Fromont, J	1997	Molluscs	In D. Walker (ed) marine biolgoical survey of the central kimberley caost, Western Australi. UniveristyofWestern Australia, perth. Unpublished report. Western Australian Museum Library UR 377			46-57	R

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Burbidge AA, Mckenzie N	1989	**Patterns in the modern decline of Western Australia's vertebrate fauna: Causes and conservation implications.**	**Biolgical conservaiton**	50		143-198	J
Burbidge, A, Done, C, Wilson, B	1988	Prince Regent : jewel of the Kimberley	Landscope	4	1	47-53	J
Burbidge, AA	1987	The management of crocodiles in Western Australia	Wildlife management : crocodiles and alligators			125-127	B
Burbidge, Aa	1999	**Conservation values and management of Australian Islands for non-volant mammal conservation.**	**Austrlaian Mammalogy**	21		67-74	J
Burbidge, AA		North Kimberley Mammal Status survey	CALM/Tropical Savannas CRC. Unpublished				U
Burbidge, AA	1990	The tail of the mysterious Kimberley possum	Wildlife Australia	272		26-27	j
Burbidge, AA, Manly, FJ	2002	Mammal extinctions on Australian Islands: causes and conservation implications	Journal of Biogeography	29		465-473	J
Burbidge, AA, McKenzie, NL, Kenneally, KF	1991	Nature conservation reserves in the Kimberley, Western Australia	Department of conservation and Land Management			164 pp	B
Burbidge, AA, Messel, H	1979	The status of the salt-water crocodile in the Glenelg, Prince Regent and Ord River Systems, Kimberley, Western Australia	Report (Western Australia. Dept. of Fisheries and Wildlife)			38	R
Burbidge, AA., McKenzie, NL	1978	The islands of the north-west Kimberley, Western Australia	Wildlife research bulletin, Western Australia	7		16-Feb	J
Burrows, ND, Christensen, PES	1991	A survey of Aboriginal fire patterns in the Western Desert of Australia.	Fire and the Environment Symposium (Proceedings: Knoxville, Tennessee: 1991)			297-305	B
Burvill, GH	1991	Soil surveys and related investigations in the Ord River area, East Kimberley, 1994	Technical bulletin (Western Australia. Dept. of Agriculture)	80		Jan-72	J
Bustard, HR	1969	The current status of crocodiles in Western Australia with recommendations for conservation and managed exploitation	Report (Western Australia. Dept. of Fisheries and Fauna)				R
Butler, W. H.	1973	Extension of range of some Kimberley birds	Western Australian naturalist	12		166-167	J
Butler, WH	1977	Notes on Kimberley birds	Western Australian Naturalist	13		194-195	J

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Butler, WH.	1979	The Red-winged Parrot *(Aprosmictus erythropterus)* in the North-West Division of Western Australia.	The Western Australian Naturalist	14		56	J
Buxton, R	1996	Drought Plan Regional Report: Kimberley		0			R
Callow, JN	2000	The controls on gully erosion in the upper Ord River catchment, northwestern Australia.	Unpublished Honours Thesis, University of Western Australia.				T
Campbell, W. D.	1915	An account of the Aboriginals of Sunday Island, King Sound, Kimberley, Western Australia	Journal and proceedings of the Royal Society of Western Australia.	1		p. 55-82	J
Campbell, W. D.	1995	1995 Sir David Brand Awards for Tourism : Darngku Heritage Cruise, Geikie Gorge : entry: Heritage and Cultural Tourism (Category 6)	Department of Conservation and Land Management and the Kimberley Tourism Association			12 p. : col. ill.	R
Carew,R, Hickey, R	2000	Derivation of a tidal inundation modelling supports environmental research at Roebuck Bay (Western Australia)	Transactions in GIS	4		99-111	J
Carrick, R	1956	The little corella, Kakatoe sanguinea G. and rice cultivation in the Kimberley Region, W.A.	CSIRO wildlife research	1		69-71	J
Carter, M., Rogers, D		Little Ringed Plover Charadruis dubius: A Kimberley Record with comments on Morphological and Vocal Aspects of Eastern Populations.	Australian Bird Watcher	17		269-277	J
Carter, T		Some Birds Occurring in Areas 8 and 9 of Australia, not given in Hall's "Key" (Second Edition).	The Emu	7		99-101	J
Chalmers, CE, Woods, PJ	1987	Broome coastal management plan	Environmental Protection Authority, perth				R
Chapman, A	1993	Mammals of the Munja-Walcott Inlet area, West Kimberley, Western Australia	Western Australian naturalist	19		140-146	J
Chapman, A, Harold, G, Milewski, T	1993	Birds of The Munja-Walcott inlet area West Kimberley, Western Australia.	The Western Australian Naturalist	19		147-161	J
Chapman, GF	1992	Desertified Grasslands: their biology and management.	Academic Press, London.				B
Cheel, E	1916	Results of Dr E. Mjobergs Swedish scientific expeditions to Australia 1910-13. X, plants	Kung. Svenska Vetenskapsakademiens Handlingar Band 52.				B
Chi, M	2002	Salt Water People: Aboriginal use of sea resources, Broome, Western Australia	In Indiginous Research and Development. Curtin University of Technology, Perth				B

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Cho, JL, Park, JG, Humphreys, WF	2005	A new genus and six new species of the Poarabathynellidae (Batynellacea, Syncarida) from the Kimberley region, Western Australia	Journal fo Natural history	39	24	2225-2255	J
Choo, MHC	1991	A screen-entry system for storing inventory data from Kimberley rainforests	Kimberley rainforests of Australia			27-36	B
Christensen, W.	1983	Aborigines and the Argyle Diamond Project : submission to the Aboriginal Land Inquiry	East Kimberley working paper			ii, 62 p.	O
Christian, CS	1945	Report on a visit to the east Kimberley division of Western Australia and portion of the Northern Territory, with proposals for investigations at the research station in the lower Ord River region				[30] leaves	R
Churchill S.K.		Distribution, abundance and roost selection of the orange horseshoe-bat, *Rhinonycteris aurantius,* a tropical cave-dweller.	Wildlife Research	18		343-354	J
Churchward HM, Bettenay E.		The soils of a portion of the Fitzroy River Valley at Liveringa Station WA.	CSIRO Landuse	Series 42			J
Clark, HI	1938	Echinoderms from Australia.	Memoirs of the Museum of Comparative Zoology, Harvard	55		1-595	J
Clark, HI	1946	The echinoderm fauna of Australia	Publications of the Carnegie Institution	566		1-567	J
Clark, LA, Wendel, JF, Craven, LA	1995	A new species of Micraira (Poaceae: Micraireae) from northern Western Australia	The Beagle	12		1-7	J
Clark, S		The Holocene alluvial stratigraphy and paleohydrology of the Fitzroy River, northwestern Australia.	Honours Thesis, University of Western Australia.				T
Clarkson, JR, Kenneally, KF		The flora of Cape York and the Kimberley: A preliminary comparative analysis.	Proceedings of the Ecological Society of Australia	15		259-266	J
Claymore, S	1999	Investigating threatened ecological communities in the Kimberley	WATSNU	6		2-3	J
Claymore, S.	1983	New reserves proposed for Dampier Peninsula	Swans	13	2	25-29 : col. ill., maps	J
Clayton-Greene KA, Beard JS	1984	The fire factor in vine thicket and woodland vegetation of the Admiralty Gulf region, north-west Kimberly, Western Australia.	Proceedings of the Ecological Society of Australia	12		225-230	J
Clement, C	1996	A guide to printed sources of the history of the Kimberley region of Western Australia.	Centre fo Western australian History, University fo Wesern Australia				B

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Clement, C		Historical notes relevant to impact stories of the east Kimberley	East Kimberley working paper			41 p.	O
Clement, Cathie		Pre-settlement intrusion into the East Kimberley	East Kimberley working paper			46 pp	O
Clement, Cathie, Bridge, Peter,	1982	Environmental review and management programme for Ashton Joint Venture, Argyle diamond project : volume of appendices	Dames & Moore				R
Clements, C, Fong, J, Lee, CL, Sharpe, B	2004	community based aquaculture hatchery, One Arm Point, Dampier Peninsula the Kimberley, Western Australia- a community success story	Trochus information belletin	11		2 to 4	J
Coate, K	1997	Adele Island, Western Australia	Corella	21	3	124-128	J
Coate, KH, Johnstone, RE, Lodge, GA.	1998	Birds of the Gardner and Denison ranges, and Lake Wilson area south-east Kimberley, Western Australia	Western Australian naturalist	22		25-53	J
Coate, KH, Johnstone, RE, Lodge, GA.		Birds of Kingston Rest North-East Kimberley, WA.					B
Cochrane, HR, Scholz, G, Van Vreeswyk, AME	1994	Sodic soils in Western Australia	Australian Journal of Soil Research	33		359-388	J
Colbert, EH, Merriless, D	1967	Cretaceous dinosaur footprints from Western Australia	J Royal Society WA	50		21-25	J
Collin, P, Jessop, R		The Occurrence of Three Species of Shearwater at Broome, North-western Australia.	Australian Bird Watcher	17		94-96	J
Collin, P., Jessop, R., Minton, C.		A Record of the Pin-tailed Snipe Gallinago stenura at Anna Plains Station, North-western Australia.	Australian Bird Watcher	16	5	217-219	J
Collins, J	2001	Fly-in-Fly-Out Bush camp tourism: Faraway Bay in the Kimberley , Western Australia	Honours Thesis, University of Western Australia.				T
Collins, J	2005	Nature-based tourism in the rangelands of the Kimberley Region, Australia	Rangeland Journal				J
Collins, J	2006	Marine Tourism	Chapter in PhD dissertation. University of Wesern Australia				T
Collins, P	1995	The birds of Broome					U
Collins, P, Jessop, R		Records of the Rose-crowned Fruit-Dove *Ptilinopus regina* for Broome, North-western Australia.	Australian Bird Watcher 16(7): 298-299.	16	7	298-299	J
Collins, P, Boyle, A, Minton, C, Jessop, R	2001	The importance of inland claypans for waders in Roebuck Bay, Broome, NW Australia	the Stilt	38		4-Aug	J

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Commonwealth of Australia	2002	Ashmore reef national nature reserve and Cartier island marine reserve (Commonwealth waters) management plans	Environment Australia, Canberra				R
Cook, GD, Andrew, MH	1991	The nutrient capital of indigenous Sorghum species and other understorey components of savannas in north-western Australia.	Australian Journal of Ecology	17		375-384	J
Coombs, H. C.,	1988	Aboriginal cattle stations in the East Kimberley : communities or enterprises	East Kimberley working paper			79 p.	O
Coombs, H. C.,	1989	Land of promises : Aborigines and development in the east Kimberley				165 p. : ill., maps	B
Coughenour, MB	1991	Spatial components of plant-herbivore interactions in pastoral, ranching, and native ungulate ecosystems.	Journal of Range Management	45		530-549	J
Cowie, ID	2004	New species and lectotypifications of some reticulate-nerved Tephrosia (Fabaceae) from north-west Australia and the genus Paratephrosia re-evaluated	Nuytsia	15		163-185, maps	J
Craig, AB	1997	A review of information on the effects of fire in relation to the management of rangelands in the Kimberley high-rainfall zone.	Tropical Grasslands	31		161-187	J
Craig, AB	1997	Fire management issues in Kimberley pastoral lands.	Bushfire '97. Proceedings of Australian Bushfire Conference, Darwin, 8-10 July 1997			227-232	P
Craig, AB	1999	Fire management of rangelands in the Kimberley low-rainfall zone : a review	Rangeland journal	21	1	39-70	J
Craig, AB		Draft Fire Management Guidelines for Kimberley Pastoral Properties					R
Craig, Donna	1987	Social impact assessment bibliography	East Kimberley working paper			14 p.	O
Craig, Donna	1989	The development of social impact assessment in Australia and overseas and the role of indigenous peoples	East Kimberley working paper			88 p.	O
Crawford, IM	1968	The art of the Wandjina : aboriginal cave paintings in Kimberley, Western Australia				144 p. : ill.	B
Crawford, IM	1982	Traditional Aboriginal plant resources in the Kalumburu area : aspects in ethno-economics	Records of the Western Australian Museum. Supplement			86 pp	J
Cresswell, GR, Baccock, KA	2000	Tidal mixing near the Kimberley coast of NW Australia	Journal of Marine and freshwater research	51		641-646	J

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Critchley, CNR, Poulton, SMC	1998	A method to optimize precision and scale in grassland monitoring.	Journal of Vegetation Science	9		837-846	J
Croot,K.		Devising the methodology for developing a monitoring scheme for the Lower Ord, Western Australia.	Unpublished Honours Thesis				T
Crossman, A.F.	1910	Birds Seen in and around Broome, North-Western Australia.	Emu	9		148-150	J
Crossman, A.F.	1910	Birds Seen in and around Broome, North-Western Australia. (Additional List).	Emu	10		111-113	J
Culvenor, CCJ	1958	The chemistry of stock poison plants : Kimberley horse disease and related topics	Symposium on Australian Plant Products : summaries of papers (1958)			3	P
Curry, S, Chapmanm, AR	1996	Update to the informal names used in "Flora of the Kimberley Region"	Nuytsia	10		464-466	J
D'Adamo, N, Davidson, JA,	2002	Water temperature time series data collected at Ningaloo Marine Park, Rowley Shoals Marine Park and Mermaid Reef Marine National Nature Reserve (December 2000-October 2001) : Marine Management Support, Ningaloo and Oceanic Shoals : a collaborative project	Data report (Western Australia. Dept. of Conservation and Land Management. Marine Conservation Branch)				R
Dames & Moore	1981	Vegetation and flora of the Argyle project area for Ashton Joint Venture				51	R
Dames & Moore	1982	Ashton Joint Venture : environmental review and management programme : Argyle diamond project : draft report	Dames & Moore			275	R
Davidson, JA, D'Adamo, N	2001	Temperature monitoring in Ningaloo Marine Park, Rowley Shoals Marine Park and Mermaid Reef Marine National Nature Reserve : retrieval and deployment details of temperature loggers (September-October 2001) : Marine Management Support, Ningaloo and Oceanic	Field programme report (Western Australia. Dept. of Conservation and Land Management. Marine Conservation Branch)			vi, 19 : col. ill., col. maps + 1 CD-ROM	R
Davie, PJF, Short, JW	1995	Crustaceans	In Wells, FE, Haley, JR and Walker DI. Survey of the marine biota of the southern Kimberley islands. Western Australian museum, Perth. Unpub. Report UR286			67-80	R

Author	Year	Title	Publication	Vol	No	Pages	Type
Davie, PJF, Short, JW	1996	Crustaceans	In D. Walker, F Wells and JR Hanley (eds) Marine biological survey of the eastern Kimberley coast Western Australia. University of Western Australia, Perth. Unpub report. Western Australian Museum Library UR 353			68-74	R
Davies, Richard JP.	1986	Bungle Bungle Working Group : final report to the Environmental Protection Authority	Bulletin (Western Australia. Dept. of Conservation and Environment)			80	R
Davies,RJP.	1987	Conservation priorities in north-western Australia	East Kimberley working paper			32	R
de Boer, MN, Baldwin, R, Burton, CLK, Eyre, EL, Jenner, KCS, Jenner, MN, Keith, SG, McCabe, KA, Parsons, ECM, Peddermors, VM, Rosenbaum, HC, Rudolph, P, Simmonds, MPE,	2003	Cetaceans in the eh Indian Ocean Sanctuary : a review.	Whale and Dolphin conservaiton Society, Chippenham, UK				B
de goeij, P, Lavaleye, M, Pearson, GB, Piersma, T	2003	Seasonal changes in the macro-zoobenthos of a tropical mudflat: report on MONROEB- Monitoring Roebuck Bay Benthos, 1996-2001	Royal Netherlands Institute of Sea Research (NIOZ). Report 2003-04				R
Dell, J	1978	Torres Strait pigeon breeding in Kimberley, W.A.	Emu	78		43	J
Department for Planning and Infrastructure	2004	Coastal planning program: status of coastal planning in Western Australia 2003/04 Report	Western Austrlaian Planning Commission				R
Department of Agriculture, WA	1960	Kimberley research station : a progress report	Bulletin (Western Australia. Dept. of Agriculture)			15	R
Department of Conservation and Land Management	1999	Kimberley tourism manual : a guide to interpreting the Kimberley for tour agencies, operators, drivers, guides, storytellers and others	Department of Conservation and Land Management				O

Author	Year	Title	Publication	Vol	No	Pages	Type
Department of Conservation and Land Management	2004	Rowley Shoals Marine Park draft management plan and indicative management plan for extensions to the existing marine park	Department of Conservation and Land Management, Perth				R
Department of Conservation and Land Management and the Kimberley Tourism Association	1995	1995 Sir David Brand Awards for Tourism : Ibis Aerial Highway : entry: Environmental Tourism (Category 5)	Department of Conservation and Land Management and the Kimberley Tourism Association			50 pp	O
Department of Conservation and Land Management, WA	1997	A representative marine reserve system of Western Australia: analysis of public submissions on the report of the marine parks and reserves selection working group.	Department of Conservation and Land Management				R
Department of Conservtion and land Management	2004	Towards a biodiversity conservation strategy for Western Australia	Governement of Western Australia				R
Department of Conservtion and land Management	2006	Western Australia's biodiversity conservation priorities					R
Department of Contract and Management Services	1998	Kimberley aquaculture development strategy initial risk management study	Department of Contract and Management Services				R
Department of Environment and Conservation	2006	Draft Nature Conservation Output: Kimberley Region Plan	Department of Environment and Conservation				R
Department of Environment and Heritage	2003	Assessment of the Western Australian Pearl Oyster Fishery	Enviornment Australia				R
Department of Environment and Heritage	2004	Assessment of the Northern demersal scalefish	Enviornment Australia				R
Department of Environment and Heritage	2004	Assessment of the Western Australian Beche-de-mer Fishery	Enviornment Australia				R
Department of Environment and Heritage	2004	Assessment of the Western Australian Broome Prawn fishery	Enviornment Australia				R

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Department of Environment and Heritage	2004	Assessment of the Western Australian Kimberley prawn managed fishery	Enviornment Australia				R
Department of Fisheries	2004	Aboriginal fishing strategy: final report	fisheries Mangement paper				R
Department of Fisheries	2005	State of the Fisheries Report 2004/05	Department of Fisheries				R
Department of Fisheries	2006	Kimberley plan towards 2015	Department of Fisheries. Perth, WA				R
Department of planning and Infrastructure	2006	North Kimberley land use and infrastructure investigations	Discussion paper. Departmetn of Planning and Infrastructure				D
Department of Regional Development and the Northwest, WA	1990	Kimberley Region plan study report : a strategy for growth and conservation : issued for public comment	Department of Planning and Urban Development				R
Department of Resources Development and Department of Minerals and Energy	1997	Regional mineral prospectivity study of the Kimberley Region	Department of Resources Development and Department of Minerals and Energy				R
Department Of Terrestrial Vertebrates,	2001	Assessment of Vertebrate fauna of the Yampi Sound Defence Training Area (YSTA), Derby, W.A.	Western Australian Museum, Perth, Wa				R
Dept of Regional Development and the North west	1985	Kimberley pastoral industry inquiry final report: An industry and government report on the problems and future of the Kimberly Pastoral Industry	Dept of Regional Development and the North West				R
Dept. Of Commerce & Trade, Kimberley Development Commission	1999	Kimberley economic perspective: an update on the economy of Western Australia's Kimberley Region.	Kimberley Development Commission	0			R
Dept. Of Conservation And Environment, Western Australia. Environmental	1985	East Kimberley Impact Assessment Project : project description and feasibility study	Australin conservation Foundation			20	R

Author	Year	Title	Publication	Vol	No	Pages	Type
Protection Authority							
Dept. Of Conservation and Land Management	2001	Establishment of an oceanographic monitoring network in marine reserves. Stage 1, temperature monitoring in Rowley Shoals Marine Park (December 2000) : Marine Management Support, Oceanic Shoals : a collaborative project between CALM Marine Conservation Br	Field programme report (Western Australia. Dept. of Conservation and Land Management. Marine Conservation Branch)				R
Dept. Of Regional Development and The Northwest, WA	1990	Kimberley Region plan summary : a strategy for growth and conservation : issued for public comment	Department of Planning and Urban Development			42 pp	R
Despeissis, A	1921	Some economic plants of the north and north-west	Tropical agriculture in Western Australia			147-160	J
Dillon, MC	1985	Structural change in Wyndham	East Kimberley working paper			30	O
Dillon, MC	1985	The East Kimberley Region : research guide and select references	East Kimberley working paper			17	O
Dillon, MC		Aborigines in the tourist industry: Aborigines and tourism in North Australia : some suggested research approaches	East Kimberley working paper			13 leaves	O
Dillon, MC		Pastoral resource use in the Kimberley : a critical overview	East Kimberley working paper			24	O
Dixon J.		Soils of the Weaber Plain, East Kimberley, WA.	Resource Management Technical Report 152. Natural Resources Assessment Group, Agriculture WA (Dept. of Agric. WA).				R
Dixon, DJ	2001	Ficus lilliputiana (Moraceae), a new species from the Kimberley region of Western Australia and the Northern Territory	Nuytsia	13		457-464	J
Dixon, K	1994	Tropical terrestrial orchids of Western Australia	Orchadian	11		166-170	J
Dixon, RA	1984	A preliminary indication of some effects of the Argyle Diamond Mine on Aboriginal communities in the region : a report to the Kimberley Land Council and the National Aboriginal Conference	East Kimberley working paper			iii, 41 p. : 1 map	O

Author	Year	Title	Publication	Vol	No	Pages	Type
Dixon, RA, Dillon, MC	1990	Aborigines and diamond mining : the politics of resource development in the east Kimberley, Western Australia				xvi, 196 p. : ill., maps	R
Done, C	2001	Parks of the Plateau	Landscope	16	3	48-53 : col. ill.	J
Done, TJ, Williams, DMcB, Speare, P, Turak, E, Davidson, J, DeVantier, LM, Newman, SJ, Hutchins, JB	1994	Surveys of coral and fish communities at Scott Reef and Rowley Shoals	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Donovan, Frank	1986	An assessment of the social impact of Argyle diamond mines on the East Kimberley region : with special reference to the Aboriginals of the region	East Kimberley working paper			75 p.	O
Donovan, Frank		Guidelines for research into social impacts deriving from non-Aboriginal developments on Aboriginal land	East Kimberley working paper			iii, 54 p.	O
Dorrough, J, Yen, A, Turner, V, Clark, Sg, Crosthwaite J, Hirth, JR	2004	Livestock grazing and biodiversity conservation in Australian temperate grassy landscapes.	Australian Journal of Agricultural Research	55		279-295	J
Dortch, CE	1977	Ancient grooved stone axes from an alluvial terrace on Stonewall Creek, Kimberley, Western Australia	Journal of the Royal Society of Western Australia.	60		p. 23-30	J
Dostine, P	1998	Gouldian Finch Recovery Plan, *Erythrura gouldiae*.	Parks and Wildlife Commission of the Northern Territory, Darwin				O
Douglas, AM	1962	Macroderma gigas saturata (Chiroptera: Megadermatidae) : a new subspecies from the Kimberley division of Western Australia	Western Australian naturalist	8		59-61	J
Dow, DB, Gemuts, I	1969	Geology of the Kimberley region, Western Australia : the east Kimberley	Bulletin (Australia. Bureau of Mineral Resources, Geology and Geophysics)				R
Duckett, N		Vegetation trend in the Fitzroy Region. An analysis of 1995 and 1998 ground monitoring data	Department Of Agriculture, WA (Draft only)				R
Duke, NO	1992	mangrove floristics and biogeography	In Robertson, AI and DM Alongi (eds) Tropical Mangrove Ecosystems, AGU Press, Washington				B

Author	Year	Title	Publication	Vol	No	Pages	Type
Dunlop, CR, Done, CC	1992	Eucalyptus ordiana (Myrtaceae), a new species from the Kimberley, Western Australia	Nuytsia	8		195-199	J
Duretto, MF	1997	Taxonomic notes on Boronia species of north-western Australia, including a revision of the Boronia lanuginosa group (Boronia section Valvatae: Rutaceae)	Nuytsia	11		301-346	J
Dwyer, E, Gregoire, J., Malingreau, J	1998	A global analysis of vegetation fires.	Ambio	27	3	175-181	J
Dybdahl, R And Pass DA	1985	An investigation of mortality in the pearl oyster Pinctada maxima, in Western Australia	Report of the Department of Fisheries of Western Australia	71		1-78	R
Dyer, R	1997	Better fire management improves pastures in the Top End.	Beef Improvement News (Oct.)	15	9	10-11	J
Ecologia Environment	2005	Browse onshore gasplant environmental constraints map	Ecologia Environment for Woodside.				R
Ecologia Environment	2000	Draft EIS Proposed Development of the M2 area. Kinhill, 2000	Ecologia				R
Ecologia Environment	2004	Beagle Bay "Big Tree Country" Timber Plantation: Fauna Assessment Survey	Unpublished Report for Tropical Timber Plantations Pty Ltd				R
Ecologia Environment	2004	Beagle Bay "Big Tree Country" Timber Plantation: Flora Assessment Survey	Unpublished Report for Tropical Timber Plantations Pty Ltd				R
Ecologia Environment	2004	Beagle Bay "Big Tree Country" Timber Plantation: Preliminary Ecological Water Requirements Study	Unpublished Report for Tropical Timber Plantations Pty Ltd				R
Ecologia Environment	2004	Beagle Bay Plantation Scoping Document	Unpublished Report for Tropical Timber Plantations Pty Ltd				R
Ecologia Environment	2005	Beagle Bay "Big Tree Country" Timber Plantation: Public Environmental Review	Unpublished Report for Tropical Timber Plantations Pty Ltd				R
Ecologia Environment		Argyle Iron Ore Project: Ground Disturbance Approval Application	Argyle Iron Ore Project: Ground Disturbance Approval Application				R
Ecologia Environment		Ashmore Diamonds Biological Survey	Ashmore Diamonds Biological Survey (ASHM-1)				R
Ecologia Environment		COCKATOO ISLAND: Phase III Marine Monitoring Report	Unpublished Report for Tropical Timber Plantations Pty Ltd				R
Ecologia Environment		COCKATOO ISLAND: Phase IV Marine Monitoring Report					R

