COLLABORATION ADVANCES CONSERVATION:

NEW ZEALAND ORANGE ROUGHY

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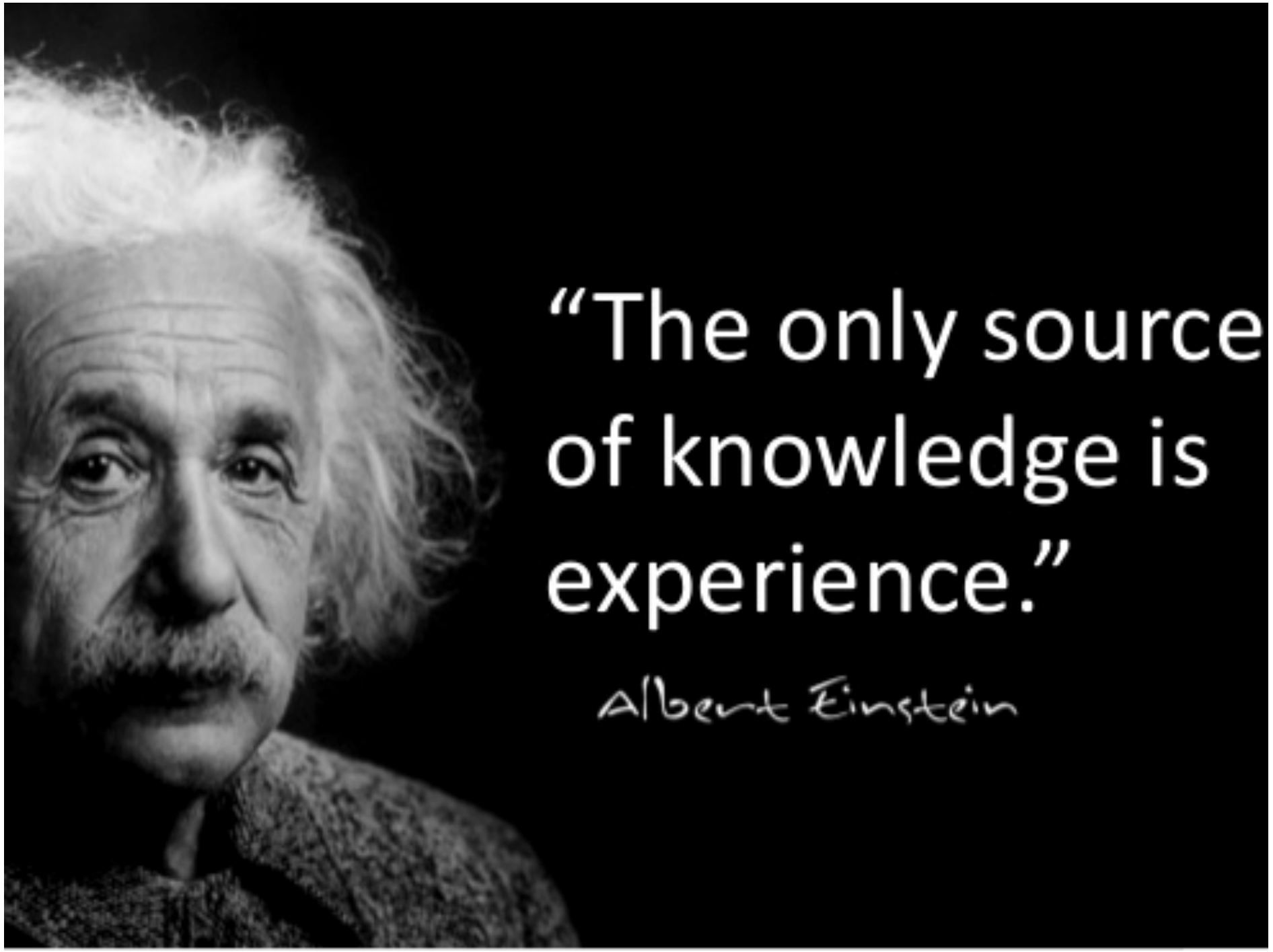
SeaWeb Seafood Summit, Malta
February 2016

deepwater group


“The earth is like a spaceship that didn’t come with an operating manual”
R. Buckminster Fuller
With orange roughy we have had to learn by doing


“The only source of knowledge is experience.”
Albert Einstein

PRESENTATION

Collaborative work approaches increase effectiveness and efficiencies.

Collaboration has assisted improvements in New Zealand's orange roughy fisheries performance.

- Why collaborate?
- Inter-agency collaborations
- Case study: New Zealand orange roughy
- Challenges
- Our observations

WHY COLLABORATE?

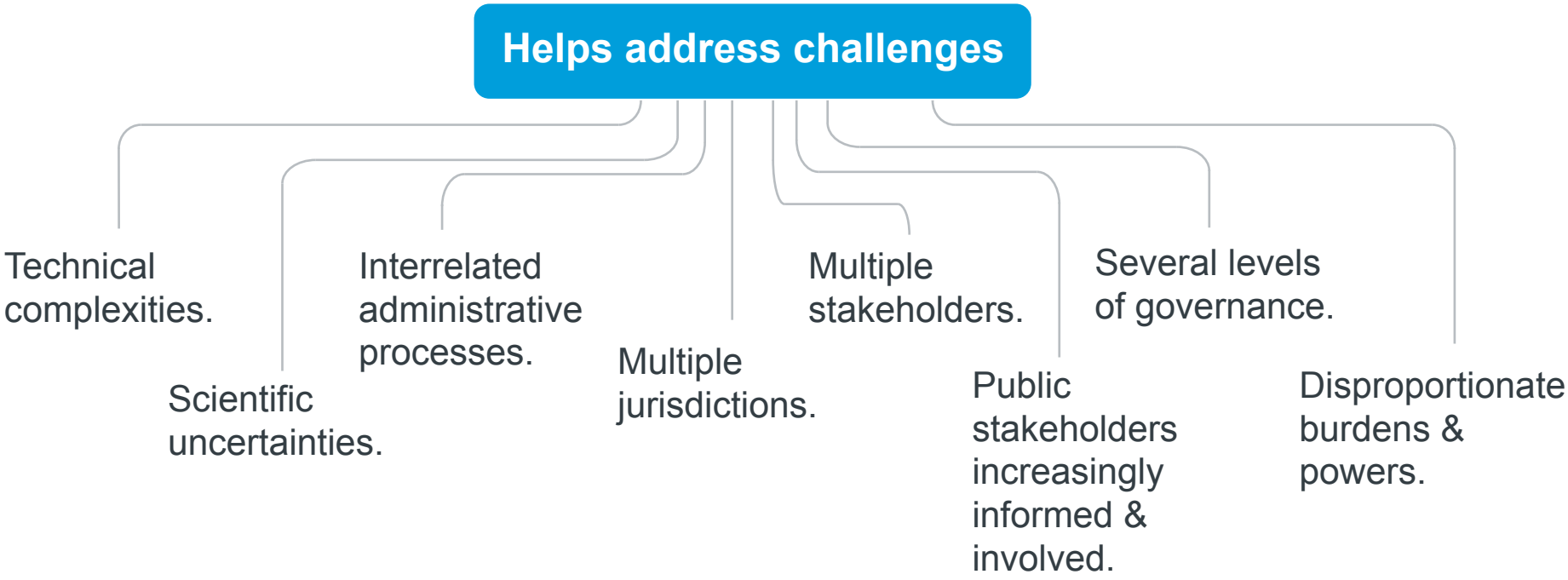
Many forms of collaboration: formal, informal, temporary, permanent.

Collaboration requires cooperative exchanges for mutual benefits.

Orange roughy, Chatham Rise © NIWA

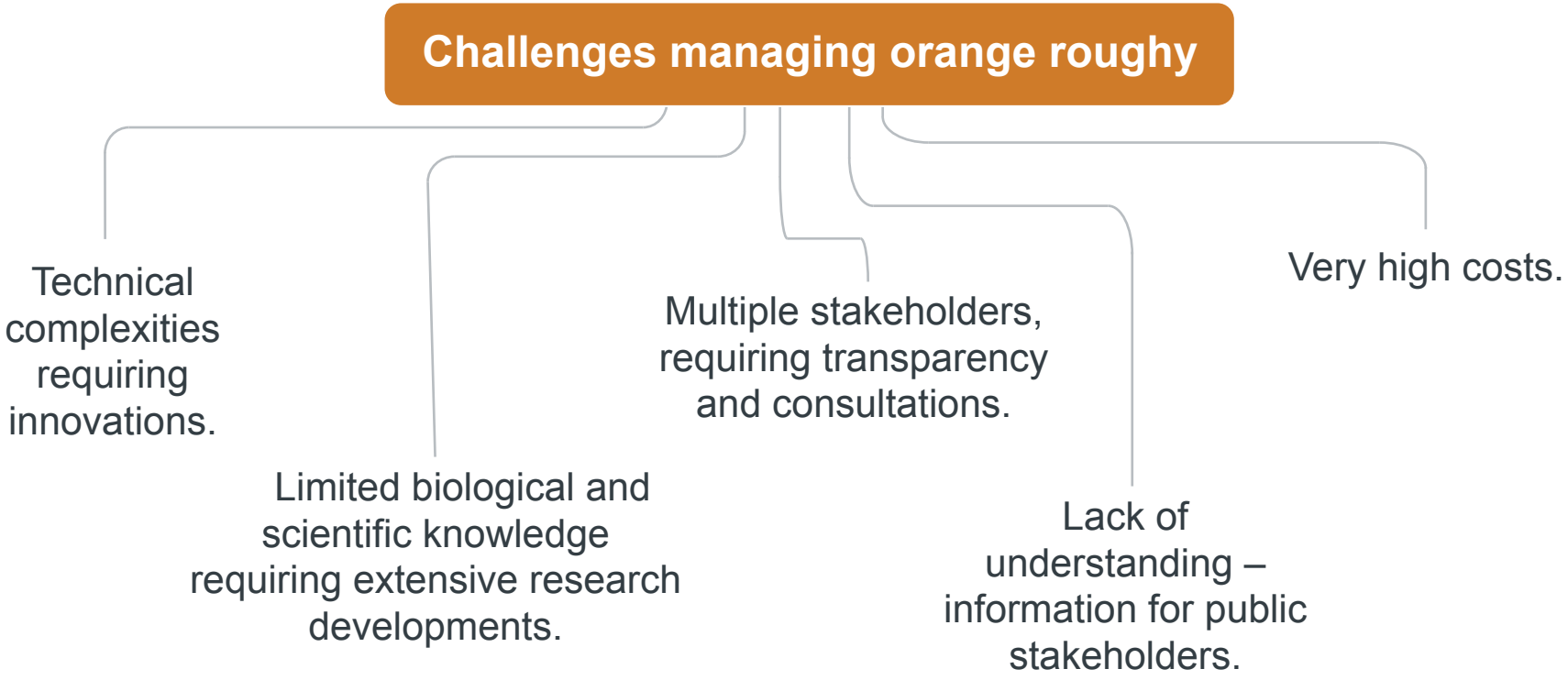
WHY COLLABORATE?

Collaboration can help decision-making where there are multiple challenging factors and multiple stakeholders.



WHY COLLABORATE?

