Ministry of
Fisheries
Te Tautiaki i nga tini a Tangaroa

New Zealand Government

The State of Our Fisheries 2008

CONTENTS

Please note:

This publication is only a snapshot of New Zealand's fisheries. To learn more visit: fish.govt.nz

Cover image:

Kura Paul-Burke's image of a basket of kina being brought to the surface. This image was the overall winner of the Ministry of Fisheries' 2008 photography competition that was open to all New Zealanders.

FOREWORD

Kia ora and welcome to the second edition of the State of Our Fisheries.

This edition continues the story of New Zealand's fisheries, recording developments from the past two years in this sector – one that is such an important source of mana, enjoyment, food, and jobs for New Zealanders, as well as export revenue for our country.

Over time this series will build that knowledge. It will provide the people of New Zealand with a reference tool they can use to learn about our diverse and, often, unique fisheries, and help them take part in the public discussions on fisheries issues.

In our rapidly changing world, information and the understanding that we can gain from it is critical for making good decisions. Throughout this edition you will see that research and consultation are two key threads to fisheries management. That is because reaching a mutual understanding of the opportunities within, and the threats to our aquatic environment is the critical step in sustainably managing our fisheries.

We must also seek a shared resolve to address the issues that face not only New Zealand, but the rest of the world. Fisheries are more than a domestic concern. Globally they are of vital importance; socially, economically and culturally.

There continue to be opportunities for New Zealanders to take part in discussions about how best to manage this shared interest and to do so in a way that is distinctly ours, helping to build our reputation for strong fisheries management.

Hon. Jim Anderton
Minister of Fisheries
June 2008

"Fisheries are more than a domestic concern.
Globally they are of vital importance; socially, economically and culturally."

INTRODUCTION

The first State of Our Fisheries was published in the year that New Zealand's Quota Management System turned 20.

The Quota Management System (QMS) was a response to the critical state our fisheries were in at the time. For years New Zealanders, like the rest of the world, had treated the seas as an inexhaustible source of food, from which we could take as much as we liked without concern.

We were wrong and for more than 20 years we have been rebuilding many of our fisheries stocks.

I would like to be able to say "and the rest is history", but that would suggest that the QMS solved all the issues facing our fisheries. However it's far more complex than that. There is still much to learn about our fisheries, particularly the environmental effects of fishing. There are stocks that are still under pressure, and some of these are the focus of shared interest from commercial, recreational and customary fishers.

The Ministry of Fisheries consults with stakeholders on our Statement of Intent, which outlines the focus of our work for the coming five years. But that's not the limit of our consultation.

Over the past two years we've talked widely with New Zealanders. We've had input from the different sectors of the fishing community, as well as scientists, environmentalists, local government and other government agencies. Many of these discussions took place during the Shared Fisheries consultation of 2006, and also in our move to develop fisheries plans and standards. They have helped us to decide how to manage issues like protecting the seabed and how to reduce the effects of human activities on Hector's and Maui's dolphins.

Fisheries plans are one of the new tools that will bring together the wealth of information we have gained throughout the last two decades, and highlight where more is needed. Standards will also form an important part of our management, setting benchmarks in areas including harvest strategies, preventing seabird deaths and managing deemed values. The performance of fisheries will be assessed against these standards.

A core part of our work is ensuring we have information on which to base management decisions. This means continuing our ongoing programme of research into fish stocks, the wider issue of biodiversity and the impact of global events such as climate change.

"There is still much to learn about our fisheries,
particularly the environmental effects of fishing."

On an international level we continue to advocate for sustainability. Our practices at home and anywhere New Zealanders do business should pass this test. Particularly as we encourage others to take a precautionary approach when it comes to fishing.

The cover of this edition of the State of Our Fisheries captures just why it is that the people of New Zealand feel so strongly about our marine environment and the animals that live within it. A number of the images throughout the book were taken by New Zealanders as part of a photography competition held by the Ministry this year. They show the aroha we feel for this wonderful resource and the mana it brings to us nationally and internationally. They remind us that we must all be its guardians.

Wayne McNee
Chief Executive
Ministry of Fisheries

"On an international level
we continue to advocate
for sustainability."

MANAGING FISHERIES FOR THE FUTURE

When the Quota Management System was implemented in 1986, New Zealand's fisheries faced tough times.

The view that fish were an unlimited resource was coming into question and it was a case of too many boats chasing too few fish.

Species like snapper, scallops and rock lobster were being over-fished.

These stocks aren't just sought after by commercial fishers – Māori value them for customary purposes and recreational fishers value them for food and for fun.

And while the introduction of the Quota Management System (QMS) helped to rebuild stocks, questions remain about how best to manage the stocks so that everyone can get the best value from them.

This issue has caused intense debate for many years, particularly in the snapper, blue cod, kingfish, kahawai and rock lobster fisheries.

So in 2006 the government began the Shared Fisheries consultation, looking for a way to address the interests of different fishing groups. Strong responses from around the country showed support for change in the way we manage these shared fisheries. Most people agreed that we need to know more about how many fish recreational fishers are catching, and that recreational fishers need better representation in the processes used to make decisions about fisheries management.

One expanding area of fishing is that done from recreational charter boats. Consultation is underway with operators of these vessels about activity and catch reporting – how often they go out, where they go, what they catch and how much fish is taken. The information gained from reporting like this would show patterns of fishing activity in this expanding sector. It would also allow for more data to be collected about the particular species that are being caught by fishers on recreational charter boats.

A fisheries sector working group has been set up so that stakeholders can work together on shared fisheries issues. Te Ohu Kaimoana, the Seafood Industry Council, the New Zealand Recreational Fishing Council, the New Zealand Big Game Fishing Council and option4 (a group that represents some recreational fishers) make up the group. They will report their findings to the Minister of Fisheries, who intends to make recommendations in 2008 for advancing Shared Fisheries policy.

Before any decisions are made, further consultation will take place with Māori and stakeholders.

Where to from here?

The QMS has been at the heart of New Zealand's fisheries management system for many years and through it sustainable catch limits have been set for key stocks.

Just over 20 years after its introduction, there are 97 species groups managed in the QMS, divided into 629 fishstocks. Research is done to determine the status of stocks against maximum sustainable yield (MSY) targets. This work is done on 85 stocks and 72 of these have been assessed as being at or near MSY-related target levels. These represent most of the main commercial stocks. Total allowable catch levels for the remaining 13 stocks have been set at levels that should enable them to rebuild. There are rebuild strategies in place for a number of fisheries, including some snapper, hoki, orange roughy and red cod stocks. If necessary, fisheries can be closed to allow them to recover, as has happened with the Challenger and Puysegur orange roughy fisheries and, most recently, west coast South Island orange roughy and Marlborough blue cod. Mostly, however, it is a matter of lowering the Total Allowable Catch (TAC) to ensure more fish are left in the water to breed.

Although MFish and fishers have learned a lot about how fish stocks behave and rebuild, and about the wider fisheries environment, up until now that knowledge has been sitting in different places. So a series of fisheries plans are being developed to bring this information together and help people get the best value from each fishery. The fisheries plan process involves the whole sector.

Value can mean:

- value to the country's economy through smart management of fisheries
- cultural and traditional values for Māori
- value to communities that catch and process fish
- recreational values for people who fish for food or fun
- the value people place on the aquatic environment
- increasing the monetary value of commercial catch.

There are currently eight Fisheries Plans Advisory Groups working on the following fisheries: Northland scallops, west coast North Island finfish, Gisborne/east coast rock lobster, Challenger finfish (Nelson/west coast South Island), southern shellfish, Fiordland paua, middle depth/deepwater, and highly migratory species.

Advisory groups are made up of customary, commercial and recreational fishers, environmental interests, and MFish staff. One of the first tasks is to review a stock's current status and the way it is managed. The group will then develop objectives for the fishery, decide how the effectiveness of management will be measured and identify the services, such as research and enforcement, that are needed to meet those objectives.

The advisory group members discuss this work with other members of their sector, ensuring contributions come from a wide range of sources. When a plan is finished, a process that's expected to take one to two years for each plan, it will go to the Minister of Fisheries for approval.

The Ministry of Fisheries divides the country into Fisheries Management Areas (FMAs). FMAs allow fisheries to be managed at a finer scale, taking into account regional differences in fish numbers and types of fishing.

Setting standards for fisheries

Part of the fisheries plan work has been developing government-set standards for managing fisheries.

These standards will set limits in areas such as biomass targets and limits for harvest rates, seabird by-catch (when seabirds are accidentally caught during fishing) and disturbing the seabed. Fishers will be managed within these limits.

Standards for consultation and research are also being set.

These standards will make things clearer around how fisheries management decisions are made. They should make it easier for tangata whenua and stakeholders to take part in the process of managing our fisheries.

The idea is that if people understand the way fisheries management works, they'll be more likely to contribute their information and opinions. This will make it easier for the Ministry of Fisheries to make decisions and recommendations to the Minister of Fisheries.

How fisheries plans are grouped

There are more than 600 fish stocks in the QMS, but writing a fisheries plan for each stock would take too long.

For fisheries plans, fish stocks have been grouped into 27 groups so that plans can be developed in a pragmatic and timely way. Fish stocks from similar areas that are caught by similar methods have been grouped together.

For example, the West Coast North Island Finfish Fisheries Plan covers flatfish, grey mullet, hāpuku and bass, kahawai, leatherjacket, red gurnard, rig, spotted dogfish, school shark, snapper, tarakihi and trevally. Information on fisheries plans can be found on the MFish website.

Mapping our fisheries

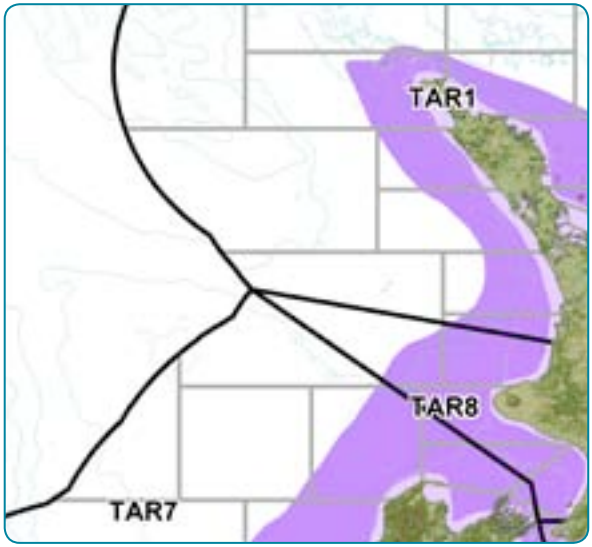
Getting a clearer picture of New Zealand's aquatic biodiversity is a lot easier thanks to NABIS. The much longer name is the National Aquatic Biodiversity Information System.

NABIS is a web-based mapping tool developed as part of New Zealand's Biodiversity Strategy that allows users to access a huge range of information.

Using this interactive tool, NABIS users can build maps using over 450 different types of information. Users can zoom in or out to focus on a single bay, or the whole of the country and its sea area. Available information includes:

- New Zealand's fisheries management areas
- where New Zealand's marine species can be found (distribution)
- our coastline, marine environment and bathymetry (the depth of the ocean floor)
- marine reserves, customary areas, and restricted fishing areas.

For this information and more go to:
nabis.govt.nz



Tarakihi annual population distribution, Tarakihi FMAs and General Stat Areas.

Finfish

Southern Finfish (Fisheries Management Areas 3 & 5)
Southern Reef Fish (FMAs 3 & 5)
Challenger Finfish (FMA 7)
East Coast North Island Finfish (FMA 2)
North East Coast North Island Finfish (FMA 1)
West Coast North Island Finfish (FMAs 8 & 9)

Shellfish / Seaweed

Southern Shellfish (FMAs 3 & 5)
Challenger Shellfish (FMA 7)
East Coast North Island Shellfish (FMA2)
West Coast North Island Shellfish (FMAs 8 & 9)
North East Coast North Island Shellfish (FMA 1)
Rock Lobster
Paua
Northland Scallops
Coromandel Scallops
Challenger Scallops
Foveaux Oysters
Seaweed
Freshwater
Freshwater General
North Island Eels
South Island Eels

Deepwater and Middle depths

Deepwater complex
Middle depths complex
Deepwater Shellfish

Other

Chatham Island (FMA 4)
Kermadec
Highly Migratory Species

FISHERIES AND THEIR ECOSYSTEMS

Thinking beyond fish stocks to the effects of fishing on the marine environment is ongoing work for scientists in New Zealand.

Understanding the way marine ecosystems are structured is essential if we are to minimise the impact of fishing on species that fishers don't catch intentionally, such as benthic (bottom-dwelling) creatures, marine mammals or seabirds.

