Michael McGinnis

Living up to the Brand
Greening Aotearoa's Marine Policy

Nā Tāne I took, ka mawehe a Rangi rāua ko Papa, nāna I tauwehea ai, ka heuea te Pō, ka heuea te Ao.

It is by the strength of Tāne, that sky and earth were separated, and light was born.

Introduction

The recent oil spill in the Bay of Plenty along the east coast of New Zealand has intensified debate over the future of marine activities in the exclusive economic zone (EEZ). An estimated 350 tonnes of oil has leaked from 775-foot vessel *Rena*, which struck the Astrolabe Reef in the Bay of Plenty on 5 October 2011. The vessel subsequently broke in two and much of it is now under water. Large numbers of containers have been washed up on the shore or have sunk. Well over 1,300 birds have died as a result of the spill, but this number of marine life casualties is an estimate at best. The spill is New Zealand's worst environmental disaster in decades. Yet these are the types of impacts that can occur when marine

areas are developed or used in areas of close proximity to sensitive island and coastal marine ecosystems of high biodiversity value.

As New Zealand continues to explore marine resource development, a concerted effort to strengthen and improve the marine governance framework in New Zealand to better reflect international best practice is needed. New Zealand's green brand of 100% Pure is a double-edged sword: it represents an opportunity for the country to create the marine policies and programmes that support the brand, and a vulnerability or liability with respect to the potential economic fallout if the country fails to live up to the brand. With respect to the importance of tourism to

Dr Michael McGinnis is a Senior Research Associate of the Institute of Policy Studies in the School of Government at Victoria University of Wellington. He has written extensively on a range of environmental policy issues over the past few decades, and is currently leading a research project on marine governance on behalf of the IPS.

the New Zealand economy, the country has an opportunity to learn from the international community and to become a world leader in the area of ecosystem-based marine governance.

Future marine policy in New Zealand is likely to be based on how well the country resolves three general institutional issues and concerns. First, the existing marine governance framework is highly fragmented, and is based on a sector-by-sector approach to marine resource use. There are 18 main statutes, 14 agencies and six government strategies for marine management and planning in New Zealand (Vince and Haward, 2009). Further, marine planning and decision

New Zealand should be considered a 'Noah's ark' of species diversity; the abundant marine life is sensitive to human activities and impacts that occur at diverse scales, including the impacts of climate disturbance

making are made more complicated by the fractured framework of laws, regulations and practices that have been developed in New Zealand over the past 30 years.

Second, New Zealand is not meeting its international obligations when it comes to marine resource management and biodiversity protection (Parliamentary Commissioner for the Environment, 2011, 6). New Zealand has not created marine reserves within the EEZ that can protect ecosystems from human impacts. As the parliamentary commissioner for the environment notes, 'It is over nine years since the First Reading of the Marine Reserves Bill. Given the growing pressure to exploit marine resources, this legislation [the Environmental Effects Bill] should be urgently advanced' (ibid., 13).

With respect to the management of the EEZ, the protection of marine life is an important requirement in international conventions and treaties, such as the United Nations Convention on the

Law of the Sea (Rothwell and Stephens, 2010; Parliamentary Commissioner for the Environment, 2011; Oceans Policy Secretariat, 2003a, 2003c). Every coastal state is granted jurisdiction for the protection and preservation of the marine environment of its EEZ. For example, coastal states have the obligation to control, prevent and reduce marine pollution from dumping, land-based sources or seabed activities subject to national jurisdiction, or from or through the atmosphere. While New Zealand has access to and the right to use the marine resources of the EEZ, this use is predicated on the protection of marine life in accordance with international obligations. The management of resource

use and human impacts, including the need to develop adaptive strategies to address climate disturbance of coastal marine ecosystems, are fundamental issues facing the country. Existing international treaties, such as the Convention on the Law of the Sea, require that resource use of the EEZ includes countries developing protective measures for marine life (Parliamentary Commissioner for the Environment, 2011). National policy that supports the value of marine biodiversity protection has not been fully developed for New Zealand's EEZ, and the current marine reserve designations fall short of international agreements (Parliamentary Commissioner for the Environment, 2011).

Third, the country remains far behind international best practice in marine policy and ecosystem-based programme development and planning (Peart et al., 2011). Marine policies should be based on internationally recognised principles of management and planning. The adoption of an ecosystem-based

approach to marine governance can contribute to a more comprehensive and integrated approach to marine ecosystem protection and integrated resource use across diverse management sectors. Policy innovation in the area of land-use and catchment planning are examples of New Zealand's capacity to lead the world in environmental management. Yet in the area of marine governance of the EEZ the country has yet to embrace the principles of management and the planning tools that are being used across the world to better protect marine life, and to resolve resource-based conflicts.

With these primary concerns in mind, this article describes a number of management principles and planning tools that can support the development of an ecosystem-based approach to marine governance in New Zealand. The article begins with a general overview of the changing socio-ecological context in New Zealand. It then provides a summary of recent legislative developments and other activities that are likely to influence the country's future marine policy. Conflicts over resource use and biodiversity protection are likely to develop in the EEZ. New Zealand lacks, however, the institutional capacity and capability to address these types of conflicts and other management challenges. Accordingly, the article focuses on the need for the central government to support several principles of integrative, ecosystem-based marine management and planning. The management principles are the public trust doctrine; the maintenance of ecosystem services; and the compatible use criterion.

Setting the stage: the changing socio-ecological context

When compared to other developed countries, New Zealand has a relatively small population. Yet the country is responsible for the management of one of the most biologically important parts of the world's ocean. As with other Pacific island countries, New Zealand faces a problem of scale, which has both a political and ecological dimension. The institutional resources (e.g. professional capacity, fiscal resources) needed to manage the marine environment across multiple marine sectors are lacking.

