



The MARINET UK Marine Reserves Campaign

Written Evidence from MARINET : Additional Document.

For the attention of:

Joint Committee on the Draft Marine Bill,
Scrutiny Unit,

Room G10,

7 Millbank,

London SW1P 3JA

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We submit written evidence that is additional to our written Main Document and Supplementary Document, both dated 24th May 2008. This present evidence is titled **Additional Document**. This additional evidence concerns, firstly, the determination of the scientific basis for the identification and location of Highly Protected Marine Reserves in UK seas out to 200 nautical miles; and secondly, evidence about the adoption of Highly Protected Marine Reserves elsewhere in the world, and with reference to New Zealand in particular.

Scientific Basis for Identifying Marine Reserves .

We submit this evidence to assist the Joint Committee following our attendance at the Committee's meetings on 3rd and 5th June, and in response to our perception that the Committee desires to know the nature of the scientific evidence for the identification of Highly Protected Marine Reserves. We advise as follows:

Firstly, it is widely recognised that, with a few exceptions, the general nature of the overwhelming proportion of the UK's seas is poorly documented in terms of its detailed physical character and the range of biodiversity which it supports. Thus scientific knowledge is in short supply.

Secondly, given this shortage of scientific knowledge and the perceived decline in marine

biodiversity in recent years (identified by the decline in fish stocks and the documented alteration in the physical and biological character of the seabed due to trawling and other human activities) it is argued that marine reserves, being “no-take” areas, are able to protect the marine ecosystem as a whole and, therefore, are the best response to further decline in marine biodiversity until our knowledge improves significantly. In short, if we set aside substantial areas free from human activity we thereby allow natural processes to reassert themselves and thus restore the very biodiversity which we presently so poorly understand.

Thirdly, the UK presently has public funds available to enable the scientific research in support of marine reserves to be undertaken, both by established experts in the UK’s universities and by UK fishermen. An example of these public funds is the UK Exchequer’s Aggregate Levy, currently set at £1.90 per tonne. Marine aggregate (sand and gravel) is currently excavated from the seabed at a rate of around 24 million tonnes per annum, thus giving an Aggregate Levy yield of £45 million, with 10% of this figure (£4.5 million) being granted by the Exchequer to environmental purposes under the Aggregate Levy Sustainability Fund (ALSF). It is therefore clear that ALSF money could be used to finance universities, government conservation agencies and fishermen to undertake the scientific research that is required to dispel the deficit that currently exists in scientific knowledge, and thereby establish the precise location of an extensive network of highly protected marine reserves. There may also be additional money available from the Exchequer via an increased allocation of revenue from the Aggregate Levy and other marine taxes and licensing revenues.

Fourthly, marine industries (oil and gas, communications, renewable energy, in addition to the aggregate industry and fisheries) can assist in this enlargement of scientific knowledge from their own records and surveys. Fishermen have an encyclopaedic knowledge of our seas and they are currently seeking a new economic role now that quotas are restricting their fishing days at sea, and thus they and their fishing boats are well placed to become scientific research vessels. The other marine industries have also to conduct extensive prospecting for resources with related EIAs, and these surveys result in an accumulation of substantial knowledge. This knowledge can be used both to identify the areas of the sea where valuable resources exist and therefore, in the national interest, should possibly be excluded from marine reserves and, conversely, can also be used to identify those areas where competition in usage does not exist and thus be readily available for the protection of the whole marine ecosystem without human interference i.e. the components areas for the extensive network of marine reserves.

Evidence concerning Highly Protected Marine Reserves outside the UK .

Highly Protected Marine Reserves have been used widely around the world, particularly in Australia, New Zealand, California and the Caribbean. Their purpose has been to rebuild fisheries, and to protect marine biodiversity.

The Royal Commission on Environmental Pollution in their 25th Report, *Turning The Tide*, looked at 39 studies worldwide which indicated that reserves covering between 20 to 50% of the seas are needed to rebuild and maximise fisheries. The RCEP’s view was that 20% is very much a minimum level, and recommended 30% in order to deliver recovery and to protect the marine environment and thus make fish populations sustainable in the future.

A leading exponent and pioneer of marine reserves is the New Zealander, Bill Ballantine. We append below an article about Bill Ballantine's perception of the role and size of a marine reserve network for the benefit of the Joint Committee. This article was published in the National Geographic magazine, 2007.

