



Spatially Explicit Decision Support Tools

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- **Project Team:**

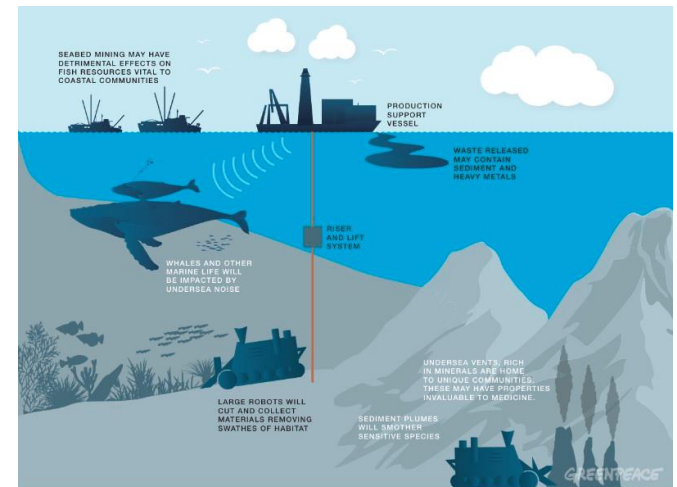
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Overview

- The issue
- What are spatially explicit decision support tools?
- Current work
 - Prioritization and trade-off models
 - Disturbance and recovery models
- Questions

The issue

- Many activities in the marine environment: Recreational (fishing, sailing, diving), commercial (fishing, mining, etc).
- Importance of maintaining healthy ecosystems
- Competing spatial demands between conserving deep-sea ecosystems and allowing economic interests such as fishing and mining
- Spatial management planning

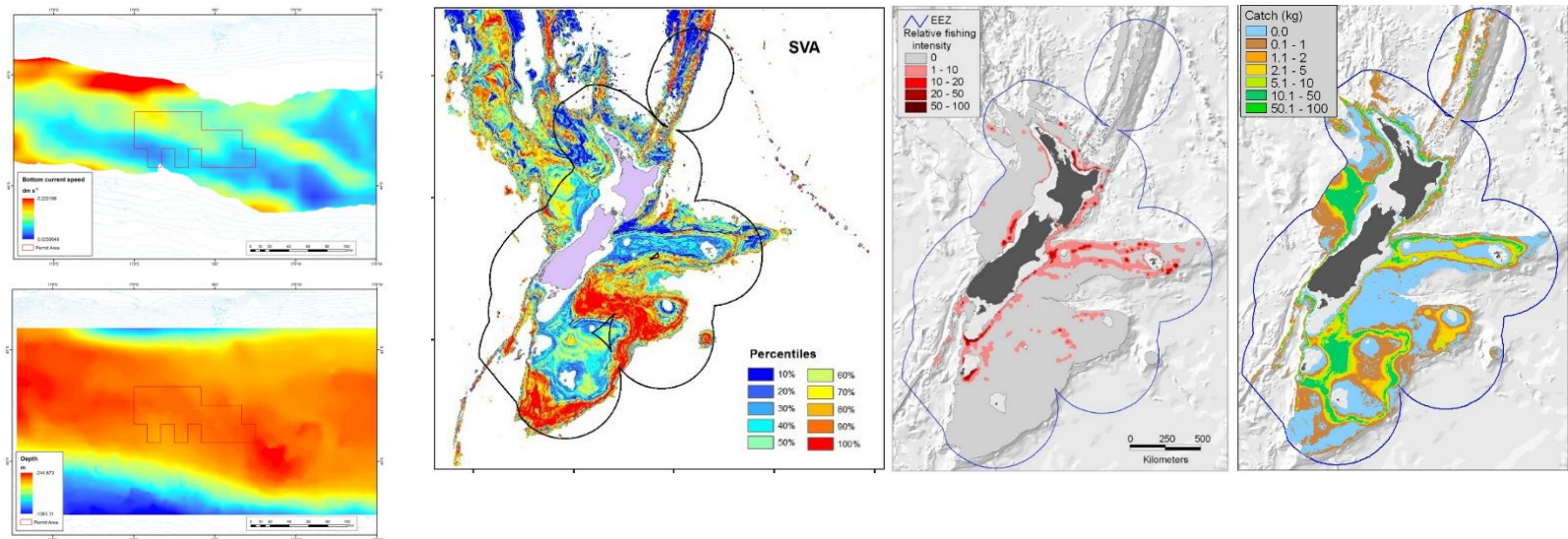


What are spatially explicit decision support tools?

- Mathematical models that use spatial data (i.e. data that have geographical coordinates)
- Explore trade-offs between different resource users, their impact on the environment and ecosystem health.
 - Help identify areas that satisfy biodiversity and stakeholder objectives
- Systematic, transparent, repeatable

What are spatially explicit decision support tools?

