

# NZ Freshwater Sciences Society 50<sup>th</sup> Conference

50<sup>th</sup>  
NZFSS  
Annual Conference  
Nelson, 10-14th December 2018



*Ka mua, ka muri:  
Looking back, moving forward*  
10-14 December 2018  
Rutherford Hotel, Nelson

## NZFSS Conference Abstract Programme - 10-14th December 2018 - Nelson

All Concurrent Sessions are based on 15-minute talks (talk 12 min, 3 min Q&A)

\* = eligible for Student Prizes

MONDAY 10 DECEMBER					
8.30am		Registration Desk Open			
10.30 - 11.00am	WELCOME	Mihi Whakatau - Conference Welcome			
11.00 - 11.30am		MORNING TEA			
11.30 - 1pm	KEYNOTE 1/2	Housekeeping and Official Conference Opening (15 mins)			
		<p><b>Keynote Speaker 1: Barney Thomas</b> Kaitiaki roles and responsibilities</p> <p><b>Keynote Speaker 2: Tina Porou</b> Te Mana o te Wai and the experiences of implementing the kaupapa through current planning tools</p> <p>Session Chair: Aneika Young</p>			
1pm – 2.00pm		LUNCH			
	CONCURRENT SESSION 1	<b>Special session: Mātauranga Māori shaping freshwater futures</b> Room: Maitai 1 Chair: Joanne Clapcott	<b>Special session: SETAC ANZECC</b> Room: Maitai 2 Chair: Jennifer Gadd	<b>Special session: Resistance, resilience, restoration</b> Room: Waimea Chair: Elizabeth Graham	<b>Special session: Lake snow</b> Room: Wairau Chair: Marc Schallenberg
2.00 - 2.15pm		Mātauranga Māori shaping marine and freshwater futures. <i>Joanne Clapcott, Cawthron Institute</i>	Key features of the revised Australian and New Zealand Guidelines for Fresh and Marine Water Quality. <i>Rick van Dam, Environmental Research Institute of The Supervising Scientist</i>	Delayed biological recovery after restoration – negative resistance & resilience. <i>Kristy Hogsden &amp; Helen Warburton, University of Canterbury</i>	"Lake snow": mucilaginous planktonic macroaggregates and their effects on lake ecology. <i>Marc Schallenberg, University of Otago</i>
2.15 - 2.30pm		<i>Whakamanahia te mātauranga o te Māori: empowering Māori knowledge to support Aotearoa's aquatic biological heritage.</i> <i>Gary Garner, Te Tira Whakamātaki</i>		Does the past matter? The influence of disturbance history on community resistance to future disturbance. <i>Roland Eveleens, University of Canterbury</i>	The value of archived diatom collections: understanding the spread of <i>Lindavia</i> intermedia in New Zealand. <i>Cathy Kilroy, NIWA</i>
2.30 - 2.45pm		Māori oral tradition and indigenous freshwater knowledge: What do whakataukī tell us? <i>Hēmi Whaanga, University of Waikato</i>	Developing guidance for including Indigenous cultural and spiritual values in water quality management in Australia and New Zealand. <i>Brad Moggridge, University of Canberra</i>	Boosting biological recovery in degraded streams: disturbing degraded communities to reverse the effects of environmental filtering. <i>Issie Barrett, University of Canterbury *</i>	Local Authorities response to <i>Lindavia</i> incursion in New Zealand. <i>Stephanie Dwyer, Lincoln University</i>

