

"from ridge tops to the sea"

Integrated Catchment Management

Resilient Communities, Resilient Ecosystems **Learning about Integrated Catchment Management in New Zealand**

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& the whole ICM research team



Landcare Research
Manaaki Whenua



C A W T H R O N

TDC **Tasman**
District Council

Common Ground Ltd

Tiakina te Taiao Ltd

Pansophy Ltd



Conceptual Models for ICM

Integrated

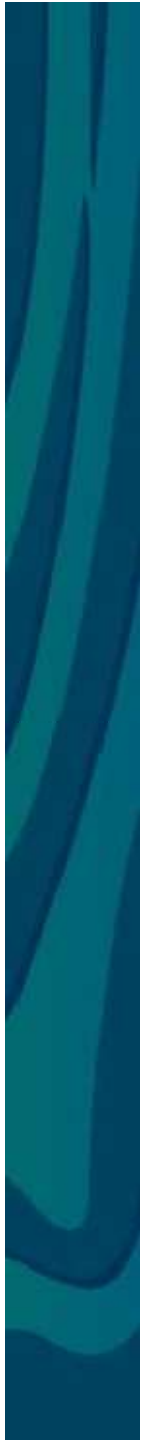
...together

Catchment

...scale

Management

...action



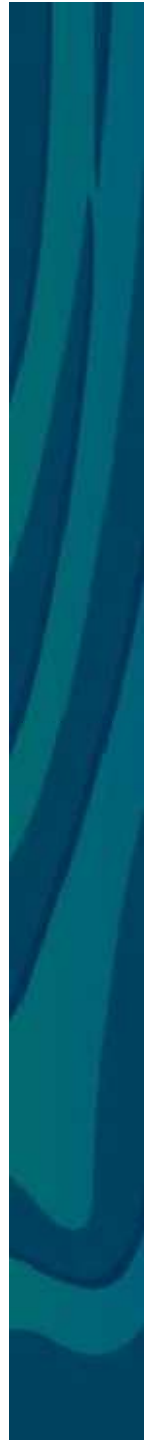
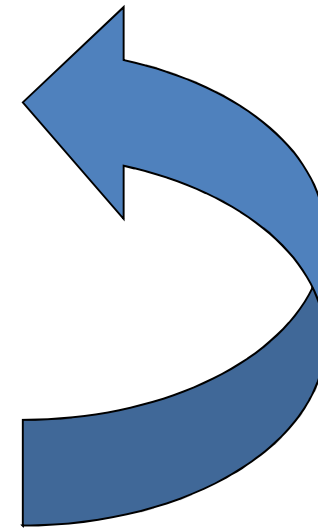
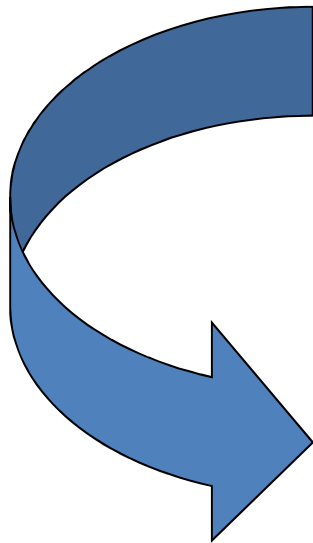
2 pillars for ICM

Community Resilience

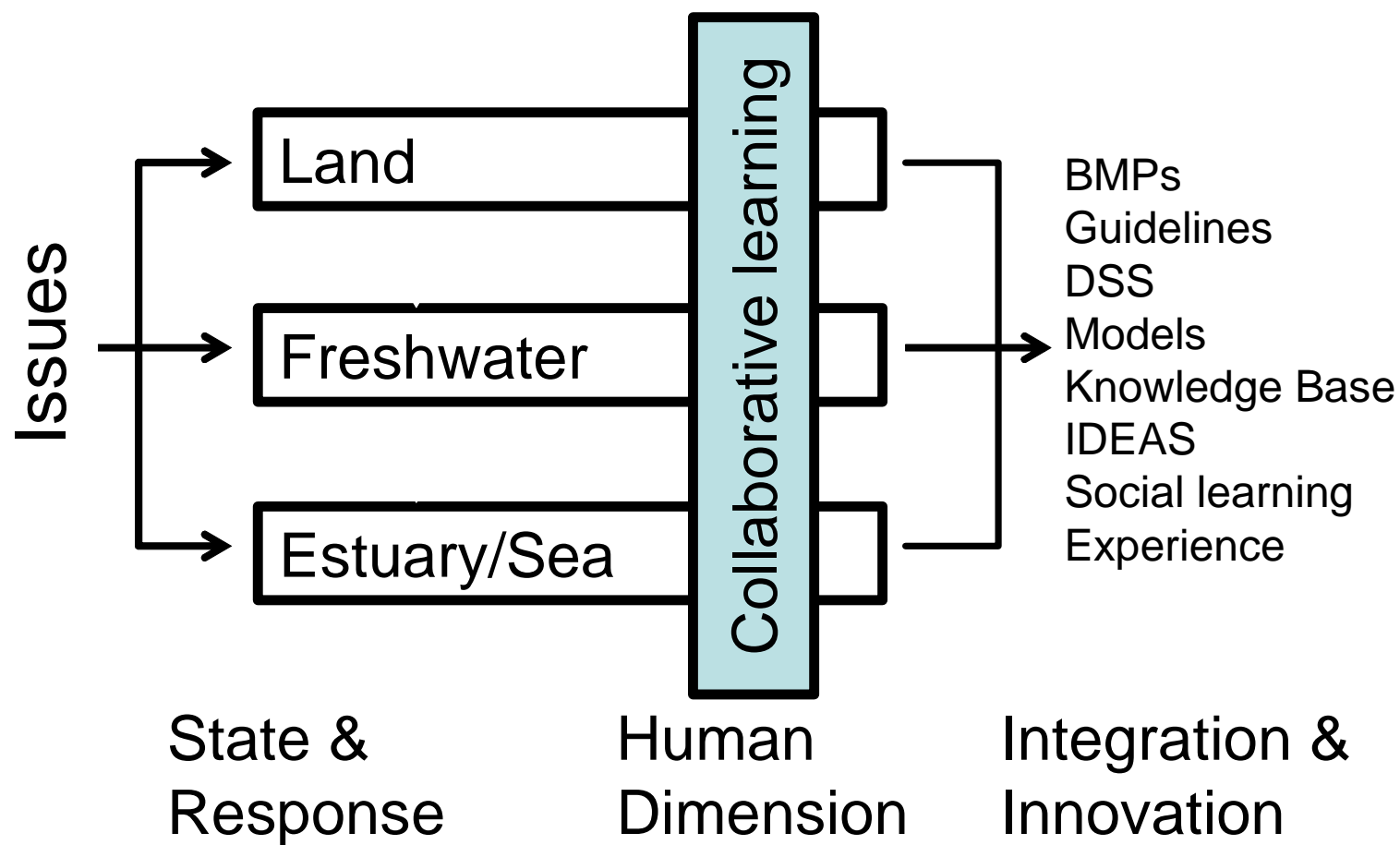
Networks – trust – awareness –
collaboration – wellbeing –
high social capital

