



Australian Government

Department of Sustainability, Environment,
Water, Population and Communities

SUBMISSION FORM

for the

Commonwealth marine reserve network proposal and draft Marine Bioregional Plan for the North-west Marine Region

Submission ID

(Office use only)

Thank you for your interest in the Commonwealth marine reserve network proposal and draft Marine Bioregional Plan for the North-west Marine Region. Good information on our ocean habitats, wildlife and resources, and the people who use and enjoy them is critical to the marine bioregional planning process and the identification of Commonwealth marine reserves. This public consultation period is an important opportunity for you to give feedback on the North-west marine reserve network proposal and the draft North-west Marine Bioregional Plan.

To ensure your submission is as relevant and effective as possible, please ensure that you:

- complete **Part 1** identifying yourself and/or your organisation
- provide clear and concise feedback
- in **Part 2** refer to specific marine reserves and/or parts of the marine reserve network you have feedback on
- in **Part 3** refer to specific parts and sections of the draft Marine Bioregional Plan that you have feedback on

Submissions must be received by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) no later than close of business on Monday 28th November 2011.

How to make a submission

Please refer to the Commonwealth marine reserve network proposal and draft Marine Bioregional Plan for the North-west Marine Region when making your submission:

www.environment.gov.au/coasts/mbp/north-west/index.html

Please ensure that you provide your contact details on your submission so that the Department can notify you that your submission has been received.

To submit your feedback :

- **email** this form complete with your contact details, feedback and any additional information to: Submissions.Northwest@environment.gov.au

or

- **post** this form **free of charge** to:

Department of Sustainability, Environment, Water, Population and Communities
MBP submissions – North-west Marine Region
Reply Paid 787
Canberra
ACT 2601

Submissions must be post-marked or received by the Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) no later than close of business on 28th November 2011.



Part 1- Personal Information

Required fields are marked with an asterisk (*)

Any personal information you provide to the Department is protected by the provisions of the *Privacy Act 1988* and will only be used to assist the Australian Government complete the marine bioregional planning process. Please include relevant contact details where possible so that the Department can notify you that your submission has been received.

Please fill out in black ink only

1. First Name:* Lynnath Surname:* Beckley
2. Postal Address:* School of Environmental Science, Murdoch University, 90 South Street
Suburb:* Murdoch State/Territory:* WA Post Code:* 6150
3. Telephone: 08-93606392
4. Email: L.Beckley@murdoch.edu.au
5. Are you making this submission on behalf of an Organisation? Yes
6. Name of Organisation: Australian Marine Sciences Association (900 members)

Primary Interest

What is your primary interest in the marine environment? (please pick one)

<input type="checkbox"/> Commercial fishing	<input type="checkbox"/> Research	<input type="checkbox"/> Mining
<input type="checkbox"/> Recreational fishing	<input type="checkbox"/> Conservation	<input type="checkbox"/> Ports
<input type="checkbox"/> Game fishing	<input type="checkbox"/> Yachting or private boating	<input type="checkbox"/> Oil and Gas
<input type="checkbox"/> Charter fishing	<input type="checkbox"/> Indigenous use and stewardship	<input type="checkbox"/> Shipping
<input type="checkbox"/> Aquaculture	<input type="checkbox"/> Tourism	<input type="checkbox"/> Leisure and recreation
<input type="checkbox"/> Fishing related business	<input type="checkbox"/> Community/local resident	

X Other please specify: AMSA has a specific interest in advancing marine science in Australia

Secondary Interest

7. Please specify: Research

All comments will be treated as public documents and may be made public on the DSEWPaC website.

I consent to my name/organisation and comments (including any personal information in my comments) being made publicly available* Yes

Note: If you wish your comments to remain confidential, you must clearly mark all or part of your comments as 'confidential', providing reasons why the Department should consider your request for confidentiality. Please note that public submissions are not normally confidential and a request for confidentiality does not make your comments automatically exempt from release. Submissions (including submissions marked confidential) may be shared with other government agencies to assist the Australian Government to complete the marine bioregional planning process. All submissions may be subject to release under the *Freedom of Information Act 1982*.



Part 2: Commonwealth marine reserve network proposal for the North-west Marine Region

To complete **Parts 2a and 2b** you will need to refer to the Commonwealth marine reserve network proposal for the North-west Marine Region available at: www.environment.gov.au/coasts/mbp/north-west/index.html

Part 2a.

