Ecology and water quality of lowland lakes in the Waikato region

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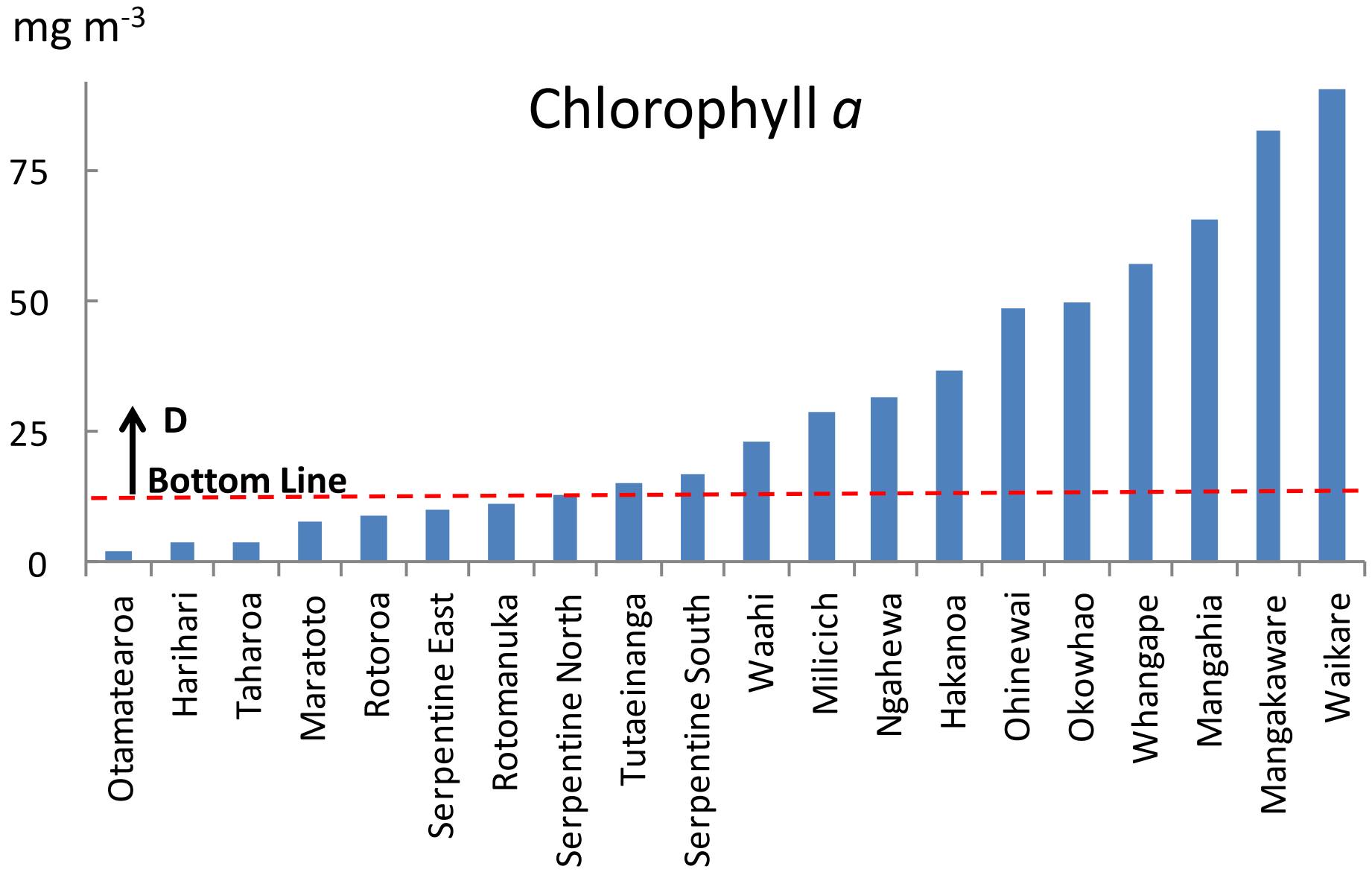
