



**For now &
our future**

Coastal Lakes of Southland

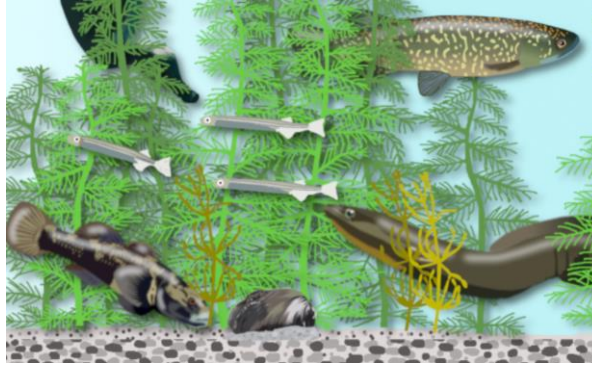
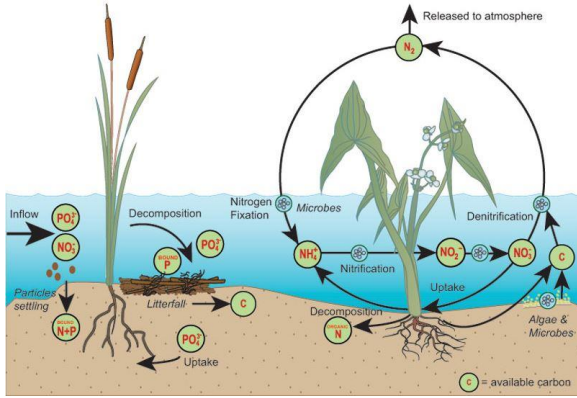
Keryn Roberts *Environmental scientist – estuaries and lakes*

Acknowledgements

- **Nick Ward** (Team Leader - Ecosystem Response)
- **Dianne Elliotte** (Contractor Aquatech)
- **Chris Owen** (Contractor Southern Waterways)
- **Rob Williamson** (Science Assistant)

- **James Dare** (Previous Lake Scientist now at BoP RC)
- **Simon Mapp** (Compliance Manager)
- **Nathan Cruickshank** (Team Leader - Land and Water Services)
- **Landowners in the Lake Vincent Catchment**

Why are lakes important?



common bully



giant kokopu



What's the problem?



Media Release
3 May 2018

Duck hunters advised to take care at Waituna Lagoon



NEW ZEALAND / SOUTHLAND

Toxic algae in Southland lagoon

1:17 pm on 29 March 2018

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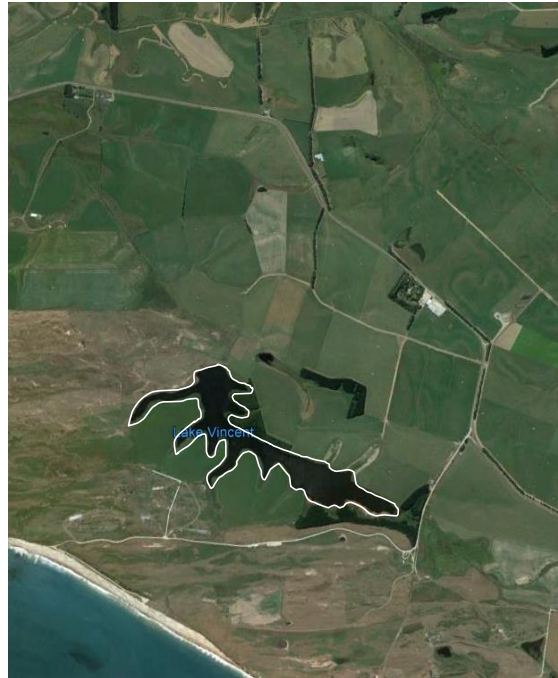
A potentially toxic algae is spreading in a Southland lagoon.

