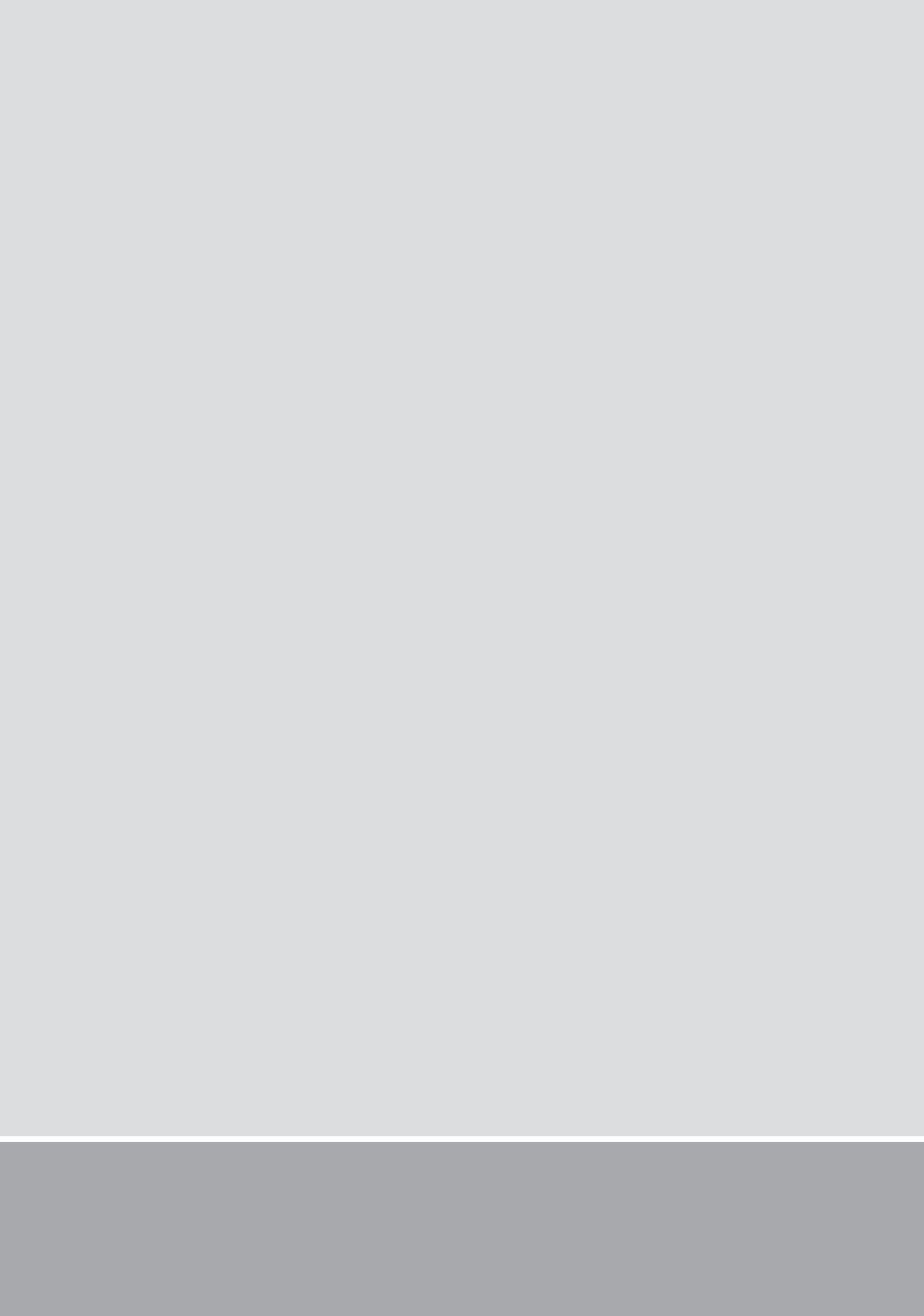


# PART ONE

## INTERNATIONAL REVIEW



## chapter two



International evolution of spatial  
marine protection

Ideas about how marine environments should be managed and protected changed significantly over the course of the twentieth and early twenty-first centuries. This evolution of thinking internationally, helps to inform New Zealand's own development in marine protection law and policy, and provides the context for considering future changes.

