



# Environmental Report Card December 2008

# At a glance

Around the world, marine reserves are important in achieving marine conservation goals. They do so by conserving habitats and biodiversity, maintaining marine communities, and fostering the recovery of some species. A range of other management tools provide lesser protection to the marine environment. Until a marine protected area network is in place in New Zealand, our reporting on marine protection will focus on marine reserves.

CURRENT SITUATION: There are 33 legally protected marine reserves in New Zealand, which now cover 7.06 per cent (12,792 square kilometres) of our territorial sea – within 12 nautical miles of the coast. Most of this protection is found in two offshore island reserves. Some key habitats and ecosystems remain unprotected.

# Getting better

TREND: More than half of New Zealand's marine reserves have been established since 2000, increasing the area designated as marine reserve by around 68 per cent. Since we last reported in 2007, two marine reserves have been established, adding a further 22.59 square kilometres to the marine reserve area (or 0.18 per cent).



INTERNATIONAL COMPARISON: New Zealand's legally protected marine reserve area is much higher than in most Organisation for Economic Co-operation and Development (OECD) countries.

FUTURE WATCH: One objective of the New Zealand Biodiversity Strategy is to protect 10 per cent of the marine environment by 2010, by using both marine reserves and other forms of legal protection. Once a marine protected area network is in place, we will be able to track progress towards this target.

We estimate that, at present, the current area of marine reserve equates to 0.31 per cent of New Zealand's total marine area. Around 34 per cent of New Zealand's total marine area is protected in some way, with the majority of this set aside in other, lesser forms of protection.

# Introduction

New Zealand administers one of the largest marine environments in the world. At more than 4 million square kilometres, our total marine area is about 14 times larger than our land area (Ministry for the Environment, 2007).

We use our marine area for many purposes, including transportation, fisheries, extraction of natural resources from the sea floor, aquaculture, recreation and tourism. We also value our marine environment for its cultural and spiritual significance (Ministry for the Environment, 2007). The marine environment also provides several life-giving services, including providing oxygen, storing carbon and purifying wastes.

Our marine environment contains a diverse range of ecosystems, including subtropical and subantarctic waters, estuaries and seabed trenches. As much as 80 per cent of New Zealand's plant and animal species occur in the marine environment (WWF-New Zealand, 2004) and 44 per cent are not found anywhere else in the world. Little is known about many of our marine species (Ministry for the Environment, 2007), which means these estimates are likely to be on the low side.

About 30 per cent of our marine environment, however, is thought to be affected by human activities. This activity is known to be highest in the inshore marine environment. Our growing population and changes in technology, increase the pressures we put on our marine environment. These pressures include commercial fishing and trawling, which are thought to have the greatest overall impact on our oceans (Ministry for the Environment, 2007).

A range of different measures are in place to manage New Zealand's marine ecosystems, habitats and species. These include marine reserves, marine parks, several types of customary areas (mātaitai, taiapure and rāhui), fisheries closures, seasonal closures, cable protection zones, and marine mammal sanctuaries (Department of Conservation and Ministry of Fisheries, 2005; Ministry of Fisheries and Department of Conservation, 2008). Of the legal tools available, marine reserves provide the greatest measure of protection for our marine environment. They prohibit fishing, the removal or dumping of any material, dredging, construction, or any other direct human disturbance of the marine environment. As such, marine reserves are often known as 'no-take' zones.

New Zealand currently does not have the ability to establish marine reserves in the Exclusive Economic Zone.

### Maritime boundary definitions

The territorial sea is a belt of coastal water extending from the shoreline to the 12-nautical mile (22-kilometre) limit. The Exclusive Economic Zone (EEZ) is a belt of water from the territorial sea's 12-nautical mile limit to the 200-nautical mile (370-kilometre) limit (Land Information New Zealand, 2008). Together, the territorial sea and EEZ comprise New Zealand's total marine area.



Source: Land Information New Zealand.

