

Discussion Document

On
The creation of a new Marine Park around the Northern coast.



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Dive! Tutukaka

Quick overview/ executive summary

What is this about?

A proposal for a Marine National Park off the Whangarei/Tutukaka Coast.

What is proposed?

From Cape Brett going south, 5 miles East of the Poor Knights Islands to Whangarei Heads, an area of 1800 square kilometres, set aside as an area where there is no commercial fishing, in 85-90% recreational fishing only and the rest in no take areas.

Why this proposal?

To create a sustainable Marine Park protecting biodiversity and promoting a range of recreational pursuits thereby creating a sustainable tourism industry that will create more jobs and secure the joys and challenges of our environment for generations to come.

Who is behind all this?

Many people have thought of ideas like this for a long time. With the introduction of the “no go” maritime area around the Poor Knights for ships over 45 meters, a clear marked and defined area became apparent. The Northland Conservation Board identified the need for an all-inclusive initiative and is keen to see interested parties looking at this proposal from an economical, social, cultural and environmental sustainable viewpoint.

Where are we now?

This discussion document was produced by two Dutch students as part of their Bachelor studies. It has not been produced as a scientific document but rather as a start and an overview, looking at some of the issues that need consideration and discussion to provide further refinement of the proposal. A number of organizations and individuals have been invited to consider the proposal and a meeting is planned for February 2005 to gather momentum and support for this proposal.

How does this involve you?

Please have a read, a think and start some discussions with others regarding the philosophy and specifics of this proposal. There is a need for compromise, vision, commitment and leadership, and for this we are looking at you!

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Introduction

The planet we live on consists of over 70% of oceans. Our well being on this world is greatly affected by water and the health of the oceans. For that reason alone, we need to be careful how we manage our seas and the species that live in it. In New Zealand we understand the need for protection when it comes to land. In actual fact, 30% of our country is protected. At the same time, New Zealand has 15000 km of coastline and less than 1% of that 15000 km coastline is fully protected through Marine Reserves. The first Marine Reserve took a long time before it was created. Nowadays, people are starting to realise that if we keep on exploiting the ocean as we do now, it will cause irreversible damage for the future.

This proposal is looking at establishing a pilot programme to create a number of Marine National Parks on the same philosophical design as our National Land Parks. This plan is to look at a proposal to create a protected triangle from Cape Brett, 5 miles around the Poor Knight Islands to Whangarei heads. In this Marine Park it is proposed that commercial fishing will be prohibited and recreational fishing will be restricted and controlled. The proposal is not anti fishing or anti any sector. The proposal is premised on the concept of sustainability and is focussed on the manifold benefits that arise to most sectors, and the community at large, from non consumptive or low intensity consumptive use of marine resources.

Thousands of jobs depend on a well-managed and sustainable fishing industry. Not every square inch of New Zealand's land resource is used for producing wool, meat, wood and milk, a large portion is set aside parks for nature's sake. We should apply the same principles when it comes to the sea.

The objective is to enhance, maintain, and protect an area of our Ocean for future generations. They should be able to be able to enjoy the biodiversity and recreational pursuits that our ancestors enjoyed.

At the same time this project will support a sustainable tourism industry, and cement the joys of the marine environment and all its attractions, for future generations.

Tutukaka and it's coastal environment are growing in popularity as a marine recreation area. With the first new hotel almost ready, and the second one in a planning stage, the growth of Tutukaka is inevitable. There will be an increase of pressure on the marine environment from tourists as a result. Visitors come here to enjoy the beautiful scenery the Tutukaka coast has to offer, great diving, fishing, kayaking and sightseeing. With an increase in visitor numbers, we have to plan for sustainable use, otherwise the very thing that attracted these people in the first place will be lost. The purpose of this proposal is to first look at the pressures the area is experiencing. Secondary to do some "future gazing" and thirdly discuss a number of options that are available to us to manage the future in a smart way, benefiting all the stake holders.

This report is far from "complete". It paints a picture that we think most of us experience. It asks for leadership, and compromise from all, to achieve a sustainable marine environment for us today and the future generations to enjoy tomorrow!

1: Pressures on the ocean

The oceans are an important part of New Zealand culture, especially in the summer months. Beaches are also important to the economy - they are part of the clean, green image used to market New Zealand as a tourist destination. While New Zealand beaches are on the whole clean and safe, there are still some issues. The recreational and food-gathering value of the marine environment is affected by microbial water quality changes over time. Animal and human wastes contain disease causing bacteria that may survive in marine waters, posing a risk to human health and the coastal environment. This waste comes from a number of different sources including sewage, storm water and agricultural run-off. Other pressures on the quality of the oceans water are for example marine farming, dredging and transport. One of the biggest users of the ocean is the fishing industry.

Commercial fishing

Fish stocks do decline and this can have a negative impact on the underwater environment. And sometimes very bad things happen due to commercial fishing! The Ministry of Fisheries is investigating the situation when they found thousands of undersized snapper and gurnard behind a commercial trawler. *"I feel that they killed more fish and left them for dead than all of the recreational fishermen took that day home to eat," Mr Kirkwood said.*
"It's a damn shame, a terrible waste of nature's resource."
Mr Kirkwood said many of the fish were undersized snapper and gurnard.
"They are killing the fish and leaving them for dead. It was really just a crying shame."¹

Current commercial fishing methods

Dredging

Dredging is used to collect oysters and scallops.

The vessel drops a steel frame dredge to the sea floor and it is dragged across the sea bed. The shellfish are collected and then sorted on deck. The dredge shown in figure 1 is used in the scallop fishery. The dredge used in the oyster fishery is a flat construction made of steel ring mesh.

Lobster Potting

Potting is mainly used for Rock Lobster, but with slightly different pots, it can also be used to catch blue cod and octopus.

Potting is, next to netting, one of the oldest forms of fishing. It was practised widely throughout the Pacific long before the arrival of European settlers.

Rock lobster pots are usually made from steel mesh and can be either square or round. The pot is baited with a piece of fish and lowered to the sea floor. The lobster enters the pot from the top, and once inside is unable to escape.

The pot is lifted by a winch on to the boat. The lobsters are measured, with any undersize lobsters being returned to the sea. Handled correctly, this process does not harm the lobsters.

¹ Quote New Zealand Herald, 9 November 2004, see bibliography

Long Lining

As the name implies long lining means catching the fish by way of a line and baited hooks. There are two main varieties of long lining used in New Zealand.

Surface long lining

Surface long lines are used mainly in the tuna fishery.

They consist of a main line that can be many kilometres long, supported in the water by a series of floats. Off the main line are branch lines up to 50 metres long. Each branch line carries a baited hook. There can be up to 3000 hooks on a long line.

Bottom long lining

Bottom long lines are used mainly for ling and snapper

Bottom long lines are similar in concept to surface long lines but are significantly shorter in length. At one end of the line is an anchor which is dropped to the sea floor. The other end has a weight attached. Depending on the length of the line a series of hauling lines are attached that come to the surface and are marked with buoys.

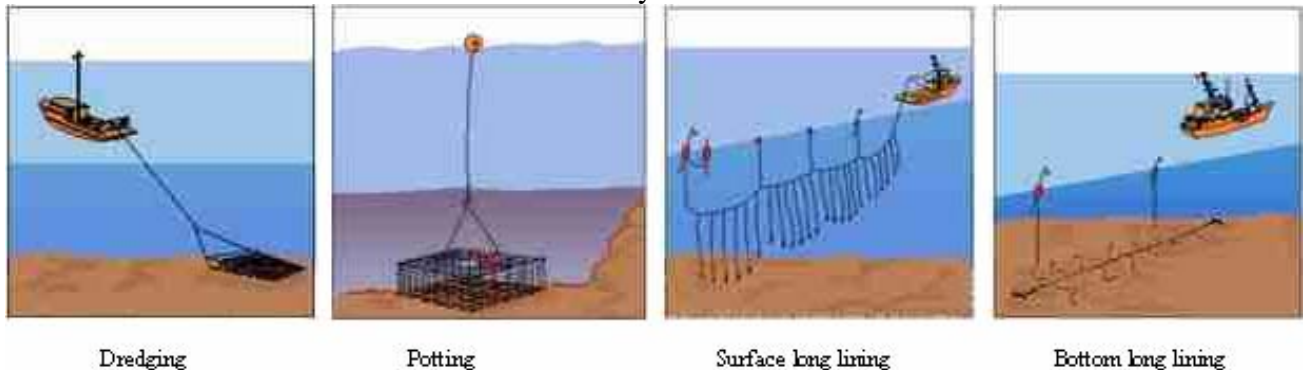


Figure 1: visualisation of fishing methods

Netting

Surface netting

The most common form of netting is "set" netting, or "gill" netting. Most nets have a series of floats at the top, and a series of weights at the bottom that keep the net upright in the water. Fish are caught as they swim into the net.

The size of the mesh in the set net determines the size and species of fish caught. Used properly, this method is one of the most selective fishing methods available.

Bottom gill netting

The basic design of this net is similar to the surface net, but it uses lighter floats and heavier weights so that the net sinks to the bottom. Haul ropes are attached to marker buoys so that the net can be recovered. This fishing method is not a very selective way of fishing.

Trolling

Trolling is used mainly for predatory pelagic fish like tuna and yellowtail kingfish.

A boat drags a set of 5-21 hooked lures through the water at slow to moderate speed (2-10 knots). Tuna and kingfish attack the lures, thinking that they are smaller prey species, and get hooked.

Purse Seining

Purse seining is used mainly to catch fish that feed on the surface, such as tuna, trevally, kahawai or mackerel. The net is not used to catch but rather to surround them.

When a school of fish is located, a small boat (known as a skiff) is dropped with one end of the net. The fishing boat and the skiff then tow each end of the net until it surrounds the fish. Once this process has been completed ropes at the bottom of the net are drawn in, and the fish are completely enclosed.

