

*As fishing and mining industries eye up the **Kermadecs**, environmentalists are in a race to turn their pristine waters into the world's largest ocean sanctuary. Sarah Catherall reports.*

A thousand kilometres northeast of New Zealand, on the world's longest underwater volcanic arc, which starts in Tauranga and ends beyond Tonga, lie several sub-tropical islands celebrated by the few that have visited them as an untouched paradise.

Known as the **Kermadec** Islands, they are teeming with birds and mammals that can't be found anywhere else in the world, and the deep seas surrounding them are swarming with fish, some as yet unknown to science.

Rare and endangered humpback whales migrate through the **Kermadecs'** waters, from the Pacific to New Zealand, over what has for thousands of years acted as a marine highway. Tuna, sunfish, marlin, sharks and endangered turtles plunge into the 10,000km- deep volcanic trench that ranks this part of the ocean as among the deepest in the world. And the largest remaining population of spotted black groper in the world lives here.

Many Kiwis don't know where the **Kermadec** Islands are, let alone that they and their oceans are part of New Zealand's territorial waters and our largest marine reserve. For the past two decades, the islands and 7450 square kilometres of surrounding seas have been protected, and a handful of Conservation Department staff have lived there for a year at a time, actively stamping out pests - rats, cats, dogs and weeds. But it's the deep, dark, cold oceans surrounding the islands that have attracted international attention.

There is now a push to expand the marine reserve into a 620,000sq km protected zone, making it the largest ocean sanctuary in the world. But a tussle is going on between environmentalists and scientists and the mining and fishing industries over the area's future.

The volcanic underwater world in the **Kermadec** arc is recognised as an oceanic asset that could bring billions of dollars to the country if it is mined. One offshore mineral company is already prospecting for minerals there, and GNS Science, a crown research institute, says the area is potentially mineral-rich and it doesn't want to see a ban on exploring it for mining.

The Ministry of Fisheries, backed by the fishing industry, says there is also vast potential for sustainable tuna and swordfish fisheries worth up to \$19 million a year. At present, only limited fishing is allowed outside the marine reserve.

The **Kermadec** arc is also on the list for World Heritage site status, which, if granted, could give it the international kudos of the Great Barrier Reef.

However, a DOC-convened natural heritage advisory group commented in its submission to Unesco, which oversees World Heritage bids, that the main risks to the **Kermadec** ridge were mining and commercial fishing prospects.

The group called for a moratorium on any fishing and mining along the **Kermadec** ridge until all 50 underwater volcanoes were protected, and a sustainable fishing regime was put in place.

The group said: "Although most of the **Kermadec** Ridge seamounts have not yet been subjected to fishing pressure, the risk of further damage from trawling is a serious threat to their integrity. Mining around the hydrothermal vents of the sea mounts is another serious threat."

This view is backed by the United States' Pew Environment Group, which works globally to protect oceans, wildlands and promote clean energy. It proposes that the **Kermadec** area be turned into the world's largest ocean sanctuary.

Pew's bid comes at a time when art and science are both putting this northern-most reach of New Zealand territory under the spotlight.

A group of artists have just returned from the **Kermadecs** and their expedition to Raoul Island was a way of raising the area's profile.

Two separate expeditions of scientists, one led by the Auckland Museum and the other by Te Papa, are still cruising around the waters, taking samples of fish species and marine life.

Bronwen Golder is director of the Pew's Global Ocean Legacy group, which aims to establish a global network of large, highly protected marine reserves. Speaking from Tonga on Tuesday, at the end of the artists expedition, she said New Zealand's image as a clean, green destination would be given a huge boost if we established the **Kermadec** Ocean Sanctuary in our exclusive economic zone (EEZ).

"It's the only part of New Zealand where a mix of tropical, subtropical and temperate seabirds and marine species - including endemic sharks, seabirds, corals and marine invertebrates - come together or breed."

