



Parks and Wildlife Commission
Parks Masterplan
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Australian Marine Sciences Association NT submission on the NT Parks Masterplan Consultation Paper

The Australian Marine Sciences Association (AMSA) welcomes the opportunity to provide comments on the NT Parks Masterplan Consultation Paper.

AMSA is a professional society of more than 700 members nationwide, committed to promoting all aspects of marine sciences. Our members are from universities, museums, private sector, and government agencies and have expertise spanning all disciplines related to marine science. AMSA actively promotes the advancement of marine sciences in Australia and provides evidence based scientific advice and support on matters of national and global interest. As well as operating nationally, AMSA has active Branches in most states and territories, including the Northern Territory.

We recognise the importance of traditional ecological knowledge in informing marine park management and of meaningful collaborations between marine scientists and Indigenous groups in conducting research on Sea Country. Many of our members are engaged in collaborative research projects with Traditional Owners, and at each of the past five AMSA annual conferences, we have held workshops on fostering such research collaborations (see <https://www.amsa.asn.au/indigenous-engagement-marine-science>).

Acknowledging our support of including Indigenous interests and expertise in marine park management, our focus in this submission is the protection of natural values based on scientific evidence. AMSA urges the Northern Territory Government to develop a Parks Masterplan that serves to protect the natural and cultural values of the NT marine and coastal environments and to foster resilience to disturbances such as those from climate change

Kind Regards

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Introduction

The NT Government's development of the Parks Masterplan comes at a time when the health of Australia's marine and coastal environments are in decline. Expansion of industrial development into the coastal and marine environment is placing increasing pressure on marine biodiversity and the well-being and security of the vast number of people it supports.

A national (and global) trajectory of decline in marine biodiversity has been systematically documented (i.e. GBRMPA Outlook Report, CSIRO Outlook report, State of the Environment Report, Senate enquiry into faunal extinctions) during the last decade and since European settlement in Australia. Since the beginning of this century there have been extensive losses of coral reefs (>50%) and seagrass (300,000 ha), between 20% and 35% of mangrove habitat has been lost since approximately 1980¹ (three key NT habitats), along with temperate seaweed forests (up to 95% declines in some species), saltmarsh habitats (50-100% losses) and oyster reefs (90-99% declines). These habitats support tremendously diverse communities, which have also declined alarmingly in many places.

These foundation marine habitats are essential for the economic and social wellbeing of Australians because they underpin marine biodiversity and enable ecosystem services that support Australian communities and societies. Recent economic models suggest that by 2025, services provided by ocean and coastal ecosystems could be worth in excess of \$25 billion p.a. However, this income, and the many intangible benefits so many Australians reap from living near the coast are contingent on the maintenance of biological diversity in marine ecosystems. This diversity underpins the ecosystem services that Australian communities all rely on, directly or indirectly, for prosperity, health and in many cases, survival. Conservation efforts to slow down or prevent the loss of these coastal ecosystems have been ineffective, as many of the drivers behind biodiversity declines have generally not been adequately managed and protection mechanisms, such as marine parks and reserves, have fallen well short of what is needed. The NT Parks and Conservation Masterplan provides an opportunity to help turn this around for the Northern Territory.

The Australian marine estate is vast and much of its biodiversity values have not been comprehensively documented in a systematic way. The cultural values of many Indigenous peoples in Australia extend into coastal waters where their connection to place, plants and animals is intrinsically connected to the health of the environment. The Northern Territory has exceptional examples of strong cultural connections evident in coastal management by Aboriginal groups. The available evidence points to extensive declines and redistribution of biological diversity in Australia's marine estate and future projections of further losses are alarming. The biodiversity losses will commensurately impact Indigenous coastal peoples around Australia.

It is AMSA's firm position that in order to effectively conserve and protect biological diversity, the causes of declines of biological diversity must first be addressed. However, there is also increasing recognition that reducing human impacts is no longer sufficient for protection of

¹ Polidoro BA, Carpenter KE, Collins L, Duke NC, Ellison AM, et al. (2010) The Loss of Species: Mangrove Extinction Risk and Geographic Areas of Global Concern. PLOS ONE 5(4): e10095. <https://doi.org/10.1371/journal.pone.0010095>

biodiversity. In addition to managing the causes of declines, there is growing demand for increasing protected areas, such as marine parks and reserves, as well as restoration or rehabilitation of lost habitats. Both approaches can also create jobs and produce substantial economic benefits.

With this in mind, it is crucial that the Parks Masterplan deliver increased investment into existing marine parks and reserves, as well as provide the mechanisms for expanding the network, working with the NT's Traditional Owners of sea country.