The net is then drawn in until all the fish are concentrated into a small space alongside the fishing boat. While this is happening the skiff will often sail away from the boat, on the opposite side to the net (but still attached to the boat), to ensure that the weight does not make the fishing boat tip over. The fish are taken aboard using large scoop nets, or by being pumped in.

Squid Jigging

Squid jigging is carried out on very specialised boats at night. Powerful lights illuminate the water, attracting the squid which gather in the shaded area under the boat. Dropped along the sides of the boat are lengths of line with lures set at short intervals. These are set through a pulley arrangement and automatically jigged up and down. When the machine controlling the line senses that the strain in the line has gone above a certain point the line is hauled in.

The hooks on the lure do not contain any barbs so that as the lures are recovered over the end rollers, the squid fall off into collecting areas.

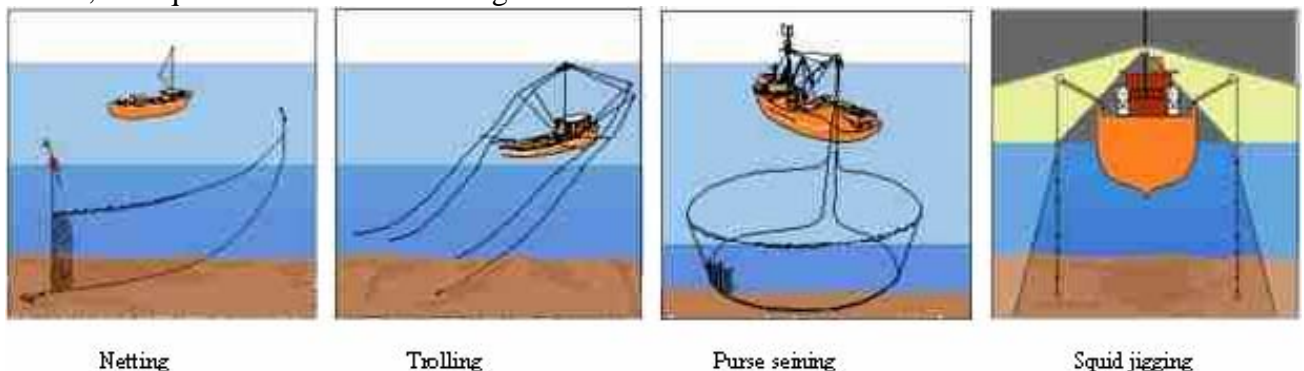


Figure 2: Visualisation of fishing methods

Trawling

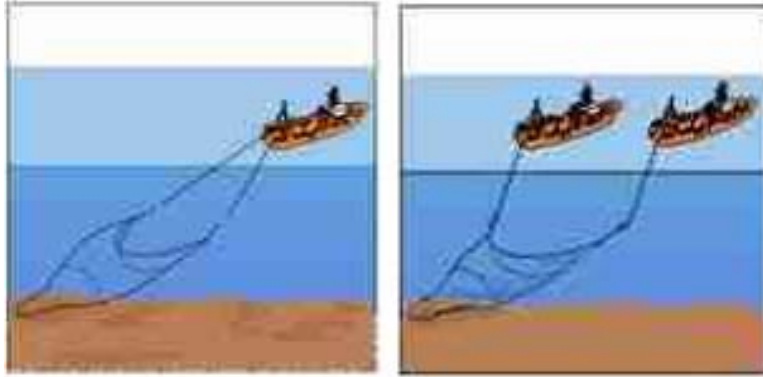
Trawling is the most important method of harvesting fish in New Zealand waters. It involves one or two boats towing a very large net, either on the bottom (for fish such as orange roughy, dories & cardinal fish) or a lesser depth, called mid water trawling (for fish such as hoki).

The net consists of several parts. Strong steel cables (referred to as warps) connect the net to the trawler. The net is held open by two large trawl doors (or trawl boards) which act as hydrodynamic kites, and stop the mouth of the net from closing. The weight of the boards also determines the depth at which the net will operate.

Fish enter the net through the mouth and then make their way to the other end, called the "codend". This part of the net contains the smallest mesh size. The size of this is controlled by law. Undersized fish are able to swim through the mesh unharmed.

Pair trawling

Pair trawling is used on smaller boats and at shallower depths. One of the lines from the net is passed to a second trawler and the two boats tow in tandem, using the distance between them to assist in keeping the mouth of the net open. Prior to hauling the net in, the line is passed back to the first boat, and the net is hauled onto one boat.



Trawling

Pair trawling

Figure 3: visualisation of fishing methods

Ministry of Fishery

The Ministry of Fishery has one goal. This goal is²:

Maximise the value New Zealanders obtain through the sustainable use of fisheries resources and protection of the aquatic environment.

The three strategies to achieve this goal are:

1. *Protect the health of the aquatic environment by:*
 - a. *Developing and implementing frameworks and processes to:*
 - i. *Manage the effects of fishing on the aquatic environment*
 - ii. *Maintain marine biodiversity and aquatic habitats*
 - iii. *Avoid or manage marine biosecurity risks*
 - iv. *Allow the government or stake holders to take action against those who degrade the aquatic environment*
 - b. *Enabling New Zealanders to participate effectively in developing policies, frameworks and standards to manage effects on and protect the aquatic environment.*
2. *Enable people to get the best value from the sustainable and efficient use of fisheries by:*
 - a. *Better defining and integrating the rights and obligations of commercial, customary, recreational and other users and allocating those rights and obligations*
 - b. *Maintaining the integrity of policies, frameworks and processes to support the rights and obligations associated with fisheries use and conservation*
 - c. *Developing institutional frameworks and capacity for fisheries stakeholders and the public to participate effectively in fisheries management*
 - d. *Enabling New Zealanders to participate effectively in developing frameworks and processes for using fisheries resources and making decisions*
3. *Ensure the Crown delivers on its obligations to Maori with respect to fisheries by:*
 - a. *Implementing its partnership obligations*
 - b. *Establishing and maintaining effective relationships*
 - c. *Developing frameworks and processes to implement the 1992 Fisheries Deed of Settlement*
 - d. *Ensuring contemporary grievances are not created.*

To achieve the goal and to work according to these strategies the Ministry of Fisheries has taken the Quota Management System on board since 1986. It controls the total commercial catch from all the main fish stocks found within New Zealand's 200 nautical miles EEZ. It was introduced to:

- Prevent over fishing (which had reached dangerous levels in some inshore fisheries, and with certain species such as snapper);
- Improve the economic efficiency of the fishing industry.

² Quote from *Annual Report of the Ministry of Fisheries 2002/2003*, see bibliography

The Quota Management System works like a stock market. The stocks, for every species 100.000.000 can be bought by fishermen. Every year the Maximum annual catch (in kg) is determined and this is divided over the shares. The amount of fish a fisherman may catch is determined by the amount of shares he bought.

The Crown also has shares. These shares are also a part of the 100.000.000. The Crown can step in when the maximum annual catch is determined lower or higher than the previous year. When the maximum annual catch is determined lower, the Crown can divide these shares equally over the shareholders. This way, fishermen do not suffer unduly under a decline in the maximum annual catch. It is naturally so that when the maximum annual catch is determined lower and there are shares given to the fishermen, they can never catch more than before the lowering.

Problems with QMS

Bycatch

Compelling evidence of the impact of fishing on marine communities can be seen in the rate of “bycatch”. Bycatch is the term used to describe the catch of “non-target” species. Worldwide, an estimated 18 to 40 million tonnes of bycatch is discarded by the fishing industry each year.

Among the “non-target” species caught and discarded are large numbers of marine invertebrates, marine mammals and seabirds. In New Zealand, each year around 700-1000 fur seals and 1100 seabirds – mostly albatross species - are drowned in trawl nets. These nets are huge, big enough to hold the Cook Strait ferry. Dragged through the ocean, they trap or crush everything in their path.

Large bycatches of seabirds are also caught and drowned due to longlines. Long lines, up to 100km in length and set with thousands of baited hooks, are cast behind fishing boats. Seabirds dive down to get the bait, get caught on the hook and drown. New Zealand’s tuna longline fleet is estimated to catch as many as 6000 seabirds per year. Most albatross and many petrel species are now considered to be threatened by fishing. In just the last 25 years, the Antipodean wandering albatross population has declined by 63%. During the same period, over 35,000 grey petrels have been killed.

In many fisheries, the amount of bycatch can exceed the catch of the “target” species. A Ministry of Fisheries study found trawlers in Northland’s Spirits Bay recorded more bycatch than the trevally and snapper they were targeting. In some instances, bycatch was up to five times more than the target catch landed.

Similar stories can be told about other fisheries. The hoki fishery alone has caught around 26,000 tonnes of non-target species each year for the last 10 years. The southern bluefin tuna fishery catches such a huge number of sharks that it would really be called a “shark fishery”. In some areas, bluefin tuna is less than 5% of the total catch.

Low reserves

The QMS also works on the edge of a knife. It is the intention to keep the number of fish at only 30% of the original amount. In doing so, there would be more food per fish and therefore, the young fish would grow faster. However it would also be easier to tip the

population over the edge. Catching too much could result in damage to the population which would take years to recover if it would recover at all.

In particular species like Orange roughy and oreos are vulnerable to overfishing because they are long-lived, slow growing species. Orange roughy can live up to 120-130 years, reaching maturity at the age of 33 – 34 years. Black oreos can live more than 150 years. These characteristics mean they are slow to recover from overfishing.

Another Issue with population size is that only for 15% of the species managed under the Quota Management System the actual size is measured.

