

## **Position Statement on Marine Protected Areas (MPAs)**

### **1. Summary**

- 1.1. AMSA endorses MPAs as vital to the conservation of Australia's marine biodiversity and biomass and to meet Australia's international obligations.
- 1.2. MPAs should be designed based on sound scientific principles, to achieve a Comprehensive, Adequate and Representative (CAR) network of marine protection.
- 1.3. MPAs with at least 30% sanctuary (no-take) zone are the most effective and therefore the preferred design option.
- 1.4. In addition, MPAs should be effectively enforced and managed, left in place for a decade or more, large in size and located to maximise their ecological benefits.
- 1.5. AMSA supports a balanced approach to managing multiple uses of the marine social-ecological system, which engages all stakeholders including scientists, and partners with traditional owners.
- 1.6. MPAs are an integral part of ecosystem-based fisheries management.
- 1.7. MPA management should include a published management plan with goals, performance measures, monitoring programs and adequate resourcing.

### **2. Who does AMSA represent?**

- 2.1. The Australian Marine Sciences Association (AMSA) is Australia's largest professional association of marine scientists with more than 700 members nationally.
- 2.2. Our Mission Statement is *Advancing marine science in Australia*.
- 2.3. Our objectives are:
  - *To promote, develop and assist in the study of all branches of marine science in Australia, and*
  - *To provide for the exchange of information and ideas between those concerned with marine science by means of publications, meetings, symposia and such other methods as may be considered appropriate.*
- 2.4. Marine scientists are not only participants in developing MPAs through delivering scientific information and advice; they are also a key stakeholder group since they use the marine environment for scientific research. AMSA wishes to emphasise the importance of this dual role for marine scientists and, as such, they should be included as key stakeholders in MPA consultation processes.

### **3. Australia's Obligations**

- 3.1. Australia is a party to the *United Nations Convention on Biological Diversity (1992)*. The convention's 2011-2020 strategic plan urges party states to conserve, by 2020, 10 per cent of their coastal and marine areas.
- 3.2. The Australian (Commonwealth) Government, and all State and Territory Governments, are committed to the development of a National Representative System of Marine Protected Areas (NRSMPA) which is Comprehensive, Adequate and Representative (CAR).
- 3.3. This commitment has significant implications, as Australia's marine EEZ covers over 13.86 million km<sup>2</sup> and is the third largest in the world (Symonds, Alcock, & French, 2009).

#### 4. What are marine protected areas?

- 4.1. Marine protected areas (MPAs) are areas of the ocean or coastal seas, securely reserved and effectively protected from a range of local threats through a mixture of regulations, including spatial restriction of certain activities. The level of protection and the intent of protection may both vary. The Great Barrier Reef Marine Park (GBRMP) in Queensland is an example of a large multiple-use, multi-zone MPA 344,000 km<sup>2</sup> in size, of which around 2/3 is open to fishing and 1/3 fully protected (GBRMPA, 2019). MPAs can also be small with impacts on a local scale, such as Cabbage Tree Bay Aquatic Reserve in Sydney, which is just 0.2 km<sup>2</sup> in size and 100% sanctuary zone (Turnbull et al., 2018).
- 4.2. Sanctuary zones, also known as fully-protected areas, marine national parks or no-take zones, prohibit all extractive (fishing) activities and the use of fishing gear, and may allow some level of non-extractive activity such as diving and boating. Partially-protected areas prohibit some fishing activities but allow others, for example may prohibit spearfishing but allow line fishing. Sanctuary zones correspond generally with IUCN categories I to II, and partially-protected areas correspond with categories IV to VI, although specific MPA rules may vary (Day et al., 2012).
- 4.3. Australia's MPAs conserve biodiversity across three major oceanic systems; the Pacific, Indian and Southern Oceans. This includes flora and fauna across a broad range of latitudes, and from estuarine to abyssal depths. These marine ecosystems are:
  - characterised by high endemism, particularly in the southern temperate zone;
  - less perturbed when compared to many other places in the world;
  - highly diverse; and
  - often poorly understood and documented (Evans, Bax, & Smith, 2017).