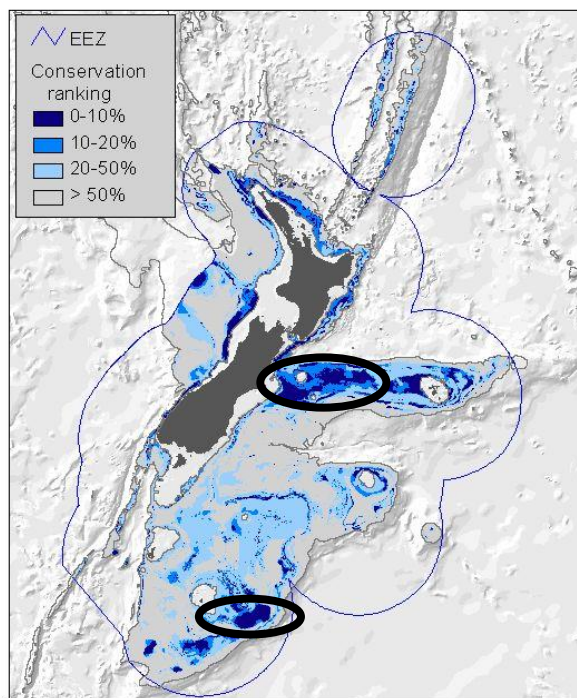
- Geographic data from physical (non-living) and biological (living) parts of an ecosystem and socio-cultural values



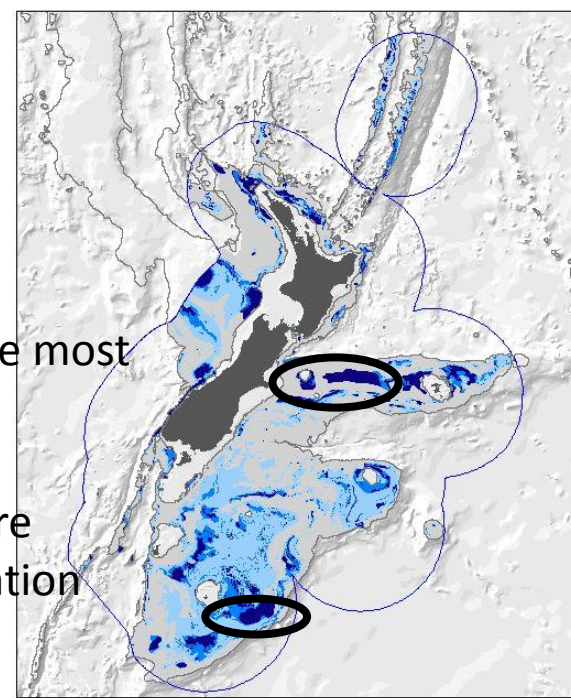
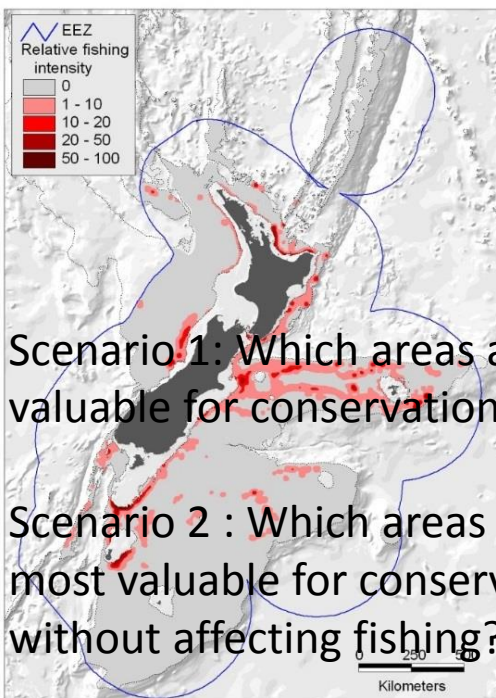
Current work - Prioritization and trade-off models

- Outputs of Zonation: maps of biodiversity prioritisation (nested) for a particular model scenario

Conservation value - No cost constraint



'Full cost constraint'

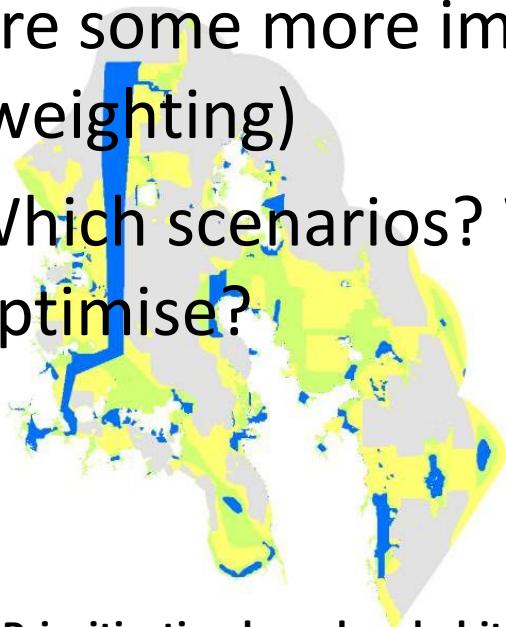


Scenario 1: Which areas are most valuable for conservation?