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Ecologia Environment		Koolan Island Exploration Environmental Protection Statement: Referral to EPA, Environmental Management Plan and Notice of Intent	Ecologia				R
Ecologia Environment		ORD RIVER STAGE 2: M2 Development Area: Terrestrial Biological Assessment - Addendum A: Regional Biodiversity & Representation	Ecologia (ORD-3)				R
Ecologia Environment		ORD RIVER STAGE 2: Riverside	Ecologia (ORD-2)				R
Ecologia Environment		Terrestrial Biological Assessment (for Ord Stage 2).	Ecologia, 1997				R
Ecologia Environment		United Kimberley Diamond Phillips Range Project Environment Management Plan (draft)	Ecologia				R
Ecologia Environment		WEST KIMBERLEY POWER PROJECT: Flora & Fauna Survey	WEST KIMBERLEY POWER PROJECT: Flora & Fauna Survey				R
Ednie-Brown, OB, Webb,G, Kikeros, A	1988	Wyndham crocodile farm : a submission in support of the crocodile farm licence application in the east Kimberley by Mr Peter Allen of Wyndham				[64] , maps	O
Edwards, AB	1942	Some basalts from the north Kimberley, Western Australia	Journal of the Royal Society of Western Australia. - Vol. 27 (1940-1941)			79-93	J
Edwards, AB, Clarke, EdeC	1940	Some cambrian basalts from the east Kimberley, Western Australia	Journal of the Royal Society of Western Australia	26		77-94	J
Edwards, H	2001	Pearls of Broome and northern Australia					B
Egan, JL, Williams, RJ	1996	Lifeform distributions of woodland plant species along a moisture availability gradient in Australia's monsoonal tropics.	Australian Systematic Botany	9		205-217	J
Ekmar, S	1918	Holothuroidea. Part XIX	In Mortensen, TH (ed) Results of Dr E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913				B
Eldridge, DJ, Greene, RSB	1994	Microbiotic soil crusts: a review of their roles in soil and ecological processes in the rangelands of Australia.	Australian Journal of Soil Research	33		389-415	J
Eldridge, MDB, Pearson, DJ	1997	Chromosomal rearrangements in rock wallabies, Petrogale (Marsupialia: Macropodidae). IX, further G-banding studies of the Petrogale lateralis complex: P. lateralis pearsoni, the west Kimberley race and a population heterozygous for a centric fusion	Genome	40		84-90	J
Elkin, AP		Social organization in the Kimberley division, north-					O

Author	Year	Title	Publication	Vol	No	Pages	Type
		western Australia					
Environment Australia	2000	Mermaid Reef Marine National Nature Reserve: plan of management, Commonwealth of Australia	Environment Australia, Canberra				R
Environment Australia	2000	Revision of the interim biogeographic regionalisation of Australia (IBRA) and the Development of Version 5.1. Summary Report.	Department of Environment and Heritage, Canberra.				R
Environmental Protection Agency	1981	Conservation reserves for Western Australia : system 7	Dept. of Conservation and Land Management				R
Environmental Protection Agency	1993	Red Book: status report on the implementation of conservation reserves for Western Australia	Environmental Protection Agency				R
EPA	2005	Ellendale 4 Diamond Project West Kimberley Region WA	EPA				R
Epton, K	2000	Rivers of the Kimberley : their discovery and naming	Hesperian, Carlisle, WA			64 pp	B
Evans, S. M., Bougher, A. R.,	1983	The little grassbird Megalurus gramineus in the north-eastern Kimberley, Western Australia / K. Brennan	Emu	83		115-116	J
Evans, SM, Bougher, AR	1987	The abundance of estrildid finches at waterholes in the Kimberley (W.A.)	Emu	87		124-127	J
Faber-Castell A	2001	Impacts of fire on ants in Parry Lagoon Nature Reserve, east Kimberley, W.A.	Macquarie University			64 pp	T
Fairbridge, RW	1953	The Sahul Shelf, northern Australia: Its structure and geological relationships	J Royal Society of Western Australia	37		1-34	J
Fensham, RJ	1994	Phytophagous insect-woody sprout interactions in tropical eucalypt forest. I. Insect herbivory. II. Insect community structure.	Australian Journal of Ecology	20		178-188	J
Fensham, RJ, Fairfax, RJ	2003	Assessing woody vegetation cover change in north-western Australian savanna using aerial photography.	International Journal of Wildland Fire	12		359-367	J
Findlay, JS	1888	The north-west coast of Australia, including the Kimberley District and newly discovered goldfield	Transactions and proceedings of the Royal Geographical Society of Australasia. NSW Branch	3-Apr		209-221	J
Fisher, R	2003	Patterns of landscape fire and predicted vegetation response in the North Kimberley region of Western Australia	International journal of wildland fire.	12		369-379	J
Fisheries Department of	1999	Management directions for Western Australia's estuarine and marine embayment fisheries: a	Fisheries Management Paper	131			R

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Western Australia		strategic approach to management					
Fisheries Department of Western Australia	2000	Broome prawn managed fishery	research report				R
Fisheries Department of Western Australia	2000	Northern demersal scalefish managed fishery management plan 2000	Fisheries Department of Western Australia. Fisheries Management Paper				R
Fisheries Department of Western Australia	2005	A five-year management strategy for recreational fishing in the Pilbara/Kimberley region of Western Australia	Fisheries Department of Western Australia. Fisheries Management Paper			70 pp	R
Fitzgerald, K	1975	Regional pasture development and associated problems. I Northern Western Australia	Tropical Grasslands	9		77-82	J
Fitzgerald, K	1984	The Ord River Catchment Regeneration Project	Bulletin No. 3599, Department of Agriculture of Western Australia (reprinted from Journal of Agriculture of Western Australia Nov 1967, March 1968 % September 1968.				J
Fitzgerald, K		Soil conservation in the Kimberley area	Bulletin (Western Australia. Dept. of Agriculture)			8	R
Fitzgerald, K., Western Australia. Dept. Of Agriculture,	1992	A review of the major groundwater resources in Western Australia	Geological Survey of Western Australia for the Kimberley Water Resources Development Office				R
Fitzgerald, WV	1907	Reports on portions of the Kimberleys (1905-6)				18	R
Fitzgerald, WV	1918	The botany of the Kimberleys, north- west Australia	Journal and proceedings of the Royal Society of Western Australia	3		102-224	J
Fitzgerald, WV	1906	Some species of West Kimberley plants	The western mail	2-Jun		10	J
Fleming, MR, McKenzie, NL	1995	Kimberley Rock rat: Zyzomys woodwardi, Thomas, 1901	In R Strahan (ed) Mammals of Australia, Reed Sydney				B
Folkenson, F	1919	Madreporaria Part XXII	In Mortensen, TH (ed) Results of Dr E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913				B
Foran, Bd, Bastin, G, Hill, B	1985	The pasture dynamics and management of two rangeland communities in the Victoria River District of the Northern Territory.	Australian Rangeland Journal	8		107-113	J

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Forbes S.J., Kenneally K.F. And Aldrick S.M.		A botanical survey of Vansittart Bay and Napier Broome Bay, north Kimberley, Western Australia.	Western Australian Naturalist	17		129-200	J
Forbes, J, Kenneally, KF	1986	A botanical survey of Bungle Bungle and Osmond Range, south-eastern Kimberley, Western Australia	Western Australian naturalist.	16		93-170	J
Forbes, SJ, Kenneally, KF	1995	South west Kimberley rock-wallabies	WATSNU	2	2	6	J
Ford J.	1987	Notes on Kimberley birds.	Western Australian Naturalist	16		181-183	J
Ford, J	1978	Geographical isolation and morphological and habitat differentiation between birds of the Kimberley and Northern Territory	Emu	78		25-35	J
Ford, J	1979	A new subspecies of grey butcherbird from the Kimberley, Western Australia	Emu.	17		191-194	J
Ford, J, Johnstone, RE	1981	First record of golden bronze cuckoo in Kimberley	Western Australian Naturalist	15		30-31	J
Ford, J.	1987	Notes on Kimberley birds	Western Australian naturalist.	16		181-184	J
Ford, J., Johnstone, R. E.,	1978	Brown bittern in the Kimberley, Western Australia	Western Australian Naturalist	14		54	J
Forman, DJ, Wales, DW,	1981	Geological evolution of the Canning Basin, Western Australia	Bureau of Mineral Resources, Geology and Geophysics, Perth	Bulletin 10			R
Forrest, A.	1879	North-west exploration : progress report of expedition from Beagle Bay to Port Darwin					R
Forrest, A.	1921	Collecting notes made in the Kimberley region in 1921				35 pp	O
Forrest, J.	1883	Report on the Kimberley District, north-western Australia	Reprinted from: Australian Parliamentary paper. - Vol. 23 (1883)			1-20	R
Forrest, J.	1883	Reports of the Select Committee of the Legislative Council appointed to consider and report upon message no. 2 from His Excellency the Governor, of 20th July 1883 upon the subject of proposed amendments in the land regulations for the Kimberley district				[5]	R
Fowler, J	1995	Demersal line interim managed fishery no 1	Western Australian Fisheries Department				R

Author	Year	Title	Publication	Vol	No	Pages	Type
Fox, ID, Neldner, VJ, Wilson, GW, Bannink, PJ	2001	The vegetation of the Australian Tropical Savannas: Technical report to accompany the map of 'The Vegetation of the Australian Tropical Savannas'	Tropical Savannas CRC				M
Fox, NJ, Beckley, LE	2005	Kimberley marine biophysical resource assessment	Report for the WA Department of Conservation and land Management			16	R
Fox, NJ, Beckley, LE	2005	Priority areas for conservation of Western Australian coastal fishes: a comparison of hotspot, biogeographical and complementarity approaches	Biological Conservation	125		399-410	J
Franklin, DC, Burbidge, AH, Dostine, PL	1999	The harvest of wild birds for aviculture : an historical perspective on finch trapping in the Kimberley with special emphasis on the Gouldian finch	Australian zoologist	31		92-109	J
Friend, GR, Kerle, JA	1989	Habitat of the black-footed tree-rat (Mesembriomys gouldii) in the Kimberley and top end and the implications for conservation of the species	Newsletter of the Australian Mammal Society	Spri ng		32	J
Friend, GR, Morris, KD, McKenzie, NL	1991	The mammal fauna of Kimberley rainforests	In Rainforests of the Kimberley. Surrey Beatty and Sons.			393-412	B
Froggat, WW	1864	Journals and reports of two voyages to the Glenelg River, and the north-west coast of Australia 1863-4	Perth gazette			1 to 88	J
Froggat, WW	1888	Notes on the natives of west Kimberley, NW Australia	Reprinted from: Proceedings of the Linnean Society of New South Wales	3		651-656	J
Froggatt, W.	1934	A naturalist in Kimberley in 1887	Australian naturalist	9		69-82	J
Fryxell, PA, Craven, LA, Stewart, JMCD	1992	A revision of Gossypium sect. Grandicalyx (Malvaceae), including the description of six new species.	Systematic Botany	17	1	91-114	J
Fuller P.J. And Burbidge A.A.		Additions to the avifauna of the Prince Regent River Reserve.	Western Australian Naturalist	14		42-43	J
Galloway, RW	1982	Distribution and physiographic patterns of Australian mangroves	In Clough, BF (ed) Mangrove Ecosystems in Australia: structure, function and management. ANU Press, Canberra	31-54			B
Gardner, CA	1921	Collecting notes made in the Kimberley region in 1921	Forests Department , Western Australia				R
Gardner, Ca	1923	Botanical notes. Kimberley Division of Western Australia	Bulletin of the Forest Department, WA	32			J
Gardner, CA	1923	Botanical notes: Kimberley division of Western Australia	Forests Department Western Australia Bulletin	32	1-105		J

Author	Year	Title	Publication	Vol	No	Pages	Type
Gardner, CA	1925	The forest formations of Western Australia. No IX the Kimberley savannah woodland	Australian Forestry Journal	8		213-216; 309-312	J
Gardner, CA	1926	The forest formations of Western Australia. No VIII the Kimberley sclerophyllous woodland	Australian Forestry Journal				J
Gardner, CA	1945	Western Australia : report on Kimberley districts				25 pp	R
Gardner, CA	1945	Western Australia: report on the vegetation and climate of the Kimberley division of Western Australia with special reference to the Ord River region	Department of Agriculture, WA				R
Garrod, B, Wilson, JC	2004	Nature on the edge? Marine ecotourism in peripheral coastal areas	Journal of Sustainable tourism	12		95-`20	J
George, AS	1978	Notes on the vegetation and flora of the Cape Londonderry peninsula, North Kimberley, Western Australia	Western Australian Herbarium research notes. - No. 1	1		1-15	O
George, AS	1999	Seven new species in Acacia section Lycopodiifolia (Mimosaceae)	Journal of the Royal Society of Western Australia	82		67-74	J
George, RW, Jones DS	1987	Invertebrate Wildlife	In Chalmers, CE, and Woods PJ. Draft coastal management plan, shire of Broome. Department of Conservation and Environment Bulletin	252		36	R
Gershwin, L	2005	Two new species of jellyfishes (Cnidaria:Cubozoa: Carybdeida) from tropical Western Australia, presumed to cause Irukandji Syndrome	Zootaxa	1084		501-5	J
Gershwin, L	2006	Comments on Chiropsalmus (Cnidaria: Cubozoa: Chirodropida): a preliminary revision of the Chiropsalmidae, with description of two new genera and two new species.	Zootaxa	1231		1-57	J
Gershwin, L	2006	Nematocysts of the Cubozoa	Zootaxa	1232		1-30	J
Gershwin, L, Alderslad, P	2005	A new genus and species of box jellyfish (Cubozoa: Carybdeidae) from tropical Australian waters.	Records of the museums and Art Galleries of the Northern Territory	21		27-36	J
Giblett, R, Webb, H	1996	Western Australian wetlands : the Kimberley and south-west	Black Swan Press, Perth			173 pp	B
Gill, AM, Bradstock, RA	1992	A national register for the fire responses of plant species.	Cunninghamia	3		653-660	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Gill, AM, Hoare, JRL, Cheney, NP	1990	Fires and their effects in the wet-dry tropics of Australia.	In J.G. Goldammer (ed.) Fire in the Tropical Biota: ecosystem processes and global challenges, Springer-Verlag, Berlin.			158-178	B
Gilmour, J, Cheal, A, Smith, L, Underwood, J, Meekan, M, Fitzgibbon, B, Rees, M	2007	Data compilation and analysis for Rowley Shoals: Mermaid, Imperieuse and Clerke reefs	Report for the Department of the Environment and Water Resources				R
Gislen, T	1919	Crinoids. Part XXIII	In Mortensen, TH (ed) Results of Dr E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913				B
Glauert, L	1959	Herpetological miscellanea. IX, Ablepharus wotjulum, a new skink from west Kimberley	Western Australian naturalist	6		192-193	J
Glauert, L	1921	Pleistocene fossil vertebrates from the Fitzroy River, west Kimberley, W.A.	Journal and proceedings of the Royal Society of Western Australia.	7		85-86	J
Glauert, L.	1951	A new Varanus from east Kimberley : Varanus mertensi sp. n.	Western Australian naturalist	3		14-16	J
Glauert, L.	1956	A new skink from West Kimberley, Egernia striolata douglasi ssp. nov.	Western Australian naturalist	5		117-119	J
Glauert, L.	1979	Salt-water crocodile status	Swans	9	1	13	J
Goldsmith, J	1977	Western Australia [cartographic material]. - Ed. 1. - Scale 1:1,000,000	Western Australia. Dept. Of Conservation And Land Management,				M
Goldsmith, J	2000	Cosmic impacts in the Kimberley	Landscope.	15	3	28-34	J
Gooding, CD, Long, JL	1958	The Kimberley wallaby menace	Bulletin (Western Australia. Dept. of Agriculture)	2525		8	J
Gooding, Cod, Harrison, La	1953	The wallaby menace in the Kimberleys.	The Journal of the Dept. of Agriculture of Western Australia 3rd Series	12		333-340	J
Gorring, A, Pilbara/Kimberley Recreational Fishing Working group	2004	A quality future for recreational fishing in the Pilbara/Kimberley : a five-year draft strategy for managing the recreational component of the catch : proposals for community discussion	Fisheries management paper			100 pp	R

Author	Year	Title	Publication	Vol	No	Pages	Type
Goudie, AS, Sands, MJS	1988	Kimberley, Australia, 200 : the geomorphology and biology of the Kimberley Region, north-western Australia : a preliminary bibliography	royal Botanic Gardens, Kew			23 leaves	O
Goudie, AS, Sands, MJS, Livingstone, I	1992	Aligned linear gilgai in the West Kimberley District, Western Australia	Journal of arid environments	23		157-167	J
Gould, RA	1969	Subsistence behaviour among the Western Desert Aborigines of Australia.	Oceania	39	4	253-274	A
Gowland P.N..		Lake Kununurra Wetlands	Department of Agriculture				R
Gowland P.N..		The Ecology and Management of Waterbird Pests of Commercial Agriculture in the Ord River Irrigation Area.	The Ecology and Management of Waterbird Pests of Commercial Agriculture in the Ord River Irrigation Area.				R
Gowland PN, Brennan KG, Edwards EC		Ord River Irrigation Area Bird List	Ord River Irrigation Area Bird List.				O
Gracey, M, Gunzberg, S, Spargo, RM	1989	Community-based illness in Kimberley Aborigines	East Kimberley working paper			23 p.	O
Gracey, M, Spargo, RM		The health of Kimberley Aborigines : a personal 15-year perspective	East Kimberley working paper			iii, 23 p.	O
Graham G.	1994	A Biological Survey of the Cockburn Ranges. February - April 1994.	Department of Conservation and Land Management. Unpublished report				R
Graham G.		Report on the Natural History of Walk Trails on El Questro Station	Report on the Natural History of Walk Trails on El Questro Station				R
Graham, G	1992	A biological survey of the Lawford Range area, Kimberley region, 16-20 March 1992	Department of conservation and land management, Perth			21pp	R
Graham, G	1992	A biological survey of the silent grove area (mt Hart Station) Kimberley Region	Department of Conservation and Land Management				R
Graham, G	1994	A biological survey of mirima national park, December 1993- January 1994	Department of Conservation and Land Management				R
Graham, G	1995	Wetland management and protection in the Kimberley	Wetland Research into the Wet-Dry Tropics of Australia : workshop (1995)			74-79	P
Graham, G	2000	An assessment of the distribution and status of Arnhem Cypress Pine *Callitris intratropica* (R. T. Baker and H. G. SM.) in the Kimberley Region, Western Australia.	Report to Environment Australia				R

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Graham, G, McKenzie, NL	2003	A conservation case study of Western Australia's Mitchell subregion (North Kimberley 1) in 2003	Department of Conservation and Land Management			56 pp	R
Graham, GR	1995	Status and distribution of the Golden Bandicoot Isodon auratus	Report to Environment Australia				R
Gray, JE	1827	Mollusca, Vol 2	In King, PP. narrative of a survey of the intertropical and western coasts of Australia, performed between the years 1818 and 1822. John Murray, London			474-496	B
Green, N	1985	aboriginal affiliations with the sea in Western Australia	In Grey FZ (ed) Traditional Knowledge of the marine environment in Northern Australia Workshop Proceedings.				P
Gregory, R	1994	Site patterning in the Ord-Victoria river region: a GIS database.	Australian Aboriginal Studies		2	51-58	B
Griffith, JK	2004	Scleractinian corals collected during 1998 from the Dampier Archipelago, Western Australia	In Jones, DS (ed) Marine Biodiversity of the Dampier Archipelago, Western Australia 1998-2002. Records of the Western Australian Museum	supplement No 66		101-120	J
Griffiths, S	1998	Coastal park management plan, Broome, Western Australia. Local Government Development Project "Town Planning for Aboriginal Culture an Heritage.	Broome, Western Australia. Shire of Broome				R
Grubba, T, Cary, J, Lapwood, M	2002	Rowley Shoals Marine Reserve monitoring program: establishment of long-term monitoring sites in benthic communities in Rowley Shoals Marine Park and Mermaid Reef National Nature Reserve in October 2001	Marine Conservation Branch, Department of Conservation and Land Management. Data report MMS/OSS/RSH-53/2002				R
Hacker, RB	198-	The problems and prospects of the Kimberley pastoral industry	Technical report (Western Australia. Dept. of Agriculture. Division of Resource Management)			55	R
Hacker, RB	1989	An evaluation of range regeneration programmes in Western Australia.	Australian Rangeland Journal	11	2	89-100	J
Hacker, RB, Tunbridge, SB	1991	Grazing management strategies for reseeded rangelands in the East Kimberley region of Western Australia.	Rangeland Journal	14		14-35	J
Hall, N, Brooker, I	1973	Kimberley white gum : Eucalyptus houseana W.V.Fitzg. ex Maiden	Forest Tree Series. Australian Government Public Service. Canberra				O

Author	Year	Title	Publication	Vol	No	Pages	Type
Hall, N, Brooker, I	1974	Kimberley yellowjacket : Eucalyptus lirata W.V.Fitzg. ex Maiden	Forest Tree Series. Australian Government Public Service. Canberra				O
Hall, R.	1902	Notes on a Collection of Bird-Skins from the Fitzroy River, North-Western Australia. Part I	Emu	1		87-112	J
Hall, R.	1902	Notes on a Collection of Bird-Skins from the Fitzroy River, North-Western Australia. Part II	Emu	2		49-68	J
Hall, R.	1903	Notes on a Collection of Bird-Skins from the Fitzroy River, North-Western Australia. Part III	Emu	3		40-43	J
Hall, R.	1908	Notes on a Collection of Birds from the Townsend River, North-Western Australia.	Emu	7		25-27	J
Hall, R. And Rogers, J.P.	1908	Notes on a Collection of Birds from North-West Australia.	Emu	7		138-143	J
Halpern Glick Maunsell Pty Ltd	1997	Derby Tidal Power Project, Doctors Creek, Kimberley : consultative environmental review	Report prepared for Derby Hydro Power Pty Ltd			105	P
Halse SA, Pearson G., Kay WR	1998	Arid Zone Networks in Time And Space: Waterbird Use of Lake Gregory in North-Western Australia	International Journal of Ecology and Environmental Sciences	24		207-222	J
Halse, SA, Shiel, RJ, Pearson, GB	1996	Waterbirds and aquatic invertebrates of swamps on the Victoria-Bonaparte mudflat, northern Western Australia	Journal of the Royal Society of Western Australia	79		217-224	J
Handasyde, T	2002	Botanical report for AQIS - NAQS survey, 12th-18th May, 2002. Buccaneer Archipelago - Karracatta Bay to Cockatoo Island	Department of Conservation and land Management				R
Handasyde, T, Start, AN, Done, C	2004	Distribution, abundance and taxonomic status of Typhonium species (Araceae) in the east Kimberley : report pertaining to $2000 BankWest Landscope Conservation Visa Card grant	BankWest Landscope Conservation Visa Card grant			29 leaves : col. ill, maps	R
Handasyde, T.	2005	Report on compilation of Kimberley biodiversity and natural resource management data and associated information.	Kimberley Regional Fire Management Project, Natural Heritage Trust				R
Hanley JR	1995a	Mangrove flora: distribution of species an habitat descriptions	In Wells, FE, Hanley JR and Walker DI. Survey of the Marine Biota of the southern Kimberley Islands. Western Australian Museum, Perth. Unpub report UR286			67-80	B