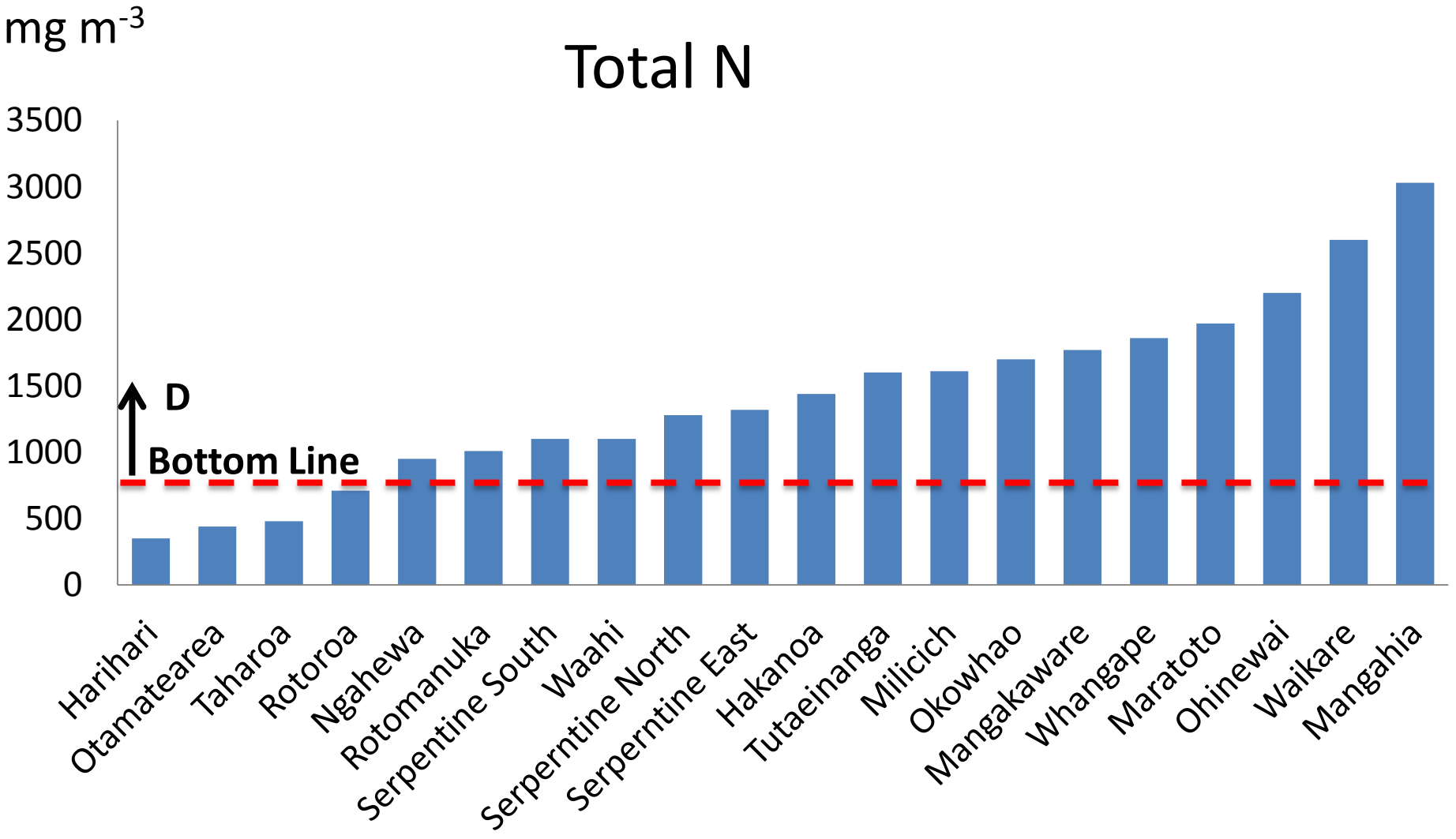
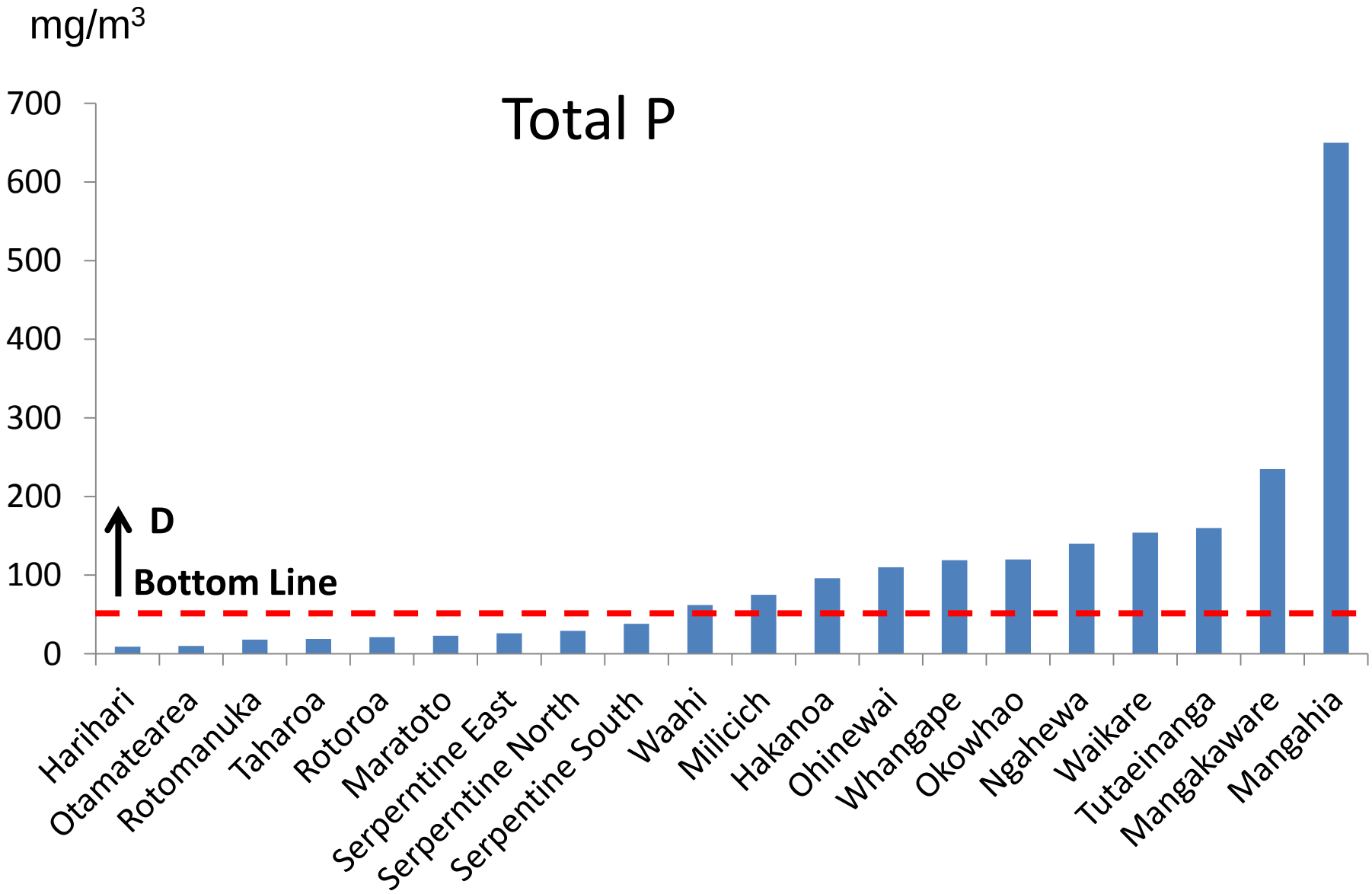
Meeting the bottom line for chlorophyll *a* in the NOF