Some significant projects have taken place in the past two years to explore seabed habitats in different areas of our Exclusive Economic Zone (EEZ). The Ministry has also been leading a high profile project for International Polar Year to look at biodiversity in different parts of the Ross Sea. And work to find ways of reducing the impact that fishing may have on other creatures that share the sea, be it in New Zealand's EEZ or the Ross Sea, is also underway.

Comparing seabed communities – the Chatham-Challenger Project

Located to the east of New Zealand, the Chatham Rise supports large and diverse deepwater fisheries such as hoki, hake, ling, orange roughy and oreos.

These fisheries are supported by high levels of plankton in the surface waters of the region.

Here, warm, salty subtropical waters meet cooler Antarctic waters producing a nutrient rich environment. The plankton support an abundance of small mesopelagic fish (small midwater fish known as 'feed'), which in turn support the stocks of larger fish species. The Chatham Rise is an important commercial fishing ground that has been fished extensively to 1,200 metre depths.

To the west of New Zealand, the Challenger Plateau is much less productive and has far fewer commercial size fish living there. It has not, therefore, faced the same level of fishing as the Chatham Rise and has extensive areas of relatively undisturbed seabed.

Over the past two years seabed habitats and the benthic communities that live on or near the seabed in these two areas have been mapped. Although the two areas are in similar depths, scientists are asking if the differences in productivity flow down to the benthic communities.

School of Porae at bottom of Northern Arch, Poor Knights Islands: © Ross Armstrong.

Three voyages were carried out on R.V. Tangaroa to answer this question.

During the first voyage, high resolution echo sounding equipment was used to physically map parts of both areas. From that information, scientists selected over 430 sites to be sampled in two further voyages. These later voyages used cameras, sleds, beam trawls and sediment corers to plumb depths between 30 and 1,800 metres to learn about the animal communities on the seabed.

The specimens and data collected will be analysed over the next three years to provide definitive results in 2010. Preliminary results indicate that the types of animals found in both areas vary substantially with depth, but overlap in terms of the range of organisms recorded (diversity). However, the abundance of organisms (biomass) is much higher on the Chatham Rise than the Challenger Plateau.

Other interesting findings include iceberg scours that date from the last ice age; evidence of currents 1,000 metres down so strong that they cause large sand ripples to form on the seabed; and indentations that are several metres deep and wide on the seabed around Veryan Bank on the Chatham Rise, and also to the west off Cook Strait in shallow water. The latter are believed to be some kind of hydrocarbon seep. Several new species have already been identified, and more are expected as analyses proceed.

Protecting the seabed – Benthic Protection Areas

In November 2007 regulations closed 17 areas within New Zealand's Exclusive Economic Zone to bottom trawling and dredging.

These closed areas provide protection to an area of seabed habitat equal to about 1.2 million square kilometres, an area four times the landmass of New Zealand. These areas are known as Benthic Protection Areas (BPAs).

Prior to the BPAs being implemented, the level of protection in the EEZ was about two percent; mostly through closures around seamounts that were implemented in 2001. With the BPAs, New Zealand has now protected about 32 percent of its EEZ.

This total protected area includes:

- 28 percent of underwater topographic features (including seamounts)
- 52 percent of seamounts (underwater mountains over 1,000 metres in height)
- 88 percent of known active hydrothermal vents in our EEZ.

The government will continue processes that provide marine protection, including Marine Protection Areas (MPAs). These will concentrate on protecting areas closer to the coast in the shorter term. Further marine protection for the wider EEZ will be considered in 2013.

Taking stock – the Census of Antarctic Marine Life

The Arctic and Antarctic polar regions are vulnerable under current climate change predictions.

Warming is widespread in the Arctic, on sea and land. Changes are less clear cut in the Antarctic, except for the Antarctic Peninsula which has experienced rapid warming in recent years with significant ice-shelf break-up.

The International Polar Year (IPY), which began in March 2007 and runs to March 2009, will see a significant number of scientific research projects in both polar regions over two summer and winter seasons. Scientists from over 200 nations are investigating many facets of the polar environment in the context of climate change.

The Census of Antarctic Marine Life (CAML) is an internationally coordinated research programme that is running during IPY. The aim is to build a snapshot of marine organisms in the Southern Ocean around Antarctica. New Zealand, led by the Ministry of Fisheries, is conducting a major survey in the Ross Sea region as part of our IPY activities.

A 50 day voyage in early 2008 saw a team of scientists on board RV Tangaroa collecting samples of living material throughout the water column – from the sea's surface down to the seafloor in three distinctive areas of the Ross Sea region. A northern area is characterised by deep sea abyssal plains at depths of 2,000-4,000 metres with seamounts (undersea volcanoes) rising far above the plains towards the surface. A central area across the continental slope has a rugged under-sea terrain that drops steeply from the shelf at 500 metres down to the abyss. A southern area across the Ross Ice Shelf is relatively flat and deeply scoured by iceberg tracks.

The voyage took place in February and March at the time when the seasonal sea ice is least extensive, allowing the greatest possible access to the Ross Sea. In the summer of 2008, however, much more ice than usual remained in the Ross Sea region and scientists were forced to redesign their sampling plans to match the conditions encountered.

An unusually large, and probably newly discovered, species of hydroid (coral-like animal) photographed on the seafloor in the southern Ross Sea. Specimens measured 6-7 cm across the 'head', with stalks over one metre long. Photo: NZ IPY-CAML.

Over 30,000 biological samples from a wide range of organisms were collected, including viruses, bacteria, plankton, benthos (animals from the seabed), cephalopods (squid or octopus), and fish. Scientists also used high resolution cameras at all depths to obtain information on the way the animal communities are structured. Water chemistry and hydrological surveys were also completed, with samples of water from different depths taken to examine their microbial content and assess their role in the biological engine of energy transfer through the food-web in this ecosystem. Experiments were carried out during the survey to assess the effects of ocean acidification on microplankton under laboratory conditions. Tissue samples from some of the animals will be used for genetic barcoding (a form of species identification), and others will be analysed to determine feeding relationships at different trophic levels in the food-web.

The 30,000 specimens will be analysed over the next three years. Species new to science – eight so far – will be confirmed and the biodiversity patterns in relation to the environment will be explored. This will increase our understanding of baseline information of the Ross Sea ecosystem and will be used to monitor changes over time.

The results will also contribute to improved understanding of toothfish fishing and the impact it has on the ecosystems in Antarctic waters.

While the Ministry of Fisheries led this project, it has been a collaborative programme involving Land Information New Zealand, the Ministry of Foreign Affairs and Trade, Antarctica New Zealand, Te Papa Tongarewa, the National Institute of Water and Atmospheric Research (NIWA), New Zealand universities, the United States and Italy. The voyage is part of the whole-of-government Ocean Survey 20/20 programme.

Protecting the world's smallest marine dolphin

The Hector's dolphin is one of the world's rarest, and one found only in New Zealand waters.

The species which grows to just 1.4 metres is divided into two subspecies. The South Island Hector's dolphin lives around the east, west and south coast, while the Maui's dolphin lives off the North Island's north-west coast. The South Island Hector's dolphin, with an estimated population of around 7,600 individuals, is ranked as nationally endangered by the Department of Conservation. The North Island Maui's dolphin, with an estimated 100 individuals, is listed as nationally critical.

Human activities such as pollution, propellers from boats, and fishing can pose a danger. Even low rates of death threaten Hector's dolphins as they reproduce slowly and have a low potential for population growth.

Fishing is the greatest known human threat to Hector's dolphins. It is responsible for around 75 percent of reported deaths with a known cause.

Threats from fishing include the risk of dolphins becoming entangled in fishing gear. There have been reports of dolphin captures in trawl nets, however, of the different fishing methods, set nets are considered to pose the greatest threat.

The government began introducing protection measures in some areas earlier in the decade. Further measures set to be introduced include a more comprehensive mix of regional bans and other restrictions on set netting, trawling and drift netting in the coastal waters where the dolphins are most often found. As well as this, observer monitoring will be significantly increased. These measures will sit alongside marine mammal sanctuary measures announced at the same time. For more information see the MFish website.

Hector's dolphins.

A network of Marine Protected Areas

New Zealand has a particularly rich and complex seascape, making it a world hotspot for marine biodiversity.

This biodiversity is the foundation for some of our most productive fisheries. The government is setting up a network of Marine Protected Areas (MPAs) to protect examples of our different marine habitats and ecosystems, as well as those that are outstanding or rare. Like our land-based Protected Natural Areas network, this will make sure some of our biological wealth in the seas is 'banked' as an investment for future generations.

Some areas are already protected by marine reserves, Fisheries Act closures, and cable protection zones. These have each been set up to achieve slightly different purposes and have not been part of a planned network. MFish and the Department of Conservation (DOC) have developed a Marine Protected Areas Policy to create a network of MPAs in the future. Building on the New Zealand Biodiversity Strategy, the objective of the MPA Policy is to protect marine biodiversity by establishing a network of MPAs that is comprehensive and representative of New Zealand's marine habitats and ecosystems.

MPAs may include a number of protection tools including marine reserves, special legislation, marine parks, customary management tools, fisheries closures, marine mammal sanctuaries and potential cable exclusion zones.

A coastal classification system has been developed to define bio-regions, which have similar marine plants and animals, and to list the different habitat types within each bio-region. The classification system has detailed the types of habitats and ecosystems that require protection.

At the same time a protection standard was developed that covers methods to maintain marine habitats and ecosystems and to allow areas to recover.

Information will also be collected on the plants and animals in the different habitats and the extent to which people use various areas. This will be important to identify the range of marine habitats to protect while minimising impacts on current users.

MFish and DOC are working together to progress marine protection under this policy. They will work with communities and stakeholders to plan for areas of protection and to determine what marine protection tools would be most suitable for those areas. The first four bio-regions where MPA plans will be developed are the west coast of the South Island and the sub-Antarctic Islands – which are already underway – Otago/Southland and the Hauraki Gulf.

In the short term, the focus of marine protection will be on the Territorial Sea (from the coast out to 12 nautical miles offshore). This is where the problems are more immediate and most acute. The risks to marine biodiversity are greatest here, where the highest economic, social and cultural values are generally found.

Impacts of land-based activities on coastal and estuarine fisheries and ecosystems

What people do on land can have major impacts on coastal ecosystems and fisheries.

In many cases these are not instantly obvious and effects build up gradually over many years.

Occasionally, these effects reach a point where we start to notice them – often when a fishery we care about is affected.

Sediment washed into the sea from urban development, catchment deforestation, agriculture and roading is a particular problem.

Already we have seen important shellfish fisheries around New Zealand suffer or collapse, at least in part because of too much sediment in the water. These include intertidal shellfish like pipi and cockle, as well as paua, kina and scallop fisheries.

Over the past 50 years, sediment build-up in harbours and sheltered inshore waters around northern New Zealand has probably damaged or destroyed important nursery areas for young snapper and other inshore species.

Our west coast North Island snapper fishery may be particularly affected. Many of these fish are thought to spend their juvenile years in sub-tidal seagrass beds and other three-dimensional 'living' habitats in our main west coast harbours. These west coast nursery areas have been shrinking in recent years (seagrass has now largely disappeared from the Manukau Harbour). So with fewer nursery grounds there may be fewer fish to catch.

Nutrient run-off from the land also has an effect, particularly in estuarine ecosystems. And in some places around New Zealand, high levels of bacteria in the water from humans and animals have closed shellfish fisheries by making them unsafe to eat.

The government's goal is to see all these effects turned around and the health of affected ecosystems and fisheries restored.

This work involves everyone, because we are all a part of the problem and a part of its solution.

Some of the groups working together to address land-based effects have already had success.

In Whaingaroa (Raglan) Harbour, water quality and biodiversity are now improving through a local initiative to fence and plant waterways leading into the harbour.

Similarly, in Golden Bay, dairy farm run-off has been reduced through an initiative involving local marine farmers, dairy farmers, Fonterra and the Tasman District Council.

Seagrass is an important habitat and provides shelter for young fish. Whangapoua Harbour.

MĀORI FISHERIES

The Fisheries Settlement

Fisheries have always been important to Māori. Fishing has provided food, a tradable commodity and a way of showing mana.

Debbie Wilson – runner up, Customary section, MFish photography competition 2008.

This importance to Māori was recognised under the Treaty of Waitangi, with the English version guaranteeing Māori 'undisturbed possession' of their fisheries until they wished to dispose of them to the Crown. When the QMS introduced a commercial practice of tradable quota shares, this right of 'undisturbed possession' of their fisheries was lost to Māori.