Impact of fishing methods

The same trawlers and dredges that cause huge disturbance to marine populations can also have a major impact on marine habitats and marine invertebrate communities. In heavily fished areas, the ocean floor can be trawled or dredged several times a year, scraping or ploughing the seabed, disrupting sediment, damaging habitat and killing large numbers of bottom-dwelling organisms.

Enormous damage is also done to seamounts. Seamounts are “underwater islands”, submerged hundreds of metres beneath the waterline. More than 700 seamounts are estimated to exist in the waters around New Zealand. Many are larger and higher than Mt Cook.

These underwater rises are known to be rich in biodiversity, home to nearly 200 fish species and 169 species of “macro-invertebrates”- corals, starfish, brittle stars, sea eggs, crustaceans and barnacles. Many of these species are new to science.

Despite their biological importance, seamounts are routinely trawled for orange roughy and oreos. Huge nets, designed to roll over the ocean floor, are dragged repeatedly over the seamounts crushing everything in their path. Forests of coral trees, up to five metres high and between 300-500 years old, are cut down in the process. After repeated trawling, these treasure troves of biodiversity are turned into rock and rubble. At present, only 19 seamounts are protected from trawling and dredging.

Inshore, marine farming is now emerging as another threat to marine habitats. Marine farming can cause significant impacts on the seabed and marine fauna and flora. Mussel farms, for example, can smother sponges, corals and other marine species. Over 35,000 hectares of the seabed is currently under application for mussel farm permits – an area bigger than Paparoa National Park.

Conclusion of QMS

Noticing all the problems that still occur under the Quota Management System since the beginning in 1986, it would be safe to say that there are still many difficulties to overcome. The QMS system is only species and stock specific and ignores the ecosystem and the relations between species. Not only is it failing on the main purpose, the protection of species against extinction, but it is failing on almost every imaginable point.

- Fish stocks are kept on such a low level that one little mistake could tip the population over
- The bycatch is still enormous and therefore problematic
- Fishing methods are not regulated and still damage the environment unnecessarily

Does this make the Quota Management System wrong? No, it hasn't yet met its mission statement, but with some adjustments it could become a good system with in which the New Zealand Fishery and fish stocks can survive. However, in the proposal before you, we are looking at no commercial fishing at all in the marine park.

Recreational fishing

Recreational fishing is a booming industry. Increasing numbers are hiring charter boats to spend a day fishing on the sea. It is a hobby and a sport which combines luck and skills. In New Zealand many people go fishing with friends and/ or family in their own pleasure craft. Also 75% of the New Zealanders live within 12 miles of the coast. Yet all this recreational fishing has its impact. In the chapter "Economic values of fishing" table 5 shows numbers of fish in tonnes taken by recreational fishermen. This indicates that perhaps recreational fishing is not as harmless as it seems.

It must be remembered that land was once a "public resource" in public ownership. If all land in New Zealand were subject to the same management as our coastal waters today, the very same overuse would apply - not to mention the dissension between those who believe they have a 'prior right'. In order to resolve this situation, property rights were accepted by society as the only sensible method of allocation. New Zealand's wealth is a direct result of such sensible distribution and trade.

Recreational fishing is a right that every New Zealander must have. However there also must be increased sustainability in this fishing sector. Fishing could be deemed a hobby, that exploits its resource. To maintain that resource for the future we must look at methods that prevent that exploitation. We can not expect the sea to be an endless source that we use and expect to be always full of fish. Bag limits are not the perfect option. They do not create refuge areas for fish to spawn, grow large and behave in a natural state. So there must be another solution to this problem.

Recreational fishing methods

Recreational fishers use many different methods to catch their fish. There are two overall types of recreational fishing. There is big game fishing and other recreational fishing. Both will be highlighted below.

Big game fishing

Big game fishing is mostly about Marlin. If spotted, they start fishing them. When a Marlin is hooked, a fight can occur varying from 5 minutes to an extreme of 14 hours. Most Marlins are caught using wheel rods. Because of the materials that are used, the extreme fights hardly occur.

It is not always Marlin that is caught. Sometimes a Yellow finned tuna or Mako shark find the lure to good to be true and take a bite. These two are the main bycatch.

Since the seventies, most Marlins have been tagged and then released. This data can be used for scientific research. The fishermen already have been able to proof that the majority of the released Marlin stay alive.

About 60% of the caught Marlin also is released. About 40% is eaten by the fishermen. Almost all of the yellow fin tuna caught, ends up being eaten. The Mako sharks are the most

fortunate of them all; around 90% of the caught sharks are set free. The rest of them are eaten or in such a condition that it was not humane to set them free again.

Fishermen are also fishing for other, somewhat smaller species like Snapper, Kingfish or Hapuku.

Other recreational fishing

Recreational fishermen use a lot of different methods to catch a fish. The most used methods are wheel rods; trolling, jigging and live bait.

Wheel rods are probably the most well known. You throw the lure out and turn the wheel to bring the lure back in. Because of the way the lure moves, fish think it is food and take a bite at it. In most cases, the hook gets stuck around the mouth.

This method is used for fresh water fishing, but also for salt water fishing. It is mostly used to catch Kingfish and Schnapper.

Trolling is another well known method. As described in the commercial part³, a lure hangs at the back of the boat and the boat whilst cruising at a speed of 8 to 20 km per hour. The main catch is Kingfish, Schnapper, Hapuku and Tarakihi with this method. It is not used as much as wheel rods, but would be the second most popular.

Setting nets is not only done by commercial fishermen but also by recreational fishermen. There is a tendency to condemn this method as the due to its impact on the environment and the large bycatch. It is not really a “for fun” method because it looks more like commercial fishing and the bycatch is enormous. Many fish which are not meant to be caught with the nets still swim into it, get hooked up in the mazes and die. The amount of fish caught often implies commercial gain in stead of recreational gain.

Recreational fishermen do not always stay in one place to fish. Some prefer to keep moving, some prefer to stay put and fish there. For the moving fishermen, a large area to fish is preferred. It could be construed as inconvenient to remove the line/net/lure every time you cross a reserve.

Spearfishing is a very selective method where the free diver selectively chooses the “right” fish. The bycatch of spearfishing is zero and thus one of the most sustainable ways of fishing.

Consideration should be given to a ban on “Crayfish hunting” during the season that the females are berry. This will give an impulse to the Crayfish population.

³ See page 6 of this report

Current bag limits

For recreational fishing in the northern region of New Zealand there is a combined daily bag limit of 20 of any combination of the following fish:

Fish species	Minimum fish length
Blue cod	33
Blue moki	40
Blue nose	--
Butterfish	35
Elephant fish	--
Flatfish	25
John dory	--
Kahawai	--
Red Cod	25
Red gurnard	--
Red moki	40
Rig	--
Sand flounder	23
School shark	--
Tarakihi	25
trevally	25

Table 1 species that can be caught and minimum fish length

In addition to the combined limit you can take a maximum of:

Fish species	Minimum fish length (cm)	Maximum daily limit per person
eels	--	6
Grey mullet	--	30
snapper	27	15

Table 2 species that can be caught with minimum fish length and daily limit

In addition to the previous mentioned limits you may also take the following:

A combined daily limit of 5, with no more than 3 kingfish per person of the following fish.

Fish species	Minimum fish length (cm)
Groper/hapuka/bass	--
Kingfish	75

Table 3 species that can be caught with minimum fish length

No daily bag limits are applied on the following fish

Fish species	Minimum fish length (cm)
Garfish (piper)	--
parore	--
pilchard	--
Yellow eyed mullet	--

Table 4 species that can be caught with minimum fish length

In this proposal we are looking at reducing the impact of recreational fishing. The preferred option is to reduce the daily bag limit by half. This will give areas greater resistance to over fishing, and at the same time, helps to create increase biodiversity. The half a bag limit is a way to make sure that the fish stock in the area will not be unduly harmed. Everyone can still enjoy the sport, but it will make it more sustainable. Perhaps there could be an option to review the bag limits at certain times. If some fish species go up in numbers that it would be possible to increase the bag limit of that species. The bottom line is that there must be a compromise that fits everybody who is using, and is going to make use of the area.

Net setting should be banned from recreational fishing method (the bycatch is big and often is seen as garbage and therefore has no use to the fishermen). It is also hard to control this kind of fishing in a sustainable way. For the rest of the methods that are used at this time there are no differences in impact. When recreational fishermen are fishing in a sustainable way, with a half a bag limit, and only bring to land what they really use there should be few problems. Of course suggestions of other methods to be banned ore allowed are open for discussion.

It is important that the process is a democratic and consultative one. The creation of protected areas should encompass all users and all viewpoints. Many recreational fishermen are, in fact, hugely supportive of the concept of a marine park, or reserve. Interested parties need to have sense of inclusion in the discussion of their points of the plan. This will ensure a realistic plan that is able to be acted upon, and it's goals achieved.

Local fishermen, iwi, and users are a vital link in the chain that determines not only the boundaries but also their preservation. Good fishing spots, breeding grounds and environmental features is the reward. There is a win-win option for everyone.

Other pressures on the ocean

Marine Farming

Aquaculture is the propagation and husbandry of aquatic plants and animals to supplement the natural supply. These activities can occur in both natural waters and in artificial aquatic impoundments.

The aquaculture industry in New Zealand specialises in high quality products and is a significant export earner for New Zealand.

The main aquaculture activity in New Zealand is the farming of filter feeding bivalves; in natural waters below high tide mark. The major species farmed are the green lipped or Greenshell™ mussel and the Pacific oyster.

Other species that are farmed are king (or quinnat) salmon and the New Zealand abalone (known locally as paua). Salmon farming occurs only in the South Island either in sea cages or in freshwater raceways. Annual production of salmon farms has remained static over recent years at around 5,000 tonnes greenweight. The value of salmon exported from New Zealand was \$35,000,000 in 1999. If marine farms are managed in such way that they do not harm the environment, then there is no reason why this activity should be banned from the marine park proposal.