Management of and planning for New Zealand's EEZ represents a particular challenge because of its biophysical scale. With its declaration of an EEZ in 1978, New Zealand's jurisdiction spanned over 3 million square kms of the ocean, and the country's coastline is in excess of 15,000 km. Its EEZ is the fifth largest in the world, with an area about 15 times that of the land mass (or 5.7% of the world's EEZ) (Ministry for the Environment, 2007). With the legal continental shelf extensions, New Zealand's current ocean area jurisdiction is more than 20 times its land area, or 1.2% of the earth's surface area. Thus, a country about the size of a major city overseas is responsible for managing and sustaining a large marine area. This responsibility is based on international obligations set forth in treaties and conventions.

New Zealand should be considered a 'Noah's ark' of species diversity; the abundant marine life is sensitive to human activities and impacts that occur at diverse scales, including the impacts of climate disturbance (Kingsford and Watson, 2011). New Zealand's marine areas contain endemic species, many of which are unique to New Zealand (Ministry for the Environment, 2005; Gordon et al., 2010). The county's EEZ includes diverse coastal marine habitats, and is recognised as one of the top hot spots of threatened biodiversity in the world (Kingsforce et al., 2009, 834). Over 17,000 species of marine life have been identified in New Zealand's seas, including over 4,000 that have been collected but have yet to be described. This comprises just over 30% of all known biodiversity associated with the country (Gordon et al., 2010, 9). The number of identified fishes, for example, has doubled over the past 15 years, and is increasing at a rate of 15 species per year, while the number of undiscovered marine species in New Zealand waters is likely to exceed the number of species that have been identified (ibid., pp.9, 12). New Zealand also hosts a very high diversity of seabirds and marine mammals. Almost three quarters of the world's penguin, albatross and petrel species, and half of the world's shearwater and shag species are found in the islands and coastal areas of the country. In addition, nearly half the

world's species of whales and dolphins have been sighted in New Zealand waters, including nine species of baleen whales, 17 members of the dolphin family and 12 species of beaked whales (ibid., 10).

There are a range of both instrumental and non-instrumental values associated with the EEZ, including the values of biodiversity and resource use. Few people dispute the intrinsic values of the marine environment. They are often reflected in maritime stories, ritual, and other ceremonies of maritime peoples. While we often focus on the economic values of the ocean, we also recognise the non-instrumental values associated with the marine environment, such as

relation to natural and physical resources, and includes the ethic of stewardship' (Resource Management Act 1991, s2); and 'The exercise of guardianship; and, in relation to any fisheries resources, includes the ethic of stewardship based on the nature of the resources, as exercised by the appropriate tangata whenua in accordance with tikanga Māori' (Fisheries Act 1992, s2). Article two of the Treaty of Waitangi guaranteed that iwi and hapu would retain the authority of rangatiratanga to continue to exercise kaitiakitanga.

With respect to consumption values, there are a range of marine uses that may be developed in New Zealand's EEZ. The

There is no existing requirement to assess the effects of the exploration and development of offshore mining and oil and gas activities: leases were granted without a comprehensive environmental assessment.

aesthetic, scientific, recreational, spiritual and sacred values. Certainly the world's oceans carry life-giving values that are beyond an instrumental value orientation or 'development ethic': for instance, a sea in a wild storm is valuable beyond the human capacity to understand it, while the sanctuary of a coastal estuary for shorebirds feeding embodies spiritual and sacred significance.

Marine resources have been used and valued by Māori for hundreds of years. The maritime heritage of New Zealand is diverse, including various diverse iwi and European belief structures and values. Marine management should reflect this diversity of cultural epistemology, understanding and knowledge. For example, kaitiakitanga is recognised as an important part of environmental management and planning. It is defined in legislation as follows: '[T]he exercise of guardianship by the tangata whenua of an area in accordance with tikanga Māori in

government has leased parts of the EEZ for the exploration of marine mining and offshore oil and gas development. There is no existing requirement to assess the effects of the exploration and development of offshore mining and oil and gas activities: leases were granted without a comprehensive environmental assessment. Within the territorial sea, the current National-led government is interested in significantly expanding aquaculture production, which may include future finfish and mussel farming. New aquaculture development may take place in nearshore coastal waters for such new species as sea cucumbers. There is also the potential for significant new renewable energy development in marine areas (Boisvert, 2011).

Biophysical scale and the scope of conflict
Conflict between contending interests and multiple values associated with marine areas is shaped by two interdependent

factors: the level of marine resource use, and the proximity and/or access of users to coastal marine areas. It is important to recognise that the scale and the scope of conflict often shape the politics of marine planning and decision making (McGinnis, 2012). For example, the scope of conflict is shaped by different political contexts associated with marine life protection, and includes conflicts between users (e.g. commercial versus recreational fishing interests) and user–marine ecosystem conflicts (e.g. fishery interests versus interests in marine mammal protection). The larger the scale needed to sustain resource use and protect marine life, the more politically contentious the decision-

- government shifts the focus from multi-sector or multi-scale governance to single-sector or single-scale governance (e.g. a shift away from integrated, ecosystem-based planning to a resource-based mentality)
- government shifts the focus from multi-stakeholder decision making to client-based decision making.

The problem is that a traditional reliance on a sector-based approach to marine management rarely captures the range of issues, interests and values that are often associated with marine ecosystems. Lester et al. (2010, 577): '[T]here is a historical legacy of piecemeal management that has

number of institutional challenges, such as:

- a spatial and temporal overlap of human activities and their objectives, causing conflicts (user–user and user–ecosystem conflicts)
- a lack of connection between the various authorities responsible for individual activities or the protection and management of the environment as a whole
- a lack of connection between offshore activities and resource use and onshore communities that are dependent on them
- a lack of protection of biologically and ecologically sensitive marine areas.

As governments continue to encourage development of marine areas, the socio-ecological context will inevitably expand to include more diverse interests and values. Value-based conflict between competing interests, international jurisdictions and within-state government jurisdictions will expand as do the scale and level of resource use. It will be difficult to resolve conflict over marine resource use and biodiversity protection without a more comprehensive and integrative approach to marine planning and decision making (McGinnis, 2012).

Sustainable marine governance requires the institutional capacity to deal with socio-ecological systems that are complex, heterogeneous, dynamic, and prone to non-linear and often abrupt changes

making and planning process becomes (ibid., 2012). As the biophysical scale of the management concern expands, the political scope of conflict between values also expands.