#### 5. Threats to Australia's marine biodiversity

- 5.1. Australia's, and the world's, marine biodiversity faces five major threats, which can often act together. Ranked in order from highest to lowest historical impact in marine systems, these are (Diaz et al., 2019):
  - 1. direct exploitation / fishing:** both from commercial and recreational fishing sectors, with attendant by-catch problems, as well as illegal, unregulated and unreported fishing;
  - 2. habitat loss:** caused by coastal development such as dredging as well as from fishing gear, especially bottom trawling. Damage includes the destruction or modification of coral reefs, vulnerable benthic ecosystems, seagrass meadows, mangroves, coastal foreshores (including coastal wetlands and estuaries) and loss of connection with the ocean;
  - 3. climate change:** increased atmospheric carbon dioxide and other gases leading to global temperature increase and other impacts, resulting in changes to oceanic temperatures, acidity, patterns of water movement (including currents, eddies and fronts), storminess and raised sea levels;
  - 4. pollution:** both in-sea and land-based, diffuse and point source, which include nutrients, sediments, plastic litter, noise, hazardous and radio-active substances; and ghost fishing and entanglement of wildlife from discarded and lost fishing gear; microbial pollution and trace chemicals such as carcinogens, endocrine-disruptors, and info-disruptors; and
  - 5. invasive species** especially those introduced by vessel ballast water and hull fouling, or by population explosion of native invasive species often as a consequence of other threats.

#### 6. What are the benefits of MPAs?

- 6.1. MPAs assist in maintaining healthy ecosystems. Important values and services provided by these ecosystems include the supply of seafood, passive and active recreational opportunities, culture, education, the regulation of coastal climate and habitats, and dilution and assimilation of wastes including greenhouse gases (Wescott & Fitzsimons, 2016). Accordingly, the health and wellbeing of coastal communities can depend heavily on healthy marine ecosystems.
- 6.2. MPAs serve six main functions, not all of which necessarily apply simultaneously:

- to protect biodiversity and ecosystem function, including the processes on which biodiversity depends;
  - to assist in maintaining ecosystem services;
  - to provide scientific benchmarks against which anthropogenic modifications to ecosystems and environments can be monitored and evaluated;
  - to protect cultural, recreational, spiritual, educational and scientific values;
  - to protect from disturbance into the future, representative habitats and species for both their intrinsic value and intergenerational equity.
  - to enhance fishery production outside sanctuary zone boundaries.
- 6.2. All Australian States endorsed the National Strategy for the Conservation of Australia's Biological Diversity in 1996. This strategy acknowledges the intrinsic value of our biodiversity.
- 6.3. *Key scientific results*

The key scientific results from studies of MPAs are listed below and are strongly supported by over one thousand peer-reviewed scientific papers beyond those cited here.

- Well-planned, managed and enforced sanctuary (no-take) zones (IUCN category I and II) are essential to marine science, with numerous scientific benefits particularly as proxies for controls on a planet where human impacts are ubiquitous (Ballantine, 2014).
- To be effective MPAs need at least four, and preferably all five of the NEOLI criteria (Edgar et al., 2014):
  - No-take (sanctuary zone)
  - Effectively enforced and managed
  - Old (in place for 10 years or more)
  - Large (100 km<sup>2</sup> or more) and
  - Isolated from other areas, for example by expanses of sand or deep water
- Small MPAs, whilst inferior to large MPAs, can have positive effects on a local scale if they are sanctuary zone, located in sheltered areas with complex habitat, and supported by the local community (Turnbull et al., 2018).
- Effective MPAs generally enable higher fish biodiversity, biomass and abundance of large (20 cm+) and fishing targeted species (Edgar et al., 2014; Malcolm et al., 2018; Turnbull et al., 2018).
- The evidence regarding the effectiveness of partial protection (allowing some fishing activities but not others) is varied, ranging from no benefit compared to unprotected areas (Malcolm et al., 2018; Turnbull et al., 2018) to limited benefits for targeted fish species (Harastiet al., 2018; Zupan et al., 2018). Partial protection may be warranted for socio-economic or political, rather than ecological or scientific reasons (Sciberras et al., 2015), however sanctuary zones should be the priority in order to maximise the ecological effectiveness of limited management budgets (Edgar, 2017; Edgar et al., 2019).
- Whilst MPAs are primarily a tool for conservation of biodiversity, MPAs can also confer fishery benefits particularly when combined with other fisheries management tools in support of Ecosystem-Based Management (EBM) (Halpern et al., 2010), and when MPAs are designed as a network of well-connected zones that allow for recruitment spillover (Harrison et al. 2012).
- Recreational fishers generally support sanctuary zones in MPAs, and this support increases with MPA age as aesthetic, fishery and other benefits become apparent (Navarro et al. 2018).