#### What are environmental report cards?

*Environment New Zealand 2007*, the country's second national state of the environment report, provided information on around 115 national-scale environmental data sets. Its primary focus was to report on the 66 national data sets that constitute New Zealand's core set of environmental indicators. A key focus of the Ministry for the Environment's national environmental reporting programme is to produce a series of 'report cards' to provide updated information on the indicators reported in *Environment New Zealand 2007*. This is one such report card.

# About this report card

This is one of a series of environmental report cards which provides information on New Zealand's oceans. A set of national environmental indicators is used to report regularly on three aspects of New Zealand's oceans as follows:

- legally protected marine areas
- fishing activity
- water quality at coastal swimming spots.

This particular report card provides information on legally protected marine areas by reporting on the percentage of:

- New Zealand's territorial sea protected by marine reserves
- each class of the Coastal Biogeographic Regions Classification protected by a marine reserve (this shows the degree of protection given to different types of marine ecosystems).

While other marine management tools are in place in New Zealand (see Table 1 on page 10), this report focuses on marine reserves. When a marine protected area network (see What are marine protected areas? below) is established, we will report on both marine reserves and other management tools, including those in the Exclusive Economic Zone.

#### What are marine protected areas?

Marine protected areas (MPAs) are places in the marine environment that are set aside to conserve the plants and animals that live within them. A formal definition has not yet been agreed in New Zealand.

New Zealand's MPA policy aims to protect marine biodiversity by establishing a comprehensive network of marine protected areas that is representative of New Zealand's marine habitats and ecosystems within the territorial sea and the Exclusive Economic Zone (EEZ) (Department of Conservation and Ministry of Fisheries, 2005; Ministry of Fisheries and Department of Conservation, 2008).

Once established, the MPA network will use a variety of tools to fully represent New Zealand's marine environment. The exact mix of tools is yet to be determined but will likely include three broad types of protection: 'no-take' areas and two other types of marine protected areas that allow some extractive activities.

New Zealand's marine environment has been classified into 14 broad biogeographic regions. These will form the basis for classification and implementation of the MPA policy (see section on Coastal Biogeographic Regions Classification on page 6).

Protected areas included in the MPA network will be inventoried. Their size and location will be compared against the range of habitats and ecosystems identified by the classification system, and gaps in protection will be identified (Department of Conservation and Ministry of Fisheries, 2005; Ministry of Fisheries and Department of Conservation, 2008).

Implementation of MPA policy will focus first on New Zealand's territorial sea where it is considered the greatest risks to marine biodiversity exist. Planning will then begin for MPAs in the EEZ. The MPA process has already begun in the West Coast South Island and Subantarctic Biogeographic Regions. Once this work is complete, the MPA policy will be implemented throughout the country.

# Key findings

## New Zealand's territorial sea protected by marine reserve

This section covers legally protected marine reserves in New Zealand's territorial sea.

#### Current situation

Thirty-three marine reserves now cover 7.06 per cent (12,792 square kilometres) of New Zealand's territorial sea (Department of Conservation, Unpublished). While this protection is high by international standards (Organisation for Economic Co-operation and Development, 2007), most of this area (97 per cent) is in two offshore marine reserves – the Kermadecs Marine Reserve and Auckland Islands Marine Reserve.

The total area of New Zealand's 33 marine reserves is similar in size to New Zealand's largest national park on land (Fiordland National Park) (Department of Conservation, Unpublished; Department of Conservation, 2007). The total marine area protected by marine reserves around *mainland* New Zealand (ie, excluding the two offshore island groups – see Mainland versus offshore marine reserves on page 4)

There are 33 legally protected marine reserves in New Zealand, which cover 7.06 per cent of our territorial sea. is equivalent to around one-and-a-half times the area of New Zealand's smallest national park on land (Abel Tasman National Park) (Department of Conservation, Unpublished; Department of Conservation, 2008a).

#### Mainland versus offshore marine reserves

By convention, mainland marine reserves refer to all marine reserves in New Zealand, except those in the offshore Subantarctic Islands and Kermadec Islands. (The Three Kings, Snares and Chatham Islands are all regarded as mainland islands.)

Offshore marine reserves refer only to marine reserves in the Subantarctic Islands (Auckland Islands Marine Reserve) and Kermadec Islands (Kermadecs Marine Reserve).

