Factors that contribute to the establishment of marine protected areas in Western Australia

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4. THE ROLE OF PLANNING INFORMATION IN MPA ESTABLISHMENT

4.1. INTRODUCTION

This chapter summarises the results of the case study reviews with respect to knowledge and information to support MPA planning. Documentation for each process was reviewed, and issues relating to the availability of information were recorded in case study summaries. Subsequent stakeholder interviews focused on the adequacy of information.

Table 3 summarises the preparatory work to support the five MPA planning processes based on the documentation review. The conservation agency undertook what was referred to as a ‘resource assessment’ process for the proposed MPAs, which compiled written and spatial information to support the establishment process. In some cases surveys and other research activities were also undertaken to address information gaps.

Summary publications, spatial data and internal reports were generated to support the conservation agency and public participation activities. The conservation agency undertook research in areas such as oceanography, community understanding, habitat mapping and biological surveys, and compiled a range of ecological and social spatial datasets that were incorporated into a Geographic Information System (GIS). Habitat maps were prepared using existing habitat information, remote sensing information and expert knowledge (i.e., Montebello Complex and Dampier), and in some cases through a more structured mapping process with field verification (e.g., Jurien, Capes and Ningaloo). Socio-economic data were derived through existing spatial datasets, government agencies’ advice, stakeholder interviews and anecdotal marine user data.

All MPA processes, except Ningaloo, involved a series of face-to-face and telephone discussion/interviews with stakeholders prior to public engagement to gain an understanding of community views and to map the community and stakeholder interests (Osborne & Monks 2000b). This ‘issues analysis’ was used to plan public participation processes, participatory structures and community information programmes.
## Table 3 Summary of information gathered for MPA planning and issues arising in the planning process

<table>
<thead>
<tr>
<th>Information gathering process</th>
<th>Jurien</th>
<th>Montebello</th>
<th>Dampier</th>
<th>Capes</th>
<th>Ningaloo</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Issues analysis</td>
<td>• Issues analysis</td>
<td>• Issues analysis</td>
<td>• Issues analysis</td>
<td>• Issues analysis</td>
<td>• Issues analysis</td>
</tr>
<tr>
<td>Spatial mapping processes</td>
<td>• Existing knowledge</td>
<td>• Existing knowledge</td>
<td>• Existing knowledge</td>
<td>• Existing knowledge</td>
<td>• Ecological datasets</td>
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<td></td>
<td>• Ecological datasets</td>
<td>• Ecological datasets</td>
<td>• Ecological datasets</td>
<td>• Ecological datasets</td>
<td>• Human use datasets</td>
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<td>• Human use datasets</td>
<td>• Human use datasets</td>
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<td>• Human use datasets</td>
<td>• Human use datasets</td>
</tr>
<tr>
<td>Additional activities before planning</td>
<td>• Oceanographic description &amp; modelling</td>
<td>• Oceanographic description &amp; modelling</td>
<td>• Oceanographic description &amp; modelling</td>
<td>• Habitat field surveys</td>
<td>• Interaction with coastal planning and proposed development/use</td>
</tr>
<tr>
<td></td>
<td>• Biological field surveys</td>
<td>• Biological field surveys</td>
<td>• Habitat field mapping</td>
<td>• Biological field surveys</td>
<td>• Review of implementation of past management plan</td>
</tr>
<tr>
<td></td>
<td>• Habitat mapping</td>
<td>• Habitat mapping</td>
<td>• Research on historic water and sediment quality monitoring</td>
<td>• Rec. use surveys (aerial)</td>
<td>• Habitat mapping of deep-water &amp; filter-feeding habitats</td>
</tr>
<tr>
<td></td>
<td>• Recreational use surveys</td>
<td></td>
<td></td>
<td>• Indigenous importance</td>
<td></td>
</tr>
<tr>
<td>Additional activities during planning</td>
<td>• Identification of critical commercial fishing areas</td>
<td>• Obtaining access to petroleum prospectivity, oil &amp; gas reservoirs maps &amp; early planning for future developments</td>
<td>• Further habitat mapping of deep-water habitats</td>
<td>• Forest conservation &amp; indigenous importance</td>
<td>• Habitat mapping of deep-water &amp; filter-feeding habitats</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Identification of commercial fishing areas</td>
<td>• Indigenous importance</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Identification of ports, industry, oil and gas future infrastructure</td>
<td>• Moorings mapping</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Future infrastructure</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Fine-scale commercial fishing use</td>
<td></td>
</tr>
<tr>
<td>Key information issues</td>
<td>• Scale of commercial fishing use data (particularly rock lobster &amp; wet-line/net fishing)</td>
<td>• Location of oil &amp; gas reservoirs</td>
<td>• Scale of commercial fishing use data (prawn trawling &amp; aquarium)</td>
<td>• Scale of commercial fishing use data (abalone, wet-line &amp; net fishing)</td>
<td>• Recreational fishing (spatial distribution) &amp; relative worth or value</td>
</tr>
<tr>
<td></td>
<td>• Areas of Indigenous importance</td>
<td>• Potential future infrastructure (e.g., ports, pipelines, platforms, etc.)</td>
<td>• Recreational fishing (spatial distribution) &amp; relative worth or value</td>
<td>• Scale of habitat mapping</td>
<td>• Gaps in habitat information for deep water</td>
</tr>
<tr>
<td></td>
<td>• Gaps in habitat information for deeper</td>
<td>• Scale of habitat mapping and accuracy</td>
<td>• Proposed ports &amp; expansion plans</td>
<td>• Areas of Indigenous importance</td>
<td>• Coastal use &amp; access</td>
</tr>
<tr>
<td>Water (rationale for no-take zones)</td>
<td>Gaps/poor accuracy in habitat information (and rationale for representative no-take zones)</td>
<td>Industrial expansion (e.g., salt mining) Potential future infrastructure (e.g., pipelines) for oil and gas Scale of habitat mapping and accuracy Gaps in habitat information for deeper water (rationale for sanctuary zones) Areas of Indigenous importance</td>
<td></td>
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</tr>
</tbody>
</table>
Additional data was often required during the public participation process, triggered by particular conflicts that could not be resolved due to inadequate data. This was obtained through field surveys (e.g., further habitat mapping), direct stakeholder engagement (e.g., commercial and recreational fishing data), engagement with private companies (e.g., commercial plans and interests), inter-agency engagement (marine management issues) and telephone interviews (e.g., to gauge community support).

