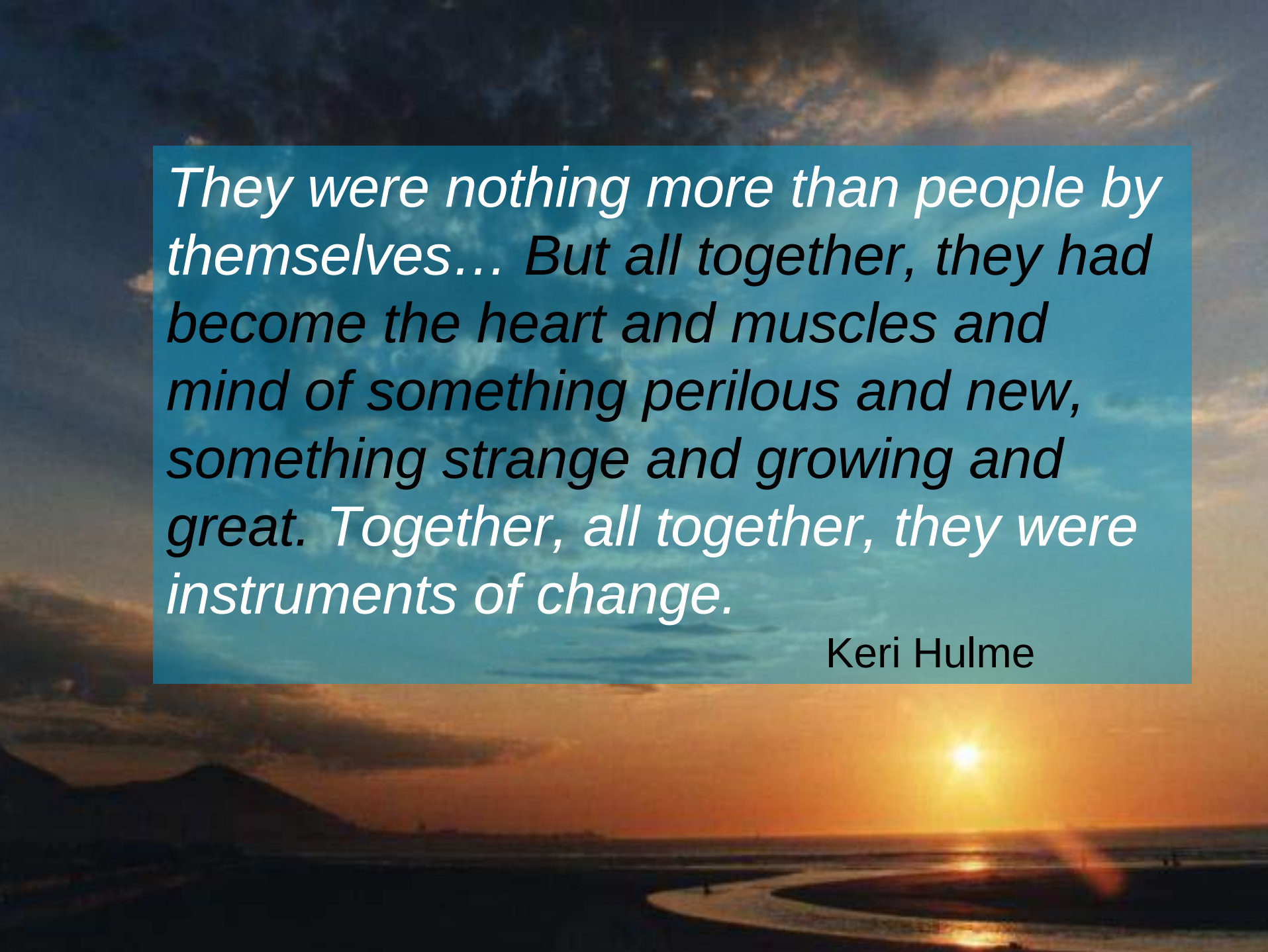
Landcare Research
Manaaki Whenua

ICM meets landscape ecology

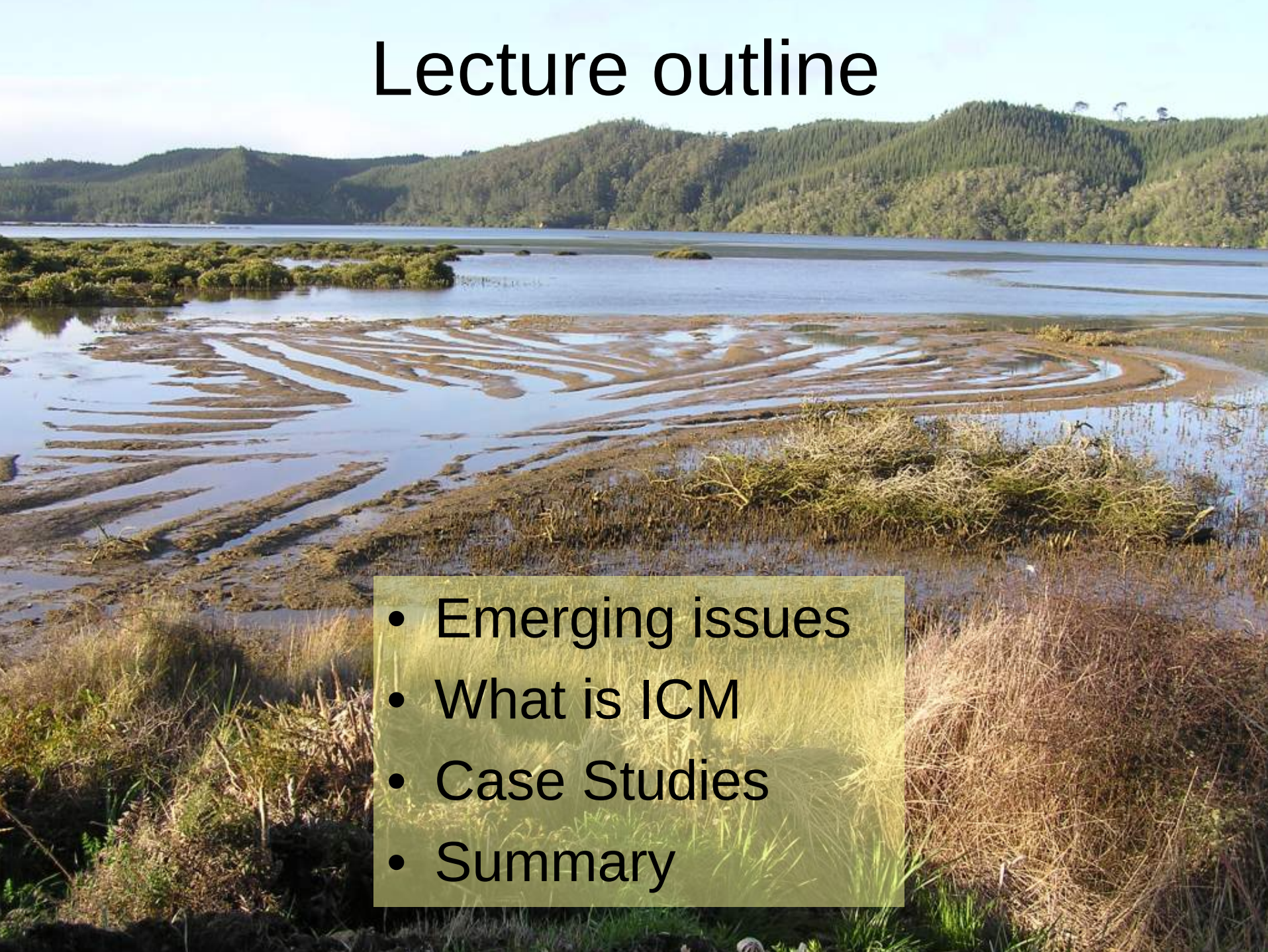
Where do the people fit?