Golder says that although there is likely to be mineral potential in the **Kermadec** region, it would be costly to mount a mining operation in such remote, deep waters, regularly struck by tropical cyclones.

"We have the fifth-largest EEZ in the world, but the current **Kermadec** marine reserve is tiny in world terms. We should be incredibly proud of the marine reserves already up there but, as a country, we need to decide whether to protect this total area as one of the last pristine sites on earth."

However, at a conference on the **Kermadecs** last year, GNS Science revealed the area's mining potential - hydrothermal vents 2km below sea level shoot metal-rich fluids into the ocean, creating a potential source of biological and mineral wealth for future generations.

One company, US-owned Neptune, has exploration rights over 3447km of the **Kermadec** arc outside the marine reserve, and another, British-owned Nautilus, has applied to prospect for metallic minerals over 52,820sq km of the arc.

Acting Minister of Energy and Resources Hekia Parata says the Government has yet to decide what to do. In the meantime, it has temporarily closed off a large part of the **Kermadec** shelf to mining- licence applications, while it gathers more information and decides the best way to proceed.

GNS ocean exploration scientist Matthew Leybourne says the area has zinc, lead, copper and gold. How much is unknown, but so far, it has been identified as the richest underwater world that has yet been explored in New Zealand.

"The possible economic benefit to New Zealand would be in the billions of dollars," Leybourne says.

He says mining exploration can be done with minimal impact - companies use technology to find massive sulfide chimneys and, once they find them, they drill holes 10 to 20 metres deep to see what is there. "It would be a travesty, not only to New Zealand's economic potential, but also for basic science, to close down the entire area proposed by Pew without knowing what resources lie in this area."

Straterra, the body representing the mining industry, doesn't want an arbitrary boundary and is also keen to have an open discussion about the area's future.

Chief executive Chris Baker is not averse to ocean areas being excluded to mining, but wants more information.

"It's quite possible that we could have our cake and eat it, too," he says. "We could allow a significant and relevant area for mineral prospecting, and have plenty of area left for heritage."

Tyler Eddy, a marine advocate for WWF, describes the seas as "completely different from anywhere else in New Zealand".

A keen diver, he says: "You see as many as 20 to 50 Galapagos reef sharks swimming around you. A lot of these species aren't contained within the current marine reserve, or the 12-nautical-mile (about 22km) boundary, and they swim in and out of it. Making it a 200-mile (370km) extension would protect them better."

Two other notable environmental bodies, National Geographic and the US-led Sea Alliance, have ranked the area up there with the Chagos Islands - 55 islands south of the Maldives that make up the world's largest marine reserve and contain the world's largest coral atoll.

Minister of Conservation Kate Wilkinson was on the Pew-led artists' trip to the **Kermadecs**. She is aware of Pew's goal to expand the reserve. She admits: "I was probably like the rest of us - I didn't know much about the **Kermadecs** until I became minister.

"I think that as a nation we're becoming more and more aware about wonderful areas like this and we're becoming increasingly aware of how blessed we are."

Today, scientists are able to go to isolated regions such as the **Kermadecs** and make discoveries that weren't possible a decade ago thanks to sophisticated technology, such as robotic, remote-controlled vehicles that take photographs of the sea floor. Even so, because of its size and remoteness, only about 20 per cent of the **Kermadec** area has been explored.

Leading the latest Auckland Museum expedition, marine curator Tom Trinski has already made one discovery - a zebra lion fish never found in New Zealand waters before.

Trinski and the 15-strong team from Te Papa, DOC, Niwa (the National Institute of Water & Atmospheric Research) and the Australian Museum, hope to collect marine records that can be used as a baseline for information about global warming.

Auckland Museum holds a small collection of species from the region, first taken from the islands about 100 years ago. "But we have really only scratched the surface in the discovery phase of the **Kermadecs**, and this expedition will complement the preceding expeditions," Trinski says.