The commitment and resources invested in ensuring a sound information platform for planning was a significant improvement on pre-1997 MPA processes. Information was comprehensive (i.e., all aspects outlined in a defined framework were addressed in some form), and wherever possible data was gathered at the appropriate spatial and temporal scales. The documentation review and interviews confirm that this approach facilitated the MPA establishment processes, particularly community engagement, boundary setting, development of zoning schemes and preparation of management plans. Most stakeholder interviews support the assertion that information was adequate for MPA planning purposes (see Table 4); however, the Marine Authority and recreational fishing responses believed information for some issues was ‘inadequate’.

Spatial information was particularly important in committee discussions and stakeholder meetings where this information contributed to conflict resolution and development of consensus between stakeholders. The following spatial information was particularly important:

- Ecological datasets, particularly marine habitats and critical wildlife areas.
- Historical and current human use data (e.g., recreational and commercial fishing, aquaculture, tourism, etc.).
- Future human use (e.g., plans for future marine infrastructure, industry, oil and gas, aquaculture, coastal development).
- Adjacent land and marine tenure.

Non-spatial information was also used to understand the area’s biodiversity and assets and socio-economic value (e.g., economic contribution, employment, etc.).
Table 4 Summary of views of marine stakeholders and agencies on the adequacy of planning information

<table>
<thead>
<tr>
<th>MPA</th>
<th>Marine Stakeholders</th>
<th>Marine Authority, Conservation and Fishery Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jurien</td>
<td>Most responses adequate (one exceeding, one inadequate)</td>
<td>Adequate</td>
</tr>
<tr>
<td>Montebello</td>
<td>Adequate</td>
<td>Adequate or more required</td>
</tr>
<tr>
<td>Dampier</td>
<td>Adequate</td>
<td>Adequate or more required</td>
</tr>
<tr>
<td>Ningaloo</td>
<td>Most responses adequate, except recreational fishing (inadequate)</td>
<td>Adequate or more required</td>
</tr>
<tr>
<td>Capes</td>
<td>Most responses adequate, except recreational fishing (inadequate)</td>
<td>Adequate or more required</td>
</tr>
</tbody>
</table>

While there was significant ecological and social information for the MPA processes, a review of the documentation and stakeholder interviews revealed that key information gaps affected all processes. These gaps included:

- Inadequate information on a key biodiversity value or human use.
- Inadequate spatial and temporal scales for MPA planning.
- Inconsistent quality of information (e.g., in spatial coverage, formats, variables, accuracy, etc.).
- Information with poor stakeholder acceptance (e.g., perceived inaccuracies of survey data, disagreement over data assumptions).