Chris Phillips

And bits borrowed from many people including Kevin Connery, Breck Bowden, Andrew Fenemor, Hans Schreier, Christine Heremaia


They were nothing more than people by themselves… But all together, they had become the heart and muscles and mind of something perilous and new, something strange and growing and great. Together, all together, they were instruments of change.
Keri Hulme

Lecture outline



- Emerging issues
- What is ICM
- Case Studies
- Summary

Learning points - reminder

- Big picture
- Wide eyes
- Everything is connected to everything else
- No such thing as a free lunch
- Many names for the same thing
- People make the difference

people, passion, purpose

"The ability to act on knowledge is power.

Most people in most organizations do not have the ability to act on the knowledge they possess".

Michael Schrage

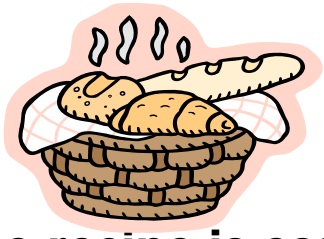
Emerging issues

“The great challenge for the next several decades will be to advance understanding of social systems in the same way that the past century has advanced understanding of the physical world”.

Jay Forrester

Simple

Following a Recipe



The recipe is essential

Recipes are tested to assure replicability of later efforts

No particular expertise; knowing how to cook increases success

Recipe notes the quantity and nature of "parts" needed

Recipes produce standard products

Certainty of same results every time

Complicated

A Rocket to the Moon

- **Formulae are critical and necessary**
- **Sending one rocket increases assurance that next will be ok**
- **High level of expertise in many specialized fields + coordination**
- **Separate into parts and then coordinate**
- **Rockets similar in critical ways**
- **High degree of certainty of outcome**

Complex

Raising a Child

- **Formulae have only a limited application**
- **Raising one child gives no assurance of success with the next**
- **Expertise can help but is not sufficient; relationships are key**
- **Can't separate parts from the whole**
- **Every child is unique**
- **Uncertainty of outcome remains**

Zimmerman (2005)


“One good conversation can shift the direction of change forever”
- Linda Lambert
(Author & founder of Center for Educational Leadership at California State University)

Emerging trends in natural resource management

The social face of catchment management

Learning communities and organisations

Knowledge management

Integrated and inter-disciplinary approaches

ICM - definition

Integrated Catchment Management (ICM) is a **process**

through which **people** can develop a **vision**, agree on **shared values** and behaviours, make **informed decisions** and

act together to manage the natural resources of their catchment.

Case studies

- Motueka River - rural
- Styx River – urban
- Kaipara Harbour

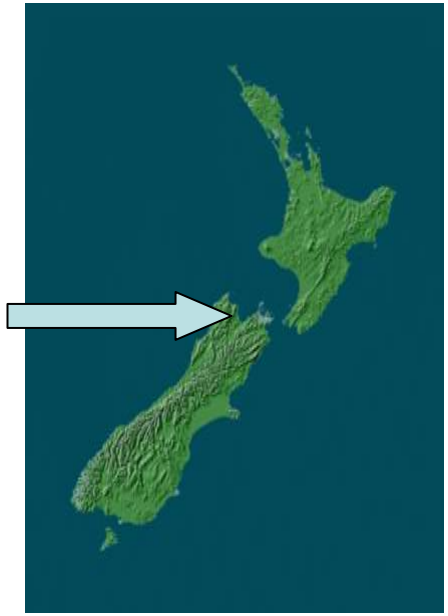
INTEGRATED CATCHMENT MANAGEMENT

for the Motueka River

•ridge tops to the sea•

http://icm.landcareresearch.co.nz/

Where is the Motueka?



Ridge tops to the sea

Motueka Catchment Issues

- Competition for scare resources
- Influence of forestry on water & sediment
- Use of riparian zones for multiple purposes
- Concern about microbial and nitrogen levels
- Effects of gravel harvesting
- Aquatic biota decline
- Marine intensification
- Cumulative effects
- Urban-rural divide
- Institutions
- ……..

Much the same types of resource management issues you can find in any catchment anywhere in the world!

ICM Motueka Research Programme

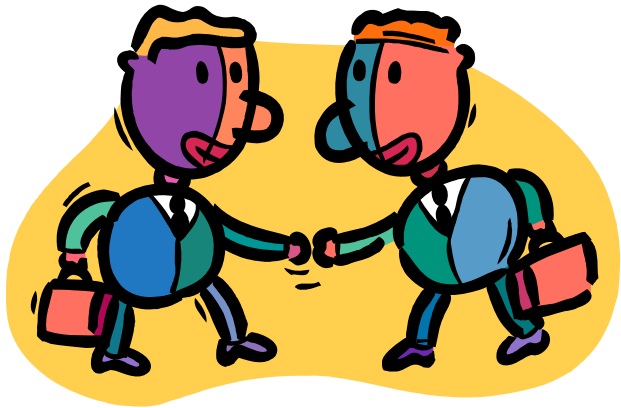
http://icm.landcareresearch.co.nz

Goal: undertake research to help improve the management of land, freshwater, and near-coastal environments in catchments with multiple, interacting, and potentially conflicting land and water uses.