Please provide feedback on the Commonwealth marine reserve network proposal for the North-west Marine Region noting, where relevant, the name of the specific reserve to which your feedback relates. In providing your feedback you may wish to consider:

- any aspects of the proposed marine reserve boundaries and/or zones that you would like to see amended
- the impacts of the proposed marine reserves on you/your sector/organisation/community
- the benefits of the proposed marine reserves for you/your sector/organisation/community

Proposed Abrolhos (Wallaby extension) marine reserve	Feedback
<p>The multiple use area (IUCN VI) off the shelf in the proposed Wallaby extension is adjacent to the Abrolhos protected area in the SW plan thereby providing a good corridor of connection across several degrees of latitude in the deep ocean. We are somewhat surprised that the opportunity was not taken to extend this area onto the shelf and thereby deliver further substantial conservation benefits for the region. The exclusion of demersal trawl, gill net and longline fishing is supported although the great depth of this area (2000-5000m) probably precludes these already.</p>	

Proposed Shark Bay marine reserve	Feedback
<p>The proposed Shark Bay multiple use area (IUCN VI) on the shelf adjacent to the state waters Shark Bay Marine Park is supported as it provides an excellent buffer and clearly indicates the importance of this region with respect to biodiversity values. However, the level of protection is low and the many competing uses in this area are cause for concern. Nevertheless, the exclusion of demersal trawling is supported because of the known destructive effects of such fishing gear on marine benthos (Kumar & Deepthi 2006). However, as no high level of protection is proposed, it is unlikely that it will deliver substantial benefits as several studies have shown that partial protection does not deliver strong conservation outcomes (Denny & Babcock 2004; Shears <i>et al.</i> 2006; Lester & Halpern 2008). We caution about increased shipping in this region and the impacts any serious shipping accident could have on the biodiversity of the semi-enclosed embayments of Shark Bay which have World heritage status.</p>	

Proposed Carnarvon Canyon marine reserve	Feedback
<p>The proposed Carnarvon Canyon multiple use area (IUCN VI) allows some protection to this important geo-morphological feature and covers depths from 4000-1500m. Shelf-edge canyons are extremely important geo-morphological features which facilitate various important oceanographic processes. We are somewhat surprised that this area was not extended eastwards across the shelf break and onto the shelf to maximize the biodiversity conservation benefits derived from protecting this feature.</p>	

Proposed Kalbarri marine reserve	Feedback
<p>The proposed Kalbarri multiple use area (IUCN VI) is well located on the shelf in an area of overlap between the tropical and temperate regions but is hampered by only providing very limited protection to the biodiversity of the region. As such, it is unlikely that it will deliver substantial conservation benefits as several studies have shown that partial protection does not deliver strong conservation outcomes (Denny & Babcock 2004; Shears <i>et al.</i> 2006; Lester & Halpern 2008). Nevertheless, precluding demersal trawling will prevent destruction of benthic habitats in the area and is to be welcomed.</p>	

Proposed Gascoyne marine reserve	Feedback
<p>The proposed Gascoyne protected area covers a substantial proportion of abyssal and deep water habitat with complex oceanography and the high level of protection (IUCN II) will be important for the conservation of these relatively un-impacted ecosystems. The eastern extent of this proposed protected area offers considerably less protection (IUCN VI) and the increasing, and often conflicting uses of the region, are cause for considerable concern (e.g. Smallwood <i>et al.</i> 2011). Nevertheless, the intent of protecting a large area of this bioregion adjacent to the world heritage site and Ningaloo Marine Park (both Commonwealth and state waters) is to be commended. It is somewhat surprising that an attempt could not have been made to include a west to east IUCN II zone across several degrees of longitude to place a complete swathe of abyssal to coastal waters under full protection as has been done in other bioregions. For example, a west to east IUCN II zone around the latitude of Point Cloates would leverage the conservation benefits of the sanctuary zone status of that large area in the Ningaloo Marine Park (state waters).</p>	

Proposed Eighty Mile Beach marine reserve	Feedback
<p>This proposed multiple use area (IUCN VI) is adjacent to the proposed state waters Eighty Mile Beach Marine Park and, as such, could protect the migration pathways of many of the species associated with this area. Although demersal trawling is to be excluded from this area, again, some attempt to include a higher protection area (IUCN II) preferably adjacent to a proposed sanctuary zone in the state Marine Park would have afforded better conservation outcomes.</p>	

Proposed Pilbara marine reserve	Feedback
<p>The proposed Pilbara protected area covers a substantial proportion of abyssal and deep water habitat with complex oceanography and this high level of protection (IUCN II) will be important for the conservation of these relatively un-impacted ecosystems. The southern extent of this proposed protected area offers considerably less protection (IUCN VI) and again it is somewhat surprising that in order to maximise conservation benefits an attempt could not have been made to include a north to south IUCN II zone. This would provide a complete swathe of abyssal to shelf edge waters and include the already protected Rowley Shoals.</p>	