Review of the NT Parks and Wildlife Conservation Act 1976

Review of the NT Parks and Wildlife Conservation Act 1976 is timely and needed. Parks legislation must provide legal mechanisms to create zones that are underpinned by legislative mechanisms to implement and enforce. An enforceable zoning plan is needed to regulate human activities in the parks to ensure they are compatible with protecting natural, cultural and other values and fostering ecosystem resilience. Zoning is widely accepted as essential for effective marine park and reserve management.

Recent amendments to the Western Australian Conservation and Land Management Act now allow for the greater recognition of the rights of Aboriginal people by broadening the purpose of marine parks to include the protection and conservation of value of marine parks to the culture and heritage of Aboriginal people; and for the joint vesting of marine reserves with the Conservation and Parks Commission (the CPC) and an Aboriginal body corporate. Such reform should be pursued as part of the Review of the NT Parks and Wildlife Conservation Act.

Marine Parks and reserves in the NT

In contrast to other densely populated tropical seas, the coastal and marine waters of the northern Australia (ie. Northern Australian Shelf Large Marine Ecosystem or NASLME) are sparsely populated, with relatively undisturbed catchments, resulting in 'near- pristine', globally significant, marine habitats and biodiversity. However, in a recent assessment of cumulative impacts, Halpern et al (2015) have indicated that this region is exhibiting some of the greatest changes in impacts on the planet. Due primarily to remoteness and lack of human disturbance, the commonwealth waters of northern Australia are recognized as a major global stronghold for many marine megafauna including migratory, rare, threatened and endangered marine species, such as cetaceans, sharks and rays and turtles. Many of these marine species and their habitats are undergoing rapid decline in adjacent seas in Southeast Asia (and globally). With healthy populations, high species diversity and intact marine habitats, the waters of the northern Australia are now recognized as a regional and global refuge for many species and significantly, their conservation and management will increasingly play a crucial role in maintaining regional (and global) tropical marine biodiversity. Marine parks and reserves should play a key role in protection of these species in NT waters, both inside and outside of sea country Indigenous Protected Areas.

Since the first scientific studies on marine protected areas were undertaken in the early 1970s, a clear global scientific consensus has developed on the benefits of marine protected areas, particularly highly protected areas, and also, the urgent need for governments to establish such areas. This is recognised through nearly five decades of independent, peer-reviewed science

on the ecosystem and societal benefits of marine protected areas and also consensus and position statements by our leading marine science experts and organisations. AMSA endorses marine protected areas, particularly sanctuary zones, as vital to the conservation of Australia's marine biodiversity and biomass and to meet Australia's international obligations

One key criterion for assessing the NT Parks Masterplan is how effective it will be in driving the management actions necessary to protect habitats and species in the marine and coastal environments and mitigate threats. The main existing and potential threats that can be mitigated through effective marine park and reserve management are various forms of commercial fishing such as gillnetting and bottom trawling, seabed mining, marine debris and boat strike. For other threats that originate or operate beyond the marine park boundaries, such as climate change, terrestrial mining and changes to the hydrological regimes of rivers, the main focus of marine park and reserve management should be to optimise the resilience of species, habitats and ecosystems to disturbance.

Climate change resilience

One unavoidable context for marine planning is a rapidly changing environment, particularly changes being driven by global warming. It is of critical importance that we foster climate change resilience into our marine and coastal planning, management and protection. There is growing scientific evidence that marine habitats in highly protected areas (where extractive activities are not permitted) are more robust to disturbances caused by climate change. AMSA strongly supports action at all levels of government to curb emissions and, along with 110 other scientific organisations representing 80,000 aquatic scientists, has endorsed the [World Climate Statement from Aquatic Societies](#).

Many benefits of highly protected areas

Since the first scientific studies on marine protected areas in the early 1970s, a clear global scientific consensus has developed on the benefits of highly protected marine parks and reserves, as outlined in numerous peer-reviewed scientific papers and consensus and position statements by leading marine science experts and organisations. This includes a recent scientific statement by the Ocean Science Council of Australia addressed to the Australian Government and signed by close to 1500 marine scientists, which says in part (Ocean Science Council of Australia, 2017):

At a time when oceans are under increasing pressure from overexploitation, climate change, industrialisation, and plastics and other forms of pollution, building resilience through highly protected Marine National Park IUCN II Zones is well supported by decades of science. This research documents how high-level protection conserves biodiversity, enhances fisheries and assists ecosystem recovery, serving as essential reference areas against which areas that are subject to human activity can be compared to assess impact.