Shallow Coastal Lakes

LAKE GEORGE



LAKE VINCENT



THE RESERVOIR



Brackish Lakes

WAITUNA LAGOON

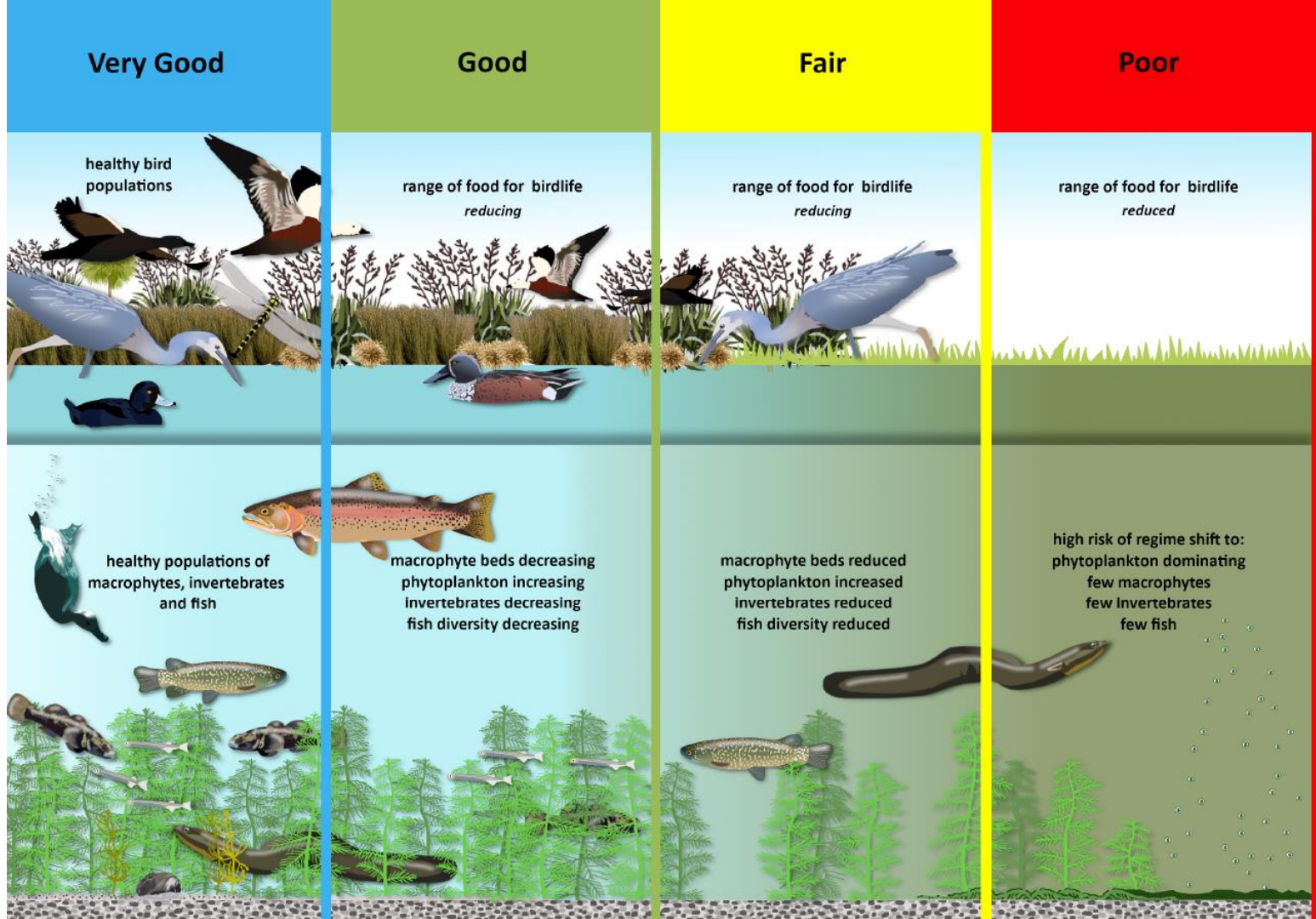


TE WAE WAE LAGOON



STATE

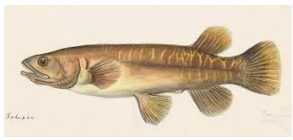
A	Very good
B	Good
C	Fair
D	Poor



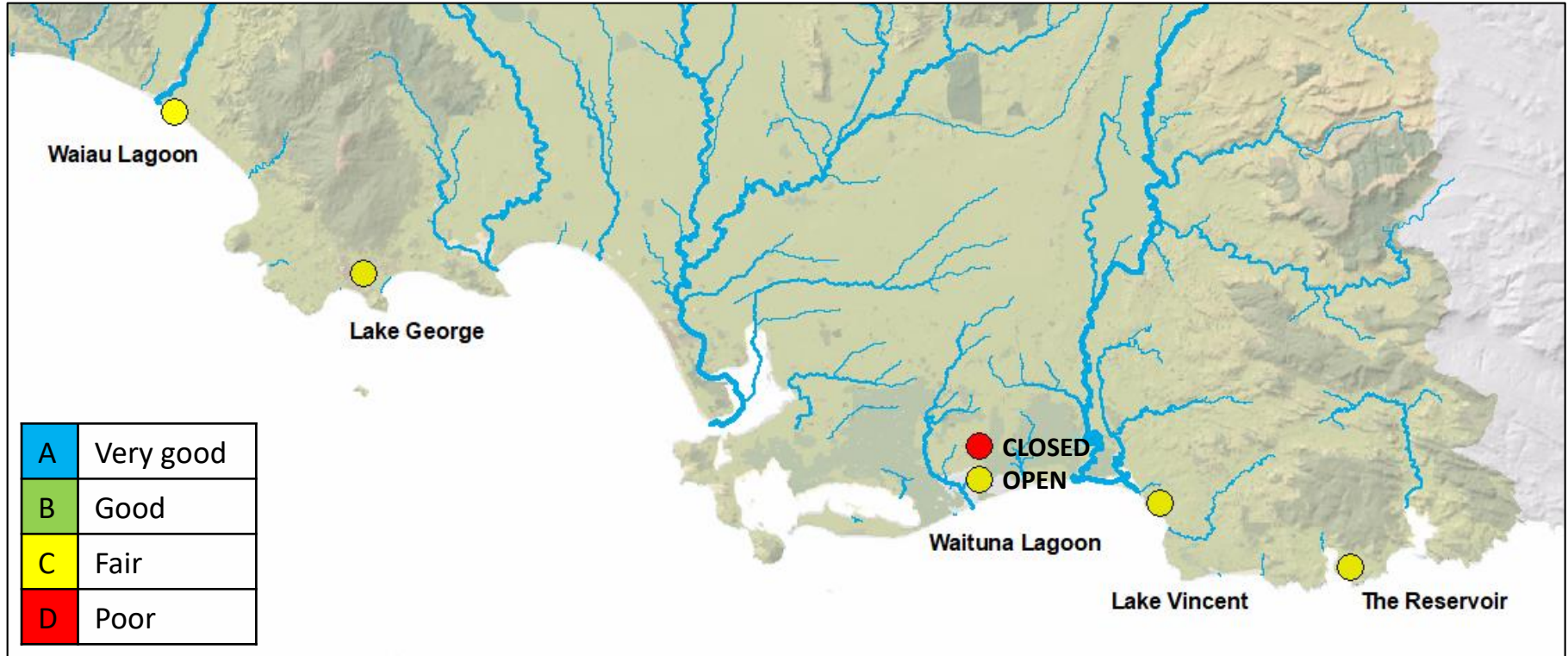


