

A sunset over the ocean with large dark rocks in the foreground. The sky is a mix of orange, yellow, and blue, with some clouds. The water is dark blue, and the rocks are dark and rounded. The sun is low on the horizon, creating a bright glow.

# **Introducing the Cultural Health Index**

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# Overview of presentation

- ◆ Background
- ◆ Developing a Cultural Health Index
- ◆ Implications for coastal management

# Participation in management

- ◆ facilitated & structured yet inclusive
- ◆ Maori participate as themselves
- ◆ values knowledge and uses qualitative & subjective assessments
- ◆ is safe with results defensible

# Objective

Design a cultural health index (CHI) to assess stream health from a Maori perspective by combining cultural knowledge and western science

# Selection of indicators

## ORIGINAL 30 INDICATORS

- ◆ Unpleasant odour
- ◆ Birdsong
- ◆ Visible flow
- ◆ Riparian vegetation
- ◆ Sediment on bed
- ◆ Foams and oils
- ◆ Stock presence
- ◆ Fish diversity
- ◆ Fish health
- ◆ Headwater activities
- ◆ etc.
- ◆ etc.
- ◆ etc.



## REDUCED TO 19 TO DEVELOP THE CHI

- ◆ River shape
- ◆ Water clarity
- ◆ Bank condition
- ◆ Flow visible
- ◆ Flow audible
- ◆ Water quality
- ◆ Riparian vegetation
- ◆ Takes and discharges
- ◆ Channel works
- ◆ Riparian margin
- ◆ Land use
- ◆ Smell
- ◆ Bed condition
- ◆ Sediment on bed
- ◆ Land-water continuity
- ◆ Mahika kai - birds
- ◆ Would you fish here
- ◆ Fish safe to eat
- ◆ Water safe to drink

# Study design

- ◆ **River selection - Taieri & Kakaunui**
  - ◆ Significance to runaka
  - ◆ Traditional knowledge
  - ◆ Stream health information
- ◆ **Site selection**
  - ◆ Different stream sizes
  - ◆ Traditional sites
  - ◆ Mix of land uses
  - ◆ Taieri River 30 sites, Kakaunui 16 sites

# Gathering data

- ◆ At least 5 members in team
- ◆ At each site
  - ◆ Rate overall health
  - ◆ Rate each of the 19 indicators
  - ◆ Rate access to site
  - ◆ Rate would you return?
- ◆ 46 sites assessed
  - ◆ List mahinga kai birds & plants
  - ◆ Sample mahinga kai fish

# Other data collected

- ◆ Data using other stream health measures
  - ◆ MCI
  - ◆ SHMAK

# Cultural Health Index

COMPONENTS OF CHI	VALUES
1. Status of site	e.g. pa, kaika, nohoanga
2. Valued uses & species	Cultural use / Mahinga kai
3. Overall health	Mauri

# 1. Site significance component

Iwi answer two questions:

- ◆ Is the site traditional (A) or not (B)
- ◆ Would you return and use the site in future (1) or not (0)

Four combinations

A-1

A-0

B-1

B-0

## 2. Cultural Use / Mahinga Kai component

Four factors rated 1-5 and averaged

1. Number of mahinga kai species
2. Proportion of historical mahinga kai species still present
3. Site accessibility
4. Desirability of returning to use the site

# 3. Overall Health Component

Objective 1: achieve **minimum** number of factors for effective measure

Objective 2: select factors that are highly correlated with **overall health**

## 19 Factors

- ◆ River shape
- ◆ Water clarity
- ◆ Bank condition
- ◆ Flow visible
- ◆ Flow audible
- ◆ Water quality
- ◆ Riparian vegetation
- ◆ Takes and discharges
- ◆ Channel works
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- ◆ Mahika kai - birds
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## The five indicators

1. Catchment land use
2. Use of riparian margin
3. River channel modification
4. Flow
5. Water quality

# McRae's Creek

- ◆ Modification of catchment 5.0
- ◆ Modification of riparian margin 5.0
- ◆ Modification of river channel 4.25
- ◆ Flow visible 5.0
- ◆ Evidence of pollution 5.0

