Participatory tools- Project 5.1.4

Interactive tools for enabling participation and knowledge exchange
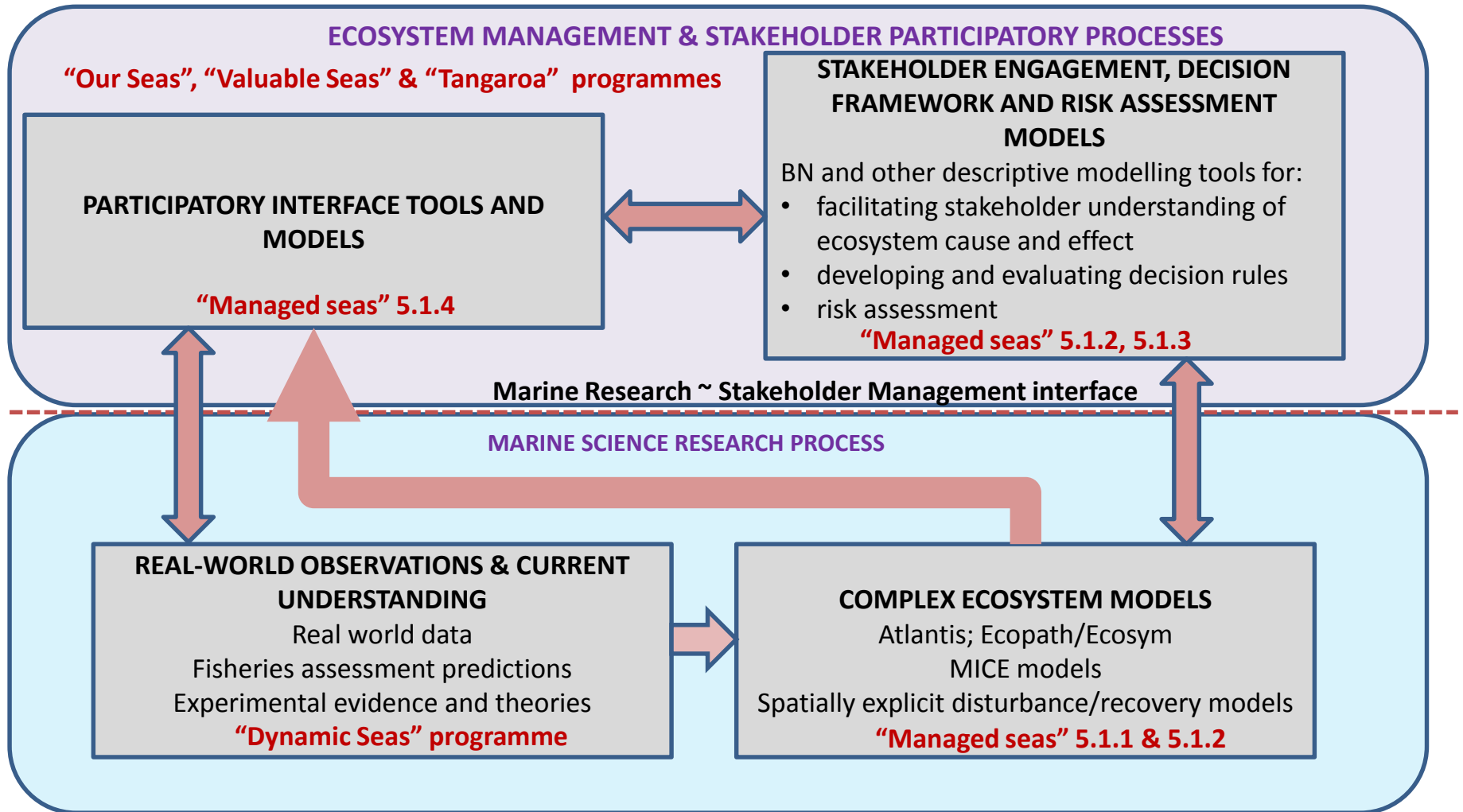
Ross Vennell (Cawthron)