ECOSYSTEM: Total Phosphorus



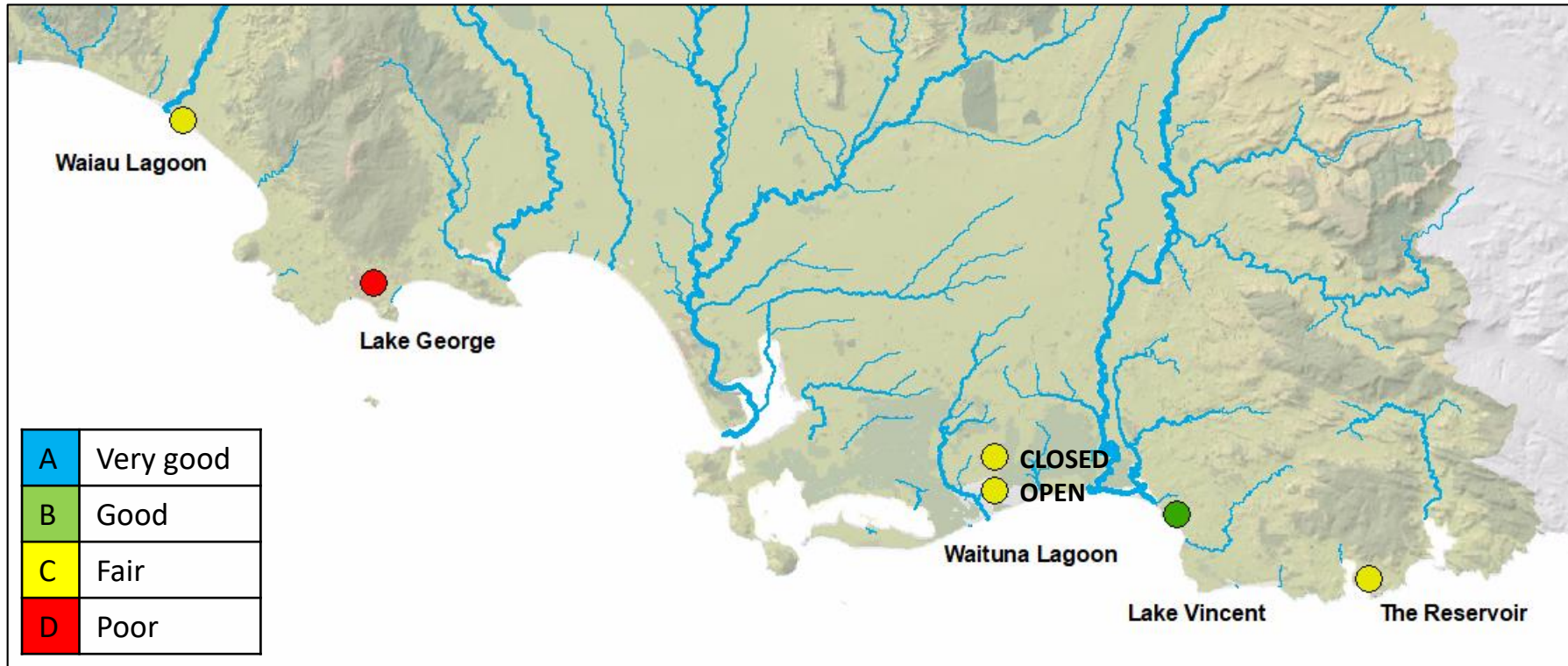


ECOSYSTEM: Total Nitrogen



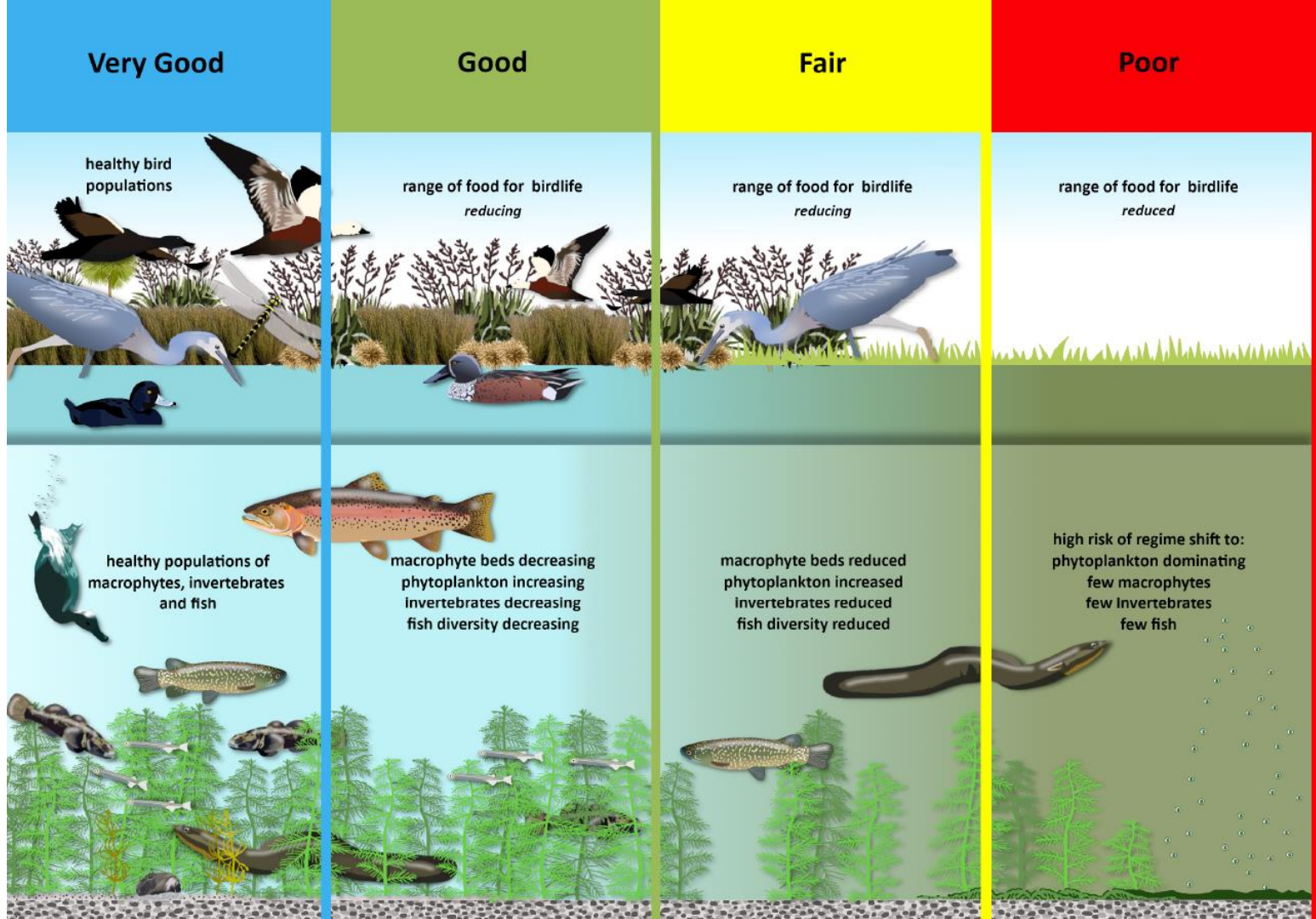


ECOSYSTEM: Phytoplankton

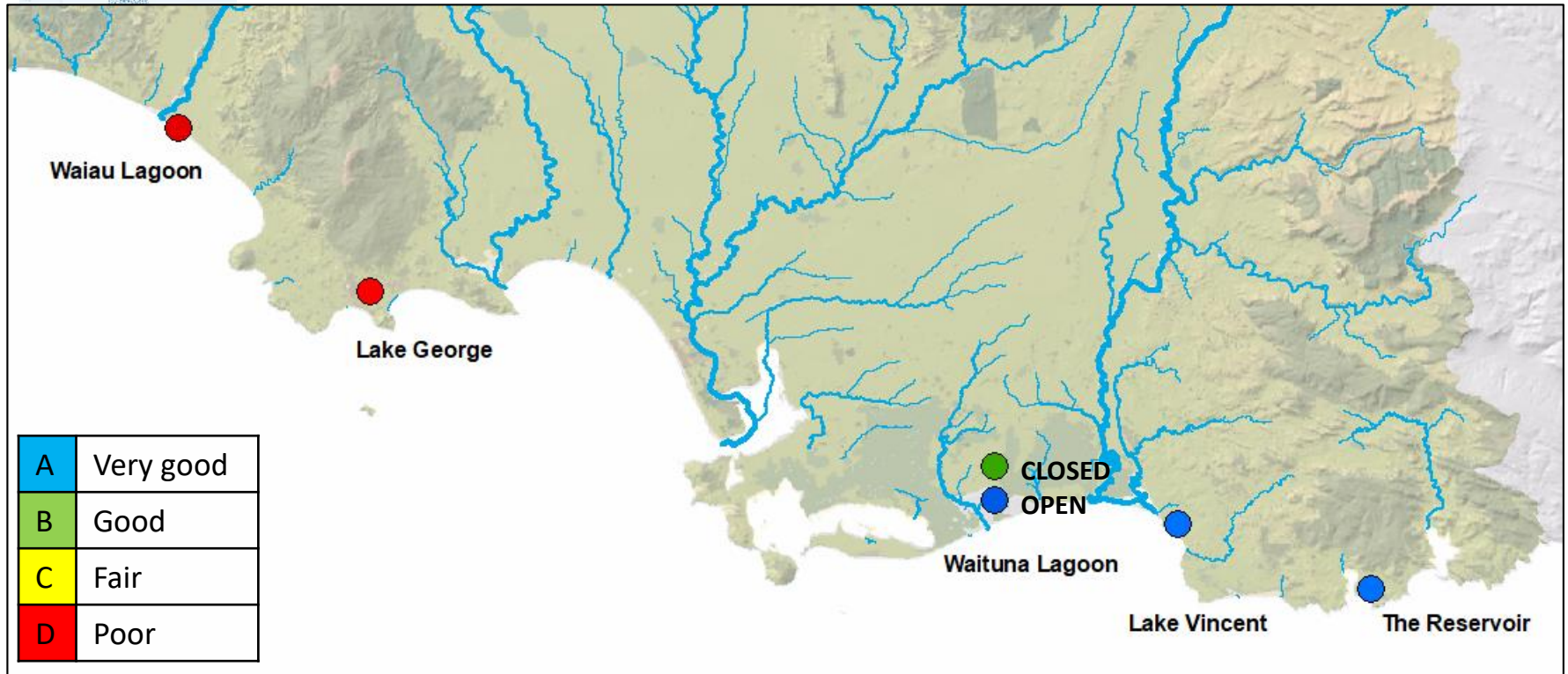


STATE

A	Very good
B	Good
C	Fair
D	Poor



HUMAN HEALTH: *E.coli*