This led to one of the largest indigenous rights claims in New Zealand's history. After years of negotiation, a settlement was finally reached. This was split into commercial and non-commercial components.

In 1989, the first part of the commercial settlement saw the government buy back 10 percent of the quota shares it had allocated to fishers. This was handed over to the Treaty of Waitangi Fisheries Commission to be held for the benefit of Māori. Provision was also made for the recognition of customary fishing rights through the establishment of taiapure – local fisheries. Then in 1992, the government gave Māori a cash settlement that was used to buy half of Sealord, New Zealand's biggest fishing company. As part of this final settlement the government also promised to give Māori 20 percent of the commercial quota shares of any species brought into the QMS in future.

The final non-commercial settlement also took place in 1992. It was based on the Crown introducing legislation that would allow for regulations to be made. These regulations would recognise and provide for customary food-gathering and the special relationship between tangata whenua, or 'people of the land', and places of importance to them for gathering kaimoana. This led to the passing of the customary fishing regulations in 1998, regulations that recognise the control tangata whenua traditionally had over fishing culture and some of their fishing areas.

Along with this, when the government sets catch limits for fisheries each year, it must allow for Māori customary use of seafood for such events as hui, blessings and tangi and other cultural purposes.

Regional Iwi Forums

Regional forums were created under the Ministry's Deed of Settlement Implementation Programme.

Forums provide a regular focal point where hapū and iwi representatives and the Ministry can meet to discuss fisheries issues, and ensure tangata whenua have a say in fisheries management processes. Forums allow those taking part to hear each other's issues and take part in consultation with the Ministry. Information can then flow back to each iwi and hapū for further discussion and decision-making.

In 2007 the Chairs of each forum met in Rotorua and agreed to develop terms of reference and a strategic plan for a national body that will represent all forums. The forum Chairs have now established a National Council.

To date (June 2008) the following forums have been established around the country:

- Te Ika a Maui (North Island Freshwater)
- Te Hiku o Te Ika (Far North)
- Ngā Hapū o Te Uru Tainui (Waikato)
- Mai I Ngā Kuri a Wharei ki Tihirau (Bay of Plenty)
- Turanga nui a Kiwa (Poverty Bay)
- Te Kupenga (Hawke's Bay/Wairarapa)
- Te Taihauāuru (Taranaki/Wanganui)
- Te Henakinui o Kapiti (Greater Wellington)
- Te Tau Ihu (Nelson/Marlborough)
- Ngai Tahu
  - Kaikoura
  - Canterbury
  - South Canterbury/North Otago
  - Araiteuru
  - Murihiku
  - Te Tai Poutini
- Pā Tangaroa (Chatham Islands).

Paua, Tuhua Island (Mayor Island), off the Coromandel Peninsula.

Customary fisheries and traditional fishing-grounds

The customary fishing regulations formally recognise the special relationship between tangata whenua and places of spiritual and cultural importance.

Through them, iwi and hapū manage their non-commercial fishing in a way that best fits their local practices, and has minimum impact on the fishing rights of others.

To use the customary fishing regulations, iwi and hapū groups decide who has tangata whenua status over defined areas or rohe moana. This status can be shared by a number of iwi and hapū groups, who then choose and nominate people to act as guardians for particular fishing-grounds. These are called Tangata Kaitiaki in the North and Chatham Islands, and Tangata Tiaki in the South and Stewart Islands.

Tangata whenua can also ask for special management areas – 'mātaitai reserves' and 'taiapure-local fisheries' – to cover their traditional fishing-grounds.

Mātaitai reserves help to ensure fisheries resources are available for customary food-gathering. Mātaitai reserves allow guardians to manage their fisheries sustainably for customary purposes.

Within mātaitai reserves, guardians can recommend bylaws to the Minister of Fisheries to change the rules for customary and recreational fishing. Normally, commercial fishing is not allowed within these reserves, but guardians can recommend regulations to the Minister of Fisheries to restore limited commercial fishing. Bylaws for non-commercial fishing within reserves must apply equally to all people, with only one exception; if a reserve is closed for general harvesting, guardians may allow seafood to be taken to meet the needs of the marae belonging to the tangata whenua of the reserve.

A taiapure-local fishery may be established in an area that has customarily been of special significance to an iwi or hapū as a source of food, or for spiritual or cultural reasons. A taiapure-local fishery can be established over any area of estuarine or coastal waters.

All fishing (including commercial fishing) can continue in a taiapure-local fishery, allowing tangata whenua to become involved in the management of both commercial and non-commercial fishing in their area. The management committee for a taiapure-local fishery can provide advice and recommendations to the Minister of Fisheries for regulations to manage local fisheries.

Currently eight mātaitai reserves have been established – three in the North Island: Hawke's Bay, eastern Bay of Plenty and Aotea Harbour; and five in the South Island: Banks Peninsula, Lyttelton Harbour, Stewart Island, Kaka Point and the Mataura River. Several other iwi and hapū groups have lodged or are planning to lodge applications.

Eight taiapure-local fisheries have also been established – five in the North Island: southern Wairarapa, Bay of Plenty, southern Hawke's Bay, Northland and Waikato areas; and three in the South Island: Banks Peninsula, Delaware Bay and East Otago.

Without the customary fishing regulations, iwi and hapū can only take fish for important events under provisions contained in the recreational fishing regulations. The regulations enable marae to honour guests by providing seafood at events like hui and tangi. It gives no more control over their fisheries than this, and does not provide for other types of customary purposes or management.

Taking up the customary fishing regulations

The Ministry of Fisheries has Customary Relationship and Extension Service Teams (Pou Hononga and Pou Takawaenga).

These teams work with iwi and hapū to make them aware of the customary fishing regulations, and to get them more involved in fisheries management in their areas.

The first step for iwi and hapū is to work out who has tangata whenua status over a particular area/rohe moana.

The Ministry provides information about customary fishing management options and helps iwi and hapū to develop applications for the options they are interested in following.

However, the Ministry does not advocate for the use of particular options or encourage the order in which they might be used. It is up to iwi and hapū to make such decisions.

The customary fishing regulations have been adopted across much of the South Island's waters. Ngāi Tahu was one of the first iwi to see the opportunities they presented and quickly took advantage of them. All but one runanga is operating within defined areas, with 110 guardians acting for 17 runanga.

Ngāi Tahu has identified a number of areas for protection by customary management tools. A customary fisheries protection areas project has been developed to help establish a co-ordinated network of customary fishing areas throughout their rohe moana.

In North Island waters, some 37 iwi and hapū entities have been officially recognised as having tangata whenua status over defined rohe moana. There are currently 229 guardians operating in these areas.

Alan Riwaka – winner, Customary section, MFish photography competition 2008.

Closures continue to build on rāhui

New Zealand fisheries legislation supports rāhui (traditional closures for a set period) through regulated temporary closures, as well as fishing method restrictions and prohibitions.

In response to declining local stocks, the Minister of Fisheries has approved five temporary measures.

In North Island waters, the green-lipped mussel beds in Ohiwa Harbour remain closed until 20 July 2008. However, the tangata whenua have requested that these beds remain closed for a further two years. The green-lipped mussel beds between Moturiki and Motuotau Islands at Mt Maunganui remain closed until 6 December 2009. The Kaipara Harbour scallop fishery is closed until 13 September 2008. Only hand-line fishing is allowed within Pukerua Bay until 7 June 2009.

In South Island waters, an area off Kaikoura – Whakatu Quay is closed to the taking of all fisheries resources until 17 August 2008. The tangata whenua have requested a renewal of the temporary closure for a further two-year period.

While the decline of these local fisheries has been largely because of fishing pressure, environmental conditions may also be playing a role.

Tangata Tiaki/Tangata Kaitiaki

Tangata Tiaki/Tangata Kaitiaki are individuals who authorise customary fishing within their rohe moana.

Customary fishing rights not only govern access to fish, they determine the right to manage fishing activity. The right belongs to the tangata whenua – those Māori holding traditional authority over a particular area. The principle of manaakitanga, or 'looking after one's neighbours', is a major part of customary practice. If the Tangata Tiaki/Tangata Kaitiaki wish to issue a customary fishing authorisation to someone who is not tangata whenua, they can do so.

Tangata whenua choose and nominate people to act as guardians for particular fishing grounds. After a submission process, and provided any disputes have been resolved, their appointments are confirmed by the Minister of Fisheries.

Tangata Kaitiaki operate in the North Island and Chatham Islands – Tangata Tiaki in the South Island and Stewart Island. They are the only ones allowed to authorise customary fishing in their particular areas.

Any customary fisher must get authorisation. They must explain why the fish is required (eg for a hui), when and where the fishing will take place, which species will be taken, and who will be fishing; the number and the size limit of each must also be given.

People fishing under a customary authorisation must report the number of fish they took within five days of fishing. Accurate records of all catch and authorisations must be kept by Tangata Tiaki/Tangata Kaitiaki, including how many fish were actually taken. This information helps with local fisheries planning.

Tangata Tiaki/Tangata Kaitiaki may have a wider involvement in fisheries management. They can take part in such work as setting TACs for their areas and developing regulations to manage wider fishing activity.

RECREATIONAL FISHERIES

For many generations fishing has been a popular way for New Zealanders to pass the time.

Whether it is collecting shellfish, hunting outer banks for big game fish, surfcasting, or just taking children down to the local jetty, the enjoyment New Zealanders get from fishing is a highly valued part of our heritage.

Many of today's fishers may remember seeing their parents or grandparents bringing home huge hauls of fish or shellfish. For inshore species these catches are a thing of the past.

Important choices for New Zealand about management of its fisheries resources lie ahead.

With increasing populations, especially in our major cities, more and more people are going fishing which means greater pressure on our fish stocks. Each year more than a million New Zealanders go recreational fishing.

There is growing demand by recreational fishers and other sectors for a greater share of the available resource which, at times, exceeds sustainable catch levels. Competition for allocation of exclusive spatial rights is also growing.

Over recent years, the Ministry of Fisheries has begun to look carefully at shared fisheries, an approach which takes into account the many and varied values different sectors place on fisheries.

Juergen Schacke – winner, Recreational section, MFish photography competition 2008.

Fishing by the rules

With so many people fishing, it is easy to see why there is a need for rules that help to make sure there are enough fish to go around.

Recreational catch is regulated by a range of rules. Some set out how much a person can take each day – known as the daily bag limit. Others set minimum size limits, or limit the fishing methods that can be used. They are made to be simple, and usually apply to a wide geographic area.

There are recreational rules for the five different geographic areas – Auckland and Kermadec, Central, Southern Region, Challenger, and Fiordland. These areas have many fish species and conditions in common. The rules vary slightly from region to region to reflect the abundance of fish and how fishers tend to catch them.

The Ministry publishes information on fishing rules, but it is the responsibility of each fisher to make sure they know what they are before heading out to fish.

Recreational fishing rules are reviewed on a regular basis, particularly when there are signs that a fish stock or area may be under stress. However, with lots of people chasing fish in popular coastal areas, there can be depletion. This happens particularly with species that mostly stay in the same area, like shellfish, rock lobster, blue cod and hāpuka/bass. But, fishing pressure can also affect the sustainability of some popular species that range over a larger area, such as snapper and kingfish. Where this happens, rules are changed to reduce the numbers of fish caught.

Commercial fishers must have a current fishing permit and are subject to strict quotas or limits on how much they can catch, whereas the restrictions on recreational fishers are relatively simple.

The three key things to remember are:

- Don't take more than the daily limit
- Don't take under-sized fish
- Don't sell or trade your catch.

Only those people physically involved in taking finfish and rock lobster can take catch up to the daily limit. The same goes for shellfish with the exception of scallops. Divers collecting scallops can take additional daily quota for up to two safety people per vessel. Below are examples of daily bag limits, minimum size limits and gear restrictions.

	Which fishing area	Daily limit	Minimum size	Example of restrictions
Paua (blackfoot)	All fishing areas.	10 per person per day.	Minimum size 125 mm.	SCUBA equipment may not be used.
Snapper	Auckland and Kermadec Fishery Management Area.	10 per person per day (West Coast). 9 per person per day (East Coast).	The fish must be at least 27 cm long at the centre of the 'V' formed by the tail.	Set net mesh must be at least 125 mm.
Blue moki	Southern Region Fishery Management Area.	15 per person per day.	The fish must be at least 40 cm long at the centre of the 'V' formed by the tail.	Set net mesh must be at least 114 mm.
Kina	All fishing areas.	50 per person per day.	None.	
Scallops	Fiordland (Te Moana o Atawhenua) Marine Area.	10 per person per day.	100 mm.	No. Accumulation of scallop daily limits taken in this area.

