

Going Big in the Pacific

Large-Scale Marine Protected Areas in the Pacific Ocean

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Abstract

The definition of large-scale marine protected areas in the Pacific Ocean is fundamental to the achievement of global marine conservation targets. The threatened nature of the global ocean is emphasised, the evolution of global spatial targets for marine conservation outlined and the implementation of large-scale marine protected areas in Australia and the Pacific Ocean more broadly is reviewed. The article concludes with some reflections on the efficacy of such mechanisms in the Pacific.

Keywords

large scale marine protected areas – global conservation targets – Pacific marine conservation – Australian marine conservation – blue paradox

1 Introduction

Growing realization that the global ocean and its vulnerable marine environments, habitats and biodiversity are under increasing threat has led to calls for expanded areas of the ocean to be protected, and threatened coastal and marine ecosystems thereby conserved through marine protected areas (MPAs) or other forms of area-based management tools (ABMTs). This has, in turn, led to a proliferation in large-scale marine protected areas (LMPAs) and nowhere more so than in the Pacific Ocean region. Indeed, of the ten largest MPAs, eight are located in the Pacific Ocean.

This article outlines both the enduring significance of the ocean and increasing threats to the marine environment, especially in the Pacific context with particular reference to Pacific small island States. The article then outlines the evolution of international spatial targets relating to marine conservation. The development of LMPAs in the Pacific is then traced, starting with the Australian experience and progressing to the uptake of LMPAs on the part of small-island developing States in the south Pacific region and LMPAs established in the eastern Pacific off the coasts of the Americas. Reference to the establishment of LMPAs by extra-regional metropolitan powers is also made. The article concludes with an assessment of the merits and challenges of LMPAs through the lens of their practice in the Pacific.

2 Increasingly Valuable Yet Vulnerable

2.1 *The Enduring and Increasing Value of the Ocean*

The oceans dominate the world spatially, encompassing over 70 per cent of the surface of the planet. These extensive maritime spaces are fundamental to life on planet Earth. The oceans produce 50 per cent of the planet's oxygen, cycle 93 per cent of CO₂ in the atmosphere and play an essential role in driving the global atmospheric system.¹ Additionally, the oceans serve as a major carbon and heat sink, absorbing 26 per cent of anthropogenic CO₂ emissions, and fully 90 per cent of excess heat in the past 200 years. Furthermore, the oceans are vital to global nutrient cycling and represent a key repository and supporter of biological diversity on a world scale, even though the full extent of the oceans cornucopia of biodiversity remains largely unknown. Indeed, the estimated

¹ Robin Warner and Clive Schofield, 'Climate Change and the Oceans: Legal and Policy Portents for the Asia-Pacific Region and Beyond', in Robin Warner and Clive Schofield (Eds.), *Climate Change and the Oceans* (Cheltenham: Edward Elgar, 2012), 1–20, at 1.

number of species inhabiting the world's oceans is in excess of 10 million – or some fifty times the number of marine species so far reported.²

The global ocean is also crucial to the international economic system in an ever more globalized, interdependent world, with over 80 per cent of global trade by volume being carried by sea.³ Recognition of the role of coastal and marine environments in terms of providing resources is also significant and growing. These environments support and sustain living resources, notably fisheries and aquaculture. Indeed, the United Nations Food and Agriculture Organization (FAO) has noted that fish production reached an all-time high of an estimated 171 million tonnes in 2016 with 88 per cent of this catch being used for direct human consumption, leading to the assertion that these resources “have a crucial role in nutrition and food security.”⁴ This is underscored by estimates that per capita consumption of fish has increased at twice the rate of population growth since 1961 to a record-high of 20.3kg in 2016.⁵ Moreover, fisheries are an important vehicle to address economic development, fight poverty and support livelihoods with global fish exports in 2017 being estimated at US\$157 billion, with 54 per cent of this coming from developing countries,⁶ and an estimated 59.6 million people directly engaged in capture fisheries and aquaculture in 2016.⁷ In broader economic terms, coastal areas within 100 km of the ocean have been estimated to contribute an estimated 61 per cent of gross domestic product (GDP) globally.⁸

The oceans are, furthermore, an increasing source of energy resources. It is estimated, for example, that 45 per cent of remaining recoverable conventional oil resources are located in offshore fields.⁹ Analogously, oil industry sources

2 Danielle Skropeta, ‘Exploring Marine Resources for New Pharmaceutical Applications’, in Warwick Gullett, Clive H. Schofield, and Joanna Vince (Eds.), *Marine Resources Management* (LexisNexis Butterworths, Australia, 2011), 211–224, at 221.

3 Some sources suggest that over 90 per cent of world trade is carried by sea. See, United Nations, “IMO (International Maritime Organization) Profile”, available at <https://business.un.org/en/entities/13>. The United Nations Conference on Trade and Development (UNCTAD) stated in 2018 that around 80 per cent of global trade by volume and over 70 per cent of global trade by value are carried by sea and are handled by ports worldwide. See, UNCTAD, “Review of Maritime Transport 2018”, (United Nations, 2018).

4 Food and Agriculture Organization (FAO) *The State of World Fisheries and Aquaculture 2018: Meeting the Sustainable Development Goals*, (Rome: FAO/United Nations, 2018): 69.

5 *Ibid.*, vii.

6 *Ibid.*

7 *Ibid.*, 30.

8 *Rio Declaration*, p.6.