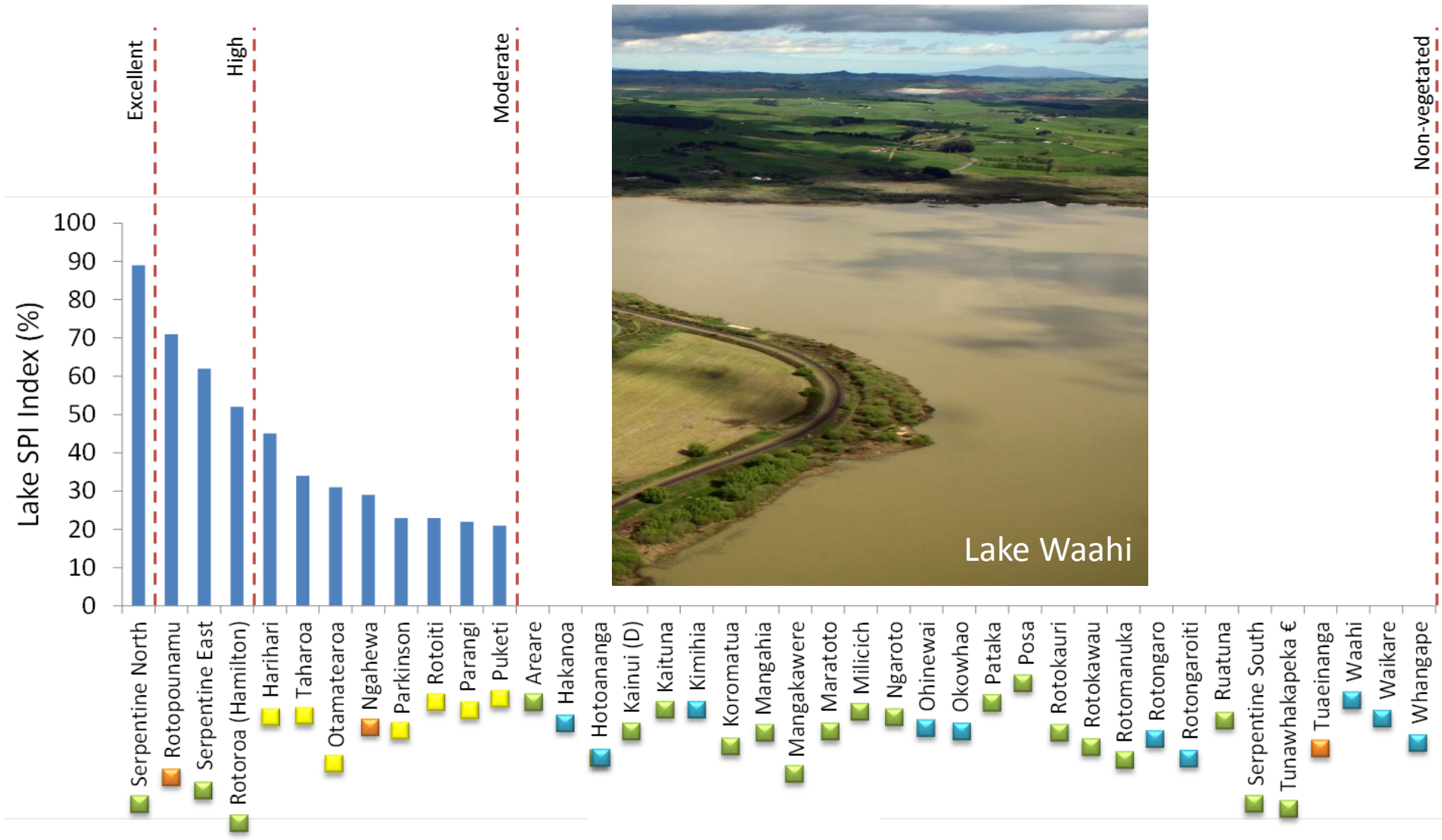
Meeting the bottom line for total nitrogen in the NOF



