



# The science behind the marine conservation story

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*Te Papa Atawhai*

# Overview

Role of science in marine protected area planning and management

MPA research and monitoring – what have we learned and where are we heading?

Science communication



The need for marine protected areas

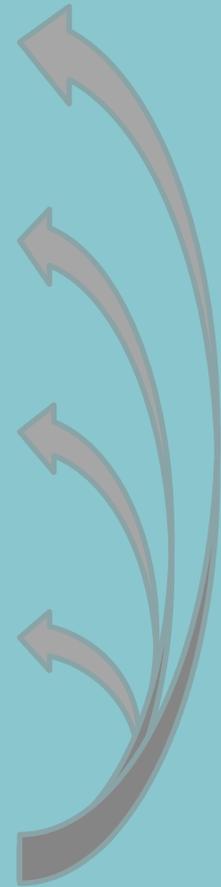
MPA policy and legislation

MPA establishment

MPA management

MPA reporting

**Knowledge / Mātauranga**



# MPA policy and legislation

What should be the targets for MPAs?  
What types of MPAs should be in the “toolbox”?  
Are the objectives for MPAs measurable & achievable?



# MPA establishment

How many? How big? What shape? How close?  
What about representation of habitats and species?  
What type of MPA should be used?

Collation and analysis of underlying data layers  
needed for MPA planning

Development of tools to support communities with  
conservation planning

# MPA Management

How, when and what to monitor?

How do you know if the MPA is achieving its objectives?

How effective is the management of the MPA?

Is poaching an issue?

What would be the effects of poaching?

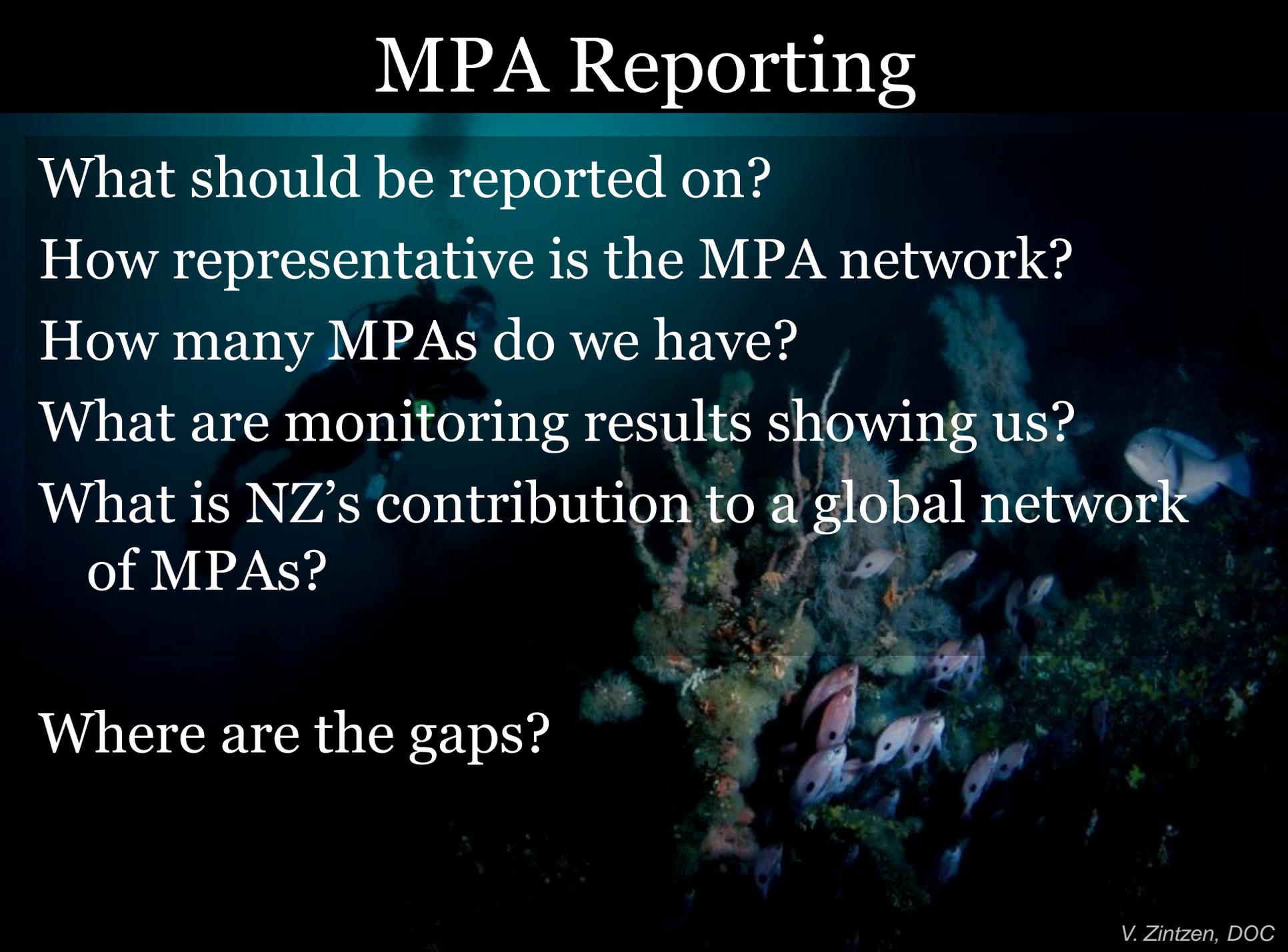
Are there any other activities in or around the MPA that are affecting its ability to achieve its objectives?

What are the key educational messages?

How can the MPA be used for research purposes?



# MPA Reporting

The background of the slide is a photograph of an underwater coral reef. On the left side, a diver is visible, partially obscured by the dark water. The reef is covered in various types of coral, and several fish are swimming around. The lighting is somewhat dim, typical of an underwater environment.

What should be reported on?

How representative is the MPA network?

How many MPAs do we have?

What are monitoring results showing us?

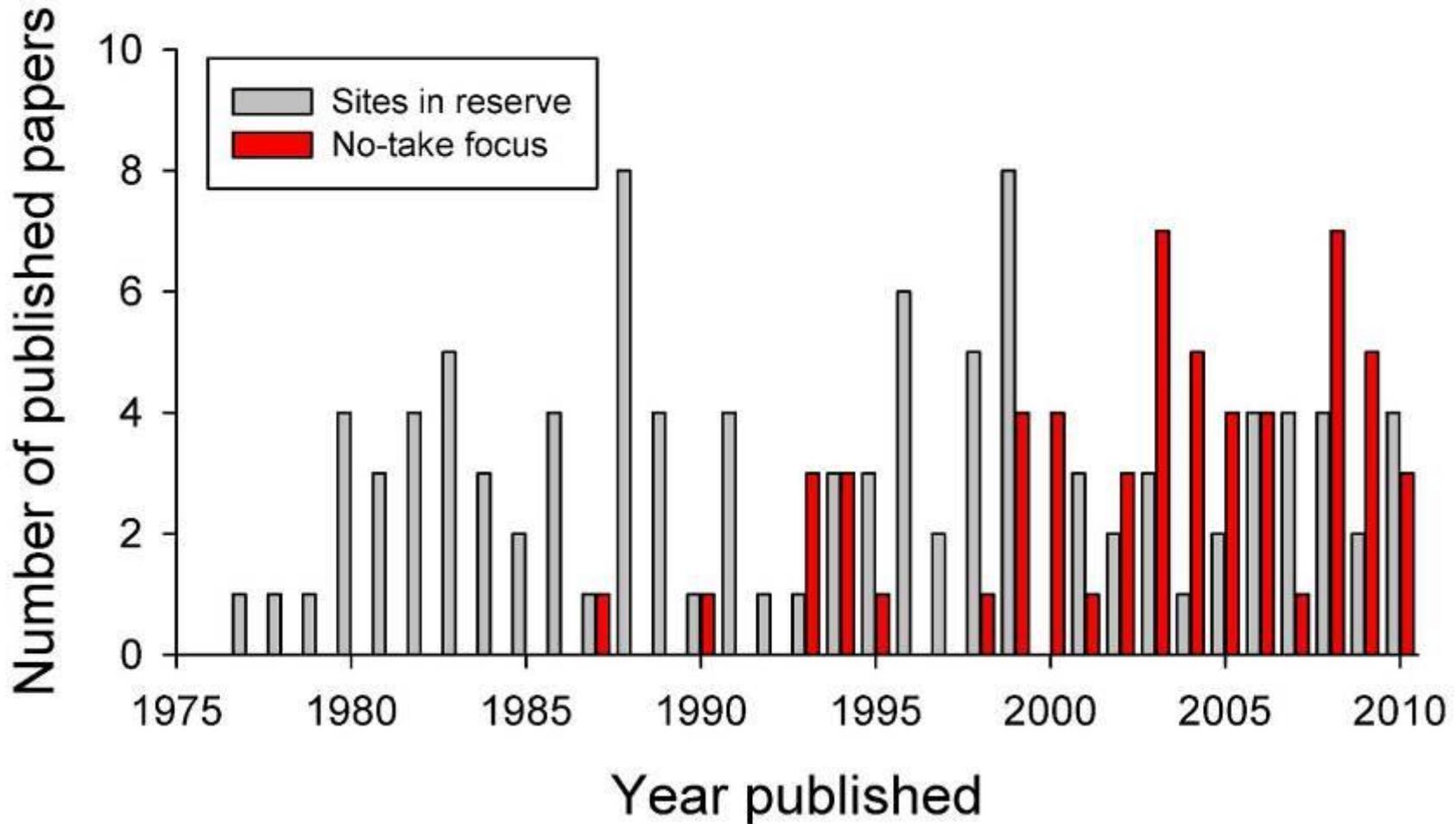
What is NZ's contribution to a global network of MPAs?