These inadequacies resulted in process delays while information shortfalls and gaps were addressed. The key issues with respect to information used for MPA planning and establishment are summarised for each case study in the following sections.

4.2. JURIEN BAY

The conservation agency gathered relevant ecological and socio-economic information prior to the commencement of community engagement. This included studies of social and ecological information, habitat mapping, field habitat surveys, biological surveys, oceanographic research, visitor usage surveys, development of human use maps and a compilation GIS. This information was summarised in a published report entitled Jurien Bay Regional Perspective 1998 (CALM 1998). The

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1 Based on stakeholder questionnaire responses.
pre-planning activities also involved consultation with stakeholders to gain an understanding of community views through a series of face-to-face or telephone discussion/interviews of 100 people in the area.

Significant resources and time were invested by the conservation agency to ensure an adequate scientific and social understanding for this process. This contrasted with previous MPA planning in the state, which was generally conducted using existing information with limited specific information gathering to support the planning process. There was high expectation within agency staff, marine stakeholders and the community that this investment would contribute to an improved establishment process.

There were three key issues relating to information that affected the Jurien establishment process:

- Extension of the area under consideration.
- Scale and availability of information on commercial fishing in the proposed MPA.
- Availability of a comprehensive habitat dataset.

4.2.1. Extension of the area under consideration

An additional complexity in the process was a decision by the committee to increase the spatial area under consideration (i.e., the ‘southern extension’). This created difficulties with respect to the adequacy of the planning information and community engagement, as there was limited ecological and socio-economic information prepared for this area and this had to be obtained quickly to minimise disruption and avoid significant delays to the process.

4.2.2. Scale and availability of information on commercial fishing

The scale and availability of information on commercial fishing in the proposed MPA was the most significant factor in the planning process, and strongly influenced the development of the management zoning for the MPA.

The western rock lobster fishery has a large number of operators and large management zones. The fishery is seasonal, with high inter-annual variation in abundance, catch and effort, and operates in State and Commonwealth waters. It was difficult to get a clear understanding of the likely commercial impacts on the fishery as a whole, to identify particular operators that would be affected, or to identify...
potential ways of avoiding zoning impacts and obtain potential consensus. Despite efforts by fishing representatives, it was not possible to get an accurate assessment of fishing areas at a scale that was useful for MPA zoning. Other fisheries were also problematic in this regard, such as the commercial shark and aquarium fisheries.

The experience in Jurien\textsuperscript{62} showed that the large reporting data grids (60 x 60 nautical miles) and resulting lack of fine-scale quantitative information on commercial fishing was used successfully by commercial fishing stakeholders to argue against the establishment of no-take zones on the basis of perceived high-level impacts, when in reality there may have been little or no fishing in the areas being considered. However, the opposite can also be the case (i.e., a small area could comprise the bulk of commercial catch for a large reporting block), where fishers’ impacts are greater than the information suggests, as was the case with shark fishermen in the Jurien process.

Commercial fishing information for MPA planning generally relied on anecdotal information obtained from the fisheries agency, through interviews, or verbal or written information volunteered by commercial fishing representatives. This relied on the development of trust between fishers and the conservation agency staff, as well as good coordination between fishers. Initially fishers were not comfortable with providing information, and subsequently data was presented late in the public participation processes. The anecdotal information provided was not representative and had an inherent bias due to the small proportion of fishers involved and the highly diverse fishing practices of fishers (i.e., areas of operation, seasonality, homeports, etc.). This information was easily challenged by other fishers as being incorrect and not representative of their fishing activities.

The absence of accurate information at an appropriate scale reduced the capacity to develop a balanced and robust zoning process and to ensure that potential socio-economic impacts were fairly assessed. It also did not enable quantitative estimates of compensation, and therefore opened the process to unsubstantiated claims of negative impacts that could not otherwise be disapproved due to the lack of appropriate data. Politically, this was an important issue as it raised government uncertainty as to the potential cost and social impact and reducing general political support for the MPA. Another related issue was the legal limitations on the release of commercial data that are in place to encourage accurate reporting by fishers for
fisheries management purposes. Catch and effort data could not be provided to the conservation agency or MPA planning committees where there were small numbers of fishermen in a particular data block (generally less than five fishers).