Of particular note in this article is the fact that New Zealand's fishing industry has itself recommended that 30% of seas in the New Zealand Exclusive Economic Zone be set aside as marine reserves in order to protect their fisheries. We regard this significant, and of interest to the Joint Committee. It means that the New Zealand fishing industry and the UK Royal Commission on Environmental Pollution are of a common mind. The article is a little long (3200 words), but we have felt it right to present it to the Joint Committee in its entirety rather than to try to edit it.

End.

Attachment: Blue Haven : The Global Fish Crisis by Kennedy Warne, Published by National Geographic, USA, 2007.

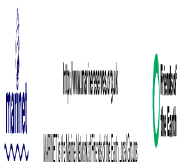
Blue Haven : The Global Fish Crisis.
By: Kennedy Warne.
Source: [National Geographic 2007](#)

High-tech harvesting and wasteful management have brought world fish stocks to dangerous lows. This story explores the fish crisis-as well as the hope for a new relationship between man and the sea. New Zealand marine reserves are a model for the world.

Rolling a fresh cigarette, Bill Ballantine gives a sardonic laugh as he recalls the headline when New Zealand's first marine reserve was opened in 1977-"Nothing to do at Goat Island Bay any more." He had fought for 12 years to protect two square miles (five square kilometers) of marine habitat on the coast of Northland, a region of the North Island. That protection was finally in place. To Ballantine it was the start of a new era. To the local newspaper, voicing community opposition, it was the end of one.

At issue was the reserve's no-take status. This stretch of sea was to be totally free from human interference. That meant no line fishing. No spearfishing. No hooking a lobster out of its lair. No prying off a clump of rock oysters. No reason, as far as the newspaper was concerned, for any red-blooded, outdoors-loving Kiwi man, woman, or child to bother coming to Goat Island anymore.

Ballantine, 70, a trim man with thinning hair and a stubby white goatee, takes a pull on his cigarette. He sits at the dining table of his cottage on Goat Island Road, half a mile back from the bay. He has lived here since he emigrated from England in 1964 to take up the post of director at the newly opened University of Auckland Marine Laboratory, which stands on a hillside overlooking Goat Island. A mollusk expert, he has been a familiar sight on Goat Island Bay for 40 years, kneeling on the rocky shore to study his beloved limpets.



When he first arrived, the road was a gravel track, as rutted as a washboard. Now it is sealed all the way to the beach to accommodate the constant stream of visitors. "A hundred thousand people a year coming to look at fish-who saw that coming? Nobody," says Ballantine. "Fifteen years ago, if you had suggested that entire school classes would be put into wet suits and taken into the water here you would have been laughed at. Now it's routine."

School field trips by the hundred. Legions of weekend snorkelers. Glass-bottom boat tours for those who prefer to stay dry. A marine education centre. None of it was foreseen, either by the university or the nearby fishing and farming community of Leigh, which was split over the idea from the start.

The battle lines were drawn as early as 1965, when Ballantine invited a group of commercial fishermen to the lab and floated his idea for a reserve closed to fishing. "Half of them said, 'No problem,' " he recalls. "The other half said, only half joking, 'We'll kill you.' "

What eventually transformed public opinion were the changes that happened underwater-changes that took everyone, including Ballantine and his fellow scientists, by surprise. Divers at the marine lab had noticed that large swaths of reef in Goat Island Bay were barren, their seaweed communities grazed to a stubble by a type of sea urchin known by its Maori name kina. These underwater lawn mowers, prickly as hedgehogs, had exploded in numbers because their chief predators-snapper and spiny rock lobsters-had been fished down to low levels. Kina even climbed up kelp trunks and gnawed through them, like beavers.

When fishing ceased, the imbalance between predators and prey began reversing almost immediately. Kina numbers dropped. Kelp grew back. Snapper, once wary and rare, became abundant and fearless. Word of this ecological revival soon spread, and the world beat a path to Goat Island's shore.

For reasons not fully understood, when areas are closed to fishing, snapper aggregate within them, forming large resident populations. Spiny rock lobsters ("crayfish" to New Zealanders) do the same. Their density inside the reserve is about 15 times higher than outside. Commercial crayfishermen have cashed in on the reserve's success because the outward migration of crayfish-a process marine biologists call spillover-brings the crustaceans to their pots, strategically placed just outside the boundary. These former skeptics are now some of the reserve's staunchest defenders. They refer to it as "our reserve" and act as marine minutemen, reporting poachers and boundary cheats.