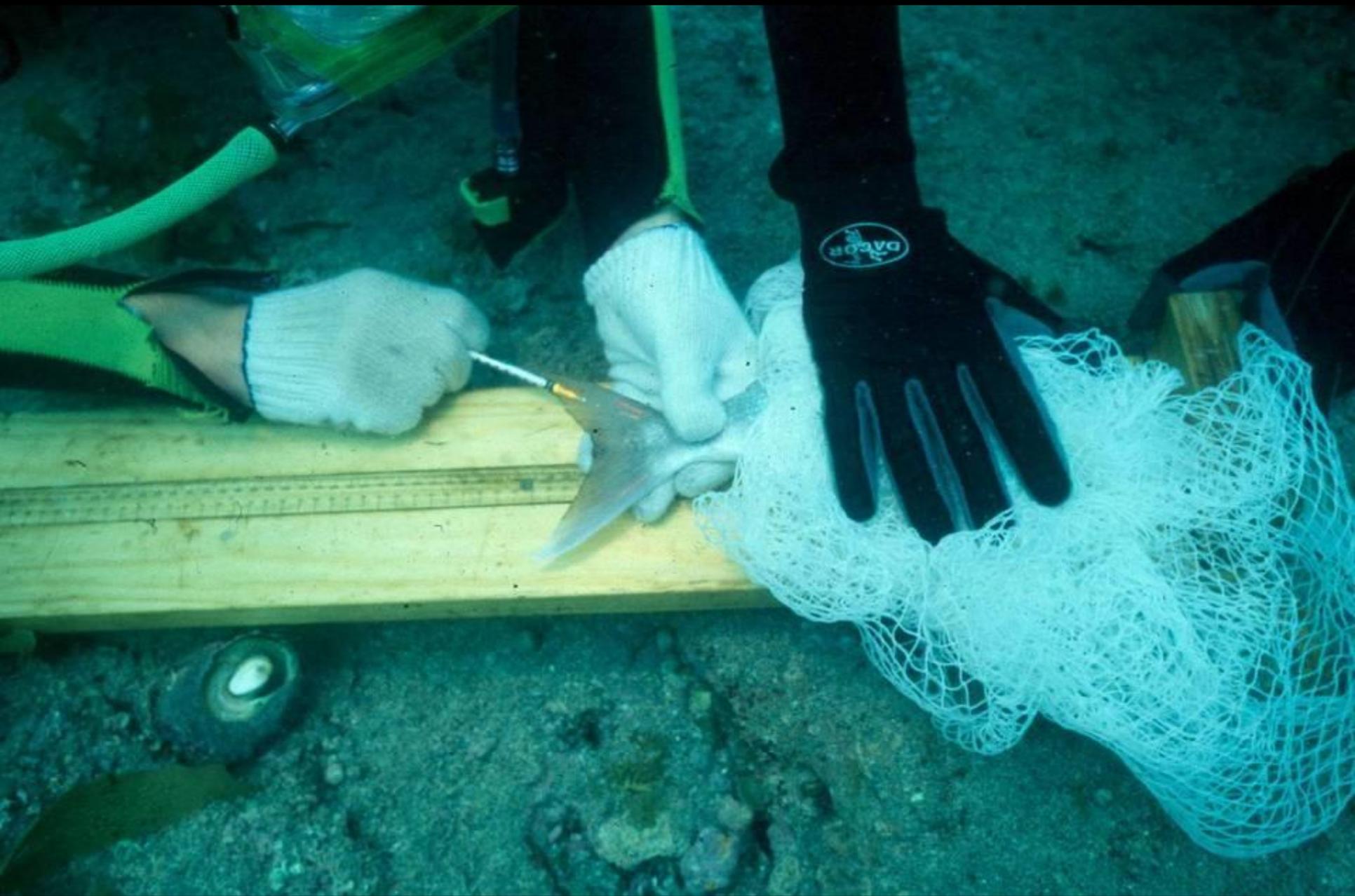
Where are the gaps?

What has been learned  
from NZ's marine  
protected area science?



# Marine reserves as a place to do fundamental research





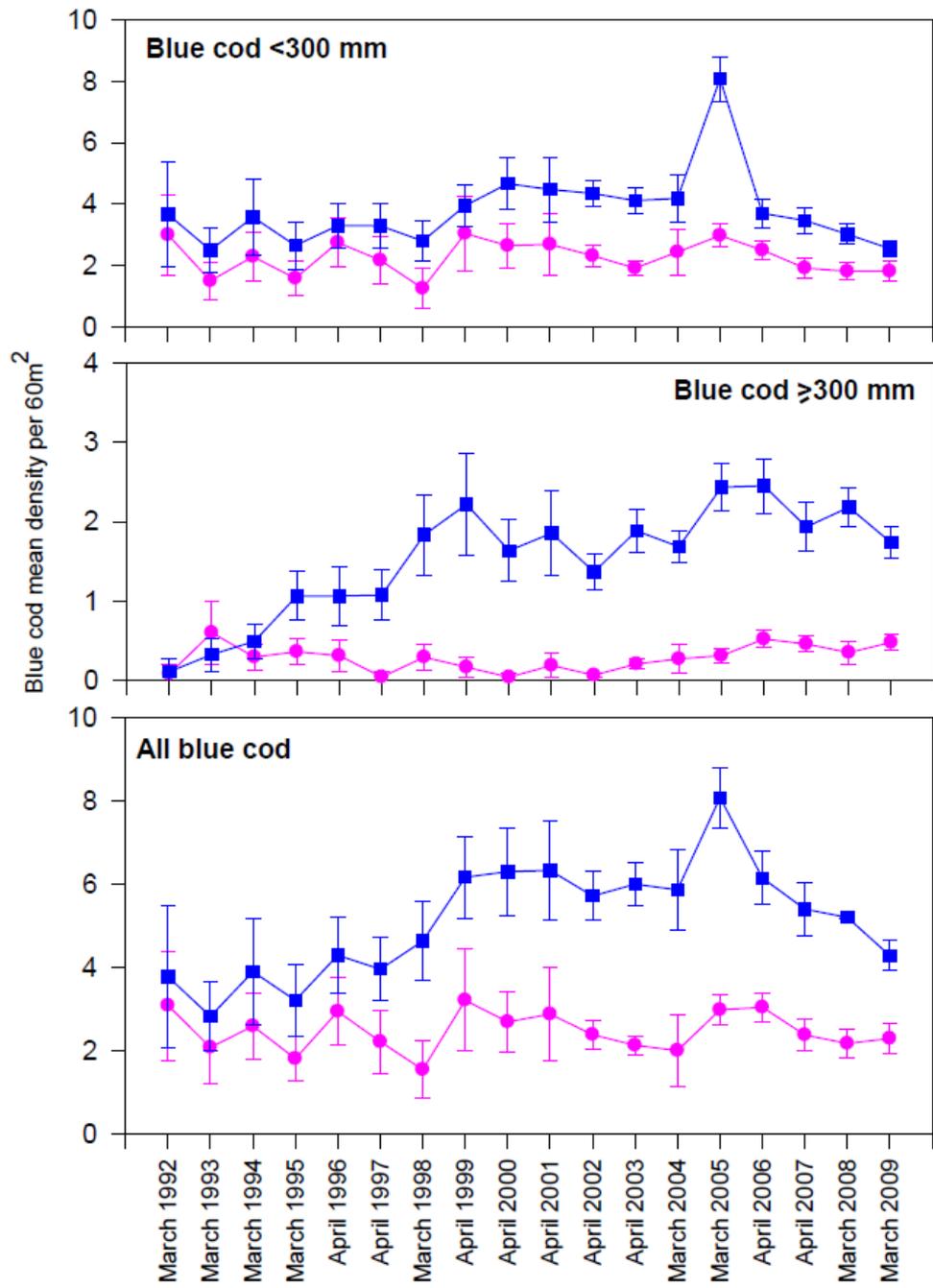
# Recovery of previously-harvested species