2.45 - 3.00pm		Evaluating a traditional Maori harvesting method for sampling stream populations of koura and toi toi. <b>Ian Kusabs,</b> <i>Ian Kusabs and Associates Ltd</i>	Estimation and application of nationwide reference conditions of water quality indicators. <b>Doug Booker,</b> <i>NIWA</i>	Helping plants find their feet – restoring macrophytes in lakes. <b>Deborah Hofstra,</b> <i>NIWA</i>	Taxonomy, provenance, abundance, and activity of <i>Lindavia intermedia</i> as revealed by molecular (and other) methods. <b>Phil Novis,</b> <i>Manaaki Whenua-Landcare Research</i>
3.00 - 3.15pm		Murihiku Cultural Water Classification System: Enduring partnerships between people, disciplines and knowledge systems. <b>Jane Kitson,</b> <i>Kitson Consulting Ltd,</i> <b>Ailsa Cain,</b> <i>Kauati Ltd</i>	Challenges in updating copper and zinc water quality guidelines for Australia and New Zealand. <b>Jennifer Gadd,</b> <i>NIWA</i>	Stream community recovery trajectories following progressive forest harvesting vary by disturbance frequency and magnitude. <b>Elizabeth Graham,</b> <i>NIWA</i>	Vibrational Spectroscopic and Multivariate Analysis of New Zealand 'Lake Snow'. <b>Ruth Sales,</b> <i>University of Otago *</i>
3.15 - 3.30pm		He Tohu o te wā – Hangarau pūtaiao. <b>Yvonne Taura,</b> <i>Manaaki Whenua</i>	Considerations for water quality guidelines for emerging contaminants. <b>Louis Tremblay,</b> <i>Cawthron Institute</i>	Is resistance futile? Managing and restoring ecological systems for multiple benefits. <b>Ross Thompson,</b> <i>University of Canberra</i>	Determining the Polysaccharide Composition of the New Zealand Freshwater Biofouler Lake Snow. <b>Cara Luiten,</b> <i>Victoria University of Wellington *</i>
3.30 - 3.45pm		Bicultural lake models to support tāngata whenua in freshwater management. <b>Mereana Wilson-Rooy,</b> <i>QEII Trust *</i>	The challenge of deriving default ecosystem protection guideline values for PFOS in freshwater. <b>Rick van Dam,</b> <i>Environmental Research Institute of The Supervising Scientist</i>		Discussion

3.45 - 4.15pm

## AFTERNOON TEA

	CONCURRENT SESSION 2	<b>Session: Mātauranga Māori shaping freshwater futures</b> <b>Room: Maitai 1</b> <b>Chair: Jane Kitson</b>	<b>Special session: SETAC ANZECC continued</b>  <b>Room: Maitai 1</b> <b>Chair: Jennifer Gadd</b>	<b>Session: Restoration methods</b>  <b>Room: Waimea</b> <b>Chair: Deborah Hofstra</b>	<b>Session: Natural history of freshwater biota</b>  <b>Room: Wairau</b> <b>Chair: Brian Sorrell</b>
4.15 - 4.30pm		Collaborating with mana whenua. <b>Kathryn Gale,</b> <i>Aukaha</i>	New guidelines and existing freshwater policy: using the best tool for the job. <b>Jennifer Price,</b> <i>Ministry for the Environment</i>	Sediment traps as mechanisms for reducing <i>E. coli</i> concentrations in dairy farm streams. <b>Megan Devane,</b> <i>ESR</i>	Elucidating climate change effects on longfin and shortfin eels using multi-decadal (1960-2012) otolith growth reconstructions. <b>Eimer Egan,</b> <i>NIWA</i>
4.30 - 4.45pm		Tieki wai in the Waiapu. <b>Pia Pohatu,</b> <i>Hīkurangi Takiwā Trust</i> <b>Joanne Clapcott,</b> <i>Cawthron Institute</i>	Issues with using water quality guidelines in management: developing decision-support frameworks. <b>Chris Hickey,</b> <i>NIWA</i>	Trialling stream rehabilitation tools to attenuate high nitrate loads in agricultural headwaters. <b>Brandon Goeller,</b> <i>NIWA *</i>	Bergmann's rule and whitebait: differences in size, age and growth of whitebait across New Zealand. <b>Mike Hickford,</b> <i>University of Canterbury</i>
4.45 - 5.00pm		Me pēhea te whakarauora i ngā repo o Maniapoto - how do we go about restoring the wetlands of Maniapoto? <b>Kelly Ratana,</b> <i>NIWA</i> <b>Ngahuia Herangi</b> <i>Maniapoto Māori Trust Board</i>	EPA use of Australian and New Zealand guidelines for fresh and marine water quality. <b>Richard Mohan,</b> <i>EPA</i>	Stream shade effects on instream plants and comparison of shade measurement methods <b>Fleur Matheson,</b> <i>NIWA</i>	Ninjas in NZ: Red-eared slider turtles are breeding in New Zealand. <b>Nicholas Ling,</b> <i>Waikato University</i>