Spillover and larval export-the drifting of millions of eggs and larvae beyond the reserve-have become central concepts of marine conservation. Reserves where fishing is banned are now seen as potential stud farms and fish hatcheries, replenishing the surrounding seas. Research at Goat Island has provided some of the strongest evidence of this replenishment effect-research made possible by the fact that the reserve has been closed to fishing for 30 years.

Goat Island was revolutionary not just because it was one of the world's first no-take reserves, but also because it protected an ordinary stretch of coastline. In true Kiwi egalitarian spirit, the

legislation enacted in 1971 to create reserves declared that its purpose was to preserve the typical as well as the unique, and that such preservation was in the national interest. Located in the middle of the water hemisphere, with a coastline greater in length than that of the contiguous U.S. and the world's fourth largest EEZ (the exclusive economic zone recognized by the UN), New Zealand is indisputably one of the most maritime nations on Earth. The country had been a world leader in developing land reserves; now it was time to do the same for the sea.

Given the success of Goat Island, one might assume that the rollout of further marine reserves would have been rapid and decisive. It wasn't. For the next three decades Ballantine would square off against stubborn anglers, reluctant bureaucrats, and fence-sitting scientists.

There was a setback with the very next reserve application, over the Poor Knights Islands, 12 nautical miles (22 nautical kilometers) off the Northland coast. Remnants of an ancient volcano, this cluster of reefs and pinnacles lies at an intersection between temperate and subtropical waters. A warm current originating hundreds of miles to the northwest sweeps past the islands, raising the water temperature one degree higher than on the coast and bringing with it a host of tropical visitors, from coral shrimps to whale sharks.

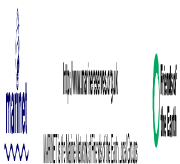
The underwater architecture is as striking as the marine life. Millions of years of weathering have riddled the islands with arches, tunnels, and caves. The walls of one arch drop 150 feet (45 meters) from surface to seabed, completely drenched in living color. At times, squadrons of 60 or more stingrays hover like stacks of flying saucers in this ethereal blue keyhole.

A submarine cave on the exposed eastern side holds a permanent air pocket trapped against its ceiling. Divers enter through a portal 40 feet (12 meters) under the surface and swim up into the bubble, which is the size of a small car. It is a wonderfully incongruous feeling to take out your scuba mouthpiece 20 feet (6 meters) under the sea and breathe deep drafts of moist, salty, subterranean air.

Rated one of the world's top subtropical dive sites, the Poor Knights would seem to have been the perfect candidate for reserve protection. Yet astonishingly, the legislation crafted to protect such habitats was amended to downgrade that protection. Pressure from recreational fishing interests was the reason. The islands were a favorite destination for anglers and supported a strong game-fishing fleet. Anglers strenuously objected to having such prized fishing grounds declared off-limits. And so began what Ballantine calls the grand compromise, in which commercial fishing was banned but recreational fishing for the most popular species was permitted.

To Ballantine it was a travesty. The act of parliament that sanctified ordinary Goat Island now denied the iconic Poor Knights its chance for ecological redemption. Seventeen years of jousting would elapse before the recreational-fishing provision was removed and full protection was conferred on the beleaguered Knights.

To be fair, few realized the extent to which recreational fishing can damage marine



ecosystems. Commercial fishing, with its capacity to scoop up whole schools in a single trawl, or deploy thousands of hooks in a night, was perceived to be the enemy, not a bunch of weekend anglers trying to catch a feed. Only later, as fish numbers dwindled and some species became rare, was the scale of the problem realized.

A curious thing happens when fish stocks decline: People who aren't aware of the old levels accept the new ones as normal. Over generations, societies adjust their expectations downward to match prevailing conditions. The concept of a healthy ocean drifts from greater to lesser abundance, richer to poorer biodiversity.

For those who live through the changes, who witness the emaciation of the sea at firsthand, it is a dispiriting experience. "I take visitors out to the Poor Knights today, and they're so excited by the fish life they're just about walking on water," says Wade Doak, one of the country's pioneer divers and underwater naturalists. "And all I can think is that they're seeing a crumb, a skerrick of what it once was."

Marine reserves are an antidote to this collective amnesia. They provide a scientific benchmark against which changes in the wider ocean—the exploited ocean—can be measured. "If nothing is left intact or pristine, how can you know that damage has occurred?" Ballantine asks. Indeed, how do you even imagine an undamaged state?

