Diversifying Aotearoa New Zealand's environmental indicators to advance nature-positive pathways

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www.ipbes.net

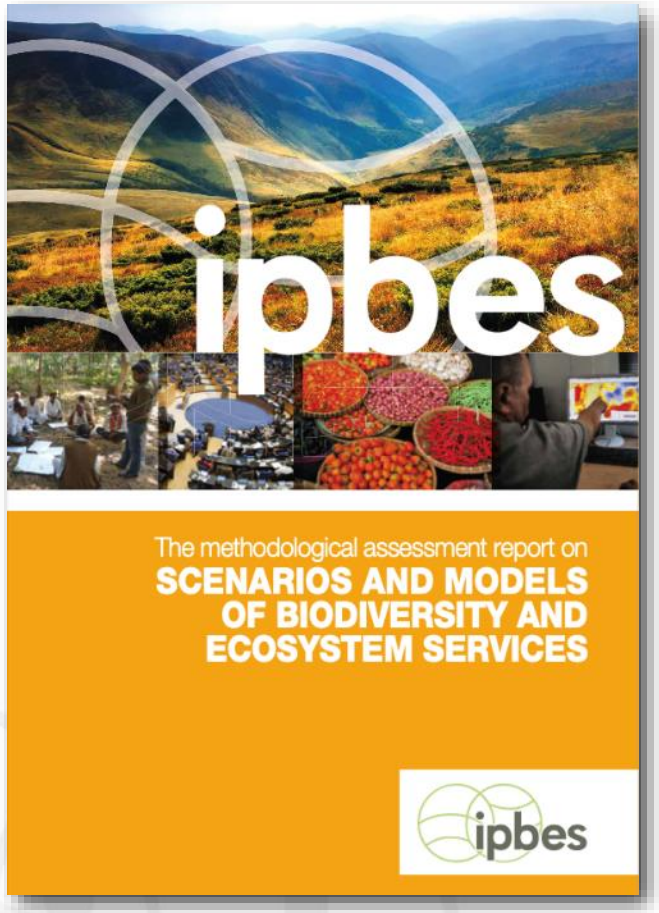
Exploring Nature Positive Futures, Tokyo, Japan, 27 March 2025,
S-21 Project Open Public Event, Institute for Global Environmental Strategies

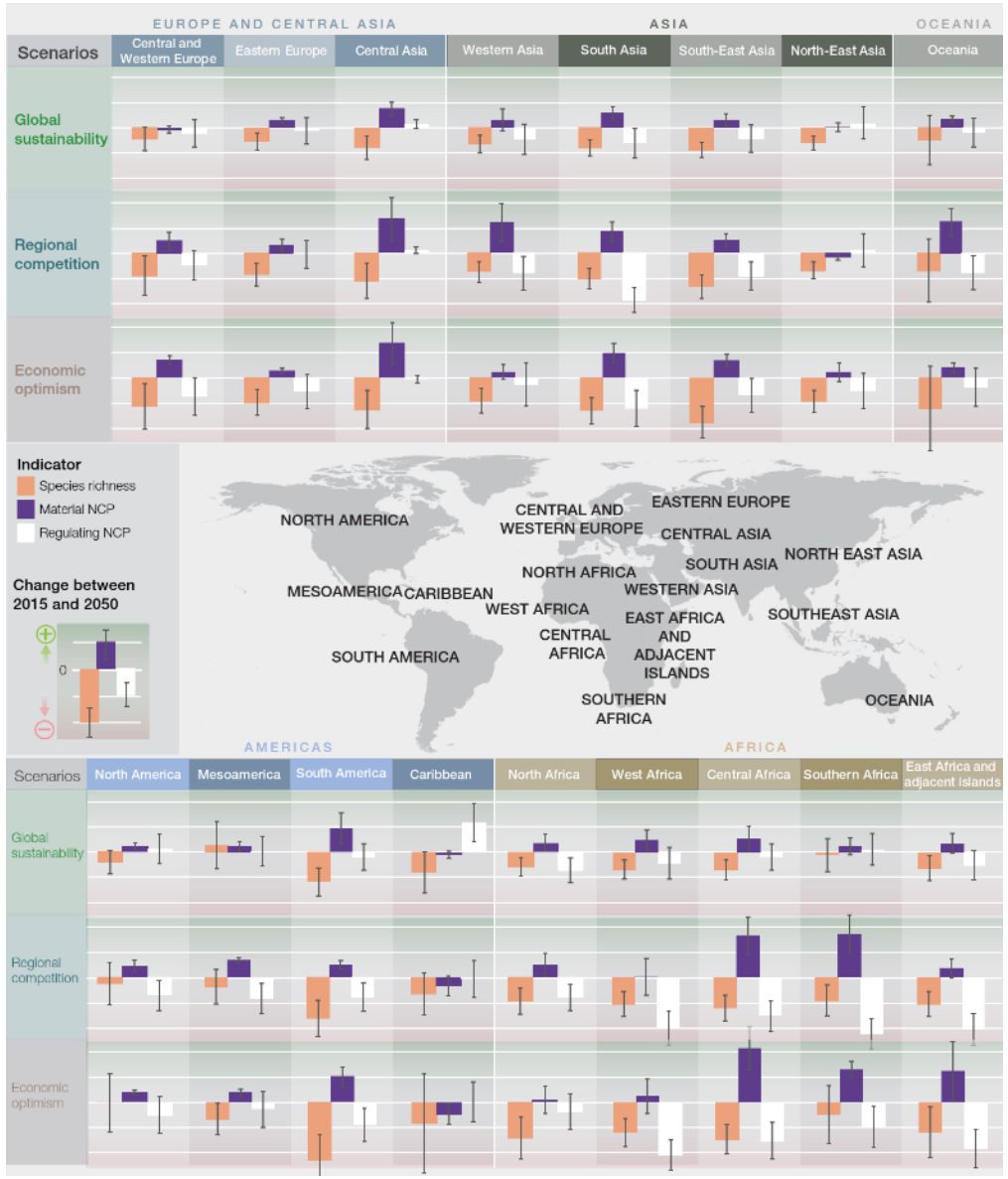
Using scenarios for global biodiversity

2016 IPBES Methodological Assessment

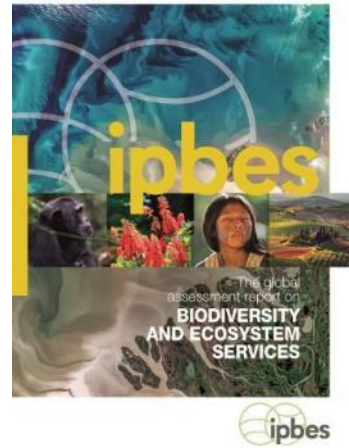
Scenarios are available and they are useful tools for policy support, but:

- Most global scenarios are developed for other purposes, e.g., climate change and its impacts
- Few scenarios detail ‘positive’ futures - most global scenarios are limited to assessing only impacts on nature, and tend to be negative
- Most global scenarios lack a participatory approach
  - Different policy and management responses relating to nature are often not well represented





Meeting climate targets will not halt the biodiversity decline



- "**Global sustainability**" has the smallest impact on biodiversity and ecosystem services across the globe
- Impacts and their differences are large in the "**Regional competition**" and "**Economic optimism**."
- Provisioning serviecs are greatest in the "**Regional competition**" scenario and "**Economic optimism**," but at the expense of a decline in biodiversity and regulating services

Biodiversity
Species richness

Provisioning services
Food, feed, wood, bioenergy

Regulating services
Nitrogen retention, soil retention, crop pollination, crop pest control, carbon sequestration

We need new scenarios that provide diverse, multi-cultural options to engage society in actions and lifestyle changes to reverse declines in nature

Source: IPBES（2019）The Global Assessment Report on Biodiversity and Ecosystem Services: Summary for Policy Makers.

What does nature mean to you?

Endangered species

National icons

Landscapes & Seascapes

Evolutionary wonders

Restoration

Intrinsic nature values

Nature supports food and livelihoods…

Food

Different varieties

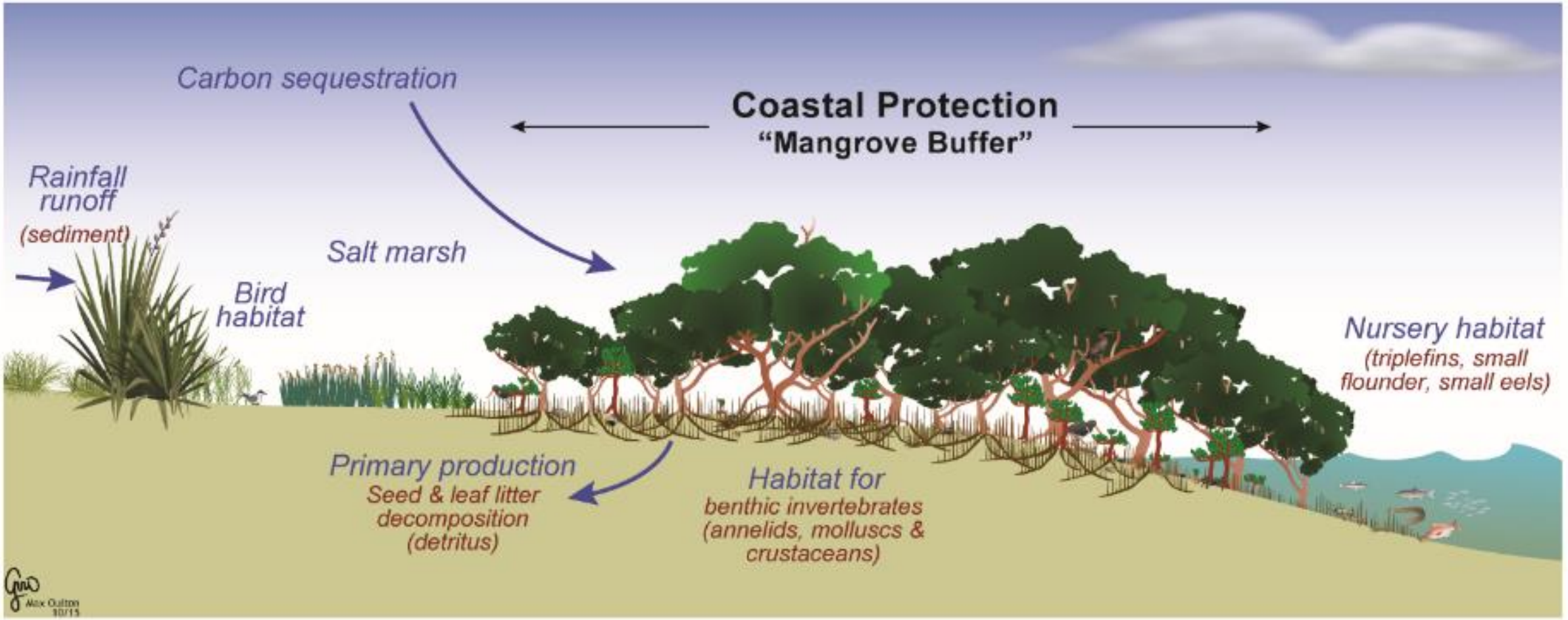
Gardening

Livelihoods

Production landscapes & seascapes

Instrumental nature values

Nature provides ecosystem services…



Instrumental nature values

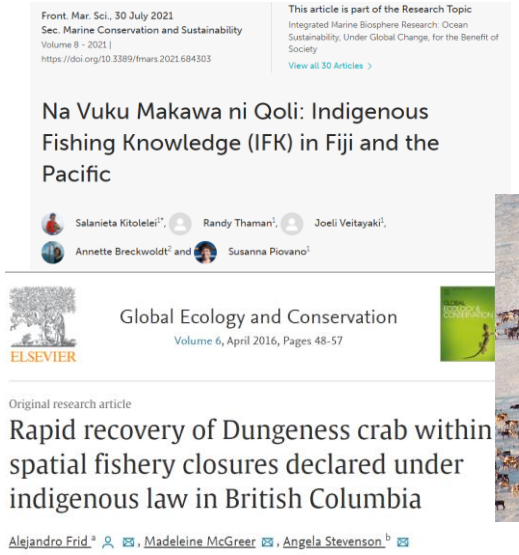
Nature is also culture…

Indigenous rights and rituals

Sense of identity

Experiencing nature

Traditional knowledge



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Sec. Marine Conservation and Sustainability
Volume 8 - 2021 |
https://doi.org/10.3389/fmars.2021.684303

This article is part of the Research Topic
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Na Vuku Makawa ni Qoli: Indigenous Fishing Knowledge (IFK) in Fiji and the Pacific

Salanieta Kitolelei[1]*, Randy Thaman[2], Joeli Veitayaki[2], Annette Breckwoldt[3] and Susanna Piovano[1]

ELSEVIER

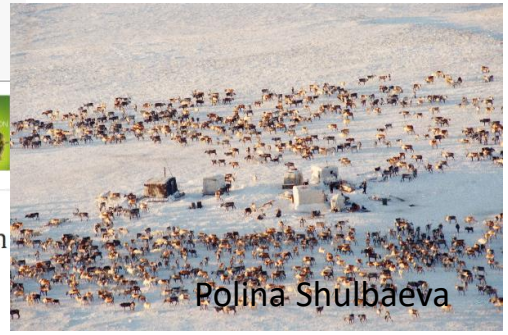
Global Ecology and Conservation
Volume 6, April 2016, Pages 48-57

