NATIONAL PARKS

Australia's Marine Protected Areas




National Parks Australia Council

NATURE FOR LIFE

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A Matter of National Significance

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Research papers of the National Parks Australia Council

The National Parks Australia Council presents a series of five research papers to influence public debate and government decision making concerning the enhancement and management of Australia's terrestrial and marine estate.

- Maintaining the Values of Australia's National Reserve System of Protected Areas
- Completing Australia's National Reserve System of Protected Areas
- Enhancing Landscape Connectivity
- National Parks - a Matter of National Environmental Significance
- Australia's Marine Protected Areas

The National Parks Australia Council has a mission to protect, promote and extend national parks systems within Australia. NPAC was formed in 1975. We are a national body that coordinates and represents the views of a range of State and Territory non-government organisations concerned with protecting the natural environment and furthering national parks. NPAC provides a forum for regular communication between state and territory national parks associations and related organisations to act as a united voice supporting conservation of the National Reserve System across Australia.

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Executive summary

Australia's marine environment is the world's third largest marine jurisdiction, at 13.86 million square kilometres. It is home to a diverse array of marine life, much of it endemic. Our cultural identity has been shaped by our love of the sea and we cluster around it - its bounty is a great economic asset, supporting commercial fishing industries and aquaculture worth $2.5 billion in 2013-14 and growing. Tourists from all over the world are drawn to Australia's coasts and oceans, the Great Barrier Reef being our most beloved marine treasure.

Ultimately, our oceans are a fundamental and indispensable provider of ecosystem goods and services, such as carbon dioxide absorption, nutrient cycling and coastal protection. We cannot survive without these gifts the oceans provide, and yet the pressures on our marine environment are significant and continuing, from unsustainable use of ocean resources to climate change.

One of the most frightening prospects is the fact the Great Barrier Reef is dying. Recent record high temperatures have resulted in widespread coral bleaching and die-off throughout this 25 million year-old natural wonder.

Our oceans need protection. To this end, all Australian governments have committed to the establishment of a network of marine protected areas (MPAs) that is comprehensive, adequate and representative, is effectively and equitably managed, and well connected and integrated into the wider seascapes.

The Australian Government has created the largest National System of Marine Protected Areas (NSMPAs) in the world and by much more than the modest headline Aichii target of 10 per cent by 2020: approximately 36 per cent of Australian marine waters will be within the protected area network. However, the proposal, despite its size, fails to deliver the conservation outcomes Australia's unique marine life is dependent upon.

The proposed network is not comprehensive, adequate or representative of Australia's marine bioregions, ecosystems or species. It is skewed towards areas less important to industry and not coincidently areas less important for conservation. The reproclamation by the current Australian Government of the outer boundaries of the 40 new reserves declared in 2012 reflects bi-partisan acceptance of the new marine protected areas system and clear resistance to adjusting boundaries to better incorporate under-represented values.

Also evident is an insidious progression towards relaxation of management to better incorporate the interests of industry over conservation – especially in highly protected areas where the strictest adherence to the protection of biodiversity should be upheld: hardly equitable and definitely not effective.

Given the importance of the marine protected area network to nature conservation and Australian society in general, it is essential these shortcomings be addressed. Without national leadership and a vision that is implemented without compromising the very values these areas are in place to protect, it is unlikely Australia will be able to uphold its international reputation as a world leader in protected area establishment and management, and risks compromising the long-term survival of its unique marine wildlife.

A juvenile Scalyfin and below, zooanthids.
Photos: John Gaskell and David Bryant

Marine Protected Areas

Recommendation

Establish National Representative System of Marine Protected Areas that is comprehensive, adequate and effective, and is managed equitably and effectively.

Background

Protected areas, when properly managed, are a proven effective tool for the conservation of biodiversity and the persistence of well functioning, intact ecosystems: they are promoted as the key solution to halting biodiversity loss.[1] To maximise the likelihood that the full suite of biodiversity is captured, protected areas must be strategically located, interconnected and integrated into the wider seascape.

Protected areas secure ecosystem services that provide economic benefits for human communities including water, soil and beneficial species conservation, climate moderation, social, cultural and health benefits. On land, these benefits are estimated to be worth more than $38 billion a year.[2] A much larger figure is estimated to have been secured by marine protected areas in the form of moderation of climate and impact of extreme events by reef and mangrove ecosystems.

While these estimates have not been verified by studies specific to Australia, they are indicative of an enormous - almost inestimable – economic contribution of protected areas to the nation.

The establishment and management of a National Representative System of Marine Protected Areas (NRSMPAs) is the primary mechanism to conserve and prevent biodiversity decline and associated ecosystem services and cultural values associated with Australia's oceans.[3]

Australia's National Representative System of Marine Protected Areas cover more than 30 per cent of the country's sea-scape within Commonwealth waters. Each marine protected area has been allocated an International Union for the Conservation of Nature (IUCN) protected area category, for which the protected area needs to be managed for (Appendix 1). The IUCN has also developed guidelines for appropriate management objectives under each category. Table 1 provides

By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes. (CBD 2011)

Protected area management effectiveness is now a key element of a broader examination of progress towards the Convention on Biological Diversity strategic plan and its constituent Aichi Targets - especially Target 11, which addresses the contribution that an effectively and equitably managed protected area system can make to the overall goals of the convention.

IUCN CATEGORY	NAME	IUCN CATEGORY DESCRIPTION	NUMBER	AREA (HA)	CONTRIBUTION TO NRS (%)
IA	Sanctuary	Managed mainly for science.	70	13,674,027	4.18
II	Marine National Park	Managed mainly for ecosystem conservation and recreation. Also referred to as a no-take area.	94	109,001,271	33.30
III*	Natural Monument		15	74,598	0.02
IV	Habitat Protection (and Recreational Use)	Managed mainly for conservation through management intervention.	95	71,366,874	21.81
I-IV Total			274	194,116,769	59.31
V*	Protected Seascape		35	437,273	0.13
VI	Multiple Use Zone/Special Purpose	Managed mainly for the sustainable use of natural ecosystems.	196	132,738,741	40.56
V-VI Total			231	133,176,014	40.69
Total			**505**	**327,292,783**	**100.00**

Table 1. Marine Protected Areas in Australia by IUCN Management Category (State and Commonwealth, 2014).[4]

* Natural Monuments and Protected Seascapes are not considered in the analysis of the outcomes of the NRSMPAs as they do not contribute significantly.

information on the number and contribution (ha) of each IUCN category to the National Representative System of Marine Protected Areas network.

Policy Framework

International

1972: World Heritage Convention

Australia made an important commitment in 1972, under the World Heritage Convention, to protect representative examples of all major terrestrial, freshwater and marine ecosystem types.

1992-1993: Convention on Biological Diversity

This commitment has been reinforced and refined under various international platforms. Australia's ratification of the international Convention on Biological Diversity 1992 in 1993 provides the most significant and widely recognised of these international treaties. Signature and ratification of the convention was the first major step in a long journey to developing a network of marine reserves in Australian waters. In 2004, all signatories to the convention agreed that 'at least 10% of each of the world's ecological regions be effectively conserved'. The parties also agreed to establish (by 2012) and maintain 'a network of marine and coastal protected areas that are representative, effectively managed, ecologically based, consistent with international law, and based on scientific information'.[5] More recently these goals and concepts have been expanded and refined. Aichi Target 11 states:[6]

> *By 2020, at least 17% of terrestrial and inland water, and 10% of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.*

1995: The Jakarta Mandate

The commitment and development of a marine protected area network was further influenced and driven by other fora, such as the Jakarta Mandate on Marine and Coastal Biodiversity,

which recognised and addressed the unique and significant differences between marine and terrestrial biodiversity, and where a program of action for implementing the Convention on Biological Diversity for aspects concerning marine and coastal biodiversity was agreed.

Key objectives for conservation of marine and coastal biological diversity presented in the Jakarta Mandate were:

- Integrated marine and coastal area management.
- Sustainable management of marine and coastal living resources.
- Effective marine and coastal protected areas.
- Development and management of mariculture.
- Prevention of incursions of invasive species.

2002: World Summit on Sustainable Development

Australia promoted its Oceans Policy (1998) (see below under National) as an effective framework for meeting the Jakarta Mandate and committed to the establishment of a comprehensive, adequate and representative (CAR) system of Marine Protected Areas by 2012. In an historic step forward, all governments agreed to build a network of land and marine protected areas. The Australian Government provided the crucial national leadership and successfully worked in partnership with all levels of government and the whole community, implicitly acknowledging, inter alia, that state and territory borders do not limit environmental issues and challenges.