Ecosystem Resilience

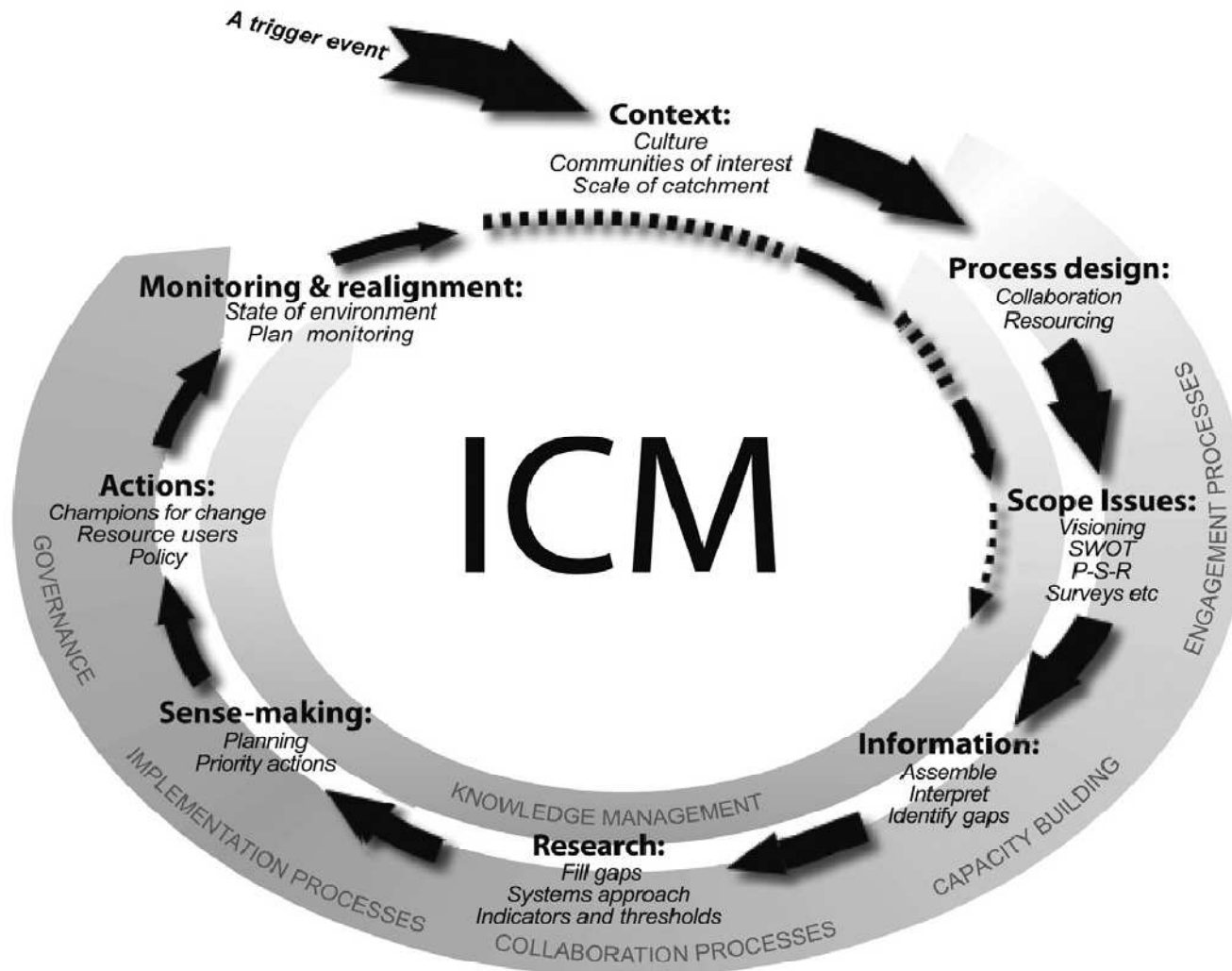
Biophysical sustainability – robustness –
balance of ecosystem services –
SoE targets met