Key Messages

- Most lakes are in **FAIR** to **POOR** condition
- Shallow coastal lakes and brackish lakes are under threat from:
 - Land use activities in the catchment
 - Habitat loss, Invasive and introduced species
 - Regime shift from clear water state to phytoplankton state



What can be done?

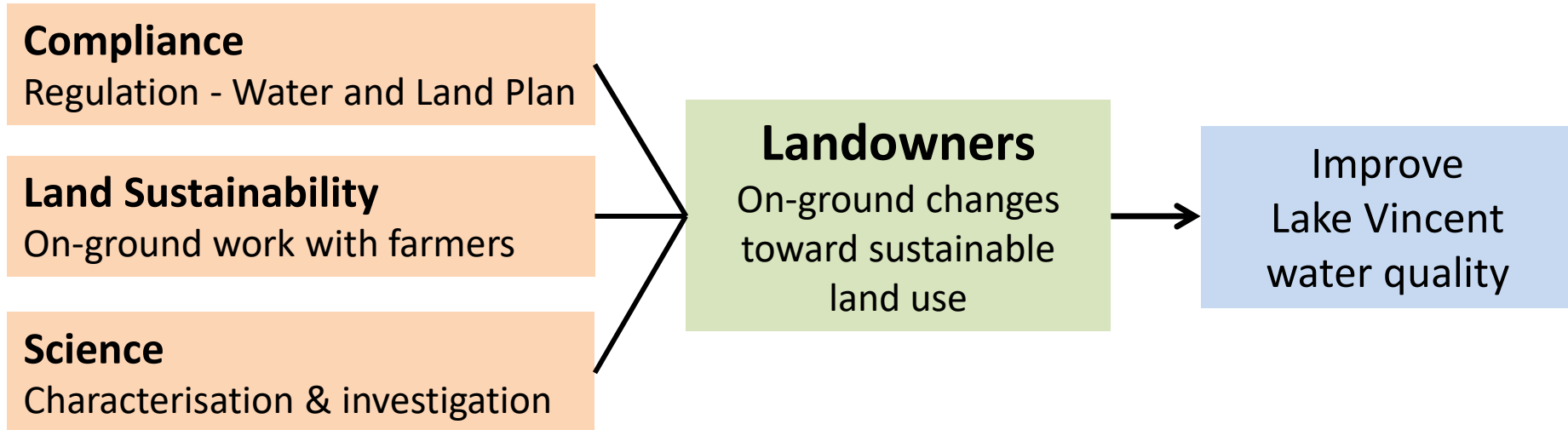
Case Study: Lake Vincent



Case Study: Lake Vincent

James Dare, Simon Mapp, Nathan Cruickshank, Lake Vincent Land Owners

- Between 2004 to 2016 water quality declined
- Lake Vincent Catchment Management Proposal