Social scientists have shown that a government's response to an expanding scope of conflict between diverse interests and values often includes an attempt to control the conflict by limiting the range of voices, values and interests in the planning process (ibid.). Governmental control of conflict can also lead to support of a sector-based approach to marine planning and decision making, rather than the more difficult and potentially contentious multiple-sector approach to management and governance, which includes more interests and values. There are three main forms of institutional conflict management:

- government shifts the focus of decision making from multiple issues to single issues (e.g. a shift from biodiversity considerations to fishery issues)

largely focused on single sectors of activity and failed to consider marine ecosystems as interconnected wholes.' As Rosenberg and Sandifer (2009, 13) maintain, '[u]nder sector-by-sector management, trade-offs within a sector may be considered, but those among sectors are largely ignored and often remain unaccounted for'. Similarly, Norse (2010, 184) argues: 'This situation was hardly problematic when ample distance remained between swinging fists and noses, but in the face of today's increasing demands, a system of ocean governance less likely to give us healthy oceans and sustainable economies would be difficult to design. Without strong interagency coordination, sectoral man-agement *cannot* work.'

To date, the existing marine gover-nance framework in New Zealand emphasises a traditional approach to resource management and planning. This governance framework contributes to a

The need for a proactive approach

Sustainable marine governance requires the institutional capacity to deal with socio-ecological systems that are complex, heterogeneous, dynamic, and prone to non-linear and often abrupt changes (Young et al., 2007). There are synergistic and cumulative impacts from human use of coastal marine ecosystems, including the impacts of land-use activity such as farming and ranching (Halpern et al., 2008). The synergistic and cumulative impacts of multiple use of coastal and marine resources should be addressed in a governance framework that includes a comprehensive assessment of environmental effects, the mitigation of effects, and the protection of important marine (Miles, 2009).

Identifying the primary threats to New Zealand's marine areas is the subject of several studies. In a recent Ministry of Fisheries report entitled *Assessment of Anthropogenic Threats to New Zealand*

Marine Habitats, MacDiarmid and colleagues characterise the primary threats and pressures on the country's coastal marine ecosystems (MacDiarmid et al., 2010). These scientists used a model developed in the United States (Halpern et al., 2008) that is also being used by the United Nations Environmental Program. Their important study shows that the two top threats and vulnerabilities in New Zealand stem from human activities associated with climate disturbance, which are driven by the continued reliance on fossil fuels across the world, and human activities in coastal areas, including dairy production. The highest-scoring threat, by a considerable margin, was ocean acidification, a consequence of higher CO_2 levels in the sea. The second-highest scoring threat was rising sea temperatures resulting from global climate change. These results indicate the importance of international threats to New Zealand's coastal marine ecosystems.

The marine environment has biophysical limits that are influenced by natural and climate-related changes in the oceans and other ecological features of marine ecosystems and biology (Kingsford and Watson, 2011). When these limits are exceeded in terms of the level of impact, ocean ecosystems can reach 'tipping points', where the function, structure and complexity of an ecosystem changes dramatically. Lubchenco and Petes (2010, pp.115-16) warn, 'Many ocean ecosystems appear to be at a critical juncture. Like other complex, nonlinear systems, ocean ecosystems are often characterized by thresholds or 'tipping points', where a little more change in a stressor can result in a sudden and precipitous loss of ecological functionality.'

The importance of biodiversity protection

To avoid tipping points, scholars have developed tools that can be used in marine planning and decision making that include important information on ecosystem services and the values associated with these. Biodiversity is an important contributing factor that influences the services provided by marine ecosystems. The Royal Society of New Zealand in a recent working paper on the subject of ecosystem services notes:

Biodiversity is often valued for providing resilience to environmental change. More biodiversity generally leads to more resilience, but the relationship is rarely simple. Ecosystem functions, such as nutrient regulation, are provided by the traits of organisms within that ecosystem. Greater genetic diversity provides a greater reservoir of traits that can replace traits lost if particularly important species are lost. More diversity also provides more opportunity for functions to operate across a broader range of conditions. In this way, biodiversity provides the insurance value that future environmental changes will not reduce services. Biodiversity itself provides existence value and option value (in this case, the value of preserving the benefits of unknown future uses of currently unused species and the opportunity for current use of those species). The past fifty years have seen a 'substantial and largely irreversible loss' of biodiversity. New Zealand's unique endemic biodiversity has similarly seen serious decline – an unknown but large loss of common wealth and natural heritage. (Royal Society of New Zealand, 2011, 5)

The setting aside of marine protected areas, or MPAs, is one of the best ways to conserve biodiversity (Taylor et al., 2011). The scientific literature on the benefits of MPAs also shows that the expansion of reserve networks is needed as a climate adaptation strategy (Kingsford and Watson, 2011, 276). With respect to biodiversity protection, New Zealand has not set aside the level of representative marine habitat within a network of marine reserves that can be shown to protect key components of coastal marine ecosystems and the services they provide. New Zealand has thus far designated less than 10% of its marine area as MPAs (Pande et al., 2008). By the end of 2010 only 0.3% of the EEZ and 7.6% of the territorial sea was protected in some type of MPA, and most of this protection exists in the Kermadec Marine Reserve and the Auckland Islands Marine Reserve: these two areas represent approximately 99% of the total existing area protected in New Zealand marine waters. The benthic protected areas in the EEZ are of low habitat value for biodiversity protection (Leatherwick et al., 2008, 96-9).

The primary reason for the stalling of the development of a new oceans policy framework was the debate over Māori rights to coastal and marine resources in 2003.

A brief history of marine policy reform

Since the late 1990s New Zealand has continued to support the development of a comprehensive marine governance framework (Helm, 1998; Risk, 2002; Foster, 2003; Peart and Mulcahy, 2005; Bess and Rallapudi, 2007; Andrews, 2008; Vince and Haward, 2009). A concerted effort began in 1999 to develop a more integrated, comprehensive and ecosystem-based approach to marine policy across all resource sectors. Despite the early development of a national oceans policy, the process stalled in 2003, only to be revived to some degree in 2005. The primary reason for the stalling of the development of a new oceans policy framework was the debate over Māori rights to coastal and marine resources. An additional reason was that the move towards a more comprehensive approach to marine governance requires political will and leadership, because major policy innovation in this domain is difficult given the current institutional culture: multi-

sector policy innovation can threaten institutional cultures. The then Labour-led government took the view that issues regarding ownership of the foreshore and seabed between Māori and the Crown needed to be resolved before further development of new oceans policy.

