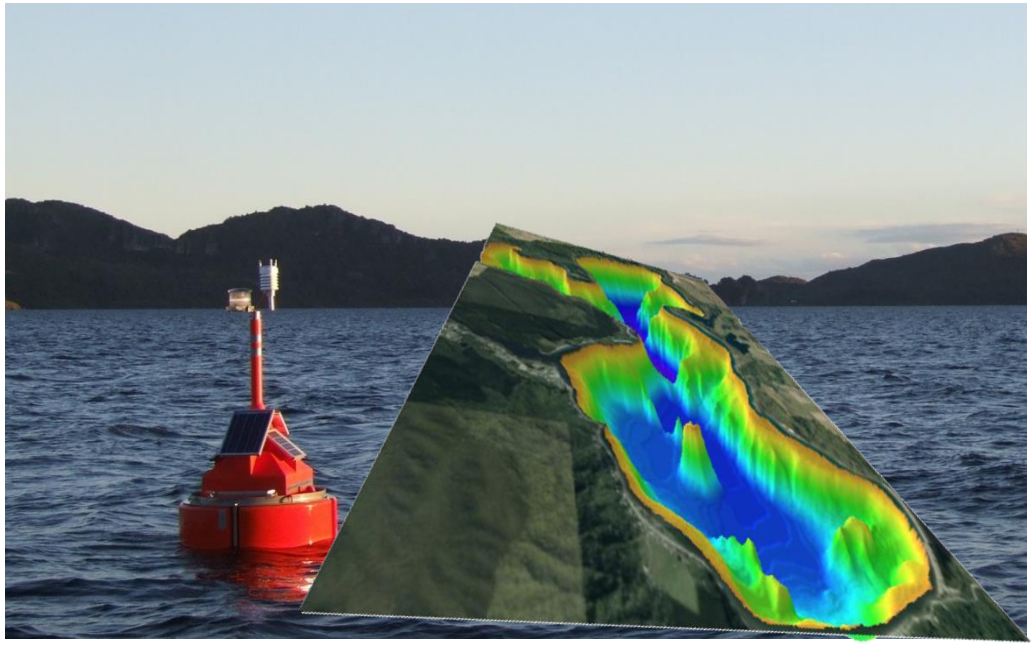
Enhancing the health and resilience of New Zealand lakes

1/10/2015-30/9/2019



THE UNIVERSITY OF WAIKATO
Te Whare Wānanga o Waikato

enhancing the benefits of New Zealand's natural resources
NIWA
Taihoro Nukurangi

CAWTHRON INSTITUTE

UNIVERSITY of OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALAND

The Research Team

University of Waikato:

- David Hamilton, Kevin Collier, Brendan Hicks, Ian Duggan, Maui Hudson, Chris Battershill, Moritz Lehmann

NIWA

- Clive Howard-Williams, John Quinn, Piet Verburg, Sandy Elliot

Cawthron Institute

- Dave Kelly, Susie Wood

University of Otago

- Marc Schallenberg

GNS Science

- Catherine Moore

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Research structure

Operational Costs (even split of operational cost per CS: $34,013/year)		Bud
1.1	**In-lake models and technology for enhancing capability to manage environmental limits**	
1.1.1	Applying time-series models to evaluate impacts of variability in contaminant delivery	
1.1.2	Scalable models based on an integrated geospatial platform	
1.1.3	Geospatial platform to support mana whenua restoration of lakes	
1.1.4	Understanding how multiple stressors affect ecological resilience and integrity	
1.1.5	Accounting for food web dynamics in models to predict management outcomes	
1.2	**Improved cost-effective in-lake monitoring to support predictions**	
1.2.1	Improving real-time high-frequency in-lake monitoring technologies	
1.2.2	Ground-truthing new remote sensing technologies	
1.2.3	Quantifying biodiversity and food web responses to lake resilience	
1.2.4	Cultural indicators of lake health and resilience	
1.3	**Prioritising interventions to maintain and restore ecological resilience**	
1.3.1	Managing sediment and nutrient legacies	
1.3.2	Food web biomanipulation techniques to enhance ecological processes	
1.3.3	Enhancing refugia for taonga species	
1.3.4	Prioritising lakes and interventions for management action	

Research leaders

1.1	**In-lake models and technology for enhancing capability to manage environmental limits**		
1.1.1		Applying time-series models to evaluate impacts of variability in contaminant delivery	Sandy Elliot
1.1.2		Scalable models based on an integrated geospatial platform	David Hamilton
1.1.3		Geospatial platform to support mana whenua restoration of lakes	Maui Hudson
1.1.4		Understanding how multiple stressors affect ecological resilience and integrity	Marc Schallenberg
1.1.5		Accounting for food web dynamics in models to predict management outcomes	Kevin Collier
1.2	**Improved cost-effective in-lake monitoring to support predictions**		
1.2.1		Improving real-time high-frequency in-lake monitoring technologies	Susie Wood
1.2.2		Ground-truthing new remote sensing technologies	Moritz Lehmann
1.2.3		Quantifying biodiversity and food web responses to lake resilience	Kevin Collier
1.2.4		Cultural indicators of lake health and resilience	Maui Hudson
1.3	**Prioritising interventions to maintain and restore ecological resilience**		
1.3.1		Managing sediment and nutrient legacies	Piet Verburg
1.3.2		Food web biomanipulation techniques to enhance ecological processes	Marc Schallenberg
1.3.3		Enhancing refugia for taonga species	Dave Kelly
1.3.4		Prioritising lakes and interventions for management action	Kevin Collier