## The genesis of marine protection

Although the late nineteenth and early twentieth century saw growing awareness of human impacts on the environment, and the need to conserve areas in a natural state, concerns about the terrestrial environment dominated. The world's first terrestrial national park was established in 1872 at Yellowstone in the United States. This was followed in 1887 by New Zealand's first national park at Tongariro, the result of a generous gift of land to the Crown by Te Heuheu Tukino IV. At this time, the protection of marine ecosystems was not considered a priority.

Early spatial restrictions on activity in marine areas were generally directed towards protecting particular species such as fur seals, or the management of specific fish stocks, rather than the protection of the environment itself. Such techniques have been employed in many different places around the world for centuries. For example, in Oceania (Polynesia, Melanesia and Micronesia) rulers could close an area to replenish fish stocks or because they felt that the area had become over-exploited.<sup>1</sup> In 1957, Beverton and Holt provided the first formal numerical analysis and justification for the use of closed areas in fisheries management. Their work was inspired by observations of increasing fish stocks in the North Sea, after World War Two, when the fishing grounds were inaccessible due to the presence of mine fields.<sup>2</sup>

Nevertheless, despite localised attempts at stock management, a view persisted well into the twentieth century that the ocean was such a bountiful resource that nothing that humans did could significantly affect it. This view was famously expressed by Thomas Huxley in his 1883 address to the International Fisheries Exhibition in London when he said "... *probably all the great sea fisheries are inexhaustible; that is to say, that nothing we do seriously affects the number of fish. And any attempt to regulate these fisheries, seems consequently, from the nature of the case, to be useless ...*"<sup>3</sup> The lack of concern for the health of the marine environment was exacerbated by the fact that most of it was out of sight and poorly understood.<sup>4</sup>

During the 1950s and 1960s, there was a growing realisation that better management of the impact of human activities on the marine environment was required, as it became apparent that human activity could indeed cause very real damage. Improvements in science and technology allowed for more effective study of the ocean and consequent improvements in understanding. However, such developments also facilitated increased fishing effort, as new technologies enabled fishing vessels to harvest fish more effectively, and to access previously un-fished areas. High profile collapses of some stocks occurred during this period, such as North Sea herring in the 1960s.

In 1958, the United Nations Convention on the Law of the Sea extended state jurisdictions beyond the customary three nautical mile territorial sea. It provided a legal framework that was designed to mitigate against the 'tragedy of the commons' that had characterised human exploitation of ocean resources. It sought to do this by enabling states to assert their jurisdiction over a greater proportion of the world's oceans. The boundary of the territorial sea was expanded out to 12 nautical miles and new, much larger, exclusive economic zones extended out to 200 nautical miles from land.

At the same time, there was a growing consensus amongst the international scientific community that marine protected areas should be established, not simply to manage fish stocks, but to play a role similar to that of national parks on land. The areas would preserve ecosystems in their natural state as insurance against the destructiveness of human activity.

Thus the First World Conference on National Parks in 1962 recognised that marine areas, as well as terrestrial ones, should be protected as national parks.<sup>5</sup> Further work was subsequently undertaken on the international stage to develop measures to protect the world's oceans. In 1972, the Governing Council of the United Nations Environment Programme established the Regional Seas Programme. This adopted action plans, in each region around the world, for the protection of marine living resources from pollution and over-exploitation.<sup>6</sup>

The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) and the Convention for the Protection of the World Cultural and Natural Heritage (the World Heritage Convention), concluded in 1971 and 1972 respectively, were amongst the instruments developed at an international level during this period to recognise the importance of, and need to protect, marine ecosystems.<sup>7</sup>

## Establishing marine protected areas

From the 1970s onwards, nations in all parts of the world developed a greater interest in the establishment of marine protected areas. De Silva *et al* calculated that in 1970, there were 118 marine protected areas in 27 nations. By 1985, 430 marine protected areas had been proclaimed by 69 nations, with another 298 proposals under consideration.<sup>8</sup> Efforts tended to focus on the protection of isolated individual areas, which were selected because of their particularly rich biodiversity, or the presence of rare species. Areas identified for protection were often small, because governments were reluctant to constrain the activities of extractive users of the marine area.<sup>9</sup>