## Trend

#### Long-term trend

New Zealand's first marine reserve (Cape Rodney-Okakari Point Marine Reserve) was established in 1975. Figure 1 shows the increase in area of marine reserves within the territorial sea since 1975. There have been two significant increases due to the establishment of marine reserves in two remote offshore island groups (see the dark blue line in Figure 1). In 1990, 7,480 square kilometres were protected around the Kermadec Islands, and in 2003, 4,980 square kilometres were protected around the Auckland Islands (Department of Conservation, Unpublished).

#### + FIGURE 1

#### PERCENTAGE OF NEW ZEALAND'S TERRITORIAL SEA IN MARINE RESERVES, 1975-2008



Data source: Department of Conservation, Unpublished.

The Kermadecs and Auckland Islands offshore marine reserves make up 97 per cent of the total area protected by marine reserves in New Zealand's territorial sea. Less than 3 per cent of the total area protected by marine reserves is contained in mainland reserves.

There are now 33 marine reserves in New Zealand's territorial sea, with 17 having been established since 2000. As a result, the area designated as marine reserve has increased by 68 per cent, from 7,634 square kilometres in 2000 to 12,792 square kilometres in 2008 (Department of Conservation, Unpublished).

# Getting better

Two marine reserves were established in 2008 – an increase of 22.59 square kilometres.

#### **Recent trend**

The bolded parts of the lines in Figure 1 show the changes in marine reserve area since this indicator was last reported in *Environment New Zealand 2007*. In 2007, almost 12,769 square kilometres of New Zealand's territorial sea were protected by marine reserves (Department of Conservation, Unpublished). By 2008, this area had increased by 22.59 square kilometres (or 0.18 per cent) (Department of Conservation, Unpublished).

The increase is attributed to the 2008 establishment of two mainland marine reserves: the Tapuae Marine Reserve on the west coast of the North Island and the Taputeranga Marine Reserve on the south coast of the North Island.

# Case study

### Cape Rodney-Okakari Point (Goat Island) Marine Reserve

Around the world, marine reserves are important in achieving marine conservation goals. They do so by minimising or preventing human disturbance to allow habitat conservation, restoration and maintenance of marine communities and the recovery of some species (Ministry for the Environment, 2007).

Monitoring of marine reserves in New Zealand provides us with useful insights into the effectiveness of legal protection and the resulting biological changes that have occurred in our waters. It has also helped us understand how species formerly targeted by commercial and recreational fishing respond to legal protection (Ministry for the Environment, 2007).



#### RED MOKI SHOAL, CAPE RODNEY-OKAKARI POINT MARINE RESERVE

Source: Courtesy of Tony Ayling.

In 1978, much of the sea floor in the Goat Island Marine Reserve between 5 and 9 metres in depth was rock-flat barrens dominated by sea urchins. Between 1978 and 2000, these barrens changed to habitats dominated by kelp forest or shallow, mixed seaweeds. It is thought that these habitat changes were due to the increase in lobster and snapper in the marine reserve. Lobster and snapper fed on the sea urchins, causing a decrease in sea urchin densities, allowing seaweed regeneration and other habitat restoration over time (Department of Conservation, 2008b).

Snapper are now significantly more abundant in the Goat Island reserve, with adult snapper estimated to be 30 times more abundant inside the reserve than outside (Department of Conservation, 2008b). Snapper are also considerably larger, with the average length of snapper inside the reserve being over 10 cm greater than snapper outside the reserve (Taylor et al, 2003). Lobsters within the marine reserve have also increased, with lobster estimated to be 15 times more abundant in the reserve than in neighbouring areas (Department of Conservation, 2008b). Similar results were found in several marine reserves around New Zealand (Pande et al, 2008).

# Key findings

Ten of the 14 biogeographic regions have at least one marine reserve. Some key marine ecosystems remain unprotected by marine reserves.

## Coastal Biogeographic Regions Classification protected by marine reserve

This section covers the levels of protection given to different marine ecosystems within each of the coastal biogeographic regions. The Coastal Biogeographic Regions Classification divides New Zealand's territorial sea into 14 regions (see Figure 2).

