

# Scale and EBM: navigating mismatches between socio-ecological systems

Joanne Ellis, Simon Thrush, Elizabeth Macpherson, Karen Fisher,  
Eric Jorgensen, Conrad Pilditch, Jasmine Low, Fabrice  
Stephenson, Andrew Allison, Judi Hewitt

# Marine law and policy

## Spatial scale and EBM

Te Tiriti o Waitangi



Marine protection reform · ETS review · Biodiversity markets · Managed retreat · Regional Spatial Strategies  
Coastal Policy Statement · Te Mana o Te Taiao · Te Mana o Te Wai · Emissions Reduction Plan · National Adaptation Plan

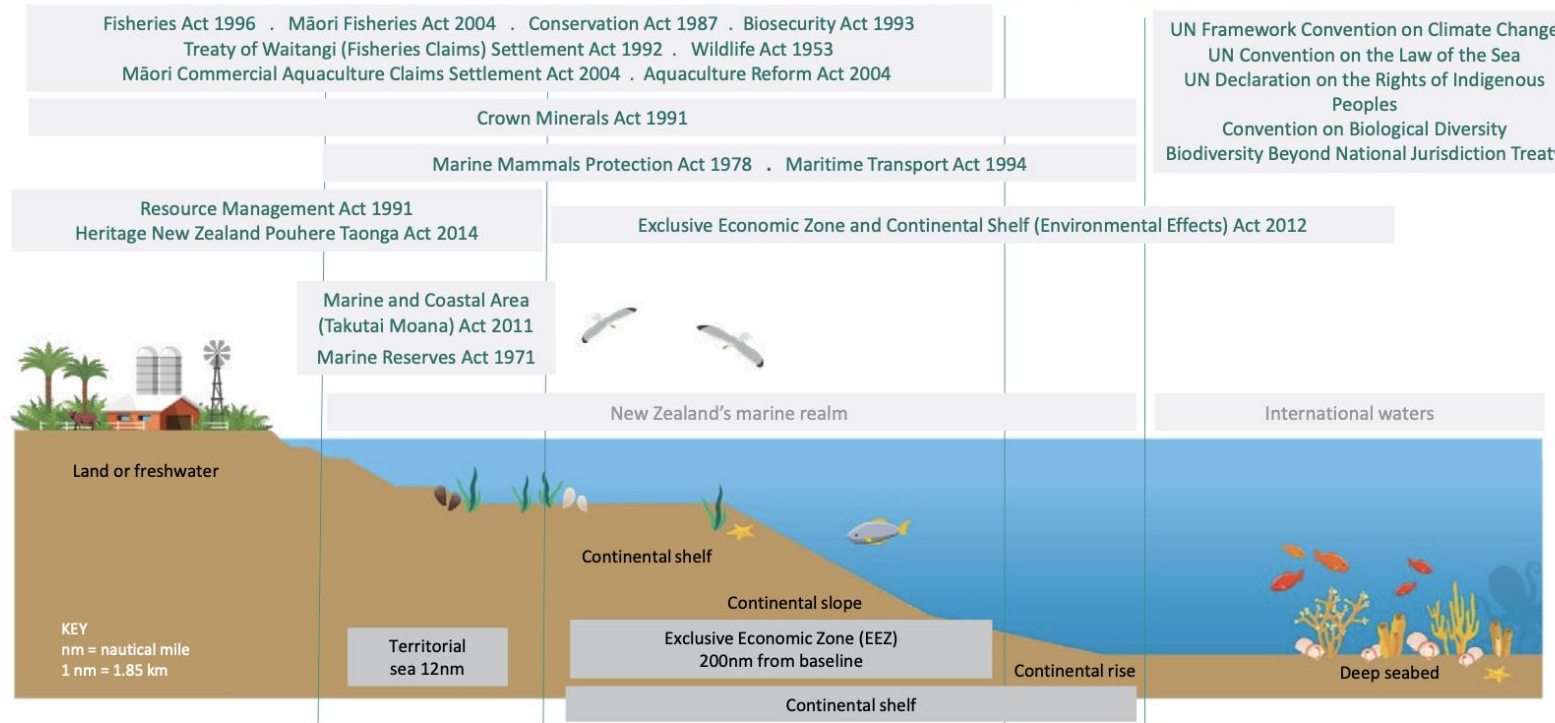
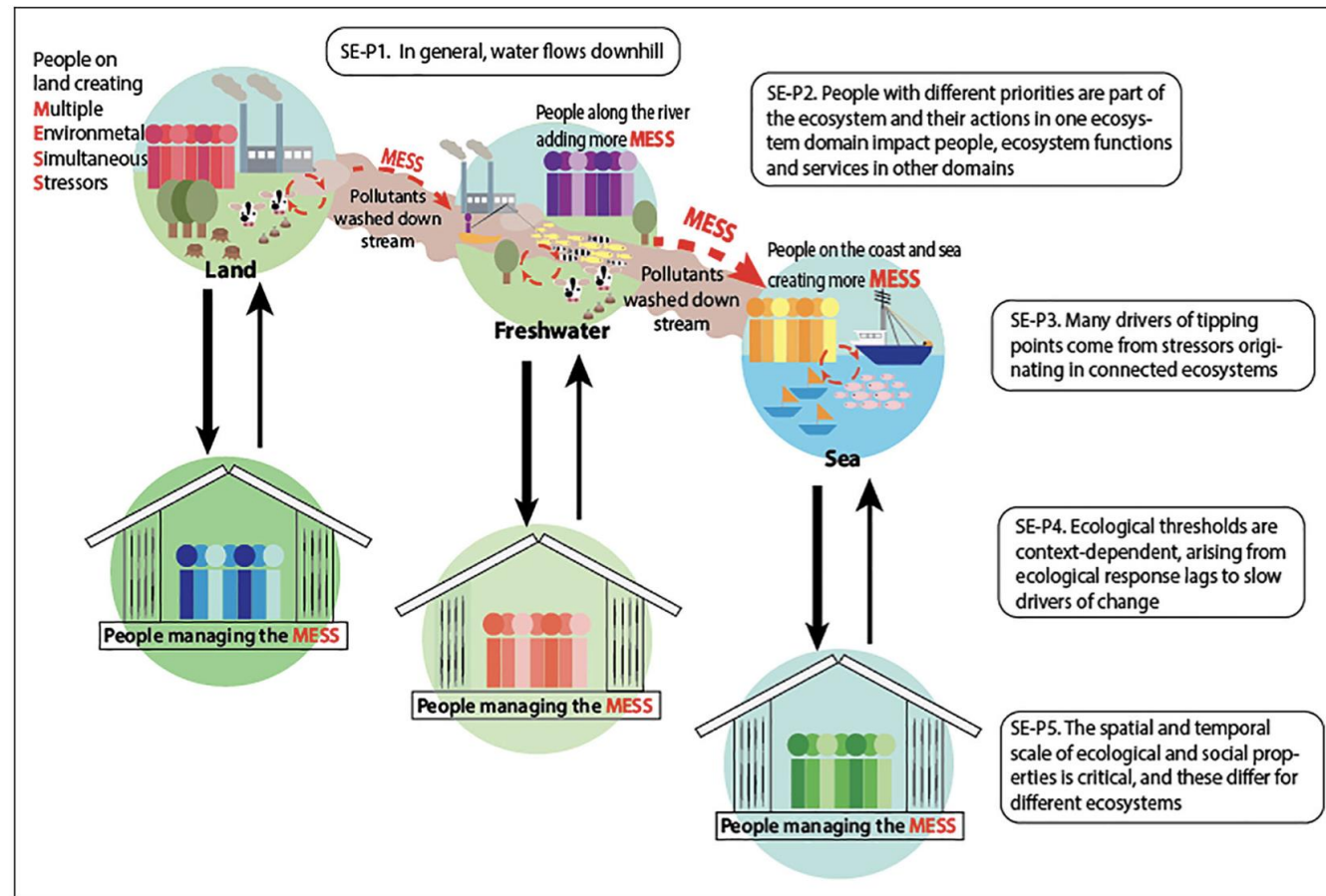