2014: World Parks Congress, Sydney

The primary official recommendation concerning marine protected areas was:

> ***Recommendation 1.*** *Urgently increase the ocean area that is effectively and equitably managed in ecologically representative and well-connected systems of MPAs or other effective conservation measures. This network should target protection of both biodiversity and ecosystem services and should include at least 30% of each marine habitat. The ultimate aim is to create a fully sustainable ocean, at least 30% of which has no extractive activities.*[7]

The goal of 30 per cent of marine areas within highly protected management zones, i.e. 'no-take' areas, is much greater than that given in the Convention on Biological Diversity 's Aichi Target 11, which calls for a minimum of 10 per cent of marine areas to be conserved in Marine Protected Areas or other effective area-based conservation measures by 2020, with no mention of the area required to be within highly protected management zones, and is a critical consideration. This recommendation reinforces the goal set at the World Parks Congress in 2003, which recognised that it is not enough to plan 'no-take' Marine Protected Areas amid otherwise unsympathetically managed ocean waters. The ultimate aim is to create a fully sustainable ocean and avoid the '… creation of islands of hope in a sea of despair …'.[8]

National

1991: Marine Conservation Program

The Australian Government initiated a long-term marine conservation program to ensure the conservation and sustainable use of Australia's marine and estuarine environments. A key component of this initiative was a commitment to expand Australia's existing marine reserve system through the establishment of a national system of Marine Protected Areas.

1992: Australia's Intergovernmental Agreement on the Environment

The Intergovernmental Agreement on the Environment (IGAE) was made between the federal, state, territory and local governments

to facilitate a cooperative national approach to management of the environment. The parties agreed that a representative system of protected areas encompassing terrestrial, estuarine and marine environments is a significant component in maintaining ecological processes and systems.

1996: National Strategy for the Conservation of Australia's Biological Diversity

Three years after ratifying the Convention on Biological Diversity , Australia's federal, state and territory governments signed the National Strategy for the Conservation of Australia's Biological Diversity (Biodiversity Strategy).[9] This committed the Australian Government to establish and protect a CAR sample of Australia's terrestrial and marine environments, and is the nation's main instrument for implementing all of its obligations under the convention and the Intergovernmental Agreement on the Environment. The Biodiversity Strategy recognised that the marine and estuarine marine protected area system in particular was inadequate to maintain biological diversity. The strategy recommended expansion of marine parks and reserves to encompass representative examples of Australia's marine environments. Action 1.4.1 of the strategy commits to undertake a program that ensures the federal, state and territory terrestrial and marine protected area systems are comprehensive, adequate and representative.[10]

The Biodiversity Strategy functions as a policy 'umbrella' over subsequently developed (and revised), more specific national frameworks relevant to the establishment of a marine protected area network, i.e.:

- Strategic Plan of Action for the National Representative System of Marine Protected Areas: A Guide for Action by Australian Governments (Marine Strategy).[11]

1998: Australian and New Zealand Environment and Conservation Council Guidelines for Establishing the National Representative System of Marine Protected Areas

The Australian and New Zealand Environment and Conservation Council (ANZECC) Task Force on Marine Protected Areas prepared the Guidelines for Establishing the National Representative System of Marine Protected Areas to help government agencies in the development of the marine protected area. High-level criteria were established to identify and select marine protected areas. The primary goal being 'to establish and manage a CAR system of MPAs to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels'. The ANZECC Guidelines include the CAR principles, i.e. Comprehensiveness, Adequacy and Representativeness (expanded upon below under The Scientific Planning Framework). Additional principles for the development of the Marine Protected Areas were also outlined, including a regional framework, the inclusion of highly protected areas (IUCN I and II in each bioregion), use of the precautionary principle, appropriate consultation (to address social, economic and cultural issues), Indigenous involvement (to recognise and incorporate interests of Indigenous peoples), and principles relating to decision-making (to integrate long- and short-term environmental, economic, social and equity considerations).

1998: Australia's Ocean Policy

Australia's Oceans Policy sets out the framework for the implementation of integrated marine planning and management committed the Australian Government, states and Northern Territory government to establishing a marine protected area network by 2012.

1999: Strategic Plan of Action for the National Representative System of Marine Protected Areas

The Australian Government, states and Northern Territory government endorsed the Marine Strategy. The government claimed this marine protected area network 'is being developed with the aim of contributing to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels'.[12]

2000: Environment Protection and Biodiversity Conservation Act 1999

On 16 July 2000, the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) came into force: it is the Australian Government's key piece of environmental legislation. The EPBC Act is the principal regulatory tool for managing marine environmental issues and provides a framework for the management of matters of national environmental significance, which includes Commonwealth marine areas (almost of all of the Australian marine environment). The EPBC Act provides for the proclamation and management of marine reserves, with reserves managed in accordance with principles prescribed for the International Union for Conservation of Nature's set of protected area management categories, and gives effect to a range of domestic and international policy commitments relating to marine reserves.[51]

2007: Goals and Principles for the Establishment of the National Representative System of Marine Protected Areas in Commonwealth Waters

These are expanded upon below (see Scientific Planning Framework).

2007: Expansion of the National Reserve System of Marine Protected Areas

The first network of 14 Commonwealth marine reserves was proclaimed in the South-east Marine Region.

2012: Proclamation of the National Reserve System of Marine Protected Areas

On 17 November 2012, 40 new Commonwealth Marine Reserves (CMRs) were proclaimed in the South-west, North-west, North, Temperate East and Coral Sea marine regions as part of the Australian Government's contribution to the National Representative System of Marine Protected Areas network, bringing approximately one-third of Australia's marine waters into the protected area network. The former Labor government considered the National Representative System of Marine Protected Areas one of its greatest environmental achievements.

2013: Commonwealth Marine Reserves Review

In March 2013 management plans were approved for the South-west, North-west, North and Temperate East reserve networks and the Coral Sea marine protected area. However, in the lead up to the federal election, pressure from lobby groups, in particular the recreational fishing lobby and commercial fishing interests concerned about perceived 'lock-out' policies and reduced access to former fishing grounds, persuaded former prime minister Tony Abbott to the review of the boundaries and management of the proposed marine protected area network. He announced that he would scrap the just-finished management plans so the fishing industry could

be given a greater say, despite already having been given disproportionate consideration by the government and despite more than 95 per cent of the 750,000 public and stakeholder submissions to the Australian Government since 2011 urging greater protection of the marine environment.[13] The revision of these plans is referred to as the Commonwealth Marine Reserves Review (CMR).

Until management plans come into effect there are no changes 'on the water' for users of the new marine reserves: Australia's marine protected areas remain 'paper parks'. The issues section addresses the shortcomings of the initial proposal, and the draft Commonwealth Marine Review recommendations.

The Scientific Planning Framework

The science-based bioregional frameworks guide the strategic acquisition of areas for inclusion within the protected area networks to ensure Australia progresses towards its goal of developing a CAR system of MPAs.[14]

Comprehensive, Adequate and Representative

1. **Comprehensive:** the inclusion of examples of regional-scale ecosystems (at an appropriate scale) within each bioregion.
2. **Adequate:** the inclusion of sufficient levels of each ecosystem within the protected area network to provide ecological viability and to maintain the integrity of populations, species and communities.
3. **Representative:** the inclusion of areas at a finer scale, to encompass the variability of habitat within ecosystems (or reasonably reflect the biotic diversity of marine ecosystems).

Integrated Marine and Coastal Regionalisation of Australia

Classification of the marine and coastal environments has added complexity due to the three dimensional nature and independence of the marine ecosystems (e.g. the water column is largely independent of the geological properties of the seabed).[15] The Integrated Marine and Coastal Regionalisation of Australia Version 4 (IMCRA) provides the spatial framework for classifying Australia's marine environment into bioregions at a 'provincial-scale' useful for regional planning. The marine protected area network aims to represent provincial-scale bioregions (in Commonwealth waters). In summary, 41 provincial bioregions have been identified and scaled-up into seven discrete large-scale bioregions that are used for marine protected area planning (Appendix A).[16]

Goals

There are four goals to guide the identification of areas suitable for inclusion in marine protected areas, and provide direction on how to ensure that all types of marine ecosystems and their biodiversity are represented within the national network of marine reserves.

Goal 1. Each provincial bioregion occurring in a marine region should be represented in the marine reserve network.

Goal 2. All oceans depths should be represented in the marine reserve network to ensure examples of all types of marine biodiversity will be protected.

Goal 3. Examples of benthic/demersal biological features (e.g. large scale seafloor habitats, communities, ecosystems) should be represented in the marine reserve network.