9 International Energy Agency (IEA) (2013), *Redrawing the Energy-Climate Map*, World Energy Outlook Special Report, (Paris: Organization for Economic Cooperation and Development (OECD) and IEA), 93.

have suggested that 30 per cent of global oil production and 27 per cent of global gas production in 2010 came from offshore sources.¹⁰

Recognition of the importance of the oceans economically and to sustainable development is likewise growing, as illustrated by enhanced debate around the concept of the 'blue economy'. For example, the Australian Institute of Marine Science estimated that the total measurable output (income) based on the Australian marine environment was \$68.1 billion for the 2015–2016 financial year, representing approximately 2.2% per cent of total national industry output.¹¹ – nearly double the figure of just one decade before.¹² This estimate as to the value of Australia's marine industry is considered to be conservative, as economic data for a number of key activities remains unavailable.¹³ Further, the assessment fails to capture the value of ecosystem services, which were estimated to add a further A\$25 billion.¹⁴

Such essential, but often not fully acknowledged, ecosystem services include activities such as scientific research and development, marine safety, desalination, coastal protection, and aspects of marine tourism as well as significant cultural and amenity benefits.¹⁵ It was estimated in the late 1990s that marine systems contributed \$21 trillion globally in such ecosystem services as compared with \$12 trillion contributed from terrestrial sources.¹⁶ A more recent assessment on the part of the World Wildlife Fund (WWF), employing a conservative assessment approach estimates the total asset value of the oceans to be at least US\$24 trillion, with the annual "gross marine product" associated with the oceans being estimated at over US\$2.5 trillion.¹⁷ This impressive figure is thrown into sharper relief when it is realized that it is restricted to renewable economic activities directly associated with the oceans, such that offshore oil

10 Sylvian Serbutoviez, "Offshore Hydrocarbons," IFP Energies Nouvelles," *Panorama 2012*, p.1, available at <http://www.ifpenergiesnouvelles.com/publications/notes-de-synthese-panorama/panorama-2012>.

11 Australian Institute for Marine Science (AIMS), *The AIMS Index of Marine Industry 2018*, (Townsville: AIMS, 2018).

12 Australian Institute for Marine Science (AIMS), *The AIMS Index of Marine Industry 2014*, (Townsville: AIMS, 2014) p.6.

13 *AIMS 2018*, *supra* note 11.

14 *Ibid.*

15 *Ibid.*, pp. 4–5.

16 Robert Costanza, R. d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R.V. O'Neill, J. Paruelo, R.G. Raskin, P. Sutton and M. van den Belt, *The Value of the World's Ecosystem Services and their Natural Capital*, 387 *Nature* 259 (1997).

17 World Wildlife Fund (WWF) *Reviving the Ocean Economy: The Case for Action – 2015*, (WWF, 2015), at p.12.

and gas is excluded from the equation. According to these estimates the oceans rank as the world's seventh largest economy.¹⁸

2.2 *Increasing Global Ocean Threats*

The counterpoint to the significant benefits and opportunities offered by the oceans is that many of the marine resources and services mentioned above are increasingly under threat. Coastal environments are under pressure from population shifts towards the coast and related development pressures, something encapsulated by the term 'coastal squeeze,' as well as pressures induced by climate change, such as sea level rise, which are explored in more detail elsewhere in this volume.¹⁹ Offshore, growing diversity and intensity of ocean uses has meant that marine environments are similarly under greater stress with it being estimated, for example, that more than 40 per cent of oceans already are strongly affected by humans.²⁰

Notable contemporary oceans governance challenges include: climate change; resource depletion; equitable distribution of benefits and access; protecting and preserving the marine environment; overfishing including the impacts of illegal, unreported and unregulated (IUU) fishing; biodiversity conservation and management; labour and human rights; waste and marine pollution; and, maritime security to protect against threats such as piracy and armed robbery against shipping.

Taking overfishing and IUU fishing as pertinent examples, the FAO recently estimated that 33.1 per cent of fish stocks were fished beyond biological sustainability.²¹ Concerning IUU fishing, while it has to be acknowledged that inherent difficulties exist with respect to estimating the precise dimensions of such activities, they are nonetheless understood to be occurring on a grand scale. The FAO estimates annual IUU catch at up to 26 million tonnes, valued at US\$10–23 billion.²²

Further, while the afore-mentioned WWF report assigns hugely impressive dollar figures to offshore activities, the economic value of the ocean is tied to

18 *Ibid.*

19 See, for example, Nigel Pontee, *Defining Coastal Squeeze: A Discussion*, 84 *Ocean & Coastal Management* 204–207 (2013).

20 B.S. Halpern, S. Wallbridge, K.A. Selkoe, C.V. Kappel, F. Micheli, C. D'Agrosa, J.F. Bruno, K.S. Casey, C. Ebert, H.E. Fox, R. Fujita, D. Heinemann, H.S. Lenihan, E.M.P. Madin, M.T. Perry, E.R. Selig, M. Spalding, R. Steneck and R. Watson, *A Global Map of Human Impact on Marine Ecosystems*, 319 *Science* 5865 (2008).

21 FAO, *The State of World Fisheries*, vii.

22 See, FAO, "Illegal, Unreported and Unregulated (IUU) Fishing", available at <http://www.fao.org/iuu-fishing/en/>. See also, "The Future of Fish – The Fisheries of the Future," *World Ocean Review* 2013 (Maribus, 2013), 70.

assets that are in steep decline either as a consequence of threats such as pollution and over-fishing, and are compounded by the impacts of climate change, including ocean warming, deoxygenation and acidification.²³ In this context, “impacts on key marine and coastal organisms, ecosystems and services are already detectable” with high risks of severe impacts in the future.²⁴ Such conclusions are underscored by the well-established fact that fisheries now cover the globe,²⁵ are fully or over-exploited globally,²⁶ and defaunation of the ocean is accelerating.²⁷ Recent satellite studies have demonstrated that industrial fishing now covers over 55% per cent of all ocean area, with a spatial extent 400% per cent that of agriculture.²⁸

3 Global Targets for Marine Conservation and the Proliferation of Large-Scale MPAs

Against the backdrop outlined above there has been a notable increase in efforts to conserve and protect marine spaces, environments and biodiversity, especially through the designation of MPAs and increasingly on a grand scale. The basis for these initiatives under international law is generally provided by obligation to protect and preserve the marine environment under Articles 192 and 194(5) of the United Nations Convention on the Law of the Sea (LOS Convention).²⁹ This obligation has also been confirmed in international jurisprudence.³⁰

23 WWF, *Reviving the Ocean Economy: The Case for Action – 2015*, pp.7–8.

24 J.-P. Gattuso, et al., *Contrasting Futures for Ocean and Society from Different Anthropogenic CO₂ Emissions Scenarios*, 349 (6243) *Science* (July 2015), at p.45.