Figure 1 The overlapping and inconsistent spatial scales at which marine law and policy operates in Aotearoa New Zealand

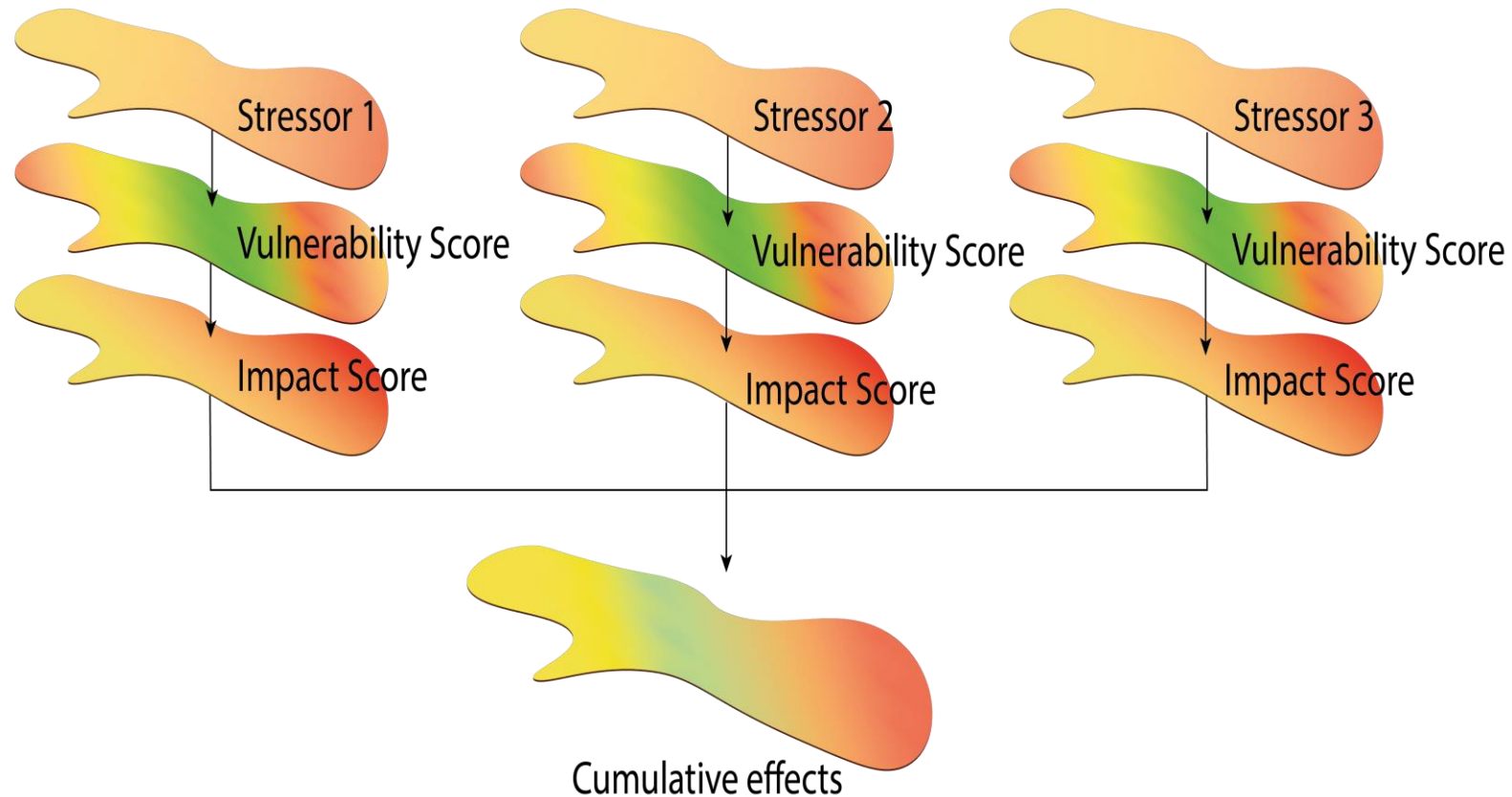


# Cumulative effects



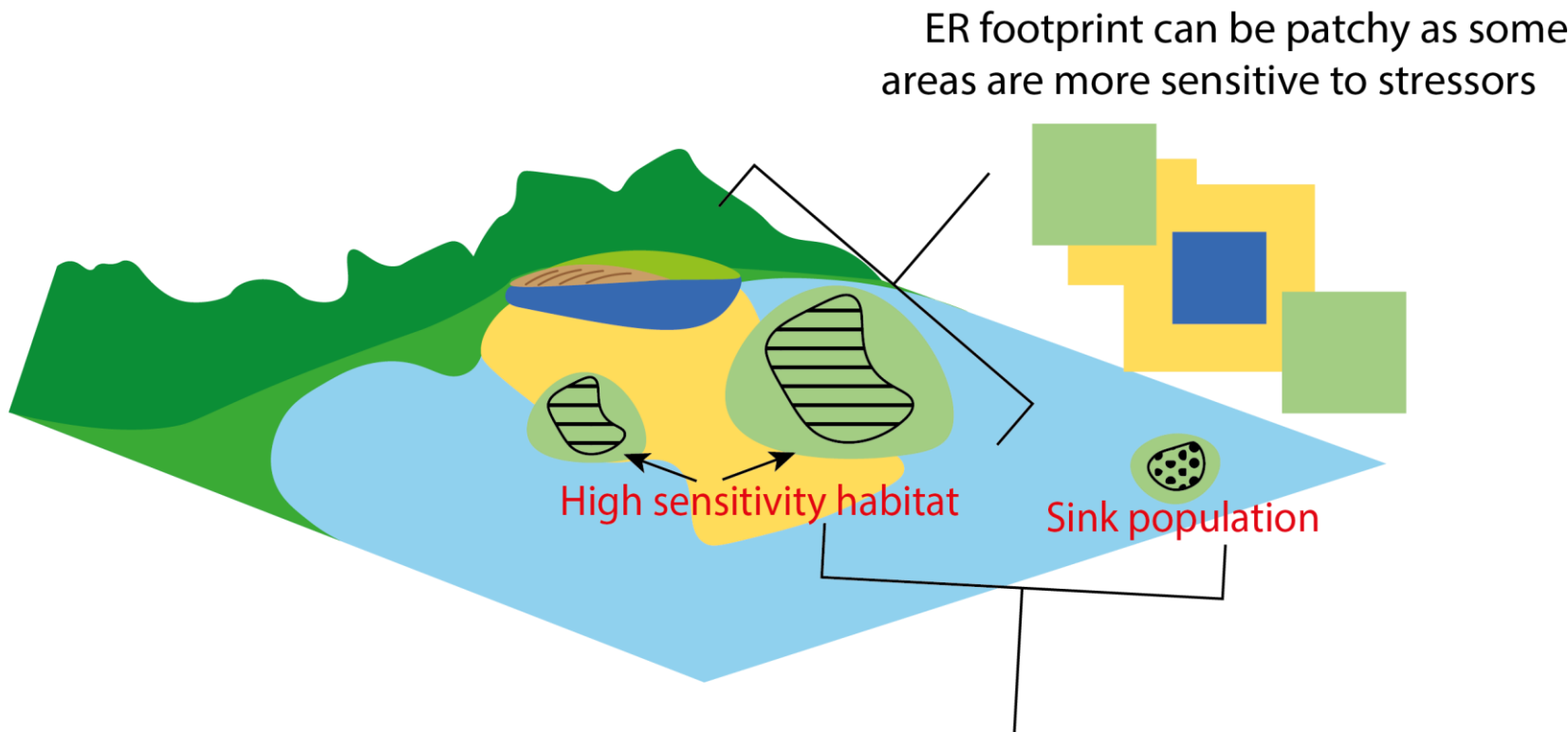
From Gladstone-Gallagher, R. Et al. 2022. Social-ecological connections across land, water, and sea demand a reprioritization of environmental management. Elementa.

# Current cumulative effects assessment



- Focus on activity/stressor footprints
- Highlight areas likely impacted by high levels of cumulative effects
- Do not recognise ecosystem as a network of responding and interacting components