Proposed Kimberley marine reserve	Feedback
<p>The proposed Kimberley protected area (IUCN VI) covers a substantial extent of relatively shallow shelf habitat in a poorly studied area with complex oceanography. Considerable conservation value has been added by locating this adjacent to the proposed Camden Sound Marine Park in WA state waters. Further, the southern area with a high level of protection (IUCN II) is welcomed as some recent studies have indicated the importance of this shelf area in both primary and secondary pelagic production (Holliday <i>et al.</i> 2011, Thompson & Bonham 2011). Location of this high protection (IUCN II) area will be beneficial for research purposes in this area.</p>	



Proposed Joseph Bonaparte Gulf marine reserve	Feedback
<p>The proposed Joseph Bonaparte Gulf protected area (IUCN VI) offers relatively little protection to biodiversity of the region though the exclusion of trawling could reduce the effects of this type of fishing on turtles and other biodiversity and reduce impacts on the benthos.</p>	

Proposed Oceanic Shoals marine reserve	Feedback
<p>The multiple use Oceanic Shoals protected area (IUCN VI) offers relatively little protection to the unique biodiversity of this region. Nevertheless, exclusion of demersal trawling should prevent further damage to the remarkable carbonate and algal assemblages in this area. Continuity from shallow shelf regions across to the shelf edge is a welcome feature. We recommend that in light of recent discoveries by the Australian Institute of Marine Science that some of this area be afforded IUCN Category II protection.</p>	



Part 2b.

Please provide general feedback on the Commonwealth marine reserve network proposal for the North-west Marine Region.

General feedback on the Commonwealth marine reserve network proposal for the North-west Marine Region

The Australian Marine Sciences Association, which represents about 900 marine scientists, acknowledges the considerable effort that has obviously gone into developing the NW marine protected area network proposal. The marine biodiversity of NW Australia deserves adequate protection as it is particularly species rich and a remarkable variety of habitats occurs in the region. However, marine protected areas are only one of a suite of management strategies available to conserve biodiversity and ensure the marine environment of the NW region remains healthy and resilient. We thus strongly encourage the federal government to carefully manage extractive use of living and non-living marine resources, threatened species and communities, invasive species, off-reserve areas and overall ecosystem health in this large area of Australia's EEZ. This should be done with due regard to the cumulative effects of anthropogenic impacts and the increasingly apparent consequences of climate change on the marine environment. We also have concerns over research and monitoring aspects and we recommend that a well-designed marine environmental monitoring programme be established for this region.

With respect to the proposed NW marine reserve network, we note the high level of protection (IUCN II) afforded to the abyssal area in the Gascoyne and Pilbara areas. This represents forward thinking since, although there are currently limited threats in these deep areas, it is likely that anthropogenic pressures will increase in the future (Game *et al.* 2010). Further, we wish to acknowledge the demarcation of special purpose and multiple use zones (IUCN VI) that restrict the harmful effects of demersal trawling on ecosystem function. Despite these positive aspects, we have strong concerns that the proposed network does not appear to be based on the well-established scientific principles of marine reserve network design, namely, comprehensiveness, adequacy and representation. These core principles have been adopted in the national representative system of marine protected areas (NPSMPA) and endorsed by the Australian Government (ANZECC 1998).

Our main concern relates to the poor spatial representation in highly protected areas (IUCN II) of the habitats on the continental shelf. The NW marine bioregion has large areas that are adjacent to parts of the continent where there is little population pressure though we acknowledge that oil and gas leases are wide-spread in the region. We are of the opinion that the federal government could have gone further with respect to including high protection areas on the shelf and shelf-edge (particularly in the Pilbara and Kimberley) so that Australia could have good examples of relatively intact ecosystems to provide baseline data for monitoring and further our understanding of healthy ecological function. These concerns are similar to those raised by AMSA and expressed by others (Edgar *et al.* 2008) about the South East Bioregional Plan.

We are concerned that there is little understanding of the key oceanographic processes and mechanisms driving the biodiversity patterns in the region though there has been some recent work in this area (e.g. Feng *et al.* 2010). Globally, protection of oceanographic processes is now being recognised as extremely important in pelagic biodiversity conservation (Grantham *et al.* 2011).

The areas in the proposed network with low level protection (IUCN VI) do little to relieve the current pressures of fishing (including spatially expanding, open-access recreational fishing), shipping and the oil and gas industry. In fact, the poor spatial resolution of fisheries data that has become evident during the bioregional planning process should be attended to at a federal level. Data collected in 0.5° blocks (>3 000 km²) are clearly inappropriate for establishing the necessary cost layer for systematic conservation planning.