Original research article

Rapid recovery of Dungeness crab within spatial fishery closures declared under indigenous law in British Columbia

Alejandro Frid[a], Madeleine McGreer, Angela Stevenson[b]

Nomadic cultures



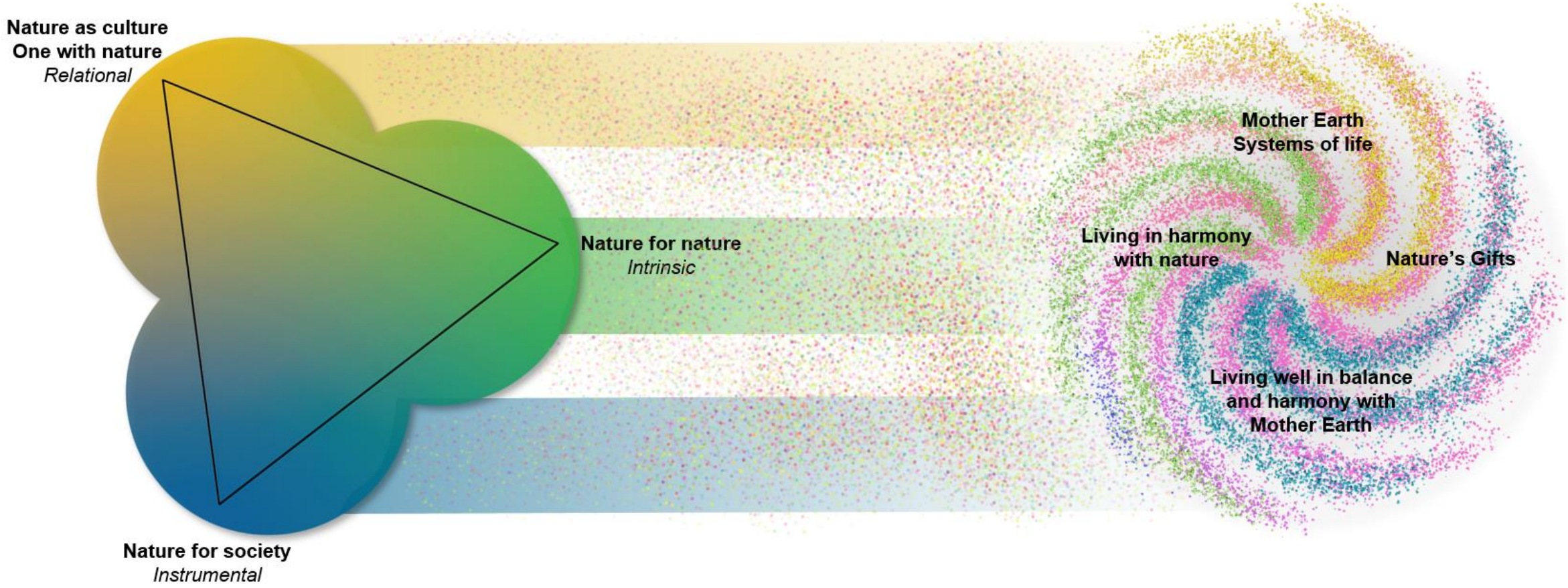
Cultural landscapes

Peace and tranquility

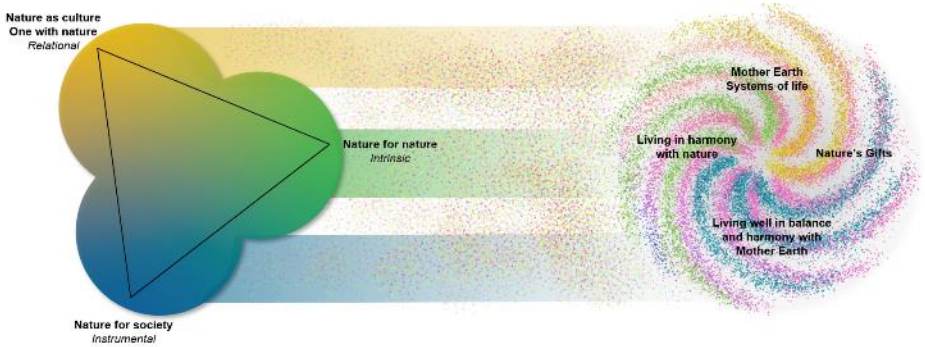
Relational nature values

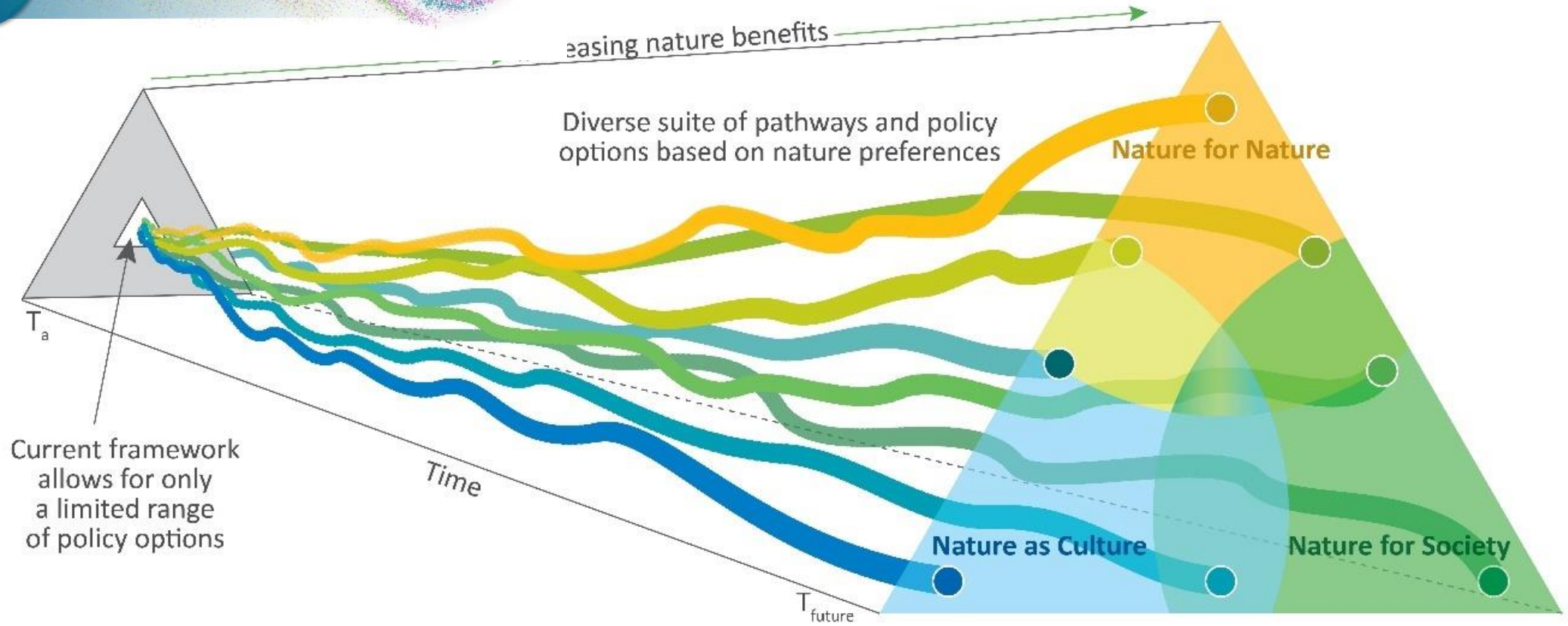
The IPBES Nature Futures Framework

A flexible tool to support the development of scenarios and models of desirable futures for people, nature and Mother Earth