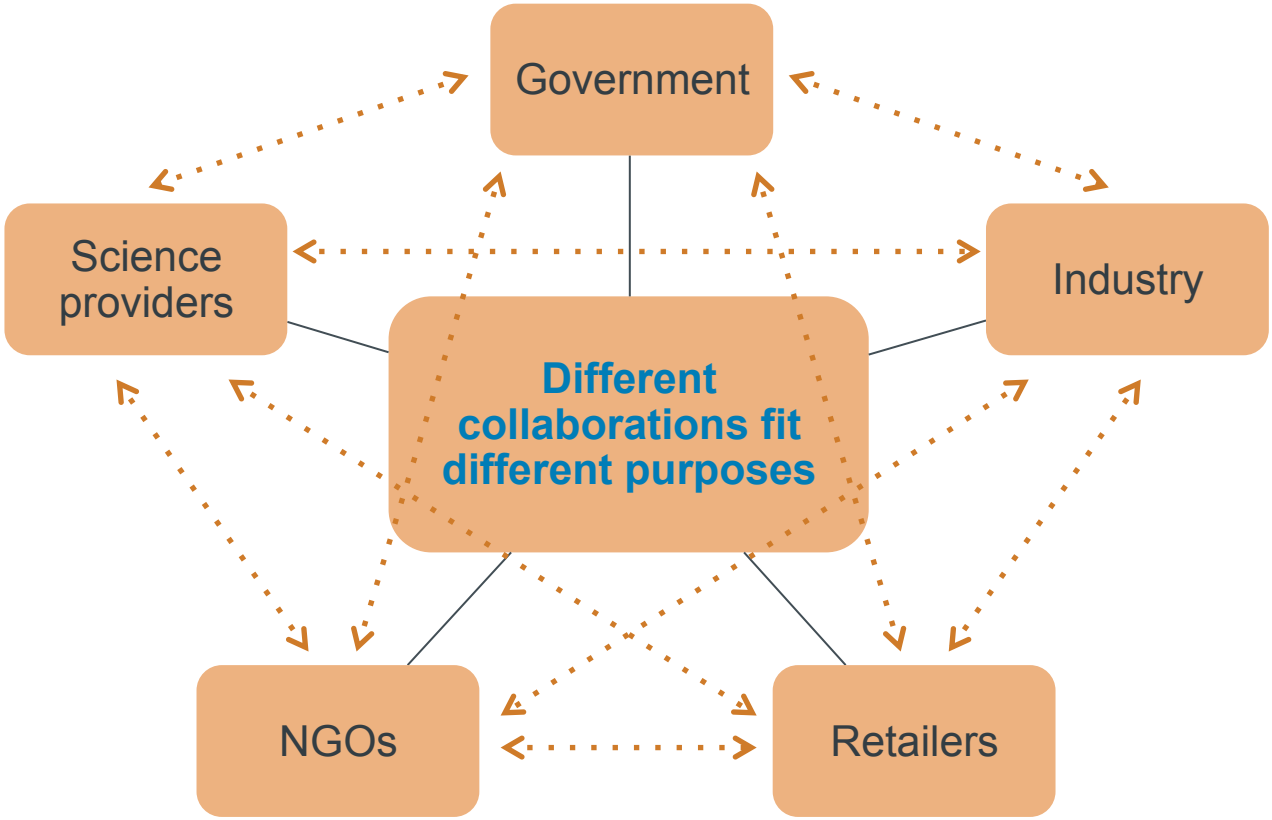
We had to start from the beginning to understand basic biology, stock structure, productivity, how to measure and how to rebuild stocks – requiring a wide range of technical and scientific expertise.




Fisheries management is not about managing ***fish….***
It's about managing ***people***….we can take care of ourselves!
Orange roughy Chatham Rise © NIWA

INTER-AGENCY COLLABORATIONS

Different forms of collaboration depending on the objectives, who is involved and how they agree to engage.




How has collaboration helped us?
To start with, there'd be fewer of us without it!
Orange roughy Chatham Rise © NIWA

CASE STUDY: NEW ZEALAND ORANGE ROUGHY

Collaborative processes have enabled many of the challenges in managing New Zealand's orange roughy fisheries to be resolved.

- ☑ ALIGNMENT OF FISHING PARTICIPANTS
  Via collaboration amongst companies through DWG
- ☑ ALIGNMENT OF GOVERNANCE
  Via MPI and DWG partnership
- ☑ INTEGRATION OF ECOLOGICAL KNOWLEDGE
  Via ecological risk assessment
- ☑ IMPROVED BIOMASS MEASUREMENTS
  Via collaboration with independent scientists, MPI, DWG
- ☑ IMPROVED ASSESSMENT MODELS
  Via global collaboration with independent scientists, MPI, DWG
- ☑ IMPROVED HARVEST METHODS
  Via collaboration with independent scientists, MPI, DWG

MAIN COLLABORATION STAKEHOLDERS

CASE STUDY: DEEPWATER GROUP

Overview:

- **AIM: Collaboration amongst all deep water quota owners**
- The Deepwater Group (DWG) was formed in 2005 - evolved from earlier collaborative groups
- Shareholders own 95% of quota
- With ***rights*** come ***responsibilities***
- Vision: ***"To be recognised as best managed deepwater fisheries in the world"***
- Not for profit organisation

Crew at work on trawler

CASE STUDY: DEEPWATER GROUP

Collaborative Successes:

- Cooperation replaces competition
- Increased trust and transparency between quota owners
- Agreed strategy and coordinated approach – strategic plan, annual plan, formal voting, regular meetings
- All agree sustainability an essential foundation for good business
- United voice and representation
- Shared knowledge of fisheries
- Shared investment in science and management

Processing orange roughy

CASE STUDY:
MPI & DWG PARTNERSHIP

Overview:

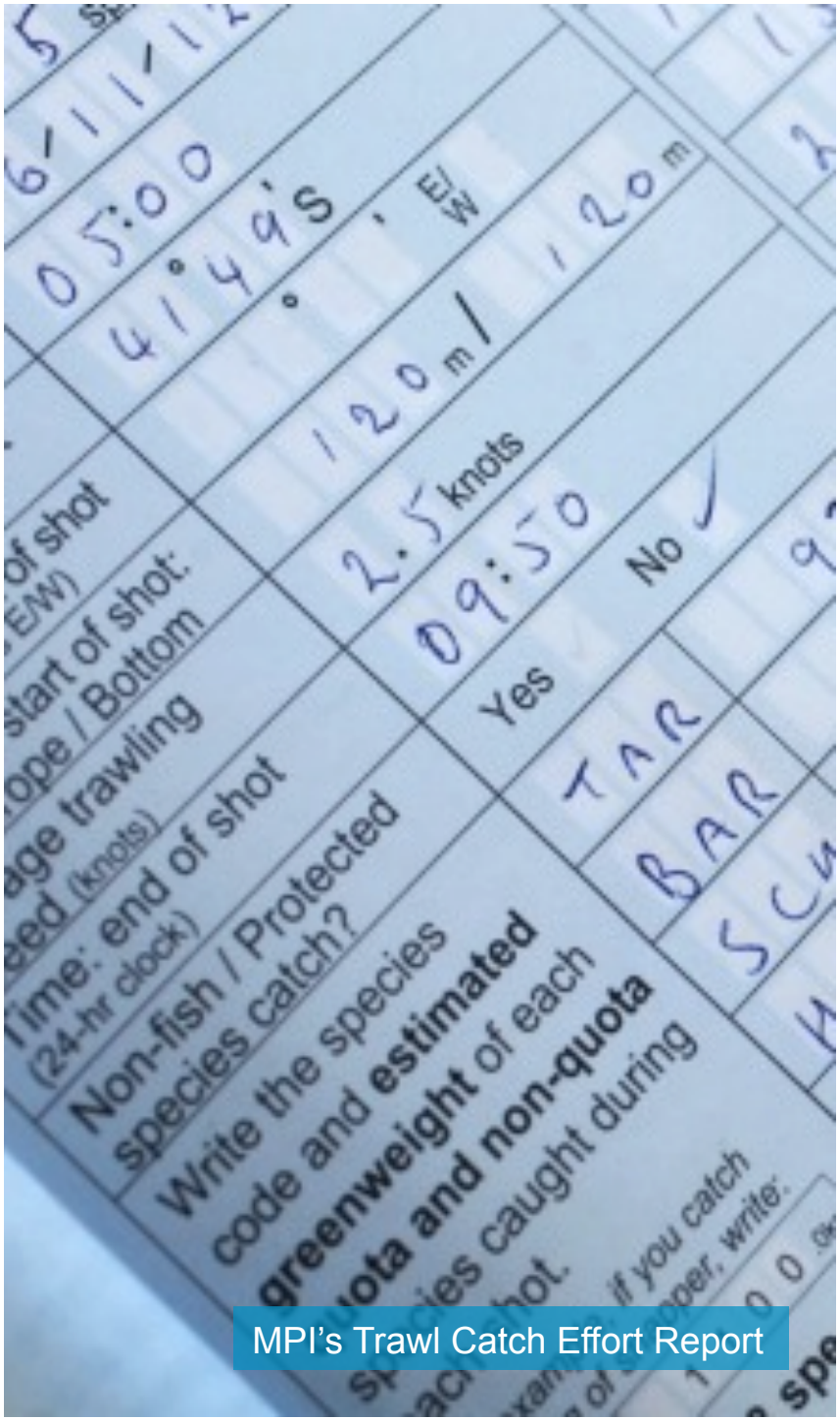
- **AIM: Collaboration between government and industry to ensure deep water fisheries are sustainably managed**
- Partnership established in 2006, updated in 2008 and in 2010
- Formalises processes already operating informally to align objectives, goals and operations
- Aligned for third party audits - MSC
- Open - either party able to collaborate with others

Minister Guy at Seafood NZ Conference

CASE STUDY:
MPI & DWG PARTNERSHIP

Collaborative Successes:

- Combines public & private perspectives, knowledge, & capabilities
- Agreed strategic plan, shared work programmes
- Clear roles and responsibilities – Government retains powers to regulate and to enforce
- Real-time, open communication – environmental incident reports
- Encourages innovative solutions – **Non-Regulatory Controls**, and **Benthic Protection Areas**

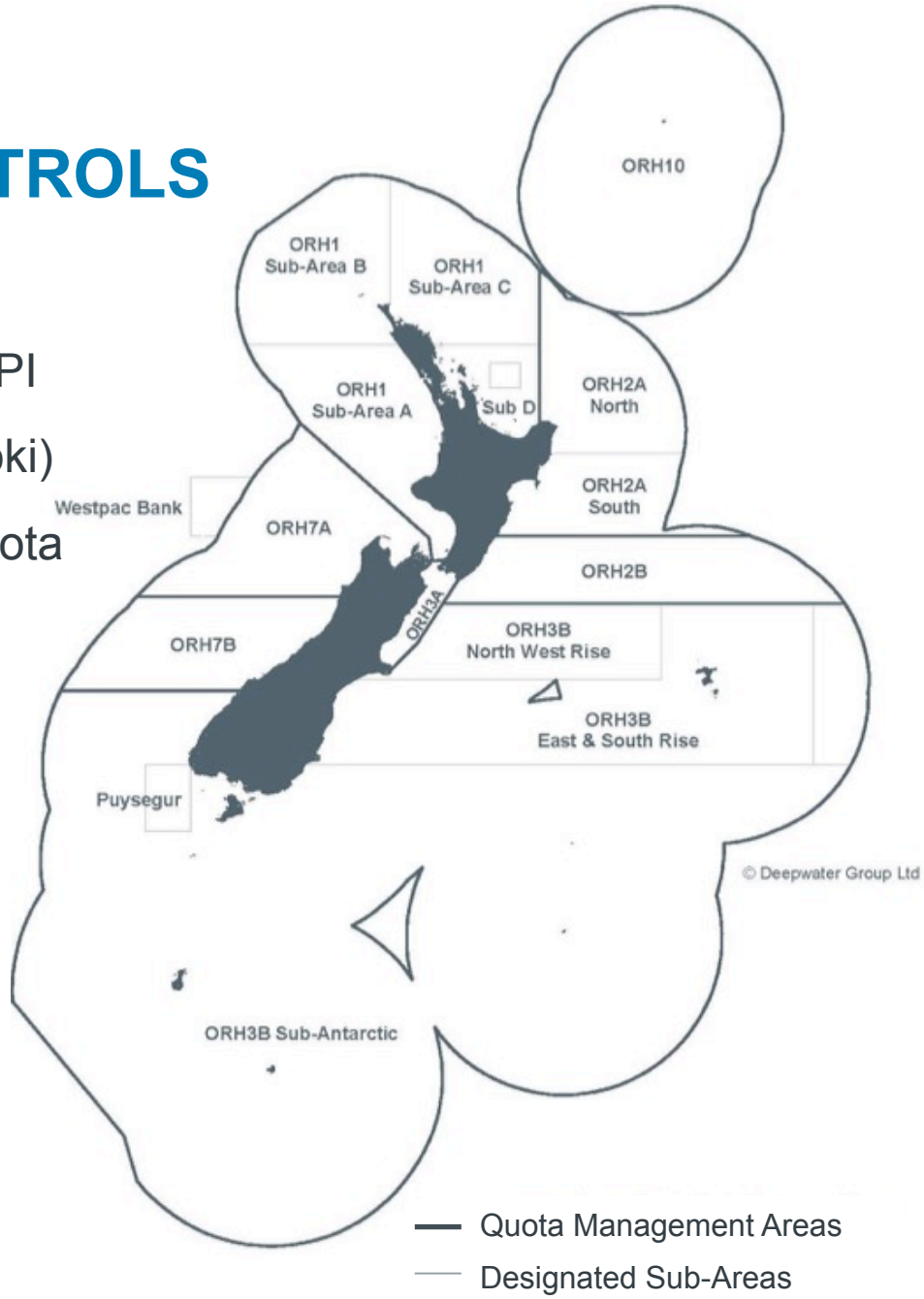


MPI's Trawl Catch Effort Report

NON-REGULATORY CONTROLS

Collaborative Successes:

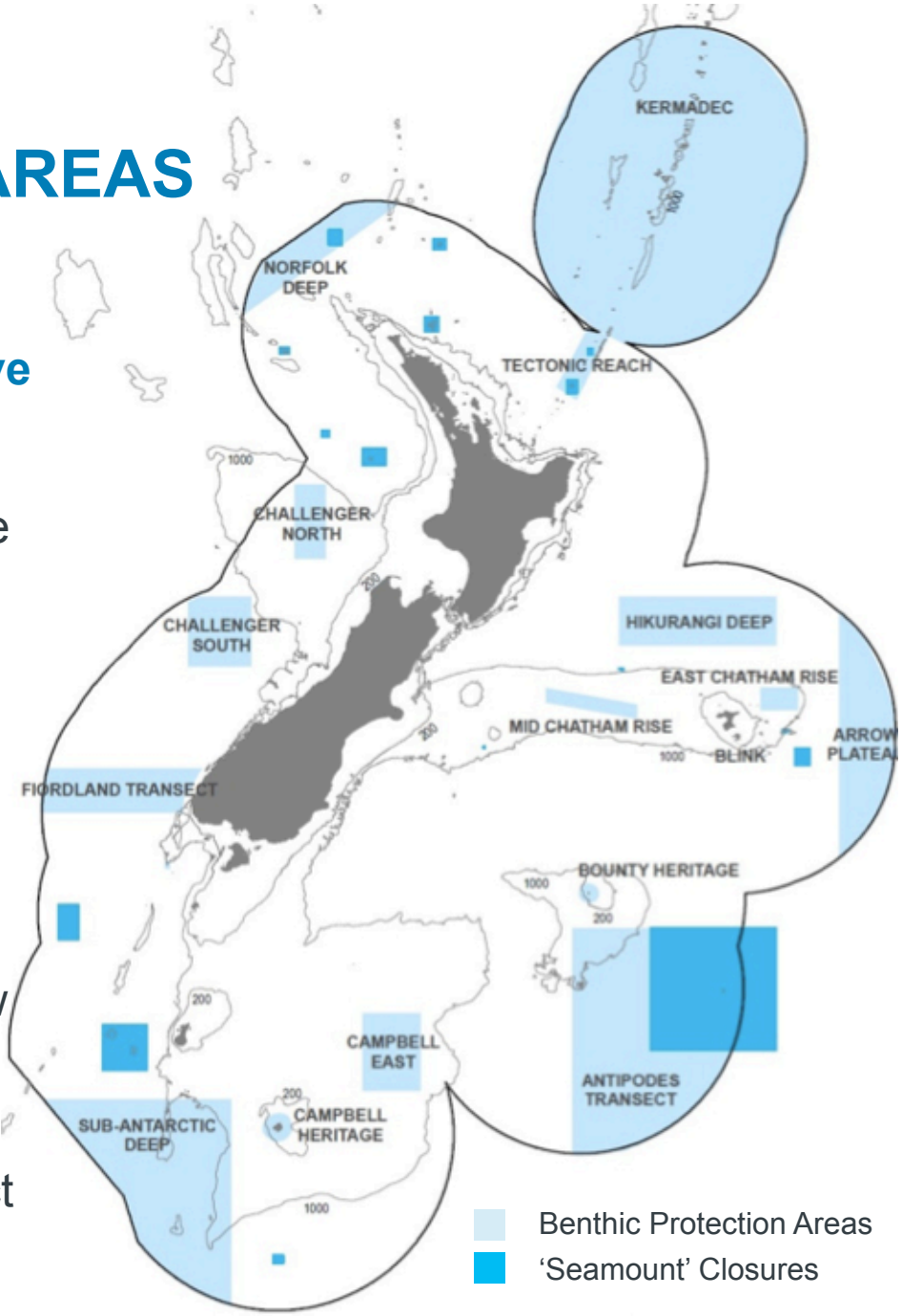
- Administered by DWG, audited by MPI
- Closed fishing areas (e.g. juvenile hoki)
- Sub-area catch limits within large Quota Management Areas
- Voluntary catch reductions - fisheries closures
- DWG Operational Procedures
  - Hoki, orange roughy & oreo
  - Squid
  - Marine Mammals
  - Seabirds
  - Sharks



BENTHIC PROTECTION AREAS

Overview:

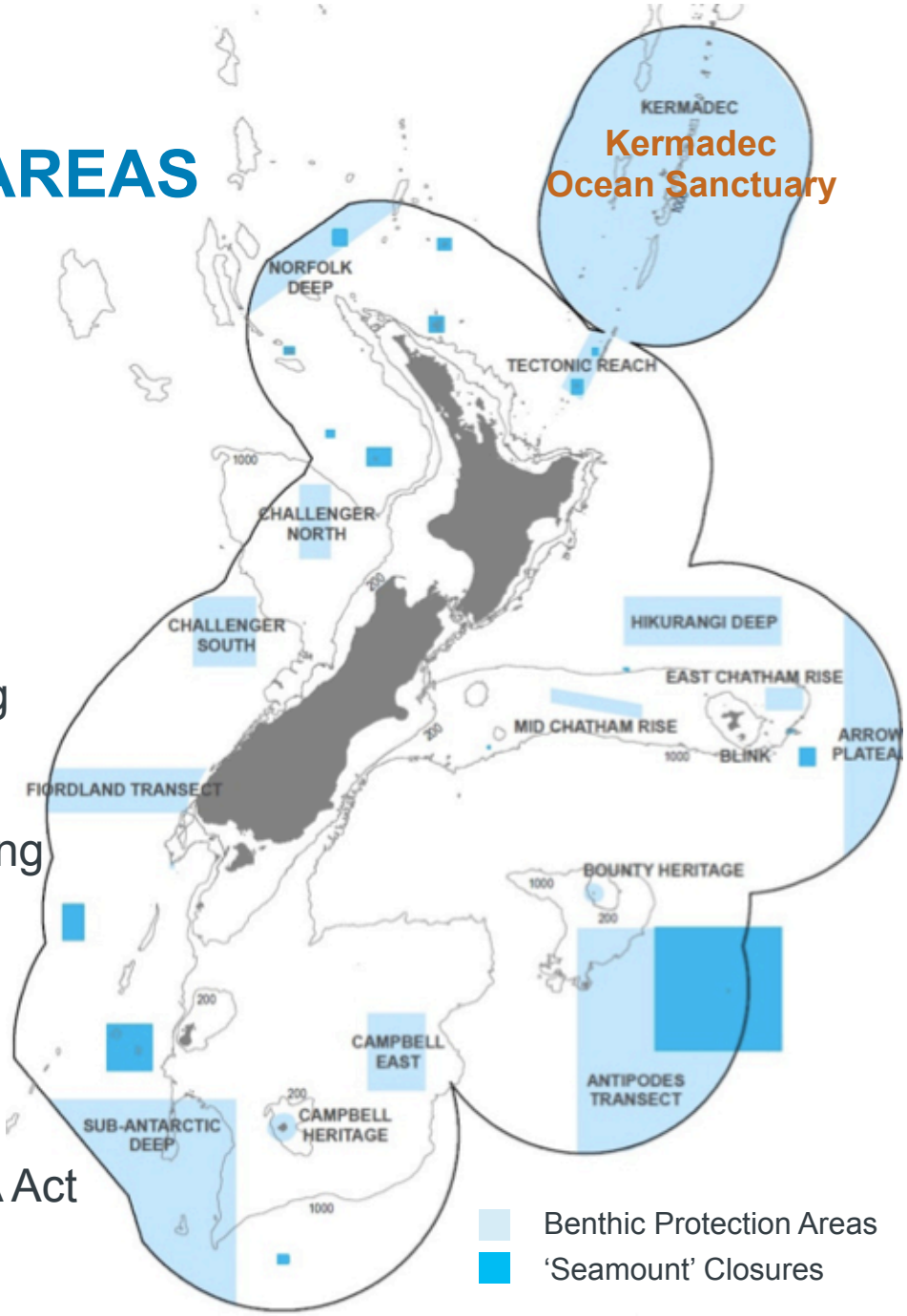
- **AIM: Set aside large representative untouched areas from trawling**
- Industry has trawled only ~8% of the NZ EEZ – the world's 5th largest
- Each year we trawl ~1% of NZ EEZ
- **~92% of NZ EEZ has never been touched by trawling**
- DWG proposed 30% of the EEZ be closed to trawling –Government saw benefit to New Zealand, agreed, undertook public consultation and implemented under the Fisheries Act



BENTHIC PROTECTION AREAS

Collaborative Successes:

- Key features of BPAs:
  - Based on best available science
  - Protect >10% of each habitat classification & **52% seamounts**
  - Protect pristine benthic habitats
  - Protect 30% of EEZ from trawling
  - Apply only to bottom fishing
- IUCN recognises BPAs as contributing to global marine protection -12% of global area protected by MPAs
- Government extending protection in Kermadec to include ALL activities
- Government consulting on new MPA Act



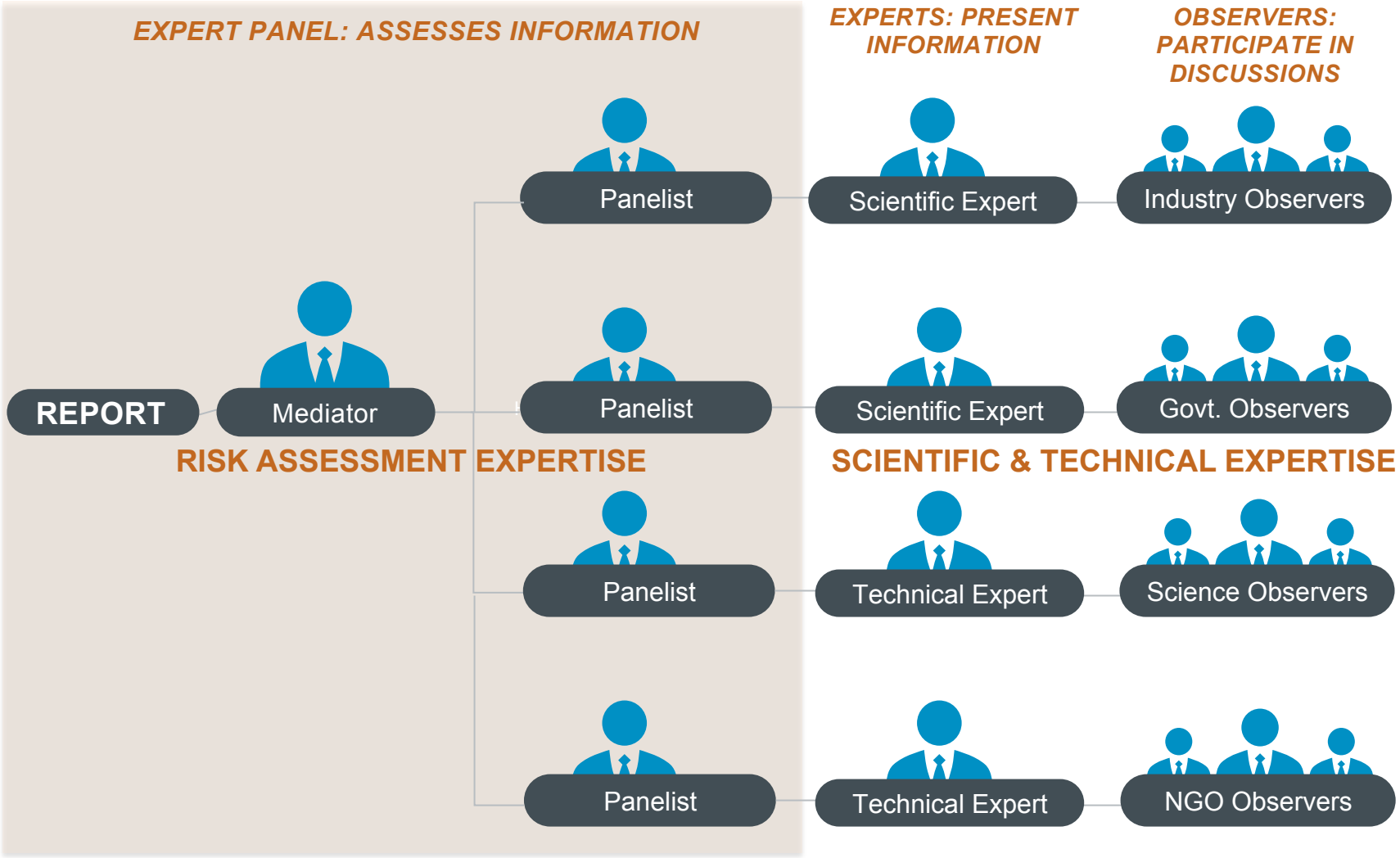
CASE STUDY: ECOLOGICAL ASSESSMENT

Overview:

- **AIM: Assess the ecological impacts of orange roughy fisheries**
- Undertaken in 2013
- Expert panel assessed risks associated with 4 main orange roughy fisheries against MSC P2 80 SG
- Scored levels of consequence, levels of likelihood, & levels of confidence
- Independent mediator
- Overall outcome: risk of serious or irreversible harm for each is '*negligible*' to '*moderate*' for each PI

Birds attending deep water trawler

CASE STUDY: ECOLOGICAL ASSESSMENT



CASE STUDY: ECOLOGICAL ASSESSMENT

Collaborative Successes:

- Independent, expert-based assessment
- Broad range of expertise & knowledge
- Contributions from scientists, industry, government, NGOs
- Uncertainties or disagreement reflected in confidence scores
- Identified information and management gaps
- Informed management and programs implemented to address gaps
- Transparent – process & results public

NIWA scientist measuring hoki

CASE STUDY: IMPROVED SCIENCE

Background:

- **AIM: Credible biomass estimates**
- Research trawl surveys inadequate to estimate orange roughy biomass – 2D sampling of 3D event
- Industry & scientists worked together to develop more effective methods
- CSIRO (Australia), Sealord and DWG developed new acoustic techniques and multi-frequency Acoustic Optical System (AOS) 1998-2016
- Precisely positioned at depth on headline of trawl net – species ID, length and target strength measurements

CSIRO scientists preparing the AOS

CASE STUDY: IMPROVED SCIENCE

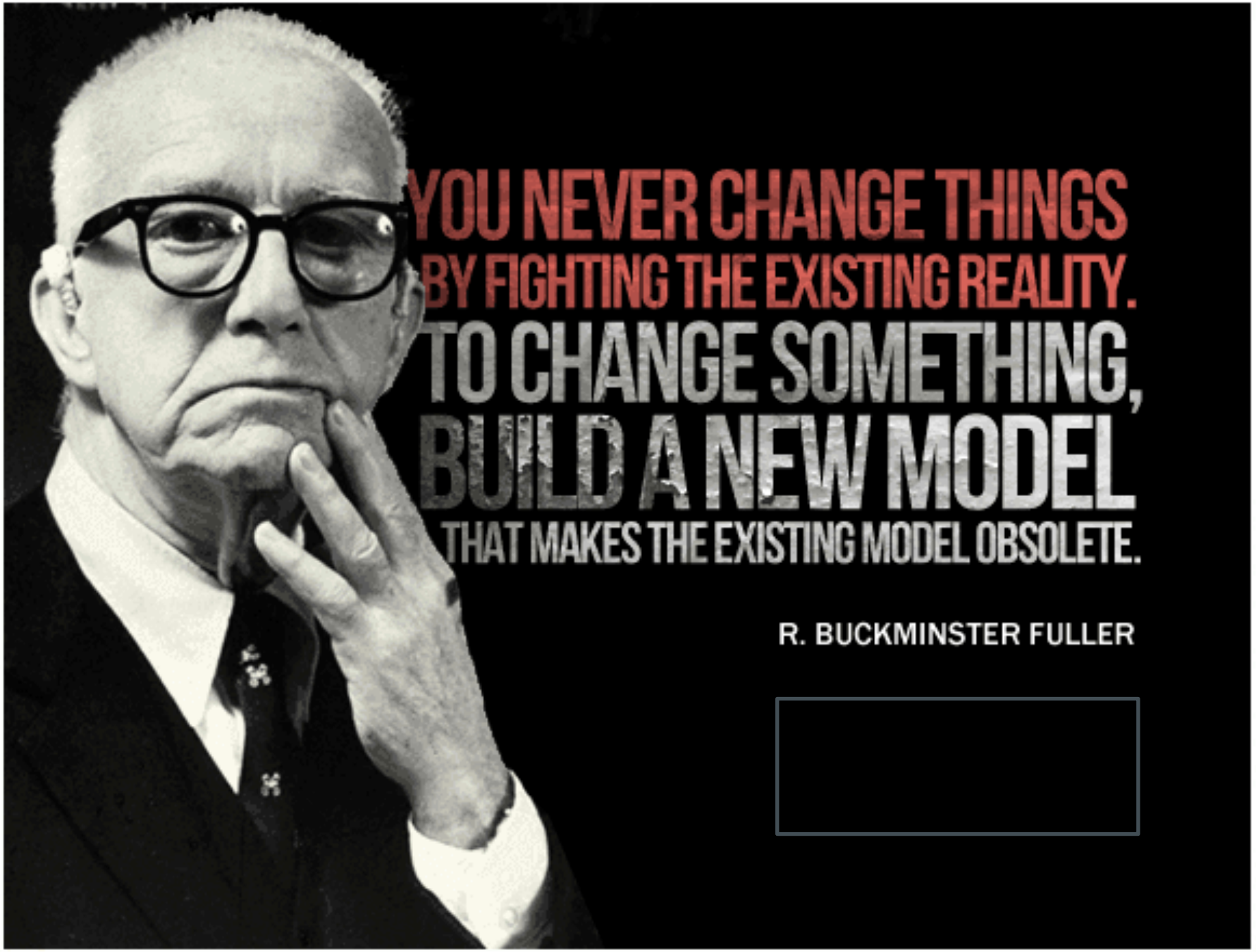
Collaborative Successes:

- Shared costs, knowledge, capabilities, equipment & data
- Developed innovative world-leading multi-frequency AOS system
- Video & acoustics in real-time – visuals of fish and habitats
- Distinguishes between fish with gas-filled bladders & those without
- Better estimations of numbers of orange roughy and other species
- Essential to achieve stock assessment and MSC certification

Orange roughy from AOS © CSIRO

Acoustic Optical System on Trawl Net © CSIRO

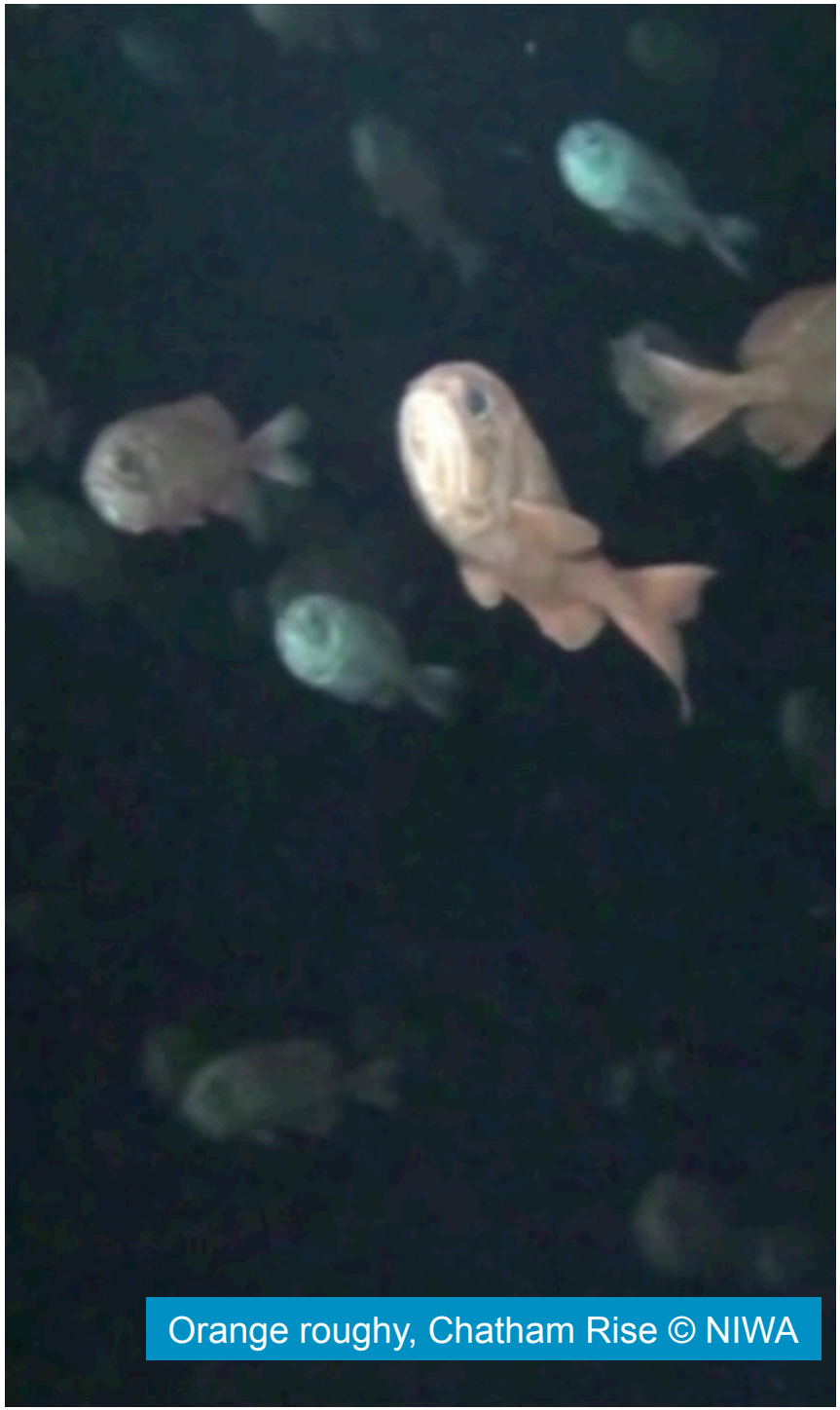

CSIRO
SEALORD


YOU NEVER CHANGE THINGS
BY FIGHTING THE EXISTING REALITY.
TO CHANGE SOMETHING,
BUILD A NEW MODEL
THAT MAKES THE EXISTING MODEL OBSOLETE.
R. BUCKMINSTER FULLER

CASE STUDY: IMPROVED SCIENCE

Background:

- **AIM: Robust stock assessments**
- Deterministic stock assessment models
  - Lack age/recruitment information
  - Inadequate - set aside in early 2000s
- Government, industry and independent scientists (AU, USA, CAN, NZ, SA) looked for new model options
- Early collaboration approach by Innovative Solutions Ltd (ISL) produced promising age-structured model in 2013
- New model completed by ISL in 2014



Orange roughy, Chatham Rise © NIWA

CASE STUDY: IMPROVED SCIENCE

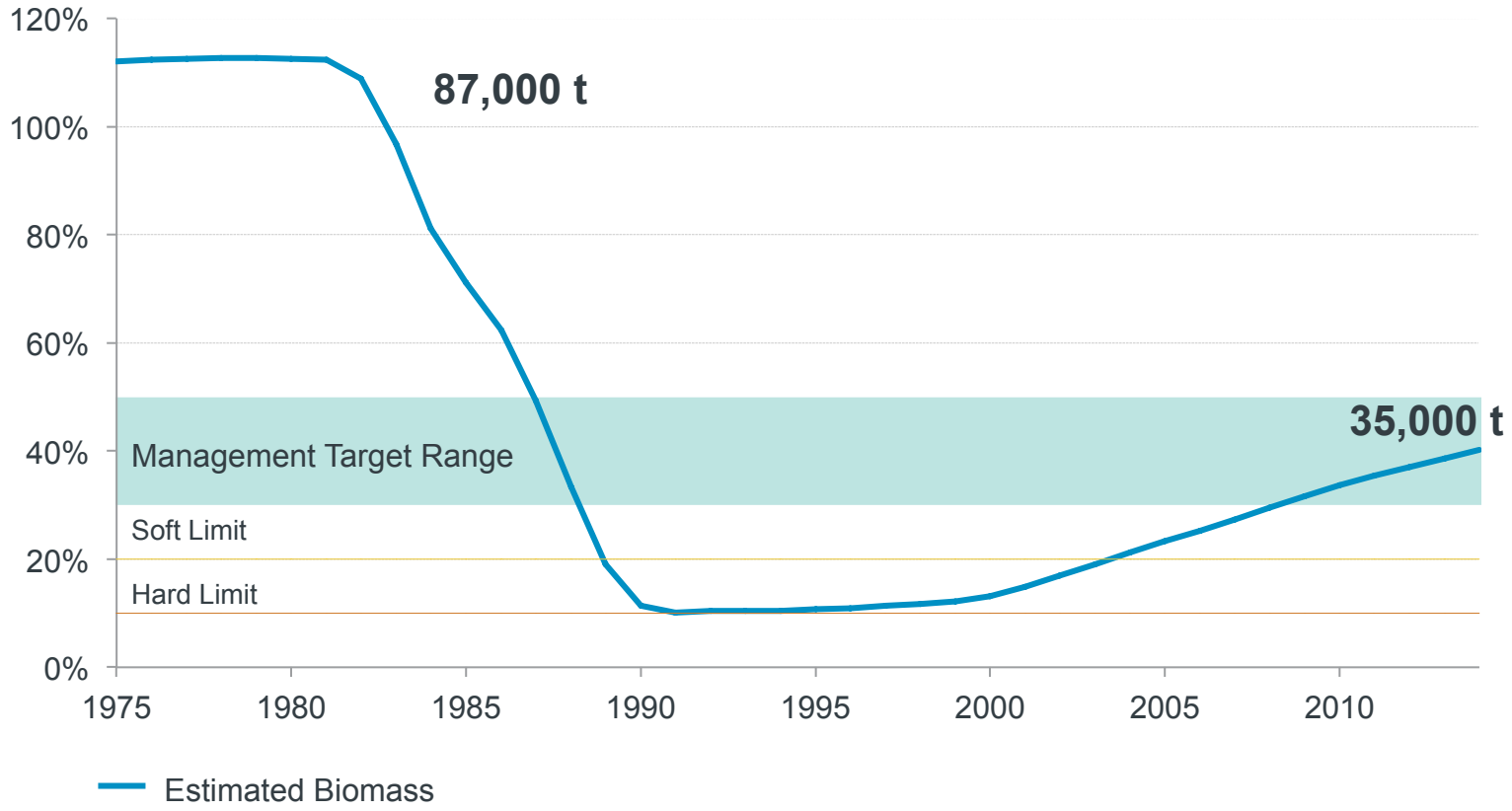
Collaborative Successes:

- In 2014, four new stock assessments, peer-reviewed, accepted by MPI
- Initial focus on main fisheries >70% of orange roughy catch
- Progressively being rolled out into smaller fisheries
- Essential to achieve MSC certification

Orange roughy, Chatham Rise © NIWA

CASE STUDY: CHALLENGER PLATEAU (ORH7A)

2014 Assessment estimates current biomass of 42% B_0

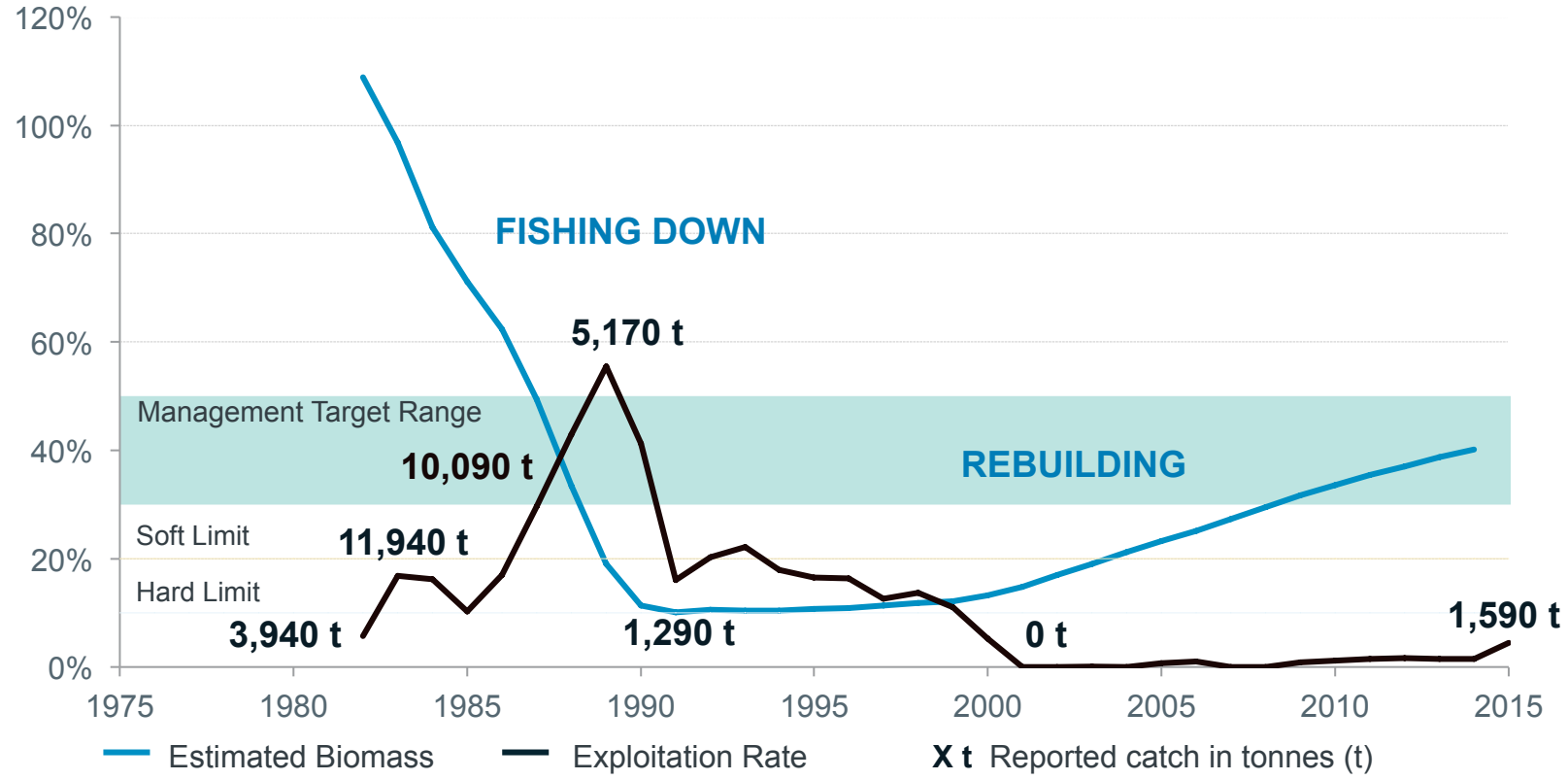


CASE STUDY: CHALLENGER PLATEAU (ORH7A)

Sustainable yield from 40% B_0 = 1,650 t

Current Catch Limit = 1,600 t

Current Exploitation Rate = 4.5%



CASE STUDY: IMPROVED MANAGEMENT

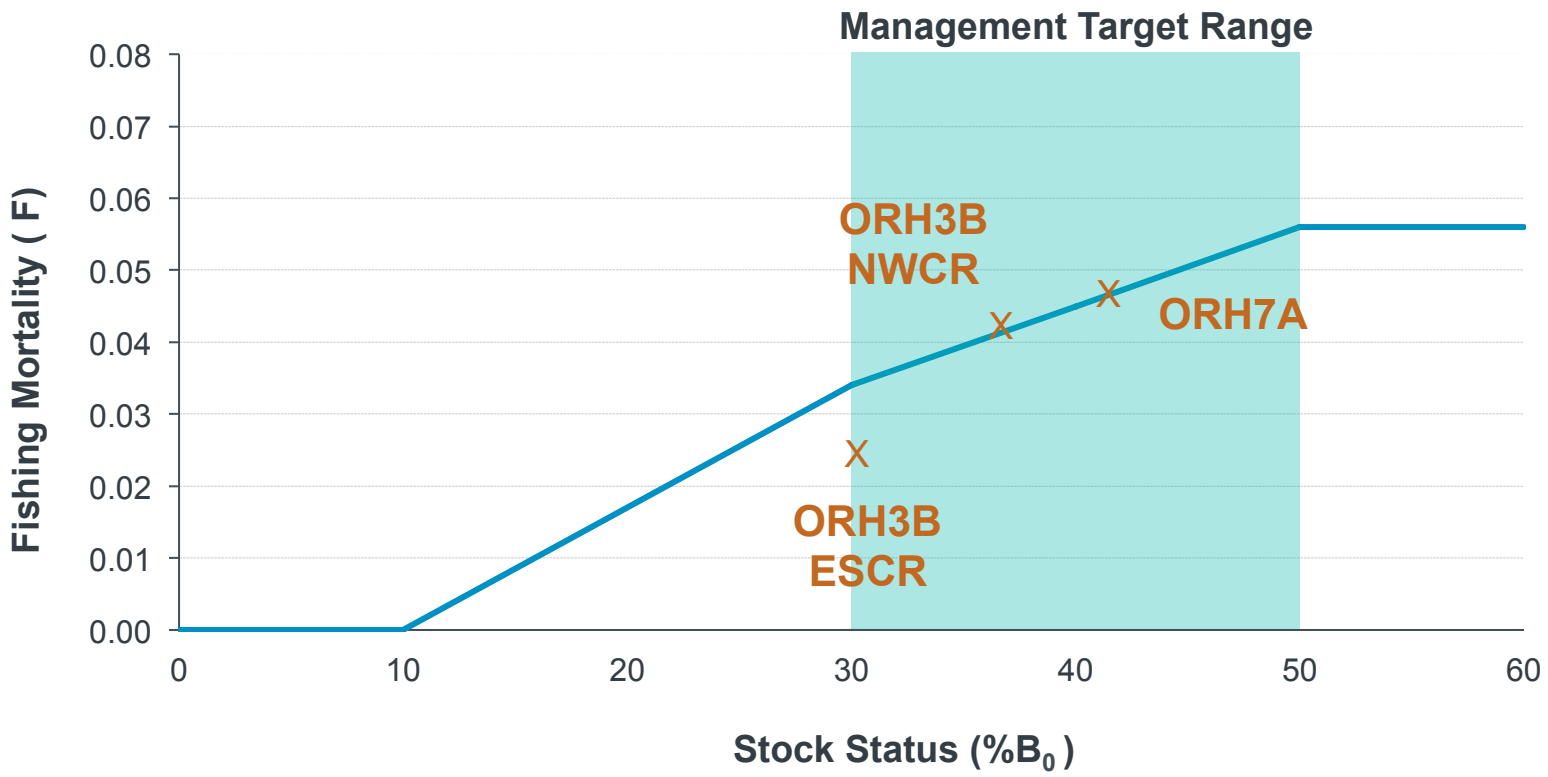
Overview:

- **AIM: Robust management processes**
- Development completed by ISL in 2014
- 2014: Management Strategy Evaluation (MSE) peer-reviewed, accepted by MPI
- 2014: New Harvest Strategy based on MSE, peer-reviewed, accepted by MPI
- Initial focus on main fisheries >60% of orange roughy catch – progressively being rolled out into smaller fisheries
- Essential to achieve MSC certification

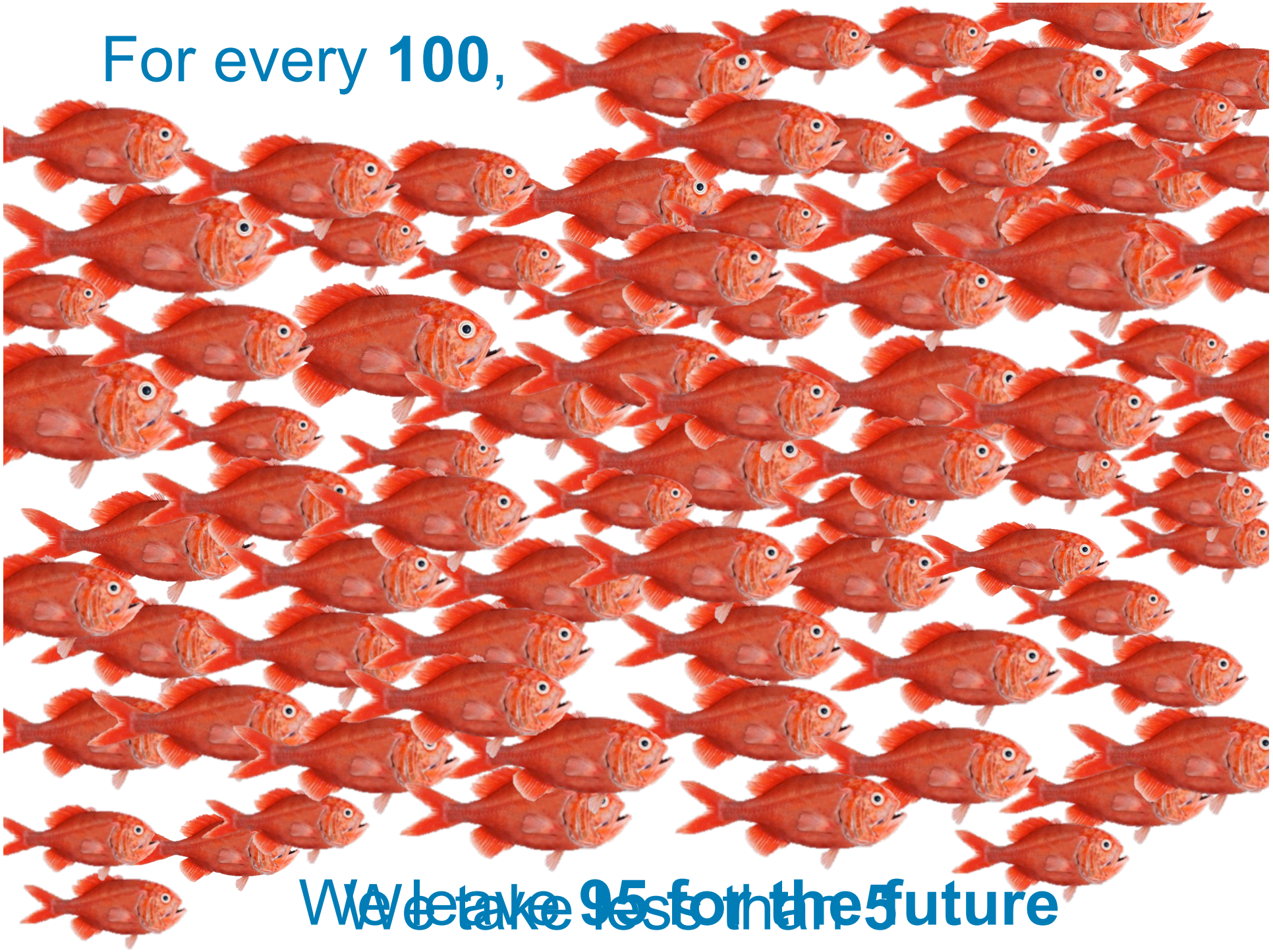
HARVEST CONTROL RULES

Revised Harvest Control Rules to meet MSC requirements.