Seen in this light, marine reserves are the reference collections of the sea, or, as Doak likes to call them, "wet libraries." Like libraries on land, they should be regarded as essential public amenities. And, as the Poor Knights experience shows, they must be fully protected. Allowing fishing in a marine reserve makes as much sense as allowing the most popular books in the library to be borrowed and never returned.

Doak dreams of the day when establishing marine reserves becomes as automatic as building a school in a new residential area, or opening a medical clinic, or planting a park.

We're not there yet. So far, the acquisition of most reserves in New Zealand has been a slow and contentious business involving the voluntary effort of community groups, dive clubs, conservation organizations, Maori communities, and even a group of high school students.

During the late 1980s, Ballantine traveled the country holding adult education courses for anyone interested. "The subject was marine studies, but everything was oriented to making marine reserves," he says. "Several small groups sprang up as a result, and some of those groups went on to propose reserves, and a few of those proposals were successful. This is the way it has been."

Ballantine likens the creation of a marine reserve to a drunk trying to get a key into a lock: "You have to be at the right door, and be holding the right key, but beyond that it's just persistence."

It took 14 years for students of Warren Farrelly's senior geography class at Kamo High School, in Northland, to get a reserve in their local harbor. Over a thousand students were involved, deciding on the boundaries, holding public meetings, raising funds, and negotiating the twists and turns of the application process. Math classes analyzed public-opinion surveys, media classes wrote press releases, and art students produced illustrations for a children's book on marine reserves. Each graduating class passed the torch, and in 2005 Whangarei Harbour Marine Reserve became a reality.

Farrelly, retired now but still a keen diver and underwater photographer, is proud of what was achieved by his students-some of whom, he says, "had never even stuck their heads in the water before." Several have gone on to pursue marine or environmental studies at university.

Samara Sutherland, class of '98, co-founded a program called Experiencing Marine Reserves, an initiative that has won her several leadership awards. At a summer snorkeling day in the newly opened reserve, she stood in the shallow water giving instructions to excited children decked out with zingy wet suits, dive masks, and flutterboards. She sent them off like ducklings, half a dozen trailing a parent, to the nearby reefs, where leatherjackets, seahorses, and anemones awaited discovery. They dipped their faces underwater, popped up, and squealed, "I saw a fish! I saw a fish!"

Yet this brand new library of the sea is only half its intended size. The application sought protection for three sites, but only two were approved. The site most popular with anglers-the largest of the three-was removed from consideration at the 11th hour by conservation officials with no stomach for a fight.

For the students, it was a bitter lesson in political expediency and a reminder of the strength of the anti-reserve lobby. New Zealand may have led the world in creating no-take reserves, but many of its citizens continue to resent their existence and dispute their worth.

Not so the commercial crayfishermen of Fiordland, a wilderness in southwestern New Zealand, who voluntarily vacated prime lobster-fishing waters and instigated the creation of a network of protected areas. Ten no-take reserves and five no-anchoring areas now preserve underwater communities so vulnerable to damage that scientists have dubbed them "china shops."

Many of the treasures found in these sites are there due to a stroke of hydrological serendipity. Tannin-stained fresh water flowing into the fiords from rain forests forms a light-blocking layer several feet thick that floats on the denser seawater. The presence of this layer allows normally light-shy species such as black coral, lampshells, and sea pens, a type of soft coral, to live at much shallower depths than usual.

Descending into the fiords is like landing through smog in an aircraft. For a few seconds everything is brown, and you're diving blind. Then, at the mixing point between fresh and salt, the water starts to shimmer like a mirage, and you emerge like Alice through the looking glass. Projecting from the fiord walls are ten-foot-tall (three meters) black coral trees. Butterfly perch shoal among their branches like Christmas tree ornaments. Symbiotic snake stars-sulfur

yellow, burgundy, spotted, or boldly striped-entwine their arms tightly around twig and trunk.

Wax ascidians-sponge-like encrustations-drip down the rock faces like melting candles. A pea green sea slug the size of a grapefruit rests in corpulent splendor on a boulder. At a site called Strawberry Fields, pimply, red sea squirts turn the rocks into an underwater fruit bowl. Arrays of sea pens stand on the seabed like some kind of alien installation. Cruising them are nosy, in-your-face blue cod, wearing perpetual frowns on their frog-eyed noggins.