Meeting the bottom line: total phosphorus in the NOF



LakeSPI index: indicator for submerged plant health



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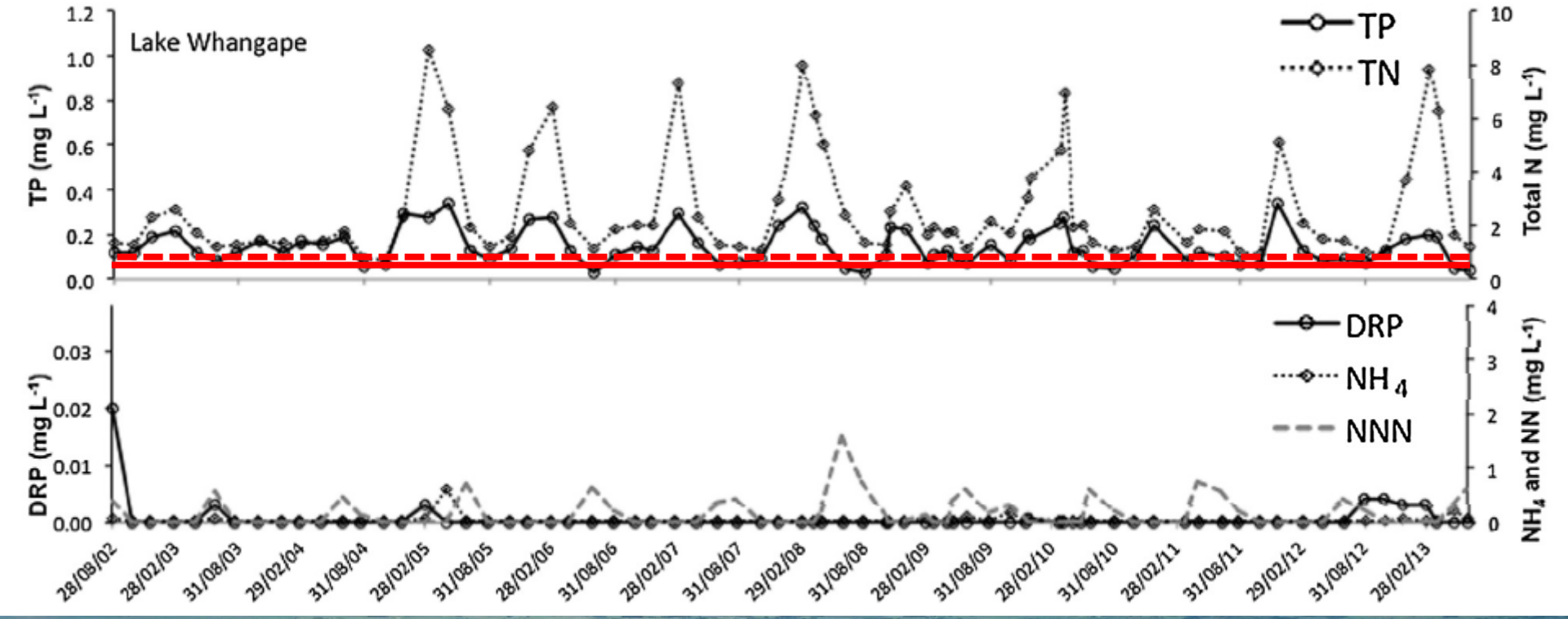
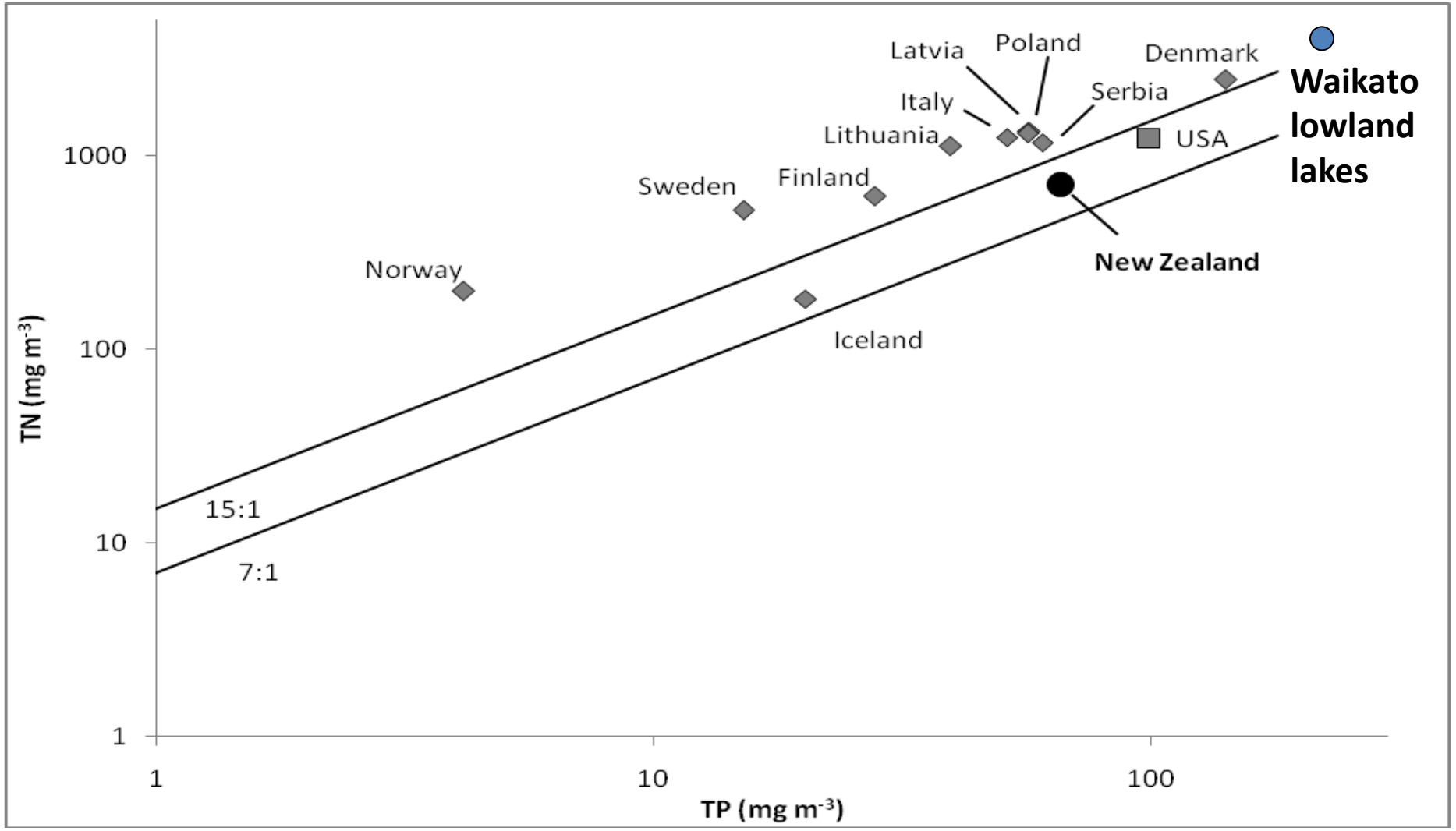
Nutrients in Lake Whangape