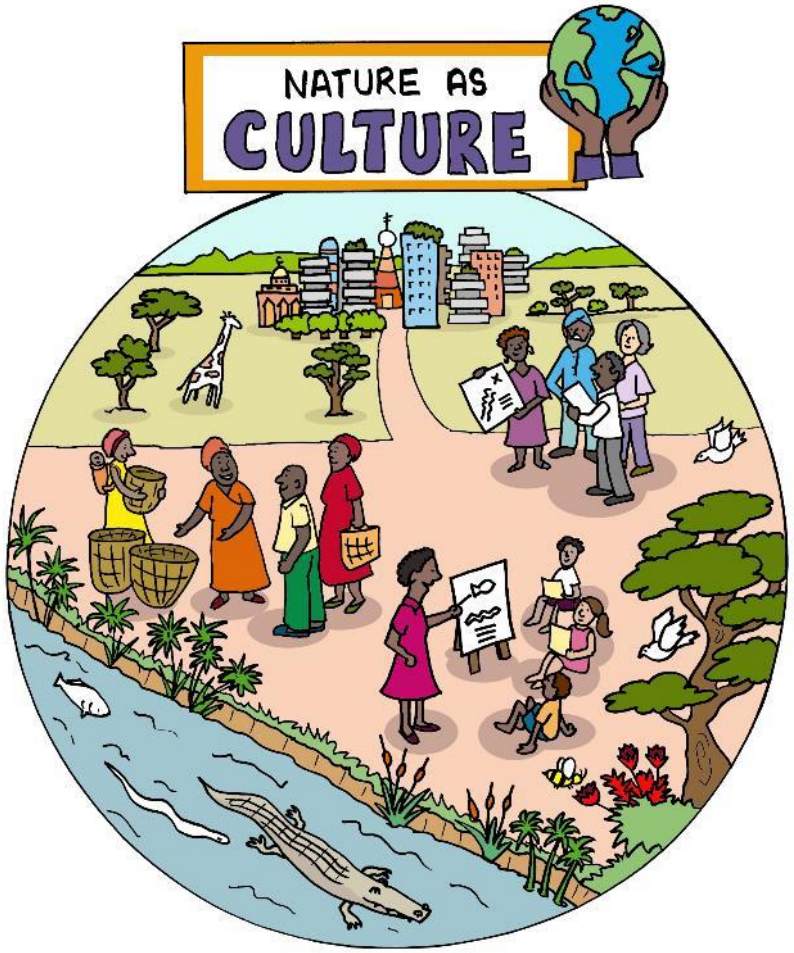


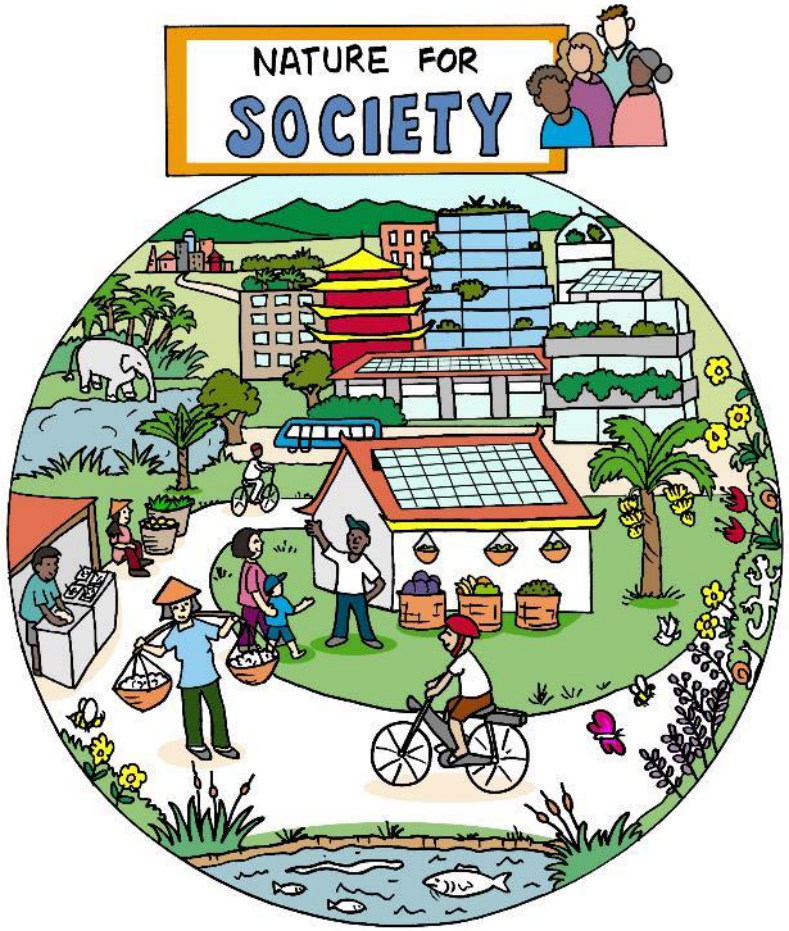
Identifying diverse positive futures using the Nature Futures Framework





Imagining Urban landscapes in the NFF





Lundquist et al. (Unpublished manuscript). A pluralistic Nature Futures Framework for policy and action.