### **Current situation**

The Coastal Biogeographic Regions Classification has been further developed and finalised since it was used to report on this indicator in *Environment New Zealand 2007*. Changes include dividing the Southern Biogeographic Region into two regions: Southern and Fiordland, and reassessing the areas of the various biogeographic regions, which may differ from the sizes reported in *Environment New Zealand 2007*.

Figure 2 shows the location of New Zealand's coastal biogeographic regions and the various marine reserves around New Zealand. Of the 14 biogeographic regions, 10 have at least one marine reserve. Only two of New Zealand's biogeographic regions have a significant area protected in marine reserve: the Kermadec Islands and Subantarctic Islands, with 100 per cent and 41.7 per cent of their territorial sea ecosystems protected respectively (Department of Conservation, Unpublished). These two regions are recognised internationally as unique ecosystems (Ministry for the Environment, 2007).

#### + FIGURE 2

MARINE RESERVES IN THE TERRITORIAL SEA BY COASTAL BIOGEOGRAPHIC REGIONS CLASSIFICATION



Source: Adapted from Department of Conservation.

Figure 3 shows no mainland coastal biogeographic region<sup>1</sup> has more than 1.1 per cent of its area in designated marine reserves (Department of Conservation, Unpublished). Four regions (Three Kings Islands, West Coast South Island, Snares Islands and Chatham Islands) do not yet contain any marine reserves. As a result, some key marine ecosystems in New Zealand remain unprotected by marine reserves.

#### + FIGURE 3



PERCENTAGE OF MAINLAND COASTAL BIOGEOGRAPHIC REGIONS CLASSIFICATION IN MARINE RESERVES, 2008

Data source: Department of Conservation, Unpublished.

As mentioned earlier, a relatively high proportion of the Subantarctic Biogeographic Region is protected by marine reserve (41.7 per cent). The biogeographic region, however, covers a wide geographic range, with the Bounty and Antipodes Islands to the east and the Auckland and Campbell Islands to the south (Figure 2). This means the marine reserve at the Auckland Islands does not protect ecosystems and species in other parts of the Subantarctic Biogeographic Region.

## Getting better

The area protected by marine reserves in two biogeographic regions increased slightly in 2008.

## Trend

As noted, since 2007, two additional marine reserves have been established: Tapuae, in the Western North Island Biogeographic Region and Taputeranga in the North Cook Strait Biogeographic Region (marked with red crosses in Figure 2). In 2008, the proportion of both the Western North Island and North Cook Strait Biogeographic Regions designated as marine reserve increased by 0.10 and 0.06 per cent respectively (shaded in red in Figure 3).

<sup>1</sup> By convention, mainland coastal biogeographic regions refer to all biogeographic regions in New Zealand except those in the Subantarctic Islands and Kermadec Islands.

# Case study

## Hauraki Gulf Marine Park: An integrated approach

The Hauraki Gulf Marine Park covers 1.2 million hectares of sea, including the Hauraki Gulf, Waitemata Harbour, Firth of Thames and east coast of the Coromandel Peninsula. Within its boundaries are five marine reserves and the internationally recognised wetland at Miranda in the Firth of Thames (Department of Conservation, 2006).

The park was established by special legislation in February 2000. With the aim of improving the environmental management of the Gulf, the Hauraki Gulf Marine Park Act establishes management objectives for the Gulf and its islands and catchments.

Two themes underpinning the Act are the importance of integrated management across land and sea, and the significance of the relationships between people, specifically local iwi, and the natural resources of the Gulf.



Source: Department of Conservation.

Management principles in the Act acknowledge the interrelationships between the Gulf's marine areas, catchments which drain into it, and the islands it contains, as well as the ability of these interrelated elements to sustain the life-supporting capacity of the environment.

The Gulf's second state of environment report, Hauraki Gulf State of the Environment Report 2008, documents mixed progress in protecting the resources of the park. Areas of concern include the accumulation of heavy metals in Auckland's upper harbours, large amounts of nitrogen entering the Firth of Thames from dairy sources, and the build up of contaminants in the Gulf from past and present land development.