We note that there has been some attempt to ensure corridors of connectivity and siting of protected areas adjacent to those in the SW and N plans (e.g. Abrolhos extension and Oceanic Shoals). Nevertheless, highly protected (IUCN II) areas proposed for the shelf are very few and it is unlikely that such small isolated areas will be able to maintain connectivity and fulfil the goal of protecting Australia's marine biodiversity. Scientific evidence suggests that, in a network, highly protected areas need to be spaced about 20 - 80 km apart to ensure that connectivity among them facilitates replenishment (Shanks *et al.* 2003; Halpern *et al.* 2006; McCook *et al.* 2009, 2010). That the proposed network does not appear to take into account the current scientific consensus on size and spacing of reserves is particularly concerning for conservation of biodiversity of the north west continental shelf.

This also makes replication in the design of monitoring programmes to assess the effectiveness of management very difficult. Our concerns regarding research and monitoring concern both strategy and implementation. With such an extensive zoning scheme the strategies and actions section of the plan should have, as a clear goal, development of research and monitoring which would enable performance assessment against its objectives. In particular, this strategy should include replicated before, and after, studies both within, and outside of, zones with different levels of protection. With the current zones adequate replication may be difficult to achieve, particularly for key species and areas of interest.



In summary, AMSA welcomes the general recognition of scientific information that has been used in the planning for the NW bioregion. Nevertheless, AMSA encourages the Australian Government to amend the proposed network of marine protected areas to address the above mentioned concerns, in particular, by adequately representing habitats in all the continental shelf bioregions. We are concerned that the gaps in the proposed system of marine protected areas will result in poor performance of the network and negate the strong biodiversity conservation outcomes that could be achieved.

- ANZECC 1998. *Guidelines for Establishing the National Representative System of Marine Protected Areas*. Australian and New Zealand Environment and Conservation Council, Task Force on Marine Protected Areas. Environment Australia, Canberra.
- Denny, C.M. & Babcock, R.C. 2004. Do partial marine reserves protect reef fish assemblages? *Biological Conservation* 116:119-129.
- Edgar, G.J., Langhammer, P.F., Allen, G.R., Brooks, T.M., Brodie, J., Crosse, W., De Silva, N., Fishpool, L.D.C., Foster, M.N., Knox, D.H., McCosker, J.E., McManus, R., Millar, A.J.K. & Mugo, R. 2008. Key biodiversity areas as globally significant target sites for the conservation of marine biological diversity. *Aquatic Conservation: Marine and Freshwater Ecosystems* 18: 969-983.
- Feng, M., Slawinski, D., Beckley, L.E. & Keesing, J.R. 2010. Retention and dispersal of shelf waters influenced by interactions of ocean boundary current and coastal geography. *Marine and Freshwater Research* 61:1259-126.
- Game, E.T., Grantham, H.S., Hobday, A.J., Pressey, R.L., Lombard, A.T., Beckley, L.E., Gjerde, K., Bustamante, R., Possingham, H.P. & Richardson, A.J. 2009. Pelagic protected areas: the missing dimension in ocean conservation. *Trends in Ecology & Evolution* 24(7): 360-369.
- Grantham, H.S., Game, E.T., Lombard, A.T., Hobday, A.J., Richardson, A.J., Beckley, L.E., Pressey, R.L., Huggett J.A., Coetzee, J., van der Lingen C.D., Alpine J.E., Attwood, C., Peterson, S.L., Merkle, D. & Possingham, H.P. 2011. Accommodating dynamic oceanographic processes and pelagic biodiversity in marine conservation. *PLoS ONE* 6(2):1-16.
- Halpern, B.S., Regan, H.M., Possingham, H.P. & McCarthy, M.A. 2006. Accounting for uncertainty in marine reserve design. *Ecology Letters* 9:2-11.
- Holliday, D., Beckley L.E., Weller, E. & Sutton, A.L. 2011. Natural variability of macro-zooplankton and larval fishes off the Kimberley, north-western Australia: Preliminary findings. *Journal of the Royal Society of Western Australia* 94:181-195.
- Kumar, A.B. & Deepthi, G.R. 2006. Trawling and bycatch: implications on marine ecosystems. *Current Science* 90(7): 922-31.
- Lester, S.E. & Halpern, B.S. 2008. Biological responses in marine no-take reserves versus partially protected areas. *Marine Ecology-Progress Series* 367:49-56.
- McCook, L.J., Almany, G.R., Berumen, M.L., Day, J.C., Green, A.L., Jones, G.P., Leis, J.M., Planes, S., Russ, G.R., Sale, P.F. & Thorrold, S.R. 2009. Management under uncertainty: guide-lines for incorporating connectivity into the protection of coral reefs. *Coral Reefs* 28:353-366.
- McCook, L.J., Ayling, T., Cappo, M., Choat, J.H., Evans, R.D., De Freitas, D.M., Heupel, M., Hughes, T.P., Jones, G. P., Mapstone, B., Marsh, H., Mills, M., Molloy, F.J., Pitcher, C.R., Pressey, R.L., Russ, G.R., Sutton, S., Sweatman, H., Tobin, R., Wachenfeld, D. R. & Williamson, D.H. 2010. Adaptive management of the Great Barrier Reef: A globally significant demonstration of the benefits of networks of marine reserves. *Proceedings of the National Academy of Sciences of the United States of America* 107:18278-18285.
- Shanks, A.L., Grantham, B.A. & Carr, M.H. 2003. Propagule dispersal distance and the size and spacing of marine reserves. *Ecological Applications* 13:S159-S169
- Shears, N.T., Grace, R.V., Usmar, N.R., Kerr, V. & Babcock, R.C. 2006. Long-term trends in lobster populations in a partially protected vs. no-take Marine Park. *Biological Conservation* 132: 222-231.
- Smallwood, C.B., Beckley, L.E., Moore, S.A. & Kobryn, H.T. 2011. Assessing patterns of recreational use in large marine parks: a case study from Ningaloo Marine Park, Australia. *Ocean and Coastal Management*. 54:330-340.
- Thompson, P.A. & Bonham, P. 2011 New insights into the Kimberley phytoplankton and their ecology. *Journal of the Royal Society of Western Australia* 94: 161-169.