Goal 4. Examples of all physical seafloor features should be represented in the marine reserve network (e.g. underwater seamounts, canyons, and plains).

Two additional principles were also included in the decision-making process:

Principle 12: Features should be replicated wherever possible within the system of marine reserves (that is, included more than once); and

Principle 18: The regional marine reserve network will aim to include some highly protected areas (IUCN Categories I and II) in each provincial bioregion.

As with the goals for the terrestrial National Reserve System, no quantitative objectives are provided for the protection of marine features, which is a significant oversight capable of undermining the main objective.[17]

Achievements

Based on the recommendations stemming from the Commonwealth Marine Review, the size of the National Representative System of Marine Protected Areas network will be approximately 2.4 million square kilometres (36% of the Commonwealth marine area).[18] The number of marine reserves (including the Great Barrier Reef Marine Park) will be approximately 60, covering

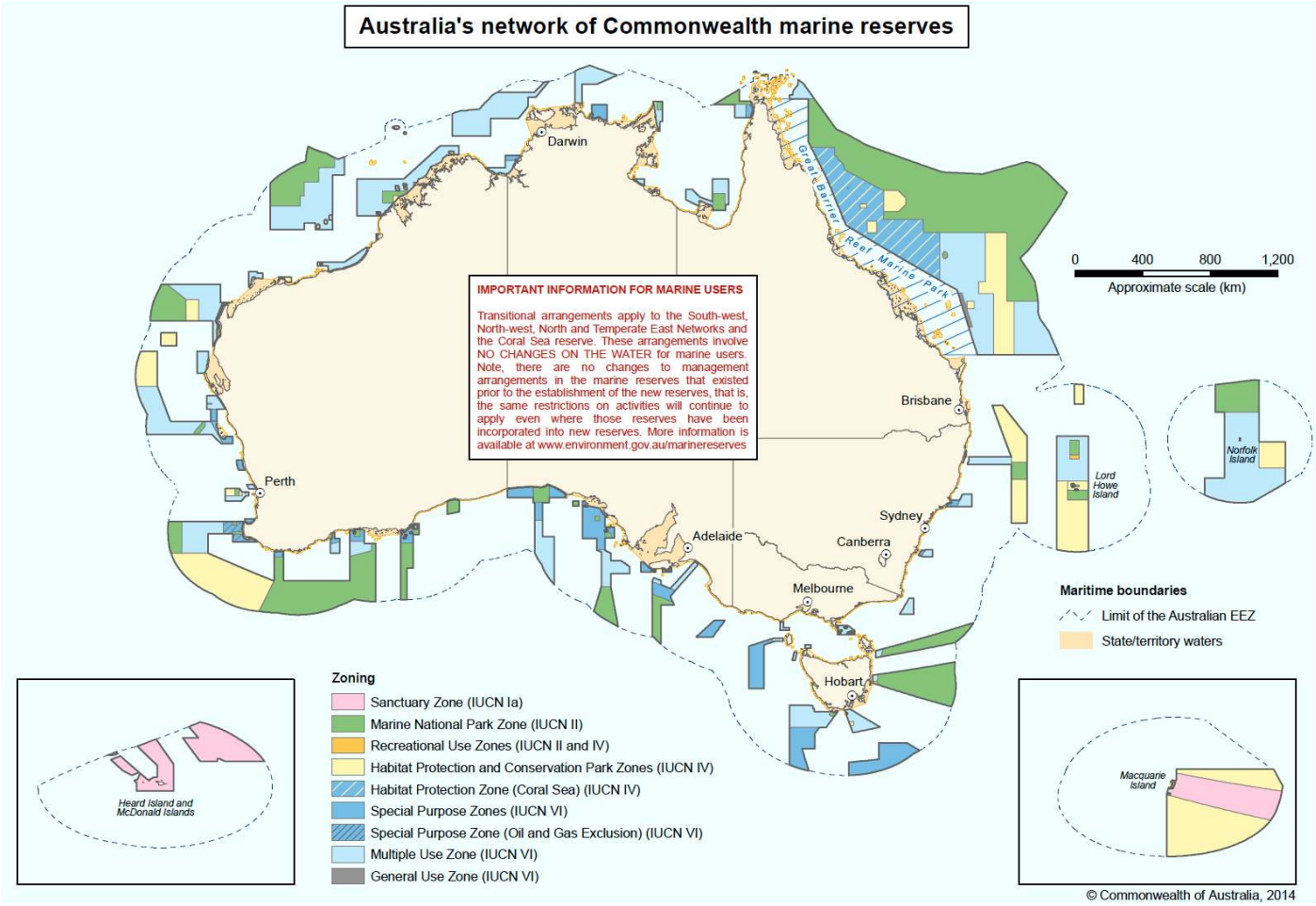

Figure 1. The National Representative System of Marine Protected Areas (2012) and IUCN Management Categories).[4]

* Natural Monuments and Protected Seascapes are not considered in the analysis of the outcomes of the NRSMPAs as they do not contribute significantly.

more than one third of Commonwealth waters, and will be the largest system of marine reserves in the world (Figure 1).

The issues

Framework

Aichi Target 11

By 2020, at least … 10 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider … seascapes.

World Parks Congress 2014

Urgently increase the ocean area that is effectively and equitably managed in ecologically representative and well-connected systems of MPAs or other effective conservation measures. This network should target protection of both biodiversity and ecosystem services and should include at least 30% of each marine habitat. The ultimate aim is to create a fully sustainable ocean, at least 30% of which has no extractive activities.

1. Commonwealth Marine Reserves

Reviews of the 2012 proposal highlighted a number of deficiencies, including:

1. A comprehensive, adequate and representative National Representative System of Marine Protected Areas had not been achieved.

2. Reserves are biased towards areas of less interest to industry and corresponding lower biodiversity values.

3. There were inconsistencies in zoning and allowable uses within the National Representative System of Marine Protected Areas. Apart from compromising the conservation of natural values, these inconsistencies could result in complexities in management across the network, making varying compliance and enforcement across the network difficult.[44]

It was also identified that a robust, adaptive management approach based on well-targeted, long-term monitoring and evaluation would be required if management of the system was to be effective and efficient, and would entail significant investment in new infrastructure and capability beyond that currently provided.[18]

As mentioned above, in 2013 the Australian Government set aside the management plans for the Commonwealth Marine Reserves in the South-west, North-west, North, Temperate East and Coral Sea marine regions (the South-east Commonwealth Marine Reserves Network was not included in the review. This network was created in 2007 and the management plan for the network is in operation) (see Figure 2).

The Commonwealth Marine Reserves has been completed and the reports and recommendations are out for comment. The Commonwealth Marine Reserves Review produced two reports: the Expert Science Panel (ESP) Report 2 and the Bioregional Advisory Panel (BAP) 4 Report. The expert science panel was asked to advise the Australian Government on the science underpinning the development of Australia's marine reserves while the advisory panel was asked to advise on areas of

Cool temperate waters in southern Australia combine with a varity of habitats to support a plethora of marine life. Photo: David Bryant