Fishing rules for each region are available from MFish offices or at fish.govt.nz

Marlborough Sounds closed to rebuild blue cod

Even when rules are in place to manage fishing, the sheer numbers of people going fishing in an area can place stress on fish stocks.

Recently the Minister of Fisheries announced that the blue cod fishery in the Marlborough Sounds will be closed for the next four years to protect the long-term future of the fishery.

This closure is to relieve the pressure on the fish stock and give time for the community to come together and make decisions on how this fishery should be managed into the future with a fishery plan.

Blue cod is a very important fishery to the Nelson/Marlborough Sounds communities. The Ministry received over a thousand submissions about measures needed to protect and rebuild the blue cod fishery.

While there was no universal agreement over what measures to take, the majority of submissions supported further action to protect the future of this fishery, with most supporting closed areas.

The fishing closure will come into effect on 1 October 2008 and will expire on 1 October 2012. It will be illegal for recreational fishers to take blue cod caught within the enclosed Marlborough Sounds area. This includes all 'enclosed waters' of Pelorus, Kenepuru, Queen Charlotte Sounds and Tory Channel.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Fishing for other species within the Sounds will still be allowed but blue cod caught unintentionally must be returned to the water immediately.

Commercial fishers in the area have agreed to continue the existing agreement to not fish in the enclosed Sounds while the closure is in force.

The Tory Channel blue cod fishery is not in as much trouble as elsewhere, but it has been included in the closure to avoid rapid decline to the same state as the rest of the Sounds, especially because of the increased pressure it would come under if it was excluded from this closure.

A scientific fish stock survey run by NIWA in late 2007 has confirmed that since 2004 the number of juvenile blue cod has seen an average decline of 57 percent across the Marlborough Sounds. Along with this, the inner Queen Charlotte Sound is reporting no blue cod at all. Only the very outer areas of the Sounds, where commercial fishers operate showed a reasonable number of adult blue cod.

Previous measures to rebuild the population have been unsuccessful, including reducing the recreational daily bag limit to three blue cod per fisher per day, and increasing the minimum legal size in 2003.

Around 150 tonnes of blue cod are estimated to be harvested each year by recreational fishers, compared with 15 tonnes by commercial fishers.

Recreational fishing in the Sounds is likely to continue to increase over time as the area becomes increasingly popular for fishers both within and outside the region.

New developments in the area include an additional 500 new berths planned for the Picton and Waikawa marinas, as well as new baches being built around the Sounds. Boat trailer registrations in Nelson/Marlborough and Canterbury have increased by 40 percent over the last decade. New boats are also becoming more efficient by using sophisticated equipment to find the fish including GPS and fish finders.

Significant numbers of fishermen also cross the Cook Strait from Wellington and Mana to fish in the Marlborough Sounds.

Wanted – alive and unharmed

The phrase "like a fish out of water" expresses the discomfort someone can feel when they experience something new and unusual.

Spiny red rock lobster.

For fish, shellfish and lobster, being out of their element for too long is a death sentence.

Live fish being returned to the water need to be handled carefully if they are to have the best chance of survival. They should be handled with wet cotton or rubber gloves, or at least wet hands, and returned to the water very gently. Allow the fish to slide into the water from as close to the surface as possible. If you discover you are fishing in an area with large numbers of under-sized fish, move to another spot or use a larger hook size. Fish, especially shellfish and rock lobster, should be returned to the water as near as possible to the place where they were found.

Paua can bleed to death if injured as their blood is unable to clot. It is best then to try to measure their length before removing them. If they're too small, leave them where they are. If you return them to the water, place them back where they came from, with their foot against a surface they can clamp on to. Paua placed on sand have no chance of survival.

Fish taken in excess of your daily limit, under-sized fish, or fish taken in nets with under-sized mesh must be returned immediately to the water.

COMMERCIAL FISHERIES

There are 130 species fished commercially in New Zealand waters. Their market value can change depending on how much the market – both here and overseas – wants to buy.

Economists have placed a value on New Zealand's living marine resources based largely on average quota values. The total asset value has been increasing over time. In the 11 years between 1996 and 2007 it has increased 40 percent from $2.7 billion to $3.8 billion.

When compared with the rest of the world, New Zealand's growth in fisheries production fluctuates. Much of this fluctuation reflects the variation in harvest of species, where the amount caught can fluctuate from year to year; squid is an example of this.

The fishing industry is worth a lot of money to the New Zealand economy. The wild fish catch earns more than $1.1 billion in export earnings each year and sales from aquaculture bring the total to more than $1.3 billion.

Like other sectors there are costs associated with fishing that can have an impact on overall earnings. The commercial sector looks for ways to fish economically. Sometimes this involves looking overseas for solutions.

One example is New Zealand companies chartering fishing vessels and crew from overseas companies. Such fishing vessels are commonly known as Foreign Charter Vessels (FCVs).

FCVs operate in many of the deepwater fisheries, including squid, hoki and jack mackerel, and account for a significant proportion of catch in these important and valuable fisheries. The majority of the FCVs operating in New Zealand are from Korea, Russia and the Ukraine.

When chartered by New Zealand fishing companies, these vessels are bound by the same area closures and restrictions as the domestic fleet. They are also subject to the same requirements for observer coverage. Likewise, if FCVs breach any part of the Fisheries Act 1996, they are subject to the same punishments as domestic vessels.

Peter Langlands – winner, Commercial section, MFish photography competition 2008.

Management of foreign charter fishing vessels

The New Zealand government supports the use of foreign charter vessels (FCVs) but believes that the right to use one comes with responsibilities.

Concerns were raised about the safety, standard and operation of foreign fishing vessels chartered by New Zealanders to fish in New Zealand waters. In response, a major review of management controls for FCVs was conducted by the Ministry of Fisheries, together with industry.

This year a new regime for FCVs was announced and came into effect on 1 July 2008.

The changes to the management regime fall within four main areas:

- A minimum standard for the provision of food, accommodation and amenities for MFish observers on board, including minimum requirements for observer cabins and bathroom facilities and a minimum head height of 1.9 metres in the area of an observer's factory work-station.
- A risk-based approach to placing observers on vessels, with increased levels of observer coverage on vessels considered high risk.
- Greater safety assurance through increased cooperation with Maritime New Zealand.
- Improved registration and approval processes including more rigorous risk assessment and screening of foreign vessels and crew and compulsory pre-registration inspection by fishery officers.

These changes are designed to ensure the integrity of the Quota Management System and provide a safe and secure working environment for MFish observers.

The new regime has been extensively consulted on with the fishing industry. A review group comprising MFish staff and representatives of major fishing companies and different sectors of the fishing industry that use FCVs has worked to develop the new requirements. The proposals were then consulted on publicly before any final decisions were made.

It will be a legal requirement to comply with the new regime. Any vessels that do not comply with the minimum requirements or are considered to pose an unacceptable risk will not be registered to fish in New Zealand. Any registered vessel that breaches the regime will be ordered to remedy the situation and may be prosecuted or denied re-registration.

Fishers have been given one year to fully implement these new requirements.

Fishing for squid

FCVs are used commonly when fishing for squid, a catch that varies in value depending on what's happening in the global market.

Although squid is traditionally a low value product, New Zealand's squid fishery is one of our most economically important industries. It is frequently one of our top seafood export earners, with most of our product exported to Asia and Spain.

The value of our squid fishery is heavily influenced by how much squid is caught in other parts of the world, particularly in the South Atlantic. The size and quality of the available squid also plays a part in how much the market will pay. This, along with fluctuations in exchange rates, explains why export earnings can vary from year to year.

Export Earnings

The main squid fishing season occurs during the summer months. There are two trawl fishing areas – a small area around the Auckland and Campbell Islands known as SQU6T and an area covering the rest of the EEZ called SQU1T.

The SQU1T fishery is primarily a trawl fishery and normally begins in December. The SQU6T fishery starts on 1 February and normally continues until the end of April. There is also a smaller squid jig fishery, covering the same area as SQU1T. Jig fishing uses a different fishing method than trawl vessels – but few boats are involved in this fishery at present.

Both of New Zealand's squid fisheries are fished mainly by Korean and Ukrainian vessels that have been chartered by New Zealand companies. This is because it costs less to charter a vessel than it does to buy a new one.

The squid fishery is unusual because squid are believed to spawn (releasing and fertilizing eggs) and die in the same year, so with each new fishing year there is essentially a fresh quantity of squid to harvest. This means that the effect of fishing on the squid species may be relatively small, as long as sufficient spawning takes place. There are environmental issues in both the SQU1T and SQU6T fishery. Sea lions are at risk in the SQU6T fishery. Like other fisheries, seabirds are also at risk of being caught and killed.

In the past the SQU1T fishery has had the highest number of seabird captures across all New Zealand's fisheries. In recent years both regulations and voluntary measures, brought in by the industry, have been introduced to reduce the high number of seabird captures. Regulatory measures include that all vessels must use a bird scaring device.

Current voluntary measures require fishers to limit the amount of offal that is discharged from their vessel. Offal is waste from onboard fish processing, such as gutting and filleting. Seabirds are attracted to it because it is a good food source for them.

The SQU6T fishery around the Auckland and Campbell Islands overlaps the habitat of the New Zealand sea lion. Sea lions sometimes get caught in squid fishing gear and drown. To address this the Minister sets a sea lion mortality limit which specifies the maximum number of sea lions that can be captured in the SQU6T fishery. When this limit is reached the fishery is closed. For the 2007/08 season the limit was 81 sea lions.

There were 46 assumed sea lion deaths during this period, 10 fewer than the previous year. In recent years fishing gear has been developed that allows sea lions to escape from fishing nets. All vessels fishing in SQU6T use this gear and MFish believes the number of sea lion captures has fallen as a result.

To understand how sea lions interact with fishing gear, some fishing boats had cameras attached to their nets during the 2008 season. This footage will be used to ensure that government and the fishing industry are doing everything possible to limit the impacts on sea lions, while still permitting fishers access to this important fishery.

Greenweight conversion

'Greenweight' is the weight of any fish, aquatic life or seaweed before any processing commences.

In overseas jurisdictions, greenweight is sometime referred to as 'roundweight' or 'liveweight'.

In New Zealand, under the Fisheries Act 1996, all references to the weight of fish must be in greenweight. When commercial fishers complete monthly harvest returns to report on their catch, the weights they record must be in greenweight.

Where fish are processed into landed states – such as headed and gutted, dressed or fillets – it is necessary to use conversion factors. This is a ratio that converts the processed weight of the fish back to greenweight. Conversion factors are usually set on the basis of sampling data that is collected by Ministry of Fisheries observers working on board deepwater factory vessels.

The conversion factors are made public through the New Zealand Gazette, the newspaper of the New Zealand Government that is published each week.


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Proving environmental sustainability

The environmental certification project is all about promoting and improving the management and environmental performance of New Zealand fishing and aquaculture.

While New Zealand already has a good reputation for the sustainable management of our natural resources, we need to build on that by becoming a world leader in demonstrating the environmental performance of our fisheries.

The Ministry is seeking an independent assessment of how well our fisheries management system addresses sustainability and other environmental issues. The assessment will also provide information that can support the certification or other independent assessment of individual fisheries.

Assurance of environmental sustainability, like assurance of food hygiene and safety, is becoming simply another part of doing business.

The government has set up a contestable certification fund to encourage the New Zealand fishing and aquaculture industries to demonstrate and improve on their environmental performance through independent certification.

An environmental certification or assessment undertaken by an independent organisation, such as the Marine Stewardship Council, is one way to demonstrate that a fishery is harvested in a sustainable way. Environmental certification also contributes to the clean, green 'Brand NZ' and increases public confidence that fishing and aquaculture are managed well.

However, certification can be costly. There is the certifier or assessor to pay as well as staff time preparing information to support the application and sometimes travel. In recognition of this, the certification fund has been set up to help those seeking certification with up to 50 percent of these costs. The fund is not limited to any one environmental certification or assessment scheme or provider – so long as it's independent and credible.

The Ministry will also be compiling and presenting further information on the environmental sustainability of a range of New Zealand wild-caught and farmed seafood. This information will be complete, transparent and science-based. And it will be presented in a way that is easily accessible to the public, seafood buyers and independent assessors.

HIGH SEAS FISHERIES

There are still vast areas of the ocean that are not part of any nation's Exclusive Economic Zone. These are referred to as the high seas.

Because the high seas don't belong to one country, many nations catch the fish that live in or migrate through these waters. This is having an impact on the stocks. The United Nations Food and Agriculture Organization (FAO) recently warned that more than two-thirds of high-seas fish stocks are depleted or at high risk of collapse.