Trinski is concerned that deep-sea mining could endanger areas outside the current marine reserve. Less than 1 per cent of the world's oceans are protected, compared with 12 per cent of global land, in the form of national parks.

"The less impact on the **Kermadecs** the better. The benefits of marine protected areas are no longer controversial – they have only positive spinoffs for the environment."

Niwa has been exploring the region for decades. Research manager Rob Murdoch says several underwater volcanoes on the arc are as large as Mt Ruapehu. Although Niwa doesn't have an official view on current protections, Murdoch says the southern reaches of the **Kermadecs** also have mineral deposits and that area isn't part of Pew's proposed ocean sanctuary. On the arc, though, rare earth minerals – sought after by the Asian electronics industry – have been found.

The fishing potential of the **Kermadecs** is another source of dispute.

In 2007, the Government, prompted by the fishing industry, launched the biggest seabed-protection zone in the world, banning dredging and seabed trawling on 1.2 million kilometres of New Zealand's seabed, which covers the **Kermadecs**, too.

Pew says there's not much money in fishing the potential ocean sanctuary – only \$90,000 worth of fish was caught in that area in the past year.

However, the Fisheries Ministry says existing protections for the **Kermadecs** are enough and a **Kermadec** fishery could be developed to reap \$19 million a year. Arthur Hore, manager highly migratory species/pelagic, says: "Stocks are currently being managed sustainably and there is potential for increased catches of highly migratory species such as tuna and swordfish, with associated economic benefits to the New Zealand economy."

Inspiration for Artists

Once a year, four DOC staff and several volunteers travel to Raoul Island, which becomes both their home and working environment.

They have to get used to working and socialising together for months at a time, possibly without seeing anyone else. But for those who enjoy tramping, surfing, snorkelling and whale-watching, the place is paradise.

Paul Rennie, DOC's mainland manager for the **Kermadecs**, says: "I recall once being taken ashore by helicopter and when I looked down into the sea, I could see porpoises and dolphins everywhere. It's one of the most unique places I've ever been to, in terms of its isolation and naturalness. It's totally unspoiled."

Raoul Island is not without dangers. Earthquakes are a frequent part of life there, and anything less than a six in magnitude barely rates a mention.

In March, a cyclone ripped through the island, destroying some mainland buildings, and a DOC worker, Mark Kearney, was killed in 2006 when a volcano erupted.

Conservation staff have almost returned Raoul Island to the state in which it was found when the Bell family first lived there from the 1870s, in the days when it was widely known as Sunday Island.

DOC worker Mike Ambrose has just made his 14th trip to Raoul, this time with the United States' Pew Environment Group. Ambrose was on the island when all rats and cats were finally eliminated seven years ago.

Rats lived off seabirds and **Kermadec** parakeets, which were both wiped out but are now making Raoul home again. Fourteen bird species are on the endangered list, and some are finally nesting on the island.

You have to be a certain type of person to work on Raoul - days are spent scanning a patch of bush, standing eight to 10 metres apart, and surveying every bit of ground for weeds or seeds.

"If you let one weed take off, in a 100 years they'll be sprouting over these beautiful forests. It would be deadly for the endemic plants, " Ambrose says.

In Ambrose's view, conservation projects like the **Kermadecs** - which cost \$350,000 a year, including wages, to run - are under the radar. It's this world that the visiting group of artists will document and reveal to New Zealanders when they create photographs and artworks based on their expedition.

Gregory O'Brien, Wellington poet, artist and curator, was on the trip, along with artists including John Pule, Fiona Hall, Jason O'Hara and Elizabeth Thomson.

O'Brien says the artists' trip will help put the **Kermadecs** on the map, in the way that Antarctica has come alive through the imagination of artists.

On the mining potential, O'Brien says: "Most New Zealanders don't hold the mining industry in high regard. There are arguments to preserve the area and my view is that you just don't get it back . . . After spending time there, I feel like there's something sacred about the place."