We have estimates of recovery from several regions, notably northeastern NZ, Gisborne, Nelson / Marlborough

Harvested species such as snapper, blue cod and rock lobster have generally responded positively to protection

But...the speed and magnitude of recovery is variable and site-specific



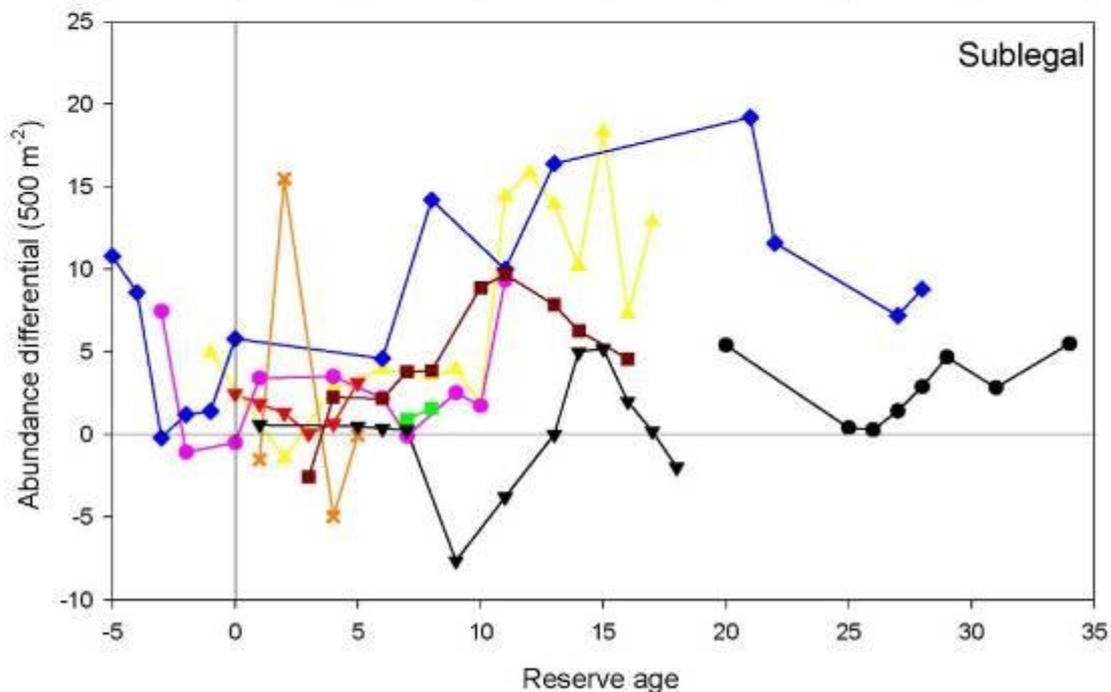
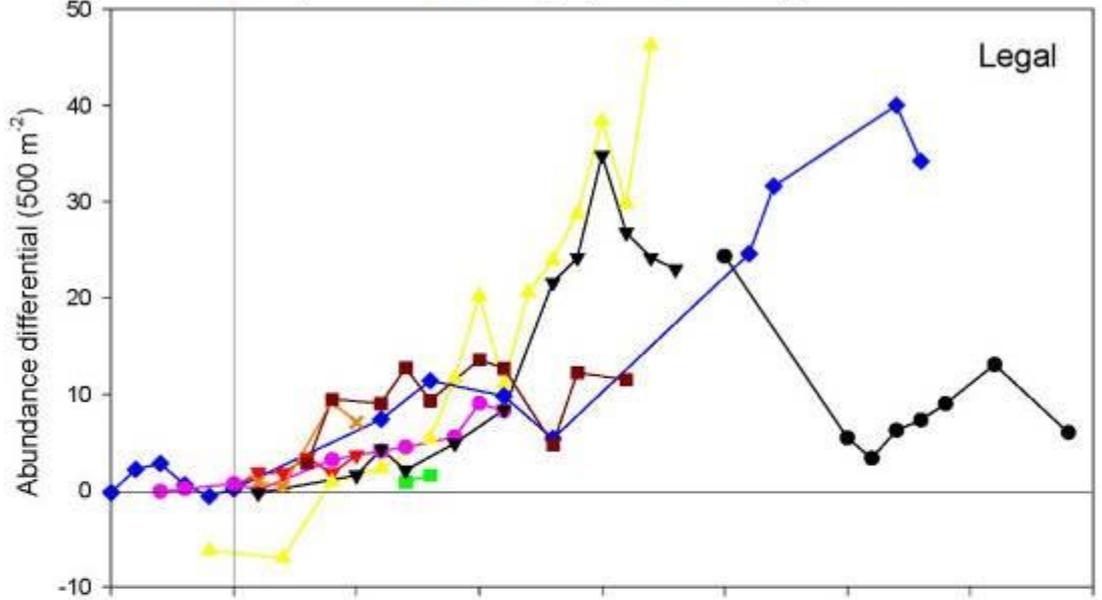


V.Zintzen

Blue cod, *Parapercis colias*

Long Island – Kokomohua  
Marine Reserve,  
Marlborough Sounds

- CROP
- ▲ Horoirangi
- Kapiti Island
- ▲ Long Is
- ◆ Tawharanui
- Te Angiangi
- × Te Tapuwae o Rongokako
- ▲ Tonga Is
- Te Whanganui a Hei



Rock lobster, *Jasus edwardsii*

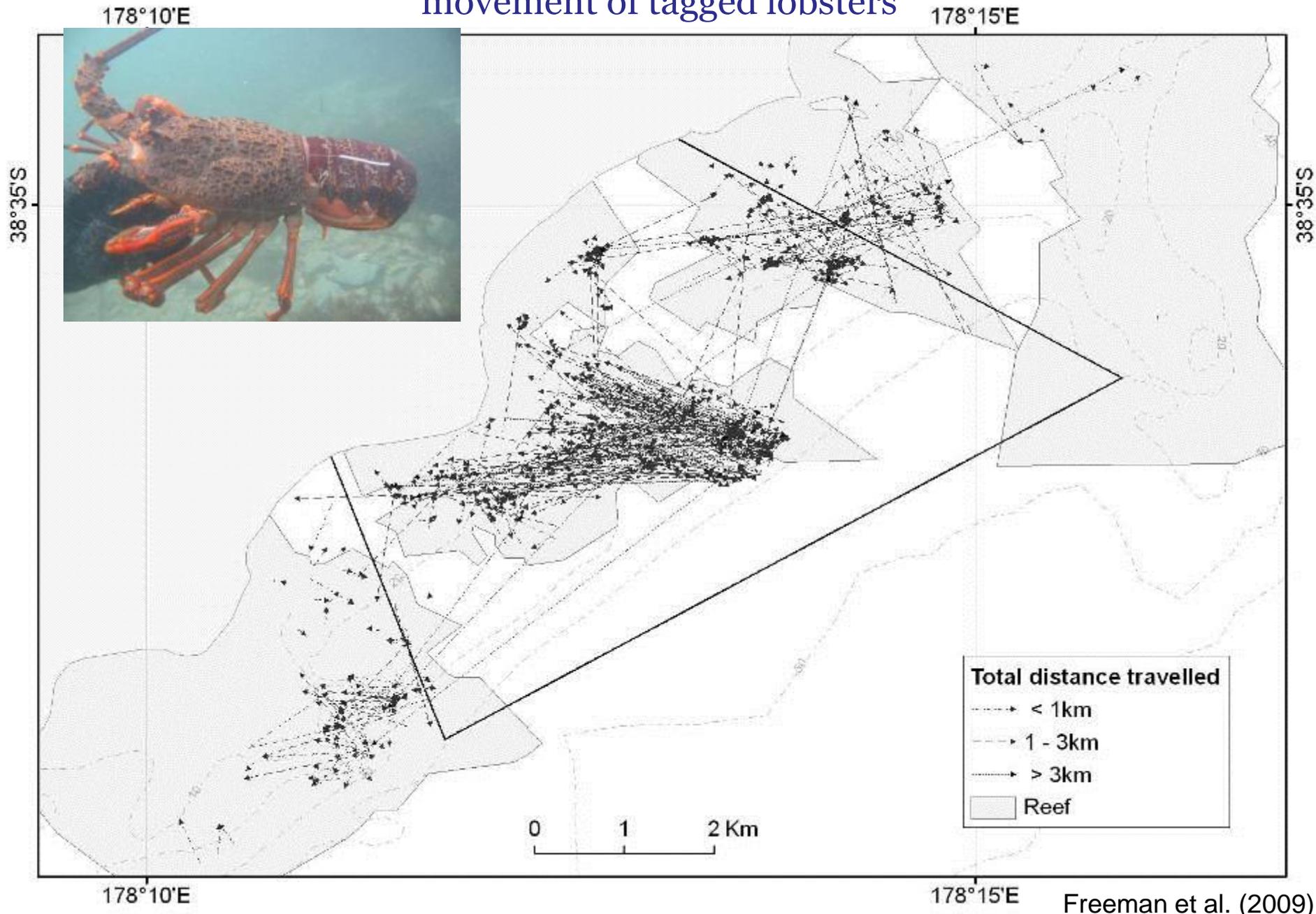
Difference in abundance between unfished and fished populations – 9 NZ marine reserves