Scenario 2: Which areas are most valuable for conservation without affecting fishing?

Current work - Scenarios

- Which models work best for New Zealand?
 - Which datasets will be used? (different outputs)
 - Are some more important than others? (weighting)
 - Which scenarios? What are we trying to optimise?



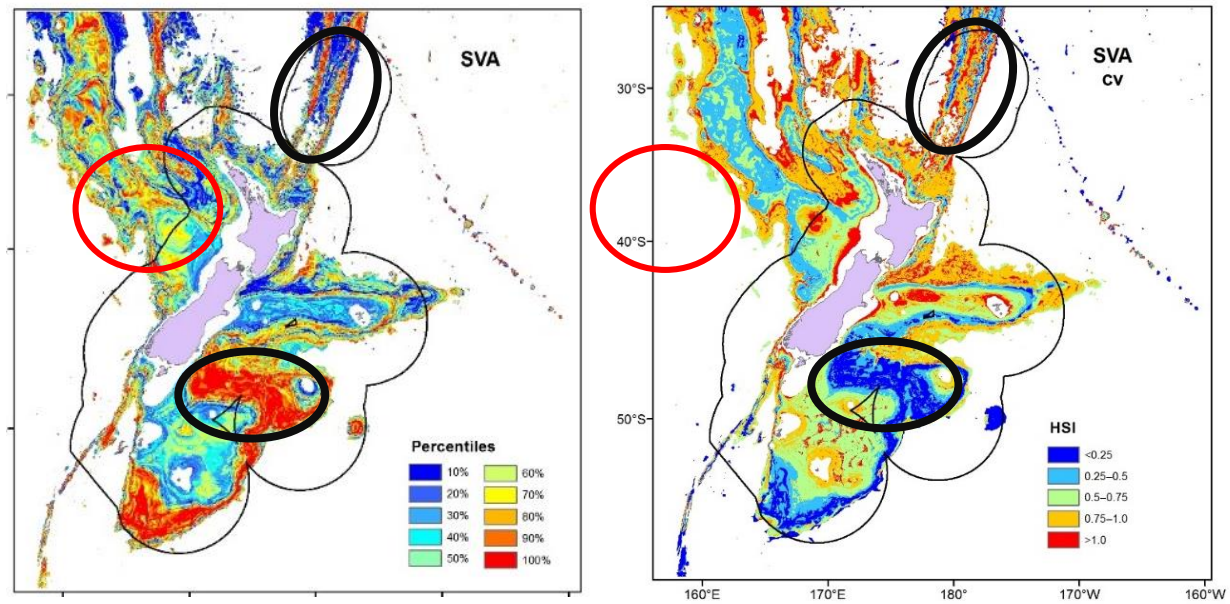
Prioritisation based on habitats



Prioritisation based on demersal fish

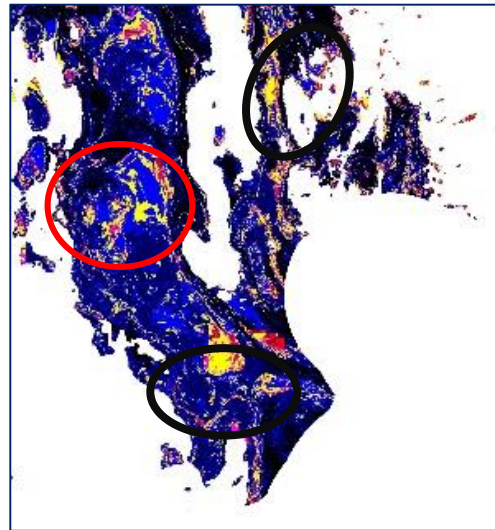
Current work - Scenarios

- Which models work best for New Zealand?
- Uncertainty of data layers

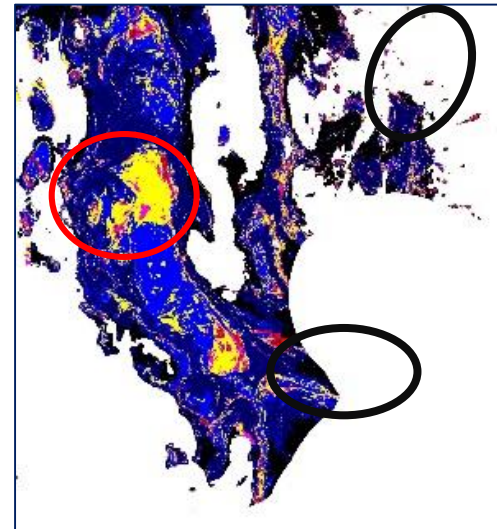


Current work - Scenarios

- Which models work best for New Zealand?
 - Differences in trade-off models
 - Causes of uncertainty



Without including uncertainty



Including uncertainty

Future work

- Incorporation of other socio-cultural data layers into decision models
- Multiple scales and types of disturbances in evaluating ecosystem resilience



Thank you for listening - Questions?



SUSTAINABLE SEAS

Ko ngā moana whakauka