Author	Year	Title	Publication	Vol	No	Pages	Type
Hanley JR	1995b	Quantitative survey of mangrove invertebrates.	In Wells, FE, Hanley JR and Walker DI. Survey of the Marine Biota of the southern Kimberley Islands. Part 7. Western Australian Museum, Perth. Unpub report UR286			82-100	R
Hanley JR	1995c	Polychaetes	Wells, FE, Hanley JR and Walker DI. Survey of the Marine Biota of the southern Kimberley Islands Part 10. Western Australian Museum, Perth. Unpub report UR286			67-80	R
Hanley, Jr	1992	Polychaete worms	In Morgan GJ (ed) Survey of the aquatic fauna of the Kimberley Islands and Reefs, Western Australia. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report UR8				R
Harold G.		Fauna study: April-May 1980: Argyle diamond project for CRA Exploration - Ashton Joint Venture.	Unpublished Report for CRA - Ashton Joint Venture.				R
Harris, J	1990	Kimberley flora and fauna: the slide towards extinction	the Wilderness Society, WA				R
Harris, P	1988	Bushfire mapping using Landsat MSS images of the Drysdale National Park, the Kimberley, Western Australia.	Unpublished report, Curtin University.			1-24	R
Hart, A, Skepper, C, Joll, LM	1999	Growth of pearl oysters in the southern and northern areas of the pearl oyster fishery, and examination of environmental influences on recruitment to the pearl oyster stocks	Fisheries Research and Development Corporation (Australia) Perth. Western Australia Fisheries Department				B
Harvey, MS	2002	Short-range endemism among the Australian fauna: some examples from non-marine environments.	Invertebrate Systematics	16		555-570	J
Hassall And Associates Pty Ltd	1993	The Ord River Irrigation Project : past, present and future	Kimberley Water Resources Development Office				R
Hassan, LY	2000	Mineral occurrences and exploration potential of the east Kimberley	Report (Geological Survey of Western Australia)				R
Hawke, S	1991	National parks and conservation areas in Bunuba country : the Bunuba perspective : a report for the	Kimberley Land Council			41	R

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		Kimberley [i.e. Kimberley] Land Council					
Hay, A, Barrett, MD, Barrett, RL	1999	A new species of Typhonium (Araceae: Areae) from the west Kimberley, Western Australia	Nuytsia	13		243-245	J
Haynes, C	1987	Three interests together : land, Aborigines and tourists in national parks of north Australia : Aborigines and development in the east Kimberley :	Australian National University Public Affairs Conference			11 leaves	P
Haynes, CD	1985	The pattern and ecology of munwag: traditional Aboriginal fire regimes in north-central Arnhemland.	Proceedings of the Ecological Society of Australia	14		203-214	B
Haynes, Cod	1991	Use and impact of fire.	C.D. Haynes, M.G. Ridpath and M.A.J. Williams (eds.) Monsoonal Australia: landscape, ecology and man in the northern lowlands. A.A. Balkema, Rotterdam.			61-71	B
Head, L	1994	Landscapes socialized by fire: post-contact changes in Aboriginal fire use in northern Australia, and implications for prehistory.	Archaeology in Oceania	30		172-181	B
Head, LM, O'Neill, AL, Marthick, JK	1992	A comparison of Aboriginal and pastoral fires in the north-west Northern Territory	Pages 130-144il. Moffat and A. Webb (eds.) Conservation and development issues in north Australia. North Australian Research Unit. ANU Darwin.			130-144	B
Heap, A, Bryce, S, Ryan, D, Radke, L, Smith, C, Smith, R, Harris, P, Heggie, D	2001	Australian estuaries and coastal waterways: a geoscience perspective for improved and integrated resource management: a report to the National Land and Water Resources Austi theme 7: ecosystem health	Australian Geological Survey organisations				R
Hector, J.M., Lindner, R.K.	1989	A bioeconomic analysis of feral donkeys in the north Western Australia	Western Australian Agriculture Protection Board discussion paper			33	D
Helms, R	1897	East Kimberley	Journal of the Bureau of Agriculture, Western Australia	4		1283-1287, 1299-1303, 1306-1311	J
Hercock, M	1999	the impacts of recreation and tourism in the remote north Kimberley region of Western Australia	the Environmentalist	19		259-275	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Hernandez, T	1941	Social organization of the Drysdale River tribes, north-west Australia.	Oceania	12	3	211-232	B
Hewett, PN, Batini, FE	1972	Report on a visit to the north Kimberley region, October 23rd-27th, 1972				21, vi leaves, [16] : col. ill., maps	R
Hewitt, MA	1977	Crustaceans - non Caridean Decapods	In D Walker (ed). Marine Biological Survey of the Central Kimberley Coast, Western Australia. Part 7. University of Western Australia, Perth Unpub report. WA Museum Library U	UR3 77		58-66	R
Heyward, A, Rees, M, Cappo, M	2000	Summary of research sampling achieved and preliminary interpretations from a Scott Reef biological survey expedition, December 1999.	Australian Institute of marine Sciences. Interim Report to Woodside Energy Pty Ltd.				R
Heyward, AJ, Halford, A, Smith, L, Rees, M	1998	Temporal and spatial patterns of coral and fish assemblages at Scott Reef, 1994-1997	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Heyward, AJ, Halford, A, Smith, L, Williams, DMcB	1995	Coral reef ecosystems of north west Australia: long term monitoring of corals and fish at North Scott, South Scott and Seringapatam Reefs	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Heyward, AJ, Rees, M, Smith, L	1999	Scott Reef deeper lagoon habitat preview and recommendations for further assessments	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Hick, P, Scoones, R	1990	Satellite-derived imagery for water penetration and is relevance to fisheries in the Kimberley region of Western Australia: a collaborative research project between CSIRO, Broome Pearls Pty Ltd, and the Western Australian Fisheries Department	CSIRO Division of Exploration Geoscience, North Ryde				R
Hickey, R, Pearson, G, Piersma, T	2003	Maps, Mud and Birds	Geospatial Solutions			40-43	J
Hill, G.F.	1911	Field notes on the birds of Kimberley, north-west Australia	Emu	10		258-290	J
Hnatiuk, RJ		Population structure of Livistonia eastonii Gard., Mitchell Plateau, West Australia.	Australian Journal of Ecology	2		461-466	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Hnatiuk, RJ, Kenneally, KF	1981	A survey of the vegetation and floral of Mitchell Plateau, Kimberley, Western Australia	In Wilson, BR (ed) biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia. Part 1. Western Australian Museum Perth				B
Hoatson, D., And Others.		Bungle Bungle Range. Purnululu NP, East Kimberley. Western Australia: a guide to the rocks, landforms, plants, animals and human impact.					B
Hobson, RA	1930	Zebra rock from the East Kimberley	Journal of the Royal Society of Western Australia.	16		57-70	J
Holloway, PE	2001	A regional model of the semidiurnal intertidal tide on the Australian North West Shelf.	Journal of Geophysical research- Oceans	106		19625-19638	J
Holm, AMCR	1975	Kimberley pindan country - its management and improvement.	Rangeland Bulletin	22			J
Holm, AMCR, Allen, RJ	1988	Seasonal changes in the nutritive value of grass species in spinifex pastures of Western Australia.	Australian Rangeland Journal	10	1	60-64	J
Holm, AMR, D'Antuono, MF		Response by Stylosanthes hamata and S. scabra to phosphate on three soils in the north-Kimberley of Western Australia	Technical report (Western Australia. Dept. of Agriculture. Division of Resource Management)			14	R
Holmes, G	2004	Draft Kimberley Natural Resource Management Plan	Rangelands Natural Resource Management Group				R
Holt, JA, Coventry, RJ	1990	Nutrient cycling in Australian savannas.	Journal of Biogeography	18		427-432	J
Hooper, JNA, Kennedy, JA, Quinn, RJ,	2002	Biodiversity "hotspots" patterns of richness an endemism and taxonomic affinities of tropical Australian sponges	Biodiversity and Conservation	11		851-885	J
Hooper, N.		Bush-hen Gallinul oliacea in the Kimberleys, Western Australia.	The Australian Bird Watcher	11	7	243-245	J
Horstman, M	2001	Karparti ecology: recognition of Aboriginal ecological knowledge and its application to management in north-western Australia.	Ecological Management an Restoration	2		99-109	J
Horstman, M		Collaborative surveys of fish in the Fitzroy River, WA	Ecological Management and Restoration	2	3		J
Hosking, LFV	1933	Distribution of Devonian rocks in the Kimberley Division and description of a recent collection of Devonian fossils from the Kimberley Division	Journal of the Royal Society of Western Australia	19		67-77	J
How, R, Schmitt, L, Teale, R, Cowan,		Appraising vertebrate diversity on Bonaparte islands, Kimberley, Western Australia.					J

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M							
How, RA, Cowan, MA	2006	Collections in space and time: geographical patterning of native frogs, mammals and reptiles through a continental gradient.	Pacific Conservation Biology	12		111-133	J
Howard, M.		Birds observed on a visit to Bernier Island in September 1977.	The Western Australian Naturalist	14		50-51	J
Hudson, J, McGregor, W		How to spell words in south Kimberley languages [sound recording]				1 sound cassette	O
Hughes, JF	1977	Report of bushwalk : Prince Regent River Western Kimberley W.A.	Western Australia. Dept. Of Conservation And Land Management,			54 leaves, maps	R
Hughes, JF	1990	The Kimberley : the slide towards extinction	The Wilderness Society			23	O
Humphreys WF, How RA, Bradley AJ, Kemper CM, Kitchener DJ	1984	The Biology of Wyulda squamicaudata, Alexander 1919.	In Possums and Gliders			162-169	B
Humphreys, WF	1995	Limestone of the east Kimberley, Western Australia : karst and cave fauna	Western Australian Museum. Unpub report for the National Estate Grants Program			1 v. (various pagings) : col. ill.	R
Hunter, JT, Bruhl, JJ	1997	Three new species of Phyllanthus (Euphorbiaceae: Phyllanthaceae) for the Northern territory, one new species for Western Australia, and notes on other Phyllanthus species occurring in these regions.	Nuytsia	11	2	147-163	J
Hutchings, PA, Saenger, P	1987	Ecology of Mangroves	University of Queensland Press, Brisbane				B
Hutchins, JB	1995	Fish	In Wells, FE, Hanley JR, Walker DI (eds). Part 11. Survey of the Marine biota of the Southern Kimberly Islands. Western Australian Museum, Perth. Unpub Report	UR2 86		67-80	R
Hutchins, JB	1996	Fishes	In Walker, DI, Wells, FE, Hanley JR (eds). Marine Biological Survey of the Eastern Kimberley, Western Australia. Part 9. Western Australian Museum, Perth. Unpub report	UR3 53		75-83	R

Author	Year	Title	Publication	Vol	No	Pages	Type
Hutchins, JB	1998	Survey of the fishes of Ashmore Reef	Western Australian Museum of natural Science, Perth. Unpbublished report to Parks Australia, North, Darwin			51 pp	R
Hutchins, JB	1999	Biogeography of the nearshore marine fish fauna of the Kimberley, Western Australia.	In Seret, B and Sire, J-Y (eds) Proceedings of the Fifth Indo-Pacific Fish Conference, Noumea 1997. Society of French Ichthyologists, Paris			99-108	P
Hutchins, JB	2001	Biodiversity of shallow reef fish assemblages in Western Australia using a rapid censusing technique	Records of the Western Australian Museum,	20		247-270	J
Hutchins, JB, Morrison, S	1997	Fishes	In Walker D (ed) Marine biological Survey of the Central Kimberley Coast. Part 8. Western Australia. University of Western Australia. Unpub report. Way Museum Library	UR3 77		67-76	R
Hutchins, JB, Williams, DM, Newman, SJ, Cappo, M, Speare	1995	New records of fishes for the Rowley Shoals an Scott/Seringapatam Reefs off north western Australia	Records of the Western Australian Museum	17		119-123	J
Ing, B, Spooner, BM	1994	Myxomycetes from the Kimberley Region, Western Australia	Botanical journal of the Linnean Society	116		71-76	J
Ingleby S.		Distribution and status of the Spectacled hare-wallaby, *Lagorchestes conspicillatus.*	Wildlife Research	18		501-519	J
Isbell, RF	1986	Studies of Rangeland Soils in the North and East Kimberley Regions, north-west Australia. Part 1. Soil distribution and properties.	CSIRO Division of Tropical Crops and Pastures Technical Paper No. 28			2-42	R
J.S. Battye Library of West Australian History	1981	Selected bibliography of the natural history of the Kimberley region of Western Australia.	Library Board of Western Australia, Perth.				O
Jacobs, Sal	1992	New species of Triodia and Plectrachne (Poaceae) from the Kimberley	Nuytsia	8		219-223	J
Jacobs, SWL	1985	A new grass genus from Australia	Kew bulletin	40		659-661	J
Jacobs, SWL	2004	Thedachloa, a new grass genus (Gramineae: Paniceae) from the northern Kimberley , Western Australia	Telopea.	10		635-637	J
Jacquier, D	1999	Dampier peninsula tourism study	Public report				R

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Jaensch RP, Vervest, RM	1990	Waterbirds at remote wetlands in Western Australia, 1986-88. Part one: Lake Argyle and Lake Gregory.	RAOU report 32.				R
Jaensch RP, Vervest, RM	1990	Waterbirds at remote wetlands in Western Australia, 1986-88. Part Two: Lake Macleod, Shark Bay, Camballin Floodplain and Parry Floodplain.	RAOU report 69.				R
Jaensch, RP	1989	Birds of wetlands and grasslands in the Kimberley Division, Western Australia : some records of interest, 1981-88	RAOU report			25	R
Jaensch, RP		Little Bitterns Breeding in Northern Australia.	Australian Bird Watcher	12		217-221	J
Jaensch, RP	1972	Duck shooting [chart] : (north-west, Kimberley and eastern land divisions) January 1, 1973 to December 31, 1973 /	Department of Fisheries and Fauna			1 wall chart : col.	MA
Jenkins, CGH		Overland to the Ord River.	Emu	47		35-40	J
Jenner, KCS, Jenner, MN,	1994	a preliminary population estimate of humpback whales off Western Australia.	Centre for Whale Research, Perth				R
Jenner,KCS, Jenner, MNM, McCabe, KA	2001	Geographical and temporal movements of humpback whales in Western Australian waters	APPEA Journal	2001		749-765	J
Jennings, JN	1975	Desert dunes and estuarine fill in eh Fitzroy estuary, North-Western Australia	Catena	2		215-262	J
Jennings, Philip, Kimberley Pipeline Environmental Advisory Committee (W.A.)	1990	Development of a water pipeline, Kimberleys to Perth : preliminary feasibility and economic appraisal study : for the Water Authority of Western Australia / Infrastructure Development Corporation. - 2nd preliminary working draft					R
Johannson, KE	1918	Serpulimorpha, Anneliden	In Mortensen, TH (ed) Results of Dr. E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913. Part XX.				B
Johnston, HF	1885	Report on the survey of the Kimberley district during the year 1885, with other general information regarding Cambridge Gulf and the valley of the Ord River				3-8	R
Johnstone, RE	1981	Notes on the Distribution, Ecology and Taxonomy of the Partridge Pigeon (Geophaps smithii) and Spinifex Pigeon (Geophaps plumifera) in Western Australia.	Records of the Western Australian Museum	9	1	49-63	J
Johnstone, RE	1990	Mangroves and mangrove birds of Western	Records of the Western Australian	Supplement 32.			J

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		Australia.	Museum				
Johnstone, RE	1992	Note on the Distribution, Ecology and Taxonomy of the Peaceful Dove *Geopelia striata* in Western Australia.	The Western Australian Naturalist	19		p 10-17	J
Johnstone, RE, Kolichis, N		First description of the nest and eggs of the Black Grasswren Amytornis housei (Milligan) with notes on breeding.	Records of the Western Australian Museum	19		259-265	J
Johnstone, RE, Burbidge, AH	1991	The avifauna of Kimberley rainforests	In Kimberley rainforests of Australia. Surrey and Beatty			361-391	B
Jones, D, Hewitt, MA	1997	Barnacles (Cirripedia)	Walker, DI (ed) Marine Biological Survey of the Central Kimberley Coast, Western Australia. Part 11. University of Western Australia. Unpub Report. WA Museum Library	UR3 77		191-195	R
Jones, DS	1992	Barnacles	Morgan GJ (ed) Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Part VI Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report UR8	UR8		50-56	R
Jones, EM	1978	Plan of Wiluna-Kimberley stock route exploration by A.W. Canning L.S., 1906-7 [cartographic material] : also showing positions of wells constructed 1908-9-10	Scale ca. 1:475,200			1 map on 2 sheets	MA
Jones, R	2006	Report on the marine environment of the Kimberley region, Western Australia	Department of Fisheries				R
Jozwik, FX, Nicholls, AO, Perry, RA	1970	Studies on the Mitchell grasses.	In M.J.T. Norman (ed.) Proc. XI International Grassland Congress, Surfers Paradise, Queensland. April 1970. University of Queensland Press.			48-51	B
Juston, JG	1934	The physiography (geomorphology) of Western Australia.	Bulletin of the Geological survey of Western Australia	61		240	J
Kabay, ED	1975	A biological survey of the Drysdale River National Park, north Kimberley, Western Australia, in August 1975	slide collection Dept of Fisheries and Wildlife WA			468 slides	O

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Kabay, ED, Burbidge, AA	1977	A Biological Survey of the Drysdale River National Park, North Kimberley, WA in 1975.	Wildlife research bulletin, Western Australia	6		1-133	J
Karanovic, I, Mannonier, P	2002	on the genus Candonopsis (Crustacea:Ostracoda:Candoninae) in Australia with a key to the world recent species	Annalsed de limnologie	38	3	199-240	J
Karanovic, T	2004	The genus Metacyclops Miefer in Australia (Crustacea: Copepoda Cyclopoida),. With description of two new species	Records of the Western Australian Museum	22	3	193-212	J
Kay WR, Smith MJ, Pinder AM, Mcrae JM, Davis JA , Halse SA	1999	Patterns of distribution of macroinvertebrate families in rivers of north-western Australia.	Freshwater Biology	41		299-316	J
Keenan, CP, Lloyd, J, Newman, SJ, Ovenden, JR, Slater, LS	2002	Spatial genetic subdivision between northern Australian and Southeast Asian populations of Pristipomoides multidens: a tropical marine reef fish species	Fisheries Research	59	1	57-69	J
Keighery, G	1997	Preliminary report on the flora of the Jerremiah Hills and Nimbing Ranges, Western Australia	Department of Conservation and Land Management				R
Keighery, G	1999	Weed surveys in the Kimberley	Boab bulletin	35		3-4	J
Keighery, GJ, Gibson, N, Kenneally, K F	1995	Biological Inventory of Koolan Island. 1 flora and vegetation	WA Museum	17	1	237-248	J
Kendrick, PG, Rolfe, JK	1991	The reptiles and amphibians of Kimberley rainforests	In Kimberley rainforests of Australia. Surrey Beatty and Sons			347-359	B
Kenneally K.F.	1988	Grevillea donaldiana (Proteaceae), a new plant species from the Kimberley Division of Western Australia.	Western Australian Naturalist	147		111-117	J
Kenneally KF, Beard JS	1987	Rainforests of Western Australia.	In: Rainforest Legacy, Vol. 1: The nature, distribution and status of rainforest types. Australian Heritage Commission Special Publication Series 7: 289-304.				B
Kenneally, K	1996	The rugged coast	Landscope	12	2	10-16	J
Kenneally, K, Coate, K	1994	Birds and botany of the north Kimberley, expedition report 1994	Department of Conservation and Land Management Landscope Expeditions				J

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Kenneally, K, Coate, K, Gueho, R, Grosse, D	1994	Wildlife and wilderness of the east Kimberley: expedition report	Department of Conservation and land management. Landscope expeditions	5		8	J
Kenneally, K, McKenzie, NL	1991	Competing for paradise	Landscope. - Vol. 6, no. 4 (1991)	6	4	35-38	J
Kenneally, Kevin F.	2003	Acacia nilotica has reached the Kimberley!	Western wildlife	7	1	14	J
Kenneally, KF	1972	Kimberley Islands expedition	Swans	3	2	31-32	J
Kenneally, KF	1986	An index to W.V. Fitzgerald's annotated species list published in The botany of the Kimberleys, north-west Australia	Australian Systematic Botany Society newsletter.	46		1-7	J
Kenneally, KF	1988	Grevillea donaldiana (Proteaceae), a new plant species from the Kimberley division of Western Australia	Western Australian naturalist	17		111-117	J
Kenneally, KF	1989	Checklist of vascular plants of the Kimberley, Western Australia	Handbook (Western Australian Naturalists' Club)			108	B
Kenneally, KF	1991	An introduction to the flora of the Kimberley	Association of Societies for Growing Australian Plants : 16th biennial conference (1991)			3-8	P
Kenneally, KF	1993	Consett Davis : scientist, soldier, Kimberley collector and casualty of war	Western Australian naturalist.	19		74-83	J
Kenneally, KF	1996	Broome and beyond	Landscope	11	3	48-53	J
Kenneally, KF	1996	Common plants of the Kimberley	Bush Books. Department of Conservation and Land Management			72	B
Kenneally, KF	1995	Salomonia ciliata (Polygalaceae), a new generic plant record from the Kimberley, Western Australia	Western Australian naturalist	20		29-31	J
Kenneally, KF, Edinger, DC	1993	A botanical survey of Walcott Inlet, Kimberley, Western Australia	Western Australian naturalist.	19		84-99	J
Kenneally, KF, Edinger, DC, Willing, T	1996	Broome and beyond: Plants and people of the Dampier Peninsula, Kimberley, Western Australia	Landscope	11	3	48-53	J
Kenneally, KF, Keighery, GJ, Hyland, BPM	1991	Floristics and phytogeography of Kimberley rainforests, Western Australia	In Kimberley rainforests of Australia			93-131	B

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Kenneally, KF, Lewis, MR, Donaldson, M, Clement, C	1997	Aboriginal rock art of the Kimberley.	Proceedings of a seminar held at the University of Western Australia, Perth				P
Kenneally, KF, Lowrie, A	1994	Stylidium costulatum (Stylidiaceae), a new tropical species of triggerplant from the Kimberley, Western Australia and the lectotypification of S. floodii	Nuytsia	9		343-349	J
Kenneally, KF, McKenzie, NL	1989	Piecing together the remnants	Landscope	4	3	50-52	J
Kenneally, KF, McKenzie, NL	1991	Companion to Kimberley rainforests, Australia	Surrey Beatty and Sons, Chipping Norton			16	B
Kenneally, KF, Schneider, EL	1983	The genus Ondinea (Nymphaeaceae) including a new subspecies from the Kimberley region, Western Australia	Nuytsia	4		359-365	J
Kenyon, RA, Loneragan, NR, Manson, FJ, Vance, DJ, Venables, WN	2004	Allopatric distribution of juvenile red-egged banana prawns (Penaeus indicus H. Milne Edwards, 1837) an juvenile white banana prawns (Penaeus meruiensis De Man, 1888) and inferred extensive migration, in the Joseph Bonaparte, Gulf, northwest Australia	Journal of Experimental Marine Biology and ecology	309		79-108	J
Kerle, J.A.		Ecological comparison of three species of tree-rat on the Mitchell Plateau (includes other species trapped).	Unpublished report to the Science and Industry Endowment Fund.				R
Kesteven, S	1987	Guidelines for research into social impacts deriving from non-Aboriginal developments on Aboriginal land					U
Kija & Jaru People, Glenn Wightman, Joe Blythe.		Plants and Animals of Kija, Jaru country: Aboriginal knowledge conservation and ethnobiological research in the upper Ord catchment	Recorded with funding from Ord-Bonaparte Program and ATSIC Wunan Regional Council. Managed by the Kimberley Land Council and Kimberley Language Resource Centre.				O
Kija People, Glenn Wightman, Joe Blythe.		Kija ethnobotanical work.	Recorded with funding from Ord-Bonaparte Program and ATSIC Wunan Regional Council. Managed by the Kimberley Land Council and Kimberley Language Resource Centre.				O

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Kimber, PC, Forster, JE, Behn, GA	1991	Mapping Western Australian rainforests : an overview	Kimberley rainforests of Australia			37-40	B
Kimber, R	1983	Black lightning: Aborigines and fire in central Australia and the Western Desert.	Archaeology in Oceania	18	2	38-41	B
Kimberley Consulting Services	1997	Economic development strategy 1997-2010 : Kimberley region, Western Australia	Western Australia. Dept. Of Land Administration, Western Australia.				R
Kimberley Development Commission	1999	Kimberley region economic development strategy 1997-2010	Kimberley Development Commission				R
Kimberley Diamond Co NL	2002	Notice of intent Ellendale Diamond project	Kimberley Diamond Company				R
Kimberley Diamond Co NL	2005	Ellendale 4 Diamond Project West Kimberley Region WA- Environmental Protection Statement	Kimberley Diamond Company	1 and 2			R
Kimberley Language Resource Centre,	1991	The Kimberley [videorecording] : land of the Wandjina				1 videocassette (53 min.) : sd., col.	O
Kimberley NRM Strategist	2005	a plan for managing natural resources in the Kimberley	Rangelands Coordinating Group and Kimberley Resource Management Group				R
Kimberley Pastoral Industry Inquiry WA	1985	Kimberley Pastoral Industry Inquiry: Final report on an industry and government report on the problems and future of the Kimberley Pastoral industry	Department of Agriculture, Rangeland Management Branch				R
Kimberley Regional Development Advisory Committee	1986	Kimberley regional profile : Western Australia	Department of Regional Development and the Northwest, WA			36 : maps (some col.)	R
Kimberley Regional Fire Management Project.		Sustainable Fire Management For The Kimberley Region Of Western Australia	Report of the Kimberley Regional Fire Management Project. (Natural Heritage Trust project no. 013005E).				R