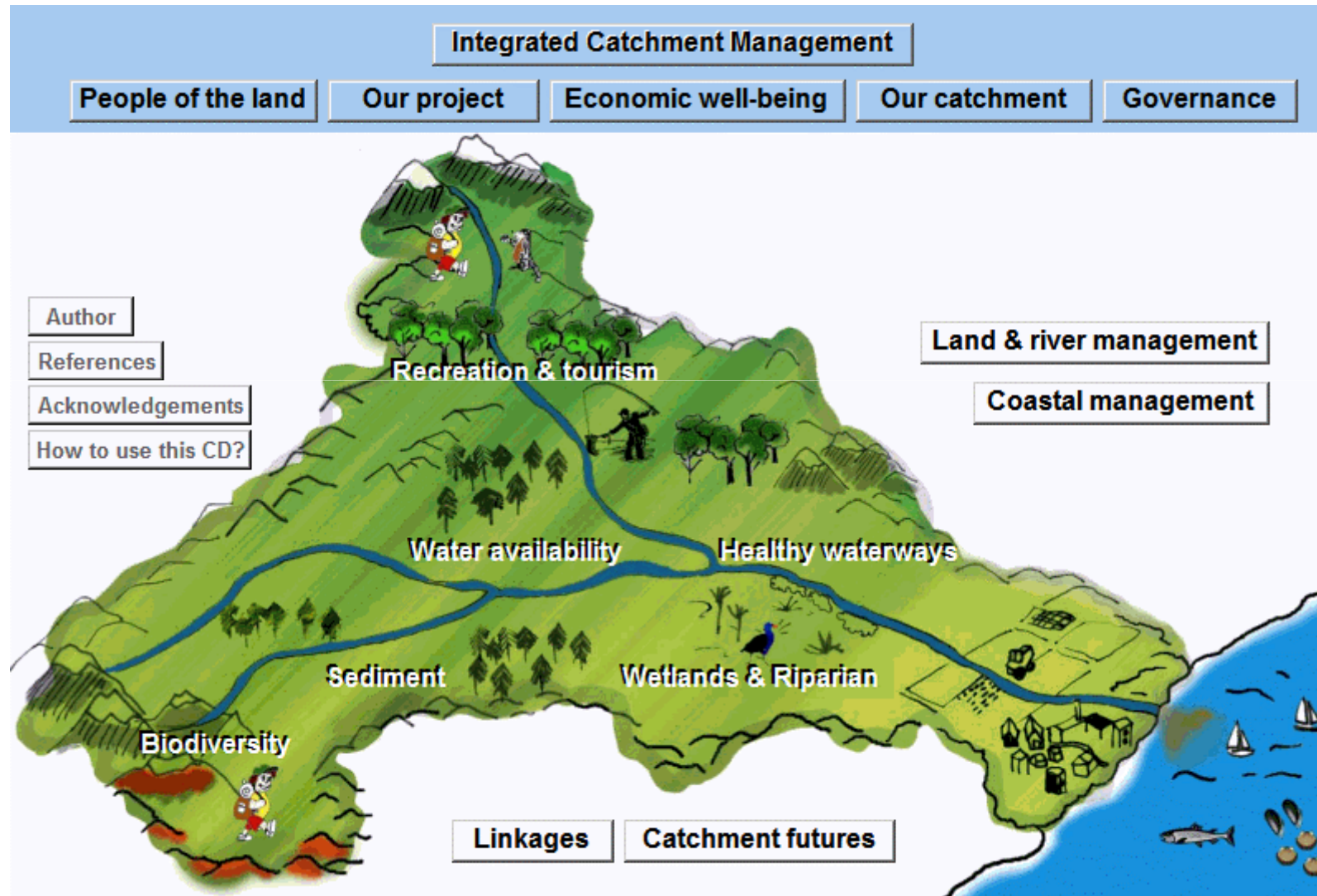
ICM connects **land, water, coast** **and people**



ICM is a process driven by issues



Motueka catchment

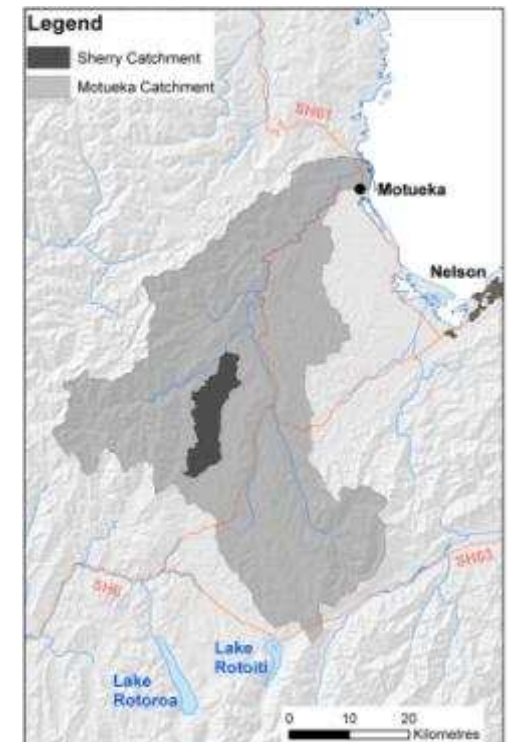


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Integrated Catchment Management

Story #1

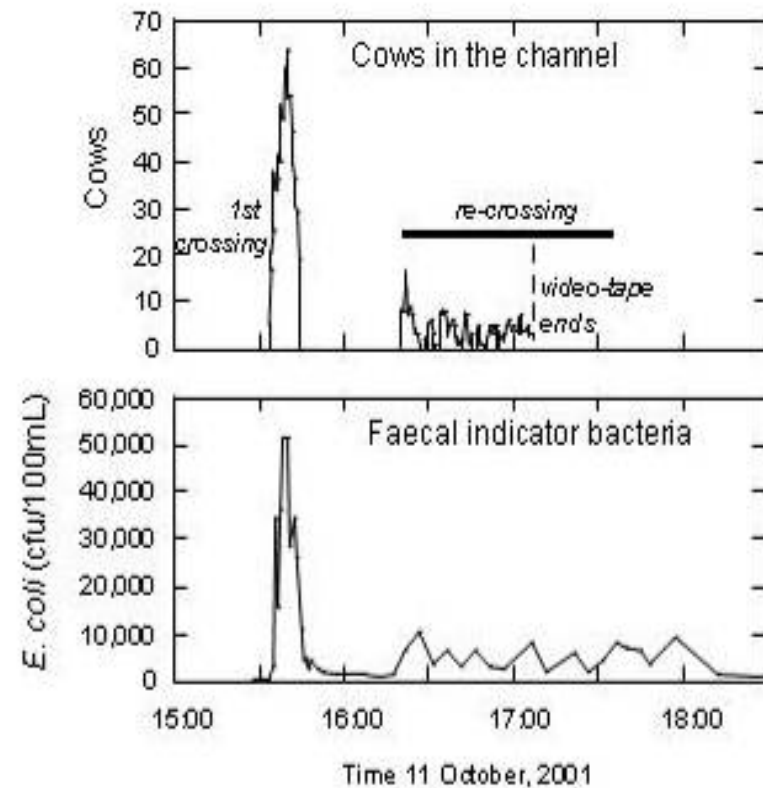
Collaboration & Science
encourage farmers to improve
water quality



Cows crossing streams



- 400% increase in *E. Coli* during cow crossings
- Cows 50x more likely to defecate in water



Bridges replace cow crossings



Bridge over troubled waters

By Simon Towle

Construction of a bridge over the Sherry River has been a long process. It was a long time ago that the Sherry River was a trouble spot for the district council. It was a long time ago that the Sherry River was a trouble spot for the district council. It was a long time ago that the Sherry River was a trouble spot for the district council.