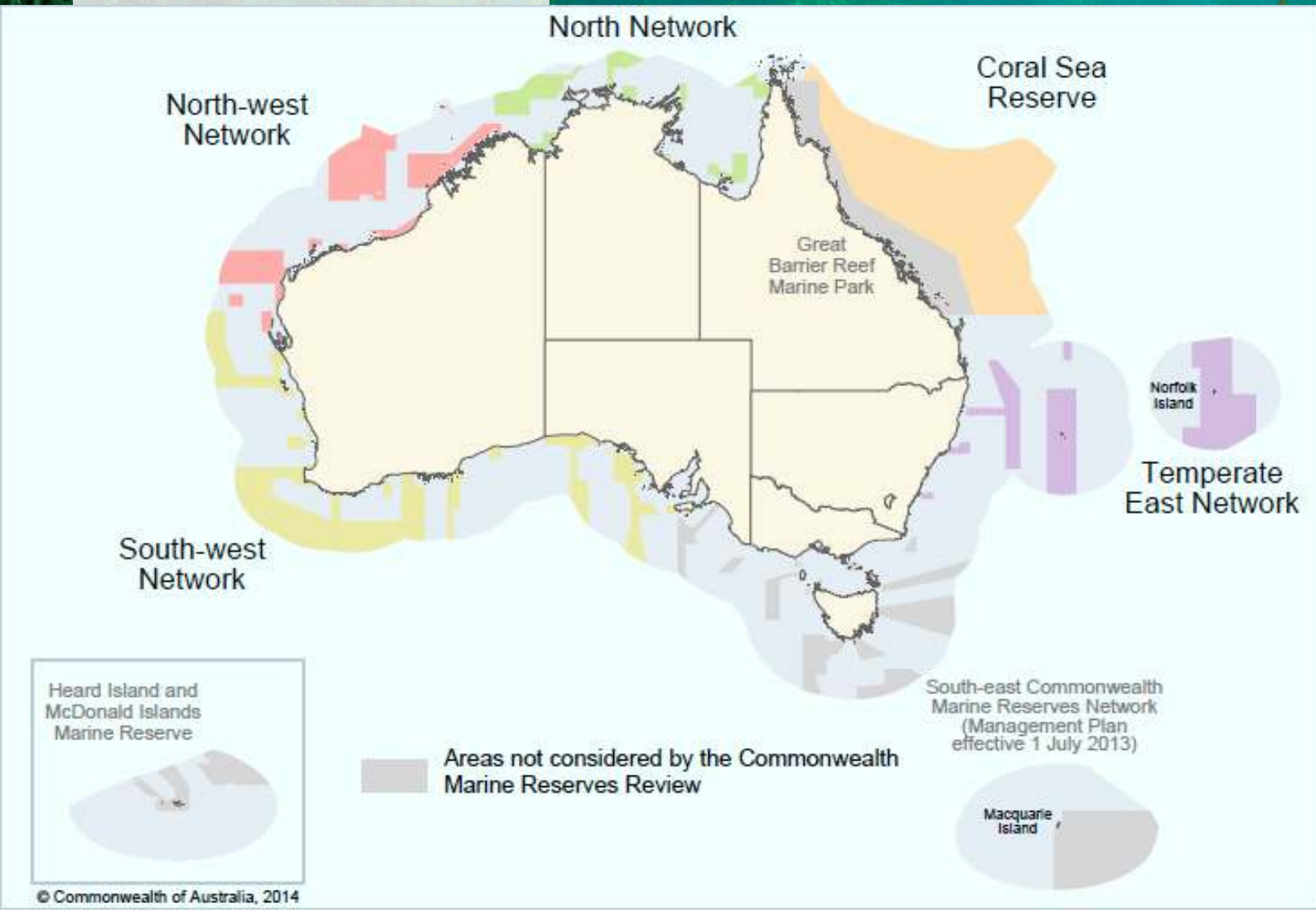

Figure 2. Map of the Commonwealth Marine Reserves Estate.

contention and how they might be addressed.[19]

The outcomes of the analysis by the science panel and the recommendations of the advisory panel do not necessarily agree, and overall the recommendations have not improved marine protection. In some areas, e.g. highly protected areas, the outcome is worse.23 In summary, changes to zoning and zone boundaries have been recommended for 26 of the 40 marine protected areas declared in 2012.

Australia's leading marine scientists have appealed to the Australian Government to reject the review, now completed, as the size of ocean sanctuaries have been reduced and areas permitted for large-scale commercial fishing have been expanded, including areas previously designated as closed to fishing and trawling, such as in the Coral Sea. These experts opine that the review ignored expert scientific advice and caution that 'if the government winds back what was already just partial environmental protection it would be terrible for the environment and send a terrible message to the world'.[20] The political intransigence is all the more concerning as research points to continual erosion of marine biodiversity. In February 2014, the Reef Life Survey of Australia's coastline found significant biodiversity losses in Australian marine life. Program co-founder Professor Graham Edgar said 'Virtually all of our coastline has had all the larger predatory organisms reduced - from the big fishes to the lobsters'. Fishery catch statistics also show major population declines in commercially important species.

In addition, research within some marine protected areas show that total fish biomass has declined by at least two-thirds from historical baselines as a result of fishing: 'Given the huge scale of fishing impacts, the rate of fish extinctions is likely to increase greatly through this century unless a refugial network of effective MPAs exists to allow persistence of large-bodied species and associated predator-dominated food webs, and broad-scale fisheries management practices significantly improve'. The 'devil is in the detail' and is examined further below.

It is clear that despite any improvements there remain some glaring inadequacies as reported by the Expert Scientific Panel. In particular, marine national parks continue to be under-represented in shallower areas and the continental shelf, ignoring the protection of areas where the highest diversity of marine life can be found.[21] The Bioregional Advisory Panel on the other hand appears to ignore this and recommends reducing Marine NP Zone (IUCN II) protection of both shelf and upper slope habitats with many bioregions, marine reserves and primary conservation features (e.g. provincial bioregions, depth ranges, biologically informed seascapes, key ecological features and seafloor features) to have no marine national parks.[22]

This is also despite the ABARES assessment of potential displacement of commercial fishing that shows there is enough room within the Australian Government's existing structural adjustment budget to address the findings of the Expert Scientific Panel and remove some of the key gaps in the

The following highlights the issues associated with the location of the marine protected areas and management.

"Management strategies that avoid opening closed areas and that concentrate on effective placement and size of closed areas are likely to be highly effective, even in estuaries and for species other than fish."[25]

protection of Australia's marine biodiversity.23 Beaver (2016) provides clear rationale that the new recommendations contradict scientific knowledge and government policy and undermine Australia's environment minister's assertion that 'the new management plans will reflect sound science, protection of the environment and support sustainable industries', and that 'Australia is a world leader in the creation of marine parks' etc…

The Bioregional Advisory Panel claims that other zoning categories – such as Habitat Protection Zones (IUCN IV) – can provide similar protection for marine life. However, this assertion is inconsistent with the scientific evidence that shows total protection is one of five key factors in effective conservation of marine life, and was reinforced by the expert panel.[23] (and references therein) The advisory panel also proposes to allow destructive commercial fishing activities in 97 per cent of proposed Habitat Protection Zones, including fishing activities deemed to pose an unacceptable risk to the conservation values of the National Representative System of Marine Protected Areas.[23] (and references therein) The only added conservation value of Habitat Protection Zones is protection from mining activities, but is completely undermined by the recommendation to expand commercial fishing activities classified by scientists as incompatible with the purpose of protected areas - i.e. the protection of biodiversity - such as longline fishing, trawl fishing, use of gillnets, and so on.

The inclusion of commercial fishing activities within the National Representative System of Marine Protected Areas is recommended by the Bioregional Advisory Panel despite the Australian Government's Independent Fishing Gear Risk Assessment (FGRA) determining, and the Expert Scientific Panel confirming, that they pose unacceptable risks to conservation values. Specifically, in each of the five separate national marine regions - the Coral Sea, South-west, North-west, Temperate East and North - the advisory panel proposes allowing these fisheries practices to either continue or expand.[23]

In relation to the Temperate East Network: Representation of provincial bioregions (four out of 10) and primary conservation features (56 out of 155) in Sanctuary Zones or Marine National Park Zones is low ...Against these metrics, and especially in comparison to other networks, the Temperate East CMR Network performs poorly against the Goals and Principles. The major deficiency in representation is coverage on the continental shelf and representation of conservation features in Sanctuary Zones or Marine National Park Zones, most notably the three provincial bioregions that are primarily located on the continental shelf (Expert Science Panel report).[21]

Key points

- The revision of the marine protected areas review weakens marine protection in a number of locations.[38]
- The proposals fail to address initial concerns with the plans, such as the under-representation of a number of marine habitats in sanctuary (no-take) zones.
- There is no overall increase of strictly protected areas (IUCN I and II) on Australia's continental shelf.
- There has been a decrease in the overall protection of IUCN I and II areas for the slope, deep ocean and south-west region.
- In the other four regions, strictly protected areas (IUCN I and II) for the continental shelf remain below 3 per cent, with the Temperate East having none at all.
- Even the small proportion of currently planned 'no-take' zones is under threat as the marine management plans are reviewed.[24]

2. Comprehensive, Adequate and Representative Marine Protected Area Network

As outlined above, the first goal of the National Representative System of Marine Protected Areas is to include all provincial bioregions (38, excluding Cocos and Christmas Islands provinces - that were outside the scope of the recent planning process - and the North-east Shelf province – already protected by the 17 Great Barrier Reef Marine Park) within the national system. Other goals include representation of all water depths, examples of habitats, communities and ecosystems as well as physical features, within the marine protected areas network. This has not been achieved.

2.1 Provincial Bioregions (Goal 1)

Each provincial bioregion occurring in a marine region should be represented in the marine reserve network.

Although all provincial bioregions are represented to some extent, representation is unbalanced. For example, seven provincial bioregions have less than 10 per cent of their area within marine protected areas, while bioregions within the Coral Sea were almost fully included.[26] Table 2 provides information on the outcomes of the Commonwealth Marine Reserves in terms of representation of values within the National Representative System of Marine Protected Areas (n.b. the Commonwealth Marine Reserves was only concerned with a subset of the bioregions, hence the different number of provincial bioregions).