There are a number of marine-related bills and events that will influence future policy:

- In August 2007 the first step towards a legislative component to the oceans policy was explored through the release of the discussion paper *Improving Regulation of Environmental Effects in New Zealand's Exclusive Economic Zone*. Instead of an 'umbrella act',

to improve alignment of the RMA with existing legislation. The second phase also aims to improve the management of infrastructure, urban design, aquaculture, including improved allocation of coastal space, and water, including both quality and allocation.

- The Aquaculture Legislation Amendment Bill (No 3) was introduced into Parliament in November 2010. This is an omnibus bill which implements the government's decisions on reforming legislation governing aquaculture. Four separate acts – the RMA, the Fisheries Act 1996, the Maori Commercial Aquaculture Claims Settlement Act 2004 and the

Māori Land Court had jurisdiction to determine claims of customary ownership to the foreshore and seabed in. The MCAA repeals Crown ownership of New Zealand's foreshore and seabed in order to replace it with a regime that will enable Māori-only ownership and control (Makgill and Rennie, 2011).

- The establishment of a new Environmental Protection Authority in 2011.
- The Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill was introduced on 24 August 2011 and referred to a select committee. This bill would put in place an effective consenting process for oil and gas exploration, deep sea aquaculture and marine energy projects. The bill gives new functions to the Environmental Protection Authority, which will be responsible for consenting, monitoring and enforcement. It establishes a framework for regulations that will classify activities as permitted, discretionary or prohibited; sets out decision-making criteria that recognise biological values; and requires decision makers to take a precautionary approach when information is limited. Any significant proposals will be subject to full public hearing, before the bill is set to become law in July 2012.
- The *Rena* tanker spill in the Bay of Plenty in October 2011.
- Over the last ten years governments have granted licences and permits to explore offshore oil and mineral resources. These include: two permits for mining petroleum; 21 permits for exploring for petroleum; a prospecting licence for phosphate on the Chatham Rise; and a prospecting licence for iron sands off Taranaki.

> ## National's approach to environmental governance is based on the following Bluegreen objectives: fostering a sense of commitment to a shared national interest in sustainable development ...

the discussion paper recommended two options: the establishment of legislative mechanisms focused on filling key gaps in EEZ environmental regulation and promoting a consistent approach across statutes, including the assessment of cumulative effects; or the development an entirely new regime for managing all activities in the EEZ.

- The Resource Management (Simplifying and Streamlining) Amendment Act 2009 sets out several amendments which make up the first phase of the review of the Resource Management Act 1991 (RMA). In the minister for the environment's view, this first phase improves the resource consent process by, among other things, restricting occasions for frivolous, vexatious and anti-competitive objections, and having projects of national significance considered at a national level. Work has begun on the more complex second phase of review, which aims to have central government provide better direction for regional councils and

Aquaculture Reform (Repeals and Transitional Provisions) Act 2004 – will be amended. It is intended that the bill will be divided into four separate bills during the committee of the whole House stage of the legislative process. The bill incorporates provisions in the Aquaculture Legislation Amendment Bill (No 2) as reported by the primary production select committee in September 2009, where those provisions remain relevant. The bill's purpose is to provide an efficient legislative and regulatory framework that enables the sustainable development of aquaculture within the coastal marine area.

- The passing of the Marine and Coastal Area (Takutai Moana) Act (MCCA) on 24 March 2011 established a new regime for recognition of customary rights and title over the foreshore and seabed. The act may be viewed as the latest step in a chain of events which started with the Court of Appeal finding, in Ngāti Apa v Attorney-General [2003] 3 NZLR 643, that the

The Environmental Effects Bill: the question of striking a balance

The focus of this section of the article is the Environmental Effects Bill and its emphasis in 'balancing' competing uses of the marine environment. The bill's purpose is to fill the existing gap in policy with respect to a requirement for environmental assessments of proposed

marine resource use in the EEZ. The bill reflects the philosophy of the current National-led government as reflected in the Bluegreen agenda, developed while National was in opposition. To quote Nick Smith, minister for the environment, at the annual meeting of the Environmental Defence Society in 2011:

National's approach to environmental governance is based on the following Bluegreen objectives: fostering a sense of commitment to a shared national interest in *sustainable development*; effectiveness in getting results; long-term consistency; reducing delay and cost; better use of technical information ... New Zealand's marine environment is an integral part of our national identity and contributes significantly to our economy – including fishing, aquaculture, oil and gas, tourism, transport and telecommunication links. However, our systems for managing environmental impacts fall under different statutes and regulations. *Consistent standards and restrictions are not applied across all activities.* It's not only the environmental risk we run – these factors could also constrain further economic growth from New Zealand's extensive marine resources. The Government will explore ways to improve environmental management in the EEZ, *which will enable us to benefit from the economic potential of New Zealand's EEZ while protecting the environment ... To lift the long-term performance of the economy, we need to reduce red tape and remove the barriers* that prevent resources from being used most productively. Stage Two of the reforms will continue the focus on managing our resources more effectively and efficiently *to deliver both economic and environmental benefits*. (Smith, 2010, emphasis added)

The Environmental Effects Bill represents an 'effects-based' approach to assessing environmental impacts. One problem with the bill at present is that the management goal of striking a balance between competing interests and values is not consistent with international obligations. As the Parliamentary

Commissioner for the Environment notes:

The purpose of the Bill is stated in clause 10 as achieving 'a balance *between* the protection of the environment and economic development'. This is not consistent with the Law of the Sea which states: 'States have the sovereign right to exploit their natural resources pursuant to their environmental policies and in accordance with their duty to protect and preserve the marine environment.' The right to exploit resources (and profit from royalties) in the EEZ and the Extended Continental Shelf (ECS) has thus been granted *conditional* on environmental protection. Clause 11 in the Bill requires consistency with

the Law of the Sea, so this conditional relationship is critical: we can pursue economic development, but we must protect the environment. The former – economic development – is optional. The latter – environmental protection – is not. (Parliamentary Commissioner for the Environment, 2011, 5, emphasis in original)

Peart and colleagues of the Environment Defence Society note:

Overall, it is clear that New Zealand is in breach of its current international obligations for management of the EEZ. ...[T]hese include the requirement to protect and preserve the marine environment, to protect threatened marine species and populations, to require environmental impact assessment of activities which are likely to have significant adverse effects on marine biodiversity, and to establish a representative system of marine reserves.