# Spillover / cross-boundary movement

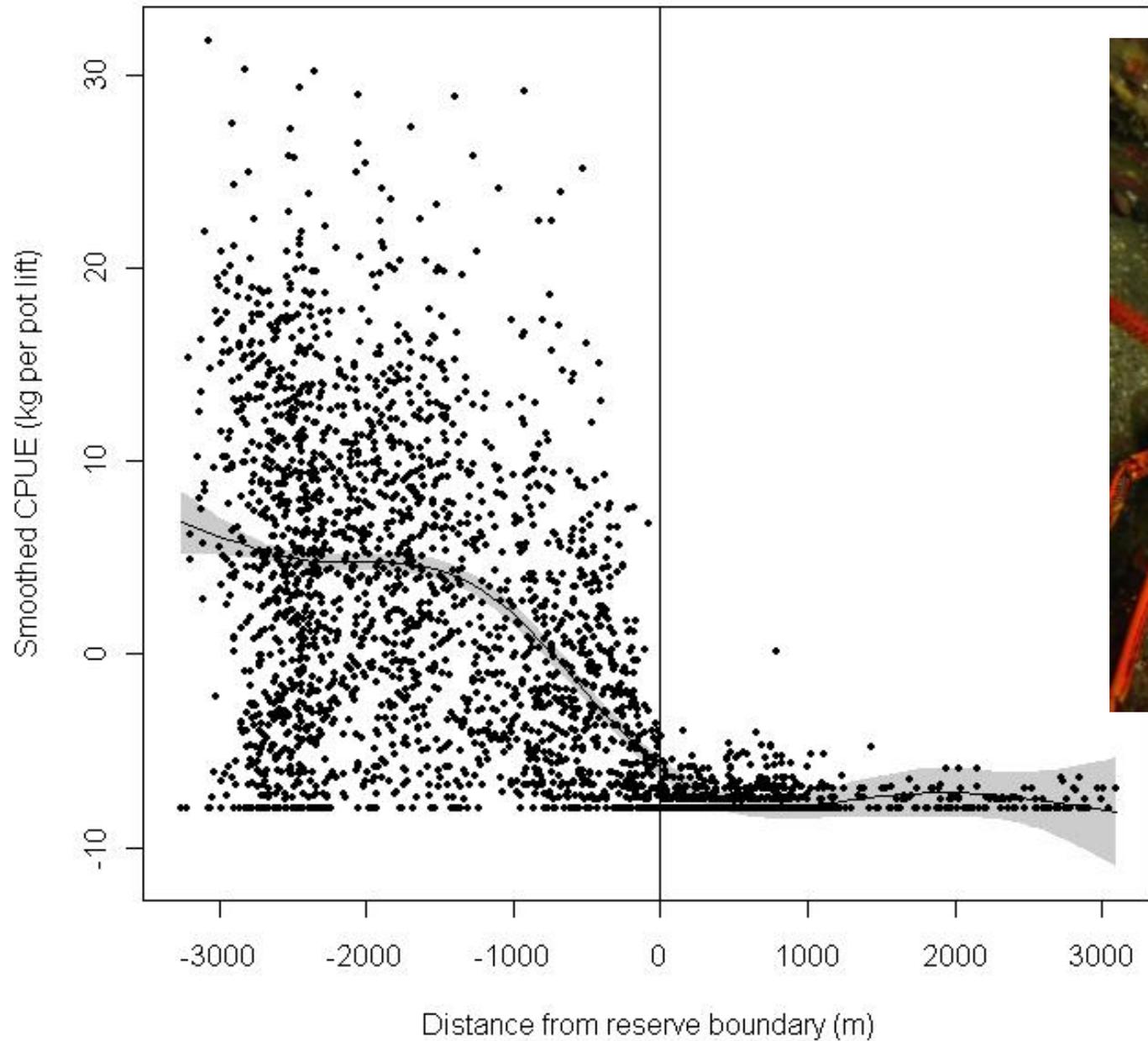
Some evidence from northeastern NZ, Gisborne and Marlborough Sounds

Important for MPA design and for assessing achievement of objectives

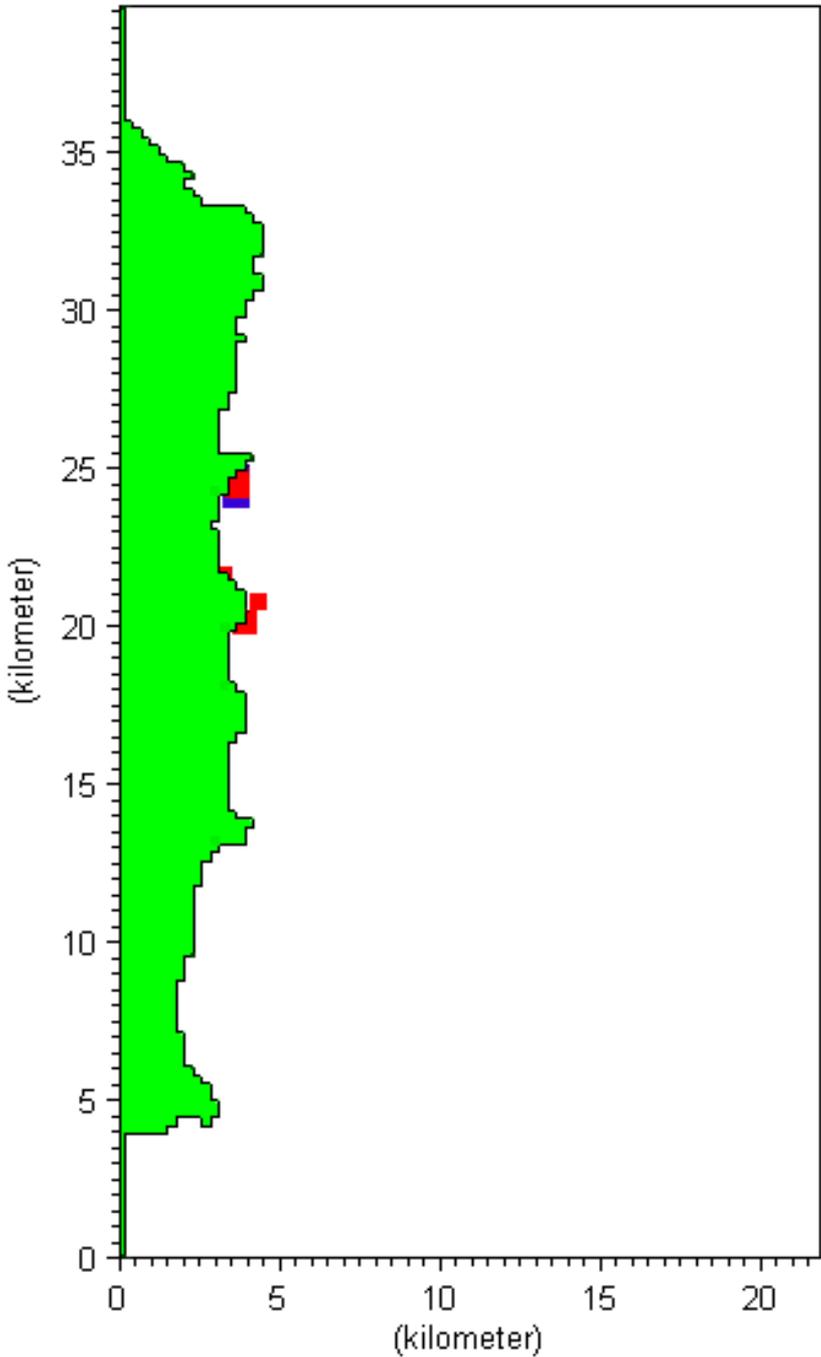
# Te Tapuwae o Rongokako Marine Reserve – movement of tagged lobsters