NIWA-   Jeremy McKenzie,
Cawthron-Mark Newton, Chris Cornelisen, Ben Knight

Overview: Participatory tools

Project works at the boundary of science and society, to develop and implement tools for facilitating participation in decision making and communicating science.
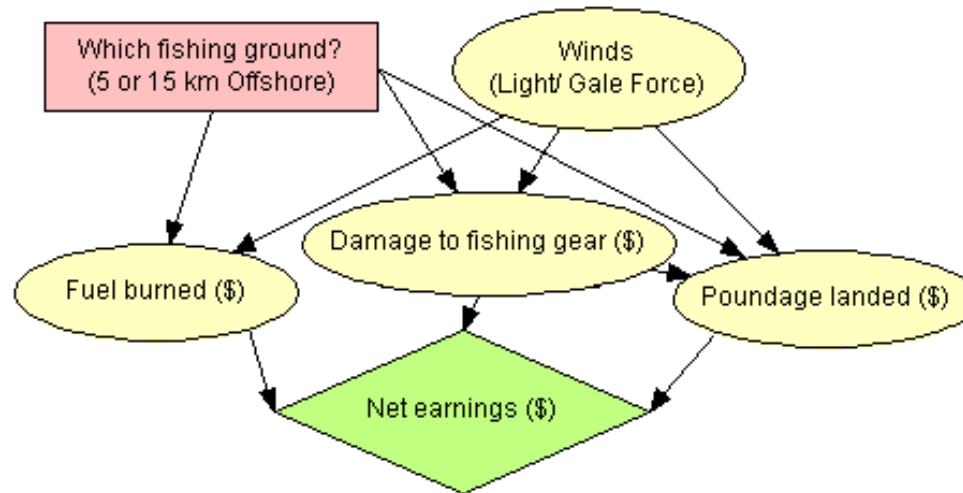
1. Online tool to enable managers and stakeholders to see consequences of management decisions in the case study area- Tasman-Golden Bays.

    ➢ Distilling complexity of Eco System model - Atlantis into an interactive tool built on "Bayes Nets" (Jeremy McKenzie)

2. A connectivity tool to allow wider public to learn and play with spatial connections of areas within Tasman-Golden Bay?? Citizen science observations in Tasman-Golden Bays??? (Ross Vennell and Ben Knight)

3. Review to identify the ingredients of effective participatory tools, and in particular the technical interfaces that encourage participation (Mark Newton)

Framework- Bayes Nets decision support tools

What are Bayesian Belief Nets (BBNs) and how are they useful?

BBN models representations of marine ecosystem function and environmental impact cause and effect

Each arrow contains a matrix of probabilities connecting a range of states

1. Do not support feedbacks
2. typically expressed as categorical state "low/medium/high"
3. The entire BN will change 'instantaneously' Ie don't evolve with time.

Scallop Fishery – Nelson-Tasman Bays

Engagement: Structured decision making

Management strategy levers

Stakeholder Aspirational objectives

- TO: Maximising profits and employment
- IWI: Restore the Mana and health of the marine habitats where scallops are found and protect and maintain these for future generations
- RSF: Large scallops and high catch rates in easily accessible areas
- CSF: Maximising profits and employment
- AF: Maximising profits and employment

Sub objectives

- INCREASE Area suitable for marine farming
- RESTORE Benthic biodiversity
- RESTORE area of optimum high density scallop habitat
- INCREASE Scallop productivity
- RESTORE water quality and clarity

Means objectives

- RESTORE Biogenic structure on depleted scallop beds
- INCREASE benthic primary productivity
- INCREASE Planktonic primary productivity
- REDUCE habitat removal and modification
- REDUCE suspended sediment and sedimentation levels
- REDUCE Nitrate and phosphate loadings

Performance measures

- Surface area of TBGB with high water quality index
- Average number of tourists visiting TBGB annually
- Average scallop biomass relative to MSY levels in recreational and IWI fishing areas.
- Number of marine farm licenses
- Annual average tonnage of nitrates and phosphates entering TBGB
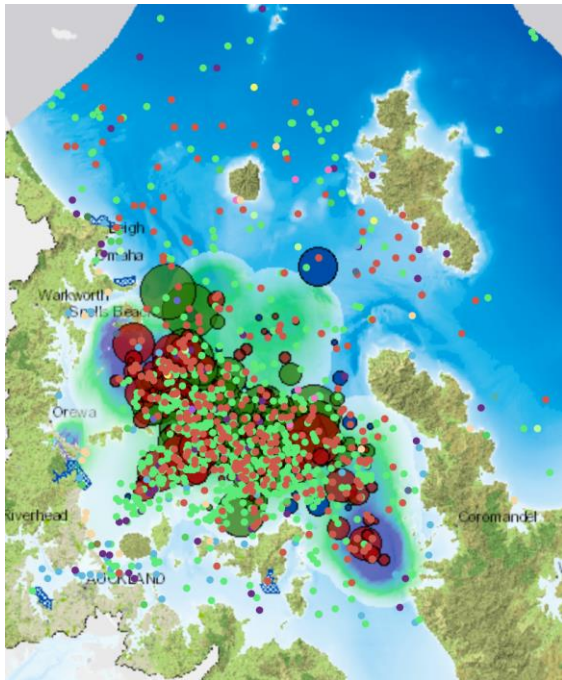- Rate of benthic habitat removal in TBGB
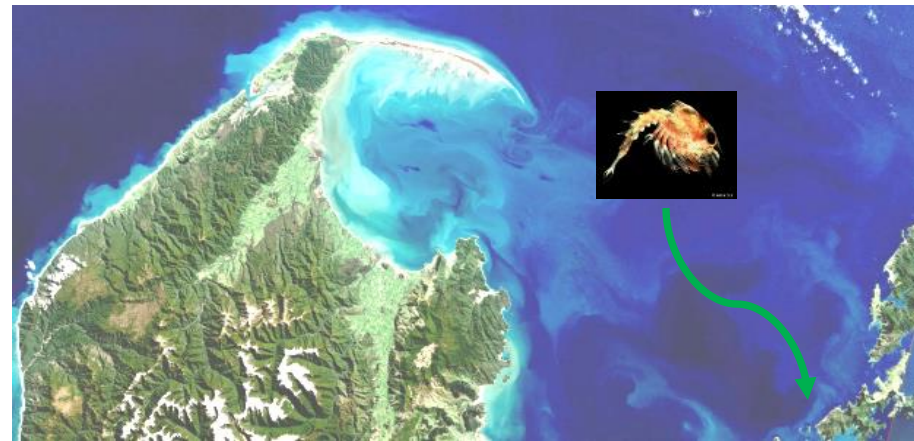- Average scallop natural mortality rate on high density beds