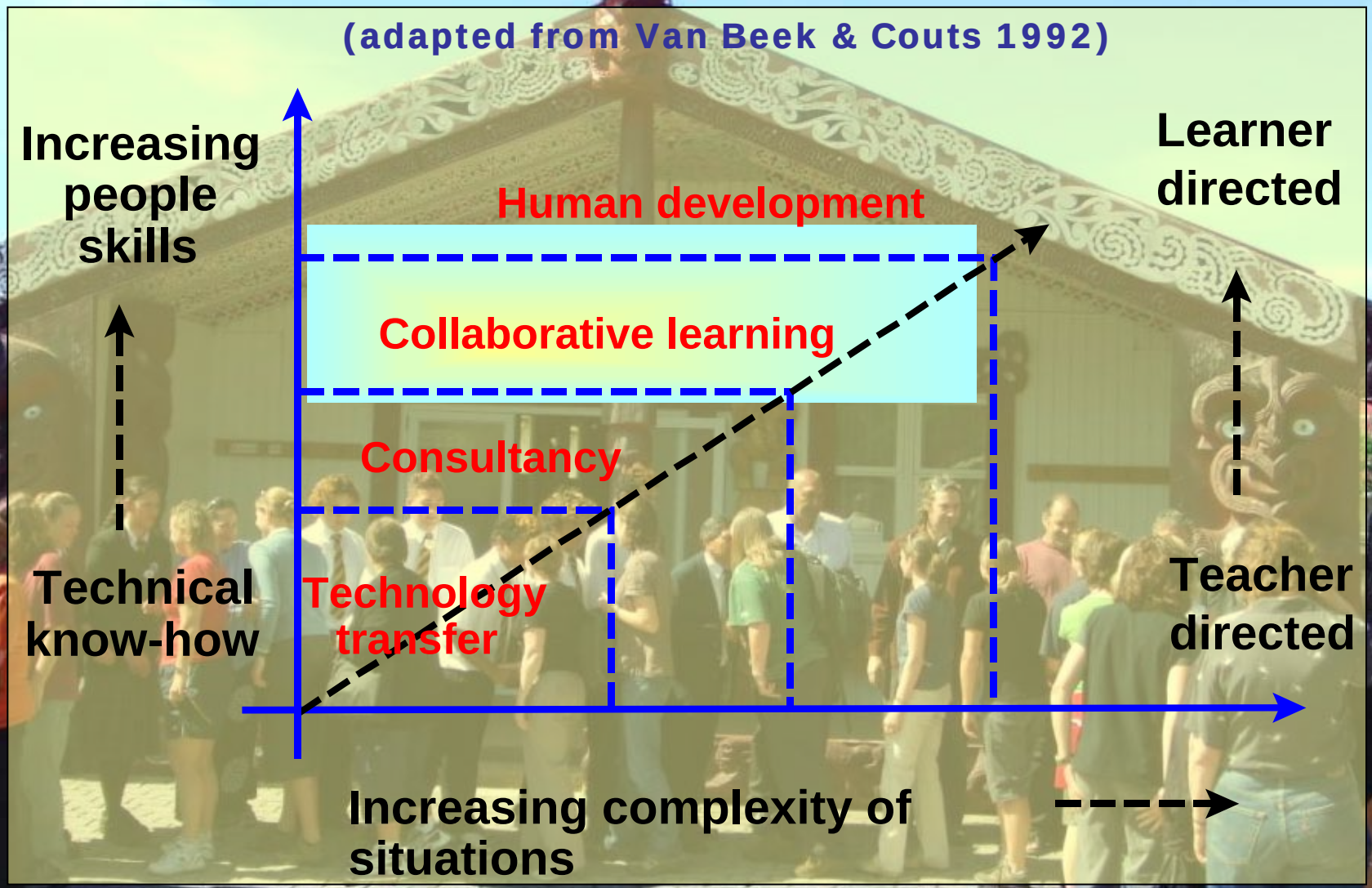
Collaborative or social learning

“Learning that occurs only when people engage one another, sharing diverse perspectives and experiences to develop a common framework of understanding and basis for joint action”.

Exploring social learning in the development of collaborative natural resource management. (Thesis, 2001. Tania Marie Schusler)



Different approaches to developing and sharing information for decision making



Story – Sherry River

SPANNED: Frank and Lisa White on their new $50,000 stock bridge across the Sherry River.

Bridge over troubled waters

By Helen Murdoch

Tomorrow's opening of a $50,000 stock bridge across the Sherry River marks the start of a continued project between farmers and the Tasman District Council to improve the river's health.

Dairy farmers Frank and Lisa White commissioned the concrete span bridge from Tiles Construction to provide permanent access to 30ha of their 271ha farm.

Mr White said their 200-cow herd would no longer have to tackle the slippery stony-bottomed ford twice a day and the river would not cut off access to valuable grazing when it was in flood.

"Building the bridge has always been part of the farm plan," Mr White said.

The couple have owned the farm for about a year.

Mr White said the cows used to slip, fall and bump each other when they went across the ford.

Rising river levels had also led to stock being marooned in the paddocks away from the milking shed.

Mrs White said the Tasman District Council had helped with the project and waived resource consent and building consent fees.

The river was the subject of the first known national scientific study on the effect of cows crossing a waterway to and from milking.

The study, which included the use of video cameras, graphically illustrated the natural tendency of stock to defecate in water (30 times more likely than elsewhere), and the resulting high bacteria levels.

Genetic policy adviser Martin Workman said the White's bridge was an example of farmers taking positive action to protect the environment.

Water quality monitoring of the river since 2000 had identified high bacterial counts at certain times.

Fish and Game had previously raised concerns about the health of the river before the monitoring, which was part of the Motueka integrated catchment project.

This involved the council, Landcare Research and other scientific groups in a study of the impact of land uses on the catchment's coastal marine area.

The initial findings were presented to eight major landowners in the Sherry area, who expressed concern about the rising bacteria levels but asked for more monitoring done.

It was carried out at four sites and showed the bacteria levels increased down the river, particularly below the four dairy farms.

"But it was recognised that any stock has an impact."