Source: Courtesy of Dan Macmillan.

The report also documents the ecological recovery occurring on many of the islands and coastal reserves of the Gulf, largely because of predator control and voluntary efforts to restore key habitats (Hauraki Gulf Forum, 2008).

Further information is available at www.haurakigulfforum.org.nz



Source: Auckland Regional Council.

# Future watch

# New Zealand Biodiversity Strategy

One objective of the New Zealand Biodiversity Strategy (NZBS) is to develop a network of marine protected areas (MPAs), using both marine reserves and other forms of legal protection, so that it represents the full range of New Zealand's coastal and marine ecosystems and habitats (see What are marine protected areas? on page 3). The strategy includes a target to protect 10 per cent of New Zealand's marine environment by 2010 (Department of Conservation and Ministry for the Environment, 2000).

The 12,792 square kilometres within the territorial sea currently designated as marine reserve equate to 0.31 per cent of the total marine environment (both territorial sea and the Exclusive Economic Zone<sup>2</sup>) under New Zealand's jurisdiction (Department of Conservation, Unpublished).

Because the definition of an MPA network has not yet been agreed, nor the full extent of an MPA network mapped, we cannot report on the proportion of the total marine area that is designated as an MPA. Instead we provide a rough estimate of the percentage of New Zealand's total marine environment protected by both marine reserves and other forms of legal protection.

2 Marine reserves cannot be currently established in the EEZ.

Table 1 lists some of the common legislative tools currently in use to manage activities in the marine environment. These tools may be included in the MPA network, although the exact mix is yet to be determined (Department of Conservation et al, 2004).

Table 1 shows that around a third of the New Zealand marine environment (34 per cent) has management restrictions in place. This includes full protection in the form of marine reserves (0.31 per cent of total New Zealand waters), as well as lesser legal protection such as marine mammal sanctuaries, marine

MANAGEMENT TOOL	LEGISLATION	RESTRICTIONS	AREA (KM <sup>2</sup> )	NZ WATERS WHERE TOOL APPLIES
Marine reserves	Marine Reserves Act 1971	Marine reserves prohibit fishing, removal of material, dredging, dumping, construction or any other direct human disturbance.	12,792	Territorial sea
Marine mammal sanctuaries	Marine Mammals Protection Act 1978	A range of restrictions depending on each marine mammal sanctuary. These vary from all commercial fishing being prohibited to special fisheries regulations.	6,180	Territorial sea
Marine parks	Hauraki Gulf Marine Park Act 2000 and amendment 2001 Fisheries Act 1996 Sugar Loaf Islands Marine Protected Area Act 1991	A range of restrictions depending on each marine park. These include a variety of fishing restrictions from all commercial fishing being prohibited to special fisheries regulations.	20,536	Territorial sea
Submarine cables and pipelines protection zones	Submarine Cables and Pipelines Protection Order 1992	No fishing or anchoring except for ships being used for research by or for the Ministry of Fisheries as long as research is done without directly or indirectly attaching any ship to the seabed.	1731.8	Territorial sea and Exclusive Economic Zone
Mātaitai – closed areas	Fisheries Act 1996 Fisheries (Declaration of Mātaitai Reserve and Appointment of Tangata Kaitiaki/Tiaki) Notice	In general, commercial fishing is prohibited, amateur regulations apply unless amended by appointed tangata tiaki/kaitiaki who can authorise customary food gathering.	204	Territorial sea
Taiapure – closed areas	Fisheries Act 1996 Fisheries Order	A spatial closure to set aside coastal fishing areas which customarily have been of special significance to an iwi or hapū as a source of food (kaimoana) or for spiritual or cultural reasons.	388	Territorial sea
Section 186 – temporary closures	Fisheries Act 1996 Fisheries (Temporary Closure) Notice	A range of restrictions applies dependent on the particular area. All restrictions prohibit the removal of at least one species. For example, a prohibition to take fish, aquatic life or seaweed from Pukerua Bay, except by the method of line fishing, applies during the period beginning 8 June 2007 and ending 7 June 2009.	769	Territorial sea
Benthic protected areas (BPAs)	Fisheries Act 1996 Fisheries (Benthic Protection Areas) Regulations 2007	Prohibition on use of dredge and restrictions on use of trawl net within 100 metres of the sea floor.	1,250,000	Territorial sea and Exclusive Economic Zone
Seamount closures	Fisheries Act 1996 Fisheries Regulations	Trawling prohibited.	100,997	Exclusive Economic Zone
Total area			1,393,598	
Total area as a percentage of New Zealand's total waters (territorial sea and EEZ) <sup>3</sup>			34% <sup>3</sup>	