Wood et al. (2010) Harmful Algae

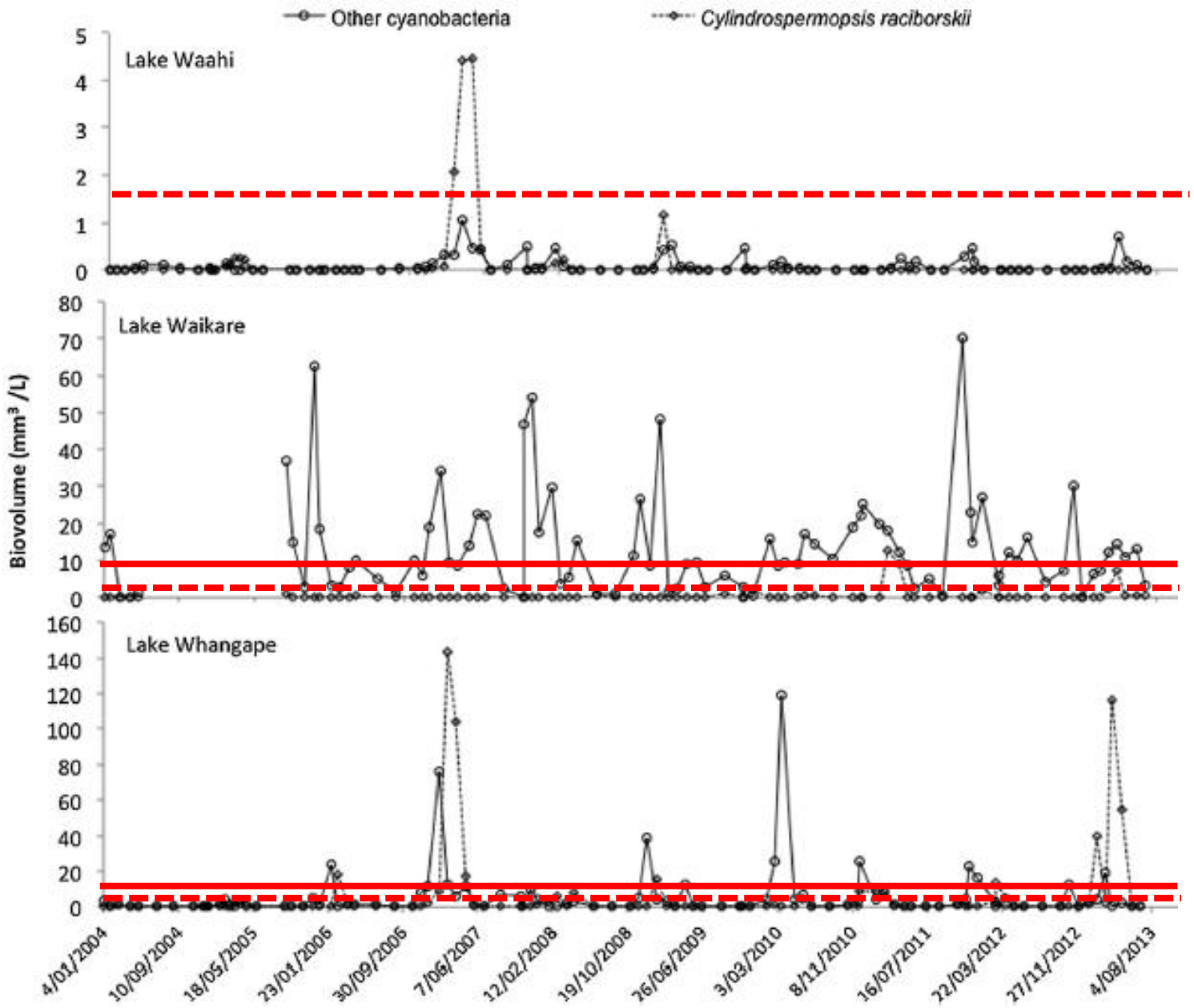
Comparison with N and P in lakes internationally