Provide 97% probability stocks within the Management Target Range.



For every **100**,



We take **95** for the **future**

COMMITTED TO SUSTAINABLE UTILISATION

The first 15 years: some hard lessons learnt, stocks declined.

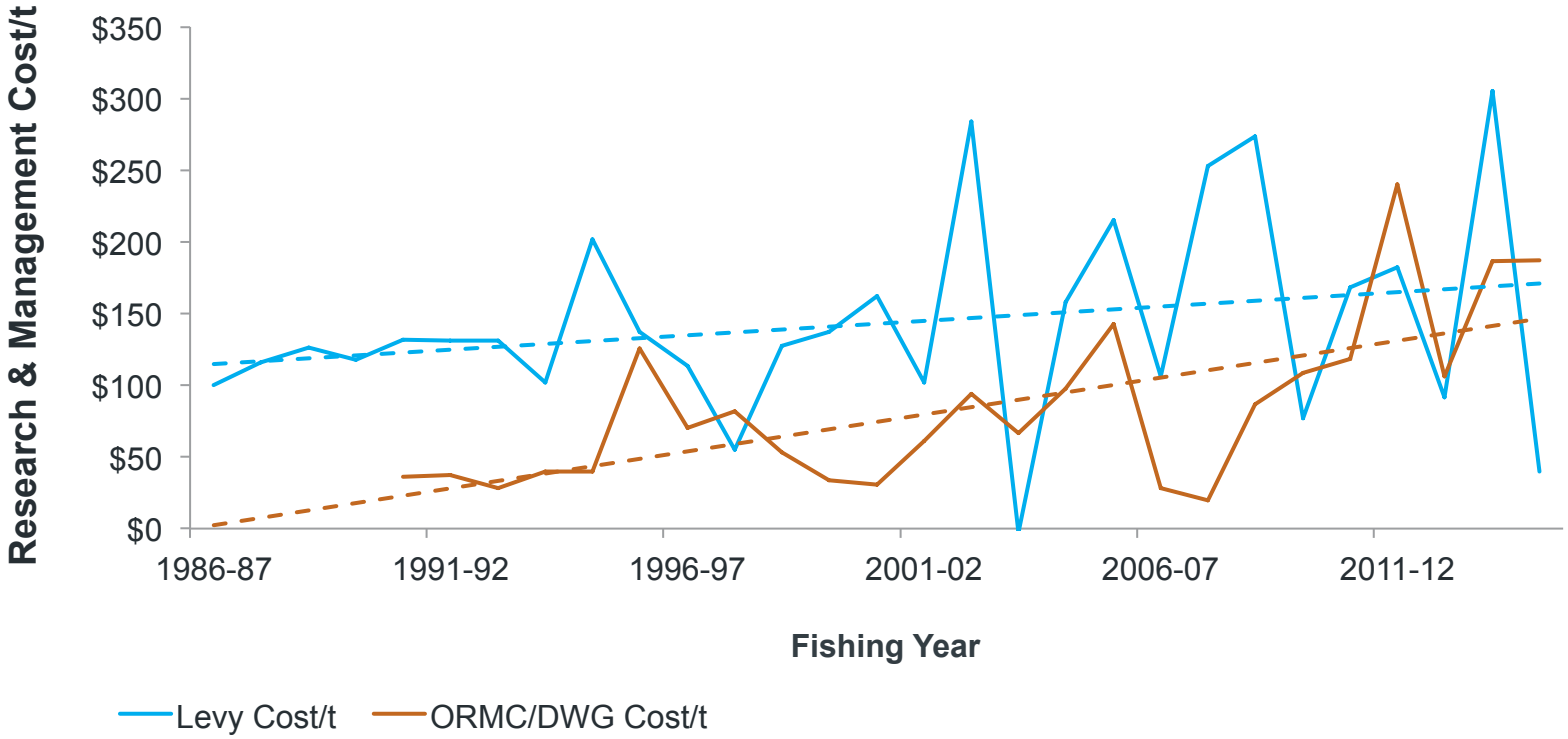
The second 15 years: a complete rethink, scientific innovations, 3 stocks now rebuilt others rebuilding, lower exploitation rates.

KEY PARAMETERS	Prior to 2000	2015
UoA Stock status	10% - 25% B_0	30% - 42% B_0
Exploitation Rates	> 15%	0% - 5%
Catch Levels	47,000 t – 6,000 t	~6,000 t
Biomass Surveys	Mostly trawl	Mostly acoustic
Stock Assessment Model	Deterministic	Include age & recruitment

COMMITTED TO SUSTAINABLE UTILISATION

Since 1984 industry invested $130 m into science on roughy:

- **Industry levies cost recovery ~$99 m**
- **Industry direct purchase ~$31 m - increasing**




REST
REBUILD
REOPEN

CASE STUDY: HABITAT IMPACTS

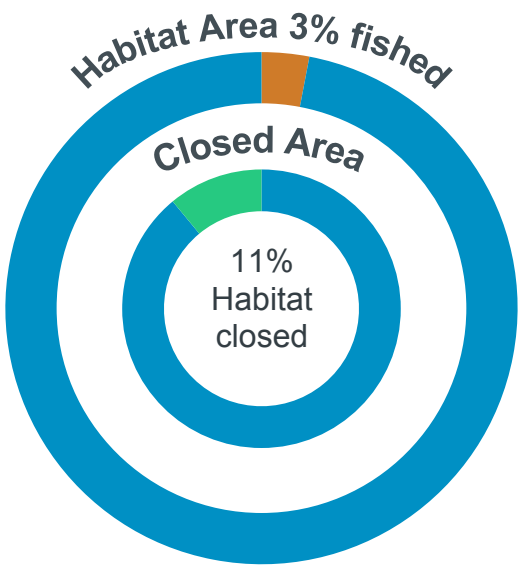
Collaborative Assessment:

- **AIM: Assess the effects of orange roughy fishing on seabed habitats**
- Habitats categorised as ‘flats’ & ‘slopes’
- MPI, NIWA, GNS Science and industry assessed commercial and research data
- Catalogued known Underwater Topographical Features (UTFs)
- Assessed characteristics and fishing activities on each UTF
- Assessed locations of protected corals

HABITATS: FLATS 800 m to 1,600 m

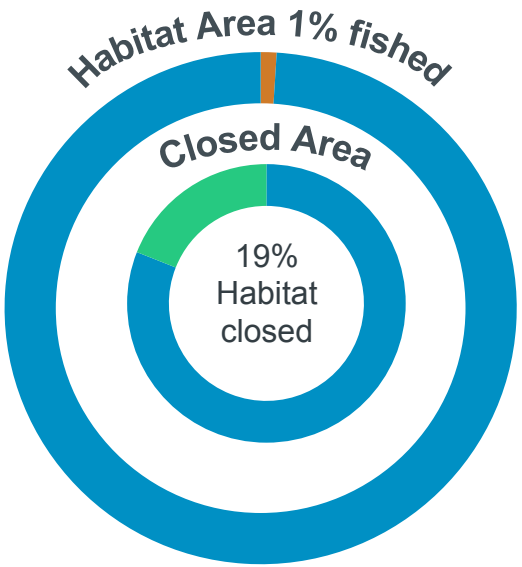
UNITS OF ASSESSMENT

For last five years:



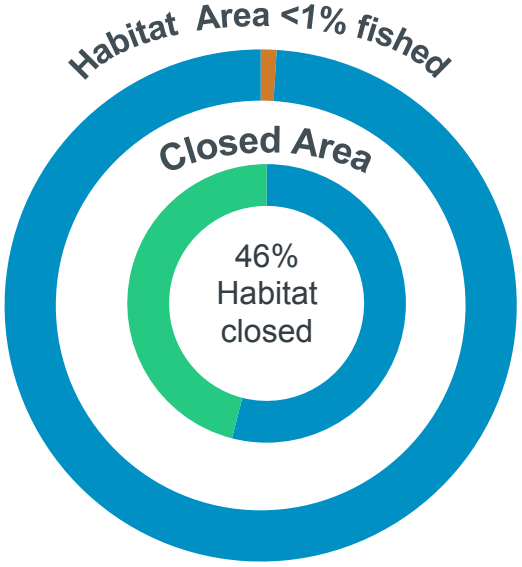
97% closed or not fished

NEW ZEALAND EEZ



99% closed or not fished

BIOREGION



99% closed or not fished

Untouched Fished Closed to fishing

Analyses by GNS Science

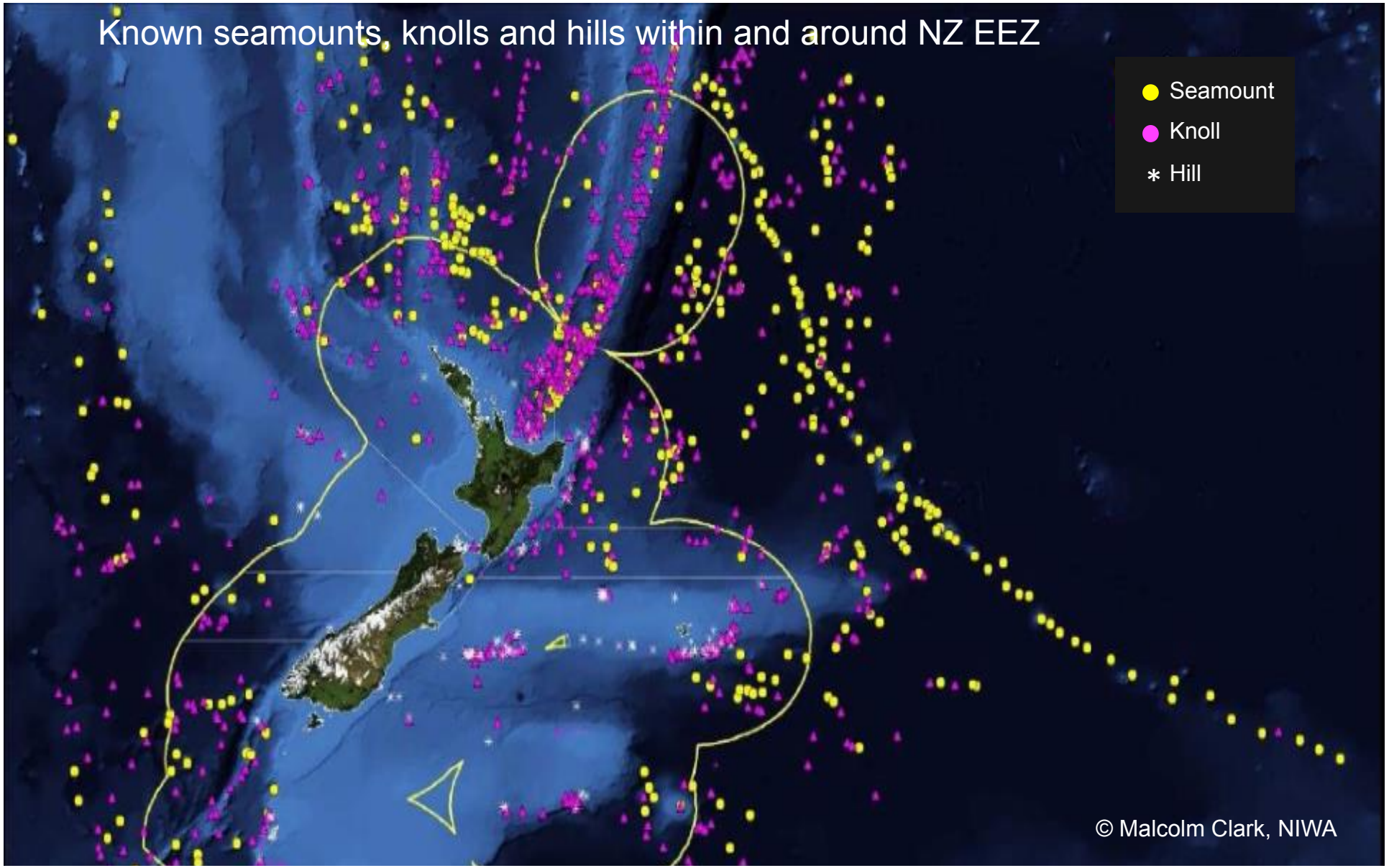
HABITATS: UNDERWATER TOPOGRAPHICAL FEATURES

Bottom trawling for orange roughy occurs year round on portions of some Underwater Topographic Features (UTFs).