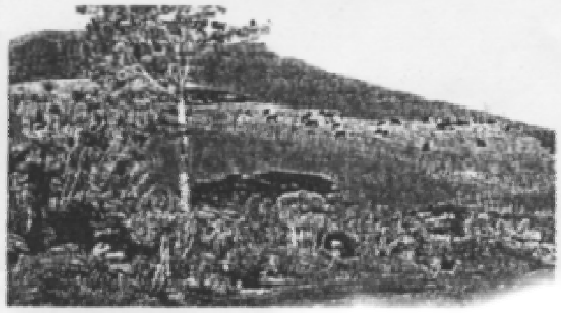
The study showed that a herd of 260 cows crossing the river raised the concentration of e.coli – an indicator of bacteria levels – more than 30,000 per 100ml of water, well above national swimming guidelines.

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 locked horns both with local councils and Fish and Game New Zealand for contaminating the country's natural waterways. However, compelling science has now persuaded farmers in Tasman District to invest considerable effort and money to clean up the Sherry River in a case that could prove a model example for the rest of the country.

Even long-time dirty-dairying campaigner Bryce Johnson, director of Fish and Game, enthusiastically describes the project as "a good news st... and the envi-

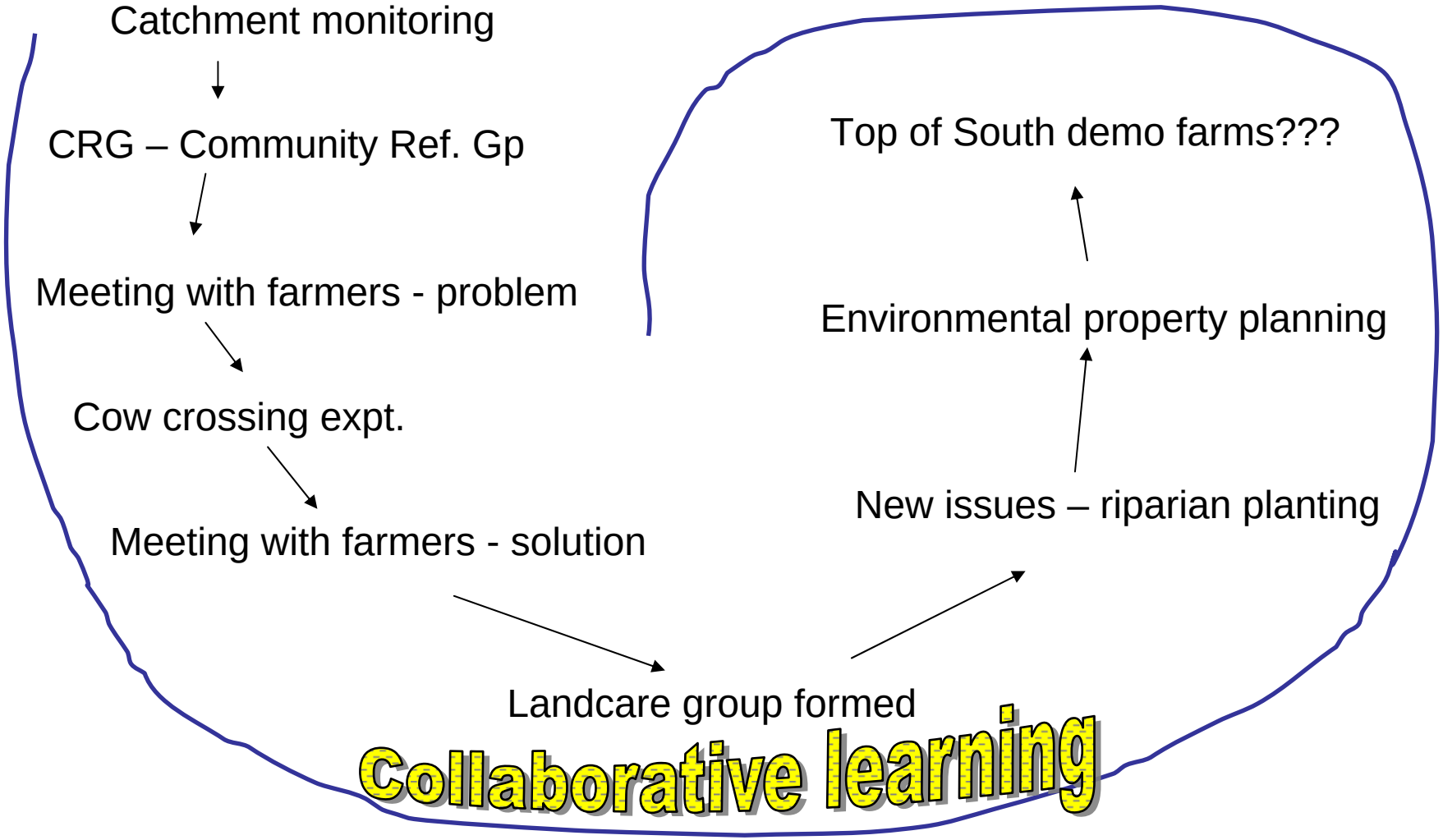


new information in December 2001, "th... Sherry farmers undertook to take action. In... a short period of time, the crossing on Fran... and Lisa White's property where the expe... iment was carried out has now been brid... In addition, another farmer, Rod O'... is using a bridge instead of taking... through the river."

He says two other bridges ar... ning stages and substantial f... ing to keep stock out...

Tasman District... cial assistance f...

How did it happen?