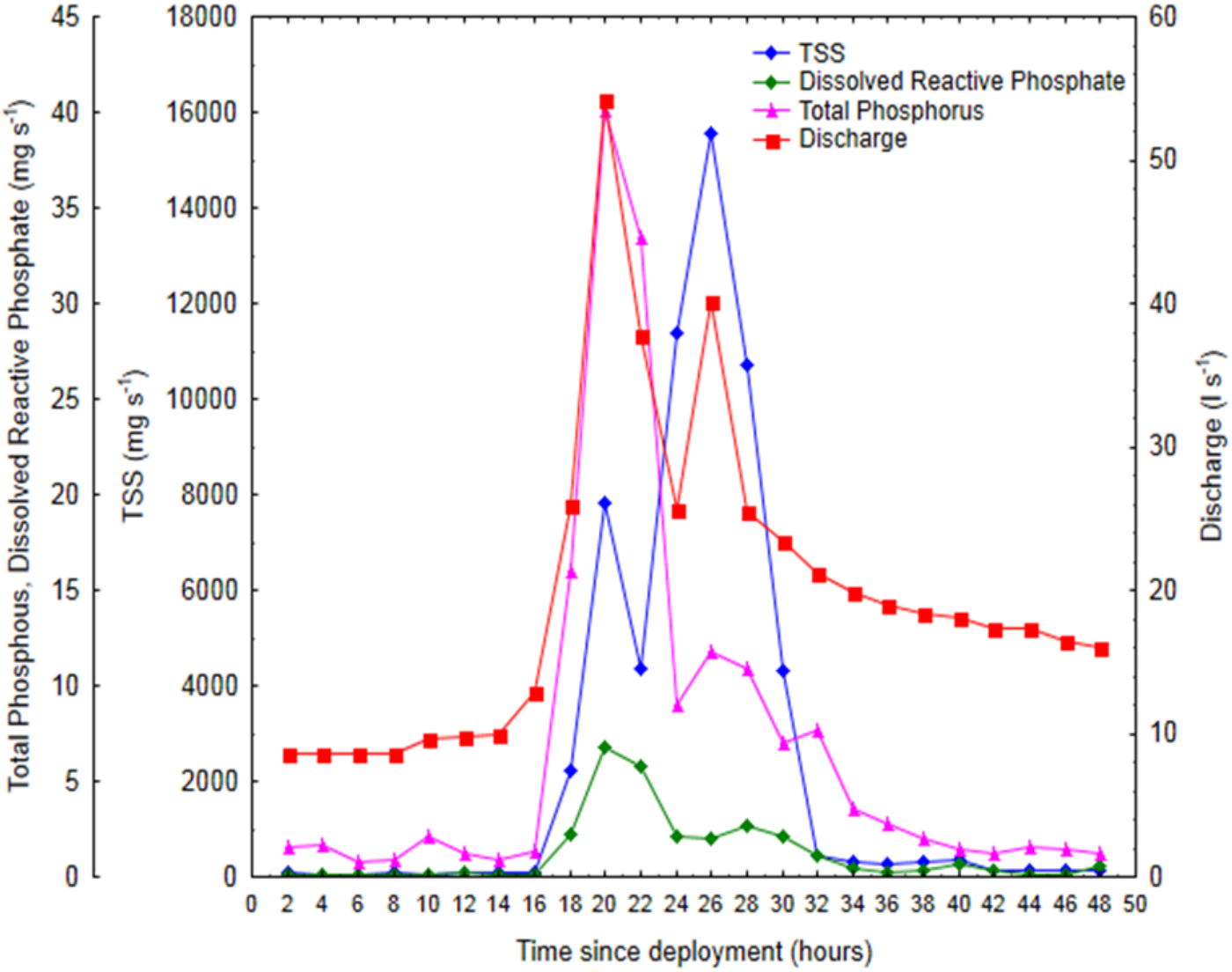
Abell et al. (2010): Ecosystems

Cyanobacteria in Lake Whangape

Wood et al. (2010) Harmful Algae



Storm event – Rotopiko South (September 2013)

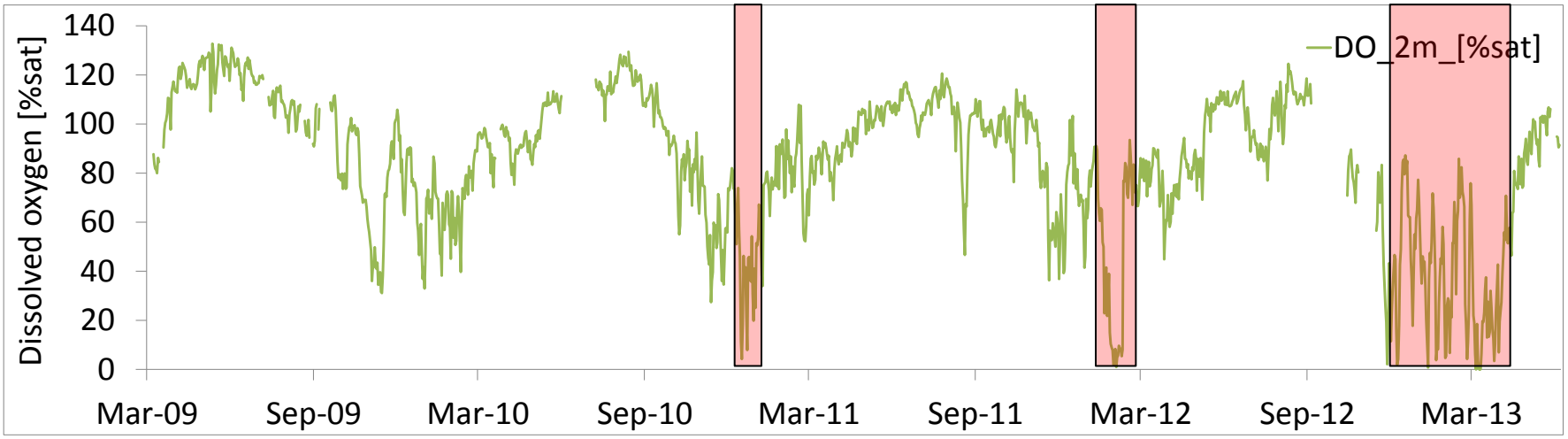


4 tonnes 'additional sediment' delivered in 24 hours

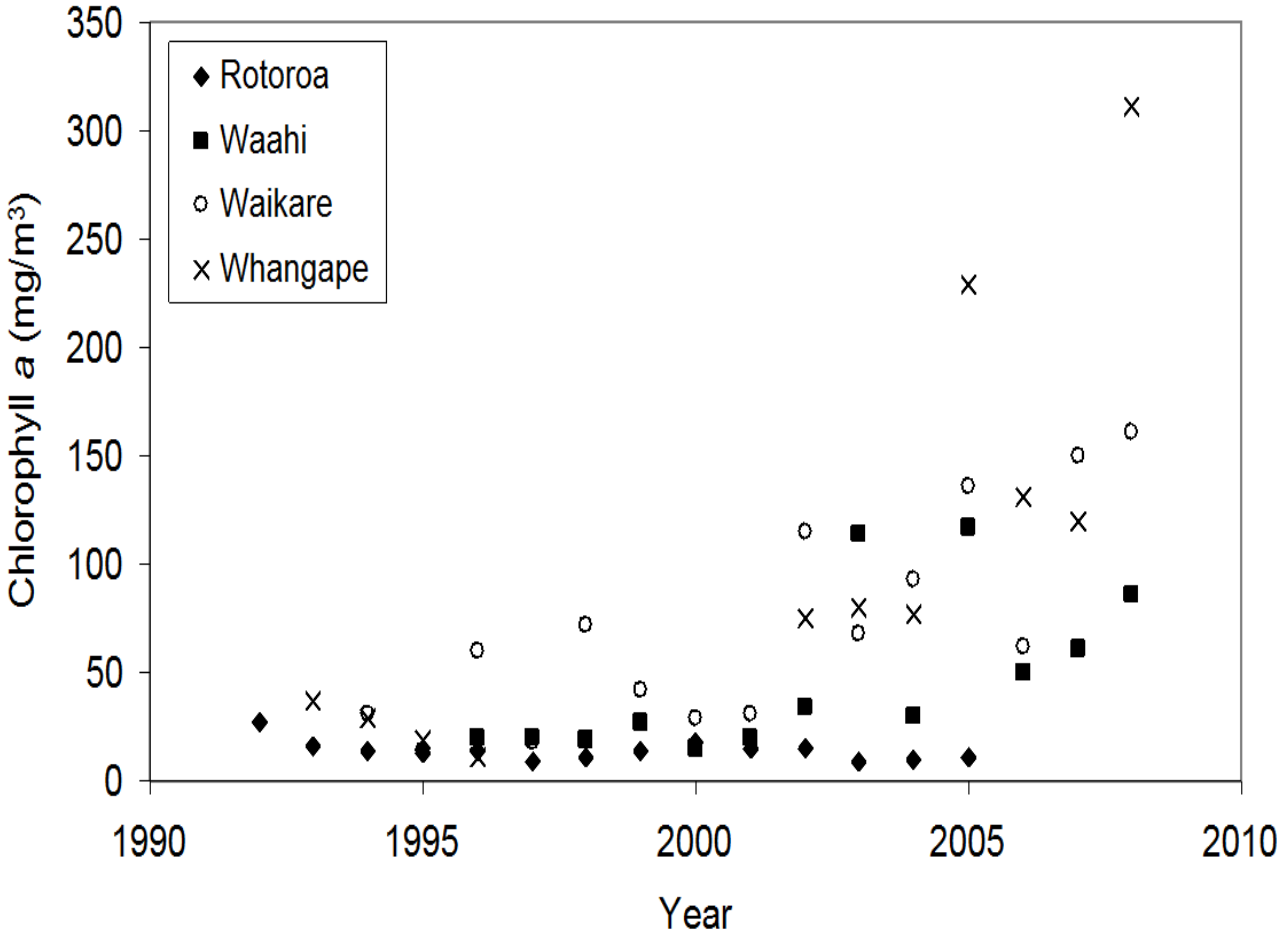
11 kg 'additional P' delivered in 24 hours