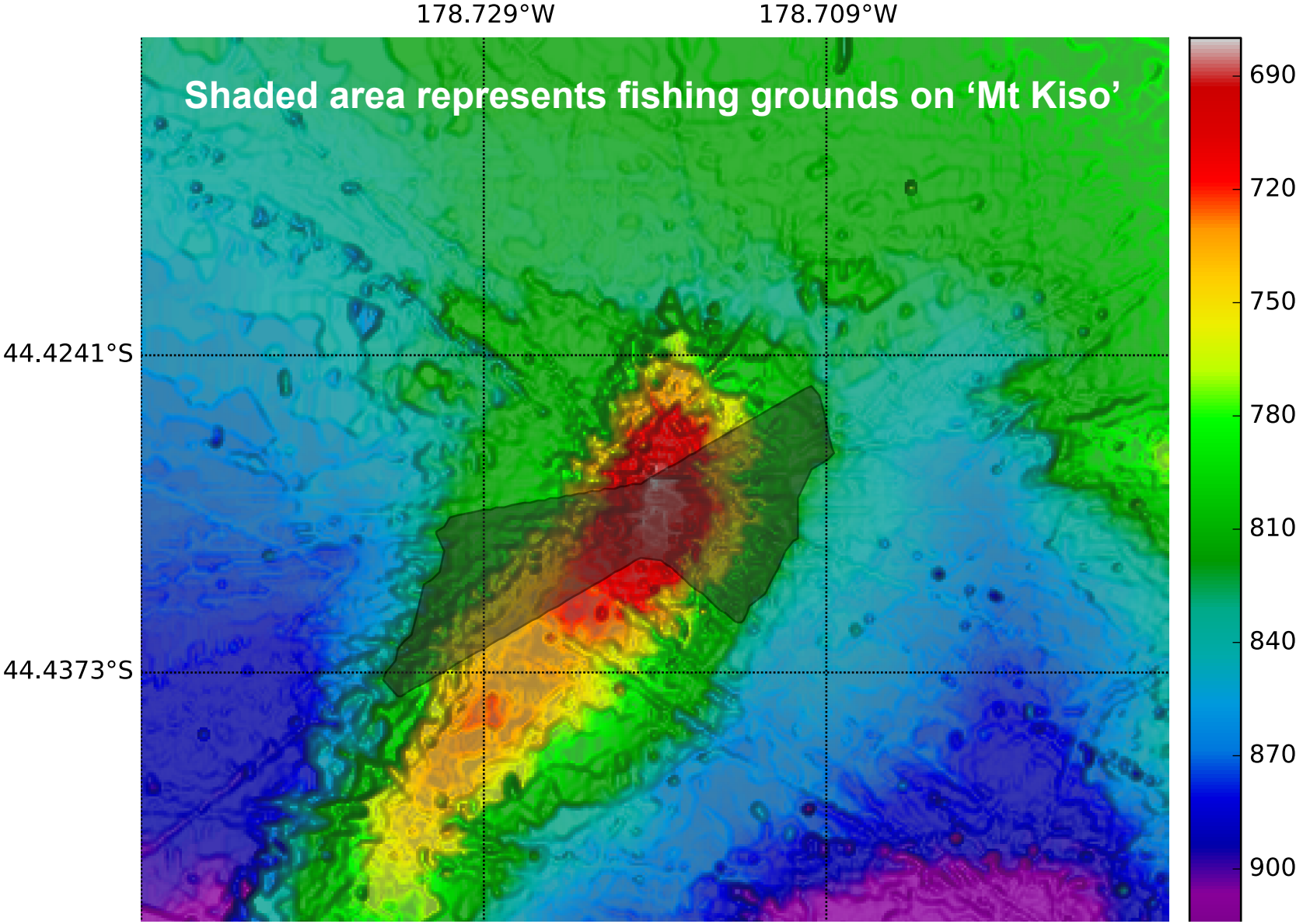
New Zealand's 'Seamount' Closures include both knolls and true seamounts

* As defined by the US Board on Geographic Names

HABITATS: UNDERWATER TOPOGRAPHICAL FEATURES

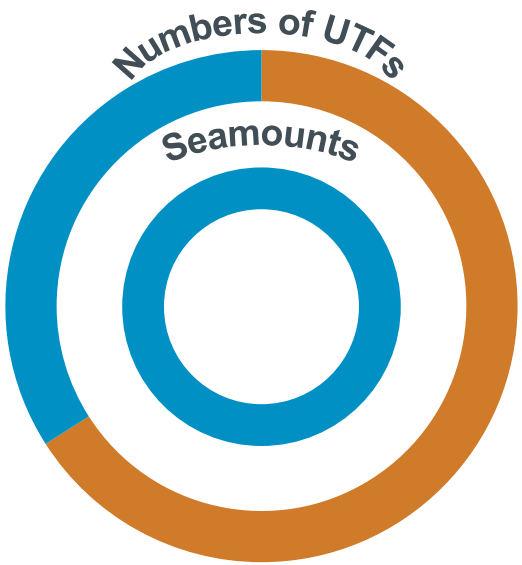


HABITATS: UNDERWATER TOPOGRAPHICAL FEATURES



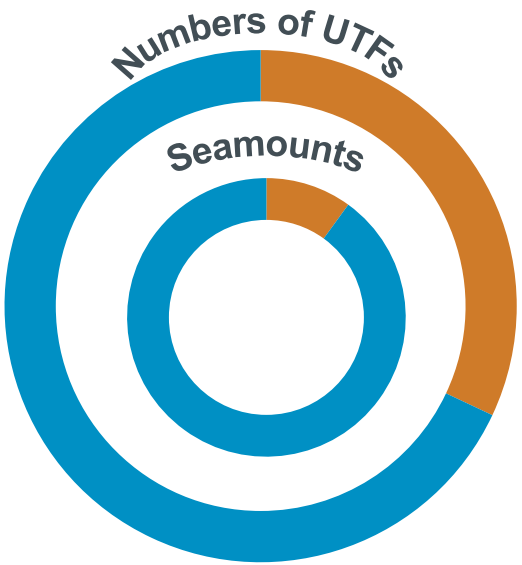
HABITATS: NUMBERS OF UTFs

UNITS OF ASSESSMENT



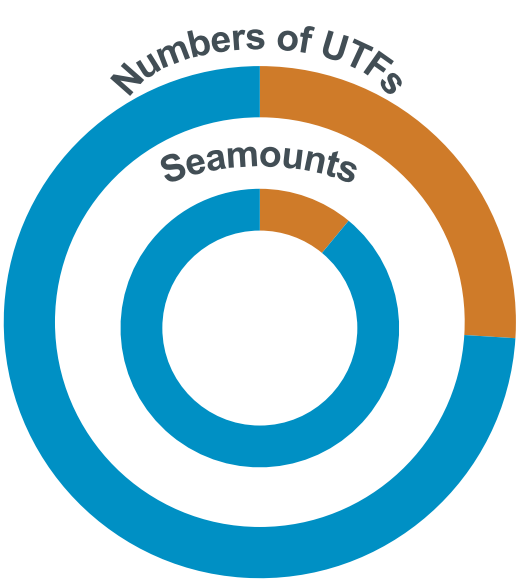
No Seamounts fished

NEW ZEALAND EEZ



10% Seamounts fished

BIOREGION



11% Seamounts fished

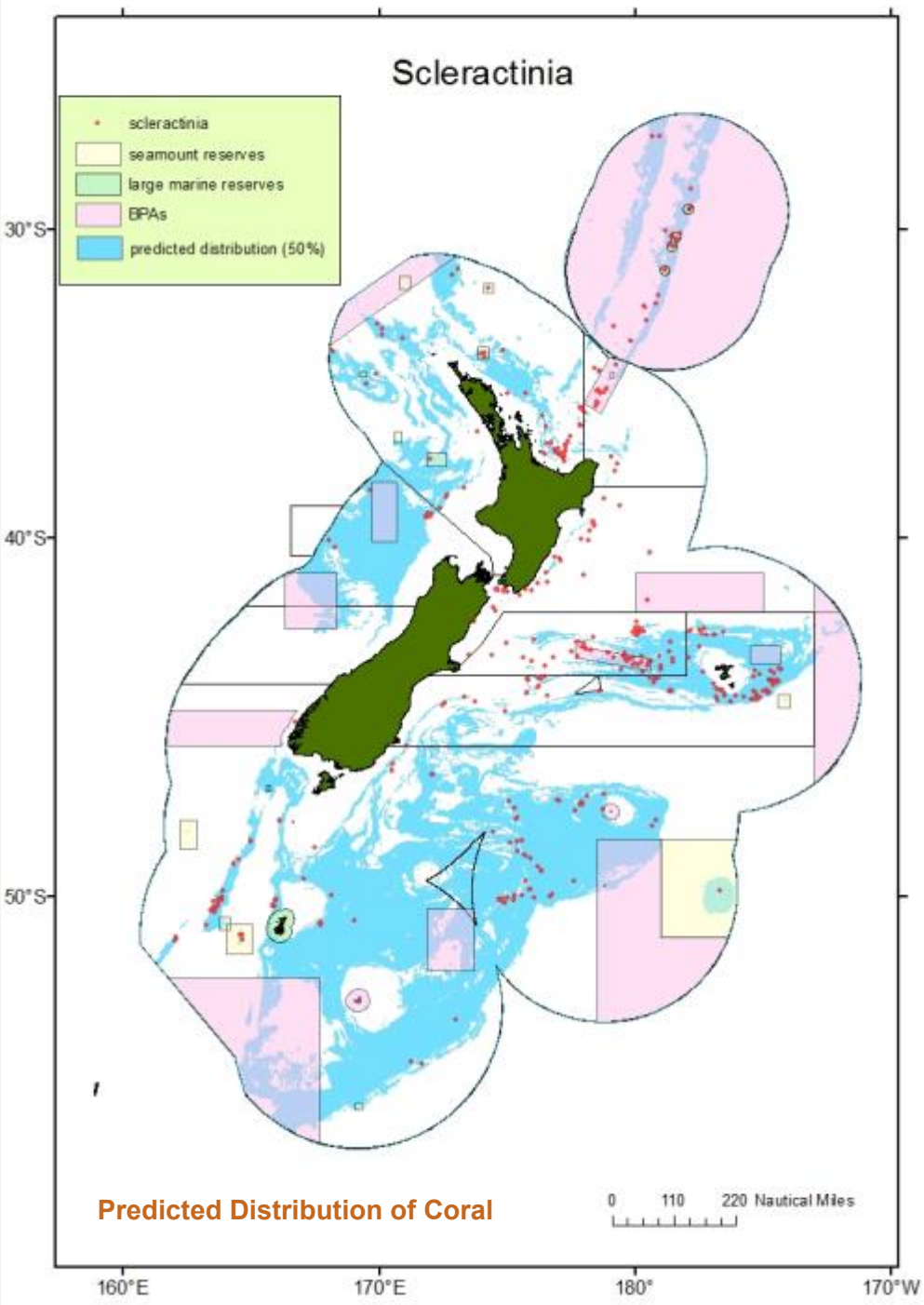
Unfished Part Fished

Analyses by NIWA

STONY CORALS

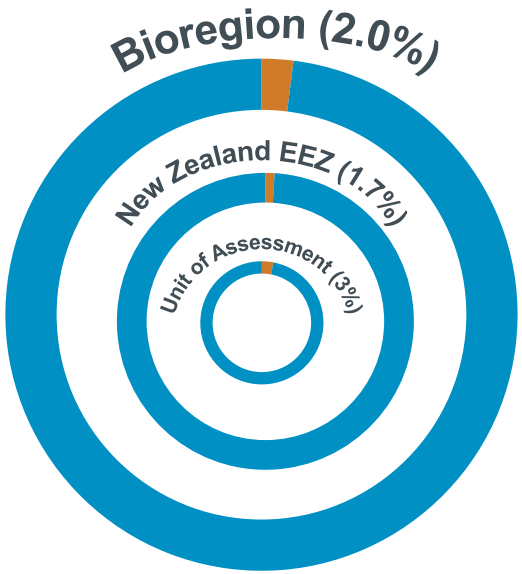
- Protected by law
- By-catch recorded & reported
- Widespread distribution
- Most occur deeper than fishing
- Protected Areas