5.00 - 5.15pm		Discussion	Ngā Pou Mataara: A Māori framework to monitor mauri in the Tukituki Awa. <b>Kate McArthur,</b> <i>Catalyst Group</i>	Stream shade restoration: are canopy shape or channel orientation important? <b>Kit Rutherford,</b> <i>NIWA</i>	Environmental factors affecting the Irrawaddy dolphin ( <i>Orcaella brevirostris</i> ) distribution in the Mahakam River, East Kalimantan. <b>Februanty Suyatiningsih,</b> <i>University of Waikato *</i>
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**CLOSE OF DAY ONE**

5.15 - 5.45pm	<b>Tribute to John Quinn (Maitai 1)</b>				
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6.00 - 7.30pm	<b>WELCOME FUNCTION // Trafalgar Street Party</b>				
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<b>TUESDAY 11 DECEMBER</b>					
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7.30am	<b>Registration Desk Open</b>				
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8.45 - 10.15am	<b>PLENARY 3/4</b>	Housekeeping: (10 mins)			
		<p><b>Keynote Speaker 3: Russell Death</b> Talk Title: Is Good Science Good Enough?</p> <p><b>Keynote Speaker 4: Jonathan Tonkin</b> Talk Title: Equipping river ecosystem management for a highly uncertain future</p> <p>Session Chair: Marc Schallenberg</p>			

10.15 - 10.45am	<b>MORNING TEA</b>				
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	<b>CONCURRENT SESSION 3</b>	Session: Population ecology and climate	Session: Community ecology	Session: Freshwater science, management and policy	Session: Nutrient modelling
		<b>Room: Maitai 1</b> <b>Chair: Travis Ingram</b>	<b>Room: Maitai 2</b> <b>Chair: Robin Holmes</b>	<b>Room: Waimea</b> <b>Chair: Trevor James</b>	<b>Room: Wairau</b> <b>Chair: Hans Eikaas</b>
10.45 - 11.00am		Rapid genetic adaptation offsets plastic increases in body growth rate under warming. <b>David Fryxell,</b> <i>University of Auckland</i>	Spatial abundance and diversity of picocyanobacteria in two lakes with contrasting geomorphology and trophic status. <b>Lena Schallenberg,</b> <i>University of Otago *</i>	Land, Air, Water Aotearoa (LAWA) – Behind the Scenes. <b>Kati Doehring,</b> <i>Cawthron Institute</i> <b>Abi Loughnan</b> <i>LAWA Environmental Monitoring and Reporting Project</i>	Development of the LUCI model for supporting sustainable management of multiple ecosystem services and nature-based water resources management in the Vietnam Mekong Delta. <b>Anh Nguyet Dang,</b> <i>Victoria University of Wellington *</i>
11.00 - 11.15am		Altering the flow and thermal regimes of river basins changes the growth dynamics of long-lived fishes. <b>Rick Stoffels,</b> <i>NIWA</i>	Effects of intraguild predation on individual specialisation in the Common Bully. <b>Marine Richarson,</b> <i>University of Otago *</i>	Combating in-stream ecological health – from bad to good by picking the low hanging fruit. <b>Duncan Law,</b> <i>Tonkin + Taylor Ltd</i>	Advective transport modelling of Orari Plains water quality. <b>Patrick Durney,</b> <i>Dhi Water and Environment Ltd</i>
11.15 - 11.30am		Thermal adaptation alters the ecological role of consumers. <b>Emma Moffett,</b> <i>University of Auckland *</i>	Are rare macroinvertebrate assemblages driven by distinct environmental factors? <b>Dimitros Rados,</b> <i>Massey University *</i>	Ecological health monitoring of large river systems: Establishing a Waikato region network. <b>Alicia Catlin,</b> <i>Waikato Regional Council</i>	Dynamic catchment modelling of a New Zealand dairy farming catchment. <b>Linh Hoang,</b> <i>NIWA</i>
11.30 - 11.45am	Can we find a climate-change fingerprint? Detecting recent range shifts among Japan's freshwater-associated species. <b>Kylie Park,</b> <i>Tonkin + Taylor Ltd</i>	Invertebrates associated with macrophytes bought from aquarium stores in Canada and New Zealand. <b>Ian Duggan,</b> <i>Waikato University</i>	Freshwater trends for the Asia-Pacific Region and the importance of training early-career scholars in science-policy <b>Catherine Febria,</b> <i>University of Canterbury</i>	Dairy Typologies: A means to Quantifying the N and P Footprint across Spatial Scales. From Farm to Nation. <b>Hans Eikaas,</b> <i>DairyNZ</i>	