The Sherry River is a long and winding river that flows through the Sherry River district. It is a long and winding river that flows through the Sherry River district. It is a long and winding river that flows through the Sherry River district.

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Farmers and scientists join up to sweeten the Sherry River

While farmers are frequently criticised for the effects of dairying on the environment, positive developments are often ignored. Simon Towle reports on work along the Sherry River in Tasman District, where farmers have joined forces with scientists and the district council.

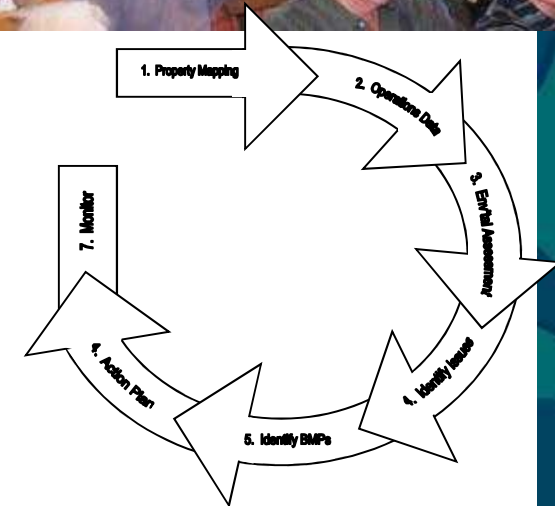
Dairy farmers have traditionally looked down on the Sherry River. It was a long time ago that the Sherry River was a trouble spot for the district council. It was a long time ago that the Sherry River was a trouble spot for the district council. It was a long time ago that the Sherry River was a trouble spot for the district council.

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new information in December 2006, "the Sherry River is a long and winding river that flows through the Sherry River district. It is a long and winding river that flows through the Sherry River district. It is a long and winding river that flows through the Sherry River district."

.. and Landowner Environmental Plans
aim to reduce contamination by 80% ..

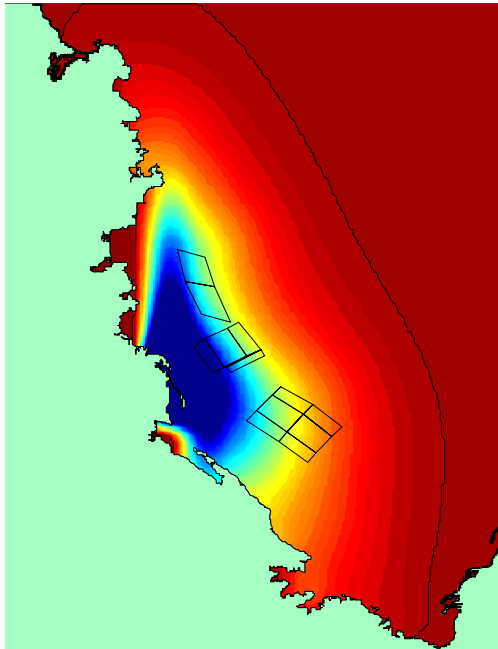


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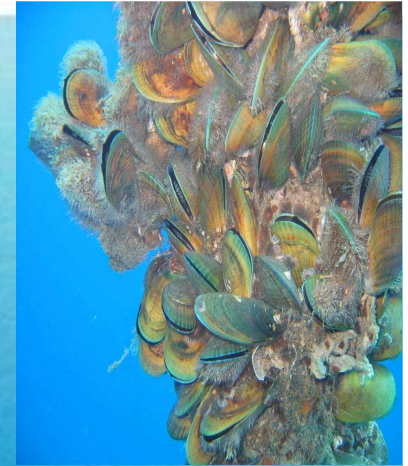
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Story #2

River plume ecosystems –
catchments extend offshore



Potential effects on shellfish resources in Tasman Bay



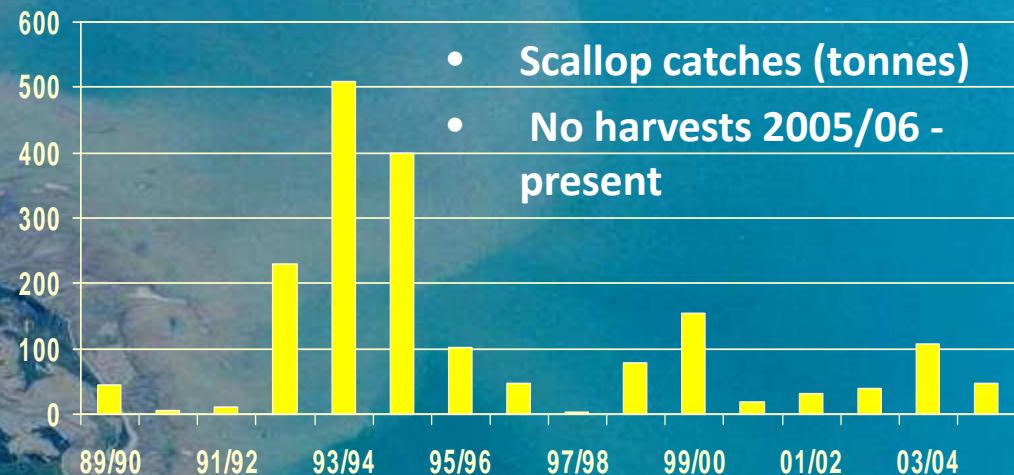
Physical disturbance
due to dredging &
trawling