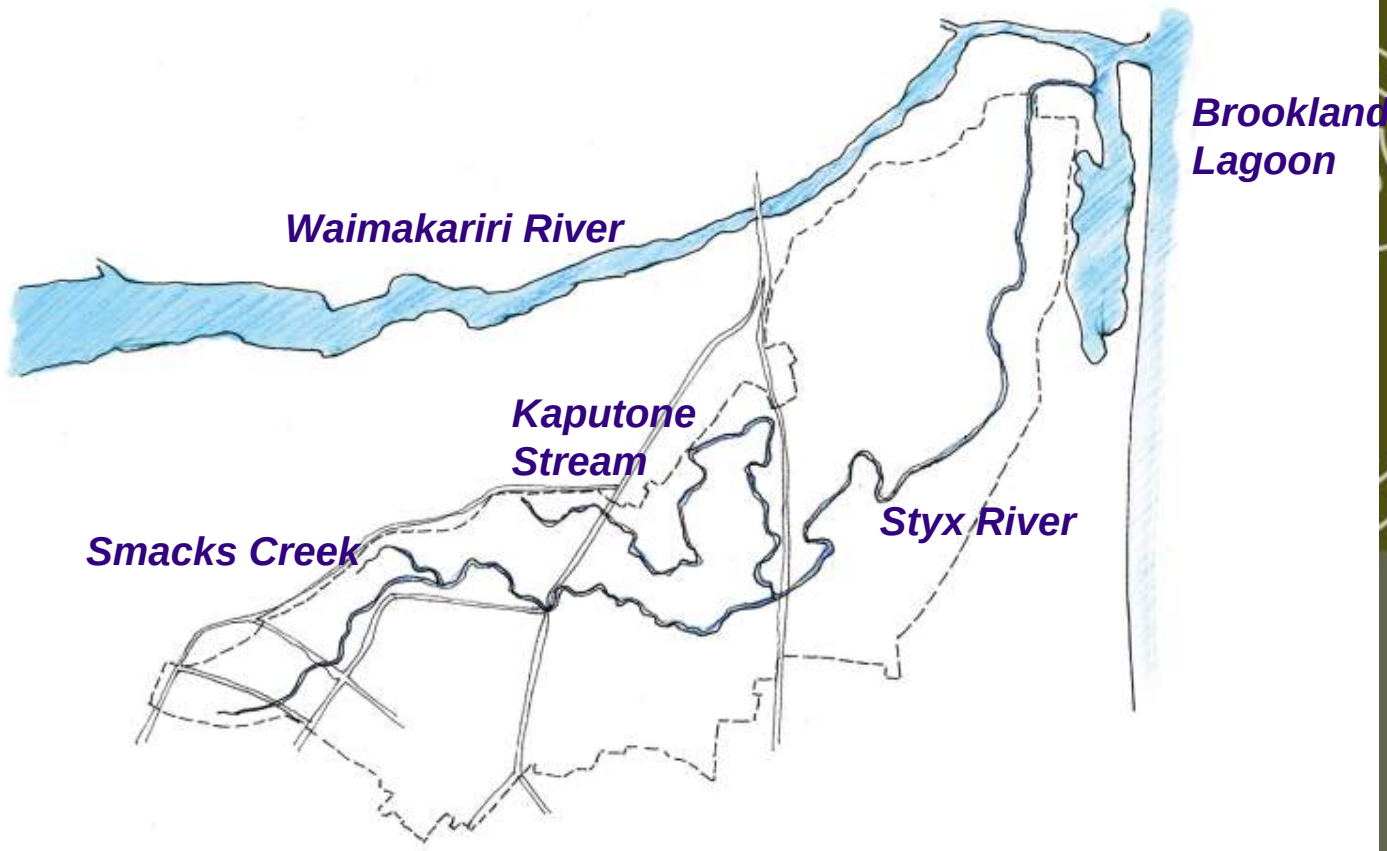
Sherry River Catchment Group

‘Improving Water Quality through on farm actions’

Styx

http://www.thestyx.co.nz/

Styx River



River Length ***Styx River 23.8 km, Kaputone Stream 10.8 km, Smacks Creek 2.1 km plus a number of smaller natural and artificial waterways***

Catchment Area ***Approximately 50 square km***

Drainage links to the following wetlands:

Bottle Lake, Marshlands, Cranford Street Basin, Cavendish Road wetland, Belfast wetlands

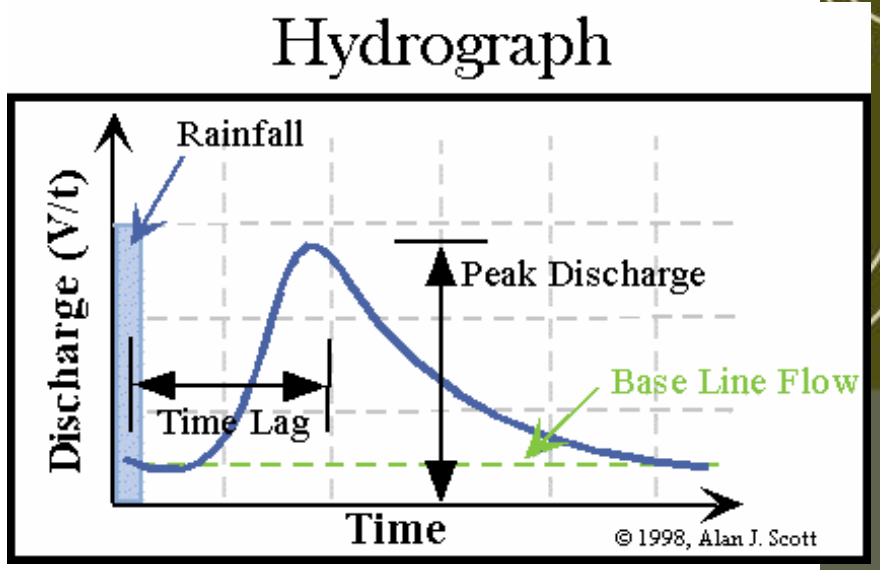

Major Driver - Land Use Change
Increasing pressure for residential development as the city expands.
Northwood

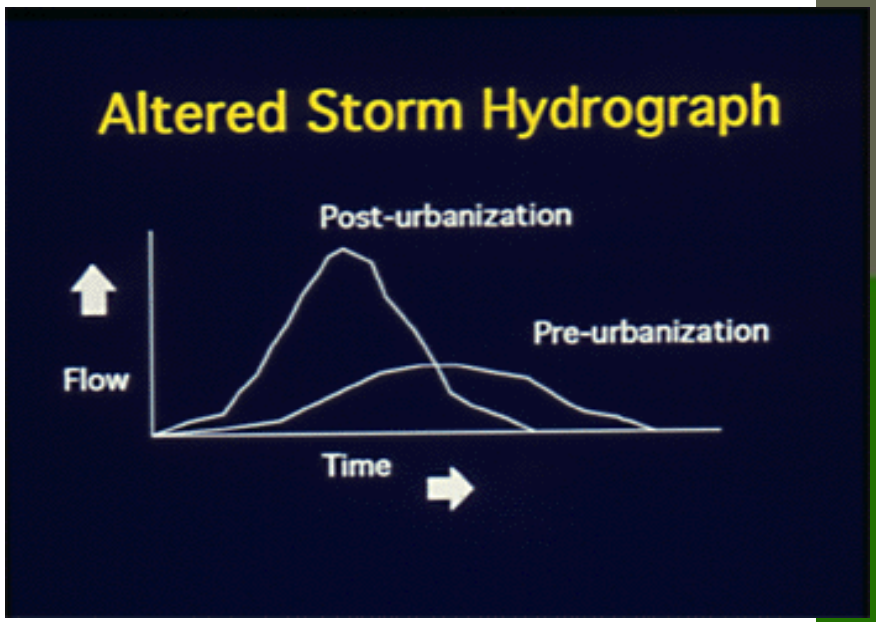
Environmental Impacts of Urbanisation

- Water Quantity
- Stream Channel Morphology
- Water Quality
- Aquatic & Riparian Habitat
- Socioeconomic effects