Analyses by NIWA



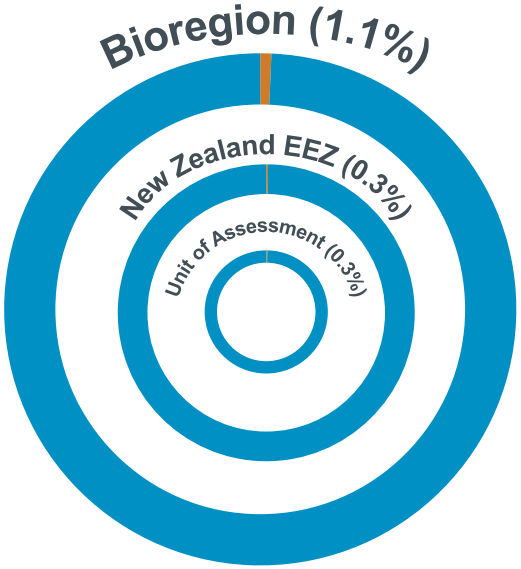
CORALS & TRAWL FOOTPRINT

BLACK CORALS



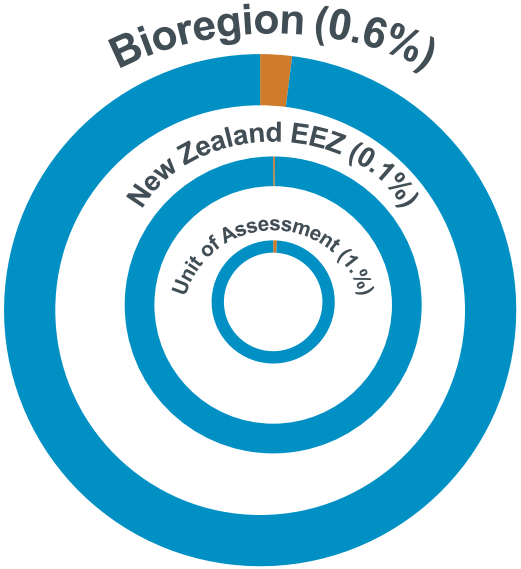
97% closed or not fished

GORGONIAN CORALS



99% closed or not fished

STONY CORALS



99% closed or not fished

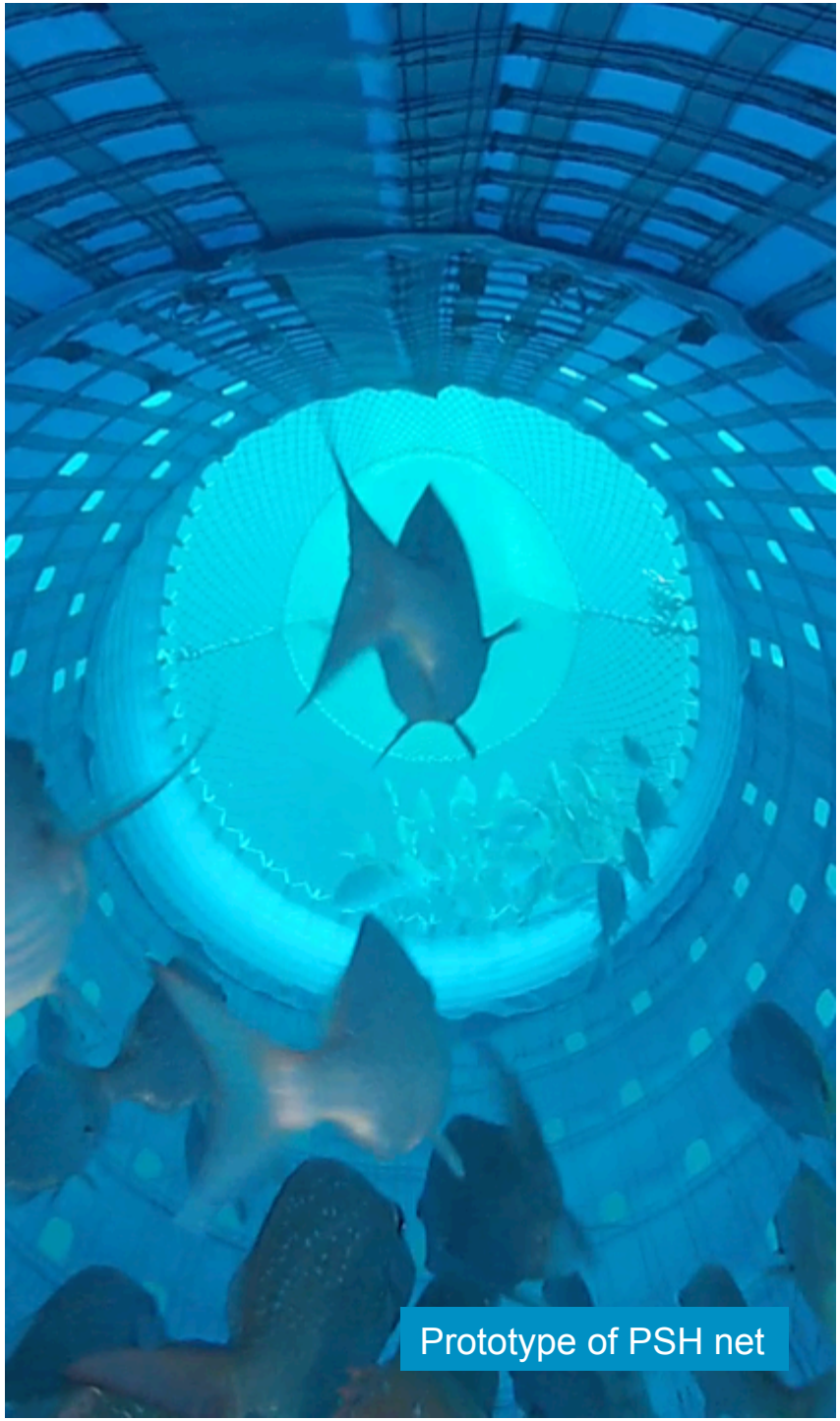
Untouched Touched

Analyses by NIWA

CASE STUDY:
PRECISION SEAFOOD HARVESTING

Background:

- **AIM: Enhance trawling, improve fish quality, release unwanted bycatch**
- Replaces traditional cod ends
- Based upon scientific observations
- Industry & MPI developed business case for seafood quality & sustainability
- *Stage 1:* Prototypes tested commercially on small inshore & large factory trawlers
- *Stage 2:* Catch handling – new onboard processes, new vessels, new markets
- New regulatory approval processes



Prototype of PSH net

CASE STUDY:
PRECISION SEAFOOD HARVESTING

Collaborative Successes:

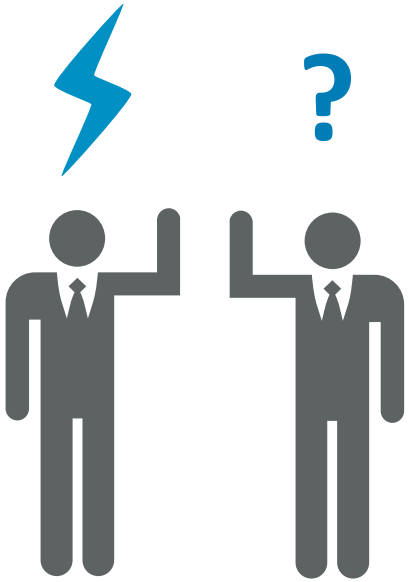
- Frequent open communication between stakeholders
- Each party brings different skills & resources at different times - from science to marketing
- Fish landed alive & in perfect condition
- Premium value seafood
- Safely releases small fish and bycatch
- Large collaborative investment ~$50 M
- Large economic benefits to New Zealand


Fish landed alive

CHALLENGES

Collaboration may be hindered if a party is:

- Unwilling to participate
- Not aligned with agreed objectives and outcomes
- Influenced by emotion rather than by sound logic, policy or science
- Not prepared to shift position



Focus for all must be on:

WHAT is right, not

WHO is right

Needs all parties to acknowledge and understand the views of others….

This does not mean all parties have to agree on all things

CHALLENGES

OUR OBSERVATIONS ON COLLABORATION

AGREED GOALS

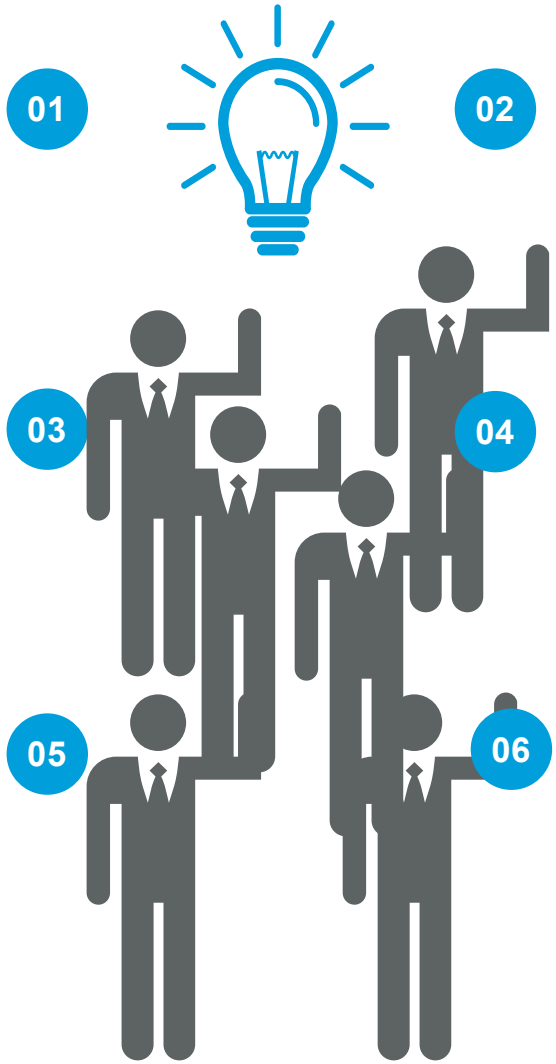
Not all processes suitable for all situations. Clear goals essential and will help to identify who to collaborate with and when.

CULTIVATE GOODWILL EARLY

Build trust early rather than after conflict and mistrust have formed

SMALL INITIAL STEPS

Small steps help build trust & test the willingness/ appropriateness to collaborate with other parties



AGREED ROLES AND RESPONSIBILITIES

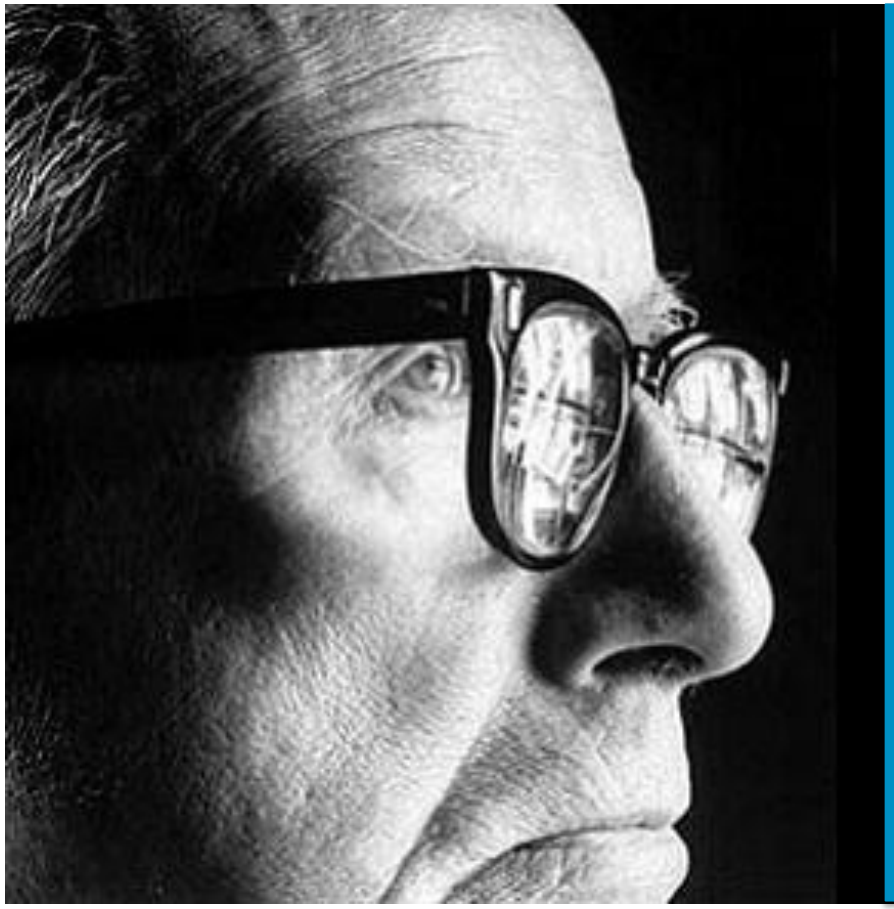
Needs clear and effective leadership, technical input, science advice, community values and governance.

BE INTENTIONAL, TRANSPARENT, ACCOUNTABLE

Each party must own their own objectives, decision, & validate these to all

COSTS & RESOURCES

Collaboration takes time & effort. Resources must reflect the level of engagement/complexity



“The purpose of our lives is to add value to the people of this generation and those that follow”

R. Buckminster Fuller


Collaboration enhances success……
TODAY…..
TOMORROW…..
TOGETHER
www.deepwatergroup.org
Thank you