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Kimberley Society	1996	Extracts from the diary of the Kimberley Society coastal excursion (Broome to Port Warrender, Admiralty Gulf, Western Australia, 17-30 May 1996)	Kimberley Society			20	O
Kimberley Tourism Association,	1987	Lake Kununurra foreshore draft management plan					R
Kimberley Tourism Association, Western Australia. Dept. Of Conservation And Land Management	1987	Broome and the west Kimberley : practical tourism issues : May-June 1987				131	R
Kimberley Water Resources Development Office	1993	Report of the Kimberley Water Resources Development Advisory Board	Kimberley Water Resources Development Office (W.A.)			46 : maps	R
King, PP	1827	Narrative of a survey of the intertropical and western coasts of Australia, performed between the years 1818 and 1822.	John Murray London				B
Kirkman, H	1997	Seagrasses of Australia: state of the Environment Technical Paper Series (Estuaries and the Sea)	Department of the Environment, Canberra				R
Kitchener D.J.	1978	Mammals of the Ord River area, Kimberley, Western Australia.	Records of the Western Australian Museum	6		189-219	J
Kitchener, D. J.	1976	Eptesicus douglasi, a new vespertilionid bat from Kimberley, Western Australia	Records of the Western Australian Museum.	4		295-301	J
Kitchener, D. J., Sanson, G.,	1988	A new species of false antechinus (Marsupialia: Dasyuridae) from the Kimberley, Western Australia	Records of the Western Australian Museum	14		61-71	J
Kitchener, DJ	1971	A biological survey of the Ord River Basin	Western Australian Museum				R
Kitchener, DJ, Humphreys, WF	1985	Description of a new species of Pseudomys (Rodentia: Muridae) from the Kimberley region, Western Australia / D.J. Kitchener & W.F. Humphreys	Records of the Western Australian Museum	12		419-434	J
Kitchener, DJ, Humphreys, WF,	1991	Our Kimberley carnivores	Landscope.	6	4		J
Kitchner, DJ, Sanson, G	1977	Petrogale burbidgei (Marsupialia: Macropodidae), a new rock wallaby from Kimberley, Western Australia	Records of the Western Australian Museum	6		269-285	J
Klepacki, Nm, Black, Sj,	1985	Impact of petroleum exploration activity on range resources and pastoral pursuits in the West	Department of Agriculture Division of Resource Management. Technical Report	41			R

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Marchant, MHz		Kimberley.					
Koch, LE	1957	East Kimberley butterflies	Western Australian naturalist	6		83-84	J
Kohen, JL	2003	Proceedings of the 2nd Biannual Kimberley Fire Forum : held at Brumby Base, El Questro Wilderness Park, East Kimberley, Western Australia 3-6 May 2001				124	P
Kraatz, M	2000	Managing for healthy country in the VRD	Tropical Savannas CRC, Darwin				R
Kubicki, A.	1975	A survey of land suitable for Townsville stylo in the north Kimberley of W.A., 1973	Kimberley Prawn Company, Western Australia. Environmental Protection Authority			167	B
Lacey, CJ, Walker, J, Noble, IR	1982	Fire in Australian tropical savannas.	In B.J. Huntley and B.H. Walker (eds). Dynamics of Savanna Ecosystems. Springer-Verlag, Berlin.			246-272	B
Lambert, J, Elix, J	2004	Report on Roebuck Bay value mapping project	Prepared for WWF and the National shorebird Conservation Project. Fairlight, NSW				R
Landvision, Kimberley Consulting Services	1997	Waterbank structure plan : a discussion paper : prepared for the Department of Land Administration and the Waterbank Station Co-ordinating Committee	Western Australian Planning Commission			86	R
Lane, B	1988	Wader expeditions to northern Australia in 1986.	RAOU Report 42.			Jan-33	R
Laws, AT	1984	Broome hydrogeological map preliminary report	West Australia Geological Survey Hydrogeology Report No 2681				R
Lazarides, M	1997	A revision of Triodia including Plectrachne (Poaceae, Eragrostidae, Triodiinae	Australian Systematic Botany	10		381-489	J
Lenegan, G	1988	The Kimberley and fire.	Bush Fires Board of W.A. report				R
Leprovost Dames and Moore	1999	Kimberley aquaculture development strategy lake Argyle Barramundi aquaculture industry: strategic environmental review	Dept of Fisheries				R
Lewis, HT	1989	Ecological and technological use of fire: aborigines versus park rangers in northern Australia.	American Anthropologist	91		940-961	J

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Lewis, Ht	1985	Burning the "Top End": kangaroos and cattle.	J.R. Ford (ed.). Fire Ecology and Management in Western Australian Ecosystems. Proceedings of Symposium held in Perth May 10-11 1985. Western Australian Institute of Technology.				P
Lewis, HT	1992	The technology and ecology of nature's custodians: anthropological perspectives on aborigines and national parks.	In: J. Birckhead, T. De Lacy and L. Smith (eds), Aboriginal involvement in parks and protected areas. Proc. conf. at Charles Sturt University, 22-24 July 1991, Aboriginal Studies Press, Canberra.			15-28	B
Lewis, HT	1994	Management fires vs. corrective fires in northern Australia: an analogue for environmental change.	Chemosphere	30	5	949-963	B
Limpus, CJ	2002	Western Australian Marine Turtle Review	Department of Conservation and Land Management				R
Lindgren, E.	1967	Possible nesting of the White-quilled Rock Pigeon in the Kimberley Region of Western Australia.	The Emu	66	4	383-386	J
Livesey, NJG	1993	Eighty Mile Beach Area: supporting documentation for inclusion on the register of the National Estate	Report to the Australian Heritage Commission and the Heritage Council of WA. Murdoch University				R
Livesey, NJG	1994	Roebuck Bay Area: supporting documentation for inclusion on the register of the National Estate	Report to the Australian Heritage Commission and the Heritage Council of WA. Murdoch University				R
Livesey, NJG, Harris, J, Brash, SJ	1994	Roebuck Bay and associated wetland systems: supporting documentation for inclusion on the register of the National Estate	Report to the Australian Heritage Commission and the Heritage Council of WA. Murdoch University				R
lohn, EM	1984	Geology of the Broome and Roebuck Plains area	In Benterrak, K, Muecke, S, Roe, P (eds) Reading the Country introduction to nomadology. Fremantle Arts Centre Press				B
Loneragan, N, Die, D, Kenyon, R,	2002	The growth, mortality, movements and nursery habitats of red-legged banana prawns (Pen aeus indicus) in the Joseph Bonaparte Gulf	Finalr Report to the FRDC. Project 97/105. CSIRO marine research and mathematical and information sciences				B
Love, JRB	1936	extracts	Stone-age bushmen of today, Blackie & Son, Glasgow.				B
Lowrie, A	1996	An epic journey to the Mitchell Plateau, Mitchell River, Mount Trafalgar, Roe River and Cape	Bulletin of the Australian Carnivorous Plant Society	15	3	12-17	J

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		Bougainville					
Lowrie, A	1996	An epic journey to the Mitchell Plateau, Mitchell River, Mount Trafalgar, Roe River and Cape Bougainville. Part 2	Bulletin of the Australian Carnivorous Plant Society	15	4	6-12	J
Lowrie, A	1996	Drosera kenneallyi (Droseraceae), a new tropical species of carnivorous plant from the Kimberley, northern Western Australia	Nuytsia	10		419-423	J
Lowrie, A	1996	New species in Drosera section Lasiocephala (Droseraceae) from tropical northern Australia	Nuytsia	11		55-69	J
Lowrie, A	1994	Drosera ordensis (Droseraceae), a new tropical species of carnivorous plant from northern Australia.	Nuytsia	10	3	363-367	J
Lowrie, A	1997	Drosera paradoxa (Droseraceae), a new species from northern Australia	Nuytsia	11		347-351	J
Lowrie, A, Kenneally, KF	1996	Stylidium fimbriatum (Stylidiaceae), a new tropical species of triggerplant from the Kimberley, Western Australia	Nuytsia	10		425-427	J
Ludwig, JA, Eager, RW, Williams, RJ, Lowe, LM,	1999	Declines in vegetation patches, plant diversity, and grasshopper diversity near cattle watering-points in the Victoria River District, northern Australia.	Rangeland Journal	21	1	135-149	J
Ludwig, JA, Tongway, DJ, Eager, RW, Williams, RJ, Cook, GD	1999	Fine-scale vegetation patches decline in size and cover with increasing rainfall in Australian savannas	Landscape Ecology	14		557-566	J
Mackie, MC, Lewis, PD, Gaughan, DJ, Newman, SJ	2005	Variability in spawning frequency and reproductive development of the narrow-barred Spanish mackerel (Scomberomorus commerson) along the west coast of Australia	Fishery Bulletin	103	2	344-354	J
MacNae, W	1968	A general account of the fauna and flora of mangrove swamps and forests in the Indo-West Pacific region	Advanced Marine Biology	35		73-270	J
Maiden, JH, Cheel, E, Hamilton, AA	1918	Sequential list of Dr. Basedow's plants from north-west Australia	Proceedings of the Royal Geographical Society of Australasia (S.A. Branch). - 1916-1917	18		1-3	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Mangglamarra, G, Burbidge, AA, Fuller, PJ	1991	Wunambal words for rainforest and other Kimberley plants and animals.	In: N.L. McKenzie, R.B. Johnstone, and P.G. Kendrick (eds.) Kimberley rainforests. Surrey Beatty & Sons, Chipping Norton, UK.			413-421	B
Marais, JP	1996	A critical evaluation of the alkane technique.	Bulletin of the Grassland Society of South Africa	7		Suppl. 1: 4-6	J
Marcus, E	1920	Bryozen	In Mortensen, TH (ed) Results of Dr. E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913. Part XXIV.				B
Marine Ecosystems Branch	2006	Pilbara coastal water quality consultation outcomes environmental values and environmental quality objectives	Department of Environment				R
Marsh, H, Penrose, H, Eros, C	2003	A future for the dugong?	In Gales, N, et al (eds) Marine mammals, Fisheries, Tourism and Management issues. CSIRO Publishing				B
Marsh, H, Penrose, H, Eros, C, Hugues, J	2001	Dugong: status reports and action plans for countries and territories	United Nationals Environmental Programme, Cambridge.				R
Marsh, LM	1992	Echinoderms	In Morgan GJ (ed) Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Part II. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report UR8			15-22	R
Marshall, KJ	1986	Shell collecting activities for Kimberley, Pilbara regions	Department of Conservation and Land management				R
Martin, HA, McMinn, A	1994	Late Cainozoic vegetation history of north-western Australia, from the palynology of a deep sea core (ODP Site 765).	Australian Journal of Botany	42		95-102	J
Maslin, BR, Weston, AS	1993	Acacia setulifera : a new Kimberley record of a rarely collected northern Australian wattle	Western Australian naturalist	19		243-246	J
Mason, B	1987	Australites from the Kimberley region, Western Australia	Journal of the Royal Society of Western Australia.	69		5-6	J
Mathai, G	1928	A monograph of the recent meandroid Astraeidae.	Catalogue of the Madreporarian corals in the British Museum (Natural History)	7		1-288	M

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Mathews, G	1909	List of Birds Observed on Parry's Creek, North-West Australia.	The Emu	9		238-241	J
Mathews, GM	1909	On the Birds of North-West Australia.	Emu	9		1-111	J
May, JE and McKenzie, NI	2003	A biodiversity audit of Western Australia's 53 biogeographical subregions in 2002	Department of conservation and land management, Perth				B
McArthur, SR, Chamberlain, HJ, Phelps, DG	1994	State and transition models for rangelands. 12. A general state and transition model for the mitchell grass, bluegrass-browntop and Queensland bluegrass pasture zones of northern Australia.	Tropical Grasslands	29		274-278	J
McArthur, WM, Wright, MJ	1967	Atlas of Australian soils. Sheet 9, Broome, Brunswick Bay and western portions of Darwin, Halls Creek area [cartographic material] - Scale 1:2 000 000|Kimberley area	Kimberley Water Resources Development Office (W.A.), Geological Survey Of Western Australia			map	Map
Mcarthur, WM, Wright, MJ, Northcote, KH	1983	Argyle Diamond Project : report and recommendations by the Environmental Protection Authority	Bulletin (Western Australia. Dept. of Conservation and Environment)			21	R
McCartney R.		Fire trials at Derby Dept. of Agriculture 'Pindan block'.	Unpublished.				R
McCartney, R	1991	A review of plant introductions to the Kimberley.	Department of Agriculture Miscellaneous Publication No. 30/91				R
McCulloch, K	2001	The impact of differing cattle grazing intensities on ants at Kachana in the east Kimberley, Western Australia				80	R
McDonald, M, Morse, J	1994	Seed collections of dry-zone acacias in the Kimberley region and the Tanami Desert, 1993	Australian Tree Seed Centre, Canberra			45 pp	B
McDonald, Mw, Maslin, Br	1997	Acacia colei var. ileocarpa (Leguminosae: Mimoisoideae), a new taxon from the tropical dry-zone of north-west Australia.	Nuytsia	11	2	219-223	J
McGonigal, NL	1990	The Australian Geographic Book of the Kimberley	Australian Geographic Pty Ltd, NSW				B
McKenzie, N	1992	King Leopold's treasures	Landscope.	7	3	43-47	J
McKenzie, N, Kenneally, K, Done, C, Griffin, T	1992	King Leopold's treasures	Landscope	7	3	44-47	J
McKenzie, N, Kenneally, K, Winfield, C	1987	W.A.'s Rainforests	Landscope	4	2	16-22	J

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McKenzie, NL	1981	Wildlife of the Edgar Ranges area, south-west Kimberley, Western Australia	Wildlife research bulletin, Western Australia	10		71 pp	R
McKenzie, NL	1983	Wildlife of the Dampier Peninsula, south-west Kimberley, Western Australia	Wildlife research bulletin, Western Australia			pp (some col.), maps	R
McKenzie, NL	1991	An ecological survey of tropical rainforests in Western Australia : background and methods	In NL McKenzie, RB Johnston, G Kendrick (eds). Kimberley rainforests of Australia. Surrey Beatty and Sons			1-26	B
McKenzie, NL	1981	Mammals of the Phanerozoic south-west Kimberley, Western Australia : biogeography and recent changes	Journal of biogeography	8		263-280	J
McKenzie, NL and Belbin, L	1991	Kimberley rainforest communities: reserve recommendations and management considerations.	in Kimberley Rainforests Australia, Eds McKenzie, Johnston, Kendrick. 1991 Surrey beatty & Sons			xiv, 490	B
McKenzie, NL, Dyne, GR	1991	Earthworms of rainforest soils in the Kimberley, Western Australia	In Kimberley rainforests of Australia			133-144	B
McKenzie, NL, Belbin, L	1991	Kimberley rainforest communities : reserve recommendations and management considerations	In: McKenzie, NL (ed) Kimberley rainforests of Australia			p. 453-468 : maps	B
McKenzie, NL, Burbidge, AA, Baynes, A		Australian mammal map : conlilurus penicillatus, Pseudomys nanus, Zyzomys argurus, Hipposideros stenotis, Nyctophilus bifax, Dasyurus hallucatus, Planigale ingrami, Planigale maculata, Sminthopsis butleri, Pteropus alecto, Saccolaimus flaviventris, Scotorepens greyii, Vespadelus douglasorum, Bettongia penicillatga, Lagochestes asomatus, Petrogale burbidgei, Petrogale concinna, Petaurus breviceps, Isodon auratus, Isodon macrourus, Macrotis lagotis, Petropseudes dahli					M
McKenzie, NL, Fontanini, L, Lindus, NV, Williams, MR	1995	Biological inventory of Koolan Island, WA: Zoological notes	Records of the Western Australian Museum	17		249-266	J
McKenzie, NL, Johnston, RB, Kendrick, PG	1991	Kimberley rainforests of Australia	Surrey Beatty and Sons, Chipping Norton				B

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McKenzie, NL, May, JE, McKenna S	2003	Bioregional summary of the 2002 Biodiversity audit for Western Australia.	Department of Conservation and Land Management, Perth				R
McKenzie, NL, Rolfe, JK	1986	Structure of bat guilds in the Kimberley mangroves, Australia	Journal of Animal Ecology	55		401-420	J
McLaughlan, NE	1960	Fauna reports : report on the patrol in the east and west Kimberley land division Sept 6 - Oct 8 1960	Department of Fisheries				R
McLaughlan, NE	1962	Fauna reports : report on the patrol in the Kimberley land division, August, 1962	Department of Fisheries				R
McLoughlin, RJ, Davis, TLO, Ward, TJ	1988	Sedimentary provinces, and associated bedforms and benthos on the Scott Reef-Rowley Shoals platform off north-west Australia	Australian journal of marine and freshwater research	39	2	133-144	J
McNamara, KJ, Wyre, GJ	1992	The conservation, management and farming of crocodiles in Western Australia	Department of Conservation and Land Management				R
Mcnee, S.A., Collins, B.G		A survey of Gouldian Finch breeding sites in the East and West Kimberley during 1992.	Consultancy report to Zapopan NL and NSR Environmental Consultants.				R
Mees, G.F.	1959	A Historical Note on the Grey-Headed Honey-Eater, Meliphaga Keartlandi.	Western Australian Naturalist	10		95-97	J
Mees, GF	1964	Stubble Quail in the Kimberley Division of Western Australia.	Emu	63		339	J
Meister, R	2004	Sustainable tourism development on the Dampier peninsula. Planning the future-respecting the past.	A scoping study prepared for the Dampier Peninsula Indigenous Tourism Association				R
Messel, H, Burbidge, AA, Fuller, PJ	1987	Tidal waterways of the Kimberley surveyed during 1977, 1978 and 1986	Surveys of tidal waterways in the Kimberley region, Western Australia and their crocodile populations: monograph			357 pp	B
Messel, H, Burbidge, AA, Wells, GA, Green, AS	1977	The status of the salt water crocodile in some river systems of the North-West Kimberley, Western Australia.	Report Department of Fisheries and Wildlife, Western Australia	24		1-50	J
Miles JM, Burbidge A.A.	1975	A biological survey of the Prince Regent River Reserve, Northwest Kimberley, Western Australia.	Wildlife Research Bulletin Western Australia (Department of Fisheries, Perth)	3		1-115	J
Mills, LJ, Adam, P	1986	Annual rainfall characteristics of the Kimberley region.	Water Authority of Western Australia, Water resources Directorate. Report No. WH 9, February 1986				R

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Ministry for Planning, Kimberley Development Commission	2000	Kununurra-Wyndham area development strategy : prepared for the Kununurra-Wyndham Area Development Strategy Steering Committee	WA Planning Commission				R
Minton, SA, Heatwole, H		Sea snakes from three reefs of the Sahul Shelf					B
Morgan, A.M.		A Trip to North-West Australia.	South Australian Ornithologist	6		103-133	J
Morgan, DL, Allen, MG, Bedford, P, Horstman, M	2004	Fish fauna of the Fitzroy River in the Kimberley region of Western Australia including the Bunuba, Gooniyandi, Ngarinyin, Nyikina and Walmajarri	Records of the Western Australian Museum	22	2	147-161	J
Morgan, G	2001	Landscape health in Australia. A rapid assessment of the relative condition of Australia's bioregions and subregions	Environment Australia and National Land And Water Resources Audit				R
Morgan, GJ	1990	A collection of Thalassinidea, Anomura and Brachyura (Crustacea; Decapoda) from the Kimberley region of the north-western Australia.	Zoologische Verhandelingen	265		1-90	J
Morgan, GJ	1992	Decapod crustaceans	Morgan GJ (ed) Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Part V. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report UR8			43-49	R
Morgan, GJ	1992	Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991.	Western Australian Museum, Perth. Unpublished report	UR8			R
Morgan, JF	1955	Report on central North Kimberley Region	Department of Lands and Surveys				R
Morgan, JF	1955	Report on central north Kimberley region	Dept. of Lands & Survey, WA.			68 , maps	R
Mortensen, TH	1918	Results of Dr. E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913.					B
Morwood, M. J.	1998	Prawn farm, Doctors Creek, Derby : Kimberley Prawn Company: report and recommendations of the Environmental Protection Authority	Bulletin (Western Australia. Environmental Protection Authority)				R

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Morwood, MJ	1997	The Asian connection : preliminary report on Indonesian trepang sites on the Kimberley coast, NW Australia	Archaeology in Oceania	32		p. 192-206	J
Mott, JJ, Andrew, MH	1992	Fire, stability and nutrients in the monsoon tallgrass savannas of Australia.	Proceedings of the Fifth Queensland Fire Research Workshop, Charleville, Sept. 1992.			44-51	P
Mott, JJ, Williams, J, Andrew, MH, Gillison, AN,	1985	Australian savanna ecosystems.	In J.C. Tothill and J.J. Mott (eds.) Ecology and management of the world's savannas. Australian Academy of Science, Canberra.			56-82	B
Mowaljarlai, David, Malnic, Jutta,	1993	Yorro Yorro : everything standing up alive : spirit of the Kimberley				xviii, 226 p. : ill. (some col.), maps	O
National Land And Water Resources Audit	2002	Australian terrestrial biodiversity audit 2002	National land and waters resources audit 2002, Commonwealth government Canberra				R
National River Health Program, Environmental Flows Initiative.		Productivity and Water Flow Regulation in the Ord River.	Progress Report 1.				R
Nel, S	1996	Kimberley aquaculture development plan	Department of fisheries, WA				R
Nevill, S.		Where to watch birds, Kimberley birding.	Wingspan	15		20-22	J
Newman, S	1999	Red emperor, goldband snapper in Kimberley tagging program	Western Fisheries Magazine	Winter		32-33	J
Newman, SJ, Dunk, IJ	2002	Growth, age validation, mortality and other population characteristics of the Red emperor snapper, Lutjanus sebae (Cuvier 1828) off the Kimberley coast of north-western Australia	Estuarine, coastal and Shelf Science	55	1	67-80	J
Newman, SJ, Dunk, IJ	2003	Age validation, growth, mortality and additional population parameters of the goldband snapper (Pristipomoides multidens) off the Kimberley coast of Northwestern Australia	Fishery Bulletin	101	1	116-128	J
Newman, SJ, Dunk, IJ	2003	Growth, age validation, mortality and other population characteristics of the goldband snapper, (Pristipomoides multidens) off the Kimberley coast of north-western Australia	Fishery Bulletin	101	1	116-128	J

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Newman, SJ, Jenke, J, Steckis, RA, Dunk, IJ, Williamson, PS	2001	Stock assessment of the outer-shelf species in the Kimberley region of tropical Western Australia	Department of Fisheries, WA				R
Newman, SJ, Skepper, CL, Williamson, PC	2004	Spatial distribution of commercial, recreational and charter vessel catch and effort data.	In Characterisation of the inshore fish assemblages of the Pilbara and Kimberley coasts. Department of Fisheries				R
Newman, SJ, Young, GC, Potter, IC	2004	Characterisation of the inshore fish assemblages of the Pilbara and Kimberley coasts.	Department of fisheries, WA. FRDC Report Project 2000/132				B
Norman, MJT, Wetselaar, R	1960	Losses of nitrogen on burning native pasture at Katherine, N.T.	Journal of the Australian Institute of Agricultural Science	27		262-273	J
North, AJ	1898	List of Birds Collected by the Calvert Exploring expedition in Western Australia.	Transactions of the Royal Society of South Australia.	22		125-192	J
Novelly, P, Baird, P	2001	A process for re-assessing the potential carrying capacity of Kimberley pastoral leases.	Proceedings of the Northern Australia Beef Industry Conference	0		41-47	P
Nowara, GB, Newman, SJ	2001	A history of foreign fishing activities and fishery independent surveys of the demersal finfish resources in the Kimberley region of Western Australia	Department of fisheries, WA. Research Report	125			R
Nowara, GB, Newman, SJ	2001	A history of foreign fishing activities and fishery-independent surveys of the demersal finfish resources in the Kimberley region of Western Australia	Fisheries research report No. 125. Fisheries Western Australia			184pp	R
Nunn, WM	1958	Pasture regeneration in east Kimberley	Bulletin (Western Australia. Dept. of Agriculture)	2501		6	J
O'Connor, A	1987	Kimberley Region Planning Study : Conservation and Reserves Seminar	Western Australia. State Planning Commission. Working paper			31	R
O'Connor, S	1999	A diversity of coastal economies: shell mounds in the Kimberley region in the Holocene	In J Hall, IJ McNiven (eds) Australian coastal Archaeology. Research papers in Archaeology and Natural History. The Australian National University, Canberra.	31			B
O'Connor, S, Veth, P	1993	Where the desert meets the sea: a preliminary report of the archaeology of the southern Kimberley coast	Australian Archaeology	37		25-34	J
O'Connor, S, Veth, P	1999	30,000 years of aboriginal occupation: Kimberley North West Australia	The Australian National University. Canberra.				O