+ TABLE 1	
EXISTING MARINE MANAGEMENT	TOOLS IN NEW ZEALAND'S WATERS <sup>3</sup>

Source: Ministry of Fisheries (National Aquatic Biodiversity Information System: NABIS), 2008; Department of Conservation, Unpublished.

<sup>3</sup> This table is an example only of tools that may be included in the MPA network (Department of Conservation et al, 2004). The exact mix is yet to be determined.

parks, benthic protected areas (BPAs) and seamount closures (seamounts are mountains rising from the sea floor that do not extend above sea level). BPAs and seamount closures make up the majority (97 per cent) of this area, equating to around 33 per cent of New Zealand's total waters.

BPAs (established in 2007), together with 19 existing seamount closures (closed in 2000), include about 88 per cent of all known active hydrothermal vents (hot springs on the ocean floor) and 52 per cent of all known seamounts (Ministry of Fisheries, 2007). BPAs and seamount closures are expected to protect these habitats from deepwater fishing activities where they occur (Ministry of Fisheries, 2007). Many of the BPAs and seamount closures are not presently disturbed by human activity.

BPAs and seamount closures do not, however, fully protect the marine environment and its ecosystems, as marine reserves do. For example, while BPAs prohibit any seabed trawling, dredging, and netting within 100 meters of the seabed; and seamount closures prohibit seabed trawling in any closed seamount area, they are not 'no-take' zones in the same way as marine reserves are. The marine environment in BPAs and seamount closures can still be subject to mining and other human activities and disturbances. In BPAs, marine life more than 100 metres above the seabed also remains without protection.

This reaffirms that the extent to which New Zealand achieves the 10 per cent New Zealand Biodiversity Strategy target will depend significantly on what types of legal protection are used in a future MPA network.

# Further information

For further information about the state of and pressures on our oceans see *Environment New Zealand* 2007 at www.mfe.govt.nz. To find out more about marine reserves see www.doc.govt.nz/conservation/ marine-and-coastal.

For more information on oceans policy see the Ministry for the Environment's oceans web page at www.mfe.govt.nz/issues/oceans. For more information on what you can do to help protect New Zealand's marine environment visit www.mfe.govt.nz/publications/ser/enzo7-info-sheets-juno8/enzo7-oceans-info-sheet-juno8.pdf.

# Technical notes

## Limitations of this indicator

Until an MPA network is established, this indicator can report only on marine reserves within the territorial sea. Other marine protection mechanisms, including those in the Exclusive Economic Zone, are not reported on in any comprehensive way.

While the effectiveness of marine reserves can be monitored at a regional level, it is difficult to report on the overall 'health' of protected marine habitats at the national scale, or provide quantitative information on how this health is changing over time.

Nor does this indicator measure how effective marine reserves are at protecting threatened marine species (Ministry for the Environment, 2007). As mentioned above, while local research is available for some marine reserves, comprehensive, national-scale information on this is unavailable.

There is good evidence to suggest, however, that marine reserves are valuable conservation tools, with marine reserve protection often resulting in more abundant and bigger individuals of exploited species, after only a few years of protection. For example, bigger and more abundant blue cod and lobster were found inside several marine reserves around New Zealand compared with outside the reserves (Pande et al, 2008).

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FOR MORE INFORMATION about marine protected areas see Environment New Zealand 2007 at www.mfe.govt.nz

## New Zealand Government