Dredging

Sand has become a very important mineral for the expansion of society. Not only is it used for glass but more so for making concrete, filling roads, reclamations, building sites, and for renourishing beaches. Each has its own requirements in respect of the quality of the sand. Although the main constituent of sand, quartz is found in every soil and locality, it occurs mostly as loam, a mix of sand + silt + clay. Clean sand is indeed a rare commodity on land, but common in sand dunes and beaches. On average, people 'use' over 200kg of sand per person per year. This sand is taken from what are essentially non-renewable resources.

The main problem with extracting sand is the movement of the surrounding land. There are studies which have shown that the surrounding area is affected by the extraction of sand. The gap which the sucking creates has to be filled with new sand or other material. This material will come from the surrounding area and this area will sink also. It's a domino-effect which gets larger and larger when the sucking continues. Everything around an extraction station will eventually be demolished.

Dredging can be done in a sustainable way. When it is done further out in the ocean, the effects of extracting the sand will not reach the beaches and therefore the beach and dune system will remain unharmed, however we do not see the dredging as a permitted activity in a marine park since the seafloor will also be protected.

Run off

Run off is water that does not infiltrate in the soil. It literally runs off. Before men came to colonise land, there were trees everywhere. When water fell, the fall was broken by trees and after that, it landed on an organic layer, made of dead leaves. This layer worked like a sponge, taking up water and releasing it slowly. This effect made sure all water would go in the ground, get cleaned by the sand layers, mix with the groundwater and eventually flow as relatively clean water via rivers into the ocean.

But now, these forests has vanished and become either cities or farming land. Here, rainwater smashes into the ground, streaming directly into rivers and oceans and taking all toxins with it. On roads this means breaking fluids, oil and rubber. On farm land this means nutrients from animal wastes and fertiliser. In the cities the amount of run off is now 80%, and on commercial area's it is even 100%. The New Zealand Herald had an article on run off from farmers and quoted: *"The Parliamentary Commissioner for the Environment, Dr Morgan Williams, said nitrogen overload had rendered many low-lying waterways unfit for recreational use, and the worst of the effects would not be known for years to come. He warned that farmers needed to make fundamental changes to the way they operated or face endangering the long-term future of farming and losing global buyers, especially in the crucial European market."*
(Quote: NZ Herald, 04th November 2004)

An effective way of removing contaminations is with wetlands or settling ponds which will remove about 75% of solids. The water-borne nutrients will encourage plant growth. Wetlands adjacent to residential areas are usually seen very favourably, and result in an increase in property values in the area.

Boating & Shipping

Over 90% of New Zealands export and import goes by ships. These ships travel all over the world and can take different sorts of pests with them to New Zealand oceans. This already has happened with the seaweed "undaria". This highly invasive Japanese seaweed has caused vast amounts of damage to the underwater environment.

It is assumed that the spore of this seaweed was brought in by ballast water in a foreign vessel. When it dumped its ballast in New Zealand's waters, the spores adjusted rapidly to the new environment, and disaster was born.

This is not the first known pest that has travelled with a vessel to new waters. All around the world, pests are migrating via transportation routes. One of the more famous ones has been the plague.

Besides travelling pests, contaminations also make boating and shipping a pressure for the environment. On many ships, there are certain chemicals used on decks and other objects. With storms or just, waves or rain, these contaminations enter the sea and are washed ashore. They land on the coast where they poison animals and smother organisms. It has already happened twice at the Poor Knight Islands. That is why the new shipping ban in the proposed area is a very positive outcome.

Sewerage

Some parts of New Zealand are not yet connected to a sewage system. There are many households dependent on Compact Treatment Systems. These systems clean waste water from households. They are now so sophisticated, that the effluent of these systems is clean enough to be put directly back in the environment.

But not all households without sewage have a Compact Treatment System. These households still dump their wastewater in the environment, for example in the ocean. Animal and human wastes contain disease causing bacteria that may survive in marine waters, posing a risk to human health and the coastal environment. This waste comes from a number of different sources, not only from sewage, but also from stormwater and agricultural run-off.

2: Economic values of fishing

Current species taken

From the fish stock assessment from the Ministry of Fisheries the following numbers show the amount of fish taken by recreational fishermen.

Species	Amount caught (in tonnes)	Covered region
Blue Cod	17	Northland + Auckland
Blue Moki	93	Northern island
Blue nose	n.a.	
Butterfish	n.a.	
Elephant fish	n.a.	
Flatfish	110	Northland, Auckland, BoP
John Dory	80	Northland, Auckland, BoP
Kahawai	950	Northland, Auckland, BoP
Red Cod	11	Northland, Auckland, BoP
Red gurnard	108	Northland, Auckland, BoP
Red Moki	n.a.	
Rig	35	Northland, Auckland, BoP
Sand flounder	n.a.	
School shark	46	Northland, Auckland, BoP
Tarakihi	305	Northland, Auckland, BoP
Trevally	234	Northland, Auckland, BoP
Grey mullet	106	Northland, Auckland, BoP
Snapper	711	Eastern Northland
Groper	190	Northland, Auckland, BoP
Kingfish	600	Northland, Auckland, BoP
Garfish	n.a.	
Parore	n.a.	
Pilchard	n.a.	
Yellow eyed mullet	28	Northland, Auckland, BoP

Table 5 amount of current species taken

Several factors need to be taken into account. The accuracy of the figures, the specific catch areas and the origin of the survey figures. Recreational fishermen are not obliged to detail how many fish they catch. The collected numbers therefore cannot be considered accurate. Also the areas where the figures are from are often very large which can give a wrong point of view. This is because we are talking about a much smaller area than the covered regions given in table 5. The figures shown in table 5 are a good indication but do not give us for 100% certainty that this is the exact amount. Parts of the numbers come from surveys the Ministry of Fisheries held among recreational fishermen, the rest are numbers from catches that are registered by the Ministry of Fisheries.

Economic values of recreational en commercial fishing.

The New Zealand exclusive economic zone (EEZ) is the fourth largest in the world at approximately 1.3 million square nautical miles. An interesting aspect of the EEZ is its depth, with 72% in waters more than 1,000 metres deep, 22% between 200-1000 metres, and only 6% less than 200 metres. Fishing within the EEZ depends mostly on species found in waters at depths ranging from 200-1200 metres, rather than species found in shallower waters. Despite the size of the New Zealand EEZ, the fisheries resources are not as abundant or productive as in many other parts of the world. This is due to a lack of nutrient upwellings, and being on the periphery of the range of highly migratory species such as tuna. Nevertheless the marine ecosystems and species are highly diverse. About 8,000 marine species have been found in New Zealand waters, including 964 species of fish, 2,000 species of molluscs (snails, shellfish, and squid), 400 species of echinoderms (kina, and starfish), and 900 species of seaweed. The result is a wide variety of marine plants and animals.

The commercial fisheries sector is New Zealand's fourth largest export earner. In 2001, the export value from the fishing industry was \$1.5 billion, including \$230 million from aquaculture production. Exports account form by far the largest proportion of the product with about 90% by value being exported. The industry is also a large employer, involving some 26,000 people through direct employment and flow on effects.

Commercial fisheries

Of the species that are living in the EEZ there are 130 species fished commercially. Of these, only 43 species are commercially significant. The deepwater species (hoki, hake, ling, orange roughy, oreo dories, squid, and silver warehou) as well as spiny red rock lobster, paua (abalone), greenshell mussels, and snapper dominate the fishing industry. Figures 4 and 5 show the value of the exported production and the value of catch for selected species.

Value of Production (Exports)

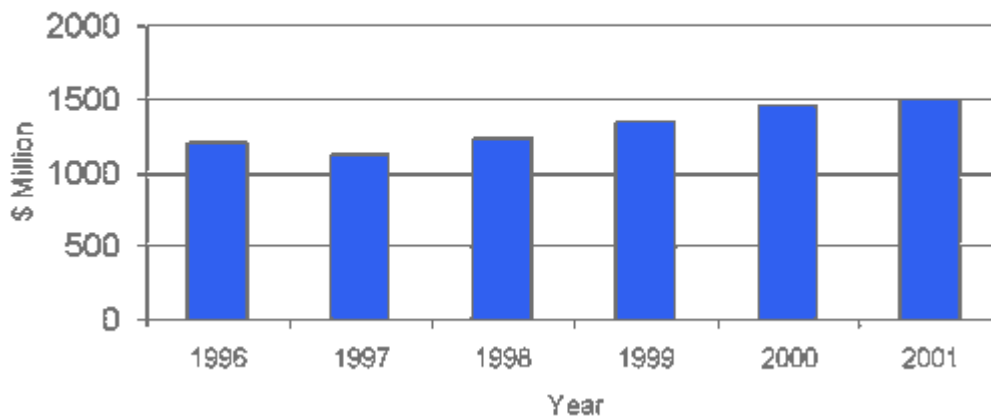


Figure 4 Value of production (exports)(source: SeaFIC)

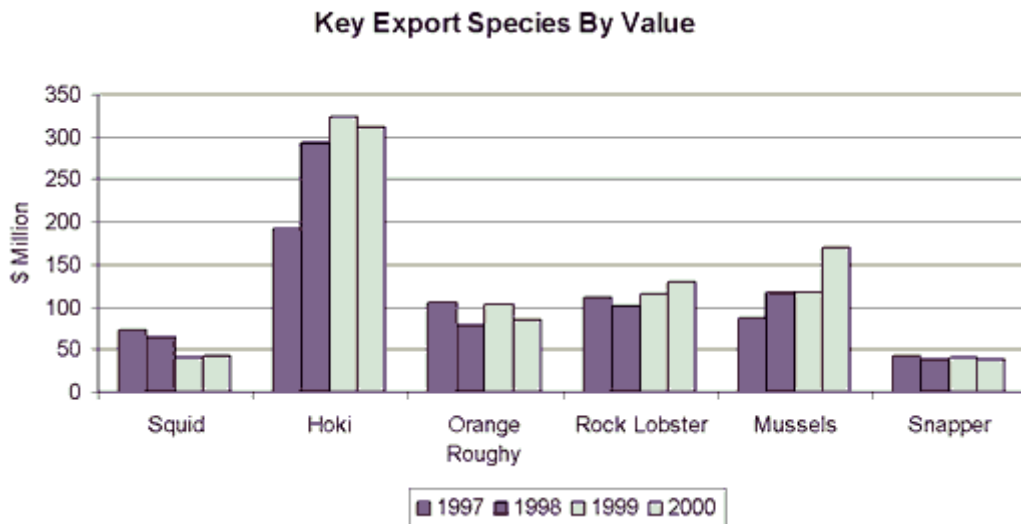


Figure 5: Key Export Species by value (Source: SeaFIC)

About 750,000 tonnes of seafood is harvested annually from New Zealand's fisheries. Seventy percent of fish taken is from the deepwater and midwater fisheries, while 11% are deep sea species, 10% are farmed species, and 9% are from the inshore fisheries.