In addition, when compared with other countries … it is evident that New Zealand has fallen far behind international best practice. Unlike these countries, New Zealand lacks an integrative framework or management body for the EEZ, a legal framework for marine spatial planning and a legal framework for the creation of marine protected areas within the EEZ. (Peart et al., 2011, 33)

Based on international best practice and the obligations under international law, future programmes and initiatives should be developed in New Zealand which include new planning tools and policy instruments that support an ecosystem-based approach to biodiversity protection and resource use.

When compared to other countries it is evidence that New Zealand has fallen behind international best practice.

Marine life protection: the importance of marine ecosystem-based planning

The idea of marine ecosystem-based planning is generating a considerable amount of interest across the disciplines, and includes the use of new planning tools such as marine spatial planning (MSP), marine zoning strategies, and the designation of marine reserves (Foley et al., 2010). There is a burgeoning literature in support of MPAs – marine protected areas – and MSPs as tools that can address intergovernmental fragmentation and conflict between contending interests and uses, and facilitate integrated strategic and holistic management across diverse sectors of marine areas (Ehler and Douvere, 2007; McLeod and Leslie, 2009; Halpern et al., 2010).

National and international organisations and governments are realigning marine governance frameworks to reflect the values of the maintenance of ecosystem 'health and integrity', adaptation, sustainability and precaution

(Ehler and Douvere, 2007; McGinnis, 2012). These values are the new pillars of marine ecosystem-based planning. Coastal marine ecosystem-based planning includes a range of programmatic developments including: integrative marine policy making; ocean zoning; large marine ecosystem programmes; integrative coastal zone management; and MSP. National ocean frameworks in France, the US, England, Canada, Vietnam, Japan, Australia, Brazil, China, Germany, Jamaica, the Russian Federation, the Netherlands, Norway, Portugal, India, Mexico and the Philippines embrace these principles of marine ecosystem-based planning (Ehler and Douvere, 2007;

coastal marine system. Oceans have very different characteristic scales (function, time, space) than terrestrial systems. For instance, the abundance and distribution of marine life is influenced by subtle changes in sea surface temperature, and oceanographic processes such as currents and eddies. Our human perceptions and values are shaped by the fact that we inhabit landscapes. Our understanding of the spatio-temporal features and processes of marine systems is poor, and shifts over time with new insights into history, evolution and scientific data (e.g. paleoecological, archeological and ecological). It is difficult for human beings to deepen our social,

reliance on MSP that deploys techniques to rationalise nature and to render the oceans predictable, to replace their self-sustaining, ecological function and structure with well-managed industrial, commercial and recreational spaces or boundaries. While MSP may resolve the potential conflicts between the uses of coastal marine areas, ecological thinking is integral to the planning enterprise. Maintaining the life-giving values of coastal marine ecosystems will require that we overcome the limits of the 'multiple use' mentality that is pervasive throughout government, and which makes impossible a collective experience with the oceans.

The values of the maintenance of ecosystem health and integrity are the new pillars of marine-system eco.based planning.

McLeod and Leslie, 2009).

MSP can also be used in conjunction with MPAs and other planning tools (Halpern et al., 2010). The promise of an integrative, ecosystem-based approach to MSP is that human beings can cooperate to plan for the large-scale spatial complexity and variability of ecosystems, and resource managers can resolve the inevitable conflicts between social, economic and political interests that are often associated with marine spaces (Ehler and Douvere, 2007). MSP can also support participatory and collaborative processes which broaden the planning effort so that it is not limited to those who receive direct economic benefits from marine resource use (Foley et al., 2010).

One cautionary note is needed with respect to the use of planning tools such as MSP. Advocates of MSP often point to land-use planning and zoning in terrestrial settings. But there are problems with relying on terrestrial models of land-use planning: terrestrial models may be inappropriate to emulate because of the dynamic scale and complexity of

conceptual, perceptual and psychological understanding of what it means to live in the multidimensional and fluid medium of the dynamic and complex marine environment. Biophysical processes and conditions in the oceans fluctuate greatly over time scales that extend from decades to millennia. The use of terrestrial models for marine governance needs further investigation, because of the complexity and limited amount of scientific information on the natural history of marine ecosystems.

In addition, to be successful MSP should be more than a technical or scientific mapping exercise: marine ecosystem-based planning requires more than the formulation of zonal plans for particular uses of marine space. MSP must be more than a bureaucratic or technocratic exercise. As a tool for decision making and planning, it requires a strategic and forward-looking ecological approach to manage human behaviour and multiple uses of coastal marine ecosystems. As with all tools or technologies, the use and application of MSP may not represent an ecological panacea. There are pitfalls in a

A way forward: the place of principles in marine governance

International best practice has shown that the following institutional characteristics can contribute to successful integrative, marine ecosystem-based planning and decision making:

- clear regulatory authority and enabling legislation in support of integrated ecosystem-based planning;
- the accountability of regulatory agencies and departments that are charged with coastal and marine governance
- the use of formal planning activities that integrate different forms of knowledge (scientific information, local knowledge and traditional ecological knowledge) into decision making
- the cultivation of decision-making processes that are legitimate and that do not favour one interest or value over another
- the use of adaptive planning strategies to learn from new information and data
- the establishment of dependable and sufficient sources of funding for each stage of the planning and policy-making process including collaborative activities, monitoring, enforcement and evaluation
- the use of well-structured stakeholder-based public processes
- the development of clear decision-making rules, objectives and directives at the national level for regional,

collaborative marine planning. (Caldwell et al., 2010)

For the strengthening and improving of marine governance in New Zealand, this section describes three management principles that ought to be embraced: the public trust doctrine; maintaining ecosystem services; and the compatible use criterion.