2.2 Depth Range by Provincial Bioregion (Goal 2)

All oceans depths should be represented in the marine reserve network to ensure examples of all types of marine biodiversity will be protected.

For the design of the National Representative System of Marine Protected Areas estate, 347 water depths by provincial bioregion classes were defined[18] The system includes 94 per cent of depth classes, with over half (200) represented in marine national parks and marine sanctuaries. There are 22 depth classes not represented in the estate (though three of these are represented in the Great Barrier Reef Marine Park and 14 are represented in the South-east region). The remaining five depth classes are not represented (one each in the South-west, North-west and Temperate East and two in the North).

Against this criterion, the estate is not comprehensive.

GOAL	PRIMARY CONSERVATION FEATURE	TOTAL NUMBER	FEATURES REPRESENTED WITHIN ESTATE	FEATURES REPRESENTED IN SZ AND MNPZ (IUCN CATEGORIES I AND II)
1	Provincial bioregions	32	31	26
	Meso-scale bioregions	35	33	21
2	Depth by provincial bioregion	347	325	200
3	Key ecological features	41	39	26
	Biologically informed seascapes	68	60	38
4	Seafloor types	21	21	20
	Total	**544**	**509**	**331**

Table 2. Performance of the proclaimed Commonwealth marine reserve estate against the Goals and Principles (excluding the South-east Marine Region and the Great Barrier Reef Marine Park.[18]

MNPZ-Marine National Park Zones; SZ-Sanctuary Zones.

2.3. Key Ecological Features and Biologically Informed Seascapes[27] (Goal 3)

Examples of benthic/demersal biological features (e.g. large-scale seafloor habitats, communities, ecosystems) should be represented in the marine reserve network.

More than 90 per cent of Key Ecological Features and Biologically Informed Seascapes are represented in the National Representative System of Marine Protected Areas. This outcome is close to comprehensive, with only two Key Ecological Features and eight Biologically Informed Seascapes not represented.

2.4. Seafloor Types (Goal 4)

Examples of all physical seafloor features should be represented in the marine reserve network (e.g. underwater seamounts, canyons, and plains).

All are represented with the National Representative System of Marine Protected Areas.

2.5. Bioregional Summary

Though the proposal captures a substantial proportion of biodiversity values within the the National Representative System of Marine Protected Areas, not all four bioregions under consideration (as part of the Commonwealth Marine Reserves) fare equally as well. In particular, the Temperate East marine protected area network performs poorly against the goals and principles. For example:

1. Only 26 per cent of the bioregion is within the protected area network.
2. Relatively fewer primary conservation features are represented, performing particularly poorly on depth representation, with one-third missing.
3. Representation of provincial bioregions (four out of 10) and primary conservation features (56 out of 155) within highly protected areas (IUCN Categories I and II) is low.
4. Only 15.7 per cent of the network (or 4.1 per cent of the bioregion) is included within Sanctuary Zones or marine national parks.

The major deficiency in representation is coverage on the continental shelf and representation of conservation features in highly protected areas, particularly on the continental shelf.[18] Not coincidently, these areas correspond with greater socio-economic interests (see section 2.5.1 below).

The North bioregion also fares poorly compared with the other bioregions, though not to the same extent as the Temperate East bioregion.

2.5.1 Offshore vs Inshore Inclusion

In its review of the National Representative System of Marine Protected Areas the Expert Science Panel noted that under-represented habitat of the continental shelf and upper slope contained the highest diversity of marine life: 'Both fish and macrofauna species richness around Australia was highest on the shelf, shelf break and upper slope and decreased with depth'. In addition, major shifts in species assemblages occur in response to latitude, depth and substrate type.[18 (and references therein)]

Selection of areas for inclusion within the National Representative System of Marine Protected Areas are obviously skewed towards deeper waters – areas of least importance to industry – and is not based on science or the agreed goals and principles for inclusion. This systematic designation of protected areas at sites of least value for extractive uses is known as 'residual protection'.[28] For example, marine protected areas in general avoid oil and gas titles, release areas and wells.[29] In general, the South-east (not part of the Commonwealth Marine Reserves) and

Temperate East marine protected area network, and especially with regard to highly protected, or 'no take' zones, disproportionately exclude the 'zone of importance', i.e. where the highest biodiversity values and greatest threats to these overlap.[30] These areas are found on the continental shelf (noting that an inverse relationship between biodiversity and depth is seen on seamounts and within some canyons).

Overall, less than 3 per cent of Commonwealth waters on the continental shelf are within the National Representative System of Marine Protected Areas compared to more than 20 per cent of the abyssal plain (> 4000 m depth).[31] Consequently, there are also major biases in representation of habitat features and ecosystems.

As a specific example, although the proposed network for the Temperate East is large (approximately 26 per cent), the proportion of the inshore environments (the continental shelf and shallow continental slope) reserved are negligible and is at odds with listing 'shelf rocky reefs' and 'canyons of the eastern continental slope' as two of the 16 regional priorities.

Devillers et al. (2015) concluded that 'Nationally, the recently announced Australian Commonwealth marine reserves were found to be strongly residual, making almost no difference to 'business as usual' for most ocean uses. Underlying this result was the imperative to minimise costs, but without the spatial constraints of explicit quantitative objectives for representing bioregions or the range of ecological features in highly protected zones.'

Clearly, comprehensiveness of coverage from a purely scientific design perspective has been compromised by the accommodation of significant economic interests, notably commercial fishing, and oil and gas interests, and strongly shaped the final placement of marine protected areas in some bioregions.[32]

There are two key reasons the residual protection of Australia's marine environment is detrimental to biodiversity conservation. First, species and ecosystems exposed to high levels of human use are also those most vulnerable to negative effects and therefore most in need of protection; but residual reservation affords these features least protection. Second, selecting areas for protection that have low levels of human use cannot improve the condition of those areas and creates a false sense of security. False sense of security can lead to 'reserve fatigue', where government, stakeholders and communities use up the limited supply of 'conservation capital', reducing the willingness to extend marine protected areas in the future, even into areas that most need protection.[28]

> *"Our results are consistent with the hypothesis that recently declared MPAs across Australia have been systematically located in areas with few fishery resources… A network of lightly fished and unfished sites will generally fail to be comprehensive because it omits community types associated with heavily fished locations…"*[33]

Protecting the full range of ecosystems off the coasts of Australia, including locations subject to high human use such as intensively fished areas, need to be included within the National Representative System of Marine Protected Areas if conservation outcomes are to be realised.[34] It is a 'fundamental requirement'.[35]

Key points

- While the National Representative System of Marine Protected Areas is large and to a large extent captures conservation features, there are significant gaps.

20 primary conservation features remain unrepresented:

- **2 provincial bioregions.**
- **2 meso-scale bioregions.**
- **7 depth ranges.**
- **2 key ecological features.**
- **7 biologically informed seascapes.**

- Some of the gaps in coverage of features in highly protected areas can be rectified within the outer boundaries of the current estate.[18]
- Other gaps can only be rectified by extending the outer boundaries of the National Representative System of Marine Protected Areas and/or by new reserves.18
- The Temperate East region is the least comprehensive, favouring the interests of industry over the protection of biodiversity.
- In general, the representation of the continental shelf, and proportion of continental shelf within highly protected areas within the National Representative System of Marine Protected Areas continues to be inadequate and has put the interests of industry before conservation.
    - **This is completely at odds with the purpose of a National Representative System of Marine Protected Areas, and**
    - **Claims to have fulfilled international obligations, such as the Aichii Targets under the Convention on Biological Diversity cannot be substantiated.**

3. Adequacy

Principle 12: Features should be replicated wherever possible within the system of marine reserves (that is, included more than once).

As the Expert Science Panel states: 'The core element of adequacy is the extent to which a reserve or network has long-term viability. Persistence, integrity and resilience are key concepts underpinning adequacy of a reserve network'.[18]

Replication and size are two key design features integral to the concept of adequacy. Size of marine protected areas within the National Representative System of Marine Protected Areas is variable, ranging from between four to 989,842 km^2, with a mean area of 53,971 km2 and a median area of 6217 km2.18 Adequacy is generally met with regard to offshore marine environments. However, representation and inclusion of continental shelf marine environments cannot be considered adequate (or comprehensive).

4. Management: IUCN Categories

Aichii Target 11 emphasises the importance of not only establishing a CAR protected area network, but also that it is 'equitably and effectively managed'. Zoning by application of IUCN protected areas categories is the key management tool for protected areas and is mandatory: the EPBC Act requires that areas within reserves be assigned to one of the categories defined by the IUCN (see Table 1).