# Lobster catches within and adjacent to Te Tapuwae o Rongokako Marine Reserve



# Pupu larval dispersal from Whangara

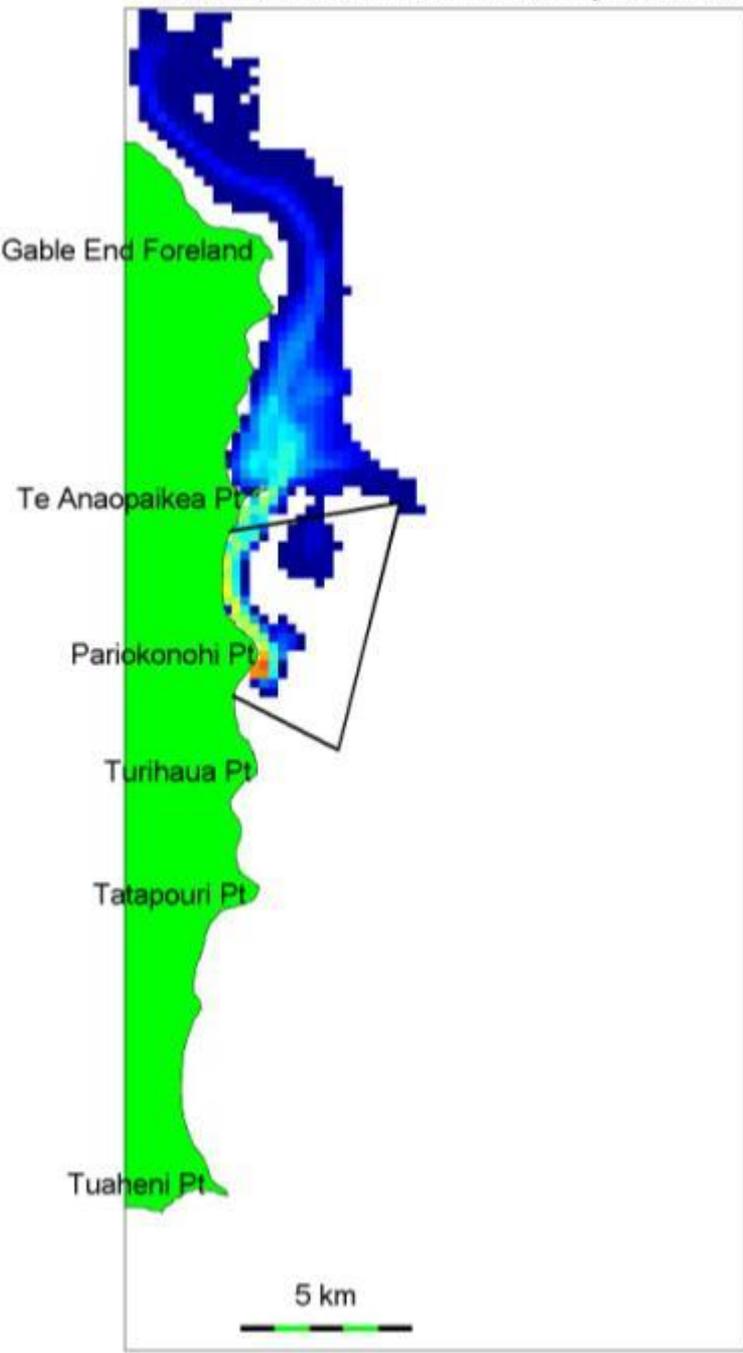


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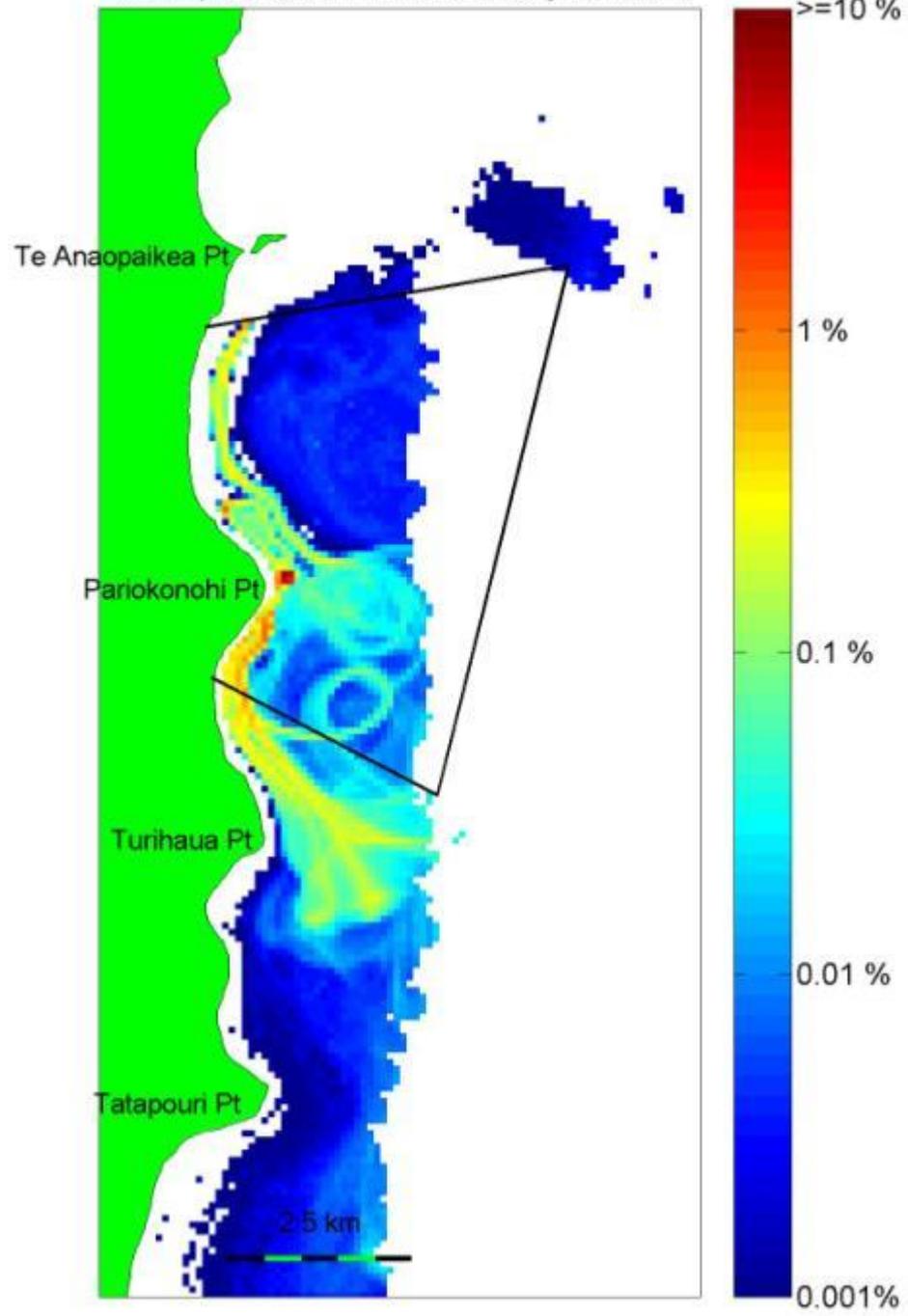
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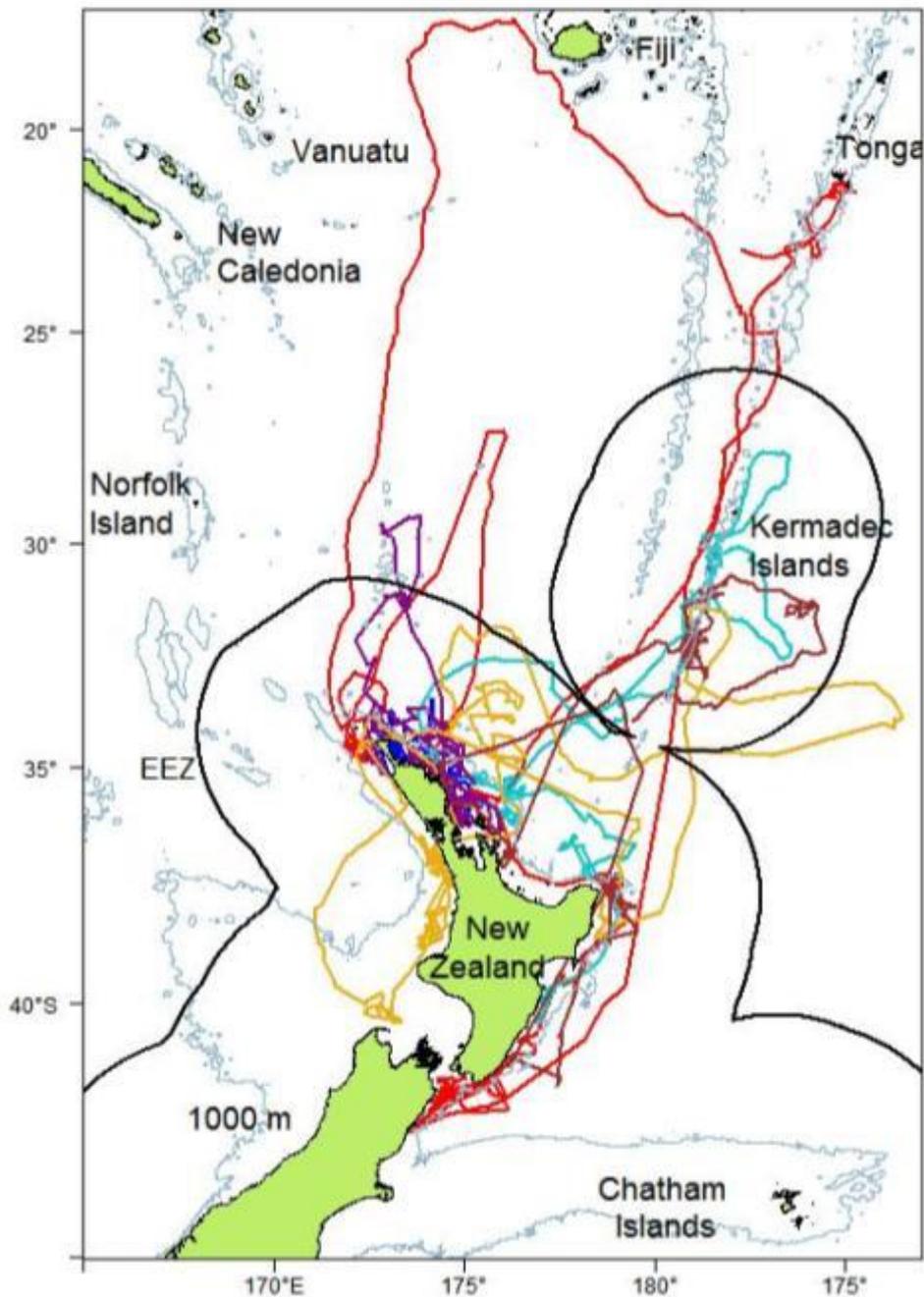
Settled kina larvae in area 1, southerly conditions