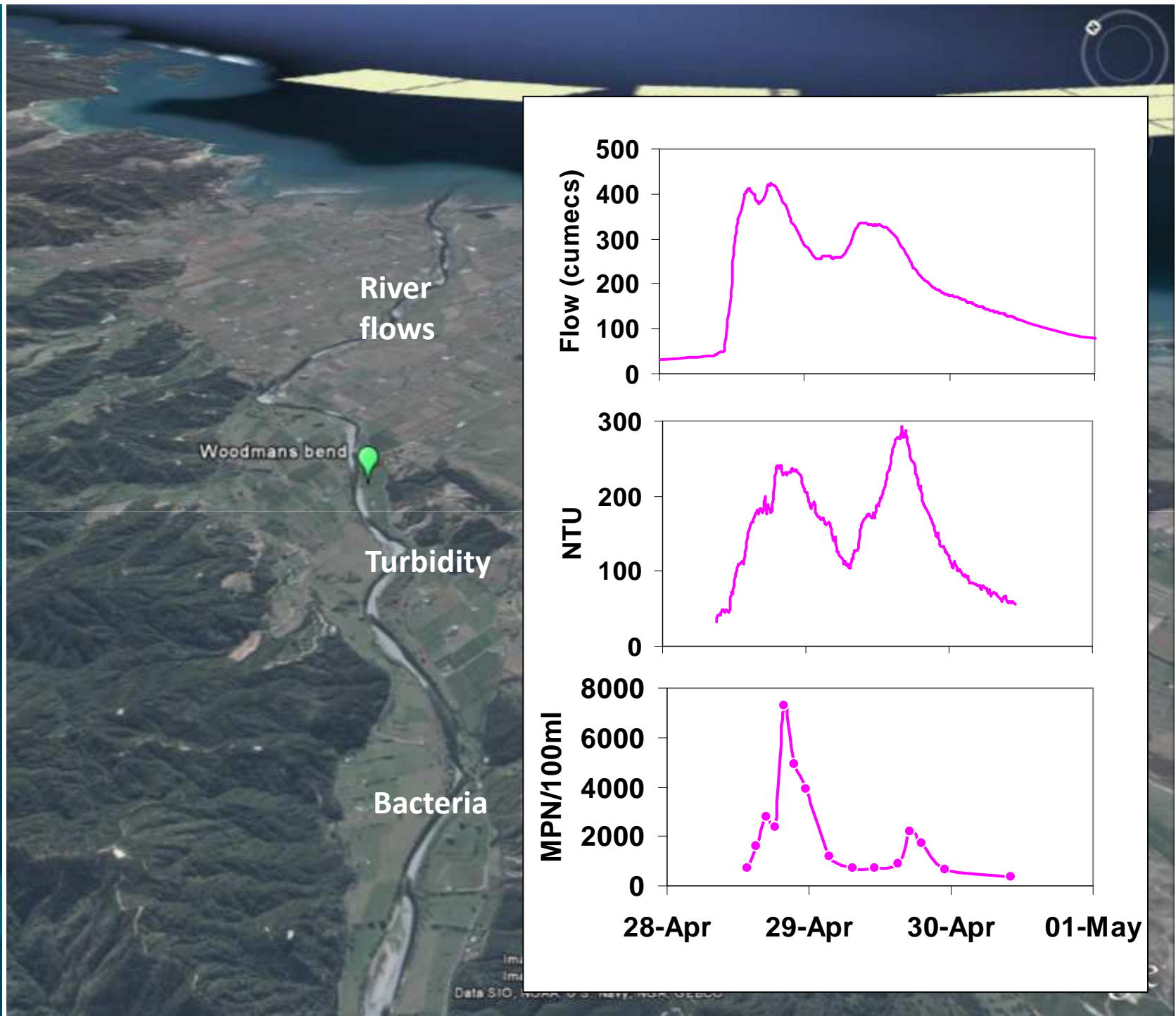
Chronic condition of high near-
bottom turbidity

Deposition/ Resuspension

Interference
of scallop
feeding

Catchment susp. sed. loads

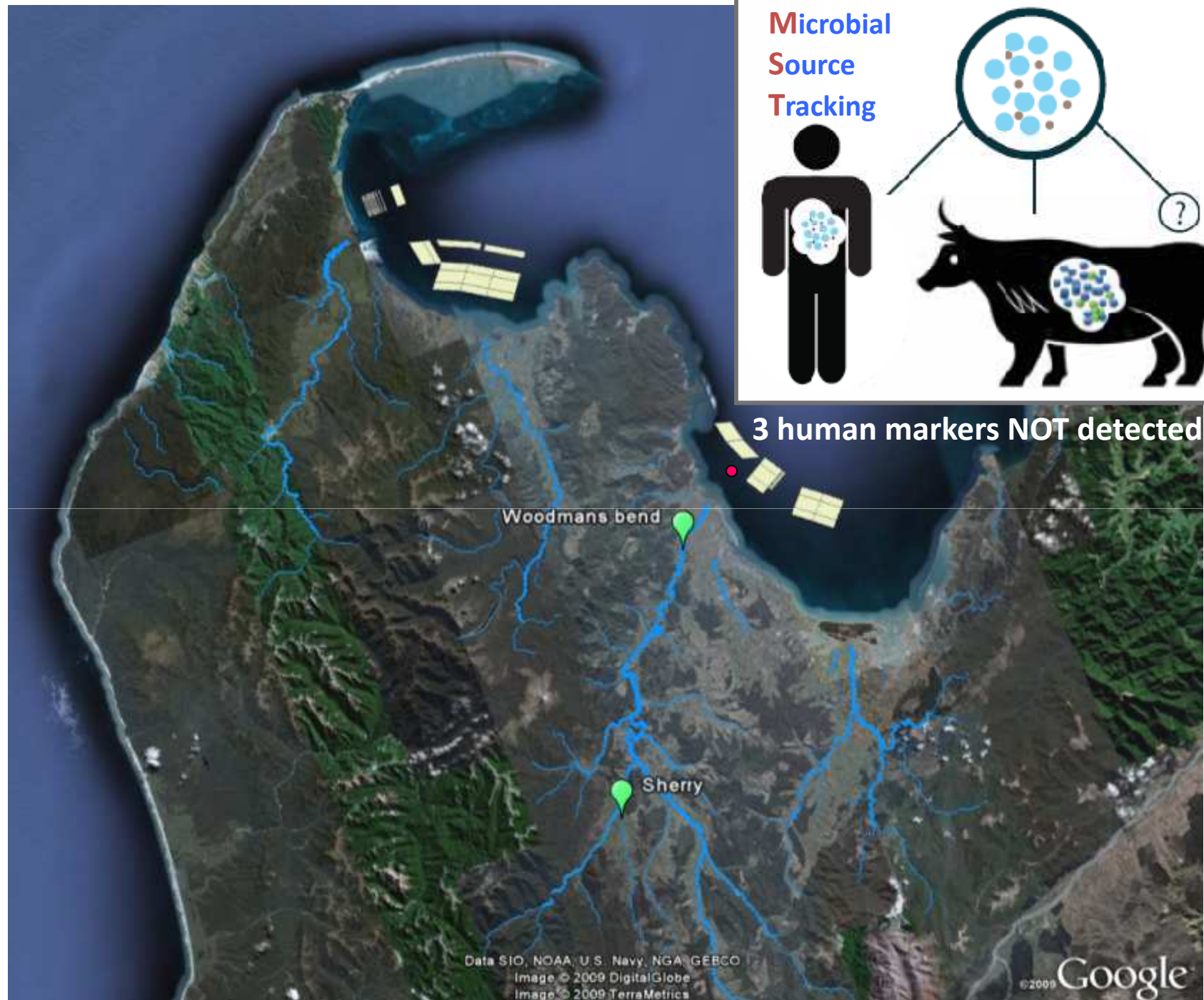




Microbial
Source
Tracking



3 human markers NOT detected



Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2009 DigitalGlobe
Image © 2009 TerraMetrics

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Story #3

Watershed Talk

the cultivation of ideas and action

How can we design dialogue processes which empower people for improved catchment management?