Lake Ngaroto monitoring buoy dissolved oxygen

Chris McBride (University of Waikato)



Chlorophyll *a* in four shallow, lowland Waikato lakes

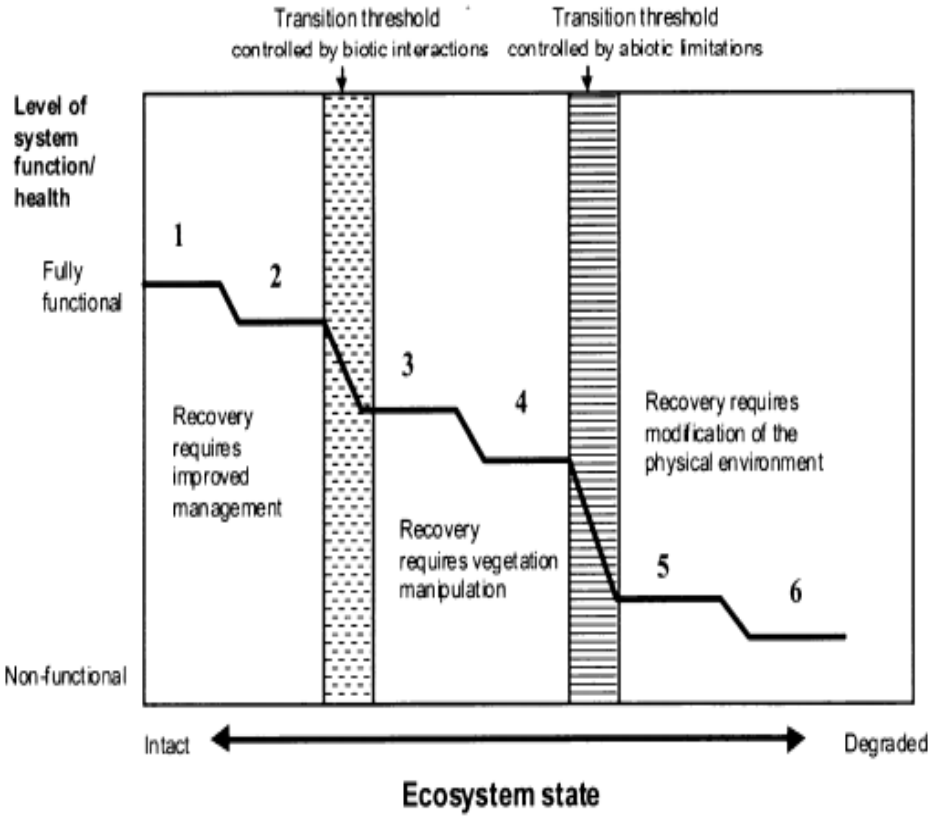


Hamilton et al. (2010): Waters of the Waikato

Applying ecological theory to changes in lake state

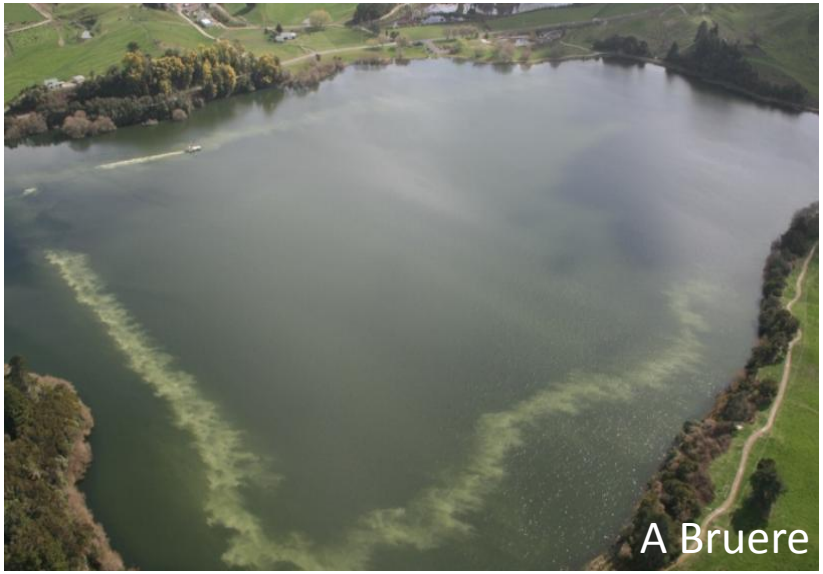
Photo: J. Clayton (NIWA)