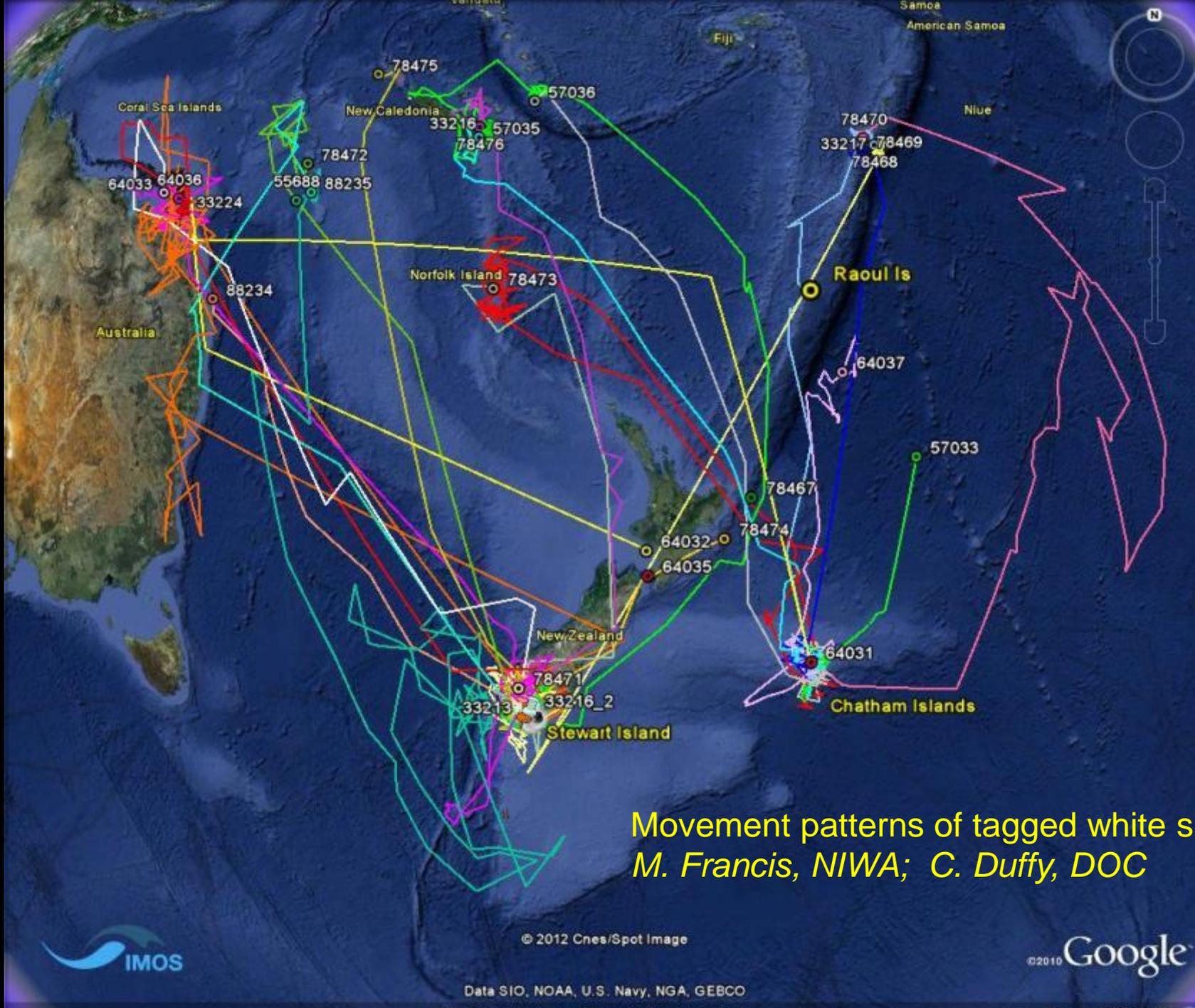
Settled paua larvae in area 2, easterly conditions



Mako shark (*Isurus oxyrinchus*)



Movement patterns of tagged mako sharks



Movement patterns of tagged white sharks  
*M. Francis, NIWA; C. Duffy, DOC*

# Food Webs

Recovery of predators has been linked to changes in reef and soft sediment communities through trophic (“food web”) cascades