Watershed talk



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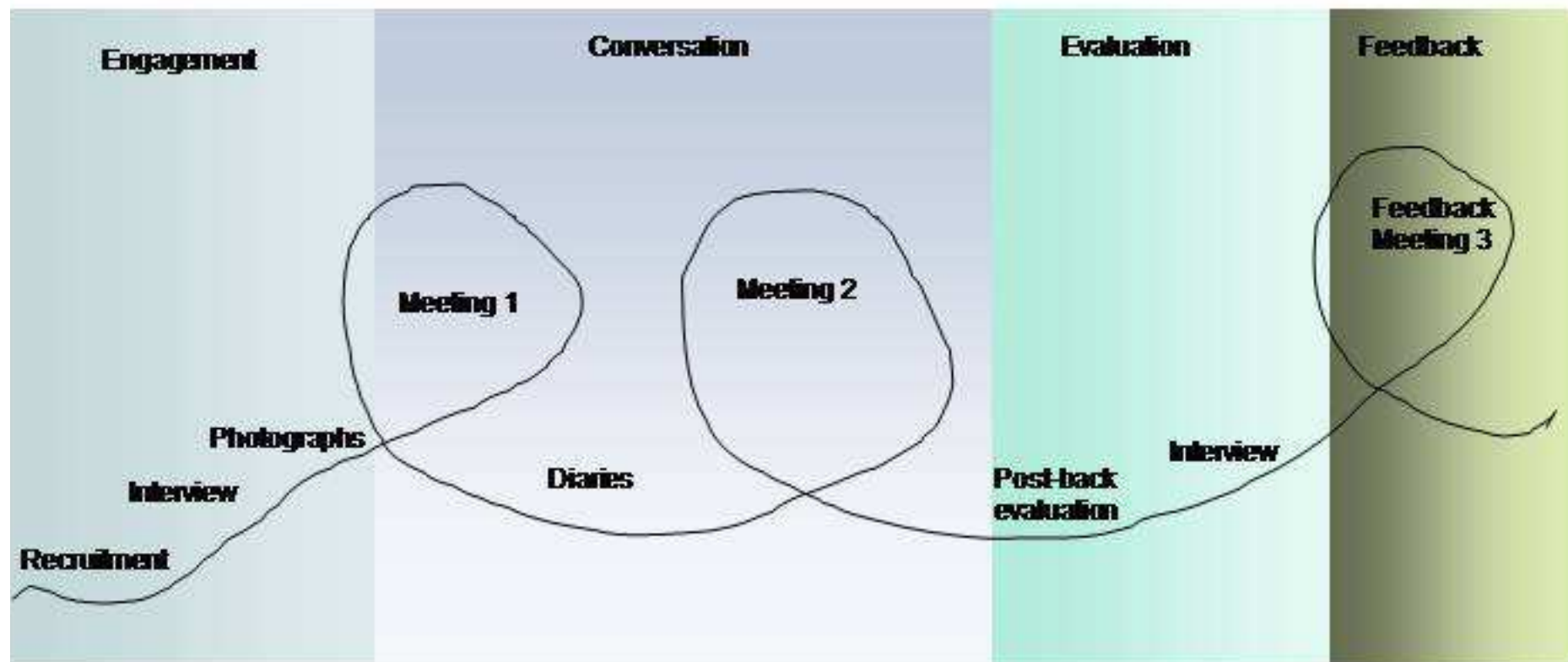


Landcare Research
Manaaki Whenua

Watershed Talk

Phases & Events

Phases and events of Watershed Talk



Watershed Talk

the cultivation of ideas and action





Watershed Talk

...some observations for resource managers

- Use creative process design sensitive to social and cultural context – many design options
- Allow participants to (re)interpret the issue – science and policy are just 2 of many voices
- Emphasis on learning and participation, not just extraction of participants' knowledge
- Contextualise people's actions and their sense of place within the big catchment picture
- Design principles:
 - Respect – Diversity of voices – Empowerment – Generosity – Active cultivation – Reflection & Evaluation