Restoring the public trust

Though the public trust concept is found in the legal systems of many countries, it is most robust in the United States and the Commonwealth countries (Turnipseed et al., 2009), where it has historically protected the public's rights to fishing, navigation and commerce in and over navigable waterways and tidal waters. In its most basic form, the doctrine obliges governments to manage common natural resources, the body of the trust, in the best interest of their citizens across generations, who are the beneficiaries of the trust. Public rights over the foreshore and seabed are recognised in common law as the rights of navigation and fishing (Makgill, 2011). In New Zealand, private rights to the foreshore and seabed frequently relate to use and occupation rather than ownership, and the foreshore and seabed is seldom alienated by the Crown.[1] Today the public trust doctrine is integral to the protection of coastal ecosystems and beach access.

Securing the place of the public trust doctrine in New Zealand oceans management would be valuable, given the interest in developing the resources of the EEZ and continental shelf. The public trust doctrine can provide the missing catalyst for national marine governance in New Zealand; it can also provide a unifying concept for the country's marine governance framework. Bringing public trust law into the national ocean management discussion helps clarify that, ultimately, the controlling duty of the governmental trustee is to act as a long-term steward of the public trust. Protecting public uses of trust resources ultimately requires protecting ecosystems. In turn, protecting ecosystems often requires limiting access to and use of sensitive and unique marine areas. Under a public trust mandate, national ocean

managers could allocate access to marine resources as long as the corpus of the trust was not substantially impaired. A clear extension of the public trust doctrine to the EEZ would help the government manage the oceans in a more cohesive, sustainable way.

Ocean waters, coastal waters and ocean resources should be managed to meet the needs of the present generation without compromising the ability of future generations to meet their needs. The most robust public trust doctrine for ocean resources could be established through recognition of a national public trust doctrine via statutory codification of a strong suite of public trust principles.

Joseph Sax, a legal scholar in the United States, defines the public trust principles as follows:

> [T]he idea of a public trusteeship rests upon three related principles. First, that certain interests – like the air and the sea – have such importance to the citizenry as a whole that it would be unwise to make them the subject of private ownership. Second, that they partake so much of the bounty of nature, rather than of individual enterprise, that they should be made freely available to the entire citizenry without regard to economic status. And, finally, that it is a principal purpose of government to promote the interests of the general public rather than to redistribute public goods from broad public uses to restricted private benefit. (Sax, 1971, 165)

The establishment of statutory laws could enable citizens, ocean management agencies, and courts to best apply

the public trust doctrine to the long-term stewardship of ocean resources. Embracing the public trust concept in marine policy is one way to support existing international obligations as well.

The maintenance of ecosystem services: new planning tools

An important part of maintaining ecosystem services is to strengthen and improve the various tools to assess the cumulative effects of proposed marine activities in the EEZ (Halpern et al., 2008, 2010). The protection of biodiversity is recognised by scientists as a primary factor that influences the maintenance of marine ecosystem services (as briefly

discussed above) (Royal Society of New Zealand, 2011). New planning tools are available that can quantify the values of ecosystem services (ibid.). For example, a decision-making tool developed at Stanford University is InVEST. InVEST can be used to support environmental impact assessments in so far as the non-consumptive values associated with ecosystem services can be integrated into comprehensive environmental assessments. InVEST is a family of tools to map and value the ecosystem services that are essential for sustaining and fulfilling human life. It enables decision makers to assess the trade-offs associated with alternative choices and to identify areas where investment in natural capital can enhance human development and conservation in terrestrial, freshwater and marine ecosystems.

InVEST and other planning tools can be used in a more comprehensive decision-making approach so that managers can better respond to the multiple threats and pressures associated with human use

The extension of a public trust doctrine to the country's EEZ policy would help government manage the ocean in a more cohesive, sustainable way

and associated impacts. In addition, a number of tools are available to evaluate and address cumulative impacts. Such tools have been in use for decades in many countries around the world. The United Nations is currently involved in a programme to better assess the health of oceans by developing an Ocean Health Index (OHI), which will include an assessment of multiple pressures or stressors on coastal marine ecosystems, including an analysis of the impacts which contribute to a decline in the ecosystem services that all life depends on.

New Zealand should establish an Ocean Health Index (OHI). It may be one useful tool for better understanding

the success of remedial actions through data-driven outcomes assessment.

Accordingly, the creation of an OHI could be a valuable tool in New Zealand, as it seeks to develop performance-based standards to measure and evaluate the success of marine governance across time and space.

Compatible use and kaitiakitanga

The values of intergenerational sustainability and intergenerational equity are important aspects of marine governance. These values are consistent with the traditional ecological knowledge of iwi and the importance of kaitiakitanga (Roberts et al., 1995). In a review of the relationship

iwi/hapu may 'own' only a percentage of the total marine farming space in a region under existing law, they still hold kaitiaki responsibilities over the whole area in accordance with tikanga

- seamless and all-encompassing: making no distinction between moana and whenua
- given effect at whanau and hapu level
- expressed in ways that are appropriate to the place and to the circumstances, according to tikanga
- enabled through rangatiratanga, which includes the authority that is needed to control access to and use of resources, and to determine how the benefits will be shared. This means that it can be expressed in part through the concepts of 'ownership', 'property', 'title' or 'stewardship'; however. it is much wider than any these.

Compatible use is a management principle that in many ways reflects the cultural epistemology of kaitiakitanga. The challenge is to establish best practices in marine planning and decision making that can assist managers in determining whether a proposed use is compatible with the maintenance of ecosystem services and with the cultural values of kaitiakitanga. When an increased level of current use becomes 'incompatible' with, for instance, a cultural value, managers and planners will need to prioritise resource protection.