In a system of marine protected areas designed to achieve biodiversity conservation outcomes and accommodating a range of other human uses, zoning plays a key role by prohibiting, constraining and spatially allocating different activities, particularly extractive uses across a reserve or network.18 The primary purpose of the National Representative System of Marine Protected Areas is conservation of biodiversity and other natural and cultural values, thus any additional allowable activities need to be compatible with this outcome.

The four primary marine zone categories are:

1. Sanctuary (IUCN Ia).
2. Marine National Park (IUCN II).
3. Habitat Protection (IUCN IV).
4. Multiple Use and Special Purpose (IUCN VI).

See Table 1 for the number and area each zone contributes to the National Representative System of Marine Protected Areas.

4.1. IUCN Categories I and II: Marine Sanctuaries and Marine National Parks – Location and Proportion

Principle 18: The regional marine reserve network will aim to include some highly protected areas (IUCN Categories I and II) in each provincial bioregion.

The highest levels of protection that can be assigned to a marine protected area are the IUCN Categories I or II (Marine Sanctuary and Marine National Park) and are often referred to as 'no take' zones.

'No take' is self-explanatory: it means the extraction of biological or physical resources is prohibited. In contrast, Categories IV and VI permit extractive uses. There is overwhelming scientific evidence to support IUCN Category I and II zones as successful management tools for marine conservation and this type of zoning should be considered 'best practise'.[17] (and references therein)

'No take' zones have numerous benefits for conservation and recreational and commercial fishing industries including:[18] (and references therein)

1. Stable populations of targeted fish inside no-take reserves contributing to resilience of these species.
2. Greater stability in the food web due to the presence of large omnivorous fish.
3. Contribution of 'no take' areas to recruitment in reef-associated species.
4. Spillover to adjacent areas and improved catch per unit effort, particularly where the area adjacent to the reserve is overfished.
5. Recovery of kelp forest as a consequence of increased predation by large lobsters and fish on destructive herbivorous grazers such as urchins.
6. Increased resilience against climate change or large-scale disturbance events such as floods or cyclones.

'No take' areas have been demonstrated to be one of five key essential attributes for producing the most effective conservation outcomes for marine reserves (in terms of the mean size and abundance of exploited species).[36, 37] These areas have higher abundances and distinct fish assemblages compared with less stringently protected areas, such as Habitat Protection Zones and Multiple Use Zones.

The Expert Science Panel agrees and concludes that 'no take' zones are the most effective biodiversity conservation measure and reinforces these 'rules of thumb' in their report: 'The Expert Scientific Panel (ESP) recognises the significant body of scientific literature that demonstrates the effectiveness of Marine National Park Zones (no take zones) in achieving conservation outcomes …'.[18]

The panel also discussed the fact that each reserve should include at least one marine national park, and that a significant sample of each primary conservation feature and each provincial bioregion be included in at least one marine national park of an appropriate configuration and size to meet conservation objectives.[38]

Proportion

Australia agreed with the IUCN World Parks Congress 2014 recommendation that 'no take' zones protect at least 30 per cent of each marine habitat.[39] However, instead of trying to improve on the 2012 National Representative System of Marine Protected Areas marine national parks representation, the Bioregional Advisory Panel recommend removing 127,000 km^2 of marine national parks from the overall network (an area 1.9 times the size of Tasmania) with a net loss of 76,000 km^2, leaving approximately 13 per cent protected within marine national parks and falling well below the recommended international standard of at least 30 per cent of habitats being offered strict protection.[43, 43]

Location

Furthermore, marine protected areas that have been assigned the highest protection are predominantly

those that least need it: shallower waters are dominated by Category VI MPAs, which allow some level of extractive use and where threats to biodiversity are concentrated, whereas deeper waters near the edge of Australia's marine jurisdiction have larger percentages of 'no take' zones (see Figure 1).

Careful placement of 'no take' zones has minimised impacts to fishing and made no difference to oil and gas development, at the expense of biodiversity.[41, 42] The Expert Science Panel also noted this bias in its review of the National Representative System of Marine Protected Areas, i.e. poor representation of marine national parks at shallower depths, yet despite this, the Bioregional Advisory Panel recommends:[43, 44]

1. Further reducing marine national park zone protection in continental shelf and upper slope habitats:

   a. Shifting the location of some marine national park zones from the continental shelf to offshore areas as a way of maintaining cover but further eroding representation.

2. Demoting 18 areas from marine national park zones to varying forms of lesser protection.
3. Eight bioregions in the North planning region, six bioregions in the North-west planning region and five bioregions in the Temperate East planning region to have no marine national park zones.
4. Thirteen marine reserves to have no marine national park zones.
5. 203 primary conservation features (as defined by the Expert Science Panel) to be excluded from marine national park zones.
6. Reducing the contiguous Coral Sea marine national park by 25%.

In summary, these recommendations favour the interests of the fishing industry even more than the 2012 proposal, despite the fact the ABARES assessment of potential displacement of commercial fishing shows that there is considerable room within the Australian Government's existing structural adjustment budget to address the

CORAL SEA REGION

With broad community support the 2012 proposal had 100 per cent of the Coral Sea placed within a marine national park zone (see Figure 1 and Figure 2), and would have been a major contribution to the protection of intact tropical pelagic marine life on a global scale.

The Bioregional Advisory Panel recommendations include some welcome proposals for new marine national park zones in the Coral Sea Marine reserve. However, they also recommend fragmenting and reducing the size of the marine national park zone one of the Coral Sea by 25% and opening up over half of the Coral Sea to longline fishing, claiming this reduction is 'necessary' to reduce the impact of the Coral Sea zoning on the Eastern Tuna and Billfish Fisher industry. This blatantly disregards the outcomes of the independent Fishing Gear Risk Assessment and Expert Science Panel that maintain this industry posed an unacceptable risk to the conservation values of the Coral Sea and should not be allowed to operate within the reserve.[23]

REGIONAL EXAMPLES OF POOR REPRESENTATION OF CONTINENTAL SHELF HABITATS WITHIN MARINE NATIONAL PARK ZONES

Temperate East Region

This region has the poorest representation of marine national park zones in the shallower shelf and upper slope habitats within the National Representative System of Marine Protected Areas: 0.2 per cent and 0 per cent, respectively – effectively ignoring the agreed targets and recommendations for protection. ABARES estimates the total maximum impact of the 2012 proposal for this region on commercial fishing to be in the order of $0.6 million. There is therefore considerable room in the Australian Government's structural adjustment budget for improving the shelf and upper slope Marine National Park Zones in the Temperate East.[40] The Expert Science Panel recommended major improvements to the Temperate East Marine Reserve Network because of the poor performance of the network against the goals and principles of the National Representative System of Marine Protected Areas, and highlighting the major deficiency in representation of coverage on the continental shelf and representation of conservation features in sanctuary and marine national park zones.

The Bioregional Advisory Panel proposes that the protection of these habitats within marine national park zones remain the same, and that no marine national park zones be allocated to several other reserves, and that marine national park zones should be removed from high conservation value habitats, such as the Middleton Reef Seamount. The Middleton Reef Seamount was included within a marine national park zone in 1987 and one of Australia's longest protected coral reef habitats. Furthermore, the Expert Science Panel found that seamounts such as this one that provide vertically continuous habitats are likely to be key refugia for deep ocean marine life if they are forced out of their existing depth ranges by climate driven changes to their habitats.[23]

ABARES estimates that the proposel for the Middleton Reef ecosystem would provide a maximum economic benefit to commercial fishers of just $31,000 per annum, effectively giving a benefit of $335 dollars per annum to each of the 92 longlining statutory fishing rights in the Eastern Tuna and Bluefish fishery, the main fishing industry this area.[40, 23] Areas where Bioregional Advisory Panel has recommended including marine national park zones includes a new zone over the deep ocean and upper slope habitats in the Norfolk Marine Reserve – an area containing no active fishing operations – and leaving the high conservation value Norfolk Island Seamounts with no high level protection.

South-west Region

In the South-west Region only 7 per cent of shelf habitats and 2 per cent of upper slope habitats were within marine national park zones in the 2012 National Representative System of Marine Protected Areas proposal. Following the Commonwealth Marine Reserves, the Bioregional Advisory Panel recommended reducing the size of these even further within this region (a reduction of 2,472 km^2 is proposed).[23] This is well below the agreed targets and recommendations for protection and unnecessary given the total estimated impact of the 2013 South-west Marine Reserve Network on commercial fishing is only in the order of $2.1 million. There is considerable room within the Australian Government's structural adjustment package for improving the shelf and upper slope marine national park zones.23 Furthermore, this doesn't take into account the benefits to industry of having 'no take' areas on catches outside the reserve.