Although a small percentage of the protected areas prohibited all extractive activities (often described as ‘marine reserves’) many did not. The term ‘marine protected area’ gained currency as a label for any type of spatial protection within the marine environment. It was used in many different jurisdictions to refer to a variety of management arrangements. As such, there is no universally accepted definition of the term ‘marine protected area.’ Nations and international organisations have adopted a range of interpretations, including the following:

- The Australian Marine Science Association defines ‘marine protected areas’ as *“areas of the ocean or coastal seas, securely reserved and effectively protected from at least some threats.”*<sup>10</sup>
- The United States Presidential Executive Order 13158 describes ‘marine protected areas’ as *“any area of the marine environment that has been reserved by federal, state, territorial, tribal or local laws or regulations to provide lasting protection for all or part of the natural and cultural resources therein.”*<sup>11</sup>
- The Oslo/Paris convention (for the Protection of the Marine Environment of the North-East Atlantic) (OSPAR), covering the north-east Atlantic, states that the term ‘marine protected area’ *“means an area within the maritime area for which protective, conservation, restorative or precautionary measures, consistent with international law, have been instituted for the purpose of protecting and conserving species, habitats, ecosystems or ecological processes of the marine environment.”*<sup>12</sup>
- The California Marine Managed Areas Improvement Act 2000 provides that a ‘marine managed area’ under the Act *“is a named, discrete geographic*

*marine or estuarine area seaward of the mean high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law or administrative action to protect or conserve marine life and habitat.*"<sup>13</sup>

- The International Union for the Conservation of Nature (IUCN), which has been instrumental in developing international thinking about marine protected area design, defines a 'marine protected area' as *"any area of the intertidal or sub-tidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment."*<sup>14</sup>

Whilst these definitions differ, what underpins them all is the requirement that the protection of the marine environment, or components of it, is the central objective. Similarly, the precise management measures employed to achieve protection are not relevant. Marine protected areas are not required to exclude activities, if such exclusion is not required to achieve the management objective(s).

Whilst protection of the environment must be the primary objective, marine protected areas may be designed with secondary purposes in mind. There is widespread support for the notion that the design of marine protected area systems should provide for the realisation of socio-economic objectives, as well as environmental ones.<sup>15</sup> This idea recognises the importance of providing for human relationships with the marine area, which in turn increases support for management measures and thus compliance, and creates a resource of value to the community. Thus, opportunities for recreation, tourism, scientific study or even sustainable use might be appropriate secondary objectives.

## **Move to ecologically representative networks**

Since the first small protected areas were established many decades ago, approaches to marine protection have evolved significantly. Today, best practice is informed by our understanding of the marine environment as a hierarchical, inter-dependent structure. Interference with some elements of the ecosystem may have far-reaching consequences, even altering the very nature of the ecosystem itself.<sup>16</sup> The focus of marine protection measures has thus shifted from the protection of

individual sites identified on the basis of their location (a *spatial* focus), to the consideration of the marine ecosystem as a whole (a *systems* focus).

Nations, including New Zealand, have committed to the establishment of an ‘ecologically representative’ global marine protection system via a range of international instruments. Specifically, in 2004, the seventh meeting of the Conference of the Parties to the Convention on Biological Diversity set out targets for the establishment of “*comprehensive, effectively managed, and ecologically representative national and regional systems of protected areas.*”<sup>17</sup> Then, the Eighth Conference of the Parties in 2006 adopted the following target: “*At least 10 per cent of each of the world’s marine and coastal ecological regions effectively conserved.*”<sup>18</sup>

The ‘ten per cent target’ was refined in 2010 at the tenth Conference of the Parties, which emphasised the importance of an integrated marine management approach to ensure that by 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 seascapes.*”<sup>19</sup>

Although it provides a measurable goal to which nations can aspire, the adoption of the ten per cent target was somewhat arbitrary in scientific terms. The impact of protecting ten per cent of the marine area will differ in various jurisdictions, dependent on the characteristics of the marine environment and the pressures on it.<sup>20</sup> In addition, there is some flexibility in the measures that can be employed to meet the target: coastal and marine areas must be conserved in effective protected areas and “*other effective area-based conservation measures.*”

Many national governments have reflected the target in domestic policy. Initiatives for the establishment of new marine protected areas have been undertaken in many nations including the United States, Australia, the United Kingdom and New Zealand. These have sought to develop connected networks of marine protected areas, which together aim to protect a full range of ecosystem features (species and habitats), occurring within each nation’s waters.