4.2.3. Availability of a comprehensive habitat dataset

The existence of a comprehensive, reliable and suitably detailed habitat map influenced the zoning process. Establishing no-take zones that are representative of the major marine habitats was a key criterion for the proposed zoning. Therefore habitat data needed to be adequately detailed, defendable and available for the public participation process. In the case of Jurien, the absence of reliable habitat information in deep-water areas led to debate and opposition to proposals for no-take zones on the basis that habitats were not significantly different despite anecdotal evidence to the contrary. This was significant, as these deeper water areas were of high commercial interest for the rock lobster fishery and the lack of quality habitat data limited the ability to make a sound scientific argument for restrictive zoning in these deeper waters.

4.3. Montebello Complex

Relevant biological and social information was gathered to support the planning process, including marine habitat surveys, compilation of information on recreational and commercial use and establishment of a GIS. This information was summarised in the Montebello/Barrow Islands Regional Perspective (Osborne et al. 2000). The assessment process also involved a series of face-to-face and telephone discussion/interviews of stakeholders (Osborne & Monks 2000b) to gain an understanding of community views.

There were two key issues relating to information that affected the establishment processes:

- Information on existing and future petroleum activities.
- Availability of a comprehensive habitat dataset.

4.3.1. Information on existing and future petroleum activities

The principal economic impact for proposed MPA boundaries and restrictive zoning was on petroleum operations in this area, and there was a focus on minimising impacts on existing operations, formalised development proposals and future
potential developments. Commercial confidentiality of information impeded efforts to develop consensus, particularly in respect to assessing impacts on future industry development. This required an understanding of the location of oil and gas reservoirs derived through industry seismic and exploration drilling, which was commercially sensitive. Companies were reluctant to provide this information initially, and this hampered the ease of determining zoning options for achieving conservation objectives while minimising impacts on industry.

The MPA proposal also highlighted the lack of information available on future developments and the absence of forward marine planning incorporating commercial aspirations. The MPA process forced resource agencies, existing industrial companies and proponents of future industry projects to bring forward consideration of future infrastructure proposals, potential expansion of existing projects and new development activities. This was needed to determine whether or not an MPA (and zoning) would be an obstacle to future developments, and where necessary, to ensure the MPA was amended to facilitate future development. Examples in this process included proposals for pipelines, ports expansion, drilling and other activities that were likely in the 10–20 year planning horizon.

4.3.2. Availability of a comprehensive habitat dataset

In the Montebello process very good habitat information existed for shallow, offshore reef areas, but information in deeper, remote or more turbid inshore waters, particularly on the western and southern areas of the proposed MPA, was poor or absent. Anecdotal information suggested that significant coral reef communities occurred in the southern area; however, these areas had not been formally surveyed, thereby limiting the rationale for representation of these habitats in no-take zones.

The conservation agency recommended that a significant portion of the southern area be set aside as a no-take zone on the basis that the area contained important inshore coral reefs that were ecologically different to the coral reefs further offshore. This triggered debate due to the prospectivity for oil and gas, with industry not supportive of a large no-take zone in this area. However, the debate was poorly informed, due to the limited habitat information to justify the proposed zoning. While support was initially obtained, this proposed zone was not approved by government prior to the
establishment of the MPA. The availability of adequate habitat information may have assisted in the justification for retaining this proposed zone.

4.4. DAMPIER ARCHIPELAGO

The conservation agency gathered relevant ecological and socio-economic information to inform the planning process including field habitat surveys and development of a GIS spatial data. This was summarised in a report entitled Dampier Archipelago/Cape Preston Regional Perspective 2000 (CALM 2000a). The assessment process also involved interviews with 164 people from a range of interest and user groups to gain an understanding of community visions and aspirations, assess community attitude, estimate levels of knowledge and understanding and identify the issues and concerns within the community (Osborne & Monks 2000a).

There were five key issues relating to information that affected the establishment process:

- Availability of a comprehensive habitat dataset.
- Information on Indigenous values.
- Information on existing and future industrial uses.
- Information on recreational fishing and associated values.
- Information on commercial fishing use.

4.4.1. Availability of a comprehensive habitat dataset

Habitat information was based on a habitat dataset from the early 1980s prepared by the Department of Conservation and Environment. This was broad scale and included the major sub-tidal and inter-tidal habitats in the Archipelago. However, in deeper waters and more turbid shallow coastal waters there was no, or limited, information on the nature of these habitats.

The result was a highly variable habitat dataset with large gaps. There was a high degree of uncertainty as to what habitats existed and the degree of habitat homogeneity through the area. In the absence of robust survey information, habitat maps developed for the planning process mapped all deeper waters as a single unit (‘sand’) even though anecdotal information suggested these areas were not homogenous and likely to contain a range of different reef and filter-feeding
communities (e.g., whips, sponges and gorgonians) as well as soft benthos communities.