New Zealand is working with other countries to develop international agreements to manage fishing in a sustainable way. It is important for New Zealand to lead by example. We need to do the best we can to ensure our fisheries remain healthy. That means making sure our commercial fishers abide by our laws and that we don't buy or sell illegally caught fish.

Regional Fisheries Management Organisations

The United Nations Convention on the Law of the Sea says that all States have the freedom to fish on the high seas.

But that freedom is not absolute. To ensure that over-fishing does not happen, nations have a duty to cooperate with each other if their vessels fish in the same area or for the same stocks.

One recognised way of managing this is by setting up regional fisheries management organisations (RFMOs).

New Zealand is involved with a number of RFMOs, including the Western and Central Pacific Fisheries Commission, the Commission for the Conservation of Southern Bluefin Tuna, the Commission for the Conservation of Antarctic Marine Living Resources and the South Pacific Regional Fisheries Management Organisation.

Most high seas fisheries are now under the jurisdiction of an RFMO. However, fishing nations have agreed that these organisations need to be strengthened and their performance regularly reviewed.

New Zealand advocates for this work within the United Nations, and other international bodies, and regionally within the RFMOs.

A recent report – sponsored by the governments of New Zealand, Canada, Australia and the United Kingdom and WWF International – has outlined what should be considered as best practice for these organisations. This includes how they should be set up, how decisions should be made and how to work with developing countries.

In January 2007, a joint meeting of the five RFMOs that manage tuna fisheries was held in Kobe, Japan. It was agreed that improved co-ordination between the RFMOs was needed, along with improved performance. Performance criteria were agreed and developed. New Zealand has since promoted these within the Commission for the Conservation of Southern Bluefin Tuna. This proposal was accepted and a performance review began in 2008.

Work in the South Pacific

New Zealand is in negotiations to establish the South Pacific Regional Fisheries Management Organisation (SPRFMO).

This organisation will manage fishing of non-tuna species and the environmental impacts of fishing in high seas areas of the southern Pacific Ocean and Tasman Sea.

During the third round of negotiations for establishing SPRFMO that took place in Reñaca, Chile in 2007, participants agreed to a set of interim conservation and management measures. An interim SPRFMO secretariat has also been established in Wellington, New Zealand.

Negotiations are underway to finalise issues such as the area the agreement will cover, funding for the organisation once it is established, entry criteria and associated rights and obligations, and high-level policy relating to management of fish stocks.

Managing bottom trawling on the high seas

In May 2008 measures were introduced to manage the impacts of bottom trawling by New Zealand vessels on the high seas.

In 2006 the UN General Assembly called for better management of bottom fishing in the high seas. In response, the SPRFMO adopted a set of interim conservation and management measures in 2007.

New Zealand's first step has been to protect vulnerable marine ecosystems (VMEs), such as coldwater corals and sponge fields, from adverse effects caused by bottom trawling.

The Ministry of Fisheries has mapped where bottom trawling occurred during 2002-2006. Fishing outside of this 'footprint' is prohibited. The footprint is further divided into lightly, moderately or heavily trawled areas according to the bottom trawling that took place in this period.

To protect the VMEs the largely pristine, lightly trawled areas have then been closed, together with representative parts of the moderately and heavily trawled areas. These closures amount to 41 percent of the entire footprint; around 112,000 square kilometres in the South Pacific area.

In open, moderately trawled areas, bottom trawlers are required to move on five nautical miles whenever evidence of a VME is encountered. The interim measures also make it mandatory for all high seas bottom trawlers to have a Ministry of Fisheries observer onboard.

New Zealand will review these measures in 2010.

Work is now underway on how to include footprint mapping and observer coverage for other bottom fishing methods such as long-lining and drop/dahn-lining; impact assessments; stock sustainability measures; and catch or effort restrictions.

Managing New Zealand's high seas fishing activities

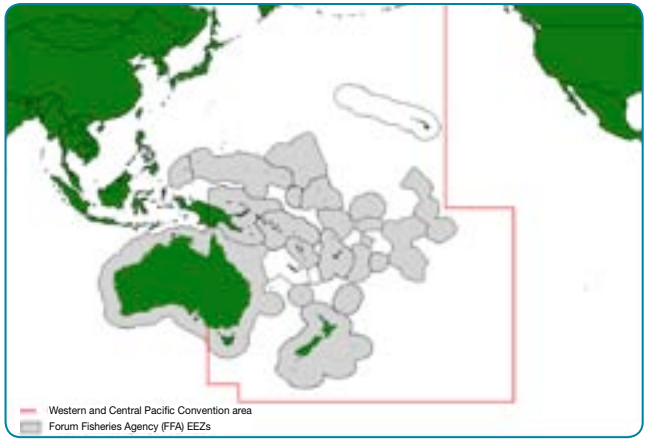
On the high seas, vessels must fly the flag of a country they are registered to – their 'flag state'.

The vessel has to operate according to that country's laws, including their fishing laws. If the country has signed up to any international agreements, the vessel must abide by those as well.

Under the Fisheries Act 1996, New Zealand registered vessels must have a high seas fishing permit if they want to go fishing or transport fish on the high seas. At present there are around 30 New Zealand flagged vessels with a high seas fishing permit.

Sometimes New Zealand fishing companies use foreign vessels on the high seas. In these cases, our legislation requires them to have an authorisation from the government of the vessel's flag state.

The system allows the New Zealand government to manage high seas activities. Our government can then engage in negotiations with other nations about sustainable high seas fishing practices, secure in the knowledge that it is meeting it's international obligations.



Pacific Island EEZs and High Seas areas of the Western and Central Pacific Ocean.

Prized Pacific tuna

In the Pacific, tuna travel through the high seas and through the EEZs of many nations. Globally, Pacific tuna are worth about US$2 billion each year.

For Pacific Island nations it's one of their greatest sources of income. Keeping these fisheries healthy is therefore of huge economic importance for the region.

Pacific tuna are one of the few remaining healthy tuna stocks in the world. But this could change as the vessels that were fishing in the Indian and Atlantic oceans are now leaving areas where tuna stocks are seriously depleted.

The increasing scale and intensity of fishing in the Pacific could have a major impact. Two key target species – bigeye and yellowfin – are already subject to unsustainable levels of fishing.

Pacific nations are working with distant water fishing nations, and have negotiated charter arrangements, access rights and foreign investment in domestic development.

These nations are also working together through the Forum Fisheries Agency (FFA), created in 1979, to help its members manage and protect their interests in tuna fisheries that fall within their 200 mile EEZ.

The FFA has developed agreed minimum terms and conditions for foreign vessels wanting to access Pacific Islands' EEZs. It has also developed a regional register of foreign fishing vessels, vessel monitoring systems and a regional observer programme.

But work still needs to be done to ensure tuna fisheries remain viable, for future development opportunities, jobs and economic self-sufficiency for Pacific Island nations.

Landing legal catch – Port State Measures

New Zealand is working with other countries through the FAO to negotiate a legally binding international agreement on landing of fish.

In New Zealand, commercially caught fish must be unloaded through licensed fish receivers. Fishers must be able to prove that their catch is legal and have documentation recording the catch history. Not all countries have such rigorous controls.

The proposed international agreement will make illegal fishing harder. Countries that sign up to it will be expected to apply stronger provisions to vessels seeking access to their ports.

For example, those receiving the fish may need to seek proof from vessels that they were fishing legally in an area and that they have reported their catch correctly.

If vessels are unable to provide this information they may be denied entry into the port.

While there is still the chance that they could unload fish at ports in countries that aren't signatories to the agreement, the cost of getting to those ports could make the catch unprofitable.

MANAGING OUR CATCH

It is almost 22 years since New Zealand brought in a quota system for managing its commercial fisheries.

Almost all major commercial species are now included in this system. They are managed in a way that lets us catch the greatest weight of fish, year after year, in a sustainable way. This is called managing for Maximum Sustainable Yield (MSY). This means finding the delicate balance between taking what we'd like now, and leaving enough in the water to grow and breed for the future.

However, to get this balance right we need a lot of information. Knowing how quickly different species grow and reproduce, and how long they live, helps us to work out sustainable catch levels. These levels are then adjusted as more information on catches and abundance is gathered.

Commercial fishers must report their catches to the Ministry of Fisheries. This information can be used to work out trends in catch rates, and in some cases gives an idea of abundance.

Knowing the catch rates and the size and age of fish caught is often enough to tell us how sustainable a particular catch level is. So, in most important fisheries, we also gather information about length and age of fish caught. This mainly comes from Ministry of Fisheries observers on board fishing vessels and sampling by researchers in fish processing sheds. Some information is gathered by the industry's own research programmes.

Where even more detailed data is needed, this can be collected through surveys by research vessels or tagging studies. However, these methods tend to be used only on our more valuable fisheries.

Where we have little information, it is hard to gauge how close a fish stock is to its target level. In these cases, the Government must act cautiously, and set the catch at what it thinks is a safe level.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Recreational fishers sometimes want different things from a fishery than commercial fishers. Often they want to be able to catch larger fish more easily. This may mean reducing catches to below the MSY level, so that more fish can grow larger. However, lowering catch limits to be able to catch bigger fish might not be what commercial fishers want. Deciding on the right management approach can be challenging!

When catch levels need adjusting, the government seeks advice from Ministry of Fisheries' scientists and managers, as well as from commercial, recreational and customary fishers, environmental interests, and the wider public.

New Zealand fisheries management is not perfect. In the past some of our fish stocks have been over-fished. With only four million people, and the fourth largest EEZ in the world, we simply can't afford the science needed to manage all fisheries exactly at their Maximum Sustainable Yield.

The government must be cautious whenever it sets catch limits so that New Zealand's fisheries will continue to provide food and jobs for future generations.

Observing the catch

For more than 20 years MFish observers have taken to the seas on board commercial fishing vessels.

A group of around 55 people spend days or weeks at sea, collecting data on fishing activities and the catch. They collect biological samples and other information that will help with research, fisheries management, setting sustainable catch levels and monitoring the environmental impact of fishing activities. This work is set by the Ministry of Fisheries and the Department of Conservation's management and research programmes.

Observers climb aboard vessels in deepwater, middle-depth and pelagic fisheries, as well as smaller fishing vessels operating in the surface and bottom long-line, purse seine, set net and inshore trawl fisheries.

In 2006/07 there was a total of 5,969 days when observers were at sea, an increase of 11 percent on the previous year. This year, 2007/08, we are up 13 percent (or 785 days) on last year's result.

One highlight of 2007 was the collection of a particularly large biological sample. A male colossal squid caught by a New Zealand fishing vessel in Antarctic waters while longlining for a toothfish and was brought back for scientific study.

Thanks to the combined efforts of the San Aspiring's crew and the Ministry of Fisheries observer this is the first intact specimen of a colossal squid ever to be landed.

A male colossal squid caught in Antarctic waters in 2007.

Hoki: status of the stock

In recent years information about the hoki stock has shown that the biomass (the total amount of hoki) for the western stock (the stock of the west coast and the south of the South Island) is below an acceptable level.

Recent surveys from some of the fisheries have shown an increase in biomass and results from the 2008 stock assessment suggest there have also been improvements to the size of the western stock.

For around 10 years, the western hoki stock has had poor spawning success, resulting in fewer young fish in the population. This has an effect on how many fish can be caught without affecting sustainability.

After the 2007 stock assessment, the Minister of Fisheries, Jim Anderton, decided to reduce the hoki total allowable commercial catch (TACC) from 100,000 tonnes to 90,000 tonnes.

The Minister also requested that the fishing industry reduce the amount of hoki they catch from the western stock to help it to rebuild.

Industry has also brought in measures to help the stock rebuild, which include closing certain areas to hoki fishing to protect the juvenile fish.

This should allow the small fish to grow to a large enough size so that they can spawn and help increase the size of the stock.

Hoki is sold in New Zealand and overseas.