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Odhner NAJD	1917	Mollusca, Vol 2	In Mortensen, TH (ed) Results of Dr. E. Mjobergs Swedish Scientific Expeditions to Australia, 1910-1913. Part XVII.				B
Office of the North West		Resources and services of the Kimberley region of Western Australia	Office of the North West			1 v. (various pagings) : maps	O
Officer, H.R.		Northern Kimberley Birds.	The Australian Bird Watcher	5	6	191-195	J
O'Grady, AP, Eamus, D, Hutley, LB	1999	Transpiration increases during the dry season: patterns of tree water use in eucalypt open-forests of northern Australia.	Tree Physiology	19		591-597	J
Old Timer	1987	The nostalgic naturalist	Landscope.	2	3	28	J
O'Neill, AL, Head, LM, Marthick, JK	1993	Integrating remote sensing and spatial analysis techniques to compare Aboriginal and pastoral fire patterns in the East Kimberley, Australia.	Applied Geography	14		67-85	J
Orr, DM	1975	A review of Astrebla (Mitchell grass) pastures in Australia.	Tropical Grasslands	10		21-36	J
Ovenden, JR, Lloyd, J, Newman, SJ, Keenan, CPO, Slater, Ls	2002	Spatial populations of Prisipomoides multidens: a tropical marine reef fish species.	Fisheries Research	59		57-69	J
Palmer C.	2004	Sustainable Fire Management For The Kimberley Region Of Western Australia	Report of the Kimberley Regional Fire Management Project. (Natural Heritage Trust project no. 013005E),				R
Paraku People.		Ethnobotanical knowledge recorded for the Paraku Indigenous protected Area.	Recorded for the Paraku people with assistance from G. Wightman and T.Vernes.				O
Partridge, T.B.		Looking at the impact of fire on vertebrate species in Purnululu NP.	PhD In progress				T
Partridge, TB	1987	Kimberley visit : June 1987 : report on the visit by Fire and Environmental Protection Branches to Kimberley Region in June 1987					R
Partridge, TB	2001	Fire and fauna of Mirima National Park, east Kimberley	Honours project, Macquarie University				T

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Paton, CJ, Rickert, KG	1989	Burning, then resting, reduces wiregrass (Aristida spp.) in Black Speargrass pastures.	Tropical Grasslands	24		211-218	J
Payne, Al	1974	Key plants in Kimberley pastures.	Rangeland Bulletin	16			J
Payne, Al , Western Australia Department of Agriculture	1979	A report on erosion and range condition in the west Kimberley area of Western Australia	Technical bulletin (Western Australia. Dept. of Agriculture)			51	R
Payne, AL, Hacker, RB	1983	Pastoral land degradation: the Fitzroy as a case study.	Journal of Agriculture	24	2	70-72	J
Payne, AL, Kubicki, A, Wilcox, DG	1974	Range condition guides for the West Kimberley Area, W.A.				141	O
Payne, AL, Kubicki, A. Wilcox, DG.		Classification of pastoral potential [cartographic material] : Kimberley region. Scale 1:500 000|Maps showing pastoral potential in the Kimberley region, Western Aust	Rangeland Management Branch, Dept. of Agriculture, Western Australia. -				MA
Pearce, D, Jackson, A, Braithwaite, R	1996	Aboriginal people of the tropical savannas: resource utilization and conflict resolution/	In: A. Ash (ed) The Future of Tropical Savannas: An Australian Perspective, CSIRO Australia			88-103	B
Pearce, K	2004	Camaenid land snails in the east Kimberley	WATSNU	11	1	1-2	J
Pearce, K.	1972	Our diminishing heritage : Kimberley planigale : Planigale subtillissima	Swans	3	3	72-73	J
Pedretti, YM, Paling, EI	2001	WA mangrove assessment project 1999-2000	Murdoch University, Perth				R
Pen, Ely	1996	The value of fringing vegetation on natural drainage lines.	Land Management Society Newsletter (April 1996)			4-7	j
Penn, JW, Dybdahl, R	1988	A research vessel survey of pearl oyster and prawn resources north-west of Broome Western Australia.	Fisheries report	81			R
Pepping, M, Piersma, T, Pearson, G, Lavaleye, M	1999	Intertidal sediments and benthic animals of Roebuck Bay Western Australia> report of the Roebuck Bay intertidal benthic mapping programme, June1997 (ROEBIM-97)	Netherlands Institute for Sea Research (NIOZ)				B
Petheram, R., Kok, B	1986	Plants of the Kimberley region of Western Australia	University of Western Australia Press				B

Author	Year	Title	Publication	Vol	No	Pages	Type
Pettit, N	1999	Natural regeneration of riparian vegetation in Western Australia.	Rip-Rap	0		8-10	J
Phelps, DG, Bosch, OJH	2002	A quantitative state and transition model for the Mitchell grasslands of central western Queensland.	Rangeland Journal	24	2	242-267	J
Phillips, RD	2004	Population structure of the Western Rainbow Fish Melanotaenia australis in the east Kimberley	Honours thesis. University of Western Australia				T
Pickup, G, Bastin, GN	1997	Spatial distribution of cattle in rangelands as detected by patterns of change in vegetation cover.	Journal of Applied Ecology	34		657-667	J
Piddington, M, Piddington, R	1932	Report of field work in north-western Australia.	Oceania			342-	B
Piele, AAR	1980	Preliminary notes on the ethno-botany of the Gugadja Aborigines at Balgp, Western Australia. (No. 3)	Western Australian Herbarium Research Notes			59-64	O
Piersma, T, Pearson, G, Hickey, B, Lavaleye, M, Rogers, D	2002	preliminary research report: southern Roebuck Bay invertebrate and bird mapping	Broome bird Observatory				B
Piersma, T, Pearson, G, Hickey, R, Laveleye, M, Rogers, D	2002	Southern Roebuck bay invertebrate and bird mapping 2002	Preliminary research report, Broome Bird Observatory				R
Piersma, T, Pearson, G, Lavaleye, M	1998	the teeming mud of Roebuck Bay	Landscope	13		16-22	J
Playford, P. E.	1960	Aboriginal rock paintings of the west Kimberley region, Western Australia	Journal of the Royal Society of Western Australia.	43		p. 111-122	J
Portlock, C, Graham, G, Done, C, Gilmour, J and Williamson, J	2001	Kimberley Region Draft Regional Management Plan	Department of Conservation and Land Management. Unpublished report				R
Pratchett, D		The Ord Regeneration area: a short history	unpublished notes				O
Price, O, Bowman, DDMJ	1994	Fire-stick forestry: a matrix model in support of skilful fire management of Callitris intratropica R.T. Baker by north Australian Aborigines.	Journal of Biogeography	22		573-580	B

Author	Year	Title	Publication	Vol	No	Pages	Type
Prince, RIT	1986	Dugong in northern waters of Western Australia 1984	Conservation and Land Management. Technical Report 7				R
Prince, RIT	1994	Status of the western Australia marine turtle populations, : the Western Australian Marine Turtle Project 1986-1990	In Proceedings of the Australian marine turtle conservation workshop. Sea world Nara Resort, Gold Coast. Australian Nature Conservation Agency				P
Prince, RIT	1998	Marine turtle conservation: the links between populations in Western Australia and the Northern Australian region. People and Turtles	In R Kennett, A Webb, G Duffm Guinea and G Hill (eds) Marine turtle conservation and management in northern Australia. Northern territory University. Darwin.			93-99	B
Pyke, LH	1987	Entrepreneurship in regional development : multiobjective resource planning for the Kimberleys Region of Western Australia	Proceedings of the 10th Pacific Regional Science Conference, 1997, Korea. Institute of New Venture Publication, Bentley WA				P
Rees, M, Colquhoun, J, Smith, LD, Heyward, A	2003	Surveys of trochus, holothuria, giant clams and the coral communities at Ashmore Reef, Cartier Reef and Mermaid Reef, northwestern Australia	Australian Institute of Marine Science				B
Reid, J, Baker, L, Morton, SR, Mutitjulu Community	1992	Traditional knowledge + ecological survey = better land management.	Search	24		249-251	J
Richards, Eirlys	1989	Pinarri : introducing Aboriginal languages in Kimberley schools				ix, 101 p. : ill.	O
Richards, Eirlys	1990	Kija wordbook : a Kimberley Language Resource Centre Project				iv, 24 p. : ill.	O
Richards, JH	1993	Physiology of plants recovering from defoliation.	In M.J. Baker (ed.) Grasslands for Our World, SIR Publishing, Wellington, NZ..			46-54	B
Richmond, GS	1993	A review of the use of Eremophila (Myoporaceae) by Australian Aborigines.	Journal of the Adelaide Botanical Gardens	16		101-107	B
Ridpath, MG	1985	Ecology in the wet-dry tropics: how different?	Proceedings of the Ecological Society of Australia	14		3-20	J
Rieger, J	1990	Riding roughshod through the Kimberley	Simply Living	5	1	44-53	J
Rigby, K	1986	Late Devonian sponges of Western Australia	Report (Geological Survey of Western Australia)			60 , maps	R

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Riley, IT, McGhie, DA, Sherrard, JH	1993	Soils of the Ord River Irrigation Area	Miscellaneous Publ. 3/93, Dept. of Agriculture, Western Australia				R
Ringrose, CR	1989	Studies of selected carbonate-hosted lead-zinc deposits in the Kimberley region	Report (Geological Survey of Western Australia)				R
Roberts, EY, Ledgar, R		A pastoral project on Aboriginal lands	J.C. Tothill & J.J. Mott (eds). Ecology and Management of the World's Savannas			171-172	B
Robinson, DW, Sageman, R	1967	The nutritive value of some pasture species in north-western Australia during the late dry season.	Australian Journal of Experimental Agriculture and Animal Husbandry	8		162-168	J
Robinson, LN	1960	Bird Life in the Ord River Area of the East Kimberley Division of Western Australia.	Supplement to The Bird Observer				J
Rogers, DI, Boyle, A, Hassell	2001	Wader counts on Kidneybean Claypan and adjacent Roebuck Plains, northwestern Australia	the Stilt	38		57-63	J
Rogers, DI, Pierma, T, Lavaleue, M, Pearson, GB, deGoejj, P	2003	Life along land's edge: wildlife on the shores of Roebuck Bay, Broome	Department of Conservation and Land Management, Perth				B
Rogers, DI, Taylork, I	2001	Conservation and ecology of migratory shorebirds in roebuck Bay	Charles Sturt University				R
Rose, DB	1985	Preliminary report : ethnobotany in the Bungles	East Kimberley working paper				O
Ross, H		Community social impact assessment : a cumulative study in the Turkey Creek area, Western Australia	East Kimberley working paper			107 p.	O
Ross, H, Bray, E	1989	Impact stories of the east Kimberley	East Kimberley working paper			133 p.	O
Ross, H, Johnson, J	1989	Argyle Social Impact Group (ASIG) : issues for review	East Kimberley working paper			21 p.	O
Rouja, P	1998	Fishing for culture: toward an aboriginal theory of marine resource use among the Bardi Aborigines of One Arm Point	Department of Anthropology, University of Durham				R
Rouja, P, Dewaillyk, K E, B lancet, C, The Bardi community	2003	Fish, fishing patterns and health among the Bardi people of north western Australia	Lipids	38	339-405		J
Rouphael, T	2006	Report on environmental surveys undertaken at Scott Reef in February 2006	Woodside Energy Ltd				R
Rowley I.	1986	Conservation of the Purple-crowned Wren, *Malurus coronatus*, in northern Australia.	CSIRO Division of Wildfire and Rangelands Research Unpublished Final Report to World Wildlife Fund (Australia).				R

Author	Year	Title	Publication	Vol	No	Pages	Type
Rowley I.	1993	The purple-crowned fairy-wren Malurus coronatus. I. History, Distribution and present status.	Emu	93		220-234	J
Rowley, I	1986	Final report to the World Wildlife Fund (Australia) on : Project 47 : conservation of the Purple-crowned Wren, Malurus coronatus in Northern Australia / by Ian Rowley	World Wildlife Fund, Australia				R
Rowley, I	1988	The purple-crowned fairy-wren: An RAOU conservation statement	Royal Australasian Ornithologists Union, Moonee ponds				P
Ruddock, I.	2003	Mineral occurrences and exploration potential of the north Kimberley	Geological Survey of Western Australia. Department of Industry and Resources	Report 85			R
Rumley, Hilary, Rumley, Dennis,		Aborigines and local government in the East Kimberley	East Kimberley working paper			73 p. : maps	O
Runcie, M.J.	2002	Behaviour and Ecology of tropical rock-possums: the Rock-haunting possum Petropseudes dahli and the Scaly-tailed possum Wyulda squamicaudata	PhD Thesis Northern territory University.				T
Runcie, MJ	1999	Movements, nest sites and feeding behaviour of the tropical scaly-tailed possum (Wyulda squamicaudata).	Wildlife Research	26		367-373	J
Russell, BC, Neil, K, Nilliard, R	2004	Ashmore reef national nature reserve and Cartier Island marine reserve: Marine terrestrial introduced species prevention and management strategy.	Report for Department of Environment and Heritage				R
Russell-Smith, J	1991	classification, species richness and environmental relations of monsoon rain forest in northern Australia.	Journal of Vegetation Science	2		259-278	J
Russell-Smith, J, Lucas, DE	1994	Regeneration of monsoon rain forest in northern Australia: the dormant seed bank.	Journal of Vegetation Science	6		161-168	J
Russell-Smith, J, Ryan, PG, Cheal, DC	2002	Fire regimes and the conservation of sandstone heath in monsoonal northern Australia: frequency, interval, patchiness	Biological Conservation	104	1	91-106	J
Ryan, DG		Aboriginal burning and European settlement.	Boambee Forestry Services, RMB Bligh Drive, Boambee NSW 2450.	0			B
Rye, BL	1994	Corrections to Flora of the Kimberley region	Nuytsia	9		418-420	J
Rye, BL	1997	The Rhamnaceae of the Kimberley region of Western Australia	Nuytsia	11		287-292	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Saenger, P	1996	Mangrove flora: distribution of species and habitat descriptions	In Walker, DI, Wells, FE, Hanley JR (eds). Marine Biological Survey of the Eastern Kimberley, Western Australia. Part 6. Western Australian Museum, Perth. Unpub report	UR3 53		39-53	B
Saenger, P, Specht, MM, Specht, RL, Chapman, VJ	1977	Mangrove and saltmarsh communities in Australia.	Ecosystems of the world Vol. 1. Wet Coastal. Elsevier, Amsterdam				B
Sage, LW	2001	New taxa in Goodenia (Goodeniaceae) from the Kimberley region of Western Australia	Nuytsia	13		529-536, maps	J
Saint, P	1993	The Kimberley and fire: a general summary	Bush Fires Board of W.A.				R
Saint, P, Russell-Smith	1998	Malgarra : burning the bush : report of the fourth North Australian Fire Management Workshop, Kalumburu, north Kimberley, Western Australia, June 1997	Western Australia. Dept. Of Conservation And Land Management. Fire Protection Branch Western Australia. Dept. Of Conservation And Land Management. Environmental Protection Branch,			54 leaves, maps	P
Sandercock, P		Floods and paleofloods: a geomorphological perspective on the January 1998 Katherine River flood events.	Unpublished Honours Thesis, University of Western Australia.				T
Sandercock, P.		Channel response and adjustments of the upper Ord River catchment, Western Australia.	Unpublished Ph.D. Thesis, University of Western Australia.				T
Sanders, T. S., Geological Survey Of Western Australia,	1993	Poseidon Bow River Diamond Mines proposal to extend mining into Beefwood Creek (M80/109) and portion of mining lease M80/288, East Kimberleys : report and recommendation of the Environmental Protection Authority	Bulletin (Western Australia. Environmental Protection Authority)				R
Sanders, TS	1999	Mineralization of the Halls Creek orogen, east Kimberley region, Western Australia	Report (Geological Survey of Western Australia)				R
Sauer, JD	1965	Geographic reconnaissance of Western Australia seashore vegetation.	Australian Journal of Botany	13		39-69	J
Sawle, M	1988	A survey of rare and uncommon mammals in the Kimberley region of Western Australia, May-July 1988	M. Sawle. Murdoch, WA			57	B

Author	Year	Title	Publication	Vol	No	Pages	Type
Scanlan, JC	1980	Effects of spring wildfires on Astrebla (Mitchell grass) grasslands in north-west	Australian Rangeland Journal	3		13-19	J
Scarlett, N. H.		A preliminary account of the ethnobotany of the Kija people of Bungle Bungle outcamp	East Kimberley working paper			27 p.	O
Schoknecht, N, Grose, C	1996	Soils of the Ivanhoe west bank, East Kimberley, Western Australia	Resource management technical report			28 pp	R
Schoknecht, N, Grose, C	1996	Soils of the Knox Creek Plain, East Kimberley, Western Australia and Northern Territory	Resource management technical report			59 pp	R
Schoknecht, N, Grose, C	1996	Soils of the Mantinea Loop, Ord River Valley, East Kimberley, Western Australia	Resource management technical report			14 pp	R
Scott, G	2004	A bibliography of indigenous ecological knowledge in Northern Australia	Charles Darwin University				T
Scott-Virtue, L.		An Archaeological Interpretation of the Bungle Bungles: *A Report for the Mindi Mindi Corporation on behalf of Tanba Banks.*	Report for the mindi Mindi Corporation				R
Sedgwick, E.H.		Crested Shrike-tit in the Kimberley, Western Australia.	Australian Bird Watcher			240	J
Semeniuk, V	1980	Mangrove zonation along an eroding coastline in king Sound, North-Western Australia.	Journal of Ecology	68		789-812	J
Semeniuk, V	1982	Geomorphology and the Holocene history of the tidal flats, King sound, North Western Australia.	Journal Royal society of Western Australia	65	2	47-68	J
Semeniuk, V	1983	Mangrove distribution in north-western Australia in relationship to regional and local freshwater seepage	Vegetatio	53		11-31	J
Semeniuk, V	1985	Development of mangrove habitats along ria shorelines in North and North-Western tropical Australia.	Vegetatio	60		3-23	J
Semeniuk, V	1993	The mangrove systems of Western Australia.	Journal Royal Society of Western Australia	76		99-122	J
Semeniuk, V	1981a	Long term erosion of the tidal flats, King sound, North-Western Australia.	Marine Geology	43		21-48	J
Semeniuk, V	1981b	Sedimentology and the stratigraphic sequence of a tropical tidal flat, North-Western Australia.	Sedimentary Geology	29		195-221	J
Semeniuk, V, Kenneally, KF, Wilson PG	1978	Mangroves of Western Australia.	Handbook Number 12 , Western Australian naturalist Club, Perth				B

Author	Year	Title	Publication	Vol	No	Pages	Type
Setterfield, SA, Williams, RJ	1996	Patterns of flowering and seed production in Eucalyptus miniata and E. tetrodonta in a tropical savanna woodland, northern Australia.	Australian Journal of Botany	44		107-122	J
Sharland, M.		Birds of the Kimberleys.	Walkabout, August 1st	#### #		36-39	J
Sharp, BR, Whittaker, RJ	2003	The irreversible cattle-driven transformation of a seasonally flooded Australian savanna.	Journal of Biogeography	30		783-802	J
Shear, WA, Humphreys, WF	1996	A new Stygiochiropus from a north West Cape (Western Australia) coastal plain cave (Diplopoda: Polydesmida: Paradoxosomaridae	Records of the Western Australia Museum	17		447-449	J
Shilling, D.		Birds of Upper Liveringa Station, Western Australia.	Emu	48		64-72	J
Shivas, RG	1995	New records of plant pathogens in the Kimberley region of northern Western Australia	Australasian Plant Pathology	24		188-201	J
Shivas, RG	1977	The genus Verticordia (Myrtaceae) in northern Australia / by N.B. Byrnes	Austrobaileya	1		47-48	J
Simon, BK	1989	The Kimberley Research Project (1988), Western Australia, with historical notes on botanical activity in the Kimberley region	Queensland geographical journal. 4th series.	4		23-36	J
Simon, BK	1992	Triodia pascoeana (Poaceae), a new species from the Western Kimberley	Nuytsia	8		241-243	J
Simpkin-Brown, J	1985	A resource inventory of the Bungle Bungle area, east Kimberley region, Western Australia	Western Australia Office of the North West			1	R
Skewes, TD, Gordon, SR, McLeod, IR, Taranto, TJ, Dennis, DM	1999	Survey and stock size estimates of the shallow reef (0-15 m deep) and shoal area (15-50m) marine resources and habitat mapping within the Timor Sea: Habitat mapping and coral dieback	Fisheries Resource Research Fund, CSIRO Marine Research				R
Slater, P	1961	Palaearctic migrants in the Kimberley division. I, eastern barn swallow (Hirundo rustica gutturalis) at Derby	Western Australian naturalist.	8		33-35	J
Slater, P.	1959	Breeding periods of birds in the Kimberley Division, Western Australia	Western Australian naturalist.	7		35-41	J
Slayter, RO	1960	Climate of the North Kimberley	In: Speck, et al. The land and pastoral resources of the North Kimberley area. Land Resource Series CSIRO Australia	4		1-109	B

Author	Year	Title	Publication	Vol	No	Pages	Type
Smith M, Kaoota's AC.	1985	An annotated list of plants and their uses by the Bardi Aborigines of Dampierland, north-western Australia.	Records of the Western Australian Museum	12		317-360	J
Smith, EA	1894	On the land-shells of Western Australia.	Proceedings of the Malacological Society London	1		84-99	J
Smith, L, Gilmour, J, bird, J	2004	Biological and Physical environmental at Scott Reef: 2003 to 2004. I. Executive summary	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Smith, L, Gilmour, J, Rees, M, Lough, J, Halford, A, Underwood, J, Van Open, M, Heyward, A	2004	Biological and Physical Environment at Scott Reef: 2003 to 2004. III B biological Environment	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Smith, L, McAllister, F, Rees, M, Colquhoun, Gilmour, J	2006	Benthic habitat survey of Scott Reef (0-60m)	Australian Institute of Marine Science				R
Smith, L, Steinberg, C, Gilmour, J, Brinkman, R	2003	Biological and Physical Environment at Scott Reef: 1994-2003. I Executive summary	Australian Institute of Marine Science report for Woodside Energy Pty ltd				R
Smith, LA, Johnstone, RE	1974	First record of white-lined honeyeater in northern Kimberley	Emu	74		58	J
Smith, LA, Johnstone, RE	1977	Status of the purple-crowned wren (Malarus Coronatus) and buff sided robin (Poecilodryas superciliosa) in Western Australia	West Australian Naturalist	13		185-188	J
Smith, LD, Rees, M, Colquhoun, J, Heward, AJ	2005	Survey of beche-de-mer and Trochus populations at Ashmore reef: baseline survey	Beagle, Darwin. Supplement 1			177-183	J
Smith, M	1984	Bardi relationship with sea	Anthropological Forum	5		443-447	J
Smith, M	1987	Dots on the map: sites and seasonality,. The Bardi example	Australian Archaeology	25		40-52	J
Smith, M	1998	The Monitoring River Health Initiative and aquatic macroinvertebrates in the Kimberley region of Western Australia	Limnology of the Fitzroy River, Western Australia : a technical workshop (1998)			11-12	P
Smith, M	1986	Notes: Bardi use of fire	Unpublished				B
Smyth, D	2004	Living on Saltwater Country: a report for the North Australian Indigenous land and Sea management	National Oceans Office				R

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		Alliance					
Snook, LC	1946	Pasture plants of the Kimberleys.	Journal of Agriculture, W.A.			318-343	J
Soderberg, R.	1916	Results of Dr. E.Mjobergs Swedish Scientific Expeditions to Australia 1910-1913 XVIII. Studies of the Birds in North West Australia.	Kung. Svenska Vetenskapsakademiens Handlingar Band 52. No 17: 1-115, plates 1/5.				B
Sofoulis, J.	1973	Some Aboriginal stone arrangements, Secure Bay region, Kimberley division, Western Australia	Western Australian naturalist.	12		p. 121-128	J
Solem, A	1981	Camaenid land snails from western and central Australia (Mollusca: Pulmonata: Camaenidae). II-V	Records of the Western Australian Museum. Supplement	17		147-981	J
Solem, A	1988	New camaenid land snails from the northeast Kimberley, Western Australia	Journal of the Malacological Society of Australia	9		27-58	J
Solem, A, McKenzie, NL	1991	The composition of land snail assemblages in Kimberley rainforests	In Kimberley rainforests of Australia. Surrey Beatty and Sons			247-263	J
Solem, A.	1988	Maximum in the minimum : biogeography of land snails from the Ningbing Ranges and Jeremiah Hills, northeast Kimberley, Western Australia	Journal of the Malacological Society of Australia.	9		59-113	J
Solem, A.	1991	Land snails of Kimberley Rainforest patches and biogeography of all Kimberley land snails	In NL, McKenzie, RB Johnson and PG Kendrick (EDS) Kimberley Rainforests of Australia. Surrey Beatty and Sons, Chipping Norton.			145-246	B
Sombroek, HLI	2003	the tolerance of bivalves to sediment in the intertidal zone of Roebuck Bay, Australia	Masters Project. University of Amsterdam, The Netherlands				R
Speck, NH, Bradley, J, Lazarides, M, Patterson, RA, Slayter, RO, Stewart, GA, Twidale, CR	1960	The lands and pastoral resources of the north Kimberley area, W.A.	CSIRO Land research series	4			B