	SOUTH-WEST[5]	NORTH-WEST	NORTH[6]	TEMPERATE EAST	CORAL SEA	TOTAL
Area of marine region[7] (km^2)	1,292,015	1,067,731	625,690	1,466,792	989,842	5,442,070
Area of network (km^2)	508,605	335,437	157,483	383,352	989,842	2,374,719
Number of reserves	14	13	8	8	1	44
Proportion of region in the network	36%	37.1%	19.6%	26.1%	100%	43.6%
Proportion of the network in SZ and MNPZ (IUCN Categories I and II)	35.3%	31.1%	10.8%	15.7%	50.8%	36.4%
Proportion of region in SZ and MNPZ (IUCN Categories I and II)	12.7%	9.7%	2.7%	4.1%	50.8%	15.6%

Table 3. Information regarding the NRMPA for each bioregion.[18]
MNPZ-Marine National Park Zones; SZ-Sanctuary Zones.

findings of the Expert Science Panel and remove some of the key gaps in the protection of Australia's marine life.[23, 45]

The Temperate East the North bioregions' marine protected area network has the lowest proportion within highly protected areas, i.e. Marine Sanctuary or Marine National Park.

4.2. Habitat Protection Areas (Zones?): IUCN Category IV

Habitat Protection Zones aim to secure and maintain habitat conditions necessary to protect significant species, communities or physical features, and exclude activities that physically damage or seriously compromise these conservation values.18 They usually (though not always) focus on protecting the bottom habitats of the ocean – the benthic and demersal zones – and associated species assemblages, but allow activities such as fishing.

Partial protection, as in Habitat Protection Zones, can compromise conservation to some degree and is less effective than 'no take' zones for the conservation of biodiversity. It has been shown, for example, that biomass increases significantly with higher protection (e.g. a three-fold increase in 'no take' zones compared in areas with partial protection), fish grow to larger sizes, and ecosystem regulation by top order predatory fish is more pronounced in 'no take' areas compared with areas with partial protection.[18 (and references therein)]

The Bioregional Advisory Panel appears to ignore these findings and claims Habitat Protection Zones can play a similar role in protecting marine life as marine national park zones and that, in addition, recommends allowing destructive[46] commercial fishing activities within 97 per cent of the habitat

REGIONAL EXAMPLES OF POOR REPRESENTATION OF CONTINENTAL SHELF HABITATS WITHIN MARINE NATIONAL PARK ZONES

North-west Region

In the North-west Region, only 2 per cent of shelf habitat and less than 1 per cent of upper slope habitats were within marine national park zones in the 2012 National Representative System of Marine Protected Areas proposal. For the same reasons presented above, for the Southwest Region, the recommendations by the advisory panel to reduce this even further should be rejected and moves to improve protection of these habitats should be taken.

protection zones it has proposed.[22]

In such areas the benefits to the conservation of biodiversity will be highly compromised and 'rather they appear more likely to be a vehicle to expand commercial fishing activities classed by scientists as incompatible anywhere within the marine reserves'.[23]

4.3. Multiple Use Zones: IUCN Category VI

Multiple Use Zones are primarily managed for the sustainable use of ecosystems, and the vast majority of marine national parks are in this category. The proclaimed National Representative System of Marine Protected Areas in 2012 (i.e. excluding the South-east Network), including Habitat Protection Zones, is 64 per cent.

Not surprisingly studies show that Multiple Use Zones are less effective for the conservation of biodiversity than Habitat Protection Zones or 'no take' zones, but do provide improved protection for biodiversity compared with areas outside of reservation.[18 (and references therein)] Other factors, such as differences in age and size of the marine protected area; effectiveness of compliance; history of exploitation prior to marine protected area establishment; exploitation intensity inside and outside the marine protected area and so on, also impact on the effectiveness of conservation of biodiversity within Multiple Use Zones.

In terms of protection of biodiversity, multiple use zones are more effective if allowable fishing activities exclude the use of fishing gear such as seine nets and pelagic longlines, which can be harmful. In line with this the Expert Science Panel concludes, 'The inclusion of some extractive activities in Multiple Use Zones can be compatible with biodiversity conservation as long as the intensity, extent and impact of the activities are known and well managed'.[18]

Key points

- The marine protected area network covers more than one-third of Australian waters, however it is not comprehensive, adequate or representative.
  - **Continental shelf marine environments are poorly represented.**
- Marine protected areas tend to be the least commercially useful and so the least controversial to conserve, even though they may also be the least threatened.
- The current proposed zoning falls short of providing a CAR network as described in the National Representative System of Marine Protected Areas Guidelines.(EDO)
- The recommendations propose increasing the number of primary conservation features (such as Provincial Bioregions, Depth Ranges, Key Ecological Features and Seafloor Types) in sanctuary and marine national park zones (up from 331 to 352 of the total of 509 features in the estate).
  - **However, although protection appears to have increased (from 60% to 76% in high protection IUCN categories), and the total areas zoned as multiple use (IUCN VI) in these reserves, where extractive uses and mining are or may be allowed has been halved (to 18% of the estate), impacts on commercial fishers have been substantially reduced from the proclaimed zoning.**
- The recommendations with regard to commercial fishing within marine protected areas are a major issue: the primary purpose of the protected area network – i.e. conservation - has been severely compromised.
- A significant and worsening issue is the failure to address the requirement that reserves are 'effectively and equitably managed'. The reasons for this directly correspond to the skewing of National Representative System of Marine Protected Areas to regions of less economic interest to industry:
  - **Highly protected areas are concentrated offshore, in**

deep water, whereas the most vulnerable ecosystems are generally closer to shore, on the continental shelf.

- **There is a disproportionate consideration of the interests of industry over the conservation of biodiversity not only where the marine protected areas are located, but also with regard to their 'relaxed' management.**

- The way marine protected areas are managed continues to be driven by the fishing, petroleum and shipping sectors, while conservation is largely subservient to those industries' wants, or at best treated as just another competing use.[47]
  - **The consideration of CAR and precautionary principles, rather than the avoidance of fisheries conflicts, should be the basis upon which decisions on zoning should be made.**
- The conservation benefits are "vanishingly small" in proportion to size of the new areas.[48]
- Marine protected areas are centred on large 'no take' zones should remain a core objective of Australia's marine strategies – as should the sympathetic management of biodiversity across the entire seascape.
- The benefits to conservation as well as economic interests are strikingly clear: any erosion of the level of protection within these zones has economic consequences and thus is a short-sighted approach to long-term economic viability of the commercial fishing industry and at odds with the objective of these zones, i.e. an area protected and managed to preserve its natural condition; intended to provide a high level of protection for the ecosystems, habitats and biodiversity within the area.

5. What is Required to Complete the NRSMPA Network?

A National Representative System of Marine Protected Areas, which meets a standard of 15 per cent of each of 2,420 marine ecosystems and 30 per cent of the habitats of each of 177 marine species of national environmental significance, would require expansion of marine national parks up to nearly 30 per cent of state and Commonwealth waters, not substantially different in overall extent from that of the current representative system, but different in configuration.[49]

An additional 15.8 per cent of Commonwealth and state waters (approximately 137 million hectares) would need to be included within 'no take' zones (the current plan has 13 per cent of marine protected areas within highly protected categories, skewed toward areas of least interest to industry), approximately, 9 million ha occurs in state waters. This would leave more than two-thirds of Australia's marine jurisdiction open to commercial resource use outside of marine national parks and sanctuaries or in the habitat protection zones and multiple use zones of existing marine protected areas.

The total cost of Australia achieving a comprehensive, adequate and representative marine reserve system that would satisfy Aichi Target 11 is an estimated $247 million.[50] However, the results of the Commonwealth Marine Reserves show no changes in the boundaries of the reserves declared in 2012, indicating clear resistance to adjusting boundaries to better incorporate under-represented values.

Key points

- A CAR marine protected area network is feasible, but requires modest increase in the extent and reconfiguring the current network to include more 'no take' zones.

Role of the Australian Government

The intent is not for the Australian Government to assume the role of management of protected areas within the National Reserve System, but for it to ensure management of Australia's protected area estate is undertaken in accordance with best practice standards.