Graphic illustration by Mary Brake

Te Mana o te Taiao – Aotearoa New Zealand NBS 2020

Evolved from historical focus on nature conservation to integrate indigenous and societal values, and dependence of NZ economy on nature

https://www.doc.govt.nz/nature/biodiversity/aotearoa-new-zealand-biodiversity-strategy/te-mana-o-te-taiao-summary/

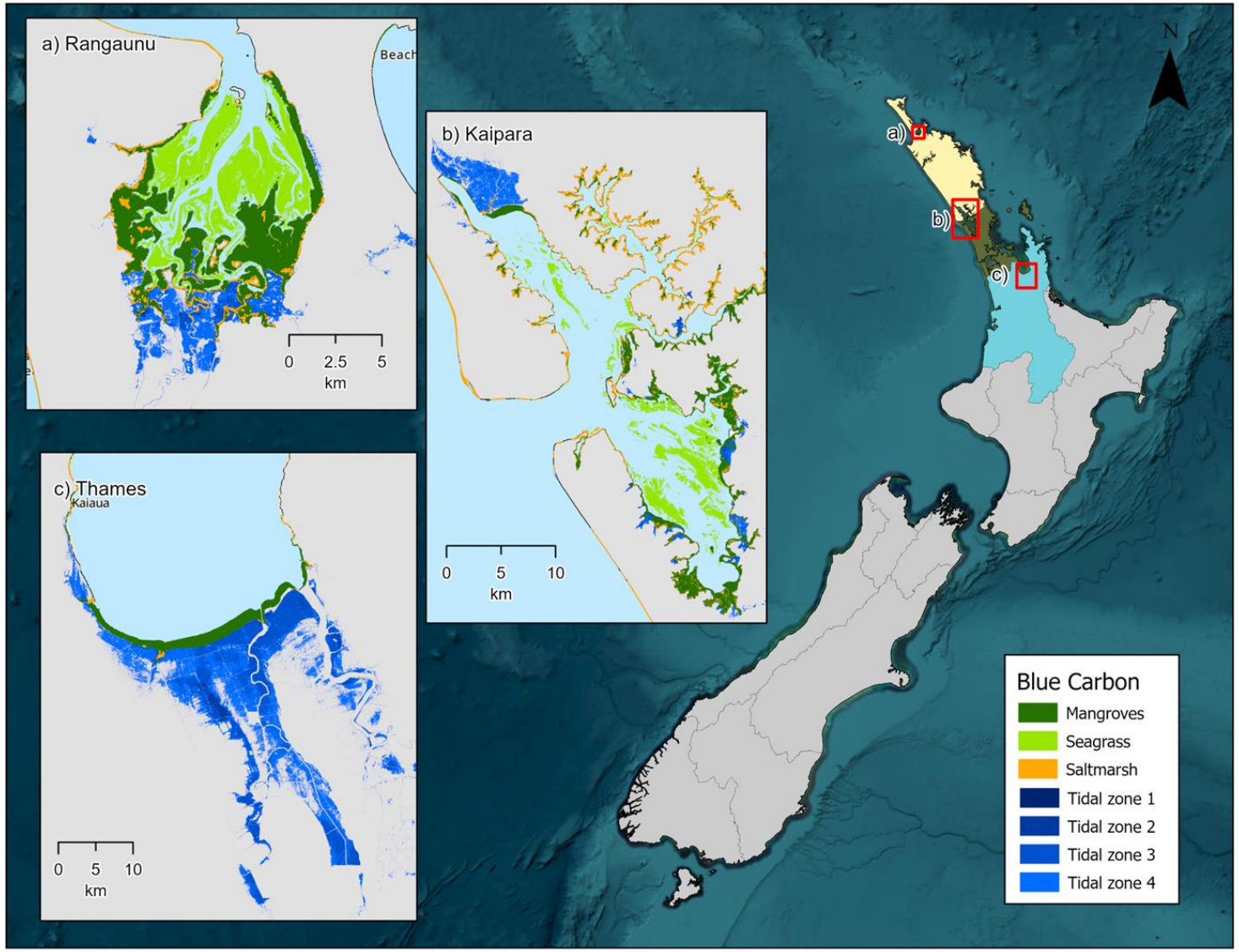
Coastal wetland / estuary restoration

How do we prioritise which coastal wetlands to restore?

Identify areas with restoration potential

Habitat mapping

- Current and potential suitable habitat for coastal habitat restoration
- Land ownership
- Statutory/regulatory guidance

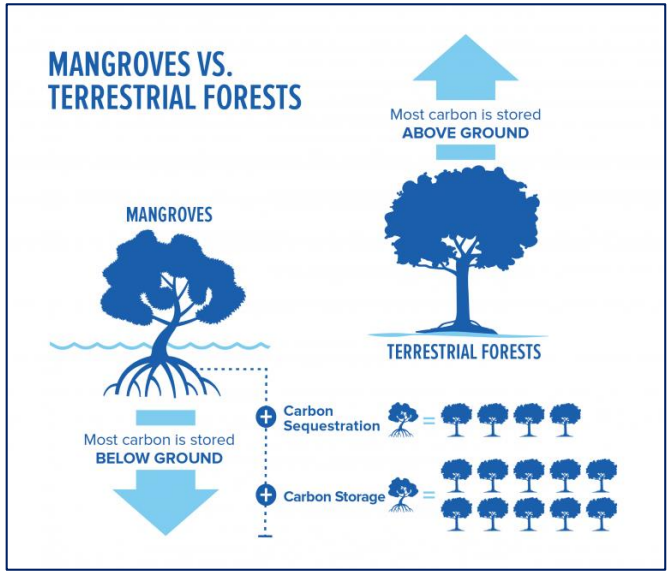


Bulmer, R. et al. (2024). Restoration Ecology

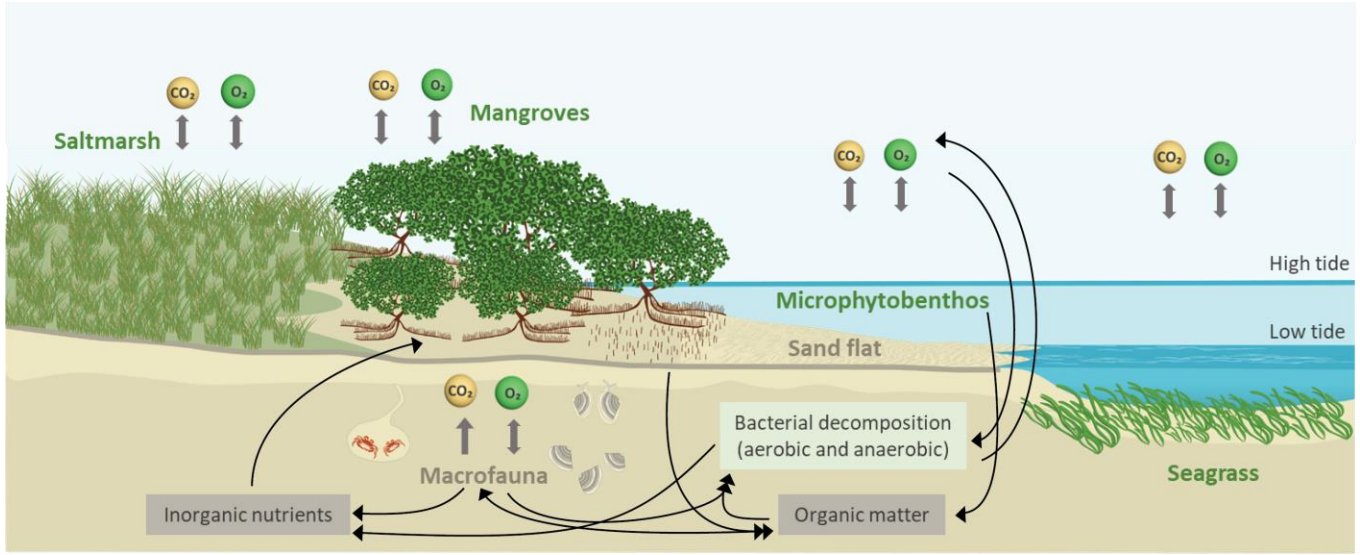
Prioritise based on nature's contributions to people?