The debate regarding the establishment of no-take zones in the deeper waters of the Archipelago was intensified, as these deeper waters were highly valued for recreational sport fishing and fishers strongly opposed no-take zones in them. In promoting a representative no-take zone system, the conservation agency put the view that these deep-water areas were unlikely to be a homogenous habitat of ‘sand’ but instead were likely to contain a range of important marine communities that should be represented based on limited anecdotal information.

In the absence of robust habitat information, the debate was poorly informed and difficult to resolve, and ultimately forced the conservation agency to undertake targeted habitat mapping to confirm the existence of these marine communities between committee meetings. These activities confirmed that these habitats were significantly different to the shallow water habitats covered by other proposed no-take zones, and hence provided an improved rationale and a more informed debate resulted on the zoning proposals. However, fishing stakeholders were sceptical of the information that was sourced by the agency during the process.

4.4.2. Knowledge of Indigenous values

The Dampier area has high Indigenous cultural heritage values, and processes to address claims for native title are a dominant issue in the area. The need for effective Indigenous consultation, involvement in future management and information on Indigenous values was recognised by the advisory committee, Marine Authority and the conservation agency; however, facilitating this was hampered by a number of issues, which are addressed in Chapter 5. The result was an absence of clear information on Indigenous use, and the values and aspirations of Indigenous communities. This, along with the lack of direct engagement by Indigenous representatives, did not enable the committee, Marine Authority or the conservation agency to have the necessary base information to understand the cultural usage of the area, important cultural sites nor Indigenous aspirations for management.

The outcome was an MPA proposal that did not take account of the important Indigenous values or aspirations of local Indigenous people, which was highlighted in the public submissions to the proposal. This was a key issue, as to legally create
an MPAs there is a legislative requirement for formal engagement with native title claimants under the Native Title Act for the gazettal of ‘onshore areas’ (land and inter-tidal requires the approval of the native title owner[s]), and ‘offshore areas’ where there is a requirement to have consulted. Therefore the lack of Indigenous information, along with the inability to engage effectively and complications with native title legislation, were key impediments to MPA creation.

4.4.3. Existing and future industrial uses

Minimising impacts on existing, proposed and future developments was a principal driver of proposed MPA boundaries and zoning. The Dampier area has high economic value associated with a number of ports, industrial processing facilities, petroleum operations and facilities and a series of proposed industrial developments were also planned. Much of this information was commercially sensitive and companies were reluctant to provide this information early in the planning process, which hampered the determination of appropriate MPA boundaries and the development of zoning options.

The MPA proposal highlighted the lack of detailed information on proposed developments and the absence of strategic marine planning for the area. The MPA process forced resource agencies, existing resource companies and proponents of future industry projects to bring forward consideration of new proposals, potential expansion of existing projects and new development activities. This was needed to determine whether or not an MPA (and zoning) would be an obstacle to future developments, and where necessary, to ensure the MPA was amended to facilitate future development. Examples of proposed future developments included the following:

- Expansion of Dampier Port and associated developments; (e.g., groynes, conveyors, loading structures, markers, etc.), proposed shipping channels and future dredge spoil dumping areas, and future use of Port Walcott.

- Proposed Cape Preston Port and associated mine developments (groynes, conveyors, loading structures, markers, etc.).

- Allowance for the release of bitterns and water intakes for the Dampier evaporative salt operation and future.
• Access to potential lime sand deposits on and adjoining the islands within the proposed MPA.

• Proposed ports at Legendre and Dixon Islands and proposed petroleum operations and petroleum pipelines.

Many of these developments were early in planning and subject to considerable uncertainty, yet it was necessary to understand the possible options and requirements to assess the possible implications of establishing an MPA that overlapped or adjoined them. The information was difficult to obtain and had to be ‘flushed out’ through consultation, letters and meetings with private companies and government agencies. Proposals for new oil and gas platforms, pipelines, new and expanded ports, expansion of salt mining operations, creation of new shipping lanes through dredging and blasting, coastal industrial developments and future mines were key considerations for the proposed MPA boundaries and zoning type and boundaries.

4.4.4. Recreational fishing data

The Dampier Archipelago is a major focus for recreational fishing, and this activity is highly valued by the local and regional communities (CALM 2000a). Information on recreational fishing available to support the development of proposed MPA boundaries and management zoning was a key requirement. With no quantitative recreational fishing data available for the Dampier area, and limited time and resources to undertake a properly designed survey, the conservation agency created a recreational fishing spatial use dataset based on anecdotal responses from key local recreational fishers to identify develop spatial datasets showing high, medium and low recreational fishing use. This data was verified by the local recreational fishing representative groups.