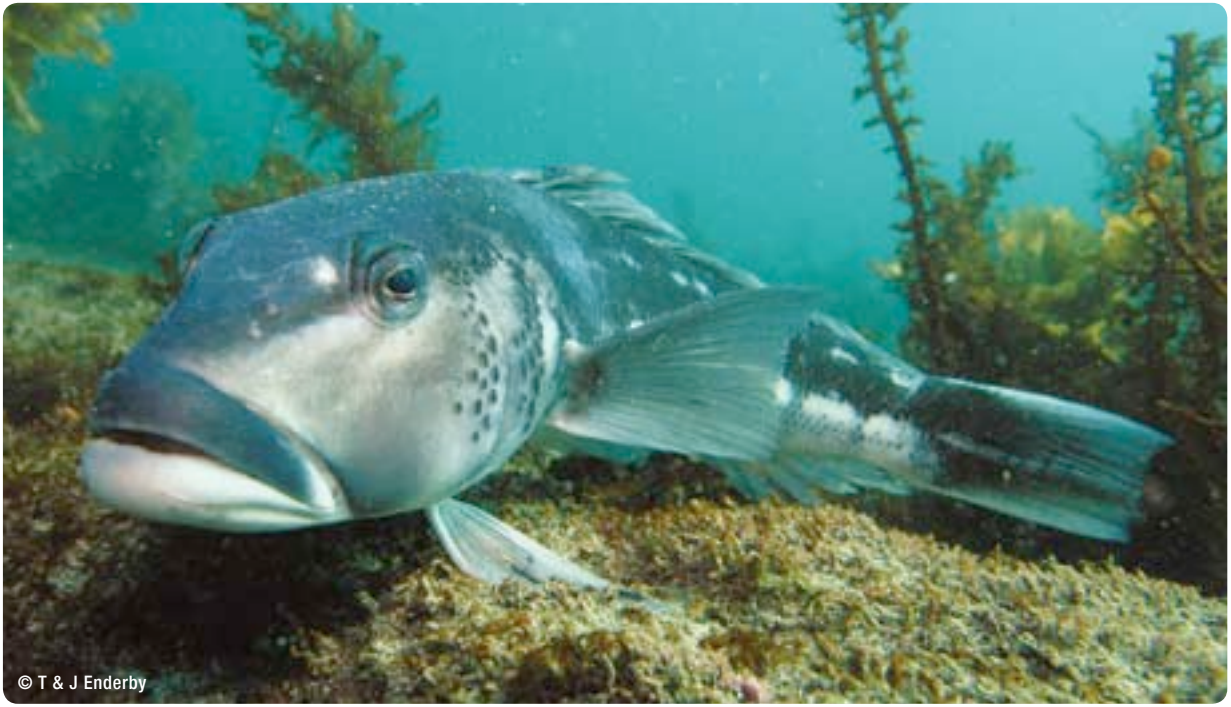
SPECIES FOCUS – Blue Cod (Parapercis colias)

Blue cod are found only in New Zealand and are an inshore domestic fishery.

The major blue cod commercial fisheries in New Zealand are off Southland and the Chatham Islands, with smaller but regionally significant fisheries off Otago, Canterbury, the enclosed Marlborough Sounds and Wanganui. Blue cod tend to be more abundant and larger in size south of Cook Strait.

This species is highly valued by all sectors and is the most popular finfish species for many areas of the South Island. The non-commercial catch of blue cod is taken almost exclusively by line fishing. Commercially, most blue cod are caught using cod pots, although there is also a small amount of bycatch from inshore trawling.

Tagging surveys indicate that blue cod tend to be resident to a home area and are therefore susceptible to local depletion. This is apparent within the Fiordland and Marlborough Sounds and Paterson Inlet (Stewart Island).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Status of the stocks

For all blue cod QMAs, recent commercial catch levels and current TACCs are considered sustainable.

Surveys using pots and handlines are completed annually to monitor the relative abundance of populations in selected areas between the Marlborough Sounds and Fiordland.

Current management issues

The drop in the number of blue cod in the Marlborough Sounds, caused by recreational fishing, is the most pressing management issue. There are some signs that such local depletion could become an issue at Kaikoura, Motunau and parts of Foveaux Strait. Given the ease of access and increasing retail value of blue cod, poaching may also become a management issue within the fishery.

Recreational fishers often catch undersize cod. Any time a fish is caught on a hook there is a risk that the fish will die, even if returned to the sea. If fishers use larger, circle hooks (6/0 or larger), or barbless hooks, the number of smaller blue cod that will die will be reduced, simply because they can't swallow that size hook.

This year MFish consulted with the community over how to deal with this issue.

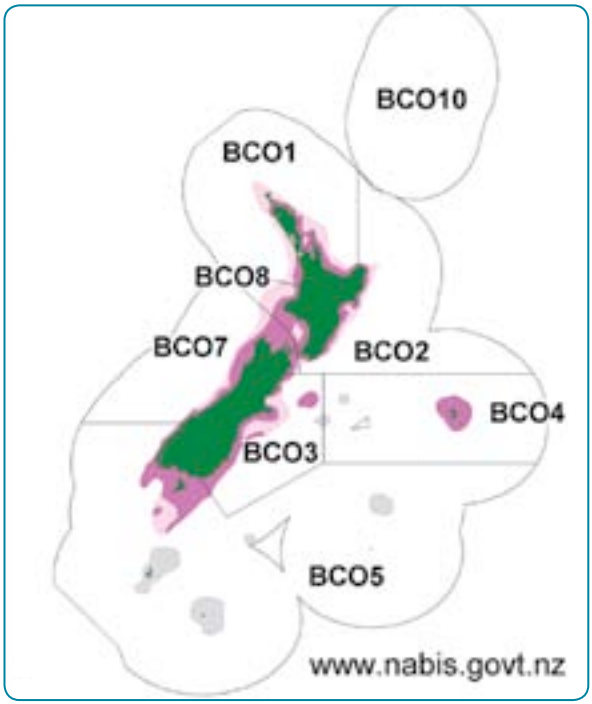
Blue cod catch limits and allowances

The Minister of Fisheries has closed the enclosed Marlborough Sounds and Tory Channel to all recreational blue cod fishing from 1 October 2008 to 1 October 2012. Elsewhere the combined commercial catch limits for all blue cod stocks has been set at 2,681 tonnes for the 2007/08 and 2008/09 fishing year.

Non-commercial allowances for recreational and customary catch, or other sources of fishing-related fish deaths, have not yet been set for any blue cod stocks. Instead, catch is controlled by daily bag limits and minimum legal size limits.

Blue cod measuring at least 30 cm can be taken by both recreational and commercial fishers. In the Central and Southland FMAs the minimum size is 33 cm.

The daily bag limit for blue cod varies from 10 in Patterson Inlet (Stewart Island), 20 in Fiordland to 30 in the Otago/Southland fisheries.



Blue cod distribution and management areas.

SPECIES FOCUS – Tarakihi (Nemadactylus macropterus)

Tarakihi is highly valued by both the commercial and non-commercial fishers and is caught in coastal waters to depths of around 250 metres.

Trawling is the main commercial method used to catch this species. Recreational fishers tend to favour rod-and-line or set nets. Tarakihi is also caught as a bycatch in other fisheries.

Tarakihi can live for more than 40 years and are relatively slow growing. Sexual maturity is reached at 4-6 years (25-35 cm from the nose to the fork of the tail) after which their growth rate slows. They spawn in summer and autumn and the three main spawning grounds are: Cape Runaway to East Cape, Kaikoura to Pegasus Bay and near Jackson Bay on the west coast of the South Island.

Tarakihi remain in a larval form for between 7-12 months and it's likely that ocean currents disperse larvae around New Zealand. Tagging surveys indicate that tarakihi can be highly mobile, travelling long distances. These factors suggest that tarakihi form a single New Zealand stock.

Status of the fish stocks

Overall, landings (the annual amount of fish and fish products, such as fillets brought to port) have remained relatively stable since at least the late 1960s, despite changes in effort and methods of fishing. Current catch limits appear to be sustainable.

Current management issues

Tarakihi is an important shared fishery. There are opposing views as to how fish stocks should be managed. Commercial fishers, in general, want to catch the maximum amount of fish year after year. Non commercial fishers on the other hand value size and availability of species such as tarakihi.

The government is currently developing a Shared Fishery policy and how it applies to the tarakihi fishery will be an important issue for the future.

Recreational fishing data was collected for much of the 2004/05 fishing year and an estimate of the recreational catch is expected to be available late 2008.

Current research in the north of the North Island includes estimating trends in catch per unit effort over time, and estimating the size/age class distribution of commercial catches. On the South Island's west coast a stock assessment will estimate current biomass levels and sustainable yields.

Environmental impacts and bycatch of endangered or protected species are both issues associated with trawl fisheries. There is ongoing work being done by the government and industry to identify, quantify, and mitigate these effects.

Tarakihi catch limits and allowances

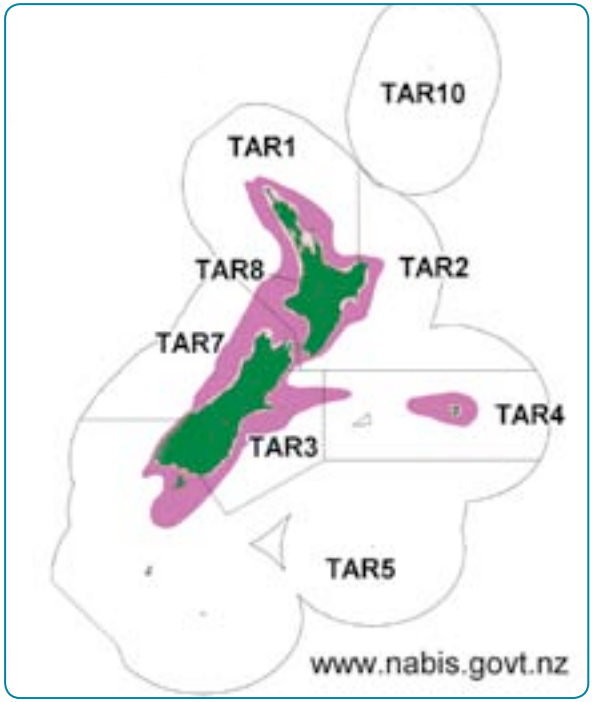
The total allowable catches for tarakihi have been set at a combined level of 7,406 tonnes for the 2007/08 fishing year.

The total commercial tarakihi catch for the country was 5,729 tonnes in 2006/07. There are recreational and non-commercial customary allowances in three QMAs only. These allowances total 652 tonnes for recreational fishing, and 188 tonnes for non-commercial customary fishing. A further 128 tonnes has been allocated to other sources of mortality which covers issues such as theft (poaching and illegal sales), illegal fishing (mis-reporting), and wastage or injured fish that are unlikely to survive.

The total allowable catch for the north of the North Island was increased by 70 tonnes in 2007. This increase was allocated proportionally between the commercial and non-commercial sectors.

The minimum recreational size limits for tarakihi is 25 cm. In the Fiordland fisheries management area there is a bag limit of 15 tarakihi per person per day. In the rest of the country tarakihi is contained within the combined species bag limit of 20.

The commercial tarakihi fishery is managed using a range of restrictions. Management measures include restrictions on large vessels fishing close to shore, and trawling and set net bans.



Tarakihi distribution and management areas.

SPECIES FOCUS – Longfin and Shortfin Eels (Anguilla dieffenbachii and Anguilla australis)

Eels are highly valued by Māori and are an important commercial fishery. They were prized at important events like hui or tangi which would ensure the mana of the marae was upheld.

Smaller average sizes, and lower numbers of eels has meant this tradition is not as common today. However, eels remain a valued fishery for Māori and for recreational fishers.

Customary methods included hand gathering, spearing, lines, eel weirs, and hīnaki (pots). Fyke nets are the dominant method used by commercial fishers, who began targeting eels in the 1960s. The main commercial eel fisheries are in the northern North Island, Lake Ellesmere (Canterbury), and Southland.

Eels live in freshwater and some estuarine waters for most of their lives until they migrate to the ocean to spawn. They are generally slow growing and die after spawning in the South West Pacific. Larvae are moved back to New Zealand by ocean currents before arriving at rivers and lagoon entrances in the spring.

Status of the stocks

Eels were first introduced into the QMS in 2000 to address sustainability concerns. At that time, catch limits only applied to the South Island eel fishery where both species are managed as one stock.

The Chatham Islands shortfin and longfin stocks followed in 2003. Catch limits were established for North Island shortfin and longfin stocks in 2004 and then lowered in 2007 to increase the average size of eels and rebuild numbers in that area.

Research has shown that the average size of both eel species has reduced compared to earlier times.

Left image: A longfinned eel swimming up a stream. Middle image: Body of a shortfinned eel showing how the dorsal fin extends only slightly further forward than the anal fin. Right image: The longfinned eel's dorsal fin extends much further forward than the anal fin.

The amount of longfin eels, as a proportion of the overall commercial eel catch, has decreased in recent years to approximately 30 percent of the catch, down from 45 percent.