To further support the value of kaitiakitanga in marine policy, a system of standards or framework to determine whether or not a use should be allowed if it has not already been categorically prohibited or restricted should be developed. Statutory language in support of the multiple goals associated with a compatible-use criterion could be adopted and these goals determined on a case-by-case basis, using planning tools to manage uses based on a set of standards for acceptable resource use developed under the new EPA and in consultation with iwi. For example, an activity's compatibility may depend on the following issues and concerns:
- the activity maintains the natural biological communities in the national marine sanctuaries, and protects

> ## Today, the wild ocean is reflected in the brand of New Zealand 100% Pure – a brand that New Zealanders embrace and that is celebrated abroad.

the cumulative and synergistic impacts of marine resource use over time. An OHI can also be based on recognition of thresholds or tipping points that should be key considerations in ecosystem-based planning and decision making. The OHI is a new quantitative way to measure whether the ocean's health improves or declines over time. It is a composite index based on indicators drawn from international agreements, intergovernmental panels and other high-level recommendations regarding marine conservation and resource use. Its indicators measure the most critical ocean stressors (e.g. climate change, fisheries, habitat destruction, pollution and invasive species) as well as their effects on the ocean's ability to provide ecosystem services and to support human well-being. Trends in the OHI and its indicators stimulate deliberate, performance-based ocean improvement by helping managers and the public to (1) identify unfavourable ocean trends; (2) select the most strategic goals and actions to reverse them; and (3) evaluate

between management integration and iwi values and traditional knowledge systems, Kier Volkerling (2006) describes the many elements of kaitiakitanga, as follows:
- mahi tapu: god-given and handed down through our tipuna
- founded in whakapapa
- the relationship between everything and everybody in the natural world: there is no distinction between people and their environment
- exercised on behalf of and for the benefit of all who are related through whakapapa
- a set of inalienable responsibilities, duties and obligations that are not able to be delegated or abrogated
- a web of obligations: to the taonga, to the atua and to ourselves and our uri: kaitiaki have a responsibility to provide for everyone and ensure everyone benefits
- independent of 'ownership' in a European sense: kaitiaki responsibilities are independent of others who hold 'ownership' or use rights under the law. For example, although as kaitiaki,

and, where appropriate, restores and enhances natural habitats, populations and ecological processes
- the activity enhances public awareness, understanding, appreciation and wise and sustainable use of the marine environment, and the natural, historical and cultural resources
- the activity supports, promotes and coordinates scientific research on, and long-term monitoring of, the resources of marine areas
- the activity facilitates (to the extent compatible with the primary objective of resource protection) all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities
- the activity assists in the development and implementation of coordinated plans for the protection and management of important cultural areas
- the activity will not substantially injure sensitive resources and qualities.

Overall, the range of values associated with a compatible-use criterion could be used as part of an environmental impact assessment to carefully consider unique and sensitive cultural and natural areas within the EEZ. For example, the criteria do not emphasise the use of an area, but support a proposed resource use or activity's compatibility with the maintenance of ecologically and culturally significant areas .

Restoring maritime heritage

This article has argued that clear management principles are needed to support the use of integrative planning tools and has described the relevant principles of the public trust doctrine,

a compatible-use criterion, and the maintenance of ecosystem services. Such principles should be embodied in law. These governing principles are part of a range of marine policies and programmes that are developing and being implemented in a number of countries, and are reflections of international best practice in the US and various Commonwealth countries.

Ultimately, marine governance depends not only on the capacity and capability of institutions to address the synergistic impacts and pressures of multiple impacts and uses, but on the cultivation of a broad ocean constituency in the public realm that supports a more sustainable ecological approach to planning, decision making and policy making. This is where a hope for change resides. All the peoples of New Zealand arrived by boat or waka. Māori have inhabited Aotearoa for over 800 years. New Zealand's rich indigenous history in combination with the maritime cultures of the country represents a foundation for the establishment of a restored ocean constituency. Accordingly, translating the principles and multiple values that are associated with marine ecosystems into a comprehensive and holistic governance framework should be an important part of future marine planning and decision making in New Zealand.

Historically, the geography of hope that led to the migration across the wild ocean to New Zealand is a shared value that is part of the country's rich and diverse maritime heritage. Policy innovation is part of the history of New Zealand environmental governance. Risk-taking, experimentation and adaptation

are required traits of island cultures. Today the wild ocean is reflected in the brand of New Zealand 100% Pure – a brand that New Zealanders embrace and that is celebrated abroad. But as the grounding of the *Rena* showed, it is a very vulnerable brand. Living up to the brand requires a renewed responsibility to live up to and adapt to the changing, life-giving blue planet.

---

1   For a detailed review of how the public trust is addressed in The Marine and Coastal Area Act 2011, see Makgill and Rennie (2011).

References

Andrews, K. (2008) *Governing the Exclusive Economic Zone: the ocean commons, cumulative impacts and potential strategies for improved governance*, Wellington: Fulbright New Zealand

Bess, R. and R. Rallapudi (2007) 'Spatial Conflicts in New Zealand Fisheries: the rights of fishers and protection of the environment', *Marine Policy*, 31 (6), pp.719-29

Boisvert, I. (2011) *Lifting the Looking Glass: tradable occupation could facilitate ocean renewable energy in New Zealand*, Wellington: Fulbright New Zealand

Caldwell, M. et al. (2010) 'Key Considerations for Establishing a Framework for Effective Marine Spatial Planning in the United States', submitted to the US Interagency Ocean Policy Task Force, February

Ehler C. and F. Douvere (2007) *Visions for a Sea Change: report of the first international workshop on marine spatial planning*, Intergovernmental Oceanographic Commission and Man and the Biosphere programme, IOC manual and guides, 46; ICAM dossier, 3, Paris: UNESCO

Foley, M.M. et al. (2010) 'Guiding Ecological Principles for Marine Spatial Planning', *Marine Policy*, 34 (5), pp.955-66

Foster, A. (2003) 'New Zealand's Oceans Policy', *Victoria University of Wellington Law Review*, 34 (3), pp.469-6

Gordon D.P. et al. (2010) 'Marine Biodiversity of Aotearoa New Zealand', *PLoS ONE*, 5 (8), e10905. doi:10.1371/journal.pone.0010905