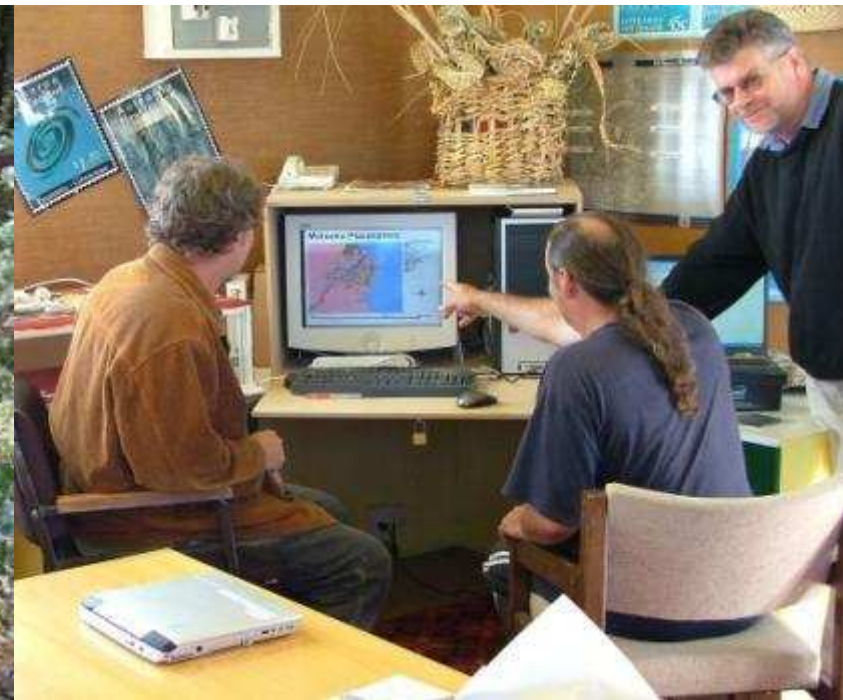
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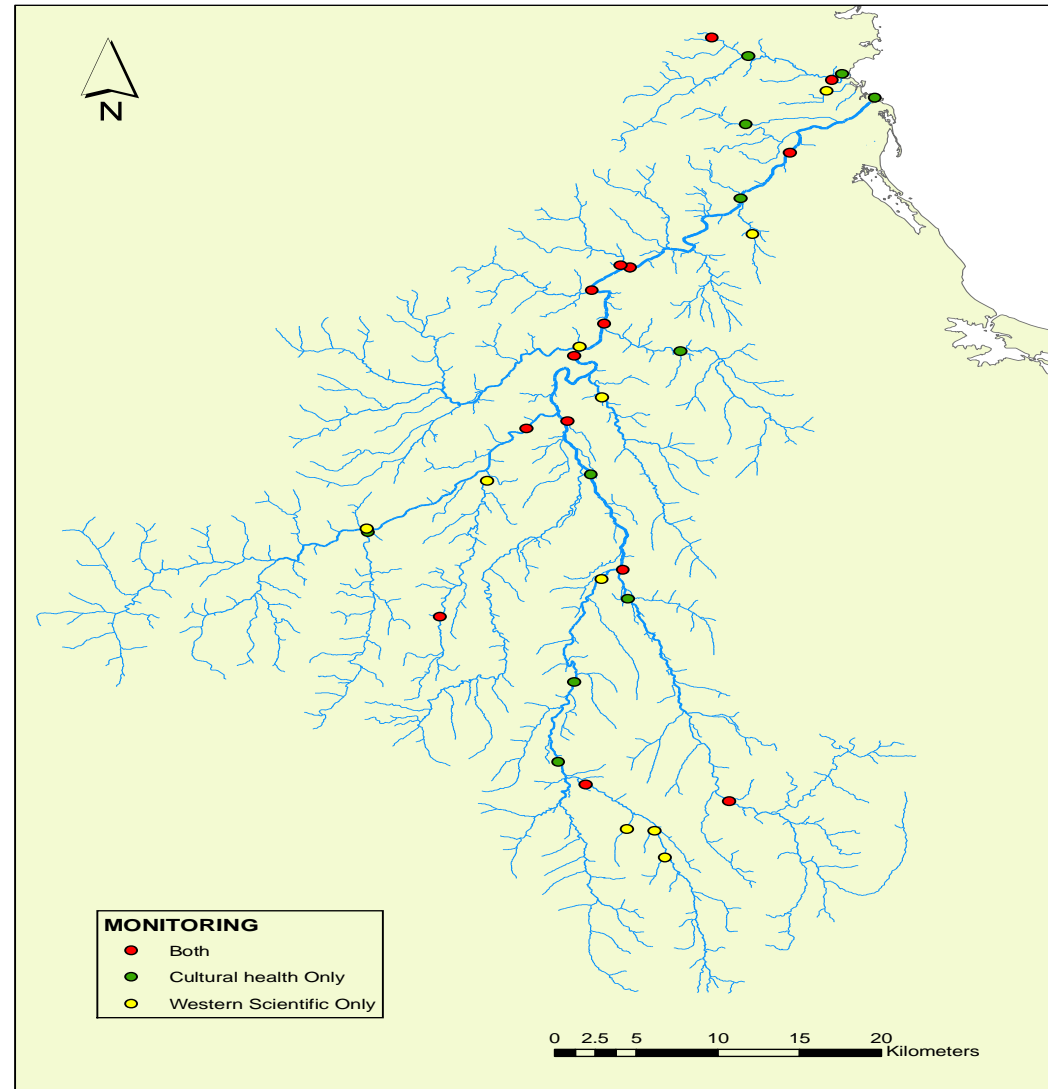
Story #4

Cultural River Health

How can we reconcile Māori and Pākehā values for improved water quality?