A comprehensive, adequate, representative and well-managed National Representative System of Marine Protected Areas is a common responsibility for all Australian governments. It is critical for the conservation of biodiversity and an important public good, securing ecosystem services that have important economic and social benefits for the Australian community. The country's marine environment currently contributes approximately $50 billion annually to the overall economy and is expected to double by 2025.[51]

The failure to use robust scientific criteria and strong political motivations to establish residual reserves that minimise costs and conflicts with users of natural resources has resulted in biased placement and undermined biodiversity outcomes. It has also overridden the primary goals of the system, jeopardising the effective protection of Australia's marine biodiversity now and into the future.[52]

There is no doubt protecting biodiversity is a huge task requiring good science, expertise and strategic investments. The resources required will necessarily be ongoing and increasingly important with the mounting pressures of climate change. However, given the undeniable economic benefits generated from protected areas, achieving a CAR marine protected area network is extremely cost effective and an investment that will continue to reap dividends.[53]

Long-term provision of adequate resources is just one critical element needed to progress the marine reserve system and its effective management in perpetuity. Strong leadership at the national level is another.

Leadership is lacking, leaving any consistent approach to the establishment of an uncompromised network at risk. The pressures of global economic uncertainties, diminishing resources for environment programs, the impacts of climate change and the unparalleled resource exploration interests in Australia – all make the timing critical for a leadership model to establish new national conservation paradigms.[54]

The following considers the roles the Australian Government could take with regard to progressing and revitalising the momentum to continue to invest and lead the nation towards establishing and maintaining a marine protected area network that is truly comprehensive, adequate and representative.

1. Leadership

The Australian Government has 'dropped the ball' when it comes to the establishment of a comprehensive, adequate and representative marine protected area network that is managed appropriately to conserve biodiversity. Instead, leadership has been given to those with a vested interest, in particular, the commercial fishing industry and other extractive use industries.

- The Australian Government needs to reinforce the principles behind the establishment of a National Representative System of Marine Protected Areas, and the benefits such a system has for all Australians, including industry.
- Address the significant shortfalls in representativeness of the Commonwealth Marine Reserves estate as opportunities arise and during future planning cycles, with a priority on amending

There are concerns the Weedy Seadragon is becoming endangered.
Photo: John Gaskell

the outer boundaries of existing marine protected areas and/or designing new reserves to improve representation in the Temperate East Marine Region and Indian Ocean Territories in particular.[21]

2. Policy Implementation and Priorities

- Australia's international obligations should be more clearly reflected in the design of the marine reserve network, particularly in relation to: the Convention on Biological Diversity; the program of work on marine and coastal biodiversity outlined in the Conference of the Parties 4, decision IV/5 to the Biodiversity Convention; the IUCN Guidelines for Applying Protected Area Management Categories (2008); and the 2011 Guidelines for Applying the IUCN Protected Area Management Categories to Marine Protected Areas.
- It is vital that key laws, policies and principles

that should underpin marine reserve planning and management are adequately applied in each marine region.

- In considering the final configuration and management of the National Representative System of Marine Protected Areas, priority needs to be given to fulfilling the goals of the marine protected area network.
- This would require adding another 11 per cent of Australian waters to marine national parks, but at a relatively modest total cost of ~$247 million.[55]

3. The Temperate East Network[38]

- The proportion of the Temperate East Marine Region protected within the National Representative System of Marine Protected Areas must be increased;
- The objectives should better reflect the need for an ecosystem based approach to biodiversity conservation and should strive to reduce development pressures in order to protect and restore biodiversity;
- The continental shelf, Lord Howe Island Plateau and Caledonia Basin should be recognised as key ecological features and protected accordingly.

4. Financing

Policy implementation and the effectiveness of proposed zoning will be highly dependent on whether sufficient resources and staff are allocated to undertake monitoring, compliance and enforcement activities.

Adequate government financing is needed if Australia is to fulfil its commitments to establish a National Representative System of Marine Protected Areas.

- Completing the system will cost $247 million.[56]
- This could be met by reallocating existing departmental resources or new money could be allocated for delivery (see the example 'Biodiversity Fund' below and for additional revenue raising opportunities see Appendix C), sourced primarily from the tax base, trusts and environmental levies rather than 'user pays' approaches like visitor fees and commercialisation of reserves.
- For example, visitors to national parks and nature reserves generate existing tax revenue in the order of $2.3 billion a year. This could be reinvested into expanding and managing the protected area network.
- The budget could be used to compensate the fishing industry if needed and as required.
- Program delivery can be achieved through existing departmental expertise, supplemented by state and territory national parks and fisheries agencies.

5. Biodiversity Fund

Additional money through wise investment has the potential to raise additional revenue for progressing and managing the marine (and terrestrial) protected area network.

- The Australian Government could manage a dedicated Biodiversity Fund with all investments guided by good scientific advice, regional on-ground experience and prudent financial management. The investments would be delivered at a regional level.
- The source of resources could come from several places, for example:
- Centralising current expenditure into a single fund.
- Bringing all 'offsets' required under various planning regimes into a consolidated fund.

A moderate additional tax that could come through a variety of sources – via developers, stamp duties, or incomes.

6. The Commonwealth Marine Reserves Review[23, 38]

- No further diminishment of marine national parks zoning in bioregions and key ecological features should occur as these are already significantly under-represented in the 2012 plans.
- Management of the National Representative System of Marine Protected Areas needs to be adequate and properly implemented according to IUCN guidelines. This includes:
  - Including a minimum of 30 per cent of each marine habitat in highly protected marine national parks.
  - Very large marine national parks such as that proposed for the Coral Sea in 2012 should be preserved.
- It is now almost four years since the National Representative System of Marine Protected Areas was proclaimed. It is within the power of the minister and the Director of National Parks to set interim management arrangements. This should be done urgently so that further delays in the management planning process do not continue to prevent most of the system from being operational.
  - If interim management arrangements continue to not be used the Australian Government should consider declaring the Commonwealth Marine Reserve Network a Conservation Zone under the EPBC Act so that new proposals for inappropriate activities (i.e. activities inconsistent with the IUCN designation of the zone) can't be progressed.
- Reject the Bioregional Advisory Panel's proposals for removing Marine National Park Zone protection on the shelf and upper slope.
- Increase Marine National Park Zone protection for the shelf and upper slope to address the under representation identified by the Expert Science Panel.
- Ensure bioregions contain at least one marine national park zone as recommended by the Expert Science Panel, and outlined by the Australian Government as a key principle of the marine reserve network when planning begun in 1998.
- Ensure each marine reserve contains at least one marine national park zone as recommended by the Expert Science Panel.
- Ensure a significant sample of each primary conservation feature (as defined by the Expert Science Panel) in included within marine national park zones as recommended by the Expert Science Panel.

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1 'XXXXX

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National Parks Australia Council

The National Parks Australia Council (NPAC) is a national body that represents state and territory organisations concerned with protecting the natural environment and furthering national parks. It has six member organisations, representing all states and territories except Western Australia and the Northern Territory.

Victorian National Parks Association

The Victorian National Parks Association (VNPA) shares a vision of Victoria as a place with a diverse, secure and healthy natural environment cared for and appreciated by all.

Website: www.vnpa.org.au

Email: vnpa@vnpa.org.au | Phone: (03) 9347 518

National Parks Association of NSW

The mission of the National Parks Association of NSW (NPA NSW) is to protect, connect and restore the integrity and diversity of natural systems in NSW and beyond, through national parks, marine sanctuaries and other means.

Website: www.npansw.org.au

Email: npansw@npansw.org.au | Phone: (02) 9299 0000

National Parks Association of Queensland

The National Parks Association of Queensland (NPAQ) is dedicated to promoting the preservation, expansion, good management and presentation of National Parks in Queensland.

Website: www.npaq.org.au

Email: npaq@npaq.org.au | Phone: (07) 3367 0878

National Parks Association of the ACT

The National Parks Association of the ACT (NPA ACT) was established in 1960. The Association works to promote national parks and the protection of fauna and flora, scenery, natural features and cultural heritage.

Website: www.npaact.org.au

Email: admin@npaact.org.au | Phone: (02) 6229 3201

Royal National Park, Australia's first national park. Photo: M Eckert | Flickr | CC BY-NC-ND 2.0

Tasmanian National Parks Association

The mission of the Tasmanian National Parks Association (TNPA) is to preserve the integrity of, and expand, the Tasmanian national park system, and to ensure appropriate management of their natural and cultural values.

Website: www.tnpa.org.au

Email: info@tnpa.org.au | Phone: 0427 854 684

Nature Conservation Society of SA

The primary objective of the Nature Conservation Society of South Australia (NCSSA) is to foster the conservation of the State's wildlife and natural habitats.

Website: www.ncssa.asn.au

Email: ncssa@ncssa.asn.au | Phone: (08) 7127 4630

National Parks Australia Council

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Australian Capital Territory: www.npaact.org.au