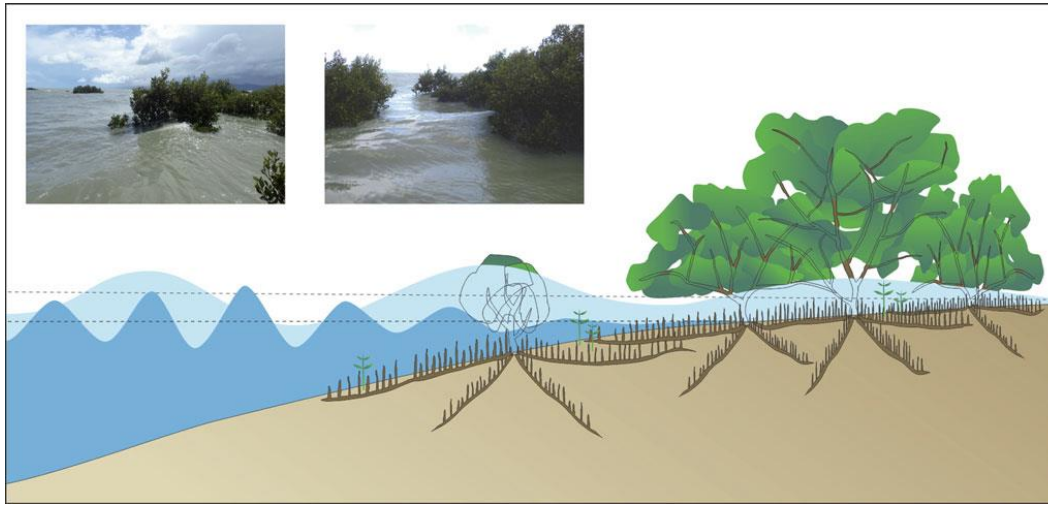
Nature for Society

- Carbon sequestration and cycling
- Nutrient sequestration and cycling
- Coastal protection/coastal erosion/wave suppression



Conservation International

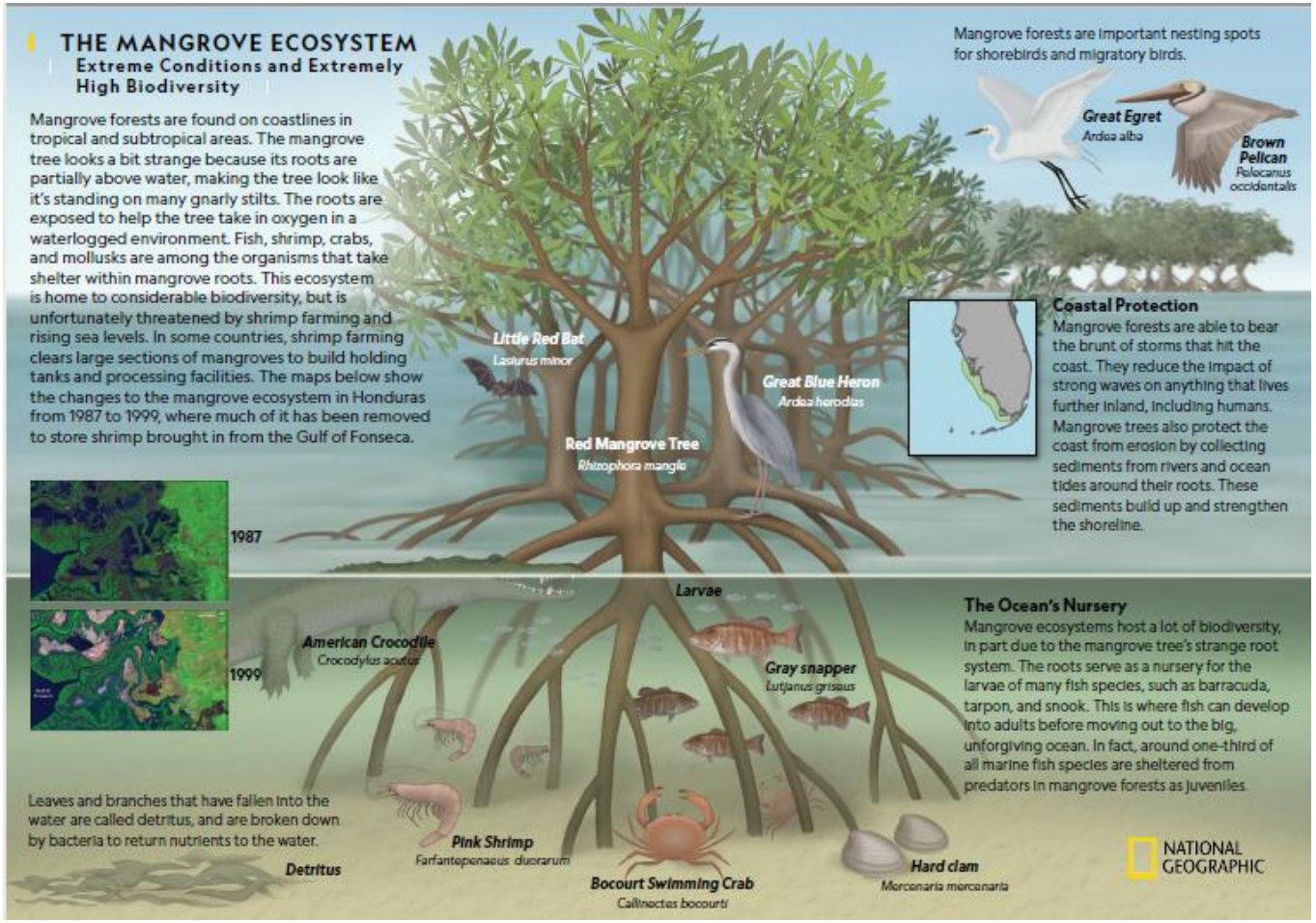




Prioritise based on values for biodiversity and ecosystem function?