Water Quantity

- Impervious cover
- Hydrograph
- Time of Concentration
- Base flow
- Increased Flashiness
- Stream Profile Changes
- Bed Scouring & Erosion





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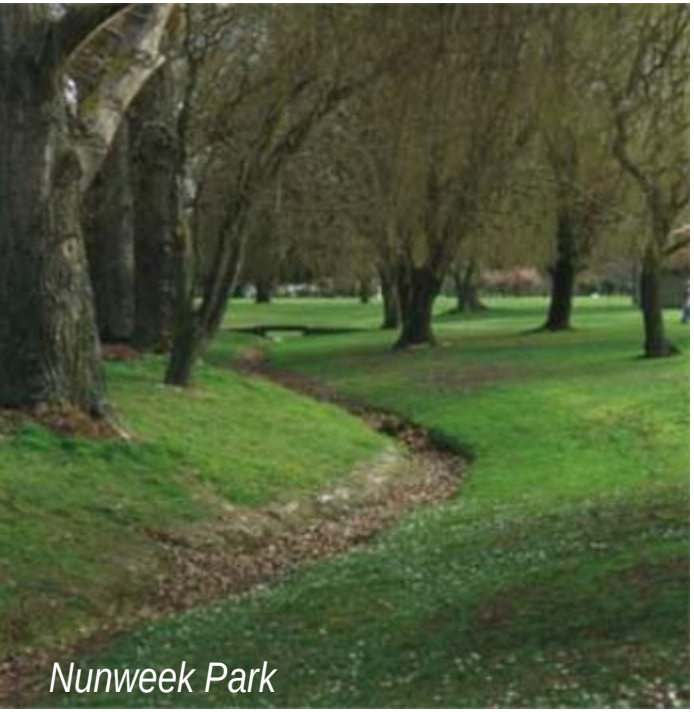
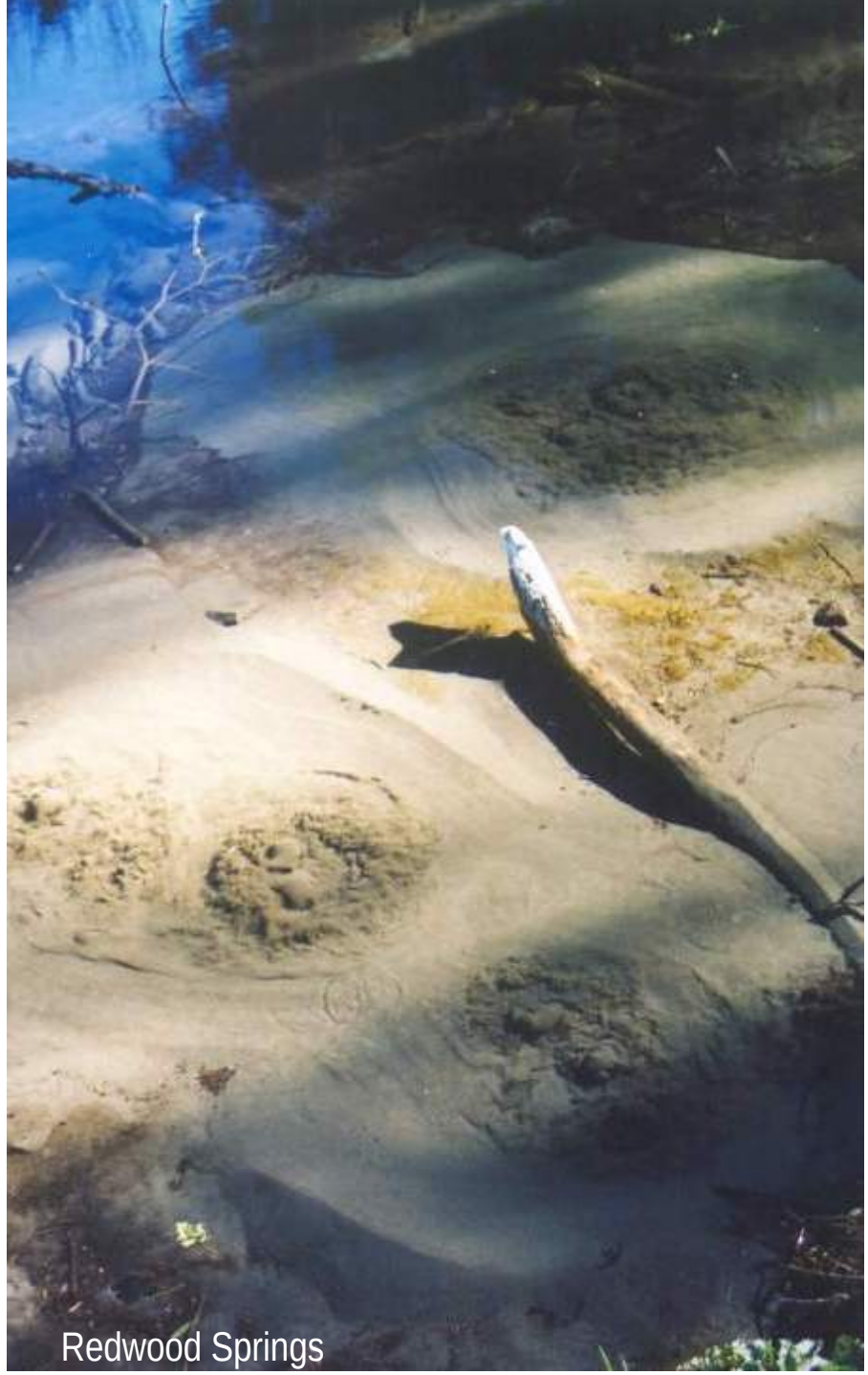
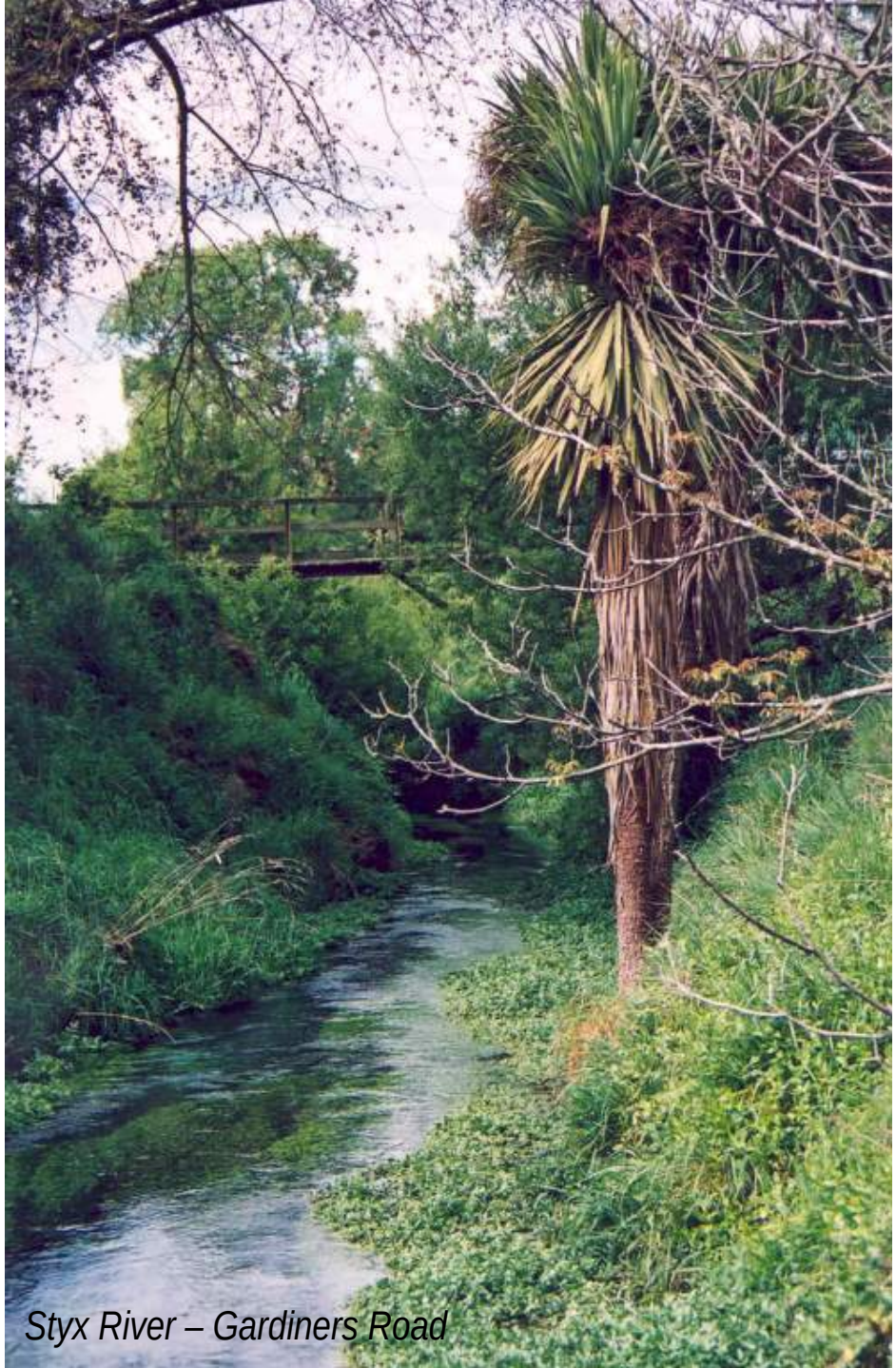