Halpern, B.S. et al. (2008) 'A Global Map of Human Impact on Marine Ecosystems', *Science*, 319 (5865), pp.948-52

Halpern, B.S. et al. (2010) 'Placing Marine Protected Areas onto the ecosystem-based management seascape', *PNAS*, 107, pp.18312-17

Helm, P. (1998) 'New Zealand's Ocean Future: opportunities and responsibilities', in *Sea Views: marine ecosystem management – obligations and opportunities, conference proceedings*, Wellington: Environment and Conservation Organisations of New Zealand

Kingsforce, R.T. et al. (2009) 'Major Conservation Policy Issues for Biodiversity in Oceania', *Conservation Biology*, 23 (4), pp.834-40

Kingsford, R.T. and J.E.M. Watson (2011) 'Climate Change in Oceania: a synthesis of biodiversity impacts and adaptations', *Pacific Conservation Biology*, 17, pp.270-84

Leatherwick, J. et al. (2008) 'Novel Methods for the Design and Evaluation of Marine Protected Areas in Offshore Waters', *Conservation Letters*, 1, pp.96-9

Lester, S.E. et al. (2010) 'Science in Support of Ecosystem-based Management for the US West Coast and Beyond', *Biological Conservation*, 143 (3), pp.576-87

Lubchenco, J. and L.E. Petes (2010) 'The Interconnected Biosphere: science at the ocean's tipping points', *Oceanography*, 23, pp.115-16

MacDiarmid, A. et al. (2010) *Assessment of Anthropogenic Threats to New Zealand Marine Habitats*, final project report, Wellington: Ministry of Fisheries

Makgill, R. (2011) 'Feeling Left Out at Sea? Navigating no ownership, customary rights & resource management,' available at http://www.nsenvironmentallaw.com/resources/MCAA_Robert_Makgill.pdf

Makgill, R. and H. Rennie (2011) 'The Marine and Coastal Area Act 2011', *Resource Management Journal*, April, pp 2-7

McGinnis, M.V. (2012) 'Learning from California's Experience in Marine Life Protection', *Coastal and Ocean Planning and Management*, 26 (forthcoming)

Mcleod, K. and H. Leslie (2009) *Ecosystem-Based Management For The Oceans*, Washington DC: Island Press

Miles, E.L, (2009) 'On the Increasing Vulnerability of the World Ocean to multiple stresses', *Annual Review of Environment and Resources*, 34, pp.17-41

Ministry for the Environment (2005) *The New Zealand Marine Environment Classification*, Wellington: Ministry for the Environment, http://www.mfe.govt.nz/publications/ser/marine-environment-classification-jun05/html/index.html

Ministry for the Environment (2007) *Improving Regulation of Environmental Effects in New Zealand's Exclusive Economic Zone*, Wellington: Ministry for the Environment, http://www.mfe.govt.nz/publications/oceans/nz-exclusive-economic-zone-discussion-paper-aug07/html/index.html

Norse, E.A. (2010) 'Ecosystem-based Spatial Planning and Management of Marine Fisheries: why and how?', *Bulletin of Marine Science*, 86 (2), pp.179-95

Oceans Policy Secretariat (2003a) *Setting the Scene: New Zealand's oceans-related obligations and work on the international stage*, working paper 1, Wellington: Ministry for the Environment

Oceans Policy Secretariat (2003b) *Adapting to Future Challenges*, working paper 9, Wellington: Ministry for the Environment

Oceans Policy Secretariat (2003c) *International Ocean Issues*, working paper 11, Wellington: Ministry for the Environment

Pande, A. et al. (2008) 'Marine Reserves Increase the Abundance and Size of Blue Cod and Rock Lobster', *Marine Ecology Progress Series*, 366, pp.147-58

Parliamentary Commissioner for the Environment (2011) 'Exclusive Economic Zone and Continental Shelf (Environmental Effects) Bill', submission to the Local Government and Environment Select Committee, December

Peart, R. and K. Mulcahy (2005) *Managing the Marine Environment: an EDS community guide*, Auckland: Environmental Defence Society

Peart, R. et al. (2011) *Governing Our Oceans: environmental reform for the exclusive economic zone*, EDS policy paper, Auckland: Environmental Defence Society

Risk, C.M. (2002) 'An Oceans Policy for New Zealand: why, what, how?', New Zealand Petroleum Conference proceedings, Wellington: Ministry of Economic Development

Roberts, M. et al. (1995) 'Kaitiakitanga: Maori perspectives on conservation' *Pacific Conservation Biology*, 2, pp.16-30

Rosenberg A.A. and P.A. Sandifer (2009) 'What Do Managers Need?', in K. McLeod and H. Leslie (eds), *Ecosystem-Based Management For The Oceans*, Washington DC: Island Press

Rothwell D.R. and T. Stephens (2010) *The International Law of the Sea*, Oxford; Portland: Hart

Royal Society of New Zealand (2011) 'Ecosystem Services: emerging issues', Ecosystem Services in Policy workshop, July, pp.1-6

Sax, J.L. (1971) *Defending the Environment: a strategy for citizen action*, New York: Vintage Books

Smith, N. (2010) 'The Next Steps in the Bluegreen Agenda', http://www.voxy.co.nz/politics/speech-smith-next-steps-bluegreen-agenda/5/50837

Taylor, M. et al. (2011) 'What Works for Threatened Species Recovery? An empirical evaluation for Australia', *Biodiversity and Conservation*, 20, pp.767-77

Turnipseed, M. et al. (2009) 'The Silver Anniversary of the United States' Exclusive Economic Zone: twenty-five years of ocean use and abuse, and the possibility of a blue water public trust doctrine', *Ecology L.Q.*, 36, pp.1-70

Vince, J. and M. Haward (2009) 'New Zealand Oceans Governance: calming turbulent waters?', *Marine Policy*, 33 (2), pp.412-18

Volkerling, K. (2006) 'Kaitiakitanga and Integrated Management', unpublished manuscript

Young, O.R., et al. (2007) 'Solving the Crisis in Ocean Governance: place-based management of marine ecosystems', *Environment*, 49, pp.8-19