25 D. Kroodsma, et al. *Tracking the global footprint of fisheries*, 359 (6378) *Science* 904–908 (23 Feb 2018).

26 FAO, *The State of World Fisheries*, p.7.

27 Douglas J. McCauley, Malin L. Pinsky, Stephen L. Palumbi, James A. Estes, Francis H. Joyce and Robert R. Warner, *Marine Defaunation: Animal Loss in the Global Ocean*, 347 (6219) *Science* 247 (16 January 2015).

28 Kroodsma et al., *supra* note 25.

29 *United Nations Convention on the Law of the Sea* (Montego Bay, 10 December 1982, in force 16 November 1994) 1833 *UNTS* 396, available at http://www.un.org/Depts/los/convention_agreements/convention_overview_convention.htm. (Hereinafter, ‘LOSC’ or ‘the Convention’).

30 See, for example, *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, ICJ Reports 2010; *Responsibilities and Obligations of States Sponsoring Persons and Entities with respect to Activities in the Area* (Request for Advisory Opinion submitted to the Seabed Disputes Chamber), Advisory Opinion of 1 February 2011, ITLOS Reports 2011, and *In the Matter of the South China Sea Arbitration before an Arbitral Tribunal Constituted*

3.1 *Global Targets for Marine Conservation*

The advent of marine protected areas (MPAs) on a large scale has been prompted by growing realisation that the oceans were, and indeed remain, under-protected and increasingly under threat. This was recognised at the World Summit for Sustainable Development (WSSD) which took place in Johannesburg in 2002 which produces an implementation plan including “the establishment of marine protected areas consistent with international law and based on scientific information, including representative networks” by 2012.³¹ In 2004, in order to assess progress towards the objective of the conservation of biological diversity, agreement on “trial indicators” was achieved among the parties to the Convention on Biological Diversity (CBD),³² including a target of “at least 10% of the world’s ecological regions be effectively conserved” by 2012.³³ Subsequently, CBD COP10 led to the adoption of the Aichi Biodiversity Targets, among which Target 11 states that:

[b]y 2020, at least...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.³⁴

In 2015 the 2030 Agenda for Sustainable Development (2030 Agenda) was adopted. Echoing earlier conservation aspirations, Target 14.5 of United Nations Sustainable Development Goal 14 (SDG 14: *Life Below Water*), calls for States to “conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific

under Annex VII to the 1982 United Nations Convention on the Law of the Sea between the Republic of the Philippines and the People’s Republic of China, Award, 12 July 2016, Permanent Court of Arbitration (PCA), PCA Case No. 2013–19, paras 939–949.

31 See, United Nations World Summit for Sustainable Development, “Draft Plan of implementation of the World Summit for Sustainable Development”, Johannesburg, 26 August–4 September 2002, para.31(c), available at https://www.un.org/ga/search/view_doc.asp?symbol=A/CONF.199/L.1&Lang=E.

32 The text of the Convention on Biological Diversity (CBD) is available at <https://www.cbd.int/doc/legal/cbd-en.pdf>.

33 Decision Adopted by the Conference of the Parties to the Convention on Biological Diversity at its Seventh Meeting (COP7), “Strategic Plan: future Evaluation of Progress”, para 3 and Annex II, COP/VII/30, available at <https://www.cbd.int/decisions/cop/?m=cop-07>.

34 CBD, “Aichi Biodiversity Targets”, available at <https://www.cbd.int/sp/targets/>.

information” by 2020.³⁵ While there has been consistent call in the instruments outlined above for the conservation and effective management of at least 10 per cent of coastal and oceans biodiversity and ecosystems, there have also been calls for substantially higher targets. For example, the World Parks Congress in Sydney in 2014 led to a call to:

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.³⁶

While, there is no commonly agreed spatial target for marine conservation and MPA coverage among the scientific community there is increasing evidence that the aforementioned 10 per cent target is considered to be insufficient to adequately protect biodiversity, preserve ecosystem services and deliver desired socio-economic outcomes.³⁷

4 Large-Scale MPAs in the Pacific

The Pacific Ocean has an area of 165 million km², encompassing around one-third of the surface of the Earth. The Pacific encompasses biodiversity of global significance living in vast marine environments that support abundant living resources, including the world’s largest tuna fishery.³⁸ In considering LMPAs in

35 United Nations, Sustainable Development Goal 14 Targets, *available at* <https://www.un.org/sustainabledevelopment/oceans/>.

36 IUCN World Parks Congress, “A strategy of innovative approaches and recommendations to enhance implementation of marine conservation in the next decade”, 22 December 2014, *available at* <https://www.worldparkscongress.org/wpc/sites/wpc/files/documents/docs/Cross%20Cutting%20Theme%20-%20Marine%20%28English%29.pdf>.

37 Bethany C. O’Leary, Marit Winther-Janson, John M. Bainbridge, Jemma Aitken, Julie P. Hawkins, and Callum M. Roberts, *Effective Coverage Targets for Ocean Protection*, 9(6) Conservation Letters, 398–404 November/December (2016).