# Reframing CE assessments with ecological response footprints

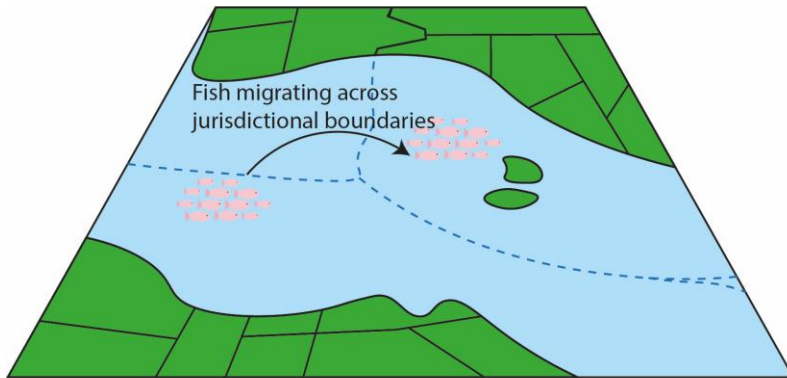


ER footprint > stressor footprint due to source and sink dynamics

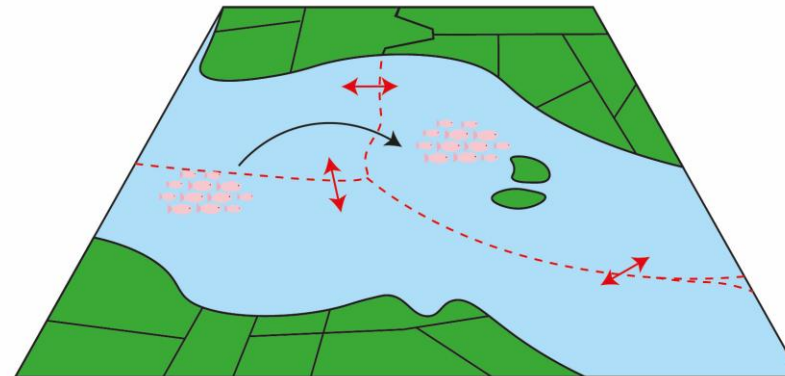
- Activity
- Stressor
- Ecological response (ER)



# Scale 'fit' and scale 'mis-match'

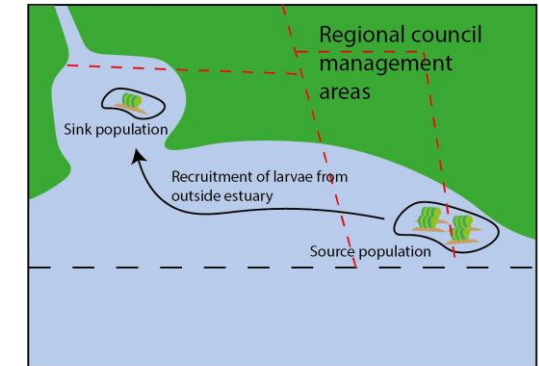


Restrictive jurisdictional boundaries indicated by the solid (regional boundaries) and dotted lines (national scale boundaries or EEZs), where fisheries are managed in isolation in accordance with jurisdictional boundaries are mismatched with ecological boundaries e.g., migratory fish species

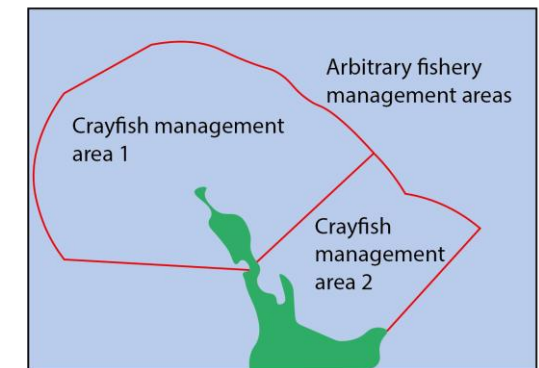


Institutional boundaries are now matched with ecological scale- Jurisdictional boundaries are still present, however, co-management between all countries (indicated by the red arrows) to manage migratory fish stocks has been established