Quotas	Protected Areas	Trawl or Dive?
	Bayes Net	
	Break out with Jeremy	

National SCIENCE Challenges

SUSTAINABLE SEAS | Ko ngā moana whakauka

Web-enabled applications?

-facilitating two-way exchange of data and

Connectivity Tool??

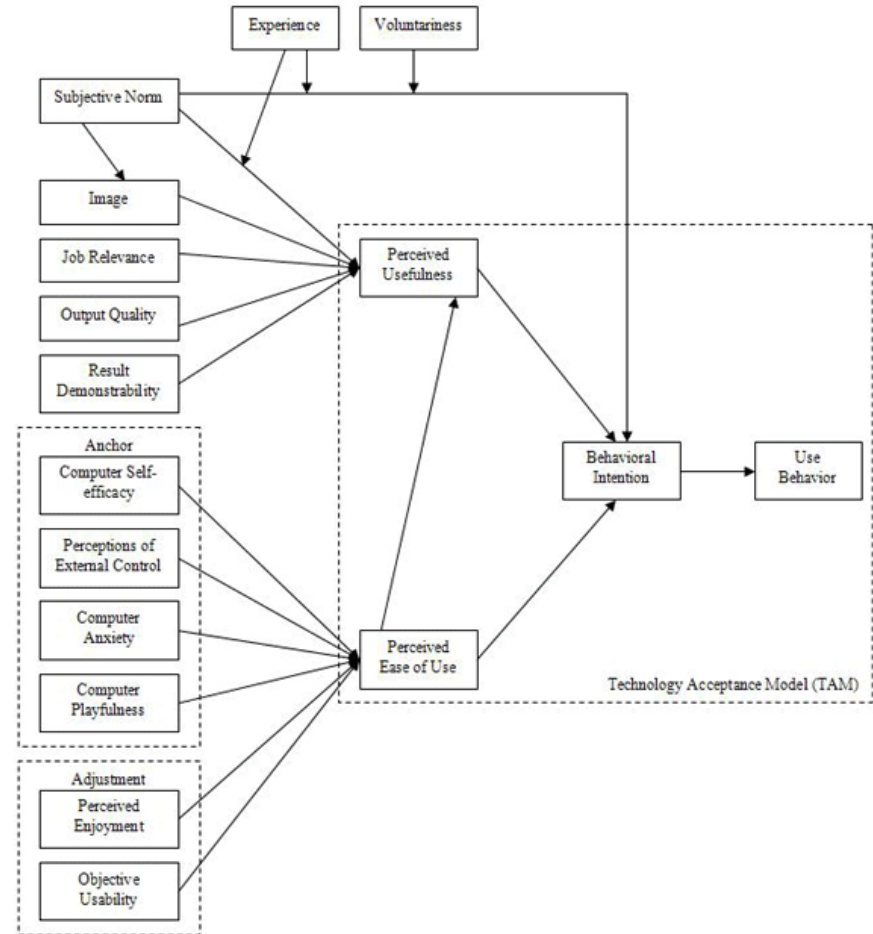Platforms for citizen science reporting??
Nature watch? Sea Sketch?

Ideas?? Bring to break out with Ross

Increasing Participation: Contributions from social psychology

- Increasing participation is about changing behaviour

- Many models of computer technology acceptance and uptake exist e.g.

  – Technology Acceptance Model (Davis et al. 1989)
  – Model of PC Utilization (Thompson et al. 1991)
  – Unified Theory of Acceptance and Use of Technology (Venkatesh et al 2003)
  – Decision Making Core (Bagozzi 2007)

National SCIENCE Challenges

SUSTAINABLE SEAS

Ko ngā moana whakauka

Questions about increasing participation

- In light of TAM, how to design interfaces for the unique challenge of coastal management?

- What would be the key aspects of online interactive tool interfaces that would make you want to utilise them? e.g.
  - Output format for results?
  - Interaction with other users, or anonymity?
  - Assistance and help functions?
  - Helping each other?
  - Contributing your own knowledge?
  - Trust with other users?

Break out with Mark Newton!!

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Ran a 3 day workshop for team in Auckland Dec 2016