Part 3: Draft Marine Bioregional Plan for the North-west Marine Region

To complete **Parts 3a and 3b** you will need to refer to the draft Marine Bioregional Plan for the North-west Marine Region available at www.environment.gov.au/coasts/mbp/north-west/index.html



Part 3a.

Please provide feedback on the draft Marine Bioregional Plan for the North-west Marine Region noting the parts and sections to which your feedback relates. In providing your feedback you may wish to consider:

- any aspects of the draft Plan that you would like to see amended
- any information that you believe is missing
- your feedback on the supporting information to the draft Plan (for example, are the proposed information tools such as the North-west Report Cards and Conservation Values Atlas easy to use and informative?)
- the effects of draft Plan on you/your sector/organisation/community

Part, section and page number of the draft Marine Bioregional Plan for the North-west Marine Region	Feedback
General	The plan appears to be a good start towards improved marine management in the NW region.
Section 1 - Plan	This focuses on ecological significance of the region. The plan concentrates on protecting pattern with little attention to the processes that drive these patterns. We recommend that federally- supported research be undertaken in this region to improve understanding of the complex processes (particularly oceanographic processes) that support the observed patterns.
Section 2 – Conservation values	<p>The conservation values, particularly with respect to protected species, have been addressed in a comprehensive manner. However, maintenance of overall ecosystem health should be given more attention.</p> <p>The strategies to address the pressures are well-intentioned but there are no clear guidelines on how this will be done and by whom. Delivery of the strategies will be particularly difficult for this bioregion because of the low population density and relatively limited human resources along the adjacent coast. We encourage inclusion of a clear framework for management responsibility in the final plan.</p>
Section 3 – Priorities and strategies	The issue of cumulative impacts has not been comprehensively addressed in the plan and we strongly encourage further work on this through scenario analysis and modelling. Possibly, the existing CSIRO model of the NWS shelf could be used to obtain insights into cumulative impacts of oil & gas, ports, increased shipping etc on overall ecosystem health. The assessment of risks to biodiversity, particularly protected species, in Schedule 2 was insightful and a useful addition to the overall document.



Part 3b.

Please provide general feedback on the draft Marine Bioregional Plan for the North-west Marine Region

General feedback on the draft Marine Bioregional Plan for the North-west Marine Region

While the plan makes considerable reference to climate change there is little indication of how this will be measured. In the NW bioregion there are already some established oceanographic moorings (and several others being installed) and the data are open access, and should be explicitly mentioned in the plan. The Australian National Mooring Network (ANMN), a facility of the Integrated Marine Observing System, has moorings measuring basic oceanographic parameters (temperature, salinity and current velocity) and, at some sites, biological parameters such as phytoplankton and zooplankton. In the bioregion there is a National Reference Station at Ningaloo.

Thank you for your interest and feedback on the Commonwealth marine reserve network proposal and draft Marine Bioregional Plan for the North-west Marine Region.