These datasets showed a basic pattern in that areas close to the shore and boat ramps were ranked as ‘low use’ with progressively increasing recreational fishing moving away from shore, with the ‘high’ areas approximately 40 km offshore associated with clear waters on the outer edge of the Archipelago. Fishers advised that the principal target species were highly valued reef and pelagic fish species, and that the principal fishing method was boat line and trolling. These spatial datasets were subsequently used in the initial development of proposed zoning, based on the assumption that the greatest potential impact to recreational fishers was in these areas.
Subsequent quantitative recreational fishing surveys undertaken by the fisheries agency found that recreational fishing intensity was highest in nearshore waters, progressively reducing out to deeper waters, where the level of fishing activity was very low. Rather than highly prized demersal and pelagic finish species (e.g., red emperor, Spanish mackerel), the survey found the four principal species taken (by number) were blue swimmer crabs, green mud crabs, one finfish species and squid (Williamson et al. 2006).

This result highlighted two quite separate aspects to measuring recreational fishing interests and the potential bias of using anecdotal methodology; recreational fishing use (i.e., the number of people that use an area, when, using what techniques, for what species and how often); and the recreational fishing value, or the worth that fishers attach to an activity, species or area. In Dampier the deeper waters of the Archipelago were a significant distance from the coast and few boat users were able to access those areas because of the size of the vessel needed to travel this distance offshore. There was generally a low level of fishing use in these areas, comprising a relatively small group with access to larger vessels, which had the capacity, time and knowledge to travel the distance. These fishermen targeted ‘high-value’ recreational fish species such as tuskfish, red emperor, snapper, coral trout, pelagic species such as mackerel, and sports fish such as sailfish and marlin. Fishermen who used these areas attributed a very high social value on access to these areas because of the quality of fish and fishing experience in these areas.

When the conservation agency obtained its original recreational fishing dataset, the people interviewed were generally the leaders of the recreational fishing groups and spokespeople for the recreational fishing community. These people were a biased sample of fishers, as these were primarily the ‘expert’ fishers discussed above. They generally rated nearshore waters as ‘low use’; however, in reality they were ranking these areas as of ‘low value’ to them and their peers, who rarely fished these areas because of the poor opportunities to catch high-value species.

This contrasted with the fact that the areas of highest use for recreational fishing was in fact fishing for ‘low grade’ species in these ‘low value’ areas. As such, the original dataset derived was a good predictor of local peak body stakeholder views, but was not an accurate indicator of overall community fishing activities of the larger, but perhaps less motivated and vocal, fishers.
This had implications for the zoning process, as these two anecdotal datasets were driving the selection of no-take zones, and fishing representatives primarily espoused this value-based view rather than a quantitative representation of use (what, when, where, how many, etc.). Therefore, the data drove the location of no-take zones into areas that would potentially have affected a greater number of fishers and overall fishing activity. This highlights the importance of quantitative data in providing a dispassionate assessment of the use, impacts and the potential pressures or risks this activity could have on the ecological values. It also highlights the value of coordinating information gathering from other agencies to ensure this is available for MPA establishment (see Chapter 7.2).

4.4.5. Commercial fishing data

Commercial fishing was an important use in the Dampier process, particularly in respect to the trawl fishery and the commercial aquarium fishery. The absence (initially) of information on the trawl fishery was a key impediment to deriving potential MPA boundaries. The subsequent provision of sound fine-scale information via fishing representatives on the seasonal patterns of this fishery assisted greatly in resolving potential conflicts and developing boundary and proposed zoning. The commercial aquarium fishery was more problematic, given that there was great variability between individual fishers for species targeted, areas fished and variations due to seasonal influences (e.g., cyclones damaging fishing areas, natural variations in species density) and commercial markets for product. Subsequently, consultation was required with all fishers to ascertain the wide variety of activities with no clear consolidated fishery position to use for development of zoning schemes or to consider potential compensation implications.

4.5. Ningaloo Marine Park

The conservation agency commenced information gathering to support the review of the NMP management plan in October 1999, collating and analysing a range of biophysical and social information collected since the 1989 management plan was developed. During 2000 and 2001, the conservation agency undertook an internal review of the 1989 management plan objectives and strategies to determine the extent of implementation and relevance for the revised management plan.66
With no major industrial, tenure or legislative issues (as reported in other MPA case studies), and limited commercial fishing issues, the NMP process was focused primarily on the extension of the Park 60 km to the south, and amendment of the zoning scheme and the potential impacts of these zones on recreational fishing interests.