Ninety percent of the seafood industry's revenue comes from exports. The major export markets are Japan (22%), other Asian countries (28%), United States (18%) and Australia (12%). Less than \$140 million of the seafood industry's revenue came from domestic sales in 2001.

In the 1970s, open access to fisheries resources and emphasis on increasing commercial harvest led to over-fishing, which impacted on fishstocks and returns to fishers. The extension of New Zealand control over the EEZ, coupled with new technology, meant that the fishing industry could expand to fish new species and areas. The introduction of the QMS in 1986 was partly aimed at addressing over-fishing.

As a result of the fisheries settlement Maori now own around 40% of quota and have additional involvement in another 20% of quota. Many iwi may have the opportunity to become directly involved in the commercial fishing industry.

Recreational fisheries

Recreational fishing, both marine and fresh water, is a popular activity. Surveys of the Ministry of Fishery indicate that up to 20% of the population engage in marine recreational fishing annually, gaining a variety of benefits, ranging from enjoyment and relaxation to sustenance for their families. Recreational fishing also contributes to the economy, through business for equipment suppliers, charter boat operators and tourist facilities. Research into the value of recreational fishing estimates the expenditure made by recreational fishers to catch five key recreational species to be nearly \$1 billion per annum. As the population concentration grows in areas such as Auckland there is increased pressure on the regional recreational resources.

While marine recreational fishers may catch at least 40 species, the main species are snapper, blue cod, kahawai, rock lobster, paua and scallops. Many of the species taken by recreational fishers are fished in competition with the commercial fishing sector. In a relatively small number of fisheries, such as the snapper fishery off the north-east coast of the North Island, and the blue cod fishery at the top of the South Island, recreational catch makes up a large proportion of the total catch.

The economic value of fish that is caught by commercial fishermen is not the same value that recreational fishermen get for it. The value of fish caught by recreational fishermen is much higher. The 1999 report Value of NZ Recreational Fishing states: "The fish species that is valued the highest in New Zealand recreational fishing on a fishing trip is Kingfish, which adds \$181.10 to the average willingness to pay for a fishing trip".

This is far higher for overseas anglers who come here because New Zealand Kingfish are the biggest in the world. The report Value of NZ Recreational Fishing finds that the on average it cost a recreational fisher \$29.83 for each kilogram of Kingfish caught. Compare that with the return from a commercially caught Kingfish, at an average retail value of \$7 per kg, and it is very obvious Kingfish are of far greater value to the country as a recreational specie. This proves as earlier mentioned, people are willing to pay for quality fishing instead of quantity fishing.

Although Kingfish is considered the most valuable specie the recreational fishermen catch, it is not hard to realise that recreational fishermen get more for their fish then commercial fishermen. In this case it is more than 4 times the price a commercial fisherman gets for it but with other species this is lower. But still it gives a significant difference between the economic value of recreational and commercial fishing.

3: Managing the resources

Threats of taking too much fish

The current knowledge of our oceans is not as good as it should (or we would want it to) be. So we do not know the precise effects of taking too much fish. But the effects that we do know show us that the effects are anything but positive.

A good example is the decline in Crayfish. This lobsterlike creature cracks open Kinas with a hook and eats the animal. Fishermen are taking crayfish for the food industry. An increase in the crayfish take resulted in a dramatic decline of crayfish, but also in a dramatic growth of kina stocks. Kinas eat kelp and whole kelpforests disappeared. With the kelpforests disappearing, so did the nursery grounds for fish. So, taking too much fish does affect the rest of the chain.

But what is too much? Fish are in fact a renewable resource. This means that some fish can be taken as long as the population is healthy. If a piece of the stock is taken and there are still enough fish of that specie to produce enough youngsters to fill the created gap, then you can speak of sustainable fishery.

If you take more than the surviving stock can produce, the population will decline and it will take more time to compensate the taken part. If fishing continues, the population will keep on declining and eventually will reach a point of no return. This is a point where the population cannot recover and will eventually become extinct. If we look overseas to Europe for example, it shows that the seas where overfished that extreme measures were necessary. Fishing fleets had to be shut down and many people lost their jobs. The compensation from the government could never cover the losses that those fishermen had. The Mediterranean Sea has been so overfished that there is hardly any fish left. In the Netherlands and the UK fishermen are now dealing with such low quotas of what they can catch that it is often hard to make a decent living. In New Zealand this is not (yet) the case but it is heading into the same direction.⁴

What is gone and what do we do to compensate?

What is already gone is hard to tell. There are indicators that it was almost too late for species like the Orange Roughy, the Oreo and the Snapper. These species were almost a victim of too much fishing in the waters around New Zealand. Luckily, New Zealand took measures just in time and the future looks a little bit brighter.

Another problem is that we don't know exactly what is living in the oceans. Still new species are found and it could be that species we didn't know of are gone for good, but this is speculation.

The great schools and almost unlimited looking supply of fish is one thing we did lose. Intensive fishing has caused fish stocks to decline rapidly and it is not without reason that the Quota Management System is based on only 30% of the original amount of fish. More would mean that over the next couple of years, fishing would be reduced even more to regain some of the fish stock. But there are measures being taken to ensure fish are still swimming in our seas in the future.

Every step taken to develop a no-take area is a step taken to make up for what we have taken from the ocean. A no-take area offers a sheltered place for fish to reproduce. This is especially useful for species that do not migrate.

⁴ Origin: seafriends, see bibliography

A population can reach a healthy size here and even grow too big for the area. When the last happens, the surplus of fish will seek new places and leave the protected area. This effect, spill over, is good for the fishing industry. When they take this surplus, there will always be a healthy population within the boundaries of the no-take area.

Next to the no-take areas, or marine reserves, are the marine parks. Marine parks have special regulations which also involve the fisheries. Fishing is still allowed in Marine parks, but there are more regulations than in the water outside marine parks and marine reserves.

The Quota Management System is another measure taken to protect the fish population of New Zealand. This measure makes sure that a certain percentage of fish will be in the ocean. The working of it is explained earlier in this report.

One of the latest efforts to make sure we will have fish in the future is releasing young fish from marine farms. An example is the thousands of young yellow finned tunas released and the many thousands more that are waiting for release as well.⁵

Benefits of no-take zones⁶

The seas have always been a dependable provider of protein-rich food. As recently as fifty years ago, the oceans were thought to be able to provide all the food that humanity needs. However, in recent times, the inexhaustible bounties of the sea have shown their limits. Fisheries everywhere in the world have either reached their limits or have collapsed. In all, our report card for managing the oceans does not look good. But it has not been for lack of trying. Most nations established controls over their inland and marine fisheries a long time ago, in order to protect them from overexploitation.

There is a good reason for protecting sea areas in which there is no fishing at all or just a little. Research shows that there is more than one benefit from protection. A couple of benefits are discussed below.

Ecosystem support

It has been proven that protected areas have a good influence on the ecosystem. The creatures that live inside the protected areas will grow and reproduce. Their offspring will spread to areas outside the reserve because the reserve itself is fully stocked. When this happens, the fishermen will receive the benefits of this. We have to keep in mind though, in order to achieve this the protected area must not be a small piece but a significant piece of sea. When an area of the sea is left alone from extraction, the ecosystem can go back to function in a more natural way, which improves the production of this area. It also increases the biodiversity in the area. Studies of more than 80 Marine Reserves all over the world have shown that the average weight of exploited species is more than four times greater in reserves than in unprotected areas. The average number of species is 1.7 times higher in reserves than in unprotected areas. The average body size of animals is 1.8 times larger in reserves than in fished areas. These findings include not just fished species but also other plants, invertebrates and fish. The studies around New Zealand show a similar pattern. At the Poor Knight Islands Marine Reserve, snapper numbers have increased dramatically inside the reserve. As food species become more numerous, so do the ones dependent on them, at all levels, from deep to shallow. This improves the biodiversity in the area.

⁵ Origin: seafriends, see bibliography

⁶ Origin: seafriends, see bibliography

Fishery benefits

There are some positive side effects from protected areas. As mentioned previously the spillover effect can have benefits for the fishermen. Larger number and bigger fish outside the protected area are a direct benefit for fishermen. The protection of spawning grounds protects the fish population from decreasing. By creating undisturbed spawning conditions the reproductive capacity can increase which in turn, creates a better fish stock. This means that in the future there will be enough fish to catch. If we don't protect some areas the fish stock will decrease. It is our duty to our future generations to protect some parts of the sea so they can also see it as it supposed to be.

The genetic diversity can increase within a population. If fish grow larger inside a protected area, after a period of time, more of these species are expected and thereby increasing the biodiversity of the area as well as inside as outside the protected area.