## Inshore example of artificial boundaries

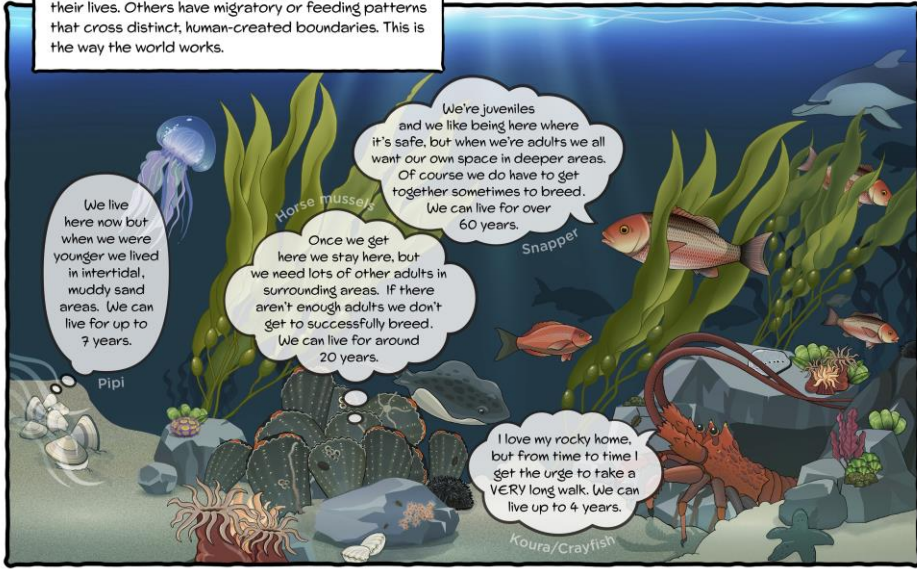


## Offshore fisheries management

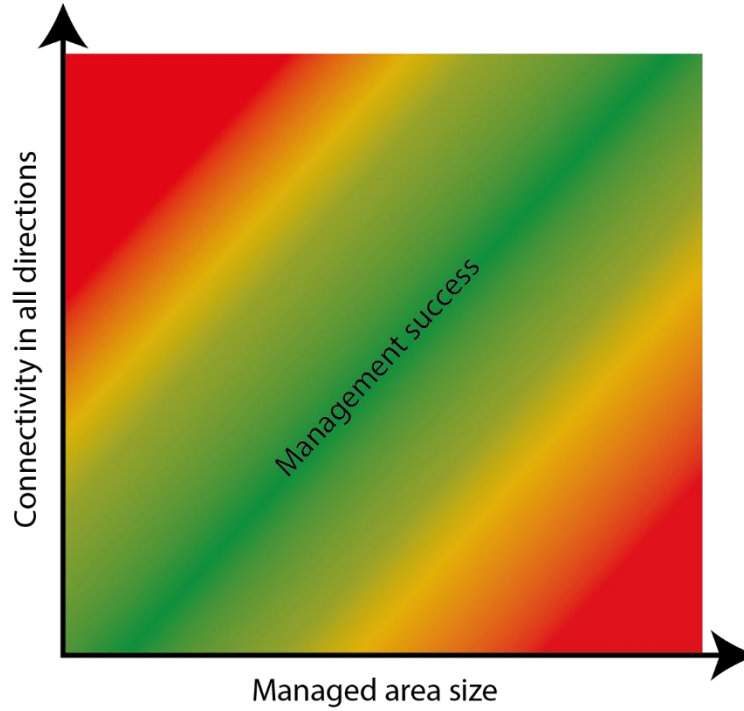




Some of our marine species live in one small area all their lives. Others have migratory or feeding patterns that cross distinct, human-created boundaries. This is the way the world works.



*Ecological connectivity*



*Management area*

When we create policy that centres on ecological processes over a range of time frames, with dedicated funding, we create a scale fit and improved outcomes.

It's good to have support from agencies to invest in nature-based solutions to reduce our impacts on coastal environments.

When we manage systems across jurisdictional boundaries, outcomes are improved.

With good management the snapper will be able to migrate safely and their numbers will recover.

With management at the right scale our nursery and breeding areas will be protected.

International obligations

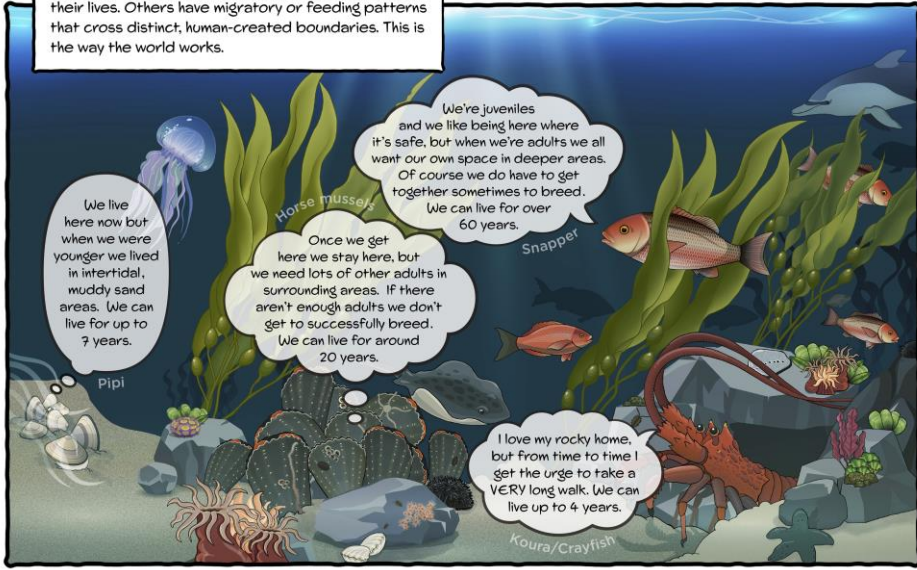
Exclusive Economic Zone (EEZ)