There were three key issues relating to information that affected the planning process:

- Availability of a comprehensive habitat dataset.
- Local information on the effectiveness of no-take zones and the impacts of recreational fishing on the marine environment.
- Non-extractive recreation and tourism (economic benefits).

4.5.1. Availability of a comprehensive habitat dataset

The existence of a comprehensive, reliable and suitably detailed habitat map was again influential in the planning process. Establishing no-take zones that were representative of the major marine habitats was a key zoning criterion. Therefore, habitat data needed to be adequately detailed and defensible to support the public participation process.

While shallow water areas inside the fringing reef were well mapped and adequate for planning, on the western side of the reef front in the deeper water communities, and in some areas on the eastern side of the Park, there was limited habitat information. Common sense and some anecdotal information suggested that these marine communities were significantly different and should be represented in a no-take zone to adequately represent the biodiversity within the Park. These deep-water areas were valued for recreational fishing, particularly sports fishing for large pelagic species, and there was opposition from recreational fishing stakeholders to restrictive zoning, believing that fishers were not impacting on biodiversity. They also believed that there was no evidence that these marine communities were different or special, and therefore that there was no justification to limit their activities.

The absence of reliable habitat information in deep-water areas and in areas of ‘sponge gardens’ led to debate and opposition to proposals for new or extended no-take zones, despite anecdotal evidence of the existence of these communities. Habitat
mapping had to be undertaken in the middle of the planning process to identify the existence, composition and extent of deep-water reefs and filter-feeding communities to justify the proposals for no-take zones, and so build community support for the proposals. Once this was obtained it contributed to the scientific debate and contributed to the development of a representative system of no-take zones. However, as identified previously in the Dampier process, there was a degree of cynicism regarding this information by fishing stakeholders.

4.5.2. Effectiveness of no-take zones and the impacts of fishing

The debates over the proposed NMP zoning generated questions about the status of Ningaloo’s biodiversity value, the effectiveness of the management arrangements that had been in place since 1989, and in particular, the value of no-take zones. The common thread of comment arising in MPA stakeholder forums, committee meetings and formal public submission processes relating to the need for no-take zones is represented in comments such as:

- There is no scientific evidence that recreational fishing is having an impact and no-take zones are not needed.
- No-take zones are not an effective tool to protect the marine environment.
- There is no scientific evidence to support such large zones.
- No-take zones do not have to be so large.

The absence of long-term baseline monitoring to assess the original NMP zoning established in 1989 was a major deficiency. If this had been carried out it may have been possible to establish how the marine biota had responded to closures over time, particularly in relation to finfish populations in both protected areas and areas open to fishing. This information would have enabled some assessment of the general level of impacts in unprotected areas (i.e., are the areas open to fishing being significantly affected?), and in protected areas it would have enabled some assessment of whether the zones were having any positive effects (i.e., was the biota different inside to outside protected areas), any positive ‘spillover’ effects from these zones and informed the adequacy issue (i.e., how large to achieve their objectives?). To provide greater scientific support and logical decision rules for designing and locating no-take zones to benefit targeted fish species, the conservation agency
commissioned a scientist to undertake a literature review of spawning sites for site-attached tropical fish species (Westera 2001). While this was useful and informed the debate, locally-focused research providing more specific data on important local sites and species would have been more influential in gaining the support of fishing stakeholders.

This information would have informed the need for zoning changes, and the criteria in terms of the size of the zones that were necessary to enable the marine biodiversity to be representative of the ‘natural state’. This information would have provided a stronger technical basis for zoning discussions, and although conflict would still have existed, there would have been a clearer understanding of the potential benefits and criteria.

4.5.3. Non-extractive recreation and tourism use (economic benefits)

The economic importance of non-extractive recreation and tourism was a key consideration in the Ningaloo process, where the establishment of a representative system of no-take zones generated public debate over the local and regional economic benefits of recreational fishing that would be potentially impacted by no-take in comparison to non-extractive tourism potentially enhanced by no-take zoning. Studies of the nature of tourism activities in Ningaloo and the economic benefits (Williams & Wood 2000; Wood & Hopkins 2001; Wood 2003) provided important background information and addressed local concerns that economically the area would not suffer due to increased conservation measures. Politically, this was an important issue, with information on the economic value of tourism being an influential dataset in the final considerations of government.