From other places where marine reserves are established fishermen, who at first did not approve the proposal, are seeing the positive effects of a marine reserve. The fishing is better and the fish are now bigger is the thought of many recreational fishermen.

Economic benefits

When establishing a marine reserve it is good to look not only to the environmental issues, but at the effects upon the local community and its economic base. When we look at a survey that has been completed at the Leigh Marine Reserve most respondents (as well permanent residents and second home owners) were of belief that the marine reserve brought measurable benefits to the area and the local community. The positive features that were mentioned were:

- Educational value,
- The preservation of species,
- The abundance of marine life that was available for viewing and that the reserve represented a natural area.

The residents also strongly agreed that the reserve had improved the profile and awareness of Leigh as a place to visit.

For local business people claim that between 20 and 70% of their trade volume in the summer season is due to the visitors and second home owners. Therefore they are positive about the marine reserve. The marine reserve did not create a major boost to local employment but has helped to maintain the continuing viability of local business. The residents also say that the area would be worse off if the reserve was not there.

For the fishermen it has proven to be good fishing near the marine reserve because of the spillover effect from the reserve. Of the local people at Leigh who were against the reserve (most of whom are involved in the fishing industry) almost all have changed their opinions and now are of the belief that the marine reserve is good for the area.

For Tutukaka it would mean that the area, which already has benefits for tourism, can now develop even more for this sector. By creating a good ecological area it can create a benefit not only for the diving sector but also for the fishing sector because although there will be a half a bag catch limit the biodiversity will grow and give fisherman more quality fishing in stead of quantity fishing. By changing to the quality fishing people most likely are willing to pay more for that than fishing on small fish what can be done everywhere around New Zealand.

Scientific benefits

An undisturbed area has proved to be quite beneficial for studying commercial species. However, the thousands of non-commercial (non-fished) species, can be studied equally well outside a marine reserve. Furthermore, many marine reserves do not represent the habitats frequented by commercial fish species, so they are of little relevance to scientific research about them. The area can also be used for long-term monitoring, without human interference. By doing this data can be assembled which gives more insight in the natural state of the environment. If the situation inside is compared with the situation outside the protected area, management can be made easier. Also with the correct data available it is possible to see and understand the effects or consequences of our actions better.

Experiments are not interfered with inside a protected area, and are therefore more reliable. A protected area restores natural behaviour which is not only good for the species itself but also for scientific research.

Educational benefits

With its natural environment the Marine Reserve can offer benefits in education. Universities can use it to train students and for qualification studies. Where marine studies are part of the school curriculum, schools will find a visit to a reserve of benefit because there is more to see. The rocky shore for instance, is not harvested.

The general public is allowed access, and many start to explore the water with masks and fins. This gives everyone who wants to a chance to learn more about the marine life in the area. A marine reserve draws attention and raises initial interest, which can be followed up by education. Initially, most visitors are entirely ignorant of what lives in the sea and how it lives there. They think that fish are stupid, cold-blooded animals and good only for food. After a visit, they become interested in the marine life and want it to be preserved.

Other benefits

Separates takers from watchers. This is what a marine reserve does with excellence. It creates areas where people are sure that the fish will be there next time. While serving its purpose, the marine reserve can still be enjoyed by others. By separating the takers from the lookers, an area is created where fish can be enjoyed. It creates a spot where people can go to and relax from their busy lives and enjoy the environment. It is a social place to meet and do things like swimming, snorkelling and diving. Tutukaka can grow more into a place where people want to come to enjoy the good things of life like diving, sightseeing, fishing, kayaking etc. and where the nature flourishes in a good balance.

So there are benefits for different user groups which have a wide positive effect.

4: Management tools available

Marine reserves (Marine Reserve Act 1971)

Marine reserves are fully protected areas that are set up to protect the area against exploitation by other people. A Marine Reserve is a no-take area which means that nobody is allowed to extract anything from that area. Recreational activities can be allowed under specific rules so there is no impact on the environment.

Marine Parks (Resource Management Act; Fisheries Act)

Marine parks provide for a range of activities in, and uses of, a marine area under specific guidelines or restrictions. These restrictions are designed to conserve certain aspects of the particular area and can apply to some or all activities such as fishing, mining, transport or recreational activities in order to meet the objectives of the area. Examples: Tawharanui Marine Park and Mimiwhangata

Areas managed under place-specific laws

One-off marine protected areas can have similar purposes to marine parks but are established through a new act designed specifically for that place. Restrictions vary and are specific to the act. Examples: Sugarloaf Islands Marine Protected Area and the Hauraki Gulf Marine park initiative

Marine Mammal sanctuaries (Marine Mammals protection Act)

Sanctuaries are established to protect particular marine mammal species (like dolphins, seals etc) sanctuaries do not protect other marine species or marine habitat within them. However, all or some activities that adversely affect the marine mammal can be restricted. Examples: Auckland Islands and Banks Peninsula.

Restrictions on fishing in certain areas (fisheries Act 1996)

The purpose of the fisheries act 1996 is to provide for the utilisation of fisheries resources while ensuring sustainability. Here utilisation means: conserving, using, enhancing and develop fisheries resources to enable people to provide for their social, economic and cultural wellbeing. With sustainability is meant: maintaining the potential of fisheries resources to meet reasonable foreseeable needs to future generations; and avoiding, remedying, or migrating any adverse effects of fishing on the aquatic environment (reviewing the marine reserves act 1971, Department of Conservation 2000)

The ministry of fisheries can restrict forms of fishing in a certain area for example to preserve certain species. Example: ban on setting nets near penguin breeding areas.

Regional Coastal plans (Resource management Act 1991)

Every regional council must design a regional coastal plan through a public process. This is to achieve sustainable management of the coastal environment. RCPs must not be inconsistent with the New Zealand Coastal Policy Statement. They are required, amongst other things, to address such issues as preservation of the natural character of the coastal environment; water quality maintenance and enhancement; and limitations on adverse environment effects.

Examples: Taranaki, Wellington, Manawatu/whanganui and Hawkes Bay


Taiapure

A Taiapure is an estuarine or littoral coastal area that is traditionally important to iwi or hapu and recognises their special needs relating to the area concerned. A taiapure is managed by a committee that may include both Maori and non-Maori members who are nominated by the local Maori community. Commercial fishing may occur in taiapure. The committee may recommend to the Minister of Fisheries to recognise and provide for customary food gathering or to manage other fishing in the taiapure. Anyone may fish in a taiapure

Maataitai

Maataitai reserves are areas that are identified traditional fishing grounds and where local iwi have a special relationship with the place. They have special status under the Fisheries Act to recognise and provide for non-commercial customary food gathering by Maori. Both Maori and non-Maori may fish in Maataitai reserves, but they are managed by a Maori committee. This committee can make bylaws restricting or prohibiting the taking of fish, aquatic life or seaweed in the reserve, if they consider it necessary for sustainable management. Commercial fishing may not occur in a Maataitai reserve unless the committee recommends to the Minister of Fisheries that it is allowed.

These are the options New Zealand has for managing the marine environment. They can basically be arranged by how much they protect an area. Table 6 gives an overview of which tool gives how much protection, the primary uses, the purpose and thereby which tool is used.

Protection	Most Protection		Targeted protection		Variable protection
					
Primary uses	Non-extractive activities	Specific activities limited for protection purposes	specific uses protected	Mixture of uses protected	Mixture of uses, extractive and commercial
Purpose	Full protection of primarily natural areas because of particular features or habitat and biodiversity characteristics.	Protection of particular species and components of biodiversity.	Safeguarding Kaitiakitanga and the exercise of customary fishing rights in respect of marine resources in areas traditionally important to Maori.	Safeguarding multiple interests in the use and protection of a particular area.	Managing resource use and managing non-extractive use.
tools	<ul style="list-style-type: none"> • Marine Reserves 	<ul style="list-style-type: none"> • Marine mammal sanctuaries • Restrictions on fishing • Wildlife refuges and sanctuaries 	<ul style="list-style-type: none"> • Maataitai reserves* 	<ul style="list-style-type: none"> • Marine Parks • Regional Coastal Plans 	<ul style="list-style-type: none"> • Regional Coastal Plans • Taiapure* • Various controls on: transport, pollution, extraction etc.

* Maataitai and taiapure sometimes include special controls which place them at various points in this table

Table 6 overview of which tools give what protection, their use and the purposes

5: Project proposal

If we look at the management tools that are available at the moment this plan can be best realized as a Marine Park with no-take areas in it. This is because Marine Parks have the goal of safeguarding multiple interests in the area. By setting up specific guidelines and rules that apply to everyone a park can be created which considers everyone's interests. The guidelines that have to be set up depend on the agreements that are made between all the users of the area.

But setting up the Marine Park is not the only thing that has to be done. This plan can only work if everyone that is involved also has their say so as much as possible can be taken in account in creating the area. Initial parties that should be consulted and who should review this proposal and set up a strategy that allows this proposal to become a reality include:

- Northern Regional Council
- Recreational users (e.g. anglers clubs, fishermen)
- Commercial users (e.g. fishermen)
- Tour operators
- Maori
- Coastal community
- Department of Conservation

The area

The proposed area where the Marine Park is placed is from Cape Brett, 5 nautical miles around the Poor Knight Islands to Whangarei Heads. Map 1 and 2 are maps of the Northern Island and Northland with the area highlighted within. Map 3 is the map of the area with the already protected areas (Poor Knight Islands and Mimiwhangata). Map 4 gives the map of the area with the rest of the no-take areas in it. 15 % (or 10%) of this area will be set up as no-take areas. This already includes Mimiwhangata and the Poor Knights Islands. The rest of the area will be open to recreational fishing. This means that of an area with a total of 1800 km², 1530 km² is for the recreational fishermen and 270 km² for the environment. This is necessary to keep the fish stock at a healthy level

Some figures of the area are shown below to give more of an idea on how big the area is.