38 J.M. Anthony, ‘Conflict over natural resources in the Pacific’, in L.T. Ghee and M.J. Valencia, (Eds.), *Conflict Over Natural Resources in Southeast Asia and the Pacific* (Oxford: Oxford University Press/United Nations University Press, 1990); and B.M. Tsamenyi and L. Manarangi-Trott, ‘The role of regional organizations in meeting LOS Convention challenges: The Western and Central Pacific Experience’, in A.G.O. Elferink and D.R. Rothwell, (Eds.), *Oceans Management in the 21st Century: Institutional Frameworks and Responses*, (The Hague: Kluwer, 2004)187–189.

the Pacific, it is acknowledged that there is no generally agreed area threshold for the definition of a marine protected area to be considered to be a 'large-scale' one. For the purposes of the present discussion an admittedly arbitrary figure of 100,000 km² is used as a means to distinguish between LMPAs and MPAs more generally. However, it should be noted that the term marine protected area covers a broad range of mechanisms and oceans management arrangements; from narrowly mandated arrangements focused on specific species such as sharks, through to broader representative networks; from highly restricted areas that are closed to exploitative industries, to multiple-use areas. Within this broad definition, the Pacific region has witnessed a proliferation in the establishment of very large-scale marine protected areas with 21 of the world's 33 LMPAs,³⁹ including eight of the ten largest ones globally⁴⁰ being located in the Pacific Ocean.

4.1 *The Australian Experience*

Australia has a long track record in terms of zoning for the purpose of protecting the environment, starting with the second oldest national park in the world, the royal National Park south of Sydney, founded in 1879. Analogously, the global move towards LMPAs was arguably heralded by Australia through the establishment of the Great Barrier Reef Marine Park. The park, established in 1975, encompasses an area of 344,400km² and is therefore among the oldest and largest marine parks in the world.⁴¹ Indeed, the Great Barrier Reef Marine Park was for nearly three decades the largest marine park on the planet. This is no longer the case as a consequence of the proliferation of LMPAs in the Pacific region (see below).

Overall Australia has a network of over 1,000 MPAs encompassing 3,014,429 km² or 40.56 per cent of its maritime jurisdiction to 200 nautical

39 Based on Table 2 in Chris Smyth and Quentin Hanich, "Large Scale Marine Protected Areas: Current Status and Consideration of Socio-economic Dimensions", Discussion Paper, Australian National Centre for Ocean Resources and Security, *available at* <https://www.pewtrusts.org/en/research-and-analysis/articles/2019/03/07/research-key-to-boosting-benefits-of-large-marine-protected-areas>.

40 With respect to implemented rather than planned LMPAs. See <http://www.mpatlas.org/protection-dashboard/very-large-mpas>.

41 The Great Barrier Reef Marine Park was established through the Great Barrier Reef Marine Park Act, Act no.75 of 1975, *available at* <https://www.comlaw.gov.au/Details/C2011C00149>. See also, the Great Barrier Reef Marine Park Authority's webpage, *available at* <http://www.gbrmpa.gov.au/>. See also, Lorne Kriwoken, "Australian Marine Protected Areas: Charting a Course Towards a Representative System", in Gullett, Schofield, and Vince, *supra* note 2.

mile (M) EEZ limits.⁴² While Australia's network of MPAs clearly encompasses broad marine spaces, they are predominantly multi-use in character. Thus, highly protected reserves encompass 'only' 12.54 per cent (378,130 km²) of its marine jurisdiction within 200 M.⁴³

The Great Barrier Reef Marine Park is a pertinent example where a complex zonation system is used in order to try to reconcile diverse and often competing or coincident uses and activities.⁴⁴ The 'general use' zone within the park covers 30 per cent of its overall area with only around 33 per cent of the park designated as no-take zones and less than one per cent of the park defined as "preservation zones" where the only research activities are allowed (with a permit).⁴⁵ In this context it can also be observed that as well as being an LMPA, the Great Barrier Reef is a World Heritage Area, meaning that the Australian government has international obligations under the World Heritage Convention of 1972.⁴⁶

The initially tropically-oriented focus for the designation of marine parks in Australia has progressed over time to include coverage of temperate and sub-Antarctic parts of Australia's extensive maritime jurisdiction. Thus, in addition to the Great Barrier Reef Marine Park, Australian LMPAs along its eastern, Pacific, seaboard include the Coral Sea Commonwealth Marine Park (989,842 km²),⁴⁷ declared November 2012 and located to the north and east of the Great Barrier Reef Marine Park; the Norfolk Island Marine Park (188,444 km²),⁴⁸ the Lord Howe Marine Park (including Middleton and Elizabeth Reefs) (110,126 km²) off the coast of New South Wales⁴⁹ and the Macquarie Island Marine Park (162,000 km²) located to the south of New Zealand.⁵⁰

42 See, <https://www.protectedplanet.net/country/AU>.

43 *Ibid.*

44 For more on the complex zoning arrangements that exist within the Great Barrier Reef Marine Park, see, <http://www.gbrmpa.gov.au/zoning-permits-and-plans/zoning>. See also, the Great Barrier Reef Marine Park Zoning Plan 2003, available at http://www.gbrmpa.gov.au/_data/assets/pdf_file/0015/3390/GBRMPA-zoning-plan-2003.pdf.

45 See, <http://www.mpatlas.org/mpa/sites/7700301/>.

46 See, United Nations Educational, Scientific and Cultural Organization (UNESCO) convention Concerning the Protection of World Cultural and Natural Heritage, opened for signature 16 November 1972, 1037 UNTS151 (entered into force 17 December 1975), available at <https://whc.unesco.org/archive/convention-en.pdf>.

47 See, <http://www.environment.gov.au/topics/marine/marine-reserves/coral-sea>.

48 See, <https://parksaustralia.gov.au/marine/parks/temperate-east/norfolk/>.

49 See, <https://parksaustralia.gov.au/marine/parks/temperate-east/lord-howe/>.

50 See, <https://parksaustralia.gov.au/marine/parks/south-east/macquarie-island/>. It is also worth noting that New Zealand also have an extensive system, see article by Joanna Mosop in this issue.