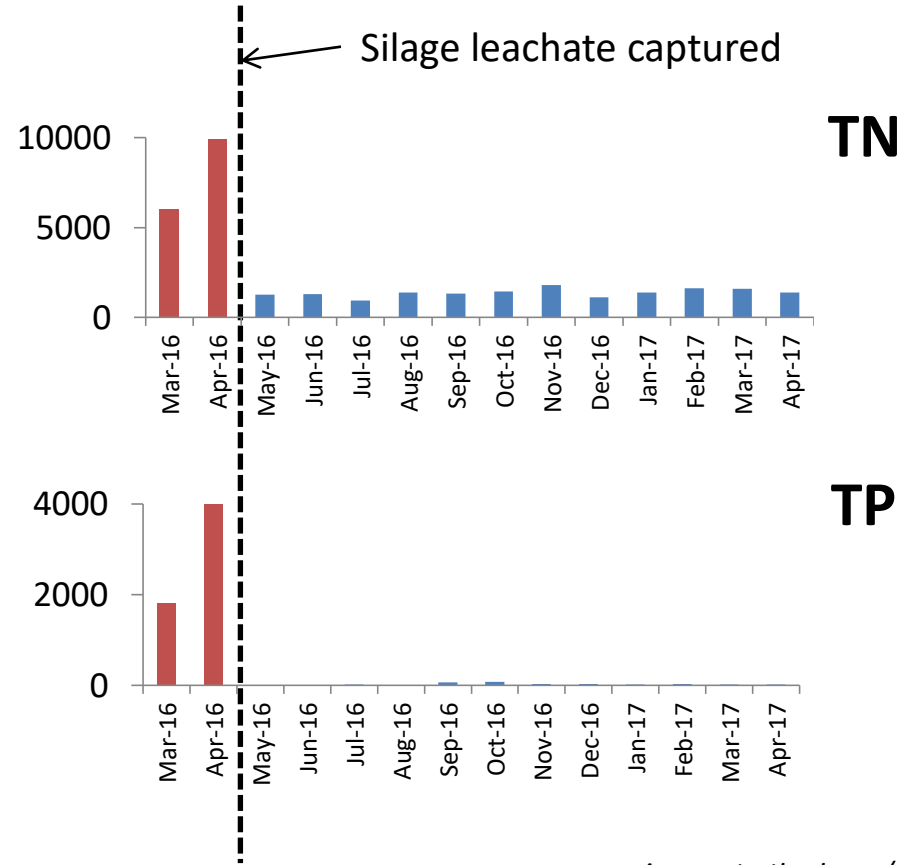
Identifying problem areas

Wintering to lake edge



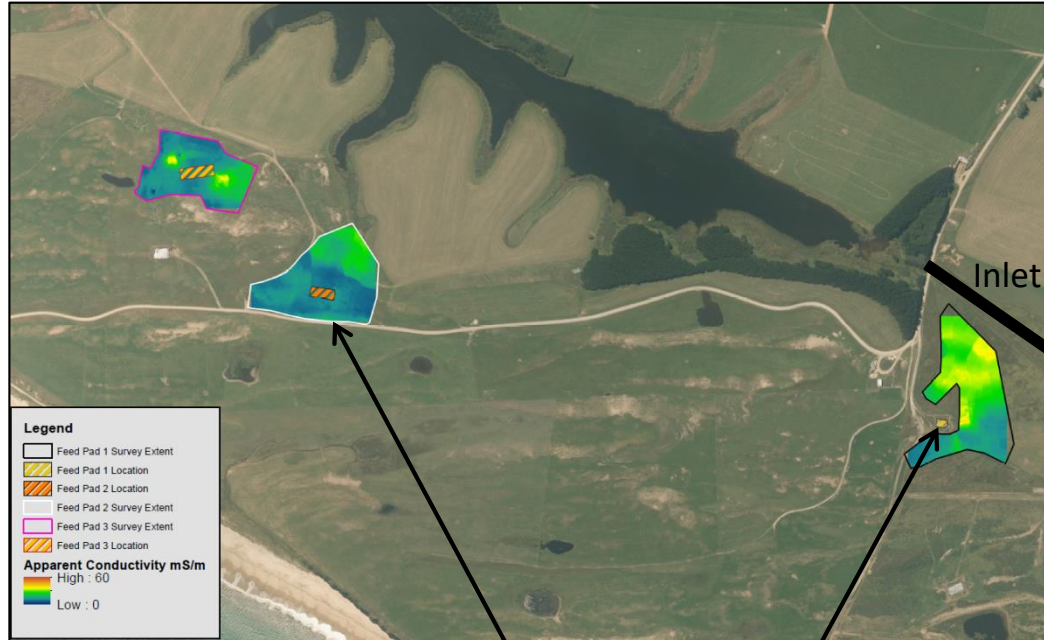
Self feed pads

Silage storage near inlet



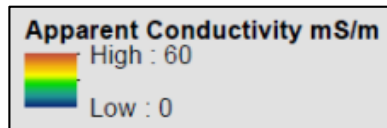
[^]concentration in mg/m³.