Total surface of the area	1800
Surface free to recreational fishermen	1530
Surface of the 15% no-take zones	270
Surface Mimiwhangata (current size)	20
Surface Poor Knight Islands	24.1
Surface left to divide over several no take areas	225,9

Table 7 figures on the area with 15% no take zones in square kilometres

Total surface of the area	1800
Surface free to recreational fishermen	1620
Surface of 10% no-take zones	180
Surface Mimiwhangata (current size)	20
Surface Poor Knight Islands	24.1
Surface left to devide over several no take areas	135.9

Table 8 figures on the area with 10% no take zones in square kilometres

With the creation of the Marine Park it is neither the intention to prevent fishing nor to make it more difficult to go fishing. It is meant as a simple insurance method to preserve fish stock. The impact of the recreational fisherman is smaller than that of the commercial fishermen. After a day fishing, the recreational fisher is glad to have caught three Kingfish. That is a great catch. A commercial fisherman takes out a whole school. With these no-take areas there can be more quality fishing rather than quantity fishing. Protected areas can create more big fish in the area around it what gives the area more quality for fishing. People are most likely willing to pay a bit more to catch one big fish in stead of three small fish. This gives a win-win situation for the fishermen as well as the people who want to preserve the area. Recent interviews with recreational fishermen show that the fishing is indeed increased by fishing near to no-take areas.

Policing the area.

In the past it has been shown that the government does not do a very good job at monitoring protected areas⁷. This is why in this plan the policing of the area will mainly be done by the persons who use the area. The bottom line of the plan is to create a park that suits everyone. If everyone is happy with the plan that is set up, and everyone's interests are taken in account, policing the area can be done by those people. Because different user groups use the area it will be used by people with different interests so there's not only one group that does the policing. The only problem with this way of policing is that when people break the rules it is noticed but no legal actions can be undertaken. A further plan must be set up for this in short time.

⁷ Origin: seafriends, see bibliography

Reviewing the area

When a Marine Park is created it is wise to review it every 10 years. 10 years looks like a long time but it takes a while before actual effects can be seen in a marine area. If the reviewing is done in less than 10 years, then short term effects are only measured making it difficult to ascertain the measurable long term benefits. Not everything is possible to review but there are certain things which can be monitored.

- Fish stock should be monitored and reviewed.
- Guidelines need to be established (and funding is later needed for these purposes).
- Species which should be reviewed must be decided in the meetings where this proposal is discussed.
- When fish stocks continue to decrease significant the fishing methods of the recreational fishermen should be reviewed to see if changes or restrictions in methods are necessary for the fish stock to increase again.
- The tourism industry should be monitored to see if the creation of the area attracts more tourists to the area (which obviously has a positive impact on the economy).

Local shops and restaurants could be involved. They could monitor if they make more money when the Marine Park is established than they did before. They used this last technique at the Leigh Marine Reserve and it showed to be a good way of measuring if the reserve had a good impact on the local economy.

Several indicators can be used to measure economical impact.

- Monitoring finance bottom line
- Council increase in property rates/ land prices
- Survey and collect data prior to date national Marine Park established
 - Giving a comparable data marker 10 years on
- Set policies and committees in place to provide for consistency

6: Discussion points

To create this area there are a number of points that have to be discussed.

Area of not take:

- Area within a national park 10 or 15%?
- Where should these zones be placed?
- When should the zones phase in?

Fishing methods:

- Methods that should be banned?
- Fishing in spawning season?
- Is marine farming allowed?
- When should the ban on commercial fishing phase in?

Species and numbers:

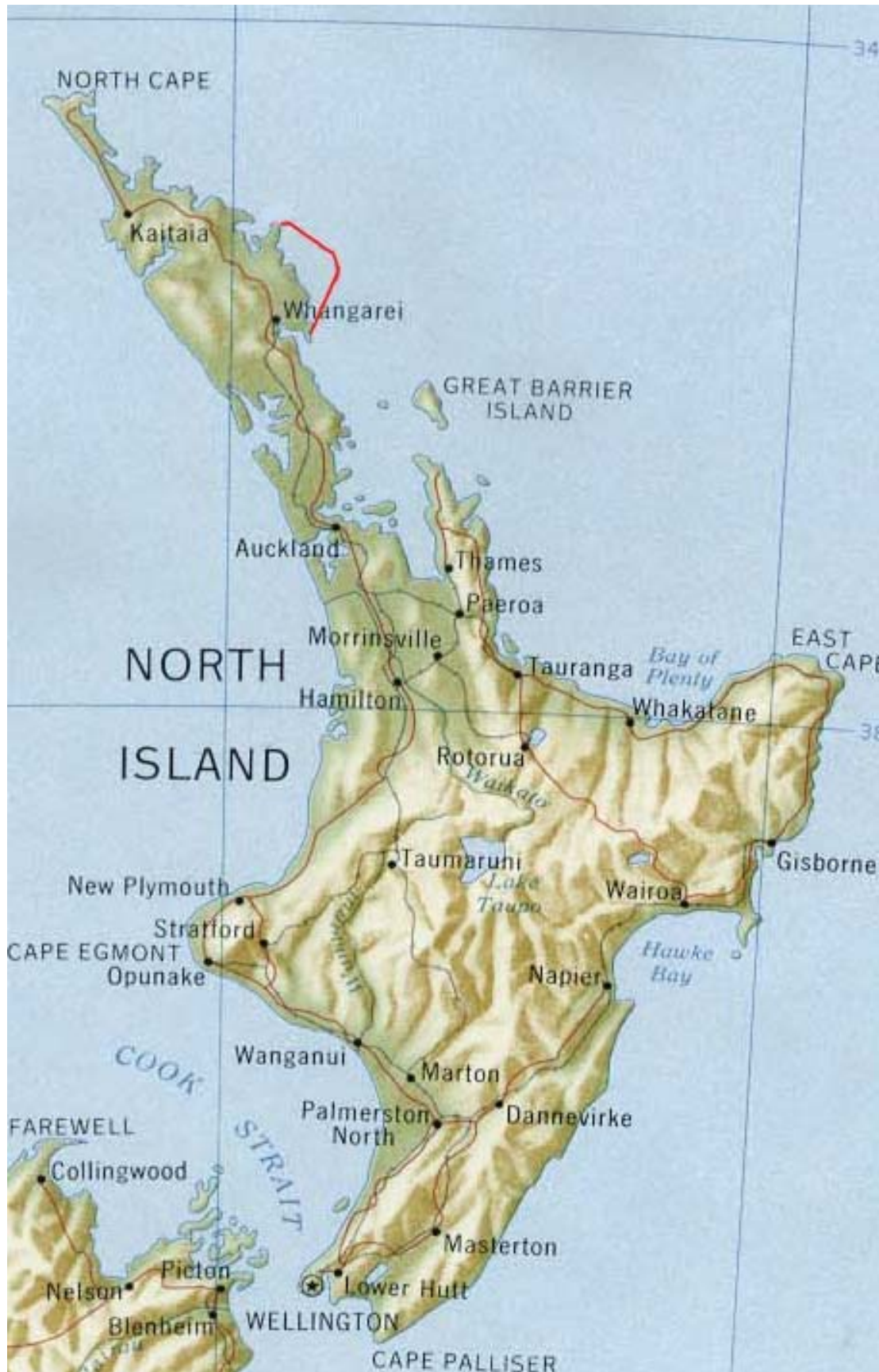
- Any more restrictions on species and numbers?
- Discussion of “soft crays” and time ban.

Creation of the area:

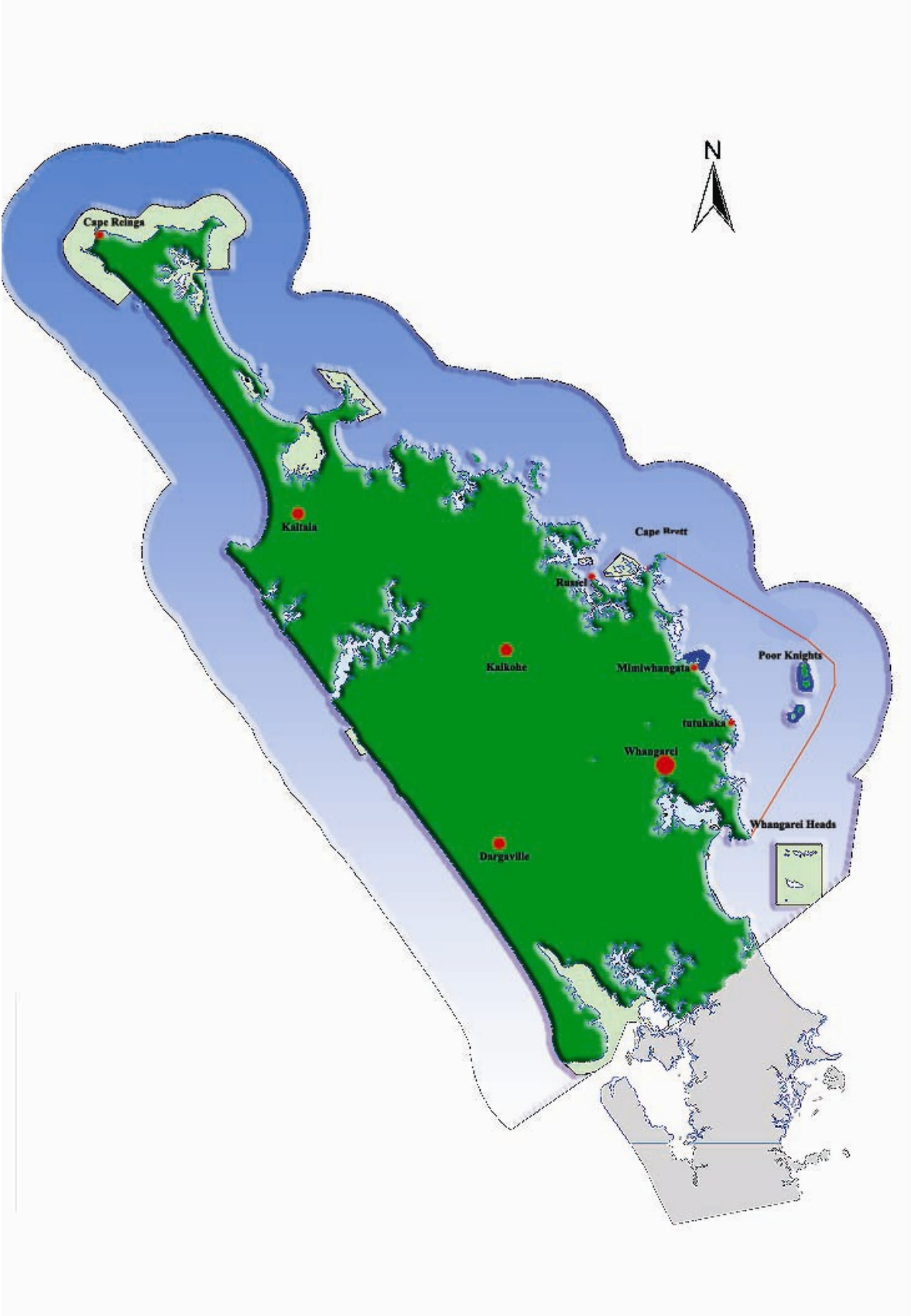
- There is the need for compromise, vision, leadership and commitment.
- Which legislative option is advised?
- When should the plan be released?