Development of trophic (“food web”) models of NZ marine reserves – e.g. Te Tapuwae o Rongokako, Taputeranga

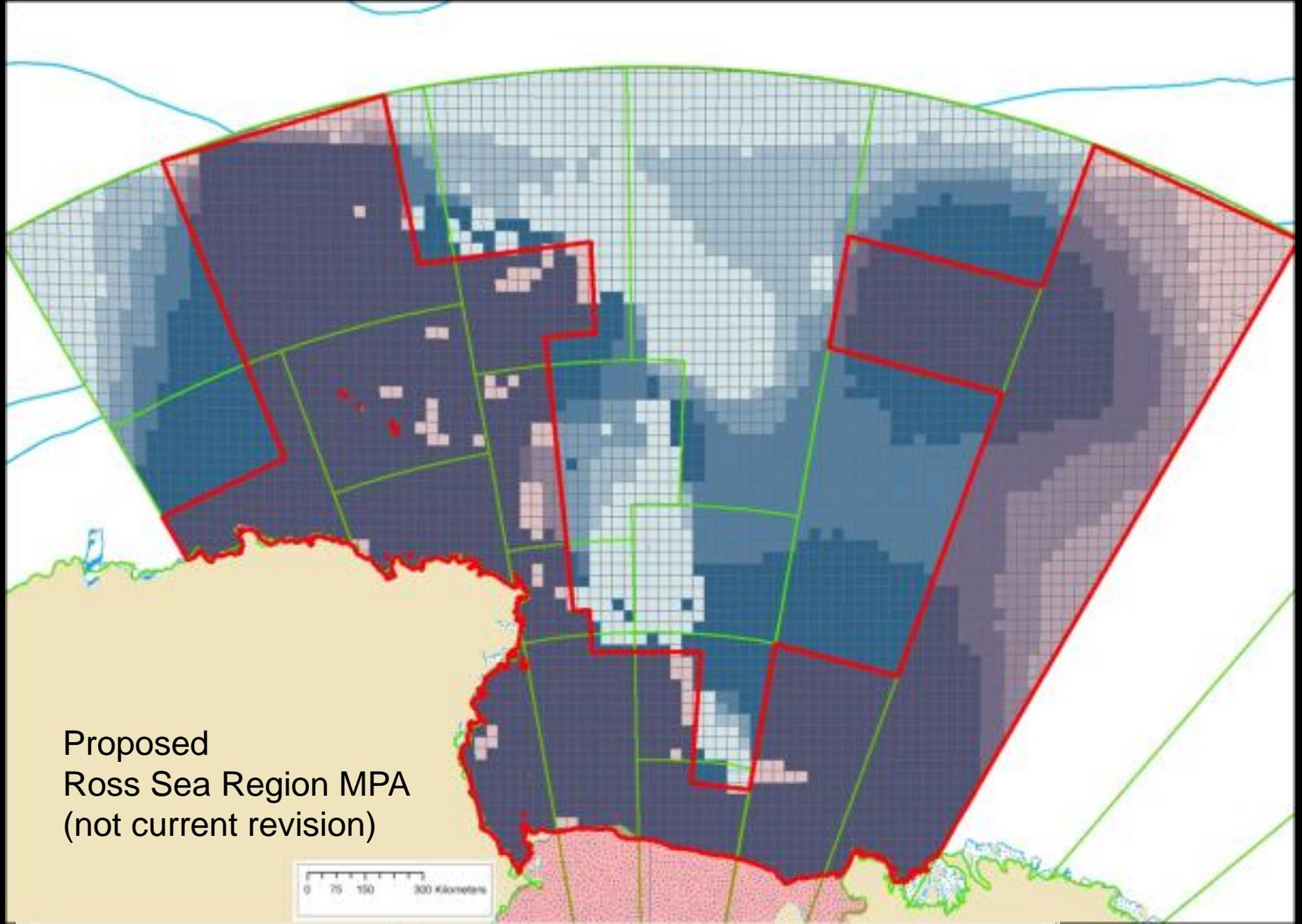
# Effects of human activities

Marine reserves as reference points for environmental and fisheries management

e.g. Fishing mortality estimates for snapper,  
Effects of fishing on growth and disease incidence in lobsters



# Planning and decision support tools



Sea Change - Tai Timu Tai Pari  
Hauraki Gulf Marine Spatial Plan

seasketch

English take a tour help Sign In

### Data Layers

Data Layers Basemap Legend & Ordering

Search layers by name or keyword

- Biodiversity
- Goods and Services
- Marine Habitats
- Physical Properties
- Contaminants and Water Quality

#### Uses and Activities

- Aquaculture
- Existing Consented Activities
- Fishing
- Heritage
- Recreation and Tourism
- Shipping and Navigation

#### Land Use & Catchment

- Catchment Boundaries (FENZ)
- Land Use Classification (LCDB3)
- Rivers (LINZ Topo50)
- Threatened Environment Classification (Landcare)

#### Additional Information

- NZ Mainland Topo50 Maps

#### Engagement Activities

Locations and content from public engagement opportunities

- Love Our Gulf

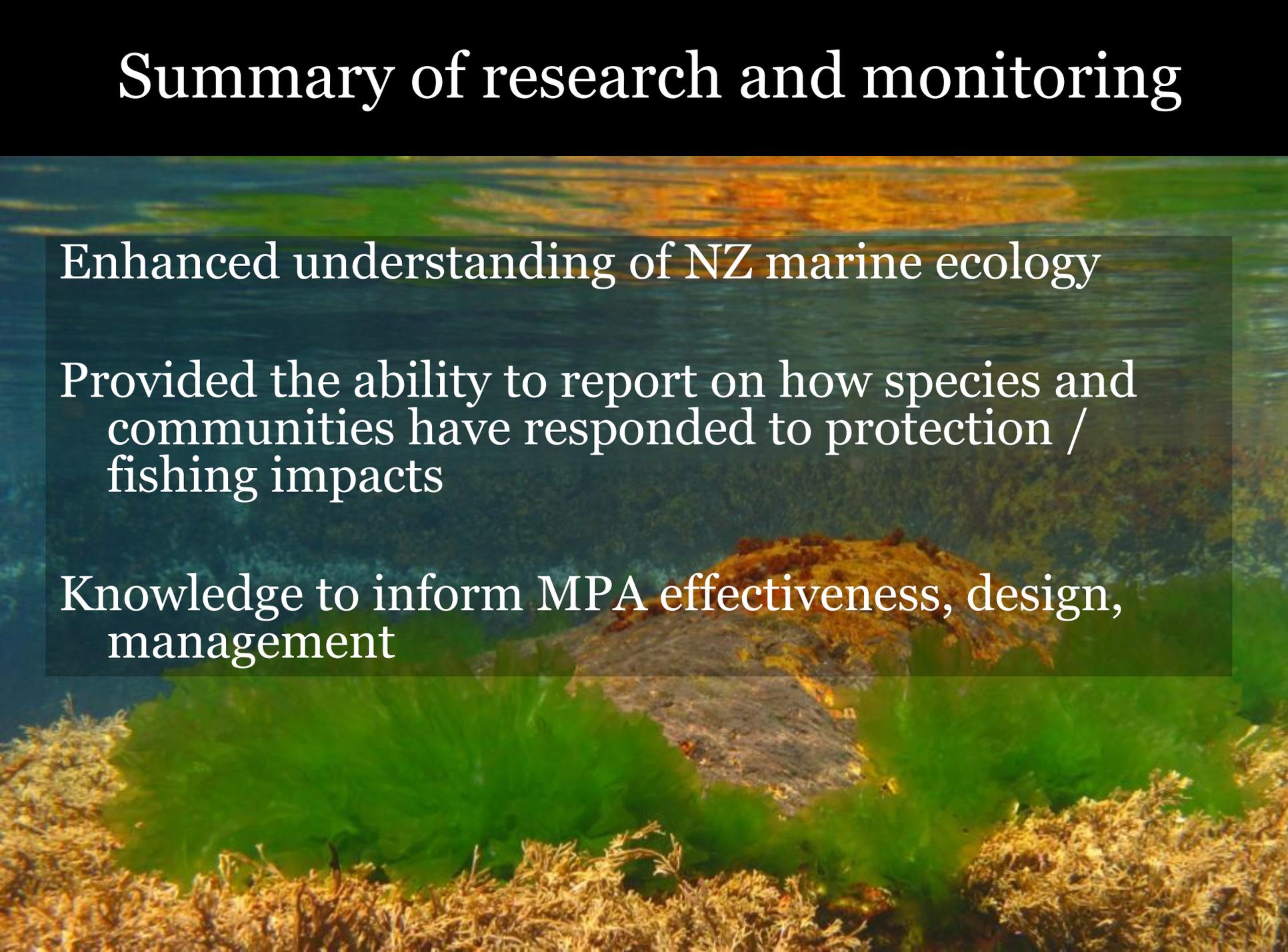
Map showing the Hauraki Gulf area with various data layers overlaid, including Biodiversity, Aquaculture, and Land Use Classification. The map is color-coded and includes labels for Waihi, Riverhead, Coromandel, and Thames.