Policy based on ecological interconnectivity

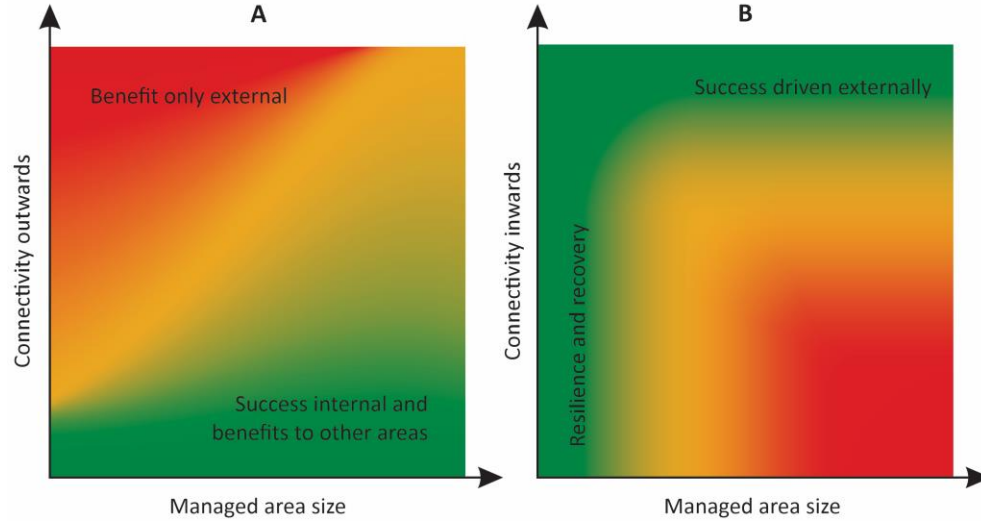
Territorial sea

Place-based governance

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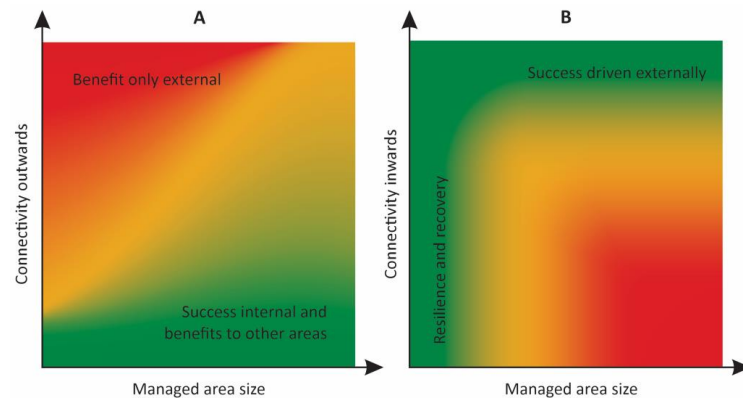
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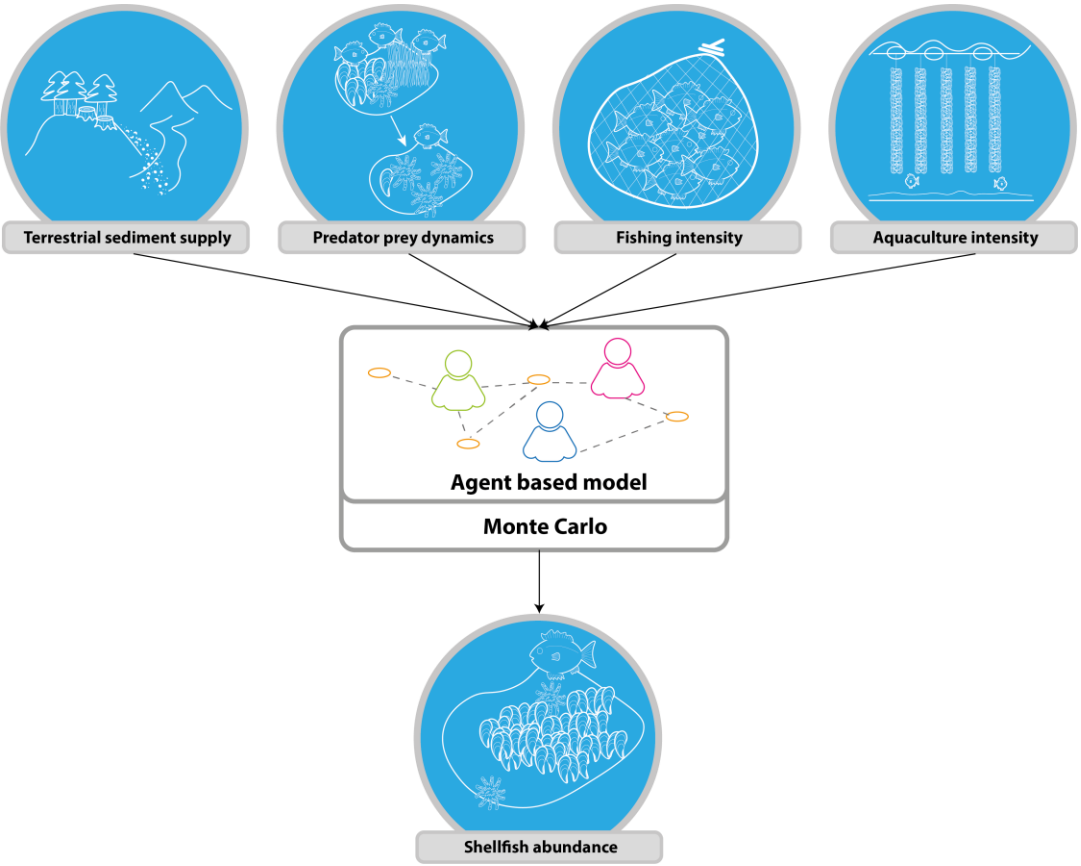
Place-based governance