7: Maps

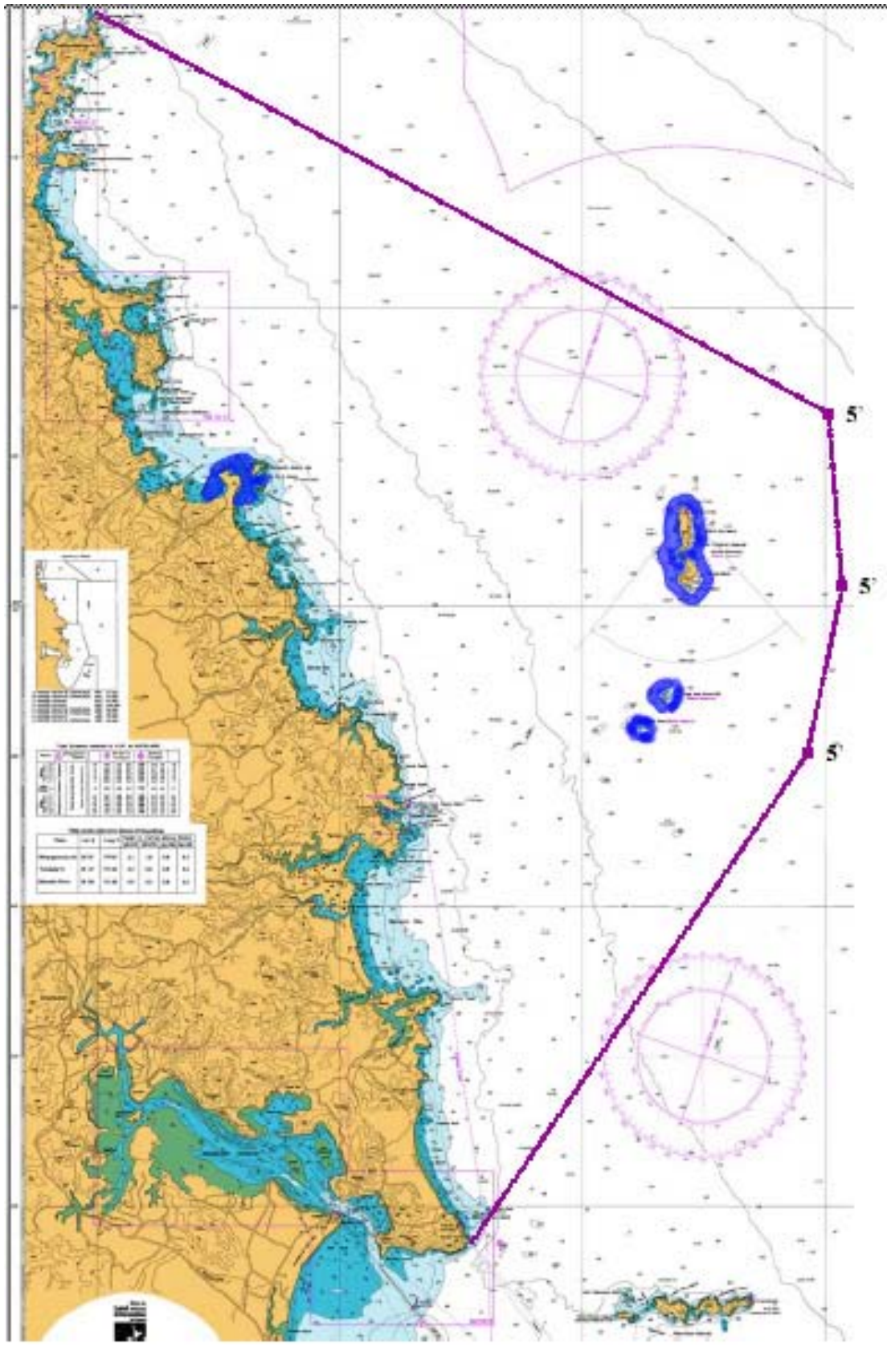
Map 1: North Island with area boundaries.



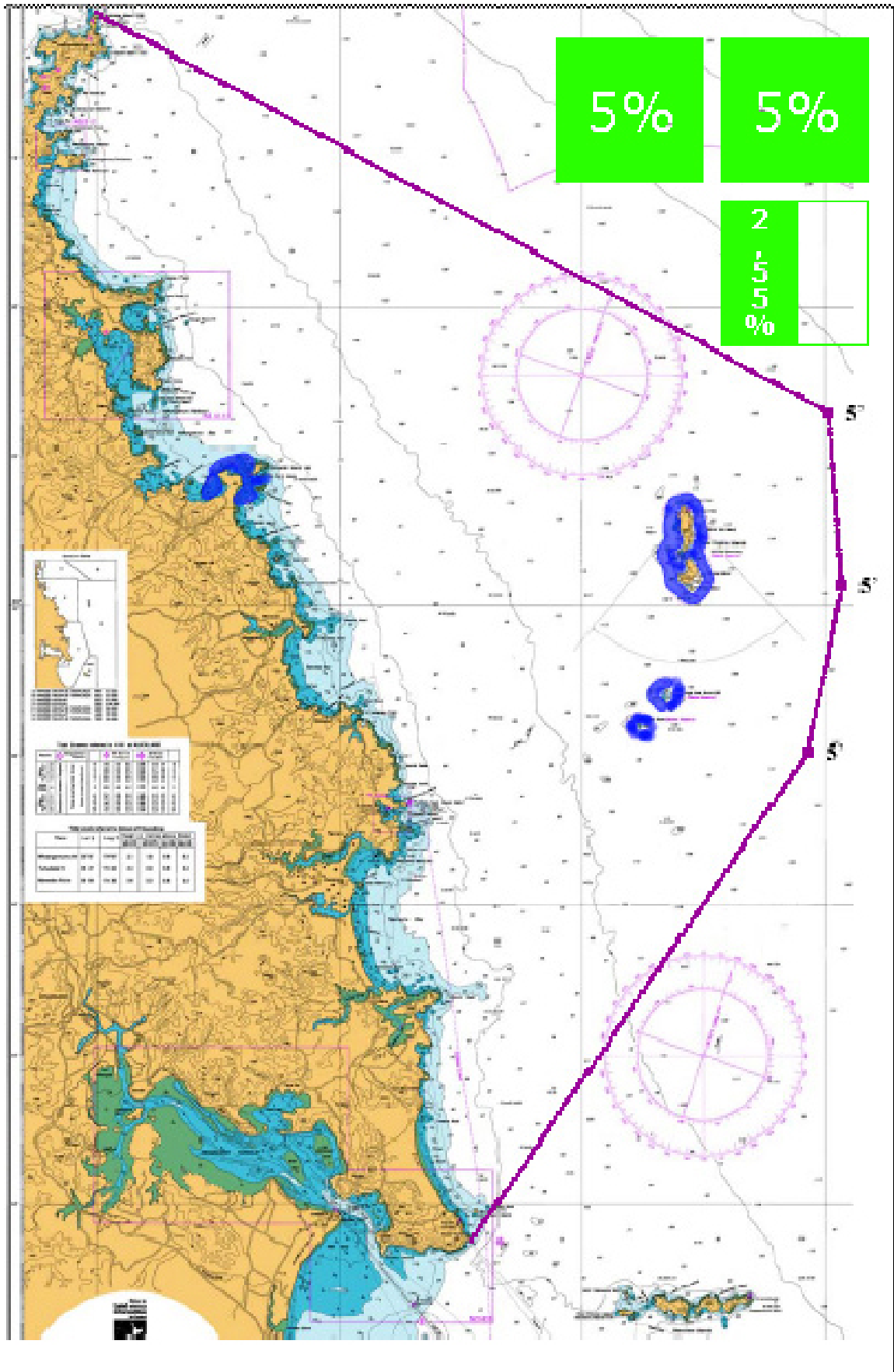
Map 2: Map of Northland with boundaries and already protected areas



Map 3: Map of the area with boundaries and already protected areas



Map 4: Map of the area with boundaries, protected areas and the 15% no take area



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