## 7. AMSA's position on MPAs

7.1. AMSA endorses MPAs as vital for the conservation of Australia's marine biodiversity and biomass.

### 7.2. Planning

- AMSA endorses the government's National Representative System of Marine Protected Areas (NRSMPA) and encourages its timely implementation. AMSA stresses the importance of utilising MPA planning principles as set out in several important government documents, for example, The Strategic Plan of Action for the National Representative System of Marine Protected Areas 1999 and Australia's Oceans Policy 1998.
- AMSA supports improved coordination between Federal, State and Territory governments in the

design of the NRSMPA. There is a need to ensure adequate protection of those ecosystems and species at a national scale, particularly those situated near or crossing jurisdictional boundaries.

- AMSA endorses the primary goal of the NRSMPA 'to establish and manage a comprehensive, adequate and representative (CAR) planning approach for protection of Australia's marine biodiversity'.
- AMSA encourages the inclusion of more shelf, slope, canyon and canyon head areas within existing and future MPA networks, and increasing the use of no-take sanctuary (rather than partial) protection as the main tool to achieve high-quality conservation outcomes.
- In addition to following the CAR approach and NEOLI criteria, AMSA recommends that MPAs are part of systematic regional networks based on bioregional assessments. It is essential that the selection and design processes for MPAs be guided by sound scientific principles and advice.
- AMSA supports multiple use of the marine environment and strongly supports a protective mix in MPAs that includes at least 30% sanctuary zone. Multiple use, through the incorporation of some partially-protected areas, enables sustainable harvesting opportunities to occur while at the same time optimising biodiversity conservation and ecosystem function in sanctuary zones.
- National and State MPA targets are most useful when part of a systematic regional conservation plan. Where detailed planning has not been undertaken, the minimum requirement to fulfil Australia's international agreements of effective conservation is to protect all major marine ecosystems, with an initial target of at least 10% of all habitat types under full sanctuary protection.
- AMSA considers that a figure of 10% sanctuary protection would slow but not prevent loss of biodiversity. At least 30% sanctuary zone protection for each habitat is necessary to achieve substantial and sustained biodiversity conservation benefits (Green et al., 2014; O'Leary et al., 2016) including restoration of depleted populations and threatened species.
- Rare, threatened and vulnerable ecosystems, communities or populations, breeding aggregations, and migration choke points should be provided with greater protection (Green et al., 2014). When these species, ecosystem, or habitat types are critically endangered, AMSA recommends 100% protection within sanctuary zones.
- Both MPA plans and networks should replicate habitats in at least three reserves and incorporate connectivity (minimum size, spacing, compact shapes encompassing whole ecological units) (Green et al., 2014) to maximise resilience to external shocks.
- When an MPA is declared, AMSA supports the development of clearly articulated aims and performance measures for the MPA, and that management resources are allocated at a scale appropriate to the size of the MPA.
- AMSA supports the role and importance of extensive stakeholder consultation during MPA planning (Giakoumi et al., 2018). Stakeholders should be able to provide a variety of management inputs including both baseline information on ecosystem values and usage, and preferences for the placement of different spatial zones and other management options.
- AMSA supports government partnerships with traditional owners in planning and managing MPAs.
- The selection of MPA planning options must be framed within Australia's national and international commitments to the protection of biodiversity. It is essential that alternative options, provided to, or collected from, stakeholders do not compromise the fundamental goals, and essentially science-based design principles of the network.
- While most attention has focused on the ecological and fisheries values of MPAs, AMSA encourages the creation of MPAs to protect sites of heritage, cultural, geological, or physical oceanographic significance.

### 7.3. Monitoring and research

- AMSA strongly supports evidence-based MPA decision making from the best available science. Australia's marine systems remain poorly studied and improved knowledge and long-term data sets are needed to better understand and monitor Australia's marine environment, habitats and biodiversity, and develop adaptive management solutions for the most pressing threats.