Author	Year	Title	Publication	Vol	No	Pages	Type
Speck, NH, Wright, RL, Rutherford, GK, Fitzgerald, K, Thomas, F, Arnold, JM, Basinski, JJ, Fitzpatrick, EA, Lazarides, M, Perry, RA	1964	General report on lands of the West Kimberley area, W.A.	CSIRO, Land Research Series	9			B
Stafford-Smith, DM, Morton, SR	1990	A framework for the ecology of arid Australia.	Journal of Arid Environments	18		255-278	J
Start, AN	2003	Fire management and healthy country in the Kimberley region, Western Australia	Proceedings of the 2nd Biannual Kimberley Fire Forum (2003)			115-120	P
Start, AN, Burbidge, AA, McKenzie, NL, McDowell, M	in prep	The status of mammals along a rainfall gradient in the Kimberley, Western Australia	Australian Mammalogy	XX		XX-XX	J
Start, AN, Burbidge, AA, McKenzie, NL, Palmer, C	in press	The status of mammals in the North Kimberley, Western Australia	Australian Mammalogy	XX		XX-XX	J
Start, AN, Handasyde, T	2002	Using photographs to document environmental change: the effects of dams on the riparian environment of the lower Ord River.	Australian Journal of Botany	50		465-480	J
Start, AN, McKenzie, NL, Mackay, G	2005	Biological survey of the vertebrate fauna and vascular flora of islands off the coast of the north Kimberley bioregion	Department of Environment and Conservation				Proposal
Start, T	2001	Kimberley: plants & animals				1-2	O
Stevenson, PM	1985	Traditional Aboriginal resource management in the wet-dry tropics: Tiwi case study.	Proceedings of the Ecological Society of Australia.	14		309-315	B
Stewart GA, Perry RA, Patterson SJ, Traves TM, Slater RO, Dunn PR, Jones PJ, Sleeman JR.		Lands of the Ord-Victoria Area, Western Australia and Northern Territory.	CSIRO Land Research Series 28.	28			J

Author	Year	Title	Publication	Vol	No	Pages	Type
Stewart, R, Fitzgerald, K, Kindleysides, P.	2005	Biophysical resource assessment: Canning coast, WA	Marine Conservation Branch , DEC, and Natural Heritage Trust Rivercare Program				R
Stiker Resources NL	2000	Proposal to establish a barge site and laydown area on EL80/1840 - Faraway Bay North Kimberley	Striker Resources NL				R
Stocker, GC, Mott, JJ	1981	Fire in the tropical forests and woodlands of northern Australia.	In A.M. Gill, R.H. Groves and I.R.Noble (eds). Fire and the Australian Biota. Australian Academy of Science, Canberra.			425-439	B
Stockwell, TGH, Andison, RT, Ash, AJ, Bellamy, Aa, Dyer, RM	1994	State and transition models for rangelands. 9. Development of state and transition models for pastoral management of the golden beard grass and limestone grass pasture lands of NW Australia.	Tropical Grasslands	29		260-265	J
Stokes, JI	1846	Discoveries in Australia	T and W Boone, London				B
Stoneman, TC	1988	Carlton plains soil survey in the shire of Wyndham/East Kimberley	Technical report (Western Australia. Dept. of Agriculture. Division of Resource Management)			21	R
Storey, V, Osborn, M	1987	Tall tales	Landscope. - Vol. 3, no. 1 (1987)			8 : col. ill.	J
Storr G.M.	1960	Possible occurrence of the Night Parrot in the Kimberley division of WA.	Emu	60		88	J
Storr, G. M.	1988	A new member of the Lerista bipes group (Lacertilia: Scincidae) from the Kimberley	Records of the Western Australian Museum.	14		439-442	J
Storr, GM	1969	Green-winged and flock pigeons in the Kimberley Division	Western Australian naturalist.	11		69	J
Storr, GM	1974	The genus Ctenotus (Lacertilia: Scincidae) in the Kimberley and north-west divisions of Western Australia	Records of the Western Australian Museum	3		209-244	J
Storr, GM	1980	Birds of the Kimberley division, Western Australia	Special publication (Western Australian Museum)	11		117	J
Storr, GM	1976	Status change for black grass wren	Swans	6		61	J
Storr, GM, Johnstone, RE	1983	Amphibians and Reptiles	In McKenzie, NL (ed) Wildlife of the Dampier peninsula, Southwest Kimberley, Western Australia. Research Bulletin	11			J

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Striker Resources NL	2002	Barge site, laydown area and access road gumboot Bay North Kimberley PER	Striker Resources NL				R
Suijdendorp, H	1981	Responses of the hummock grasslands of northwestern Australia to fire.	In A.M. Gill, R.H. Groves and R. Noble (eds) Fire and the Australian Biota, Australian Academy of Science, Canberra.			417-424	B
Sullivan, Patrick		Aboriginal community representative organisations : international cultural process in the Kimberley region, Western Australia	East Kimberley working paper			59 p.	O
Sutherland, D, Pritchard, B	2001	Aboriginal component of the Kimberley economy	Kimberley Development Committee				R
Tacon, P. S. C.	1998	Magical paintings of the Kimberley	Nature Australia.	26		p. 40-47	J
Tatlor, CFH	1999	The role of overbank flow in generating the form of an anabranching river: the Fitzroy River, northwestern Australia.	Spec. Publs. Int. Ass. Sediment.	28		77-91	J
Taylor, C		Flood hydrology and flood plain stability of the Fitzroy River, Western Australia.	Unpublished Ph.D. Thesis, University of Western Australia.				T
Teichert, C, Fairbridge, RW	1948	some coral reefs of the Sahul Shelf	Geographical Review	38(2)		222-249	J
Telford, N	1997	Montgomery Reef Western Australia: baseline trace metals data and natural and human influences	School of Resource Science and Management: Southern Cross University				R
Thackway, R, Cresswell, ID	1995	An interim biogeographic regionalisation for Australia: a framework for establishing the national system of reserves, Version 4.0.	Australian nature Conservation Agency, Canberra				R
Thackway, R, Cresswell, ID	1998	Interim Marine and Coastal Regionalisation for Australian ecosystem-based classification for marine and coastal environments	Environment Australia, commonwealth Department of Environment, Canberra				R
Thiele, D		Report of an opportunistic survey for Irrawaddy dolphins, Orcaella brevirostris, off the Kimberley coast, northwest Australia	Journal of Cetacean Research and Management				J
Thom, BIG, Wright, LD, Coleman, JM	1975	Mangrove ecology and deltaic-estuarine geomorphology, Cambridge gulf-Ord River, Western Australia	J Ecology	`63		203-232	J
Thomas, A	1997	A toast to the Kimberley	Darlington Publication Group			191pp	B
Thompson D.J.	1991	Dragonflies from the western Kimberley region	Western Australian naturalist.	18		197-200	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Thomson, C, Done, C, Grosse, A	1990	The fragile frontier	Landscope	6	1	22-25	J
Thomson, C, Graham, G	1996	Common birds of the Kimberley	Bush Books. Department of Conservation and Land Management			64	B
Thomson, DF	1949	Arnhem Land: explorations among an unknown people.	The Geographical Journal	113		1-8	B
Thomson, DF	1950	Arnhem Land: explorations among an unknown people. Part III. On foot across Arnhem Land.	Geographic Journal	114		53-68	A
Tindale, MD, Craven, LA	1993	Glycine pindanica (Fabaceae: Phaseolae), a new species from West Kimberley, Western Australia	Australian systematic botany	6		371-376	J
Tothill, JC	1971	A review of fire in the management of native pasture with particular reference to north-eastern Australia.	Tropical Grasslands	6		1-10	J
Tothill, JC, Nix, HA, Stanton, JP, Russell, MJ,	198	Land use and productive potentials of Australian savanna lands.	In J.C. Tothill and J.J. Mott. (eds.) Ecology and management of the world's savannas. Australian Academy of Science, Canberra.			125-141	B
Travers, MJ, Newman, SJ, Potter, IC	2006	Influence of latitude, water depth, day v.night and wet v. dry periods on the species composition of reef fish communities in tropical Western Australia	Journal of Fish Biology	69		987-1017	J
Tudor, ER, Blinn, DW, Churchill, DM	1991	Distribution of diatoms in the northern Kimberley region, Western Australia in relation to chemistry	Journal of the Royal Society of Western Australia.	73		93-99	J
Tulp, I, deGoeij, P	1991	Hot news from a hot place: feeding ecology studies on knots and other waders in Broome, Northwest Australia,	Stilt	19		24-26	J
Tulp, I, deGoeij, P	1994	Evaluating wader habitats in Roebuck Bay (north-western Australia) as a springboard for northbound migration in waders, with a focus on great knots	Emu	94		78-95	J
Tulp, I, McChesney, S, deGoeij, P	1994	Migratory departures of waders from north-western Australia: behaviour, timing and possible migration routes	Ardea	82		201-221	J
Turnbull, J, Hall, N	1973	Kimberley gum : Eucalyptus confluens W.V.Fitzg. ex Maiden	Forest Tree Series. Australian Government Public Service. Canberra	103			O
Turnbull, J, Hall, N		Trees of Western Australia : eight Eucalyptus trees from the tropical north. No. 55, cabbage gum, no. 56, large-leaved cabbage gum, no. 57, ghost gum, no. 58, rough-leaved range gum, no. 59, weeping box,	Bulletin (Western Australia. Dept. of Agriculture)			13	R

Author	Year	Title	Publication	Vol	No	Pages	Type
		no. 60, silver-leaved box, no. 61, Kimberley white					
Tyler MJ, Davies M, Watson GF		Frogs of the Gibb River Road, Kimberley division Western Australia.	Records of the Western Australian Museum	13		541-552	J
Tyler MJ, Davies M, Martin AA		New and rediscovered species of frogs from the Derby-Broome area of Western Australia	Records of the Western Australian Museum	9		147-172	J
Tyler, I	1996	Geology & landforms of the Kimberley	Bush books				B
Tyler, I	1997	Geology and landforms of the Kimberley	Landscope	12	4	16-21	J
Van Leeuwen S.	1984	Rare and geographically restricted plants of Western Australia, No. 25: Rare and geographically restricted plants of the Kimberleys, northern botanical province.	CALM Confidential Unpublished Report.				R
Vernes, T	2006	Establishing priorities for wetland conservation and management in the Kimberley. Interim report: phase 2 field studies	Kimberley Wetlands Project. WWF Australia.				R
Vernes, T	2007	Establishing priorities for wetland conservation and management, Kimberley Region	Newsletter, WWF. wwf.org.au/ourwork/water/kimberleywetlands				O
Veron Jen	1993	A biogeographic database of hermatypic corals	Australian Institute of Marine Science, Monograph Series	10			J
Veron, JEN	1986	Corals of Australia and the Indo-Pacific	Angus and Robertson				B
Veron, JEN	1986	Reef building corals	Berry, POF (ed) Faunal surveys of the Rowley Shoals, Scott Reef and Seringapatam Reef, North-western Australia. Part II. Records of the Western Australian Museum	Supplement No 25		27-35	J
Veron, JEN	1995	Corals in space and time: the biogeography and evolution of the Scleractinia	UNSW Press, Sydney				B

Author	Year	Title	Publication	Vol	No	Pages	Type
Veron, Jen	1993a	Hermatypic corals of Ashmore Reef and Cartier Island	Berry, POF (ed) Faunal surveys of the Rowley Shoals, Scott Reef and Seringapatam Reef, North-western Australia. Part II. Records of the Western Australian Museum	Supplement No 44			J
Vigilante, T	2004	Contemporary landscape burning patterns in the far North Kimberley region of north-west Australia : human influences and environmental determinants	Journal of biogeography	31		1317-1333	J
Vigilante, T	2004	The Ethnoecology of Landscape Burning around Kalumburu Aboriginal Community, North Kimberley Region, Western Australia: an examination of the ecological and cultural significance of Aboriginal landscape burning in the North Kimberley using experimental, ethnographic and historical approaches'.	PHD Thesis. Restricted access				T
Vigilante, T, Bowman, DMJS.	2004	Effects of fire history on the structure and floristic composition of woody vegetation around Kalumburu, North Kimberley, Australia: a landscape-scale natural experiment.	Australian Journal of Botany	52		381-404	J
Vigilante, T, Bowman, DMJS.	2004	Effects of individual fire events on the flower production of fruit-bearing tree species, with reference to Aboriginal people's management and use, at Kalumburu, North Kimberley, Australia.	Australian Journal of Botany	52		405-415	J
Vigilante, T.	2001	Analysis of Explorers' records of Aboriginal Landscape Burning in the Kimberley Region of WA.	Australian Geographical Studies	39	2	135-155	J
Vigilante, T.		Saltwater Country Project: database of natural and cultural values for the North Kimberley coast.	Natural Heritage Trust Saltwater Country Project				R
Volker, B	1990	A new species of Trianthema (Aizoaceae) from the Kimberley region and a note on T. triquetra	Nuytsia	7		117-122	J
W.A. National Parks and Reserves Association	1978	System 7, Kimberley region : submission. Vol. 1, supplementary submission, Limestone ranges of west Kimberley	National Parks and Reserves Association				R
W.A. National Parks and Reserves Association	1978	System 7, Kimberley region : submission. Vol. 2, principal submission, appendices, summary of recommendations	National Parks and Reserves Association				R

Author	Year	Title	Publication	Vol	No	Pages	Type
Walker, DI	1992	Seagrasses	In Morgan GJ (ed) Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Part IX. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report UR8	UR2 86			R
Walker, DI	1995	Seagrasses and Macroalgae	In Wells, FE, Hanley JR and Walker DI. Survey of the Marine Biota of the southern Kimberley Islands. Part 5. Western Australian Museum, Perth. Unpub report	UR2 86			R
Walker, DI	1996	Seagrasses and Macroalgae	In Walker, DI, Wells, FE, Hanley JR (eds). Marine Biological Survey of the Eastern Kimberley, Western Australia. Part 5. Western Australian Museum, Perth. Unpub report	UR3 53		36-38	R
Walker, DI	1997	Marine Biological Survey of the Central Kimberley coast, Western Australia. November - December 1996	University of Western Australia, Perth, Unpub report, WA Museum library	UR 377			R
Walker, DI	1997	Seagrasses and Macroalgae	In Walker D (ed) Marine biological Survey of the Central Kimberley Coast. Part 5. Western Australia. University of Western Australia. Unpub report. Way Museum Library	UR3 77		40-45	R
Walker, DI, Prince, RIT	1987	Distribution and biogeography of seagrass species on the northwest coast of Australia	Aquatic biology	29		19-32	J
Walker, DI, Wells, FE, Hanley, JR	1996	Marine Biological Survey of the Eastern Kimberley, Western Australia	University of Western Australia, Perth, Unpub Report. WA Museum Library	UR 353			R
Wallace, JF	1993	A discussion on the analysis of shrubland monitoring data.	Plant dynamics and interpretation in rangeland ecosystems. Dept. of Agriculture Miscellaneous Publication 27/93, Sept. 1993			91-97	R

Author	Year	Title	Publication	Vol	No	Pages	Type
Walsh, FJ	1992	The relevance of some aspects of Aboriginal subsistence activities to the management of national parks: with reference to Martu people of the Western Desert.	In: J. Birckhead, T. De Lacy and L. Smith (eds), Aboriginal involvement in parks and protected areas. Proc. conf. at Charles Sturt University, July 22-24, 1992. Aboriginal Studies Press, Canberra.			75-97	B
Warham, J	1957	West Kimberley butterflies	Western Australian naturalist	5		229-230	J
Warham, J.	1957	Cockatoo Island Birds.	The Emu	57		225-231	J
Warman,C		The impact of damming on the fluvial geomorphology of the lower Ord River, Western Australia.	Unpublished Honours Thesis, University of Western Australia.				T
Wasson, RJ		What is it that we wish to know about the gully networks of the Ord River catchment.	unpublished report				R
Watkins, D	1993	Roebuck Bay: Background information for the conservation of a wetland of international importance	Department of Conservation and Land Management				R
Watkins, D, Brennan, K, Lange, C, Jaensch, R, Finlayson, M	1997	Management planning for Ramsar sites in the Kimberley region of Western Australia : report to the Department of Conservation and Land Management, Western Australia	Department of conservation and Land Management			192 pp	R
Weigel, J		The rough-scaled python. Part II Captive husbandry and breeding	Reptiles Australia			6 to 11	J
Wells FE	1989	Survey of the invertebrate fauna of the Kimberley Islands, Western Australia.	A report to the National Geographic Society. Western Australian Museum unpub report	UR 219			R
Wells, AG	1981	A survey of riverside mangrove vegetation fringing tidal river systems of Kimberley, Western Australia.	In Wilson, BR (ed) biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia. Part 3. Western Australian Museum Perth			95-121	B
Wells, AG	1982	Mangrove vegetation of northern Australia	Mangrove ecosystems in Australia: Structure function and management. ANU Press			57-78	B
Wells, FE	1981	Molluscan fauna of the Admiralty Gulf, Cape Voltaire and the Institute Islands, Kimberley, Western Australia. Chitons , Meso-and Neogastropods	In Wilson, BR (ed) biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia. Part 8. Western Australian Museum Perth			249-263	R

Author	Year	Title	Publication	Vol	No	Pages	Type
Wells, FE	1992	Molluscs	In Morgan GJ (ed) Survey of the aquatic fauna of the Kimberley islands and Reefs, Western Australia. Part IV. Report of the Western Australian Museum Kimberley Island and Reef Expeditions, August 1991. Western Australian Museum, Perth. Unpublished report UR8	UR8		30-42	R
Wells, FE, Bryce CW	1996	Molluscs	In Walker, DI, Wells, FE, Hanley JR (eds). Marine Biological Survey of the Eastern Kimberley, Western Australia. Part 7. Western Australian Museum, Perth. Unpub report	UR3 53		54-67	R
Wells, FE, Bryce, CW	1995	Molluscs	In Wells, FE, Hanley JR and Walker DI. Survey of the Marine Biota of the southern Kimberley Islands. Part 8. Western Australian Museum, Perth. Unpub report	UR2 86		67-80	R
Wells, FE, Hanley, JR, Walker DI	1995	Marine biological survey of the southern Kimberley, Western Australia 1994	Western Australian Museum, Perth. Unpublished report	UR2 86			R
Wells, FE, Slack-Smith, SM	1981	Zonation of mollusc in a mangrove swamp, in the Kimberley, Western Australia	In Wilson, BR (ed) biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia. Part 9. Western Australian Museum Perth			265-274	B
West, NE	1993	Biodiversity of rangelands	Journal of Range Management	47		2-13	J
Western Australia. Dept. Of Fisheries And Wildlife,	1976	State trapping ban for the northern rosella, Platycercus venustus (Kuhl)	Swans	6	1	15	J
Western Australia. Dept. Of Fisheries And Wildlife,	1982	Edgar Ranges : a good case for conservation	Swans	12	3	13-17	J
Western Australia. Dept. Of Fisheries And Wildlife,	1993	The Kimberley exposed	Landscope	9	2	5 : col. ill.	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Western Australia. Dept. Of Regional Development And The North West, Kimberley Regional Development Advisory Committee	1983	The Kimberley microwave project	Telecom Australia			16 pp	R
Western Australia. Dept. Of Regional Development And The Northwest	1992	Kimberley strategic marketing plan	Kimberley Tourism Association			19	R
Western Australian Museum		Studies on freshwater fishes of New Guinea and northern Australia.	Records of the Western Australian Museum Supplement 37.				R
Western Australian Museum, Field Museum of Natural History	1981	Biological Survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia: papers resulting from a joint field expedition by the Western Australian Museum and the Field Museum of Natural History, Chicago, 1976-1977	Western Australian Museum, Perth				B
Western Australian Planning Commission	1999	Country land development program : Pilbara-Kimberley update : covering the towns of Broome, Karratha, Kununurra and Port Hedland / prepared by	Western Australian Planning Commission			40	R
Western Australian Tourism Commission, Kimberley Regional Development Committee	1981	Kimberley regional tourism survey 1981	Kimberley Tour Operators Forum, Kununurra, W.A.			118, [22] : maps	P
Western Infrastructure/Ecology		CAPE LEVEQUE ROAD: Environmental Assessment and Management Plan	(CAPELEV-1)				R
Wheeler J.R.		*Hiberia hooglandii* (Dilleniaceae), a new species from the Kimberley Region, Western Australia.	Nuytsia	7		69-74	J
Wheeler JR, Rye, BL, Koch, BL, Wilson, AJG, Western Australian Herbarium	1992	Flora of the Kimberley region	Western Australian Herbarium, Como.				B

Author	Year	Title	Publication	Vol	No	Pages	Type
Wheeler, J	1965	Purple crowned wrens: habitat and call note	Emu	64		219	J
Wheeler, J	1993	Flora of the Kimberley	Landscope	8	2	49-53	J
Wheeler, SH		Rattus villosissimus in the Ord River Irrigation Area - a Plague Hypothesis.	Agricultural Protection Board of WA.				R
White, I	1986	Annotated bibliography on tourism and Aborigines prepared for the East Kimberley Impact Assessment Project and the Central Land council	East Kimberley Impact Assessment Project, Central Land Council				R
White, J.		JARU ORAL HISTORY PROJECT REPORT (draft).	draft report				O
Whitehead, P	2001	Developing an analytical framework for monitoring biodiversity in Australia's rangelands: a report by the Tropical Savannas CRC for the National Land and Water Resources Audit	Tropical Savannas CRC				R
Whitlock, FL		Ten Months on the Fitzroy River, North-western Australia.	Emu	25		69-89	J
Wightman, GM	1989	Mangroves of the Northern Territory.	Northern Territory botanical Bulletin. Conservation commission of the Northern Territory, Darwin	7			J
Wildlife Management International	2003	Results of spotlight and helicopter surveys of Crocodiles in Cambridge Gulf, Lake Argyle and Lake Kununurra, 2003	Wildlife Management International				R
Wilkins, CF	1999	Keraudrenia exastia and Keraudrenia katatona (Malvaceae: Byttnerioideae), a new species from the Kimberley region of Western Australia	Nuytsia	13		233-242, 1 map	J
Williams A.A.E.		Lacepede Islands, July 1987.	CALM Unpublished Report.				R
Williams AAE, Williams, MR, Swann, G	2006	Records of butterflies (Lepidoptera) from the Kimberley region of Western Australia	Victorian Entomologist	36		9 to 16	J
Williams, N. M., Kirkby, I	1989	Summary of findings and recommendations : ethnography of the east Kimberley, work in progress : location and status of Aboriginal communities	East Kimberley working paper			46 p.	O
Williams, RJ, Cook, GD, Gill, AM, Moore, PHR,	1999	Fire regime, fire intensity and tree survival in a tropical savanna in northern Australia.	Australian Journal of Ecology	24		50-59	J
Willing, T	2000	Kimberley Coast: Cape Domett to King George River botany survey report: 18-21 February 2000	Department of Conservation and land management				R

Author	Year	Title	Publication	Vol	No	Pages	Type
Willing, T	2001	Ashmore Reef and Kimberley Offshore Islands botany survey report: 22-25 February 2001	Department of Conservation and land management				R
Willing, T	2006	Wilson Point, NW Kimberley: Preliminary vegetation mapping and flora assessment	Woodside Energy Ltd				R
Willing, T, Dureau, D	2000	Botanical survey for proposed Tropical Timber Plantation, Beagle Bay, West Kimberley, WA	Conservation and Land Management, Broome				R
Willing, T, Kenneally, K	2002	Under a regent moon	Landscope	17	4	48-53	J
Wilson, B	2002	Managing carbon in rural Australia.	Natural Resource Management	5	2	7-14	J
Wilson, B.	2006	Coastal marine habitats, flora and fauna of the Kimberley Region	Report to INPEX				R
Wilson, BR	1972	Western Australian coral reefs with preliminary notes on a study at Kendrew Island, Dampier Archipelago	Report of the Crown of thorns Starfish Seminar, Brisbane			47-58	R
Wilson, BR	1981	Biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia General Introduction	In Wilson, BR (ed) biological survey of Mitchell Plateau and Admiralty Gulf, Kimberley, Western Australia. Part 1. Western Australian Museum Perth			1-11	B
Wilson, BR	1994	A representative marine reserve system of Western Australia.	Report of the Marine Parks and Reserves Working Group. Department of conservation and land Management, Perth. Unpub Report				R
Wilson, BR, Allen, GA	1987	Major components and distribution of marine fauna,	In Dyne, GR, Walton DW (eds) The fauna of Australia. General articles. Australian Government Publishing Service, Canberra			43-68	B
Wilson, BR, Gillett, K	1971	Australian Shells	AH and AW Reed, Sydney				B
Wilson, BR, Smith, PR	1975	Report on the Mollusca fauna of the Prince Regent River Reserve, North West Kimberley, Western Australia	In Miles, JM and Burbidge, AA. A biological survey of the Prince Regent River Reserve, North-west Kimberley, Western Australia. Wildlife Research Bulletin	3		1-114	J
Wilson, BR, Stoddart, JA	1980	A study of freshwater molluscs of the Ord River region of Western Australia with reference to their	Western Australian Museum				R

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		potential as trematode vectors					
Wilson, GDF, Keable, SJ	2002	New genera of Phreatoicidea (Crustacea: Isopoda) from Western Australia	Records of the Australian Museum	54	1	41-70	J
Winston R. Kay.		Movements and home ranges of radio-tracked Crocodylus porosus in the Cambridge Gulf region of Western Australia.	Wildlife research	31		495-508	J
Winter, WH	1990	Australia's northern savannas: a time for change in management philosophy.	Journal of Biogeography	18		525-529	J
Woinarksi	1992	A survey of the wildlife and vegetation of Purnululu (Bungle Bungle) national park and adjacent areas	Wildlife research bulletin, Western Australia. Department of Conservation and Land Management	6			R
Woinarski, J		Terrestrial Ecoregions- Kimberley Tropical Savanna	Report for WWF AA0706				R
Woinarski, J, Start, T.		Comparison of fauna recorded at two sites in Drysdale River National Park, 1975 and 1997.	(Unpublished).				U
Woinarski, J.C.Z.	1992	Biogeography and Conservation of Reptiles, Mammals and Birds across North-western Australia: an Inventory and Base for Planning an Ecological Reserve System.	Wildlife Research	19		665-705	J
Woinarski, JCZ	1990	Effects of fire on the bird communities of tropical woodlands and open forests in northern Australia.	Australian Journal of Ecology	16		1-22	J
Woinarski, JCZ, Braithwaite, RW	1990	Conservation foci for Australian birds and mammals.	Search	22		65-67	J
Wolanski, E, Moore, K, Spagnol, S, D'Adamo, N, Pattiaratchi, C	2001	Rapid, human-induced siltation of the macro-tidal Ord River Estuary, Western Australia.	Estuarine, Coastal and Shelf Science	53		717-732	J
Wright, G	1990	Human concerns and natural values in the Buccaneer Archipelago: a resource document	Department of Conservation and land Management				R
Wright, LD, Coleman, JAM, Thom BG	1975	Sediment transport and deposition in macrotidal river channel: Ord River, Western Australia	Estuarine Research Vol 2. Academic Press, New York			309-321	B
Wright, LD, Coleman, JM, Thom, BG	1972	Emerged tidal flats in the Ord River estuary, Western Australia	Search	3		339-341	J

Author	Year	Title	Publication	Vol	No	Pages	Type
Wright, LD, Coleman, JM, Thom, BG	1973	Process of channel development and deposition in a high-tide rang environment: Cambridge gulf-Ord River delta, Western Australia	journal of Geology	81		15-41	J
Wright, RL	1964	Geomorphology of the West Kimberley area	CSIRO Land Research	9		103-118	J
Wyrwoll KH, Hopwood J, McKenzie NL	1992	The Holocene Paleohydrology and climatic history of the northern Great Sandy Desert - Fitzroy trough: with special reference to the history of the northwest Australian monsoon.	Climatic change	22		47-65	J
Yeates, DK	1990	New records of butterflies from the east Kimberley, Western Australia	Australian entomological magazine.	17		73-74	J
Young, RW	1987	Erodibility of sandstone surfaces of the Bungle Bungle Range, East Kimberley region : report to the Heritage Committee of Western Australia					R
Young, RW	1992	Structure heritage and plantation in the evolution of land forms of the East Kimberley.	Australian Journal of Earth Sciences	9		141-151	J
Zell, L	2003	A guide to the Kimberley coast wilderness, north western Western Australia	Wildlife Discovery, Brisbane			167 pp	B

Maps in support of the Kimberley Review 2007- Figures 1- 8

Please note that all maps within this document form a part of the Kimberley Biodiversity Review 2007 and should be read with that report, not on their own. Each map is intended as a generalised interpretation of environmental issues and is not a full representation of all data from the Kimberley. DEC is not to be held responsible for the accuracy of data or for omissions. A general description of the contents of each map is provided below.