11.45 - 12.00pm		Trophic interactions of kōwaro (Canterbury mudfish) across a gradient of drying intensity <b>Christopher Meijer,</b> <i>University of Canterbury *</i>	<b>SESSION THEME CHANGE: Environmental flows</b> Advancing the assessment of environmental flows for estuaries. <b>Eleanor Gee,</b> <i>NIWA</i>	Eight research areas that could foster ecosystem-based management in fresh waters, if combined. <b>Simone Langhans,</b> <i>University of Otago</i>	A Catchment Accounting Framework for tracing contaminants and calculating loads throughout New Zealand's surface waters. <b>Christophe Thiange,</b> <i>DairyNZ</i>
12.00 - 12.15pm		Carryover effects of larval environment on individual niche variation of adult common bullies. <b>Travis Ingram,</b> <i>University of Otago</i>	A new substrate mapping approach for high resolution habitat suitability assessments when designing environmental flows. <b>Jo Hoyle,</b> <i>NIWA</i>	Can the Integration and Implementation Science framework support better research for land and water policy? <b>Melissa Robson-Williams,</b> <i>Manaaki Whenua Landcare</i>	Can I Trust that Model? eSource Catchment Model Validation, a learning process. <b>Rochelle Carter,</b> <i>Bay of Plenty Regional Council</i>
12.15 - 12.30pm		A toxic puzzle – unravelling the relationship between anatoxin production & strain dominance in <i>Microcoleus autumnalis</i> ( <i>Phormidium autumnale</i> ). <b>Laura Kelly,</b> <i>Victoria University of Wellington *</i>	Drift transport capacity: what do we know and what does it mean for flow management? <b>Karen Shearer,</b> <i>Cawthron Institute</i> <b>John Hayes,</b> <i>Cawthron Institute</i>		On the need for more rigorous adoption of best practices in environmental modelling. <b>Deniz Özkundakci,</b> <i>Waikato Regional Council</i>
<b>12.30 - 1.30pm LUNCH</b>					
	<b>CONCURRENT SESSION 4</b>	<b>Special session: Swimmability</b>  <b>Room: Maitai 1</b> <b>Chair: Elaine Moriarty</b>	<b>Panel Discussion: Art for freshwater's sake</b>  <b>Room: Maitai 2</b> <b>Chair: Bruce Foster and Charlotte Sunde</b>	<b>Panel Discussion: Freshwater collaboration</b>  <b>Room: Waimea</b> <b>Chair: Jim Sinner</b>	<b>Workshop: Freshwater management in urban catchments</b> <b>Room: Wairau</b> <b>Chair: Jonathan Moores</b>
1.30 - 1.45pm		Revisiting New Zealand's recreational water quality guidelines: the freshwater microbiological sciences review project. <b>Elaine Moriarty,</b> <i>ESR</i>			
1.45 - 2.00pm		Public Health Recreational Freshwater Quality Guidelines: What's the story overseas? <b>Beverly Horn,</b> <i>ESR</i>			
2.00 - 2.15pm		Recreational water quality investigation: sources of faecal contaminants. <b>Eloise Ryan,</b> <i>Waikato Regional Council</i>			
2.15 - 2.30pm		Casting a net over the river: Bayesian networks as a real-time prediction tool for swimability. <b>Sarah Pirikahu,</b> <i>ESR</i>			
2.30 - 2.45pm		Near real-time monitoring of microbial water quality in contrasting New Zealand rivers using ColiMinder. <b>Rebecca Stott,</b> <i>NIWA</i>			
2.45 - 3.00pm		Suitability of Brazilian freshwaters for contact recreation. Assessment by a water quality index. <b>Frederico Azevedo Lopes,</b>			