Nature for Nature

- Protecting sensitive habitats
- Protecting habitats that support threatened species
- Protecting areas that support migratory species
- Areas with high biodiversity

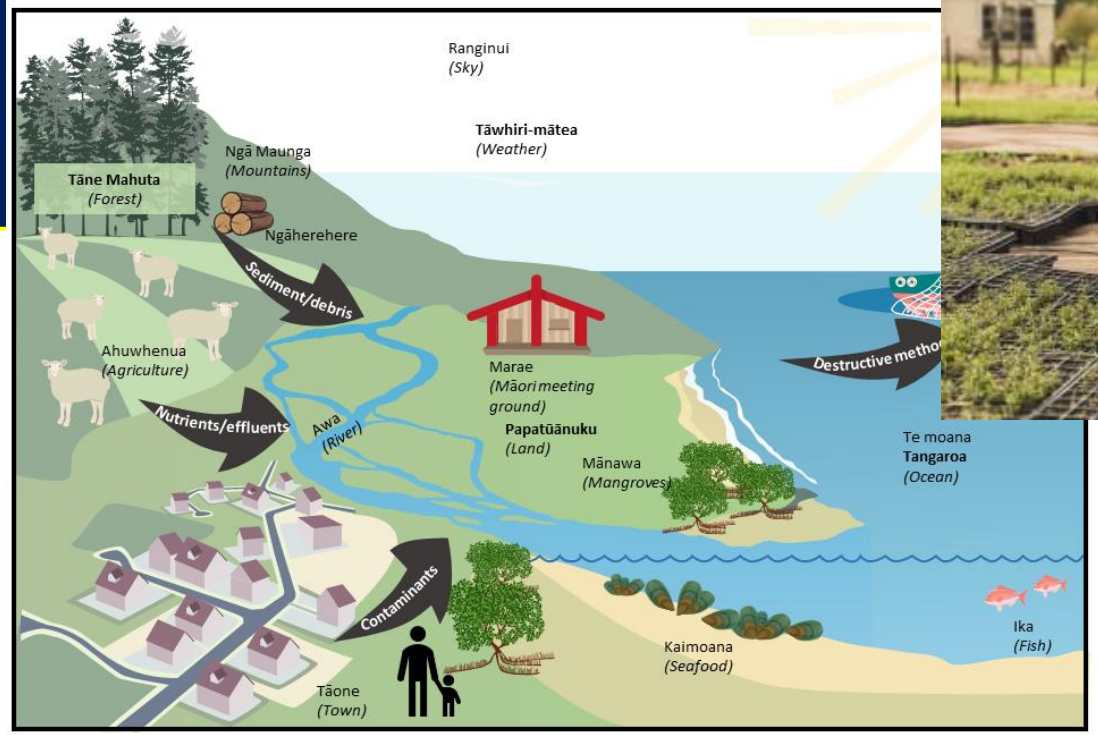


Prioritise for relational values?

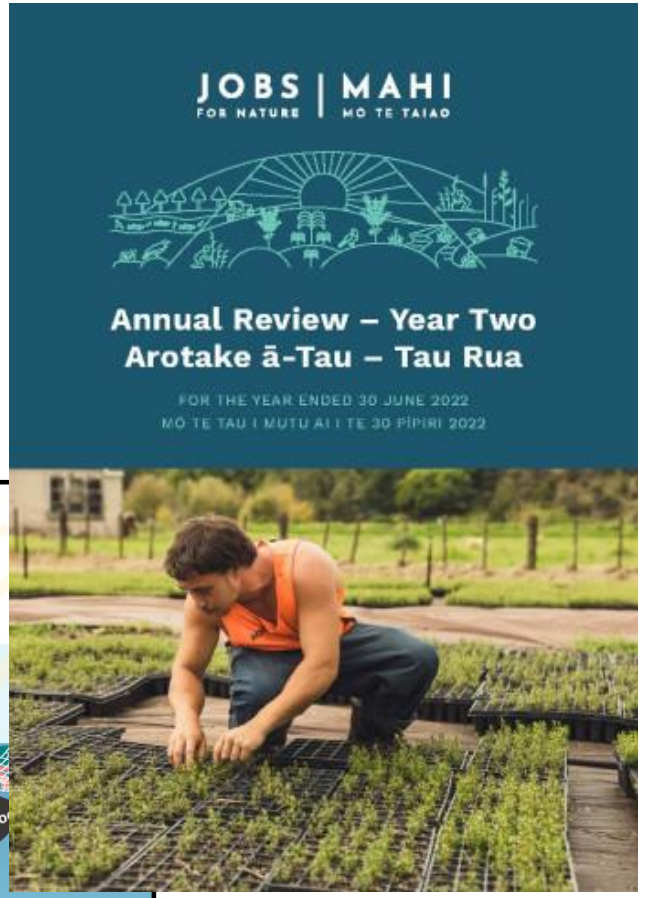
One with Nature/Nature as Culture

- Recreational use
- Reconnecting with cultural practices
- Sense of community
- Enhancing job opportunities

Recreational access



Reconnecting with culture



Creating jobs

Next steps: developing nature-positive scenarios for coastal wetland restoration

- Scenarios that prioritise based on:
  - Nature for Society – higher priority for coastal protection, climate adaptation, carbon sequestration
  - Nature for Nature – higher priority for rare and uncommon ecosystems, habitat use by threatened species
  - Nature as Culture/One with Nature – higher priority for sites with community aspirations, cultural/heritage values, mitigation of upstream impacts for co-benefits (e.g. kaimoana/seafood)
- Background consideration of co-benefits, restoration costs
- Quantify/qualify benefits of each scenario across diversity of values; explore synergies between scenarios

Nature-positive futures for *Undaria pinnatifida* (wakame) in New Zealand

Invasive kelp, now established in NZ

- **Nature for nature:** habitat forming, more tolerant of high temperatures/heat waves
- **Nature for Society:** harvesting as food & fertiliser, jobs based on control / maintenance
- **Nature as Culture:** Invasive response has created stakeholder communities, communities and jobs based around harvesting

Theobold, S. (2025). MSc thesis, University of Auckland.