In the 1990s and 2000s, Australia made strong progress towards increasing the spatial extent of areas subject to protective measures with the aim of conservation, and in the geographical distribution of MPAs across distinct marine bioregions. Australia began the process of establishing a National Representative System of Marine Protected Areas (NRSMPA) that aims to be *comprehensive* in terms of “including the full range of ecosystems recognised at an appropriate scale within and across each bioregion,” *adequate* by providing the “required level of reservation to ensure the ecological viability and integrity of populations, species and communities” and *representative* so as to “reasonably reflect the biotic diversity of marine ecosystems.”⁵¹

However, despite strong progress early on, Australia has not implemented a comprehensive, adequate or representative network across its 85 marine bioregions, with 30 bioregions at less than 1 per cent coverage.⁵² MPAs appear to be focused on ecosystems and associated species that are less threatened, while ecosystems under threats from extractive industries remain unprotected.⁵³ Minimizing impacts on industry appears to be driving perverse outcomes for marine biodiversity, with ongoing declines as a consequence.⁵⁴ Marine protection has since deteriorated further since a change of government in 2013 that initiated a long running review of the NRSMPA, ultimately deciding to rezone Australia’s existing MPAs, including LMPAs, with significant reductions in the levels of protection offered within Australia’s MPAs to levels that have been shown to be inadequate.⁵⁵ As a result, 80 per cent of Australia’s marine parks are now open to fishing, compared with 63 per cent as originally designated.⁵⁶

51 See, Australian Government, Department of Environment and Energy, “National Representative System of Marine Protected Areas/Commonwealth Marine Reserves Review”, available at <https://www.environment.gov.au/marinereservesreview/resources/representative-system>.

52 L Barr and H Possingham, *Are outcomes matching policy commitments in Australian marine conservation planning?* 42 *Marine Policy* 39 (2013), at p. 43.

53 R Devillers, R. L. Pressey, A. Grech, J. N. Kittinger, G. J. Edgar, T. Ward and R. Watson, *Reinventing residual reserves in the sea: are we favouring ease of establishment over need for protection?* 25 *Aquatic Conservation: Marine and Freshwater Ecosystems* 480–504 (2015).

54 *Ibid.*

55 Ocean Science Council of Australia. Submission to the Director of Parks Australia, 2017, available at http://oceansciencouncil.org/wp-content/uploads/2017/07/OSCA-submission-draft-management-plans-2017_09_20-1.pdf.

56 See also, MPA News, “Australian government moves to reopen large areas of national marine parks system to fishing, 10 April 2018, available at <https://mpanews.openchannels.org/news/mpa-news/australian-government-moves-reopen-large-areas-national-marine-park-system-fishing>.

For example, with respect to the Coral Sea Marine Park, green (national park) or fully protected zones have been effectively halved to allow for a major expansion in yellow habitat protection zones where fishing is allowed but the seabed is protected.⁵⁷ Devillers et al found that:

The solution is often to aim for the ‘low hanging fruit’ in an attempt to demonstrate willingness to establish protected areas, even if the long-term costs – to society in the form of lost biological heritage as well as biodiversity – of continuing declines of ecosystems and species under extractive pressures are not assessed.⁵⁸

Similarly, Kenchington, while acknowledging a “high level of success” in relation to progress towards international spatial targets for MPA designation, noted “substantial challenges in achieving reasonable levels of protection” for key vulnerable bioregions.⁵⁹ Among these challenges he notes that many of the most threatening impacts to the integrity of MPAs arise from activities outside their boundaries, and sometimes beyond the very jurisdiction that established them.⁶⁰

4.2 *Protecting the Ocean Amongst a Pattern of Islands*⁶¹

The ‘small island’ yet also profoundly ‘large ocean’ States of the south Pacific region have proved to be enthusiastic adopters of LMPAs. This region encompasses 12 independent States,⁶² two freely associated with New Zealand⁶³ and another dependent on New Zealand.⁶⁴ As a result of comprising widely dispersed islands, distant from one another these States have maritime zones

57 See, for example, Jessica Meeuwig and David Booth, *Australia's new marine parks plan is a case of the Emperor's new clothes*, The Conversation, 24 July 2017, available at <https://theconversation.com/australias-new-marine-parks-plan-is-a-case-of-the-emperors-new-clothes-81391>.

58 Devillers, et al., *supra* note 53.

59 Notably estuarine, coastal and nearshore continental shelf bioregions. See, Richard Kenchington, ‘The evolution of marine conservation and marine protected areas in Australia’, in James Fitsimons and Geoff Wescott (Eds.), *Lessons from Australia's Marine Protected Areas*, 29–41 (CSIRO Publishing, 2016), at 38–39.

60 *Ibid.*, 39.

61 An allusion to Arthur Grimble, *A Pattern of Islands*, (Eland Publishing, 2011) (first published in 1952).

62 Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

63 Cook Islands and Niue.

64 Tokelau.

with a collective area of 30,569,000 km²,⁶⁵ equivalent to around 28 per cent of exclusive economic zone (EEZ) claims worldwide.⁶⁶

These maritime claims encompass marine resources that are critically important to the Pacific Island States, especially in regard to the abundant and valuable tuna fisheries. For example, in 2018 the value of the tuna catch in the Western and Central Pacific Ocean as a whole was estimated at US\$6.01 billion,⁶⁷ with the value accruing to Pacific Islands Forum Fisheries Agency (FFA) members (including Australia and New Zealand) estimated at US\$3.05 billion.⁶⁸ Pacific Island States depend upon these stocks as a traditional and important source of food and as a critical form of government revenue.

Pacific island States depend fundamentally on the health and integrity of these marine environments to support food security, artisanal and commercial fisheries, and myriad complex interests.⁶⁹ It is therefore unsurprising that there is strong support among these States for marine conservation measures and sustainable fisheries management. In 2009, the Pacific Island Forum endorsed the Framework for a Pacific Oceanscape to encourage action in support of the Pacific Islands Regional Oceans Policy.⁷⁰ These initiatives, in conjunction with the above-mentioned global marine conservation targets, have provided further support for the establishment of large MPAs on the part of Pacific Island States.