Current management issues

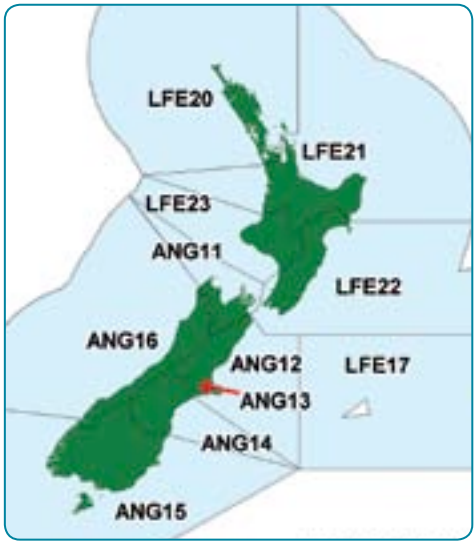
The biggest management issue in this fishery is improving the spawning escapement of the larger female longfin eels. The government has addressed this by reducing the commercial catch, introducing a national maximum size limit of 4 kg for commercially caught eels, and closing some additional areas to commercial fishing.

Research will improve the information on customary catch and the amount of eels available in different areas. Environmental threats to eels – such as habitat loss, pollution and hydroelectric dams – are managed under the Resource Management Act.

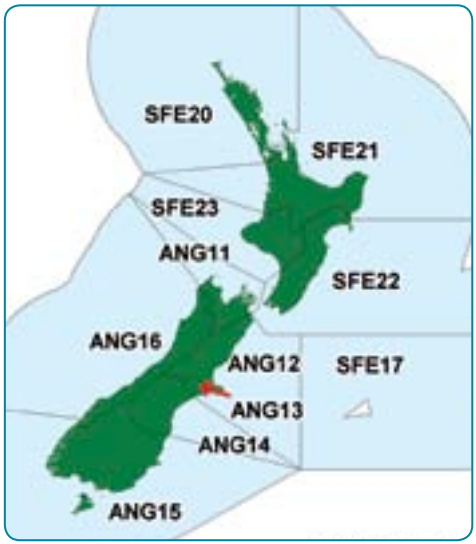
Eel catch limits and allowances

The combined total allowable catch limit (TAC) for all eel stocks has been set at 1,217 tonnes for the 2007/08 fishing year. Of this total, commercial fishers have been allocated 850 tonnes, representing a reduction on the amount of fish taken historically.

The government has allowed 233 tonnes to provide for customary fishing (eg hui or tangi) and 108 tonnes to provide for recreational catch. Non-commercial fishers can take six eels each a day and are limited to one fyke net per person. Unlike commercial fishers there is no maximum or minimum size limit for fishing activities for non-commercial fishers. Another 23 tonnes has been allowed to cover such things as theft (poaching and illegal sales), illegal fishing (eg mis-reporting) and injury of fish that are returned to the water.



Longfinned eels distribution and management areas.



Shortfinned eels distribution and management areas.

SPECIES FOCUS – Coromandel Scallops (Pecten novaezelandiae)

The Coromandel Scallop fishery extends from Cape Rodney near Leigh in the north to Town Point in the Bay of Plenty in the south.

This area provides a fertile environment for scallops, with scallop beds found throughout much of this range.

Scallops in this area have long been popular with recreational and customary fishers who take their catch by diving, dredging or on occasion, by hand-gathering scallops washed-up after a storm. A commercial dredge fishery developed in the late-1960s and early-1970s. At its peak during the early 1990s, this fishery supported 22 commercial fishers with landings in excess of 200 tonnes meatweight (the weight of the edible part of the scallop).

In 2002, the total allowable catch in the fishery was set at 48 tonnes (meatweight), with the total allowable commercial catch set at a deliberately low 'baseline' level of 22 tonnes.

The baseline can be reviewed and increased each year only after a survey has shown that a higher catch level would be sustainable. In this way, the catch limit in any given year is set at a sustainable level in response to the natural variations in scallop numbers in the fishery.

Status of the Stock

Like many other shellfish species, scallops are very sensitive to environmental conditions such as sea temperature, currents and availability of food. This means that scallop recruitment (the number of new scallops in the fishery each year) is highly variable and difficult to predict in advance. Because of this, scallop numbers can fluctuate significantly from year to year. To ensure that fishing is always at sustainable levels, the Coromandel scallop fishery is managed differently to most other fisheries in New Zealand.

Commercial and non-commercial fishers generally fish different areas within the Coromandel Scallop fishery. Non-commercial fishers may fish anywhere within the fishery, though most of their effort is concentrated in the shallower areas closed to commercial fishers. In contrast, commercial fishers have tended to fish almost exclusively in the established beds around Little Barrier Island, Waiheke Island, Mercury Bay, Waihi and Motiti.

Current Management Issues

In 2005, MFish selected this fishery to test the concept of fishery plans. This saw MFish bring together fishers from the commercial, recreational and customary sectors, as well as representatives from the environmental sector to discuss what each wanted to see achieved in the fishery. Over the following 18 months, this group worked together to produce the Draft Coromandel Scallop Fishery Plan. This document combines many different goals and aspirations, including a desire to increase the stability of the fishery and to "maintain the mauri and sustainability of the fishery with a cautious respectful approach."

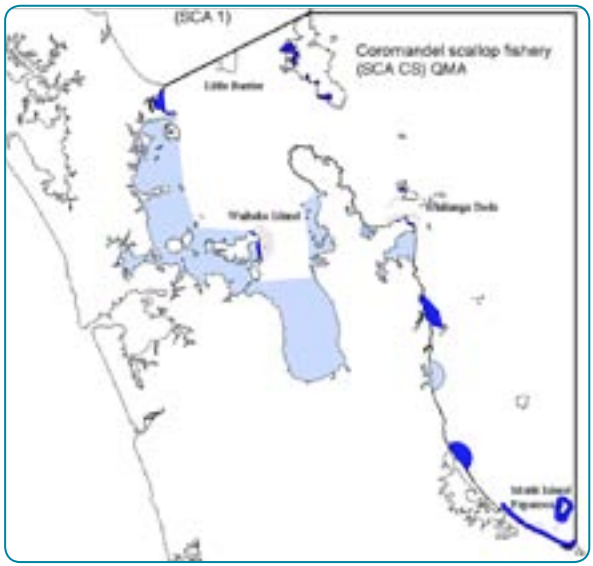
In 2008, MFish intends to work with stakeholders and tangata whenua to develop this plan further and seek wider public comment. For more information and a copy of this draft plan see the MFish website.

Historically, an annual survey has been undertaken on the commercial beds only. However, for the past three years, four popular recreational beds in the Coromandel fishery have also been surveyed. It is hoped that this work will help provide more accurate estimates of total scallop abundance in the fishery. It should help us to find out if there is a relationship between scallop abundance in the commercial beds and in the non-commercial areas of the fishery.

Scallop catch limits and allowances

Over the past few years, this stock has been fished cautiously by the commercial sector, with annual commercial landings seldom exceeding 50 percent of the available yield. For example, in 2007 the stock assessment survey indicated that 338 tonnes was available from the commercial beds, yet commercial fishers opted to take only 108 tonnes of scallop.

Recent changes to non-commercial regulations in this fishery include an allowance for divers to harvest the daily bag limit for up to two boat safety people and a shift in the recreational scallop season which now runs from 1 September to 31 March.



Coromandel scallop distribution and management areas.

SPECIES FOCUS – Southern Blue Whiting (Micromesistius australis)

Approximately one third of the southern blue whiting catch is made into surimi (a processed fish product that imitates other seafood, particularly crab), while the remaining two thirds is processed into higher value fillet.

Approximately 20,000 to 30,000 tonnes of southern blue whiting is caught each year and it is an important catch for the middle depths trawl fleet.

Vessels target southern blue whiting in late winter to early spring, when the fish group together, or aggregate to spawn. There are four distinct spawning areas in New Zealand's sub-Antarctic waters: the Auckland Islands, the Bounty Islands, Campbell Island and the Pukaki Rise. Each is managed as a separate stock.

Southern blue whiting are fast growing and typically spawn for the first time when they are three to four years old. Varying numbers of young southern blue whiting join the spawning aggregations each year. Stock size can change quickly if a large number of young fish reach adulthood in the same year.

To manage the southern blue whiting fishery well biological data from the fishery, and acoustic surveys to measure stock size, are important. This information is used to determine how much fish can be caught without threatening the sustainability of each of the stocks.

Status of the fish stocks

A large portion of the southern blue whiting caught over the last decade has come from the Campbell Island stock. This has been the largest southern blue whiting stock, mainly because of very successful spawning in 1991 and above average success in 2001, 2002 and 2004. The size of the Campbell Island population is close to the target level and is expected to be maintained at this level over the next few years.

© NIWA: P McMillan.

In 2008 an acoustic survey was conducted for the Bounty Islands stock. Echo sounders, used to determine how much southern blue whiting there is in the area, found that the population size had increased markedly from previous surveys. This is thanks to a very successful spawning in 2002.

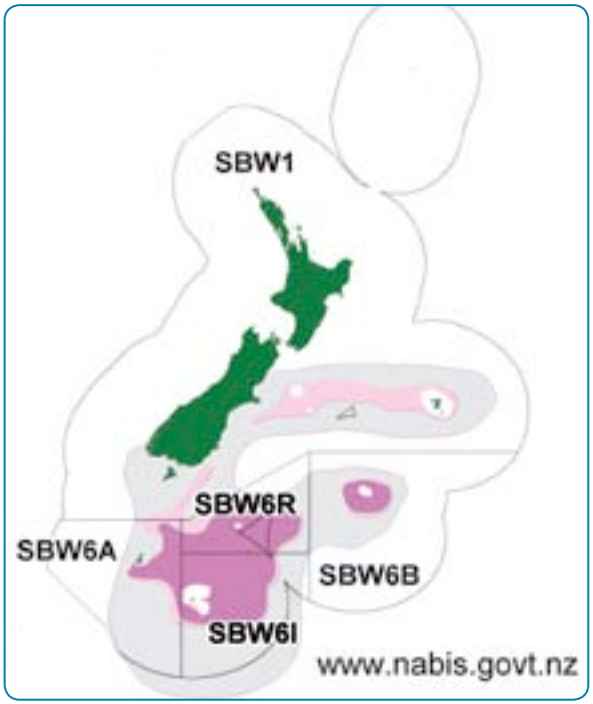
Southern blue whiting around the Auckland Islands and on the Pukaki Rise fisheries are lightly fished and catch has not exceeded 20 percent of the total allowable catch of either of these fisheries in recent years.

Current management issues

The large increase in the amount of fish around the Bounty Islands has resulted in an increase in TAC. Further acoustic surveys will be undertaken to better determine the amount of southern blue whiting present in the stock.

The number of New Zealand sea lions captured in the southern blue whiting fisheries has increased in recent years with six recorded captures in the 2007/08 fishing year. Commercial fishers have adopted a voluntary code of practice to help avoid sea lion captures. Captures of marine mammals in general will also continue to be monitored.

A fishery plan for southern blue whiting is being developed and will help with future management decisions. The Bounty Islands acoustic survey was performed by a commercial fishing vessel rather than a dedicated research vessel. Using vessels that are involved directly in the southern blue whiting fisheries means significant savings in cost and resources.



Southern blue whiting distribution and management areas. (SBW6A – Auckland Islands, SBW6I – Campbell Island, SBW6B – Bounty Island, SBW6R – Putaki Rise).

SPECIES FOCUS – Red Gurnard (Chelidonichthys kumu)

Red gurnard are found on or near the seabed throughout parts of the Indian and Pacific Oceans.

They are found around the entire New Zealand coast (except southern fiords). They are most abundant north of the Chatham Rise in shallow waters, less than 55 metres, over a sandy or muddy seabed.

Red gurnard live to about 16 years and reach sexual maturity at two-three years of age when they are around 23 cm (from the nose to the fork in the tail). At that time their growth rate slows and they gradually reach a maximum length of around 42 cm.