Photo: G. Tempero

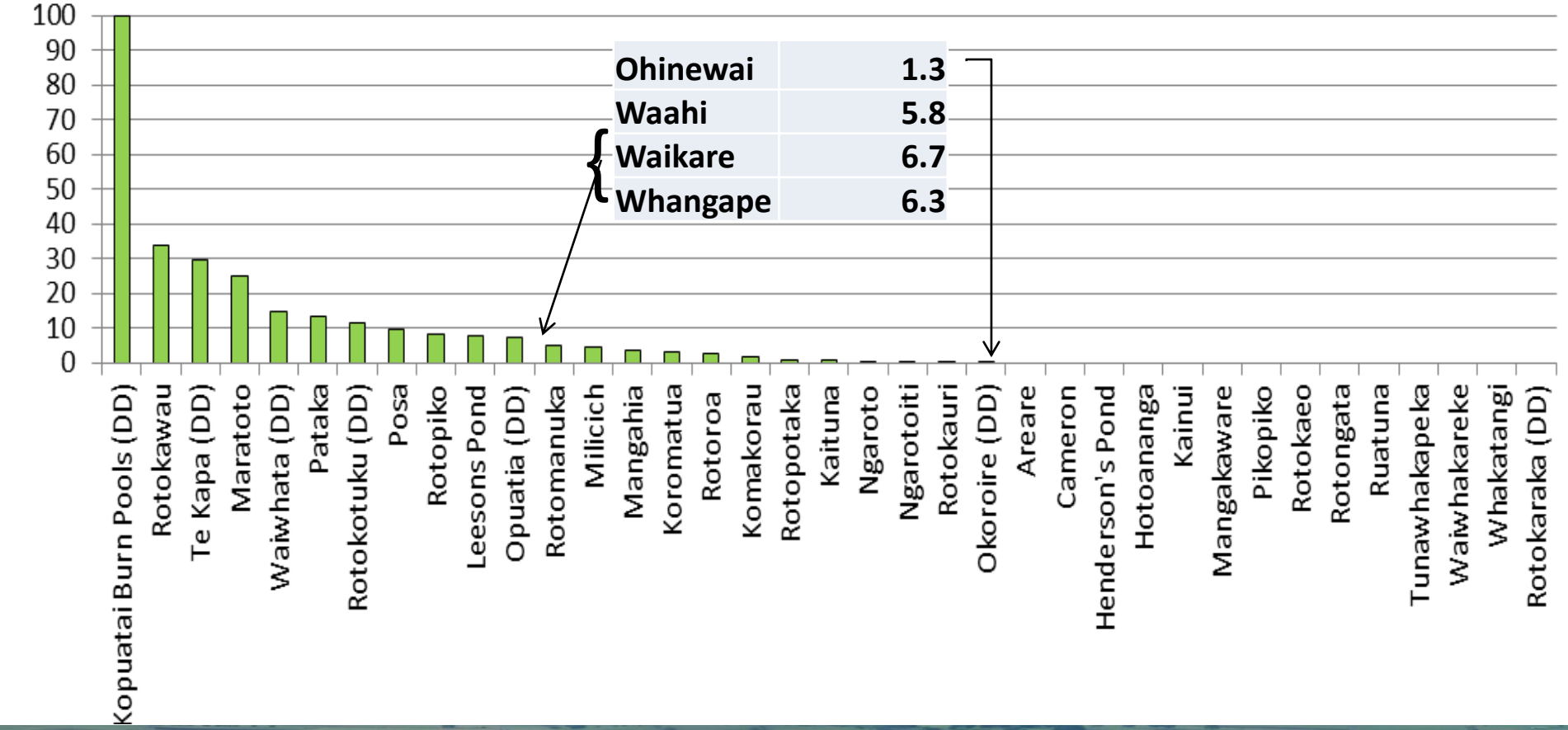


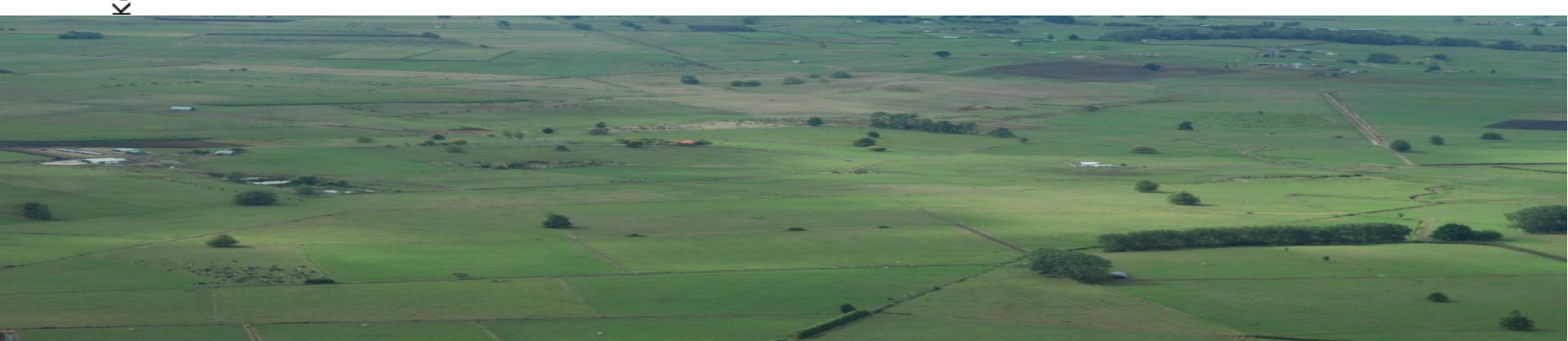
Hobbs and Harris (2001). Restoration Ecology: Repairing the Earth's Ecosystems in the New Millennium

Re-engineering of existing systems



Native vegetation (%) in peat lake catchments





Can we reverse the trend and improve the current state?

- > 20% native vegetation in catchment (threshold for regime shifts?)
- > 5% of catchment in wetlands (N, P and SS removal)
- Koi carp and invasive macrophyte removal (biological effects)
- Re-engineering (physical effects)
- Sediment treatment in some cases (addressing legacies)