65 See Tsamenyi and Manarangi-Trott, *supra* note 38, at 187–208; and J.M. Van Dyke, *Regionalism, fisheries and environmental challenges in the Pacific*, 6(1) San Diego International Law Journal 143–178 (2004), at 146–158. See also, Q. Hanich, C.H. Schofield and P. Cozens, ‘Oceans of opportunity?: The limits of maritime claims in the South Pacific’, Q. Hanich and B.M. Tsamenyi, (Eds.), *Navigating Pacific Fisheries: Legal and Policy Trends in the Implementation of International Fisheries Instruments in the Western and Central Pacific Region* 17–46 (Wollongong: Ocean Publications, 2009), at 21–22.

66 R. Gillet, ‘Pacific Island Countries Region,’ in *Review of the State of World Marine Resources*, FAO Fisheries Technical Paper 457 (Rome: FAO, 2005), pp. 144–157.

67 See, P. Williams and C. Reid, ‘Overview of Tuna Fisheries in the Western and Central Pacific Ocean, including Economic Conditions – 2018’ (paper presented to the Fifteenth Regular Session of the Scientific Committee of the Western and Central Pacific Fisheries Commission, 12–20 August 2019, Pohnpei, Federated States of Micronesia, WCPFC-SC15-2019/GN-WP-01).

68 Forum Fisheries Agency and the Pacific Community (2019). Value of WCPFC-CA Tuna Fisheries 2019.

69 Hanich, Q., and Y. Ota, *Moving Beyond Rights-Based Management: A Transparent Approach to Distributing the Conservation Burden and Benefit in Tuna Fisheries*, 28 The International Journal of Marine and Coastal Law 135–170 (2013).

70 See, Pacific Islands Forum Secretariat, ‘Framework for the Pacific Oceanscape, available at <http://www.forumsec.org/pages.cfm/strategic-partnerships-coordination/pacific-oceanscape/pacific-oceanscape-framework.html>.

These LMPAs include Kiribati's Phoenix Islands Protected Area (PIPA) (397,477 km²)⁷¹ which was declared in 2006. PIPA is inscribed on the UNESCO World Heritage List and protects one of the world's largest oceanic coral archipelago ecosystems. The LMPA encompasses 14 underwater seamounts and other deep-sea habitats, and protects over 800 diverse species of fauna.⁷² The waters are also highly productive for tuna, with recent studies finding substantial tuna spawning is occurring within its boundaries,⁷³ and likely across the central Pacific. PIPA was closed to all industrial fishing in 2015.⁷⁴ While one study has suggested that the closure of PIPA created a 'rush-to-fish' in the months immediately prior to the closure,⁷⁵ oceanographic studies, and catch/effort data dispute this, demonstrating that strong El Nino events create fishing surges across the central Pacific, not just inside the PIPA area. Catch and effort data held by the Pacific Community demonstrate that an El Nino fishing surge occurred across the central Pacific before and after the closure of PIPA, driven by strong productivity across the central Pacific.⁷⁶ However, despite the closure, it appears that fishing is continuing within PIPA as industrial purse seiners set drifting fish aggregating devices on one boundary of PIPA, and then haul them on the other side after they drift through the closed area.⁷⁷

Palau's Marine Sanctuary,⁷⁸ was proposed in 2014 with the intention of encompassing fully 80 per cent of Palau's EEZ (492,923 km²). While it is intended that the Palau Marine Sanctuary will be fully protected, 'no take' regulations are set to be gradually phased in over the period 2015–2020. In April 2017 the Federated States of Micronesia (FSM) passed legislation to create a marine sanctuary for a 12 mile area seaward of its territorial sea where commercial

71 See, <http://www.phoenixislands.org/>.

72 R Rotjan, et al, 'Establishment, management, and maintenance of the Phoenix Islands protected area' in ML Johnson and J Sandell (Eds.), *Advances in Marine Biology*, Vol. 69 (Academic Press, Oxford, 2014) 289–324.

73 Hernández, C.M., Witting, J., Willis, C. et al. *Evidence and patterns of tuna spawning inside a large no-take Marine Protected Area*. 9, 10772 *Sci Rep* (2019).

74 *Ibid.*

75 McDermott GR, Meng KC, McDonald GG, Costello CJ (2018), *The Blue Paradox: Preemptive Overfishing in Marine Reserves*, 10 *Proceedings of the National Academy of Sciences* 1073 (2018).

76 Q. Hanich, R. Rotjan, T. Aqorau, M. Bailey, B. Campbell, N. Gray, R. Gruby, J. Hampton, Y. Ota, H. Parris, C. Reid, U. R. Sumaila, W. Swartz, *Unraveling the blue paradox: Incomplete analysis yields incorrect conclusions about Phoenix Islands Protected Area closure*, 52 *Proceedings of the National Academy of Sciences*, Dec 115 (2018).

77 Q. Hanich, R. Davis, G. Holmes, E. Amidjogbe and B. Campbell, *Drifting Fish Aggregating Devices (FADs): Deploying, Soaking and Setting – When is a FAD 'Fishing'?* 34 *The International Journal of Marine and Coastal Law* 1–24 (2019).

78 See, <http://www.palauoceans.org/marinesanctuary/>.

fishing and the exploitation of natural resources is prohibited. This amounted to an estimated 10 per cent of the FSM's EEZ of over 1.3 million square miles or approximately 3,367,000 km².⁷⁹

The proposed Niue Protected Area was announced on 5 October 2017, with a management plan now in its final stages of approval after an extensive marine spatial planning and consultation process.⁸⁰ Once established, it will encompass approximately 40 per cent of the country's EEZ area, together with coastal waters (127,000 km²).⁸¹ Significantly, it will include Beveridge Reef, an uninhabited, semi-submerged atoll within Niue's waters that is home to the world's highest density of grey reef sharks. Also of note is the establishment in July 2017 of the Marae Moana; a multiple-use MPA that covers the entire Cook Islands EEZ of over 1,976,000 km². Marae Moana was designated in July 2017 by the Marae Moana Act⁸² and provides for 324,000 km² to be fully protected and closed to all industrial fishing and seabed mining.