		Universidade Federal de Minas Gerais Brazil			
3.00 - 3.15pm		Discussion			
3.15 - 3.45pm AFTERNOON TEA					
3.45 - 5.15pm	POSTERS	POSTER SESSION (Matai 1 and Maitai 2)			
CLOSE OF DAY TWO					
5.30 - 7.30pm EARLY CAREER MIXER // Deville's Café, New Street, Nelson SWIM MEETING // Waimea Room					

WEDNESDAY 12 DECEMBER					
7.30am Registration Desk Open					
8.45 - 10.15am	PLENARY 5/6	Housekeeping (10 mins)			
		<p><b>Keynote Speaker 5: Emily Bernhardt</b> Surfing the Data Wave at the Frontiers of Freshwater Science</p> <p><b>Keynote Speaker 6: Yvonne Vadeboncouer</b> Clearing a way back: illuminating the littoral in lakes and limnology</p> <p>Chair: Angus McIntosh</p>			
10.15 - 10.45am MORNING TEA					
	CONCURRENT SESSION 5	<b>Session: Aquatic plants and water quality</b> <b>Room: Maitai 1</b> <b>Chair: Fleur Matheson</b>	<b>Session: Community ecology and biological interactions</b> <b>Room: Maitai 2</b> <b>Chair: Catherine Febria</b>	<b>Session: Environmental indicators</b> <b>Room: Waimea</b> <b>Chair: Richard McDowell</b>	<b>Session: Waterscapes</b> <b>Room: Wairau</b> <b>Chair: Sarah Pirikahu</b>
10.45 - 11.00am		Nutrient attenuation in gravel bed rivers: ecosystem service or eutrophication symptom? Ngā tohu o te Tukituki. <b>Kit Rutherford on behalf of John Quinn, NIWA</b>	Intriguing trophic structures associated with mudfish pools in South-Westland: not extreme, just size-structured. <b>Angus McIntosh, University of Canterbury</b>	The influence of macroscale and microscale habitat factors on invertebrate communities: implications for SoE monitoring. <b>Alastair Suren, Bay of Plenty Regional Council</b>	Tracking groundwater contamination using DNA tracers. <b>Liping Pang, ESR</b>
11.00 - 11.15am		Stimulation of river periphyton growth by ammoniacal-N vs. nitrate-N: is there a difference? <b>Logan Brown, Horizons Regional Council</b>	Modelling network structure and temporal connectivity in freshwater metacommunities. <b>Finnbar Lee, University of Auckland *</b>	Improving the cost-effectiveness of macroinvertebrate state of the environment monitoring. <b>John Stark, Stark Environmental Limited</b>	Predicting groundwater contamination using next generation sequencing. <b>Judith Webber, ESR</b>
11.15 - 11.30am		Water we do to - Periphyton and relationships to water quality in the Horizons region. <b>Tom Stephens, Auckland Council</b>	Spatial heterogeneity in flow-disturbance influences abundance and temporal stability in native-invasive species co-occurrence in riverscapes. <b>Nixie Boddy, University of Canterbury *</b>	Using stationary and aerial red-green-blue and multispectral camera imagery for stream periphyton monitoring. <b>Anika Kuczynski, NIWA</b>	What do we know about groundwater ecosystem functions, values and threats? <b>Michelle Greenwood, NIWA</b>
11.30 - 11.45am		Improving our understanding of Southern slime. <b>Roger Hodson, Environment Southland</b>	Invasive macrophyte presence and growth form influence plankton communities. <b>Heremerose Matutes, Visayas State University-Alangalang</b>	Using sediment fingerprinting to determine the contribution of bank erosion to stream sediment yields. <b>Manawa Huirama, Waikato University *</b>	Water balance and groundwater capture zone assessment of Pukepuke Lagoon. <b>Catherine Sturgeon, Jacobs New Zealand Limited</b>