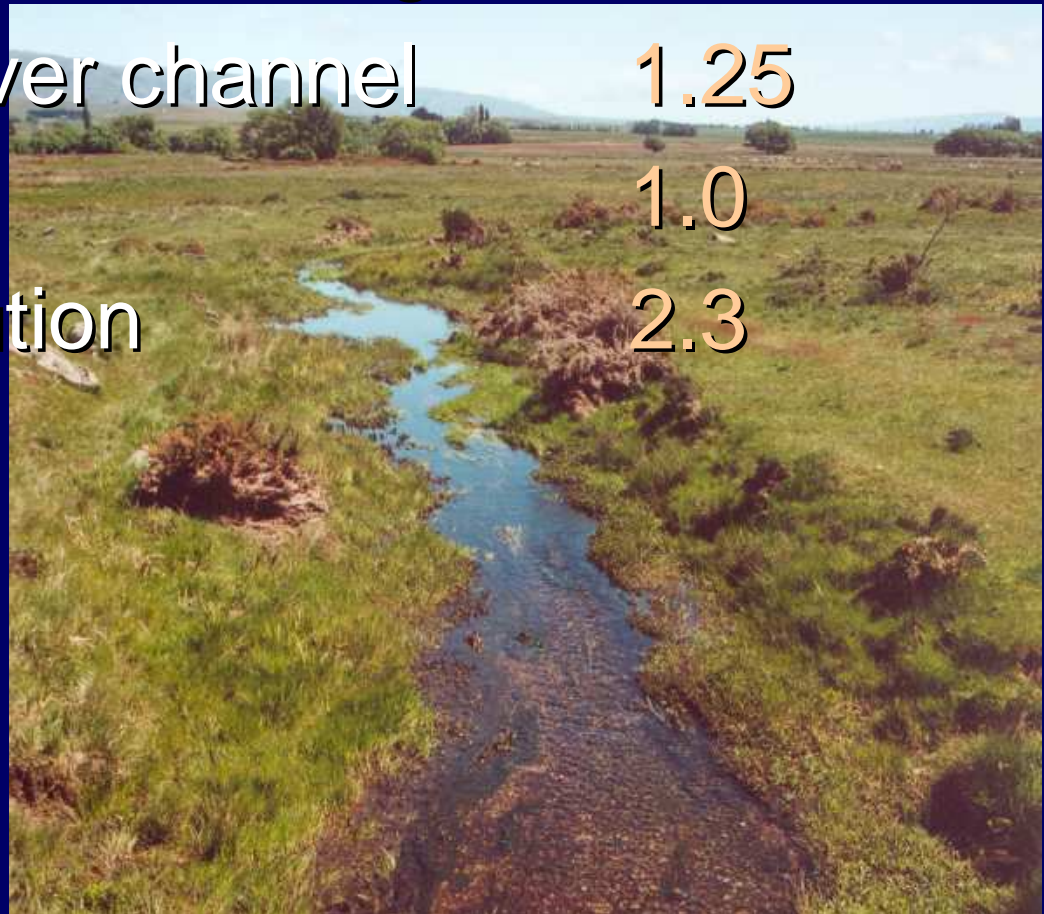
AVERAGE  
4.87



# Hog Burn

- ◆ Modification of catchment 1.0
- ◆ Modification of riparian margin 1.0
- ◆ Modification of river channel 1.25
- ◆ Flow visible 1.0
- ◆ Evidence of pollution 2.3

AVERAGE 1.31



## How does component 3 (the cultural stream health measure) rate?

- ◆ A credible measure of stream health (correlated with MCI)
- ◆ Also correlated with extent of land development in the catchment
- ◆ Valid for tributaries of different sizes (small streams to large rivers)

# Bringing all three components together



**McRae's Creek - B-1/2.9/4.87**



# Hogburn

**A-0 / 1.38 / 1.31**

# Validating the Index for wider use

- ◆ **Different river type/same iwi**

Ashburton River/Arowhenua runanga 31  
stream sites assessed

- ◆ **Different iwi/similar river type**

Kahungunu/Tukituki River 30 stream sites  
assessed

**Total of 107 stream sites assessed**

# What did we find?

## Three Cultural Health Index components

1. Cultural status component confirmed
2. Mahinga kai component widened to “cultural uses” - not solely mahinga kai.
3. Cultural stream health component expanded

# Three new indicators added to Cultural stream health component

1. Catchment land use
2. Riparian (river margin) vegetation
3. Use of the riparian margin
4. Riverbed condition/sediment
5. River channel modification
6. Flow and habitat variety
7. Water clarity
8. Water quality

# Implications for the coastal environment

- ◆ We already use the CHI to assess sites
  - ◆ in tidal reaches of rivers
  - ◆ at river mouths
- ◆ Only some indicators are specific to rivers and streams
- ◆ The research design can be replicated for other areas – harbours, coasts, lands

# Getting started

- ◆ Who is this to empower?
- ◆ How are you going to use your data?
- ◆ Risk management?
- ◆ Who can help you? What partners
- ◆ Management of data collected

# Putting the CHI into practice - implementing the index

- ◆ Guidelines available on how to use
- ◆ Training sessions on how to apply
- ◆ Tangata whenua creating teams.
- ◆ Using results to diagnose issues
- ◆ Developing indices for other areas

+ MANAGING THE POLITICS