Figure 1 Composite map highlighting ecological values as identified in the Kimberley Biodiversity Review 2007: this map represents some of the values identified in the review to highlight areas of the Kimberley that are ecologically significant and potentially vulnerable. Datasets included are those relevant to rainfall, protected and priority species and important habitat such as mangrove and rainforest.

Figure 2 IMCRA and IBRA regions: depicts these bioregionalisation definitions for the Kimberley terrestrial and marine environments.

Map 3 Mining and Petroleum tenements: presents these tenements as a demonstration of land use and future impacts in the Kimberley (mining) – fine except add in disclaimer and state waters boundary

Map 4 Land tenure: presents land ownership and uses throughout the Kimberley.

Figure 4A Main marine tourism sites in the Kimberley. Kimberley Marine Tourism Sites map supplied in 2007 by John H Collins an Honorary Research Fellow at the University of Western Australia School of Earth and Geographical Sciences based on field and desktop research. The sites displayed are those visited by wilderness tourism operators in the Kimberley and do not represent infrastructure. Some of the tourism sites are confidential and are shown as a generalised interpretation. This data is not a full representation of all tourism sites within the Kimberley and the Department of Environment is not to be held responsible for the accuracy of data or for omissions.

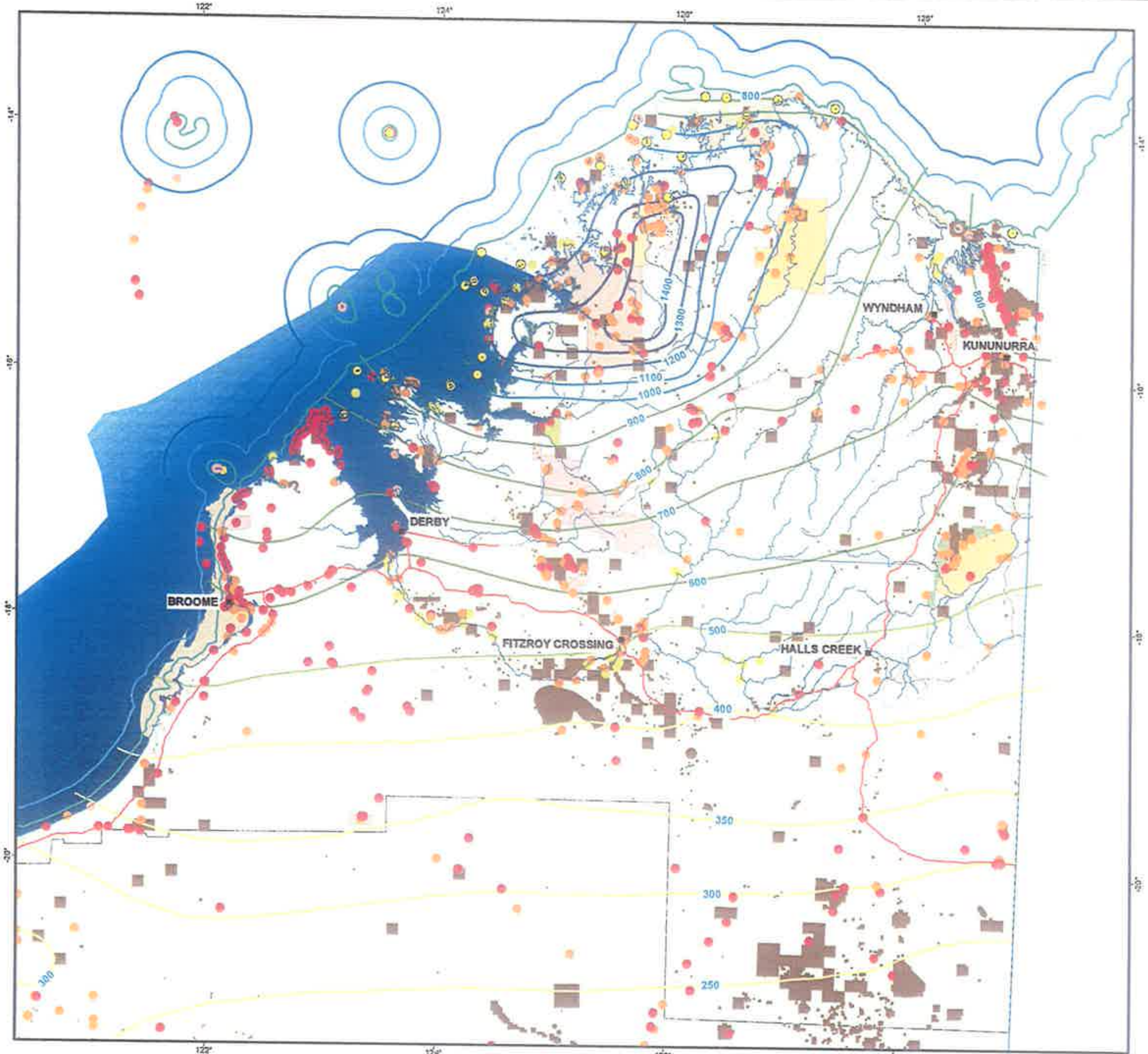
Map 5 Aboriginal heritage and traditional owners: represents additional land use issues

Map 6 Representation of known ecologically important habitats and biodiversity in the Kimberley as identified through the Kimberley Biodiversity Review 2007: including coral, mangrove and identified habitat for protected species such as humpback whales and known sites for threatened fauna, flora and ecological communities.

Map 7 Rainfall and geology of the Kimberley: High biodiversity is associated with high rainfall and rugged, complex terrain such as sandstone. This map identifies the northwest area of the Kimberley where rainfall is highest and the environment is most complex.

Map 8 Vegetation classes of the Kimberley based on surveys conducted through the Tropical Savanna CRC

KIMBERLEY REVIEW
MAP 1: COMPOSITE MAP HIGHLIGHTING ECOLOGICAL VALUES AS IDENTIFIED IN THE KIMBERLEY BIODIVERSITY REVIEW



TOPOGRAPHIC FEATURES

- Town
- Site of interest
- Principal road
- Secondary road
- Major river

SOCIAL

- Aboriginal Sites Register

RAINFALL (mm/year)

- 250 - 400
- 401 - 550
- 551 - 800
- 801 - 950
- 951 - 1100
- 1101 - 1250
- 1251 - 1400

AUSTRALIAN MARITIME BOUNDARY

- Coastal waters
- Territorial sea
- Contiguous zone
- Australian Exclusive Economic Zone

THREATENED ECOLOGY

- Threatened
- Protected
- Priority
- Turtle nesting site
- Seal / sealion habitat
- Dugong habitat
- Whale_Calving

VEGETATION

- Mangroves
- Malga

CONSERVATION

- 5(1)(g) Reserve
- 5(1)(h) Reserve
- Conservation Park
- Ex Dir Freehold
- Former Leasehold
- Miscellaneous Reserve
- National Park
- Nature Reserve

0 40 80 120 160 200
Kilometres

Projection: Universal Transverse Mercator
MGA Zone 51. Datum: GDA94

Department of Environment and Conservation

Produced under the Direction of
Keiran McNamara
Director General, Department of
Environment and Conservation

DATA DICTIONARY		
Dataset	Custodian	Date
Topography	DIA	2004
Threatened ecology	DEC	2007
[illegible]	DEC	May 2006
[illegible]	CSIRO	1993
Dugongs	DEC	May 2006
Turtles	DEC	May 2006
Systems mapping	CMRDEPA	August 2004
Aboriginal Sites	DIA	2002
Conservation	DEC	2006
[illegible]	BoM	2004
Mangroves	DPI	December 1992
Mangroves	DEC	2007
Malga	DPI	Mar 2000

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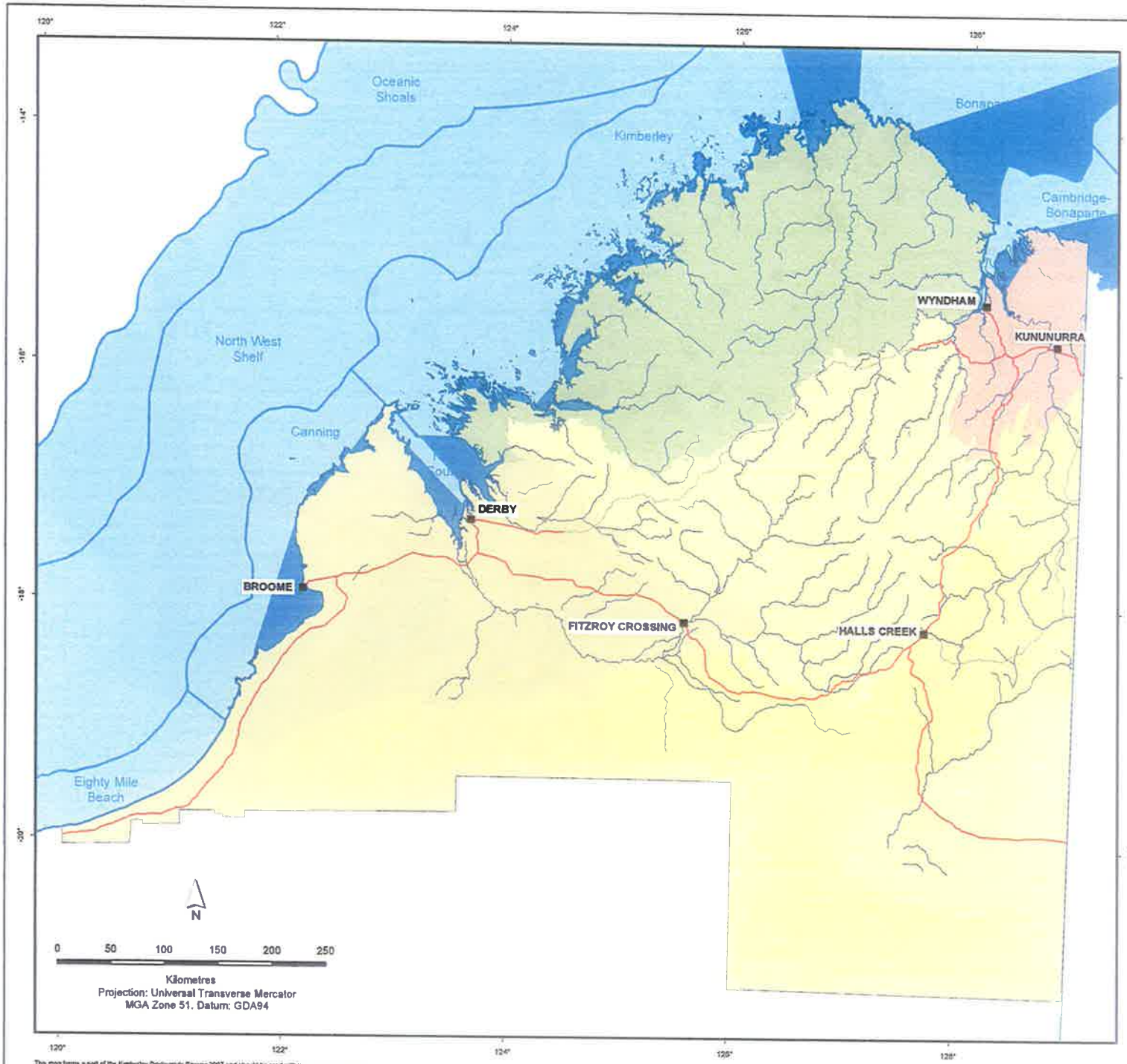
Job ref: kimberley_review-map1-ecological_values; produced on 2 August 2007

KIMBERLEY REVIEW
MAP 2: IMCRA AND IBRA REGIONS



Town
Principal road
Secondary road
Major watercourse
IMCRA region

IBRA REGION

- Central Kimberley
- Dampierland
- Great Sandy Desert
- Northern Kimberley
- Ord Victoria Plain
- Tanami
- Victoria Bonaparte

DATA DICTIONARY		
Dataset	Custodian	Date
Topography	GA	2004
DEC region	DEC	2006
IMCRA	EA	1997
IBRA	DEH	unknown
Coastline	DEC	unknown

LOCALITY MAP

Department of Environment and Conservation

Produced under the Direction of
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Director General, Department of
Environment and Conservation

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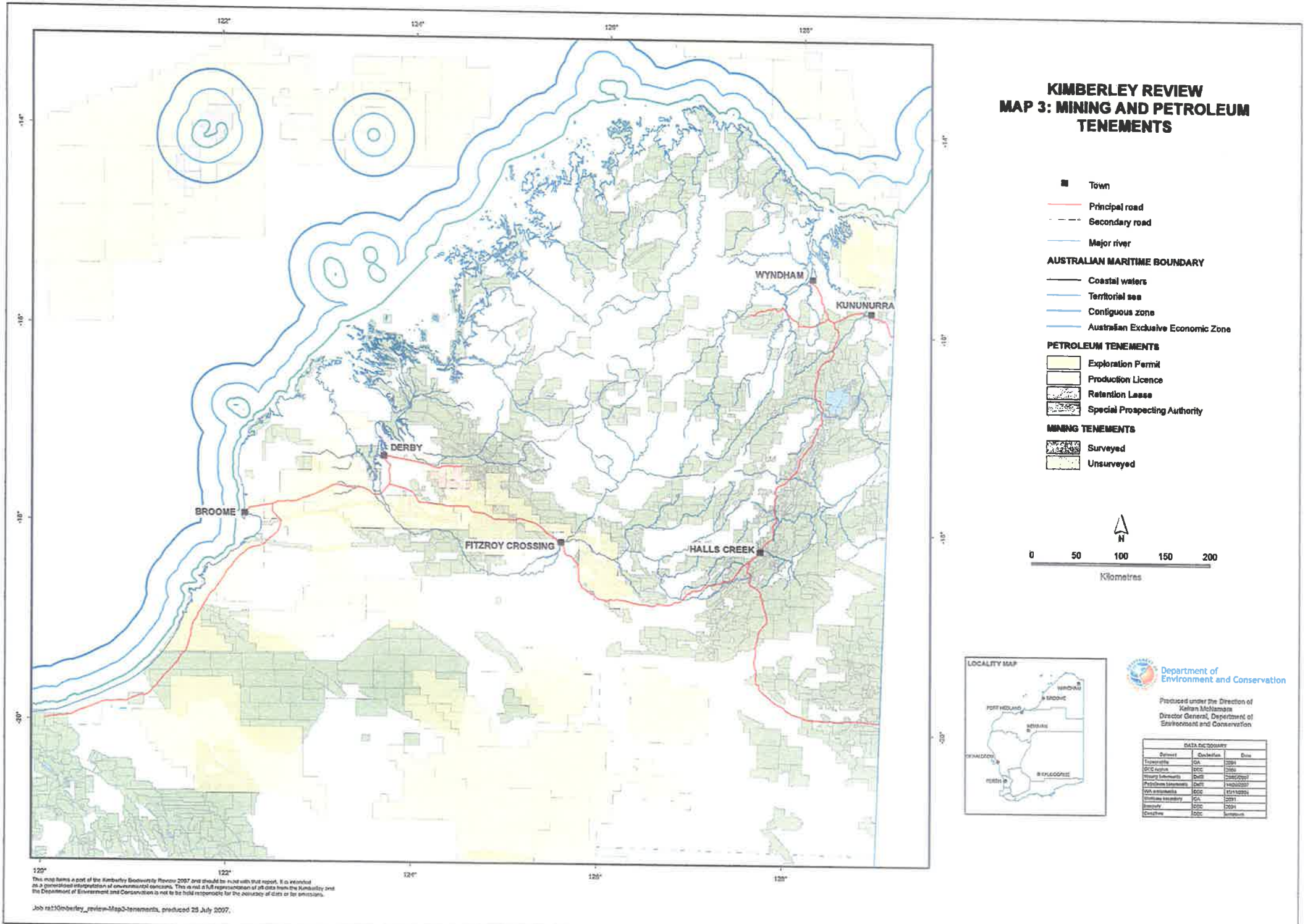
Job ref:Kimberley_review-Map2-IMCRA_and_IBRA, produced 26 July 2007.



KIMBERLEY REVIEW
MAP 3: MINING AND PETROLEUM TENEMENTS

- Town
- Principal road
- Secondary road
- Major river

AUSTRALIAN MARITIME BOUNDARY

- Coastal waters
- Territorial sea
- Contiguous zone
- Australian Exclusive Economic Zone

PETROLEUM TENEMENTS

- Exploration Permit
- Production Licence
- Retention Lease
- Special Prospecting Authority

MINING TENEMENTS

- Surveyed
- Unsurveyed

N

0 50 100 150 200

Kilometres

LOCALITY MAP

Department of Environment and Conservation

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DATA DICTIONARY		
Dataset	Custodian	Date
Topography	GA	2004
DCC Active	DCC	2006
Mining tenements	DoIR	24/07/2007
Petroleum tenements	DoIR	14/08/2007
WA environments	DCC	01/11/2004
Offshore boundary	GA	2001
Electricity	DCC	2004
Coastline	DCC	completed

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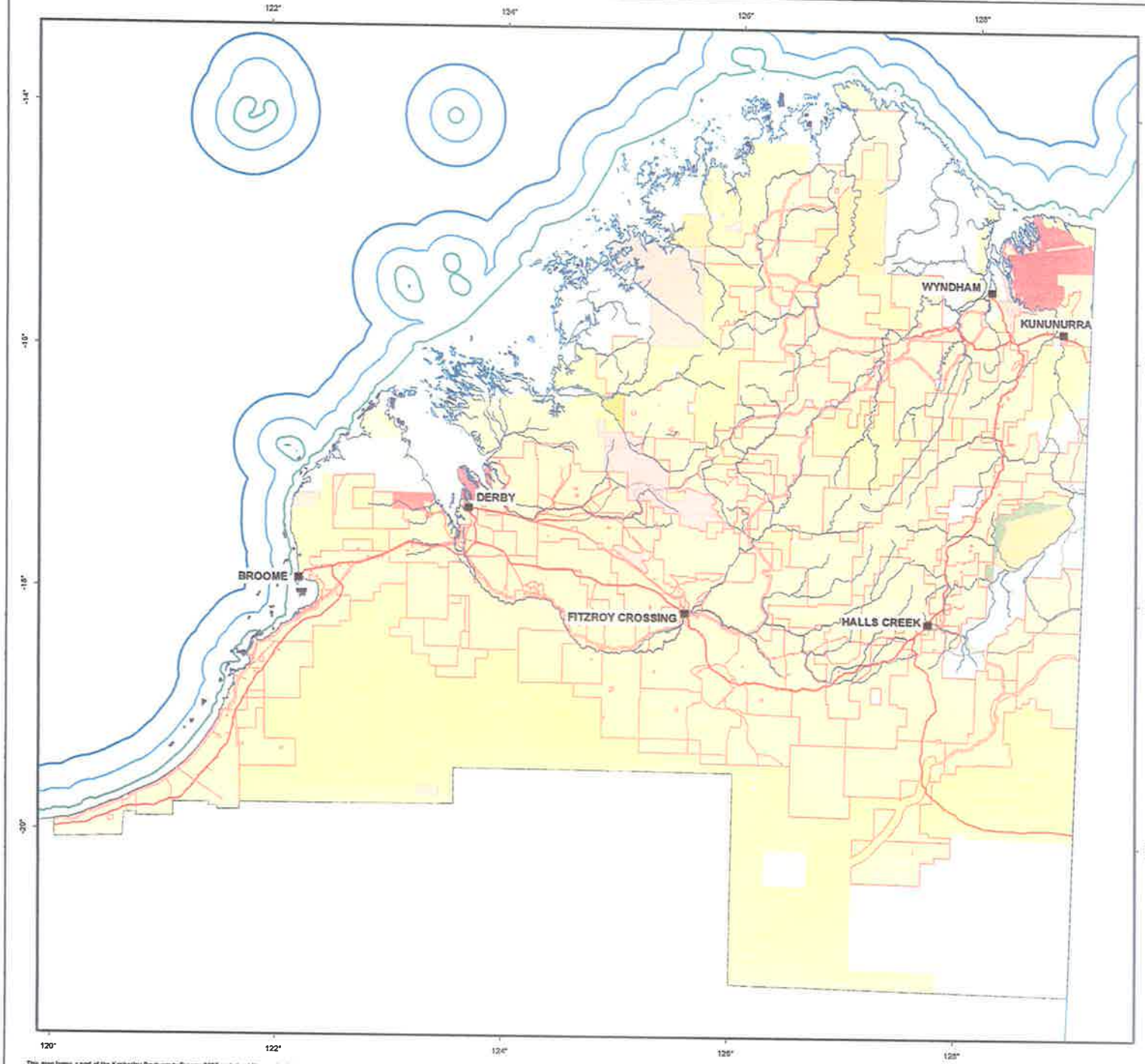
Job no:10mberley_review-Map3-tenements, produced 25 July 2007.