Connectivity Type	Example	Management Outcome
<b>Outwards direction</b>	The area is an important nursery or breeding ground with adults mainly living elsewhere or functions are locally produced and exported to other areas	Management action is likely to benefit other areas
<b>Inwards direction</b>	Adults live in the area but juveniles come from elsewhere or functions used in the area are produced elsewhere	Success from any management actions is likely to be short-lived unless the quality of the surrounding areas is maintained



# Spatial mismatch





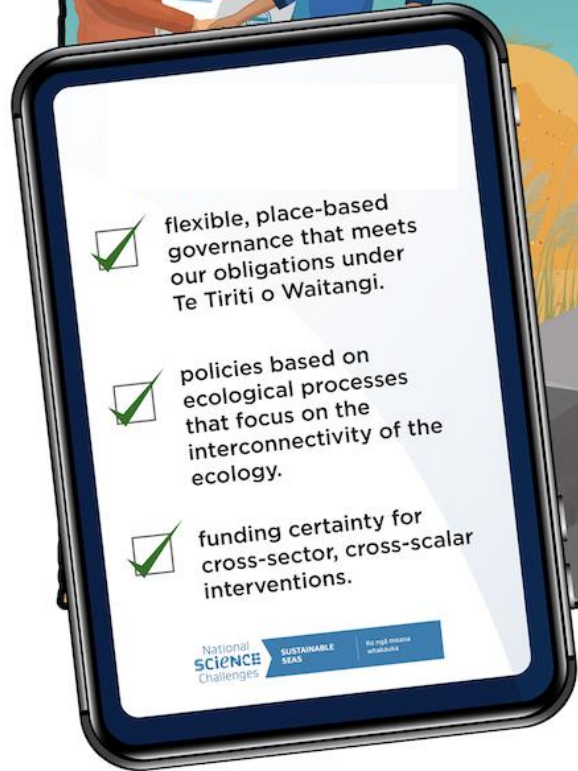
✔ **International Obligations:**  
The New Zealand Government has obligations with respect to marine environments and communities under international law.



✔ **National Policy:**  
There are multiple laws and policies affecting marine environments and communities related to fisheries, environment/planning, conservation, and Māori rights and authority that are implemented at various management scales.

Aotearoa New Zealand's policies need to be informed by the ecology across all scales, so we and our environment are thriving, and the blue economy is too!

✔ **Regional Policy:**  
There are many place-based plans and policies affecting marine environments and communities developed by councils, iwi and hapū.





# Questions?

We live here now but when we were younger we lived in intertidal, muddy sand areas. We can live for up to 7 years.

Pipi

Once we get here we stay here, but we need lots of other adults in surrounding areas. If there aren't enough adults we don't get to successfully breed. We can live for around 20 years.

Horse mussels

We're juveniles and we like being here where it's safe, but when we're adults we all want our own space in deeper areas. Of course we do have to get together sometimes to breed. We can live for over 60 years.

Snapper

I love my rocky home, but from time to time I get the urge to take a VERY long walk. We can live up to 4 years.



[Tools and resources](#)