Self feed pads



EMI mapping of effluent

Retired 'problem' self feed pad near inlet



Self feed pads

Wintering



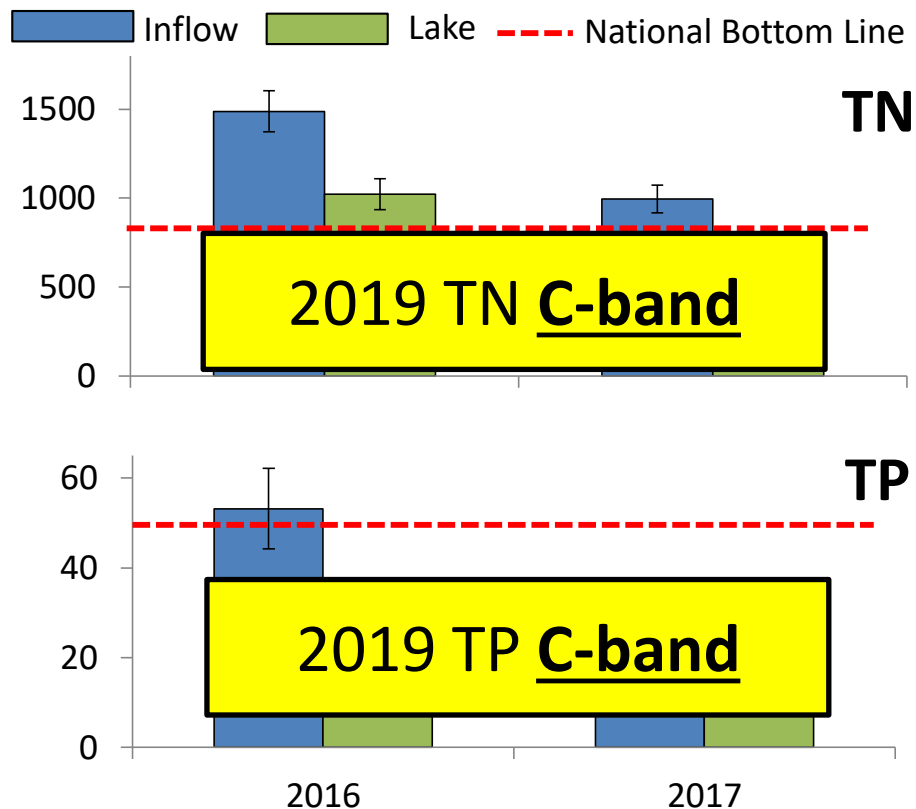
Fencing and exclusion of
stock from lake margins