Nunweek Park



Redwood Springs



Styx River – Gardiners Road

Styx gorge

Styx Mill Basin

Janet Stewart Reserve

middle reaches

the mouth

Brooklands Lagoon

The Process - involving the community & orgs

Styx River Happening – March 1999

- started during 1999
- extensive consultation and participation
- Involved wide range of people and orgs
- on-going evolving process

Styx Vision 2000 - 2040

1. Viable Springfed River Ecosystem
2. Source to Sea Experience
3. Living Laboratory
4. The Styx as a Place to Be- cultural development
5. Partnerships

Key Concepts

- Values
- Long term costs and benefits
- Visions
- Partnerships
- Holistic integrated management
- Recognising the impact of past adverse affects remedying them in a way that provides multiple benefit

Community-based Water Quality Monitoring - Smacks Creek

A Partnership Approach

- Guardians of the Styx
- Waterwatch
- Living Laboratory Trust

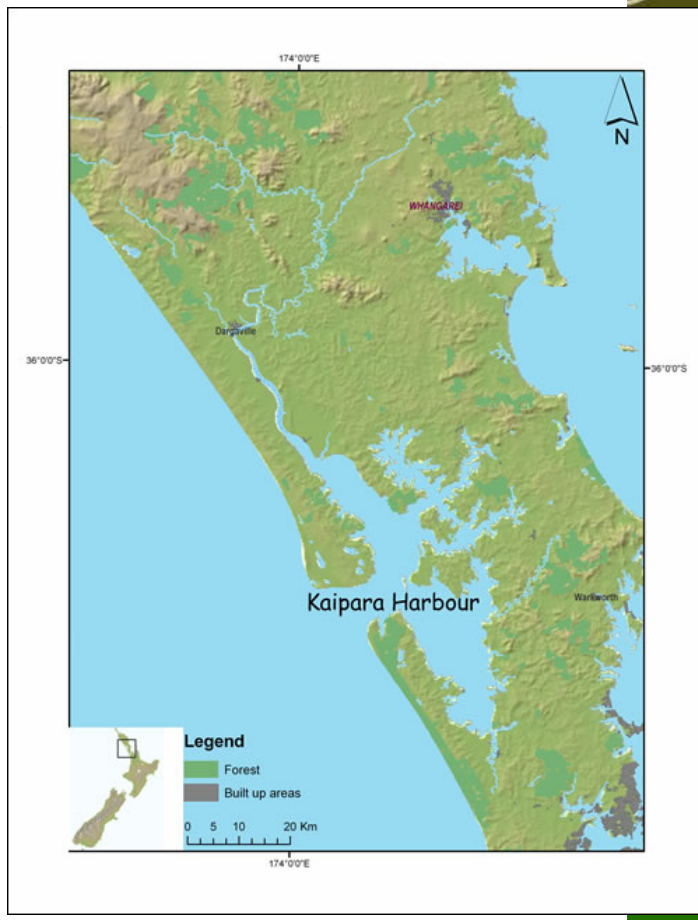
Objectives: To Identify

- Structures and processes for success
- Obstacles to the programme

International Centre for Nature Conservation
Waterwatch

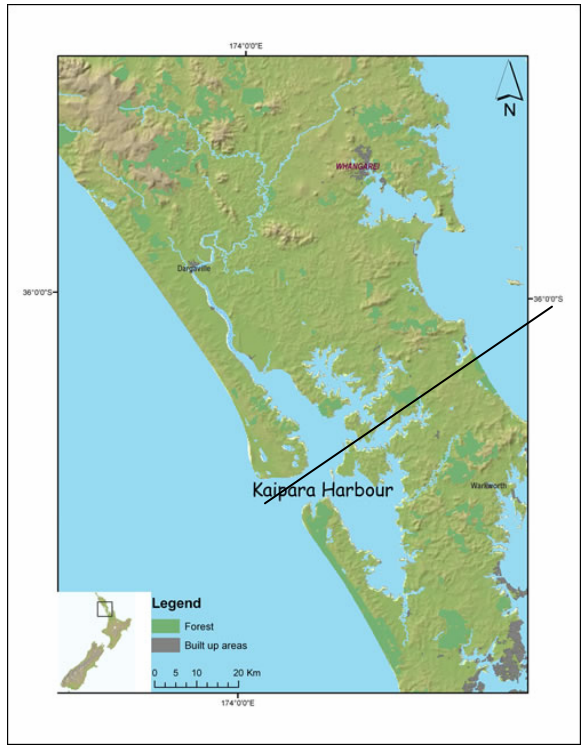
Kaipara

- Largest enclosed harbour in Southern Hemisphere.
- Catchment land use dominated by dairy farming and exotic forestry.
- “Food basket” of Ngati Whatua.
- Range of authorities have statutory responsibilities
- Challenge is to deal with competing and sometimes conflicting uses.
- Activities include sand mining, fishing, aquaculture, subdivision and energy generation activities.



Why

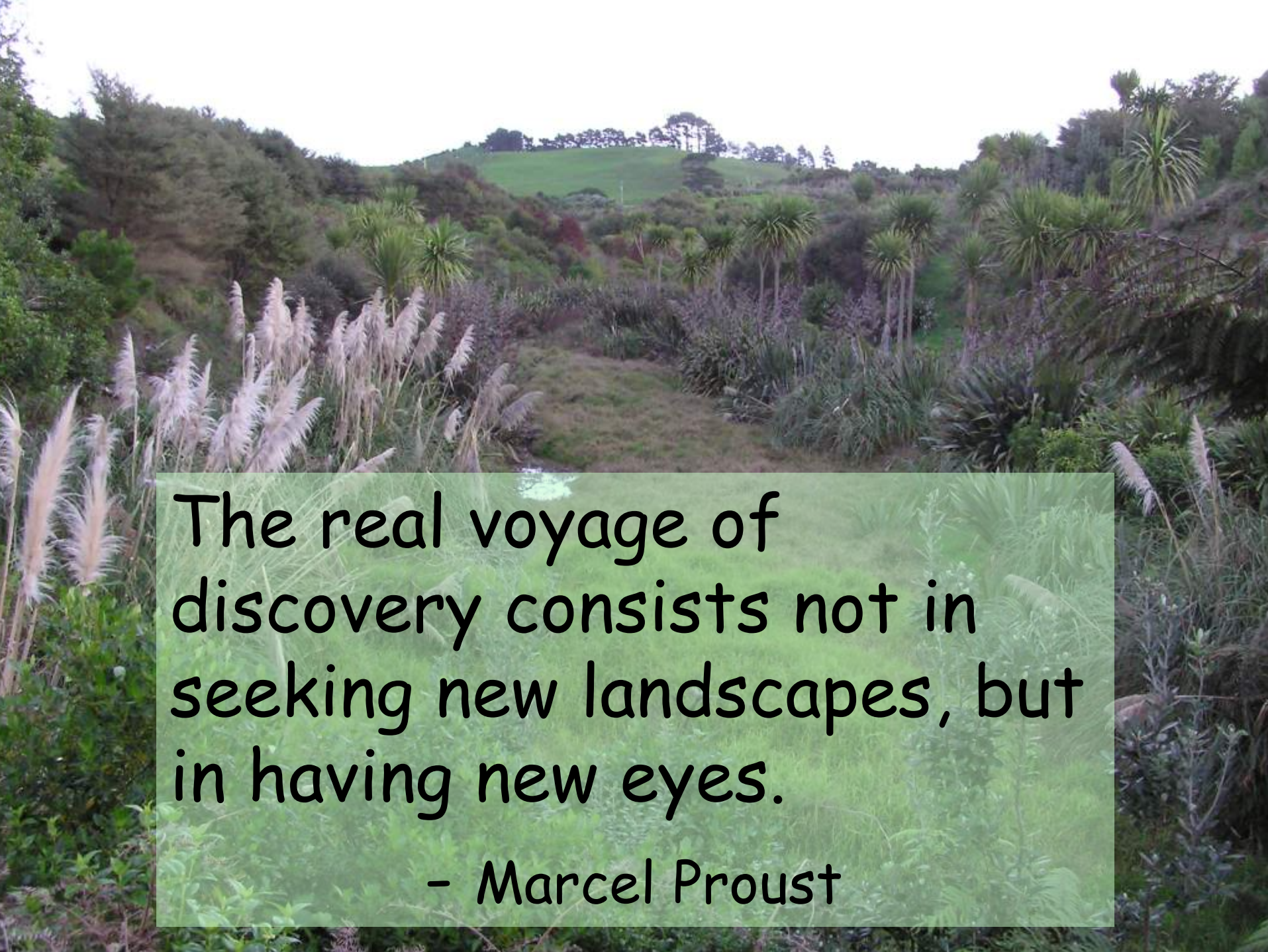
- Sacred taonga
- Kaitiaki
- Range of conflicting uses
- Long history of issues
- Te Uri o Hau treaty settlement
- Need for action



http://www.kaiparaharbour.net.nz/

Summary – case studies

- Involvement of stakeholders
- Scoping the issues
- Knowing what we know, knowing who knows what, knowing what's going on = KM
- Plan of action
- Implementation, monitoring & evaluation
- Always with big picture in mind
- Always aware of the connections


The real voyage of discovery consists not in seeking new landscapes, but in having new eyes.
- Marcel Proust