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Hauraki Gulf – use of SeaSketch to help visualise marine information

# Summary of research and monitoring

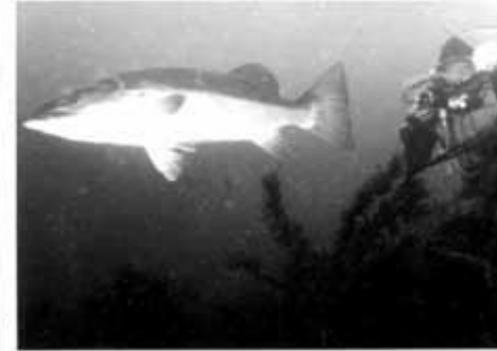
The background of the slide is a photograph of a coastal landscape. In the foreground, there are dense, low-lying plants with green and brownish-yellow foliage. In the middle ground, a dark, rocky outcrop or cliff face is visible, partially covered with similar vegetation. The background shows a body of water with a mix of green and blue tones, suggesting a shallow reef or lagoon area.

Enhanced understanding of NZ marine ecology

Provided the ability to report on how species and communities have responded to protection / fishing impacts

Knowledge to inform MPA effectiveness, design, management





# Moving ahead

Focus on ecological integrity – whole of ecosystem, from mountains to sea

Needs collective effort

- MPAs only part of the solution

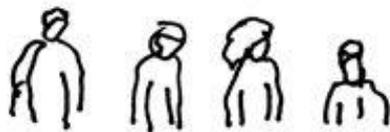
Incorporate mātauranga Maori

Engage citizen scientists

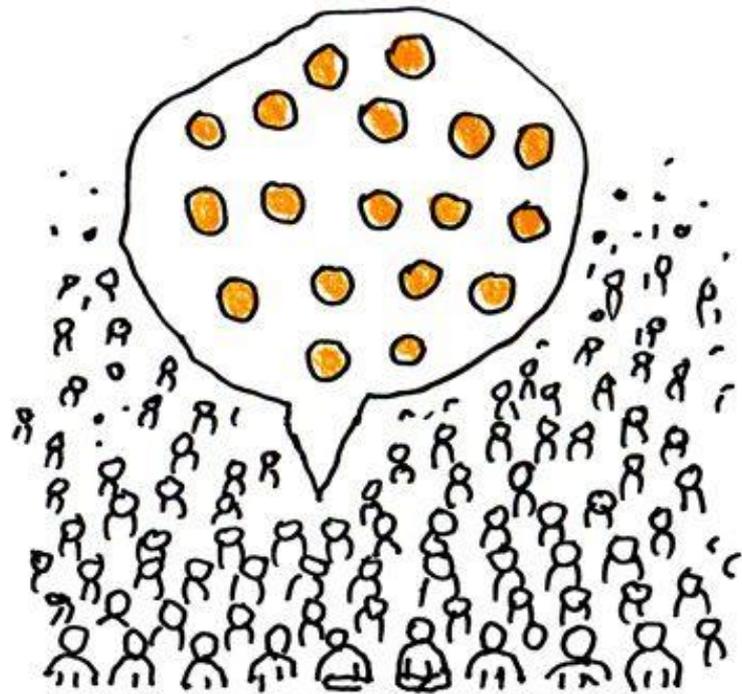
Use technology



# Science communication



scientists



the public

# Conclusions from a 2005 workshop on the use of scientific information for MPA establishment and management

We need to think about the “promises” of MPA benefits and consequences of “broken promises”.

Scientists should focus on undisputed benefits rather than on debatable benefits.

Expectations of increased productivity may explain a lot of support for MPAs.

There’s a gap between what scientists recommend and what stakeholders are led to believe.

**Is the “bar” higher for conservation science than for fisheries science?**





A cruise ship spotted on royal cam



Who is telling the story?

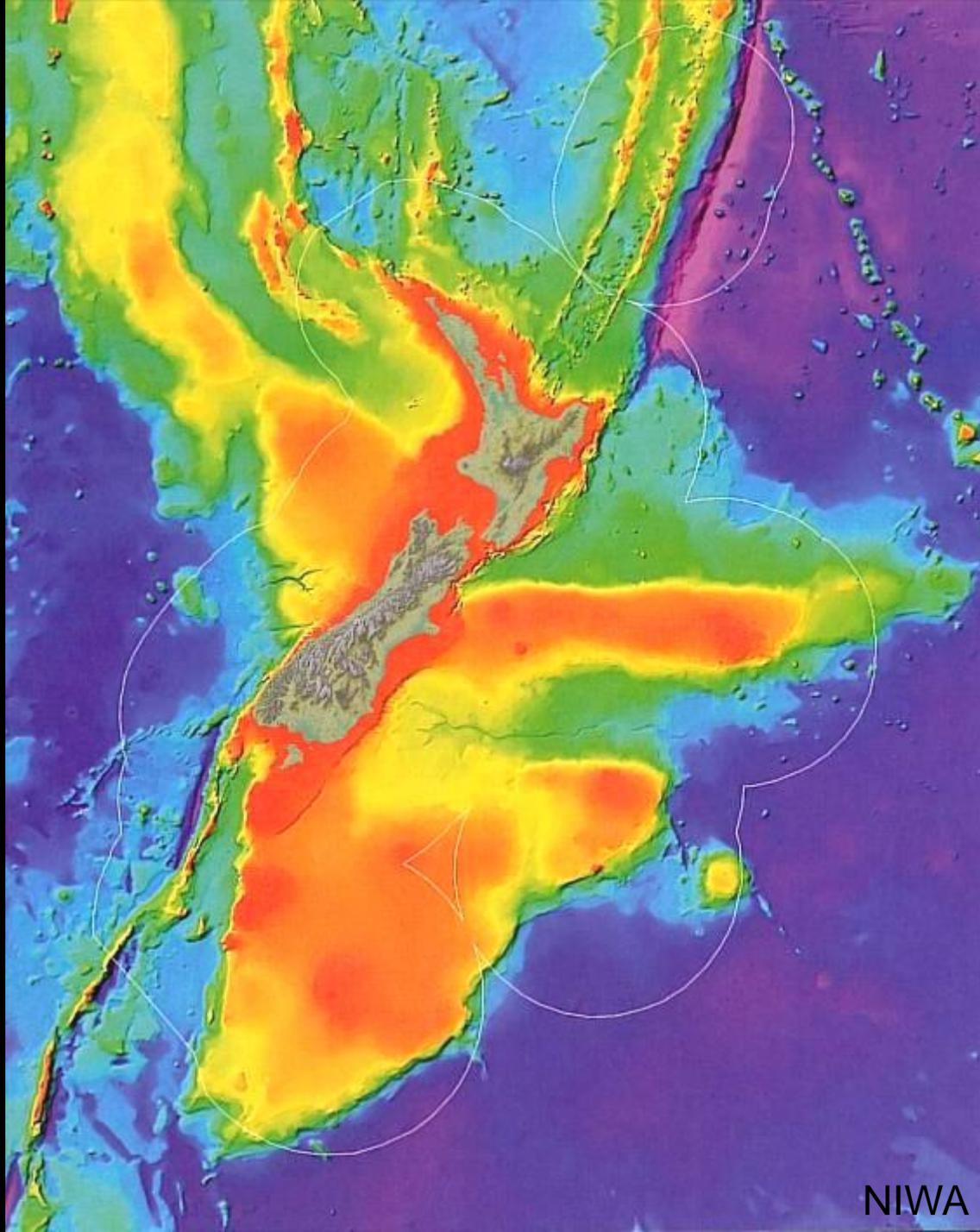


# What about new New Zealanders?



# Perspective....







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***Tena koutou***

V. Zintzen, DOC