4.6. CAPES

The State Government announced four government priority areas in 1997 for potentially establishment as MPAs, including the Capes area. The Capes area was the last of these four MPAs to be commenced, thus providing greater lead time to prepare for the planning process as well as the opportunity to learn from the successes and difficulties experienced in the preceding processes. The following tasks were undertaken to prepare for the MPA process:

- Habitat mapping in 1999 (Bancroft & Shattock 2000) and biological surveys (Bancroft 2000).
• Analysis of community issues and the level of understanding of MPAs.67

• Establishment of SRGs in 2002.

• Preparation of a ‘resource assessment’ report summarising relevant background information for the planning process (Hill & Ryan 2002).

The compilation of ecological and social information to support planning was well-resourced, with a range of field surveys to compile relevant ecological and socio-economic dataset, including specific research into Indigenous values.

There were two key issues relating to information that affected the establishment process: availability of fine-scale and accurate information on commercial fishing and the scale of marine habitat mapping.

4.6.1. Commercial fishing data

The most critical impediment to the Capes proposal was the potential impacts of proposed zoning on high-value commercial fisheries, and the associated compensation liability that this would pose for government. On the basis of agency advice, the advisory committee considered the development of a system of comprehensive, representative no-take zones in the proposed park as a key strategy to conserve biodiversity and manage the park’s values. Early in its deliberations, the committee identified that the creation of representative no-take zones would have immediate and economically significant impacts on commercial fisheries, and that the impact would be relative to the extent to which the committee addressed scientific criteria relating to replication and size of no-take zones.

The committee sought direction from the agency and ultimately the Minister on the matter of compensation for commercial fishers and specifically whether the government was prepared to allocate funding for compensation, and if so, the relative amount that would be considered acceptable to achieve certain zoning criteria. Specific direction was not provided and the committee developed a proposal based on what they collectively believed was a balanced approach.

In the absence of quantitative commercial fishing data (particularly for the abalone fishery) at an appropriate spatial scale, the MPA planning processes relied on finer scale anecdotal fishing information and input by commercial fishing representatives. In some fisheries (i.e., for the abalone fishery) where there was a small number of
operators and a well-coordinated association, data presented via finer scale maps developed by fishers identified areas of relative importance to the fishery. This was useful in minimising fisheries impacts due to zoning, but insufficient to accurately assess impacts and calculate the likely range of compensation liability.

In the absence of accurate estimates of the compensation that would be required there was a wide range of views. The high potential cost (compensation and socio-economic) of implementing the MPA caused concern within government and resulted in process delays while the fisheries agency and conservation agency addressed the absence of quantitative information at an appropriate scale. Fisheries information collected under state fisheries legislation was insufficient to estimate potential compensation impacts of MPA fishing restrictions. This was because MPA zones were a very small subset of the large reporting blocks, and it was not possible to accurately calculate the potential value of fish catch ‘lost’. This was a critical issue with respect to the commercial abalone fishery, and a key obstacle to MPA creation.

Ultimately this triggered the implementation of a specific survey of abalone stocks. The development of the methodology, survey planning, liaison with fishing representatives and fishers, implementation of the survey, analysis and compensation estimates took in the order of three years and the absence of this information caused delays and uncertainty. This point was reinforced in the recommendations of the Marine Reserves Compensation Working Group:

The Working Group was of the view that the provision of fisheries production values at an appropriate spatial scale within proposed marine conservation reserve boundaries and potential grounds for compensation should be addressed before commencement, or at least in the early stages of marine reserves planning processes. This approach should ensure that the potential compensation cost of zoning options were [sic] known during the planning process, and to provide government with information on which to consider their position on payment of compensation to achieve biodiversity objectives.  

Similar issues arose with the western rock lobster fishery, which has a large number of operators and large management zones. The fishery is seasonal, with high inter-annual variations in rock lobster abundance, catch and effort, and operates in shallow coastal waters and deeper offshore waters. During the Capes process it was difficult
to obtain a clear understanding of the likely commercial impacts to the fishery as a whole, to identify particular operators that would be affected and to identify potential ways of avoiding zoning impacts and obtaining potential consensus.

4.6.2. The scale of marine habitat mapping

Systematic habitat mapping with ground truthing was undertaken, but there were resource and time limitations on the number of field survey sites in deep-water habitats, which reduced the reliability of the mapping in these areas. There was conflict and debate on the merits of deep-water no-take zones in this area, given the importance for commercial fishing (particularly rock lobster) and recreational fishing. The absence of clear, unambiguous and stakeholder accepted data on habitats created issues for the conservation agency in obtaining support for representative marine no-take zones, a matter raised by the Chair of the advisory committee. 70