4.3 *Distant Pacific Possessions*

Additionally, metropolitan powers with Pacific coastlines including remote possessions have established LMPAS in the Pacific. In particular, in April 2014 France has pledged to establish a New Caledonia Coral Sea Marine Protected Area for the entirety of the EEZ of these islands (1.3 million km²).⁸³ An LMPA has also been proposed for the Marquesas in French Polynesia covering around 700,000 km².⁸⁴

For its part, the United Kingdom established the Pitcairn Islands Marine Reserve as a fully no-take LMPA on 15 September 2015 (834,000 km²).⁸⁵ Moreover, the United States has established multiple LMPAS in the Pacific. The Northwestern Hawaiian Islands (NWHI) Marine Sanctuary, subsequently renamed the Papahānaumokuākea Marine National Monument,⁸⁶ declared in

79 See, <http://www.mpatlas.org/mpa/sites/68808202/>.

80 See, <https://www.niueoceanwide.com/projects>.

81 See, <http://www.mpatlas.org/mpa/sites/68808405/>.

82 Marae Moana Act 2017. Cook Islands. See, <https://www.maraemoana.gov.ck/wp-content/uploads/2019/04/Marae-Moana-Act-2017.pdf>.

83 See, <http://www.mpatlas.org/campaign/new-caledonia/>.

84 See, <http://www.aires-marines.fr/Actualites/Lancement-de-la-phase-de-concertation-pour-la-creation-de-la-grande-aire-marine-protgee-des-Marquises>.

85 See, <http://www.mpatlas.org/mpa/sites/9178/>.

86 See, <http://www.papahanaumokuakea.gov/>.

June 2006 (362,580 km²), the Marianas Trench Marine National Monument (205,562 km²),⁸⁷ and the Pacific Remote Islands (1,269,066 km²).⁸⁸

4.4 *LMPAs in the Eastern Pacific*

Chile has established three LMPAs in Pacific waters. The Motu Motiro Hiva Marine Park (150,000 km²) was designated in 2010 and is located in the eastern part of Chile's EEZ around its Easter Island territory as a no-take MPA.⁸⁹ This area includes part of a "highly biodiverse chain of seamounts" and includes waters host to "long-lived deep-sea species that are vulnerable to overfishing."⁹⁰ However, communication and consultation difficulties between national authorities and the local Rapa Nui community caused disputes resulting in an impasse in the development of a management plan for the park. Subsequently, following a referendum among the Rapa Nui community, the Rapa Nui Rahui Marine and Coastal Protected Area was announced in September 2017.⁹¹ This LMPA encompasses the remainder of the EEZ around Easter Island and Sala y Gomez with a reported area of 579,368 km².⁹² Further, Chile's Nazca-Desventuradas Marine Park, announced in October 2015, covers a significant portion (300,035 km²)⁹³ of the EEZ around the Desventuradas Islands (San Félix and San Ambrosio Islands) off Chile's coast.⁹⁴

Mexico's Pacífico Mexicano Profundo (or Deep Mexican Pacific) Biosphere Reserve covers an overall area of 426,147 km² comprised of a number of fragmented, non-contiguous protected zones including "core zones" of 121,720 km² and general or buffer zones totalling 314,426 km².⁹⁵ What is particularly noteworthy regarding this LMPA is that it relates to areas below 800 m depth to the sea floor with a view to protecting fragile seabed ecosystems. While the core zones are strictly protected, the LMPA is multi-use in that fishing is allowed

87 See, <https://www.protectedplanet.net/555586815>.

88 See, <http://www.mpatlas.org/mpa/sites/8345/>. See, Anastasia Telesetsky, *United States Law, Marine Protected Areas, and Challenges to "Lasting Protection"*, 5 (1) *Asia-Pacific Journal of Ocean Law and Policy* (2020).

89 The park is located in waters off Sala y Gomez, a small Chilean island located approximately 200 miles to the east of Easter Island itself. See, <https://www.protectedplanet.net/555543712>, and <http://www.mpatlas.org/mpa/sites/9241/>.

90 See, <http://www.mpatlas.org/mpa/sites/9241/>.

91 See, <http://www.mpatlas.org/mpa/sites/68808636/>.

92 See, <https://www.protectedplanet.net/555637336>.

93 See, <https://www.protectedplanet.net/555624169>.

94 See, <http://www.mpatlas.org/mpa/sites/9175/>.

95 See, <http://www.mpatlas.org/mpa/sites/68808627/>.

within the general or buffer zones, although bottom trawling and seabed mining are prohibited.⁹⁶

5 Is Bigger Better?

As observed above, over 60 per cent of LMPAS (21 of 33) are located in the Pacific. There is therefore no doubt that Pacific LMPAS are crucial to achieving global targets for marine conservation as laid out by the CBD and SDG 14. Indeed, such is the grand spatial extent of these ‘mega-MPAS’ that the 20 largest MPAS amount to over 60 per cent of global MPA coverage.⁹⁷ There is, however, an ongoing debate as to the relative merits of LMPAS. At its core, this discourse relates to concerns over the question of whether quantity, that is the broad spatial extent of LMPAS, versus quality, or the extent to which these mechanisms deliver on their ocean conservation objectives.

The need for both larger areas of the ocean to be protected and for this to be achieved in a meaningful way was highlighted in the context of the Aichi Targets, where the justification for the spatial conservation target was that “well-governed and effectively managed protected areas are a proven method for safeguarding both habitats and populations of species and for delivering important ecosystem services.”⁹⁸ It was also recognised that there was a need to ensure the protection of “critical ecosystems”, including coastal and marine ecosystems such as tropical coral reefs, sea-grass beds, deepwater cold coral reefs, seamounts, and coastal wetlands and therefore enhanced attention was required towards “the representativity, connectivity and management effectiveness of protected areas.”⁹⁹

There are substantial potential benefits to MPAS in general and LMPAS in particular. The merits of conserving marine life and protecting critical habitats through establishing MPAS include the preservation of representative samples of biodiversity, particularly threatened species and vulnerable habitats, thus promoting ecosystem resilience. MPAS can also provide opportunities for increased fish biomass with dispersal potential and therefore spillover impacts for adjacent areas leading to enhanced sustainability of fisheries with resulting

96 *Ibid.*

97 At the time of writing, the Protected Planet website recorded the total global area coverage of MPAS as 27,738,316 km² of which the largest 20 MPAS covered an area of 17,573,997 km² or 63.4 per cent. See, <https://www.protectedplanet.net/marine>.