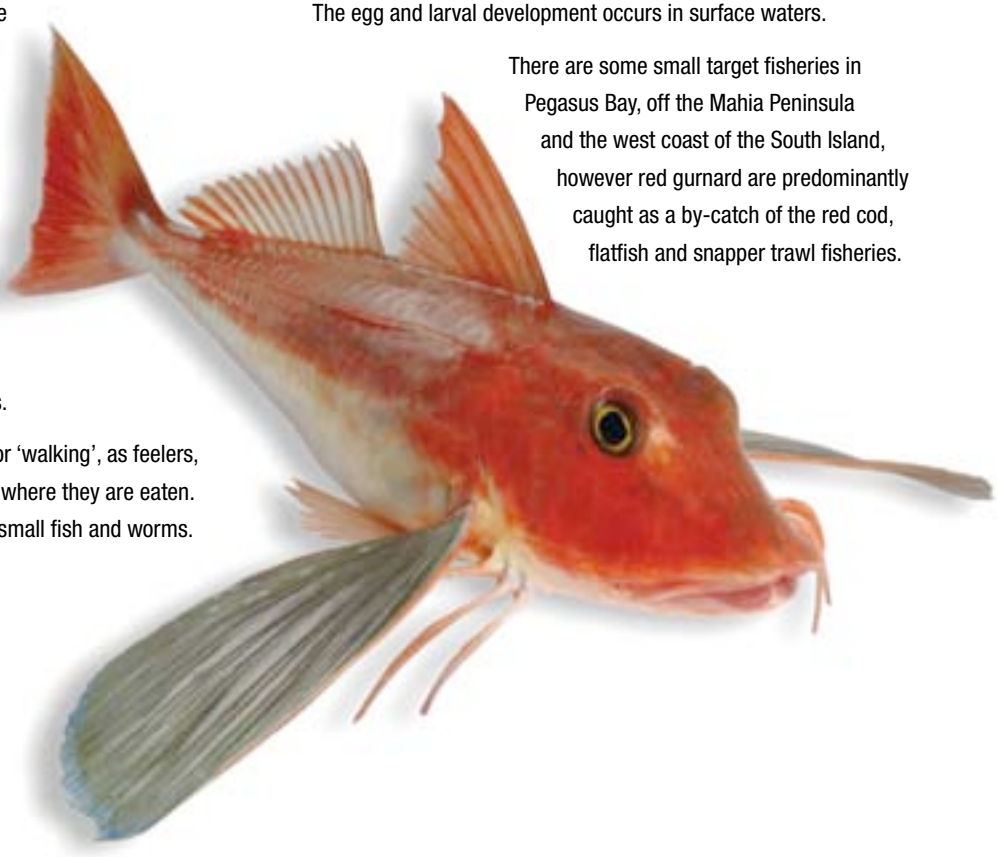
Females grow faster and larger than males, but growth also varies by location. Red gurnard off the east coast of the South Island grow faster than those in other areas.

Red gurnard use their pectoral fins for 'walking', as feelers, and to scare their prey into the open where they are eaten. Red gurnard eat crabs and shrimps, small fish and worms.

Studies have shown that red gurnard are one of the most common species caught in inshore areas, occurring in over 80 percent of all inshore trawl-tows.

Red gurnard spawn through spring and summer, peaking in early summer. Their spawning grounds are thought to be widespread. The egg and larval development occurs in surface waters.

There are some small target fisheries in Pegasus Bay, off the Mahia Peninsula and the west coast of the South Island, however red gurnard are predominantly caught as a by-catch of the red cod, flatfish and snapper trawl fisheries.



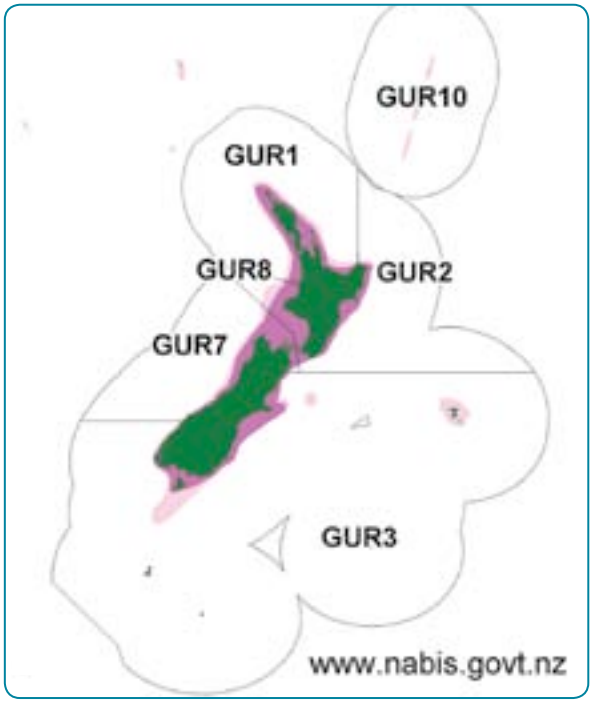
Current total allowable catches are based upon a period of highest ever catch levels. These catch levels have not been met since gurnard was introduced into the QMS in 1986-87. This is probably due to the moderate price fishers get for this species, rather than declining numbers. The gurnard stock as a whole appears to be relatively healthy.

For the north of the North Island, figures show that current catch levels are sustainable and will allow the stock to remain above the target level.

Figures show that the eastern and southern South Island stock is at its highest level for 20 years. Although recent catches on the west coast of the South Island are likely to be sustainable, at least in the short term, more research is required to confirm this.

Current management issues

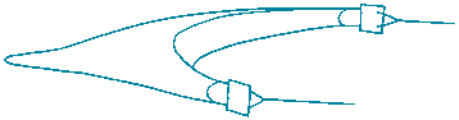
There do not appear to be any management concerns at present, but continual monitoring is required to ensure that this continues to be the case.



Gurnard distribution and management areas.

COMMON NEW ZEALAND FISHING METHODS

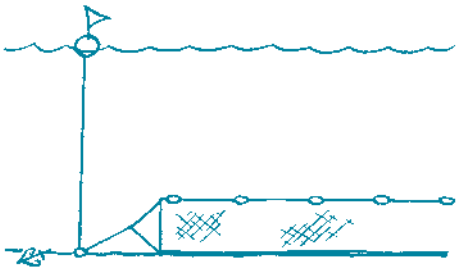
Trawling



A specialised net is used in trawling. Steel paravanes (trawl doors) are adjusted to 'fly' through the water in opposing directions and hold the mouth of the net open. The trawl doors are attached to winches on the boat by heavy steel cables (trawl warps).

Marine life that cannot out-swim a trawl net is caught when it is towed across fishing grounds. The net herds marine life into its mouth, fish become tired from swimming and end up in the net's narrow tail (cod end). The net's mesh size allows some fish to escape from the trawl. In New Zealand, most trawling is carried out near the bottom, in water depths ranging from around 10 metres to more than a kilometre.

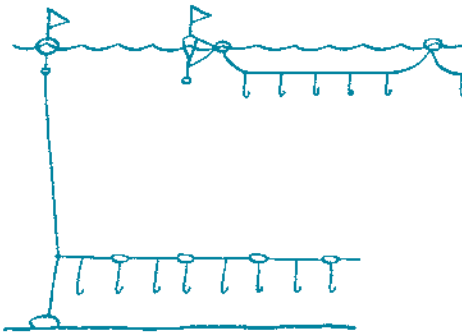
Set netting



This type of fishing involves setting a net, either in mid-water, or on or near the bottom. Set nets are made from fine nylon, so fish can't see them. They may be up to 10 metres high and several hundred metres long.

These nets catch marine life that swims into them and gets tangled. Fish bigger than the net's mesh size get tangled in the net by their gills or fins; smaller fish swim through the net. Set netting usually occurs in shallow waters, within a few miles of the coast.

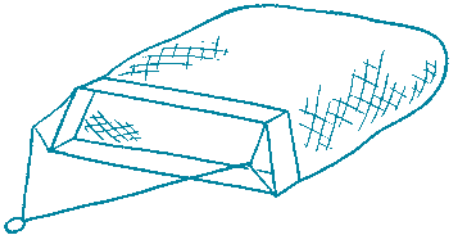
Longlining



Longlining involves setting a single line with many baited hooks on it. Commercial longlines vary in length from tens of metres to several kilometres in length and can have tens to thousands of hooks on a single line. These lines catch marine predators with a mouth large enough to take in the bait and hook.

Surface longlines are usually set in the open ocean, at depths of 50-200 metres or more below the surface. Conventional bottom longlines are set along the sea floor, in water depths ranging from around 10 metres down to around two kilometres. Bottom 'droplines' are set vertically, and have only a few hooks on each line.

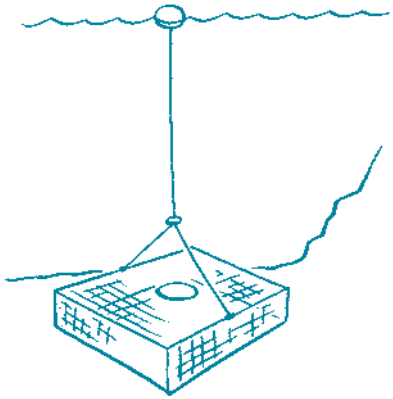
Dredging



Involves towing a steel net (dredge) across the seabed.

Most dredges in New Zealand are around two-four metres across the mouth. They catch anything that lives on the bottom and can't swim away. Dredging usually occurs in shallow waters, between 10 and 100 metres deep.

Potting



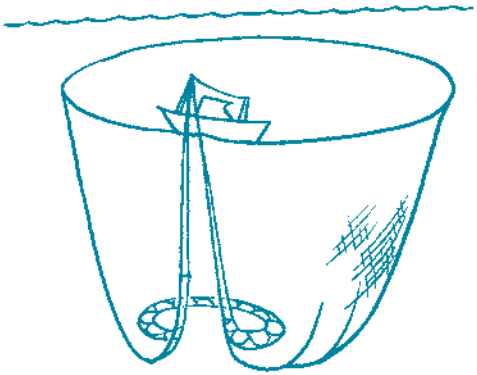
These are baited traps on the sea floor.

Some are made of nylon mesh and others from steel and wire. They have one or more entrances animals find easy to enter, but difficult to leave. They also have 'escape' holes so under-sized animals can get out easily.

Seining

Seining involves setting a net to surround and trap schools of fish before being hauled in.

Purse seining catches surface-schooling fish. A small boat lays a specialised net around the school and a drawstring around the bottom of the net is pulled tight, preventing escape. The net is then drawn into a smaller and smaller circle, trapping the fish in a tiny area. They are then scooped out with smaller nets.



Danish seining catches schools of fish near the bottom, particularly in inshore waters where trawling is not practical (eg areas surrounded by rocks and reefs). Danish seines are like trawl nets, but with long 'wings' and weighted ropes either side of the net opening. The net and ropes surround the schools of fish. As the weighted ropes are drawn in, they drag across the bottom, scaring the fish towards the net, which is then hauled onto the boat.

GLOSSARY

Acoustic survey: a technique for determining how many fish are present in a population using echo-sounders.

Aggregate: the process where fish concentrate or group together.

Benthic Areas: areas at the bottom of the water column, including the seabed.

Code of practice: a document that details how commercial fishers have agreed to operate. A code of practice may include both voluntary measures and those required by law.

Deepwater stocks: those with a centre of distribution below 500 metres.

Demersal: occurring on or near the seabed.

Dressed fish: fish that have been scaled, gutted, and had gills removed. The head and tail are intact.

Drop/Dahn-lining: is a method suited for rocky areas and areas with vertical type terrain. Instead of horizontal bottom lines, vertical lines with snoods attached are used. Lines are secured by a weight and marked with a dahn buoy.

Endemic: restricted or peculiar to a particular location or region.

Fauna: organisms of the animal world.

Fisheries Management Areas: geographic areas that are used to define fish stocks.

Fish stock: a species of fish, shellfish or other marine life within a particular area of the country that is treated as one 'unit' by the fisheries management system. Catch allowances are set for commercial, recreational and customary fishers for each fish stock (area).

Mataitai: permanent reserves created in areas of traditional importance to Māori for customary food gathering. Tangata whenua manage and control non-commercial fishing through a local committee. Tangata Tiaki/Kaitiaki can recommend bylaws to manage customary food gathering, and issue customary food authorisations. Commercial fishing is not allowed unless recommended by the Tangata Tiaki/Kaitiaki. Māori and non-Māori may fish in mataitai reserves.

Middle depths: depths below the outer edge of the continental shelf and including the upper continental slope. In New Zealand this is usually considered to be between 200 and 800 metres.

Pelagic: occurring on or near the surface of the sea.

Quota Management System (QMS): the term applied to New Zealand's fishery management system that works by allocating rights to fish certain species as individual transferable quotas. A limit is set on the amount of certain each fish stock that may be taken in a given year.

Rahui: a ban on collecting/harvesting seafood in an area.

Rohe Moana: a particular area where Tangata Tiaki/Kaitiaki are appointed to manage customary food gathering.

Spawning: the process by which fish reproduce.

Taiapure: local coastal fisheries that recognise an area's special significance to local iwi or hapū, either as a source of seafood, or for spiritual or cultural reasons. A major difference between mataitai and taiapure is that taiapure allow commercial fishing.

Tangata Tiaki/Kaitiaki: individuals or groups who can authorise customary fishing within their rohe moana, in accordance with tikanga Māori.

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