- Well-designed scientific monitoring programs should be part of all MPA planning and management. Baseline monitoring preferably before, or at least at the time of MPA creation, is a vital tool for the study of long-term MPA effects, to assess the performance of the protected area, and to detect impacts or changes.
- AMSA endorses the free and open publication of monitoring and research results regarding MPAs, following peer-review, in recognised scientific journals.
- Monitoring data from MPAs also helps our ability to manage the wider marine environment. In particular, sanctuary zone MPAs provide reference or control sites for both fisheries and conservation research. MPAs are therefore an essential part of broader research programs.
- Australia lacks an up-to-date, consolidated reporting mechanism on MPAs. The Collaborative Australian Protected Area Database 2016 (CAPAD), maintained by the Commonwealth, lacked comprehensive information on State marine protected areas. Further, the database lacks reporting on the extent of protection of marine habitat, ecosystem, geomorphic province, or even bioregion. These are important gaps and should be addressed at a national scale by the Commonwealth Government as a matter of urgency.
- Australia's marine environment has been impacted by a range of human activities. AMSA considers that the cumulative impact of multiple stressors on the marine environment constitutes a key knowledge gap not adequately addressed by existing scientific programs. A quantitative assessment of cumulative human impacts is required to underpin comprehensive evidence-based decision making related to MPAs.

#### 7.4. Fisheries

- Good fisheries management is essential for the sustainable use of marine resources and the protection of marine biodiversity. AMSA recognises that MPAs are complementary to other methods, such as input and output controls, for well-managed fisheries.
- AMSA supports improved fisheries management in conjunction with the development of MPA networks in the context of Ecosystem-Based Management. For example, MPAs enable research into key processes (growth, mortality, recruitment) in the absence of harvest pressure.
- AMSA strongly supports greater cooperation, integration and collaboration between scientists and managers working in ecology, conservation and fisheries management.
- AMSA supports the incorporation of Social-Ecological Systems approaches in order to understand and manage the relationships between humans and marine ecosystems.
- The establishment of sanctuary zone MPAs may result in displacing fishing effort to other areas, which may have negative impacts. To avoid effort transfer, MPA designation should be accompanied by appropriate reductions in overall fishing effort or catch for affected fisheries, particularly those which are at, or near, full exploitation levels.
- AMSA acknowledges that the extent of impact, and the process of fishing effort displacement from MPAs to other sites (particularly for recreational fisheries) is poorly understood. More research into this issue is needed.
- AMSA endorses the use of structural adjustment packages to buy out and retire fishing effort from industry following establishment of MPAs. These packages are designed to avoid displacement of fishing effort and, also, where MPAs remove substantial and valuable legal entitlements, alleviate stakeholders suffering significant financial hardship.
- AMSA supports the wide application of ecosystem-based and precautionary approaches to the management of both commercial and recreational fisheries, both within and outside of MPAs.
- In some cases spatial management provides the only viable option for avoiding overfishing. For example, there is currently no way to monitor the total catch taken by recreational fishers, which creates a high risk of local over-depletion, especially site-attached target species. Well-managed sanctuary zones ensure that at least one part of a breeding stock is protected from harvest, which can then replenish fished areas in a connected network of MPA zones.

#### 7.5. Management

- AMSA recognises that ongoing community and stakeholder consultation has been demonstrated, both in Australia and internationally, to be vital to successful MPA management.
- In supporting management, decisions should be based on the best scientific evidence and advice available. Where evidence is inadequate, a precautionary stance should be taken, in line with Australia's commitment to the precautionary principle. In addition, where feasible, evidence should be sought before major decisions are made.
- The selection of any management options by the community and stakeholders needs to be framed within the goals of the MPA. It is important that MPA managers have the authority to resist options that may compromise the goals and design principles of the MPA.
- AMSA supports, whenever appropriate, regional management of MPAs and recognises that having staff based near MPAs, who are part of the local community, is an effective approach.
- Networks of MPAs should be adequately resourced from inception to ensure that they are properly managed. There are costs involved both in establishing, and maintaining, networks of MPAs. These include scientific research, stakeholder consultation, education, compliance and enforcement, as well as scientific monitoring to determine the effects and performance of MPAs.
- Compliance operations in MPAs should have adequate resourcing and professional enforcement officers. Successful management needs to include adequate education, information, communication and awareness programs, and clear, simple and easy to understand boundaries, signage and regulations for MPAs.
- AMSA emphasises that MPAs require effective management strategies across the entire marine environment. This includes targeted activities and programs to address major environmental stressors such as climate change, invasive species, overfishing, pollution and habitat loss.
- AMSA encourages improved coordination between Federal, State and Territory governments in the management of MPAs.

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