98 CBD, “Quick Guide to the Aichi Biodiversity Targets”, available at <https://www.cbd.int/doc/strategic-plan/targets/T11-quick-guide-en.pdf>.

99 *Ibid.*

food security implications. MPAS also serve as invaluable repositories of marine biodiversity for research and education while simultaneously providing focal points for ecotourism and leisure.¹⁰⁰

Regarding LMPAS more specifically, bigger could be regarded as better in principle because they can encompass larger parts of broader scale marine ecosystems than is possible for smaller scale MPAS, thus providing better protection for migratory species such as tuna, billfish, sharks, cetaceans and seabirds. Consequently, LMPAS arguably build greater resilience to climate change impacts than do smaller MPAS.¹⁰¹ Additionally, it has been argued that LMPAS have the potential to deliver socio-economic benefits to broader and more diverse populations and stakeholders.¹⁰²

The counterpoint to this is that LMPAS need to be well governed and this is particularly challenging not only because of their grand scale but their frequently remote locations. In the Pacific context, the proliferation of LMPAS declared by small island States with limited monitoring, surveillance and enforcement capacity remains an issue. Concerns have also been raised over the geographical coverage of MPAS globally, indeed notably towards the Pacific Ocean,¹⁰³ as well as whether they adequately capture key threatened ecosystems such as tropical corals.¹⁰⁴ Indeed, some commentators have come to the stark conclusion that MPAS are little more than watery 'paper parks' failing to achieve their conservation objectives.¹⁰⁵

100 See, <https://parksaustralia.gov.au/marine/pub/scientific-publications/archive/benefits-mpas.pdf>, 6–9. See also, Smyth and Hanich, *supra* note 39, at 4.

101 Smyth and Hanich, *supra* note 39, 8–9.

102 Rebecca L. Gruby, Luke Fairbanks, Leslie Acton, Evan Artis, Lisa M. Campbell, Noella J. Gray, Lillian Mitchell, Sarah Bess Jones Zigler and Katie Wilson, *Conceptualising Social Outcomes of Large Marine Protected Areas*, 45(6) *Coastal Management* 416–435 (2017).

103 See, for example, M. Spalding, I. Meliane, A. Milam, C. Fitzgerald, and L. Hale, 'Protecting Marine Spaces: Global Targets and Changing Approaches', in A. Chircop, S. Coffen-Smout and M. McConnell (Eds.), *Ocean Year Book 27*, (Brill/Nijhoff, 2013).

104 See, for example, D. Mouillot, V. Parravicini, D.R. Bellwood, F. Leprieur, D. Huang, P.F. Cowman, C. Albouy, T.P. Hughes, W. Thuiller and F. Guilhaumon, *Global Marine Protected Areas do not Secure the Evolutionary History of Tropical Corals and Fishes*, 7 (10359) *Nature Communications* (2015).

105 Graham J. Edgar, Rick D. Stuart-Smith, Trevor J. Willis, Stuart Kininmonth, Susan C. Baker, Stuart Banks, Neville S. Barrett, Mikel A. Becerro, Anthony T. F. Bernard, Just Berkhout, Colin D. Buxton, Stuart J. Campbell, Antonia T. Cooper, Marlene Davey, Sophie C. Edgar, Günter Försterra, David E. Galván, Alejo J. Irigoyen, David J. Kushner, Rodrigo Moura, P. Ed Parnell, Nick T. Shears, German Soler, Elisabeth M. A. Strain and Russell J. Thomson, *Global conservation outcomes depend on marine protected areas with five key features*, *Letter*, 506 *Nature* 216–220 (2014).

The potential political dimension to the designation of LMPAs also arise in this context with some disquiet over the motives of distant metropolitan powers such as France, the United Kingdom and the United States declaring LMPAs around their Pacific possessions. On the face of it such LMPA designations may stem from laudable considerations whereby remote and often pristine areas of rich biodiversity are being protected before they are significantly impacted by direct anthropogenic impacts and in order to enhance their capacity to counter the effects of climate change. Alternatively, these LMPA designations in distant waters may be motivated by a desire to meet international obligations and targets for MPA coverage, or may have a political character as an act of administration underscoring the metropolitan State's claims to sovereignty over possessions acquired in colonial times.¹⁰⁶

It is clear that design and implementation flaws in some cases have provoked considerable criticism of large scale MPAs, some of it fierce. But other commentators are more nuanced in their assessment, arguing that such large-scale efforts to protect and conserve marine biodiversity are to be welcomed as they place greater parts of the ocean under some form of protection which can be enhanced over time and they can complement existing efforts to manage and conserve the marine environment.¹⁰⁷ The ongoing challenge is to ensure that LMPAs are well designed, governed, resourced and managed, in order to effectively conserve and utilise the world's oceans sustainably.

106 See, for example, Pierre Leenhardt, Bertrand Cazalet, Bernard Salvat, Joachim Claudet, François Feral, *The Rise of Large-scale Marine Protected Areas: Conservation or Geopolitics?*, 85 *Ocean & Coastal Management* 112–118 (2013).

107 See, for example, T. 'Aulani Wilhelm, Charles R. C. Sheppard, Anne L. S. Sheppard, Carlos F. Gaymer/John Parks, Daniel Wagner and Nai'a Lewis, *Large Marine Protected Areas – Advantages and Challenges of Going Big*, 24 (Suppl. 2) *Aquatic Conservation: Marine and Freshwater Ecosystems* 24–30 (2014).