Riparian planting

Outcomes

- Improved land use management
- Lower TN and TP for 2017 compared to 2016*



*too soon for trend analysis

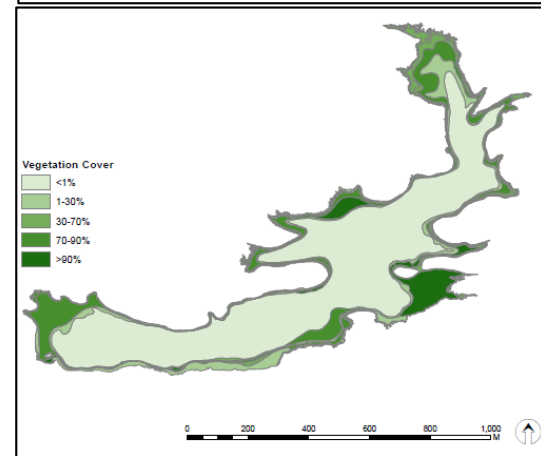
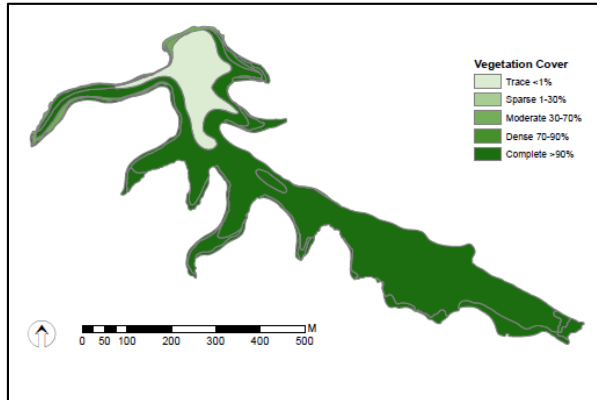
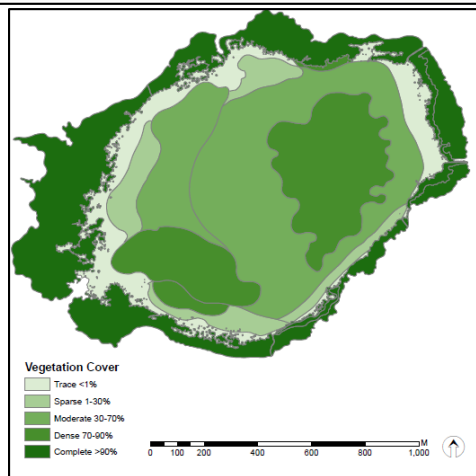
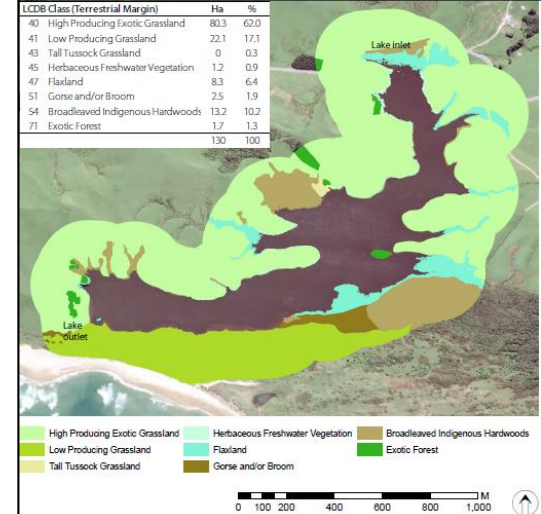
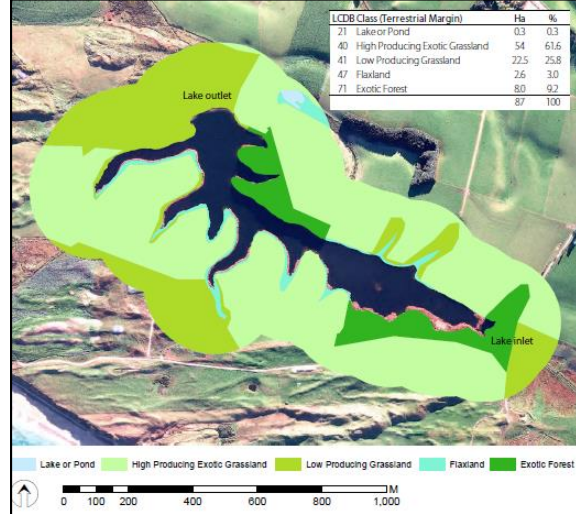
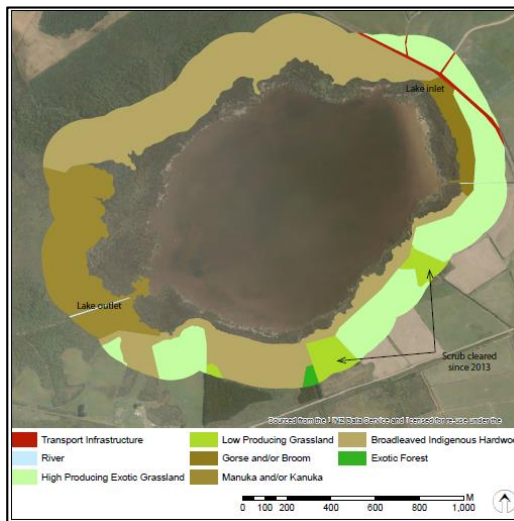
^concentration in mg/m³. Data is mean ± SE

Key Messages

Water quality is linked to **catchment land use** therefore holistic management approaches are needed.

To support **on the ground changes** that improve the water quality of our coastal lakes we need to look at working together to support landowners.

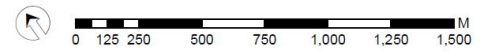
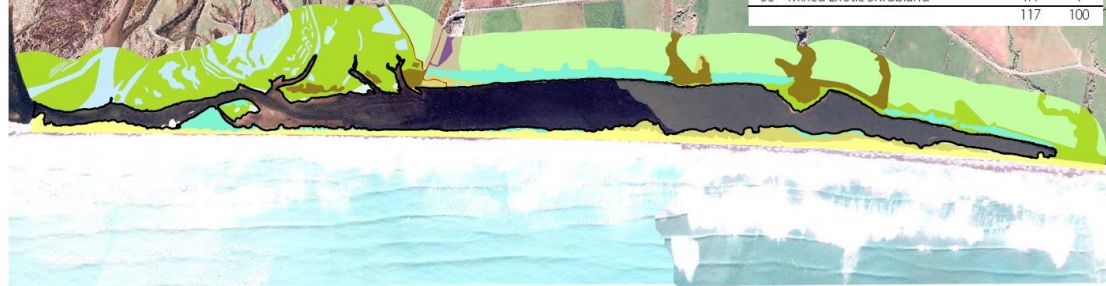




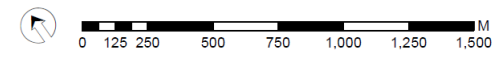
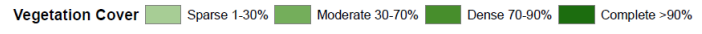
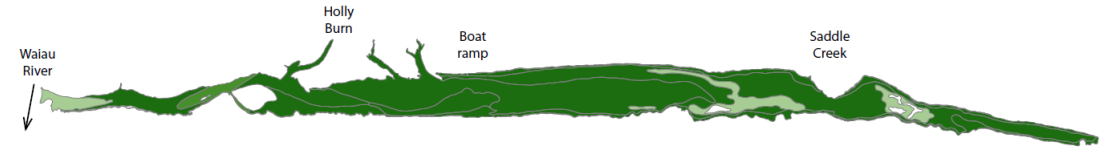
LAKE GEORGE

LAKE VINCENT

THE RESERVOIR



b)



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