KIMBERLEY REVIEW
MAP 4: LAND TENURE



- Town
- Major river
- Principal road
- Secondary road

AUSTRALIAN MARITIME BOUNDARY

- Coastal waters
- Territorial sea
- Contiguous zone
- Australian Exclusive Economic Zone
- Pastoral lease
- Aquaculture

CALM Estate

- 5(1)(g) Reserve
- 5(1)(h) Reserve
- Conservation Park
- Ex Dir Freehold
- Former Leasehold
- Miscellaneous Reserve
- National Park
- Nature Reserve

Cadastre

- Crown
- Reserve
- Other

N

0 50 100 150 200 250

Kilometres

Projection: Universal Transverse Mercator
MGA Zone 51. Datum: GDA94

LOCALITY MAP

Department of Environment and Conservation

Produced under the Direction of
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Environment and Conservation

DATA DICTIONARY

Dataset	Custodian	Date
Tenure/title	GA	2004
Pastoral lease	Landgate	2006
Aquaculture	Fisheries WA	17 December 2006
Marine boundaries	GA	2004
DEC consolidation	DEC	June 2006
Cadastre	Landgate	May 2006

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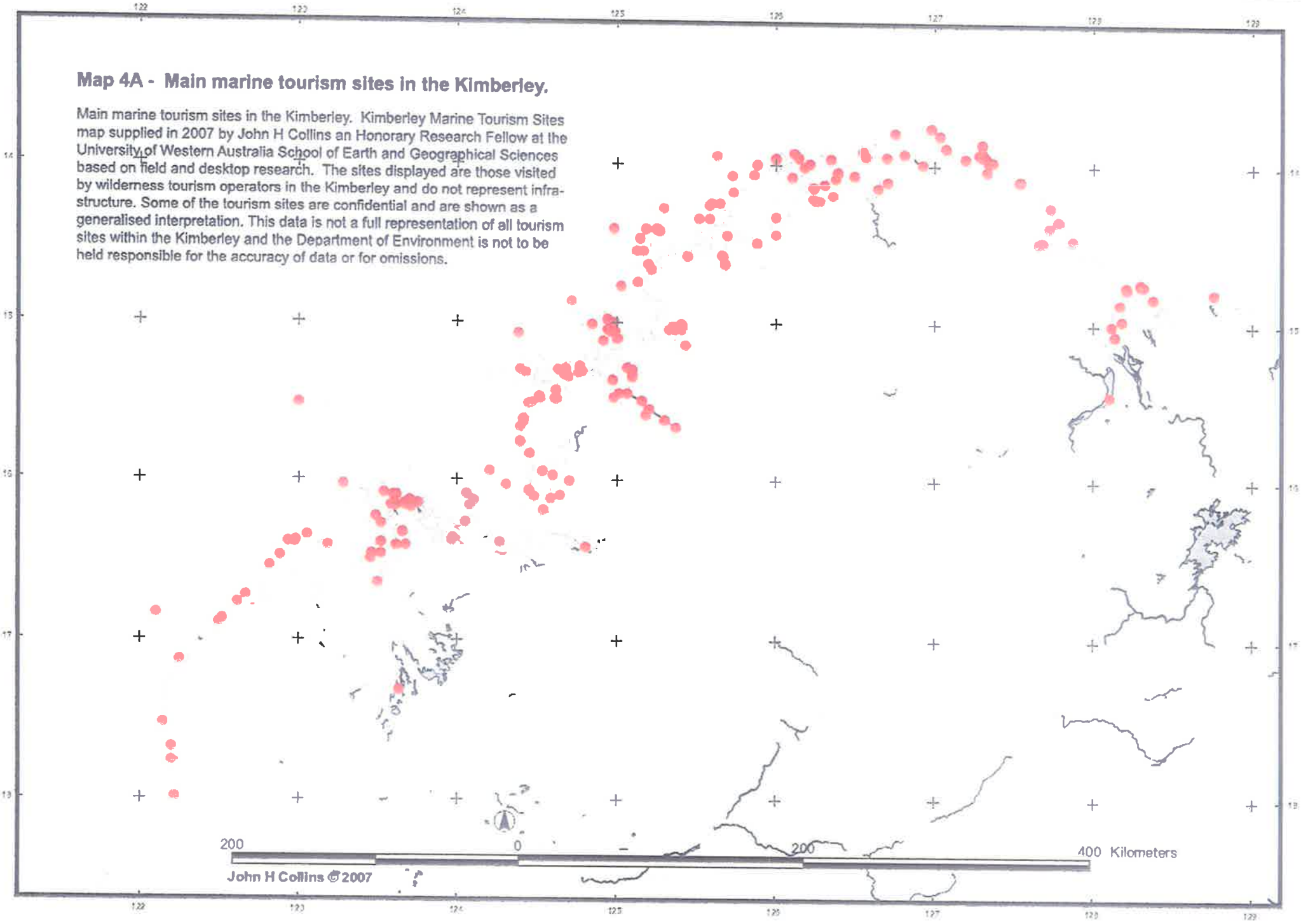
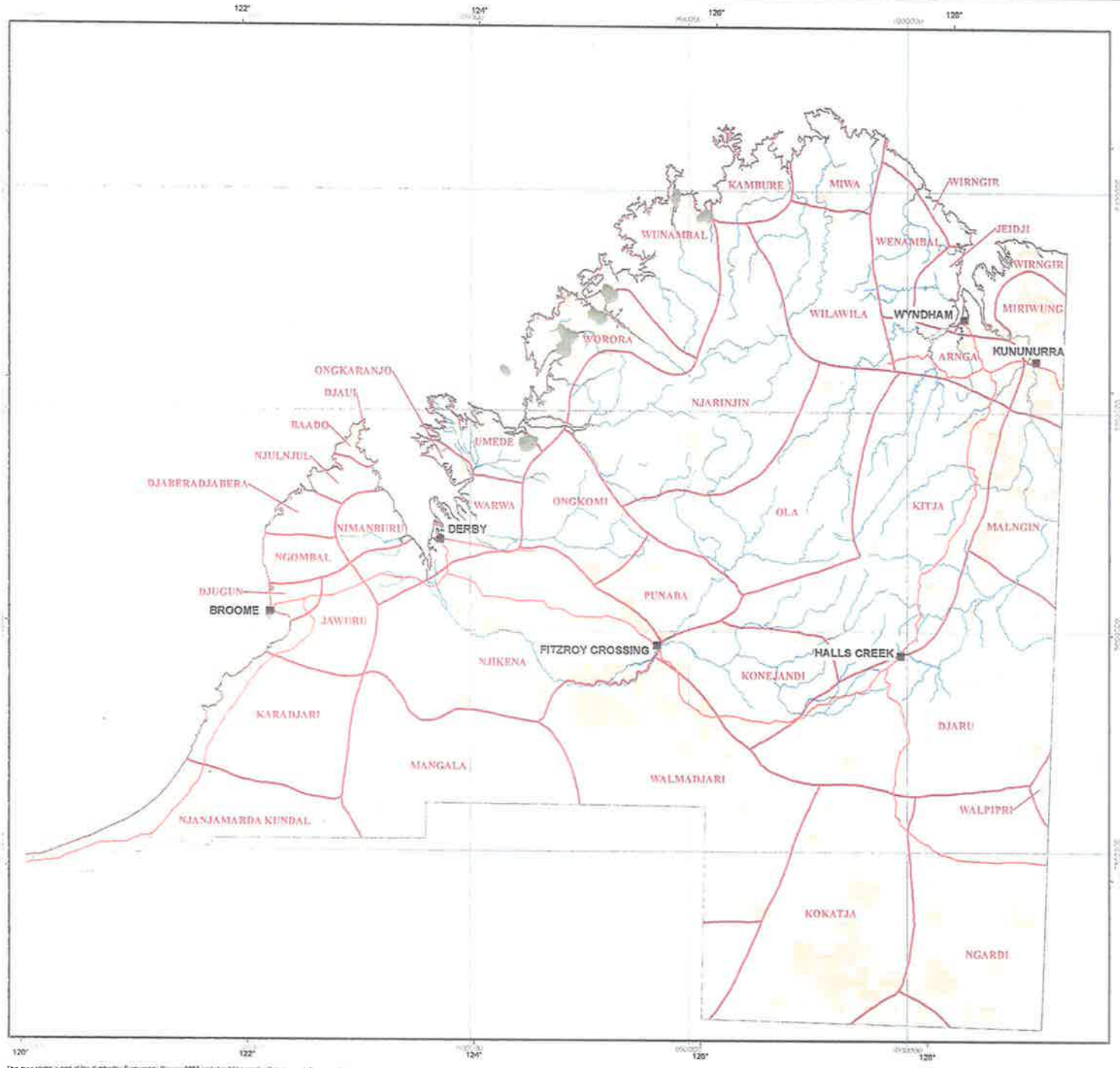
Job ref: Kimberley_review-Map4-tenure, produced 26 July 2007.

Map 4A - Main marine tourism sites in the Kimberley.

Main marine tourism sites in the Kimberley. Kimberley Marine Tourism Sites map supplied in 2007 by John H Collins an Honorary Research Fellow at the University of Western Australia School of Earth and Geographical Sciences based on field and desktop research. The sites displayed are those visited by wilderness tourism operators in the Kimberley and do not represent infrastructure. Some of the tourism sites are confidential and are shown as a generalised interpretation. This data is not a full representation of all tourism sites within the Kimberley and the Department of Environment is not to be held responsible for the accuracy of data or for omissions.



KIMBERLEY REVIEW
MAP 5: ABORIGINAL HERITAGE AND TRADITIONAL OWNER BOUNDARIES



Town

Major river

Principal road

Secondary road

Mangroves (3km buffer)

Aboriginal Sites Register

Traditional Owner Groups (TINDALE)

The Aboriginal sites shown on this map are in the Aboriginal Sites Register. This may not be the complete dataset and there may be some Aboriginal sites not included in the register.

N

0 50 100 150 200 250

Kilometres

Projection: Universal Transverse Mercator
MGA Zone 51. Datum: GDA94

LOCALITY MAP

Department of Environment and Conservation

Produced under the Direction of
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Director General, Department of
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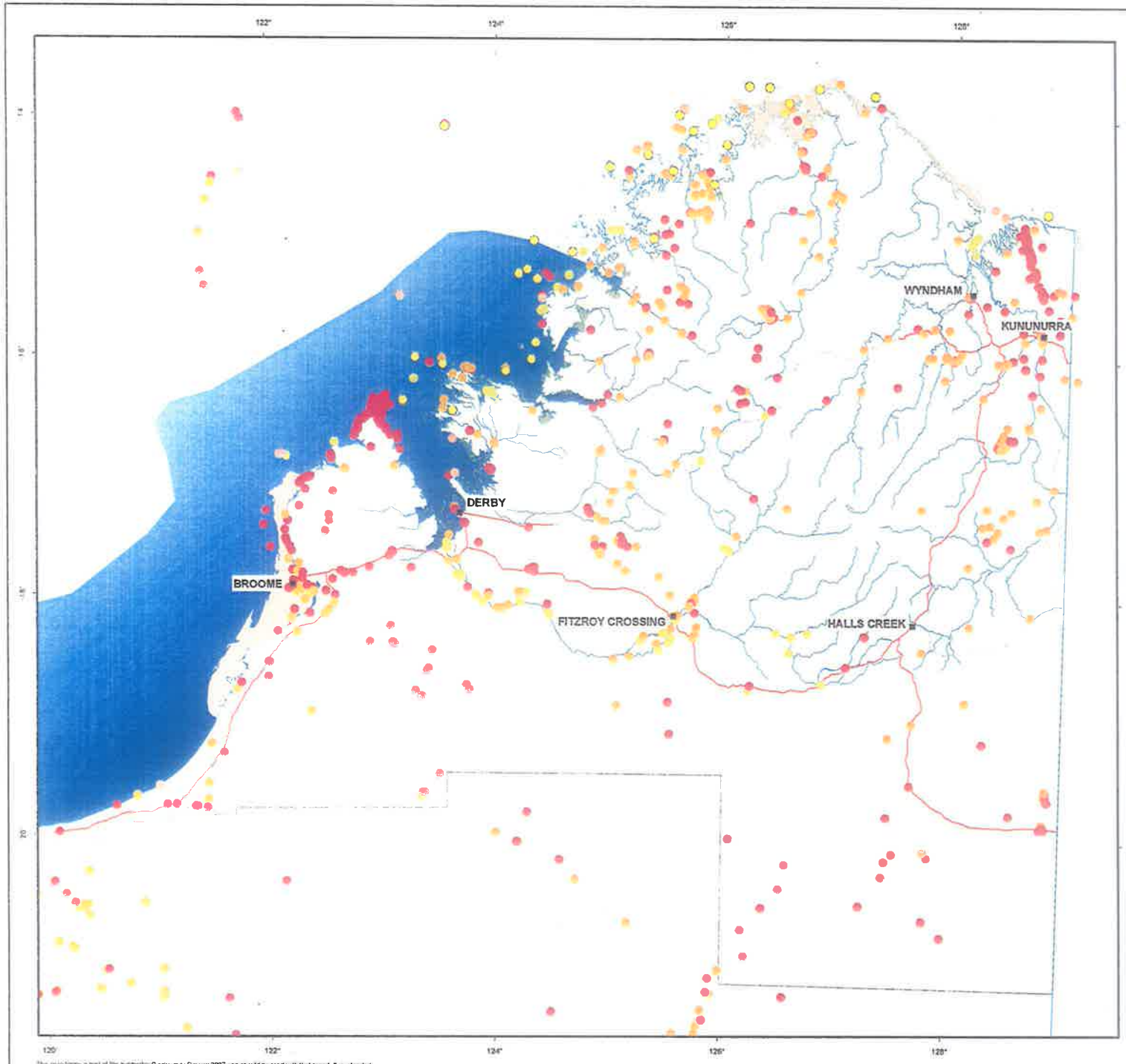
DATA DICTIONARY		
Dataset	Custodian	Date
Topography	DIA	2004
DEC regions	DEC	2006
Tindale boundaries	DIA	unknown
Aboriginal sites	DIA	September 2006
Mangroves	DEC	unknown
Coastline	DEC	unknown

This map forms a part of the Kimberley Botanical Review 2007 and should be read with that report. It is intended as a generalised interpretation of environmental concepts. This is not a full representation of all data from the Kimberley and the Department of Environment and Conservation is not to be held responsible for the accuracy of data or for omissions.

Job ref: kimberley_review-map5-Indigenous; produced on 26 July 2007

KIMBERLEY REVIEW
MAP 6: A REPRESENTATION OF KNOWN ECOLOGICALLY IMPORTANT HABITATS AND BIODIVERSITY IN THE KIMBERLEY AS IDENTIFIED THROUGH THE KIMBERLEY BIODIVERSITY REVIEW 2007



TOPOGRAPHIC FEATURES

- Town
- Principal road
- Secondary road
- Major river

VEGETATION

- Mangroves
- Malga

FAUNA CLASSIFICATION

- Threatened
- Protected
- Priority

FAUNA HABITATS

- Seabird nesting site
- Turtle nesting site
- Seal / sealion habitat
- Dugong habitat
- Corals
- Whale calving and migration

Department of Environment and Conservation

N

0 40 80 120 160 200

Kilometres

Projection: Universal Transverse Mercator
MGA Zone 51, Datum: GDA94

Produced under the Direction of
Keiran McNamara
Director General, Department of
Environment and Conservation

LOCALITY MAP

DATA DICTIONARY

Dataset	Custodian	Date
Threatened	CA	2004
Marine survey sites	JANS	unknown
Flora surveys	DEC	2007
Seabird nesting	DEC	May 2006
Establishments	CSIRO	1929
Dugongs	DEC	May 2006
Corals	AIMS	unknown
Corals	DOFA	unknown
Inlet	DEC	2006
Fauna	DEC	2006
Fauna (more surveys)	DEC	2007
Whale calving areas	Jenner et al	2001
Turtles	DEC	May 2006
Mangroves	DPI	December 1999
Mangroves	DEC	2007
Malga	DPI	May 2006

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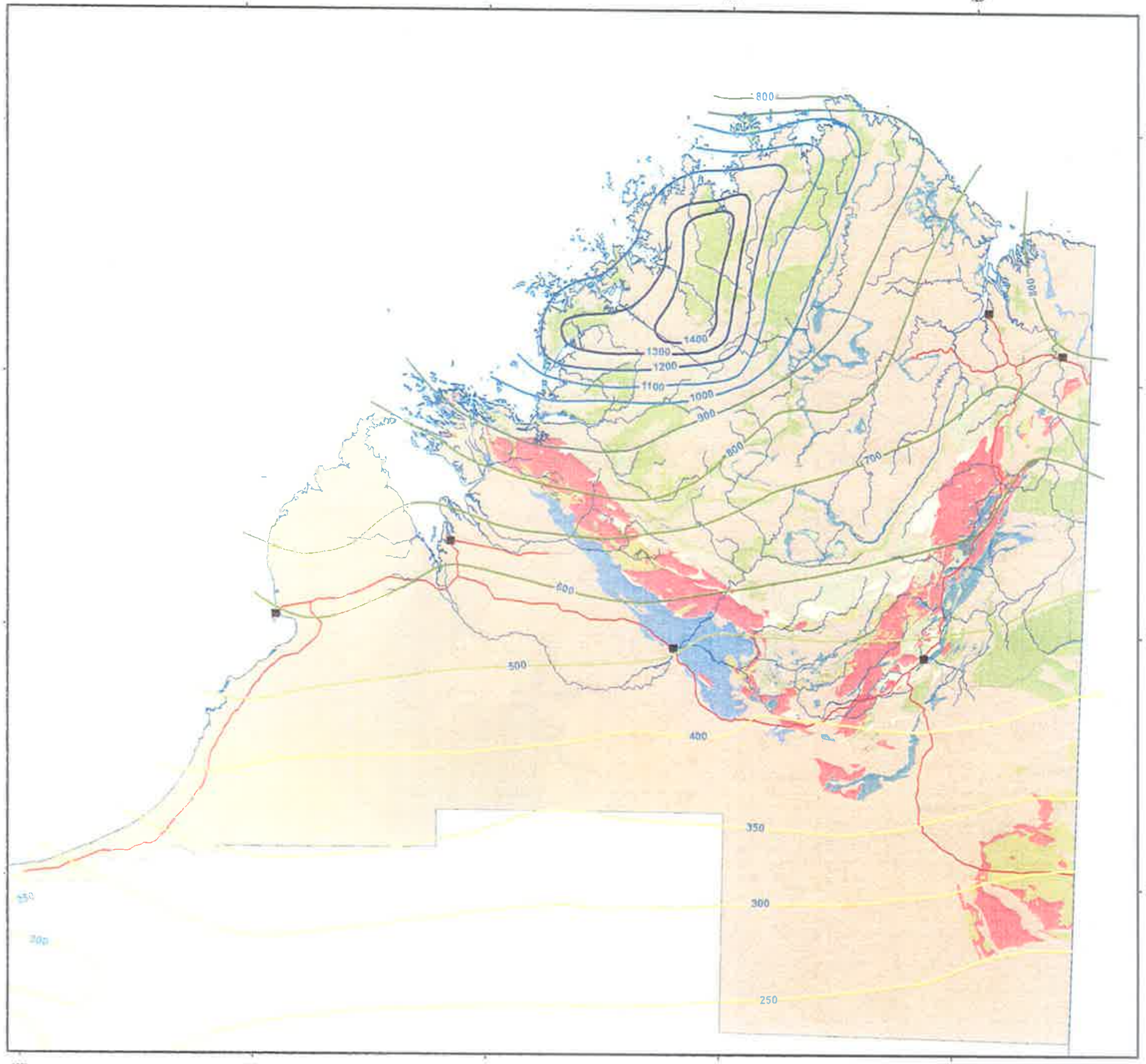
Job ref kimberley_review-map6-biodiversity; produced on 6 August 2007

KIMBERLEY REVIEW
MAP 7: RAINFALL AND GEOLOGY OF THE KIMBERLEY



Town
Major river
Principal road
Secondary road

RAINFALL (mm/year)
250 - 400
401 - 550
551 - 800
801 - 950
951 - 1100
1101 - 1250
1251 - 1400

ROCKTYPE
sedimentary siliciclastic
igneous felsic volcanic
metasedimentary siliciclastic
sedimentary carbonate
igneous lamproites
mixed
igneous mafic intrusive
igneous mafic volcanic
igneous ultramafic intrusive
meta-igneous felsic intrusive
meta-igneous mafic intrusive
igneous other intrusive
igneous granitic

0 50 100 150 200 250
Kilometres

Projection: Universal Transverse Mercator
MGA Zone 51. Datum: GDA94

Department of Environment and Conservation

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Environment and Conservation

DATA DICTIONARY

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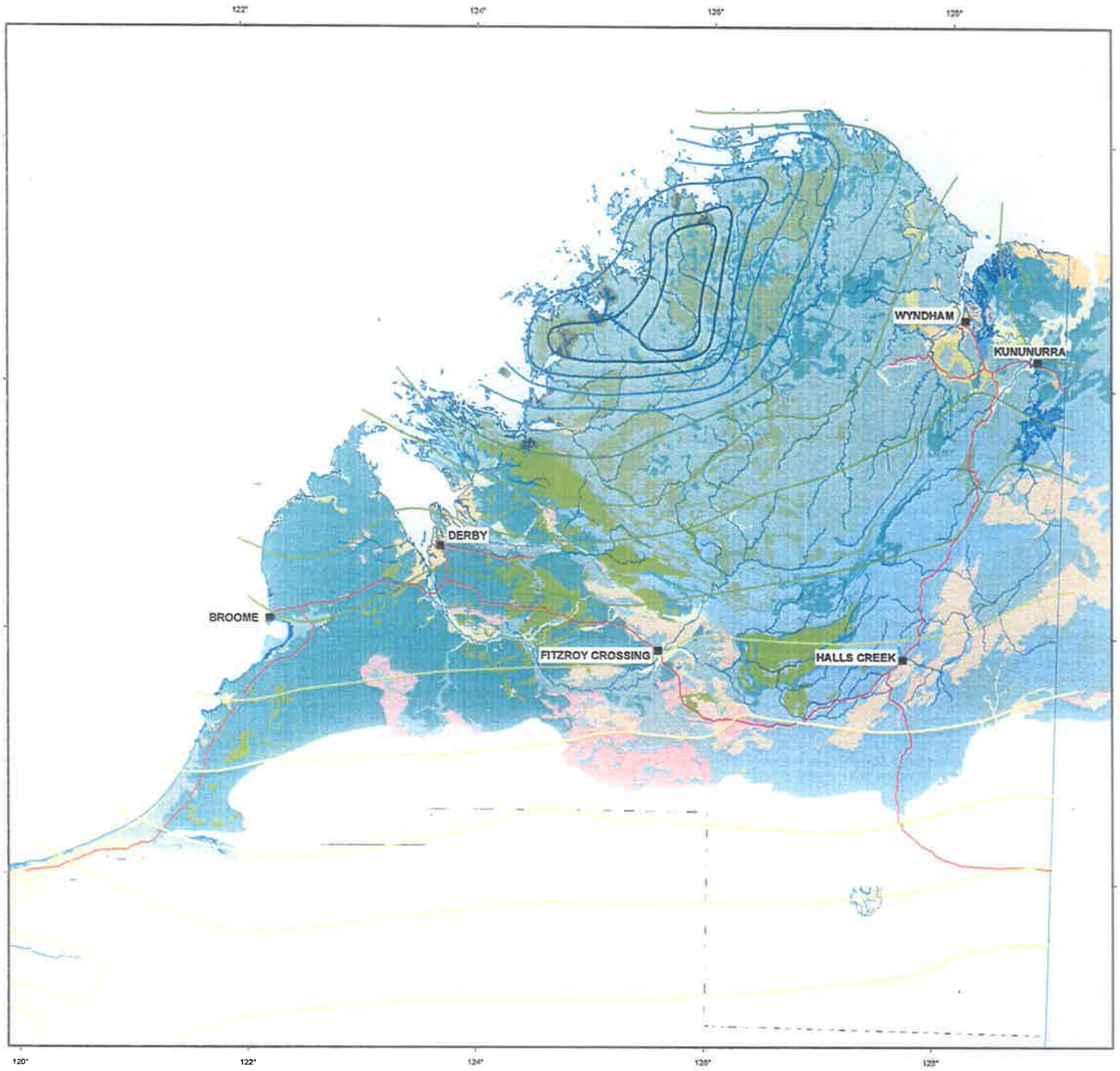
Job ref kimberley_review-map7-rainfall_and_geology; produced on 2 August 2007

KIMBERLEY REVIEW
MAP 8: VEGETATION CLASSES OF THE KIMBERLEY BASED ON SURVEYS CONDUCTED THROUGH THE TROPICAL SAVANNA CRC



TOPOGRAPHIC FEATURES

- Town
- Principal road
- Secondary road
- Major river
- Mangroves
- Melga

WETLANDS

- Important wetlands
- RAMSAR Sites

RAINFALL (mm/year)

- 250 - 400
- 401 - 550
- 551 - 800
- 801 - 950
- 951 - 1100
- 1101 - 1250
- 1251 - 1400

TROPICAL SAVANNA

- Acacia spp.
- Closed-forest communities
- Communities of the littoral zone.
- Eastern sub-humid woodlands
- Heathlands and closed shrublands.
- Hummock grasslands.
- Low woodlands dominated by Melaleuca spp. on depositional plains and alluvium.
- Monsoon low open woodlands
- Monsoon low woodlands
- Monsoon mixed species woodlands to low open-woodlands.
- Monsoon woodland and open-woodlands
- Open-forests and woodlands
- Open-forests dominated by Eucalyptus spp. and Corymbia spp.
- Sedgelands, lakes and lagoons and ephemeral herblands and grasslands.
- Tussock grasslands.
- Woodlands and open-woodlands dominated by Eucalyptus spp. and Corymbia spp. on basalt.

N

0 30 60 90 120 150

Kilometres

Projection: Universal Transverse Mercator
MGA Zone 51. Datum: GDA94

LOCALITY MAP

Department of Environment and Conservation

Produced under the Direction of
Keiran McNamara
Director General, Department of Environment and Conservation

DATA DICTIONARY

Dataset	Custodian	Date
Topography	GA	2004
RAMSAR	DEC	Unknown
Important Wetlands	DEC	2001
Rainfall	BoM	1950
Savanna vegetation	QHI/DPIW	August 2007
Mangroves	DPI	December 1999
Mangroves	DEC	2007
Melga	DPI	May 2009

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Job ref: kimberley_review-map8-Savanna_and_Wetlands; produced on 6 August 2007