Undaria pinnatifida	**Location within NFF**		
	Nature as Culture	**Nature for Nature**	**Nature for Society**
Ecology and Biological Characteristics			
High tolerance of environmental conditions	- -	- -	-
Seasonal variations	o	o	o
Limited data available		o o	
Impacts			
Loss of native biodiversity		- -	
Colonisation of different substrates	o -	+ o - -	o - -
Ecosystem function (loss of native habitat, reduced light, smothering)		- - - - -	
Different morphology (lies flat). Changes structure of habitat		- -	-
Biofouling of recreational and commercial vessel			- - - -
Growth on mussel farms (nutrient uptake)		+ +	+
Erosion protection			+
Biofouling of aquaculture facilities			- - - - -
Provides a habitat for other invasive species		-	
Aesthetics and effects on cultural values	- - -		-
Uses			
Commodity as a 'functional food', dietary source, fertiliser etc	+ + +		+ + + + +
Bioactive compounds	+ + +		+ + + o
Commercial use creates competition for harvest with native macroalgae	o - -	-	o - -
Control			
Expense of control measures and removal techniques	-	-	o -
Large biomass removal (in situ harvest)	+ +	+ + o	+ + o
Control through maintenance	+ +	+ +	+ +
Stakeholders			
Collaboration with stakeholders	+ + +		+ + +
Stakeholder vision	+ + + o	+	+ + + + o
Public perception	o o o o		o o o -
Finance			
Employment and infrastructure development	+ + + + +	+	+ + + +
Buyer required	o o o		o o o
Cost of removal	+ +	+	+ + +

Nature Futures & Invasive species in New Zealand

- Biosecurity - pest control
  - Predator free NZ – large scale targeted eradication of rats, stoats, possums
    - Cost-effective strategies
    - Prioritising spatial and temporal efforts (urban, rural, conservation land, indigenous land)
    - Ethical methodologies
  - Managing other introduced species
    - Economic values (fishing/hunting/trophy species)
    - Conflicts between societal and environmental objectives
  - Weed removal
    - Prioritising management actions
    - Managing escape of garden plants
    - Targeted social activities
    - Cost-effective eradication methods

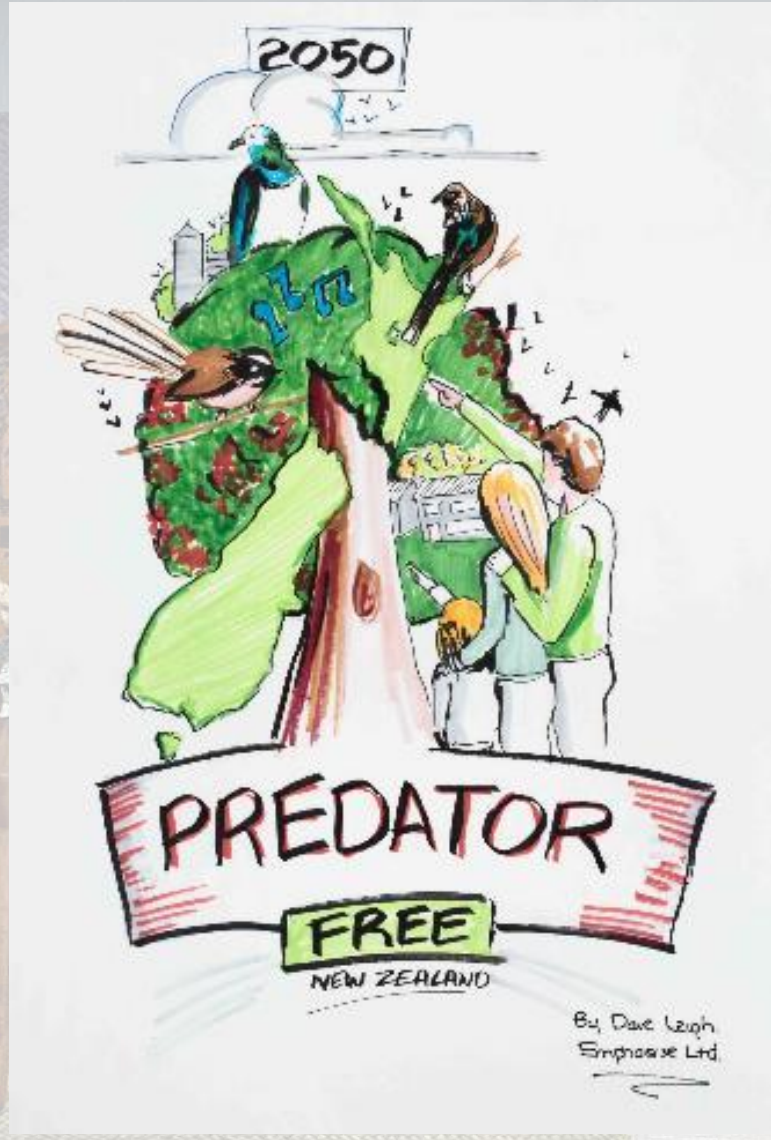
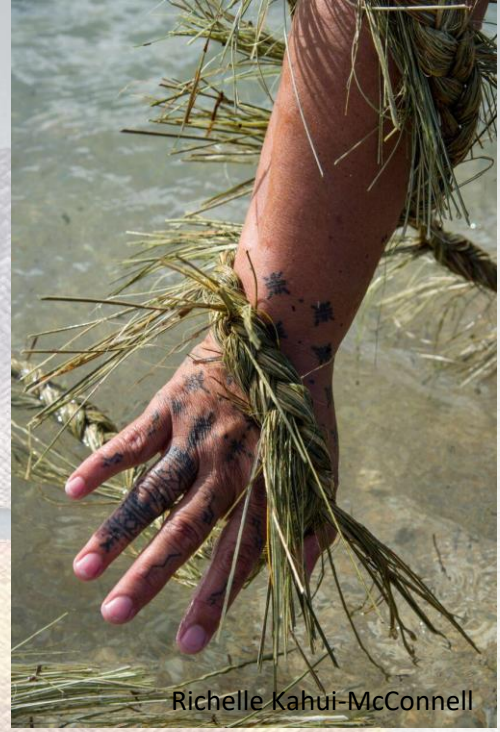
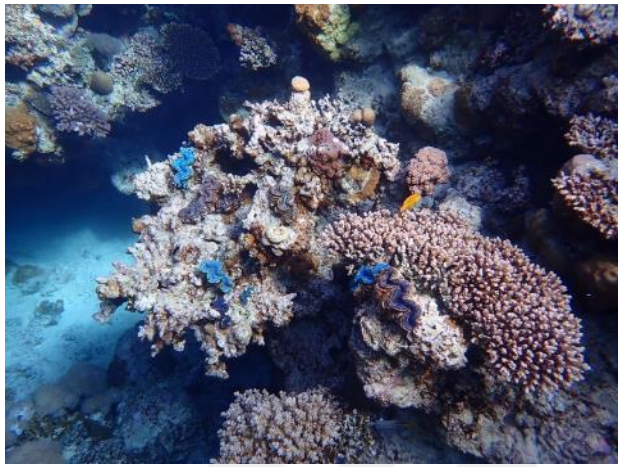


Illustration by Dave Leigh, Emphasise Ltd.

Summary

- Nature/biodiversity and the ecosystem services provided by nature are declining.
- Nature underpins our quality of life. Environmental degradation can have significant consequences for our economy, infrastructure and human well-being.
- The IPBES NFF can inform development of nature-positive futures that represent the diversity of nature value and worldviews and their direct and indirect connections to human well-being.


Richelle Kahui-McConnell



Imagining Nature Futures