Longtime crayfisherman turned eco-cruise operator Lance Shaw shudders when he thinks of the damage the steel pots did as they were lowered down the walls, crushing whatever was in their path until they landed on a suitable ledge. "When I started diving and saw what was living on the walls, I thought, What have we done?"

Fiordland's reserves and a handful of others have brought New Zealand's tally of no-take areas to 31, covering nearly 8 percent of the country's coastal waters. Yet 99 percent of this protected habitat lies within just two reserves, each hundreds of miles from the mainland, and the smallest of the country's 14 terrestrial national parks protects an area greater than all the coastal marine reserves combined.

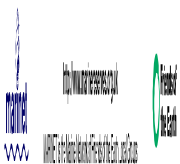
Yes, New Zealand has led the world in marine protection, says Ballantine, but what is there to cheer about "if you're leading in a race of arthritic tortoises?"

Lately, there have been signs of progress in other parts of the ocean. Several huge protection zones have been created in the past five years, culminating in the opening in 2006 of the Northwestern Hawaiian Islands Marine National Monument-a Montana-size chunk of ocean touted as the largest marine protected area in the world.

Even more important than the creation of separate reserves has been the establishment of protected-area networks-combinations of no-take areas spaced to maximize their potential in replenishing the surrounding seas. Designing such networks is one of the fastest growing disciplines in marine conservation today. The idea is to protect representative portions of all marine habitats and ecosystems in all biogeographic regions, creating "blue oases" of sustainability throughout the ocean.

One such network was recently put in place in Australia's Great Barrier Reef Marine Park, increasing the area under no-take protection from 4.5 to 33 percent, with reserves covering some 70 bioregions. California just established a network of 29 reserves-half of which ban all fishing-along its central coast, covering nearly 200 square miles (520 square kilometers) of state waters from Santa Barbara to Santa Cruz. The state plans to set up reserves along its entire coastline by 2011.

Another positive development has been the extension of marine protection to the open ocean. New Zealand's billion-dollar fishing industry recently proposed that 30 percent of the country's EEZ be set aside. Dredging and bottom trawling would be prohibited in these areas, in



recognition of the destructiveness of these forms of fishing. (Scraping the seabed to catch fish has been compared to clear-cutting the forest to catch deer.) Nearly half of New Zealand's 250 seamounts-undersea islands that are likely bristling with undiscovered species-would gain some protection under this proposal.

Despite the recent gains, only 0.01 percent of the world's oceans are closed to fishing. This is not just a problem for conservation; it is a problem for fisheries. Many fisheries scientists now say that traditional management techniques are incapable of achieving sustainable fisheries, and that ecosystem restoration is the only way to prevent the widespread collapse of fish stocks. The World Wildlife Fund has called for 20 percent no-take protection of the world's oceans by 2020. Some scientists have gone even further, suggesting that 40 or 50 percent closures may be necessary to prevent the commercial extinction of some species.

Bill Ballantine himself is wary of using fisheries goals as the main reason for establishing reserves. Yes, marine reserves can improve fisheries yields. Yes, they provide tourism and recreation opportunities, educate the public, and expand scientific knowledge. But these utilitarian benefits are secondary, he says. The fundamental purpose of marine protection should be to restore ecosystems and rebuild biodiversity.

What Ballantine is arguing for is nothing less than a new ocean ethic, in which the ocean is seen not as a commodity we own but as a community of which we are a part. It's a simple message: The sea is worth saving for its own sake.

Ballantine's insistence on no-take reserves as the means to that end has made him a thorn in the side of anglers, politicians, and even some of his professional colleagues. There was a day, late in the Goat Island saga, when the country's attorney general paid him a visit and spent six hours trying to persuade him to capitulate over his no-take stance. After his guest had left, Ballantine went up to see the farmer on whose land the marine laboratory had been built, to ask him whether he thought he was doing the right thing. Roddy Matheson had lived most of his life overlooking Goat Island. He remembered when crayfish in the bay were so abundant you could pick them out of the rock pools.

"Roddy was never one for a quick answer," Ballantine says, "so we had a cup of tea, discussed the grass growth, and rolled a cigarette or two. But as I got up to leave, he said, 'You know, it used to be quite different round here. I would like my grandchildren to see what it was like then.' That was all he said-but on the strength of that I fought them tooth and nail."

End.