Monitoring sites – Motueka and Riwaka catchments



Ngā Atua domains framework

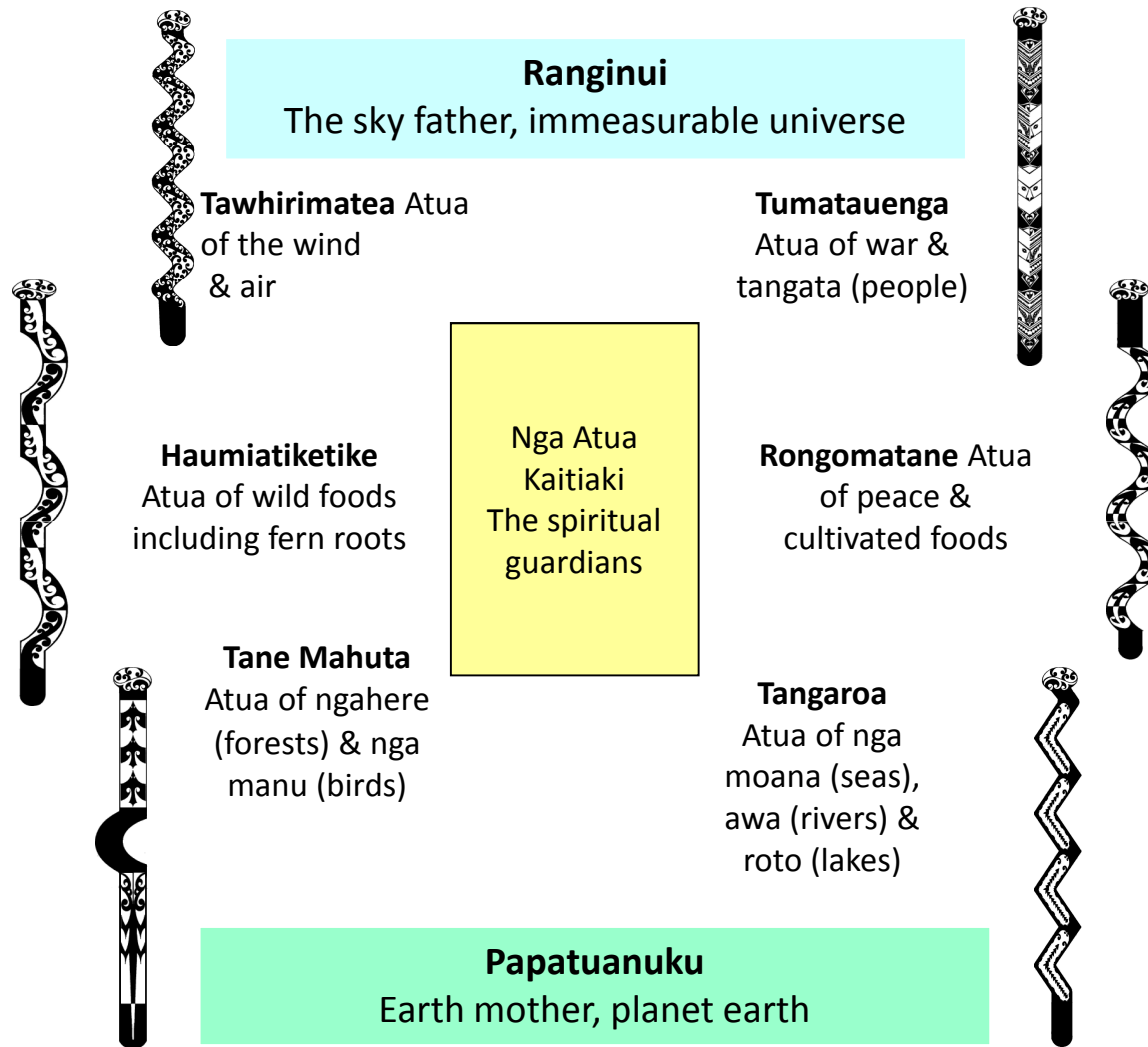


Figure 1: Atua (departmental gods) domain framework
Source: Tiakina te Taiao.

Cultural Health Indicators (examples)

Tangaroa

- Water Clarity
- Water Flow
- Water Quality
- Shape and form of river, riverbank condition, sediment
- Insects
- Fish

Tāne Mahuta

- Riparian vegetation
- Catchment vegetation
- Bird life (species)
- Ngahere/Taonga
- Pests

Haumia tiketike

- Mahinga kai
- Rongoa

Tūmatauenga

- Human activity, Use of river
- Access
- Cultural sites

Tāwhirimātea

- Smell

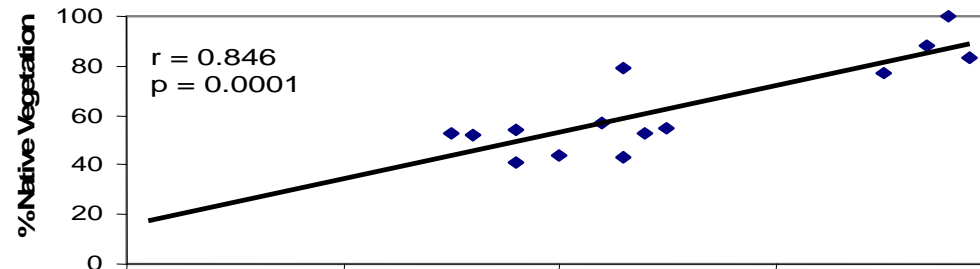
Mauri / Wairua

- Feeling, taste, wellbeing

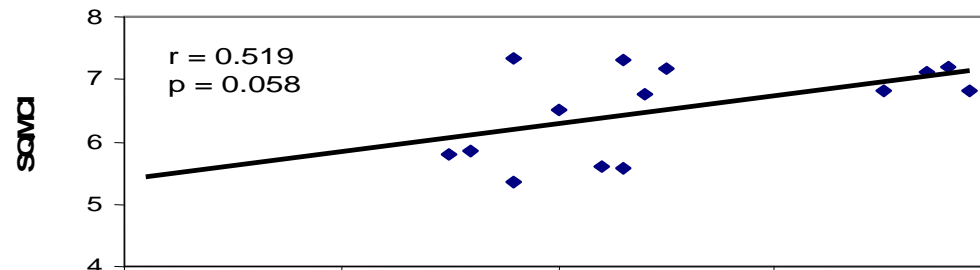


Linking science and cultural indicators

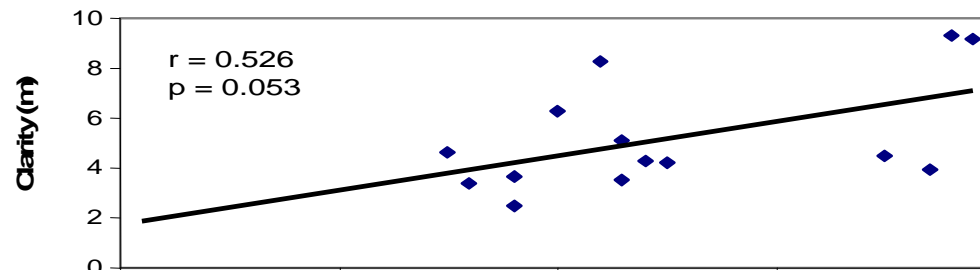
Native vegetation



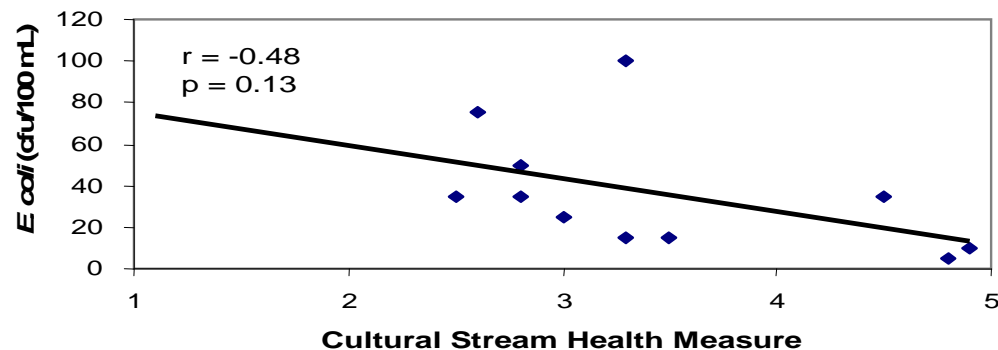
Macro-invertebrates



Water clarity



Bacteria





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