## **Building linkages with broader marine management**

It is now well-recognised that the protection of a small percentage of marine space, whilst ‘business as usual’ continues elsewhere, will not in itself safeguard

the health of marine ecosystems.<sup>21</sup> This is for several reasons. Without effective management of the broader marine environment, marine protected areas will continue to be subject to the effects of significant harmful activities which occur outside their boundaries, such as pollution and run-off from land.

In addition, spatial protection measures are likely to have greater benefits for sedentary species than for those which move around or have dispersed lifecycles, meaning their effect is predominantly local.<sup>22</sup> Furthermore, whilst well-designed networks may protect areas with high biodiversity values, the act of establishing linear boundaries will always be arbitrary. The marine environment is dynamic and interconnected, with linkages at different scales.<sup>23</sup> The distribution of marine species is also constantly shifting, a fact that is heightened by climate change.<sup>24</sup>

Thus, there is now recognition that the establishment of marine protected areas alone should not be seen as a complete solution to the challenge of effective marine management.<sup>25</sup> Rather, they should be thought of as a vital part of a management system which is applied to the entire marine ecosystem.<sup>26</sup> Ecosystems-based management seeks to replace the fragmented, sector-based approach to marine management with an integrated system. This recognises that, just as ecosystems are interconnected, management of marine activities must be integrated.<sup>27</sup>

Marine spatial planning processes, which identify marine protected areas within the context of a broader planning system, are one way of working towards ecosystems-based management. They enable the consideration of all activities and their impacts across larger areas of marine space.<sup>28</sup> If proposals to establish marine protected areas fail to consider this broader picture, they can have unintended impacts on other parts of the marine system, such as when fishing activity is displaced and increases pressure elsewhere.<sup>29</sup>

## Conclusion

Thinking about marine protection has changed significantly over the past century or so, from the early belief that the resources of the oceans were limitless, to the current acceptance that we need to manage these resources much more carefully. The creation of marine protected areas is now a widely accepted and applied approach, to achieve better protection of marine biodiversity, and to maintain ecosystem health. However, there is growing realisation that they cannot succeed in isolation. Increasingly, it is recognised that they should be embedded within a broader ecosystems-based approach to oceans management.

***Figure 2.1: Summary of the international evolution of spatial marine protection***

- Marine protection was considered unimportant until the mid-twentieth century. Early marine protection efforts focused on specific species or fish stocks.
- During the early 1960s, there was international recognition that marine areas should be spatially protected in a manner similar to terrestrial national parks.
- During the 1970s and 80s numerous marine protected areas were established in many countries around the world. These were largely individual isolated areas.
- During the 1990s, there was a shift in focus from the establishment of individual marine protected areas, to the establishment of networks.
- During the 2000s, there was growing recognition that marine protected areas needed to be incorporated into broader ecosystems-based marine management regimes, and that marine spatial planning was a useful tool to help achieve this.

# Endnotes

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13. Section 36602, California Code
14. International Union for the Conservation of Nature, 1994
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16. Walker B and D Salt, 2006
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20. Vierros M, 2006
21. Agardy T *et al*, 2011b
22. Although there are some exceptions – for example, marine protected areas may be used to protect fish nursery grounds, or key habitat for marine mammals. For more detail see chapter four.
23. Walker B and D Salt, 2006
24. See e.g. C Harley *et al*, 2006
25. Agardy T *et al*, 2011b
26. Allison G *et al*, 1998
27. Agardy T *et al*, 2011a
28. Douvère F, 2008
29. Hilborn R *et al*, 2006