In addition to their benefits of increasing the resilience of marine ecosystems to climate change, one of the most consistent effects of highly protected areas is an increase in the abundance of

large individual fish. Globally, sanctuary zones on average increase the size of fish by 28%². The reproductive output of larger fish is disproportionately greater than that of smaller fish (i.e. one 2-kilogram fish produces more eggs than two 1-kilogram fish) (Barneche, Robertson, White, & Marshall, 2018). This means that sanctuary zones can provide great benefits to fish populations by providing a refuge for bigger mothers that reproduce more, benefiting not only the sanctuary, but also the surrounding areas. AMSA's [Position Statement on Marine Protected Areas](#) makes a suite of recommendations including that 'MPAs with at least 30% sanctuary (no-take) zone are the most effective and therefore the preferred design option'.

Partial protection is widely acknowledged in the scientific literature as an inadequate alternative to no-take protection. The abundance, biomass and body size of fish in partially protected areas are often similar to that in completely unprotected areas³.

There is also wide support in the community for marine parks with sanctuary zones. Navarro, Kragt, Hailu, and Langlois (2018)⁴ quantified social support from recreational fishers for marine sanctuaries by surveying fishers from 10 Australian marine parks. The level of support for sanctuaries among recreational fishers was more than three times greater than the opposition in all marine park regions except Sydney. Australia-wide, most (63%) recreational fishers who fished in established marine parks said they supported sanctuary zones, and only 18% opposed them. The pattern of support depended on the age of the marine parks: the level of support was greater in the longer-established parks. On average, support for no-take zones increased from 42% to 71% over 15 years, with the most rapid change occurring in the first five years after establishment.

There is a growing suite of advice about how to design resilient marine parks and reserves (Jones, Watson, Possingham, & Klein, 2016; Magris, Heron, & Pressey, 2015; Magris, Pressey, Weeks, & Ban, 2014; Maina et al., 2015; Maynard, Marshall, Johnson, & Harman, 2010; Mumby

² Lester, S. E., Halpern, B. S., Grorud-Colvert, K., Lubchenco, J., Ruttenberg, B. I., Gaines, S. D., Warner, R. R. (2009). Biological effects within no-take marine reserves: a global synthesis. *Marine Ecology Progress Series*, 384, 33–46.

³ Costello, M. J., & Ballantine, B. (2015). Biodiversity conservation should focus on no-take marine reserves: 94% of marine protected areas allow fishing. *Trends in Ecology & Evolution*, 30(9), 507-509. And Edgar, G. J., Stuart-Smith, R. D., Willis, T. J., Kininmonth, S., Baker, S. C., Banks, S., . . . Berkhout, J. (2014). Global conservation outcomes depend on marine protected areas with five key features. *Nature*, 506(7487), 216. And Giakoumi, S., Scianna, C., Plass-Johnson, J., Micheli, F., Grorud-Colvert, K., Thiriet, P., . . . Gaines, S. D. (2017). Ecological effects of full and partial protection in the crowded Mediterranean Sea: a regional meta-analysis. *Scientific Reports*, 7(1), 8940.

⁴ Navarro, M., Kragt, M. E., Hailu, A., & Langlois, T. J. (2018). Recreational fishers' support for no-take marine reserves is high and increases with reserve age. *Marine Policy*, 96, 44-52.

et al., 2011)⁵. In particular, there are comprehensive guidelines developed by Fernandes et al. (2012)⁶ for the design of resilient marine parks.

AMSA made a Submission on the Limmen Bight Marine Park Draft Plan of Management, including design of the zoning scheme (<https://www.amsa.asn.au/comments-limmen-bight-marine-park-draft-plan-management>). The zoning scheme at Garig Gunak Barlu National Park (Cobourg Marine Park) was developed with Traditional Owners. The zoning scheme must be properly implemented and adequate resources provided for its management.

The design of marine parks and reserves must have a strong level of engagement with Traditional Owners and support Traditional Owner aspirations. AMSA recognises and supports a co-design process, such that recently undertaken in the [Buccaneer Archipelago Marine Park](#), being the first of its kind, and that which is being planned for Limmen Bight Marine Park.

Opportunity for collaboration

It is essential to recognise the strong connectivity of ecological processes and species within the Northern Territory's waters, particularly the strong land-sea and cross-shelf connectivity (due to the macrotidal conditions, low profile shelf, high volume tropical rivers, etc.). There should be attempts to align inshore marine reserves with offshore Australian Marine Parks, incorporating 'shared' conservation assets and values in adjacent waters as a key tenet in designing effective marine parks and reserves. This will also significantly assist the Northern Territory government to attract resources and investment through collaborations with the Federal government and others, as has been seen to date at Limmen Bight.

Data availability

The Australian coastline and marine estate are vast, and much of it is yet to be properly explored or have its biodiversity documented in any systematic way. Marine ecosystems are inherently challenging to access compared to terrestrial ecosystems, making traditional monitoring of ecosystems and biological diversity difficult. Thus, the loss of biological diversity from Australia's marine estate is likely to be much greater than what has been presented in peer-reviewed scientific publications.

⁵ Jones, K. R., Watson, J. E., Possingham, H. P., & Klein, C. J. (2016). Incorporating climate change into spatial conservation prioritisation: A review. *Biological Conservation*, 194, 121-130. And Magris, R. A., Heron, S. F., & Pressey, R. L. (2015). Conservation planning for coral reefs accounting for climate warming disturbances. *Plos One*, 10(11), e0140828. And Magris, R. A., Pressey, R. L., Weeks, R., & Ban, N. C. (2014). Integrating connectivity and climate change into marine conservation planning. *Biological Conservation*, 170, 207-221. And Maina, J., Jones, K., Hicks, C., McClanahan, T., Watson, J., Tuda, A., & Andréfouët, S. (2015). Designing climate-resilient marine protected area networks by combining remotely sensed coral reef habitat with coastal multi-use maps. *Remote Sensing*, 7(12), 16571-16587. And Maynard, J., Marshall, P., Johnson, J., & Harman, S. (2010). Building resilience into practical conservation: identifying local management responses to global climate change in the southern Great Barrier Reef. *Coral Reefs*, 29(2), 381-391. And Mumby, P. J., Elliott, I. A., Eakin, C. M., Skirving, W., Paris, C. B., Edwards, H. J., . . . Stevens, J. R. (2011). Reserve design for uncertain responses of coral reefs to climate change. *Ecology Letters*, 14(2), 132-140.

⁶ Fernandes, L., Green, A., Tanzer, J., White, A., Alino, P. M., Jompa, J., . . . Pressey, B. (2012). *Biophysical Principles for Designing Resilient Networks of Marine Protected Areas to Integrate Fisheries, Biodiversity and Climate Change Objectives in the Coral Triangle*: Report prepared by The Nature Conservancy for the Coral Triangle Support Partnership.

The connectivity in marine systems can make it difficult to disentangle project- and non-project related impacts. Effective mitigation requires a good understanding of the wider oceanographic and ecological baseline, as well as other human influences, typically across much broader spatial and temporal scales than on land. That sound understanding does not exist for the Territory's marine and coastal environments.

This data deficiency has been recognised in the Territory for some time. Information gaps for the Gulf of Carpentaria, Arafura Sea and Joseph Bonaparte Gulf were listed in the report of a 2007 expert workshop that described the Characterisation of the Marine Environment of the North Marine Bioregion. The NT EPA's 2012 Interim Report on seabed mining also identified key knowledge gaps, as did the 2018 Northern Territory Marine Science End Users Analysis. However, there has been little effective action and resourcing to address the data deficiency. Such a deficiency will take many years to overcome, even if there is a strong commitment from the NT Government and its agencies for the development and implementation of a well-resourced and integrated strategic marine and coastal scientific research plan.

AMSA stands ready to advise on and support efforts to fill the knowledge gaps for the Territory's marine and coastal environments. To that end, we support the NT Government's Review of seabed mining in the NT – Environmental impacts and management⁷ finding of the need for 'a government managed and resourced central data repository'. This should be part of a national environmental data and monitoring program that links federal, state and territory data on biodiversity, strategic planning and environmental impact assessment. Similarly, an online monitoring and reporting hub for comparative reporting with public and professional access to documents on public registers; licensing, compliance and enforcement data; bioregional plans, strategic assessments, and associated performance audits; periodic and annual reports should be developed.

Conclusion

AMSA urges the Northern Territory Government to develop a Parks Masterplan that serves to protect the natural and cultural values of the NT marine and coastal environments, and foster resilience to disturbances such as those from climate change. Its development comes at a time when the waters of the northern Australia are now recognized as a regional and global refuge for many species, yet the health of the Northern Territory's marine and coastal environments are in decline. There is an urgent need to turn this around.

AMSA endorses marine protected areas as vital to the conservation of the Northern Territory's marine biodiversity and biomass and to meet Australia's international obligations. We recommend that best practice design principles are applied, using the co-design model. It is crucial that the Parks Masterplan deliver increased investment into existing marine parks and reserves, as well as provide the mechanisms for expanding the network. This must be done with the NT's Traditional Owners of sea country. The subsequent Review of the NT Parks and Wildlife Conservation Act 1976 provides the opportunity to address the lack of legally enforceable zoning, as well as to allow for the greater recognition of the rights of Aboriginal communities.

⁷ <https://ntepa.nt.gov.au/consultation/review-of-seabed-mining-in-the-nt-environmental-impacts-and-management>