11.45 - 12.00pm		Water quality and periphyton modelling of point source discharge effects. <b>Olivier Ausseil,</b> <i>Aquanet Consulting Ltd</i>	Consumption of kōura in Lake Rotoiti by brown bullhead catfish: a risk assessment. <b>Laura Francis,</b> <i>Waikato University *</i>	Efficacy of a phycocyanin sensor as a surrogate measure of cyanobacterial bloom. <b>Ngaire Phillips,</b> <i>Streamlined Environmental Ltd</i>	Water source and contaminant pathways in the Waiokura catchment, Taranaki, New Zealand. <b>Rob van der Raaij,</b> <i>GNS Science</i>
12.00 - 12.15pm		Eutrophication Risk Assessment: Linking Across Freshwater Environments. <b>Sandy Elliot,</b> <i>NIWA</i>	Macrophytes in an ICOLL: an open and shut case? <b>Mary de Winton,</b> <i>NIWA</i>	Natural Dispersion of Mercury from Puhipuhi, Northland – Revisited. <b>Andrew Rumsby,</b> <i>Pattle Delamore Partners Ltd</i>	Update on the New Zealand water model-hydrology project. <b>Christian Zammit,</b> <i>NIWA</i>
<b>12.15 - 1.30pm</b> <b>LUNCH (boxed lunch)</b> <b>Rōpū Māori Meeting (Waimea Room)</b>					
	<b>CONCURRENT SESSION 6</b>	<b>Special session: Characterising lake communities</b> <b>Room: Maitai 1</b> <b>Chair: Susie Wood</b>	<b>Special session: Freshwater citizen science</b> <b>Room: Maitai 2</b> <b>Chair: Richard Storey</b>	<b>Special session: Land use and freshwater</b> <b>Room: Waimea</b> <b>Chair: Scott Larned</b>	<b>Session: Contaminants and nuisance plants</b> <b>Room: Wairau</b> <b>Chair: Cathry Kilroy</b>
1.30 - 1.45pm		Understanding toxin production in bloom-forming cyanobacteria from New Zealand lakes. <b>Jonathan Puddick,</b> <i>Cawthron Institute</i>	Resourcing and coordinating freshwater citizen science across New Zealand. <b>Richard Storey,</b> <i>NIWA</i>	Big picture stuff. <b>Ken Taylor,</b> <i>Our Land and Water NSC</i>	Preventing the spread of freshwater pests – what’s working and what’s not. <b>Tracey Burton,</b> <i>NIWA</i>
1.45 - 2.00pm		Shifts in the bacterial communities associated with the formation and breakdown of a toxic cyanobacterial scum. <b>Konstanze Steiner,</b> <i>Cawthron Institute</i>	Engage, advise, support – helping communities own their research. <b>Sheryl Miller,</b> <i>Greater Wellington Regional Council</i>	Science to policy and back again: compliant land use practices still cause P leaching. <b>Richard McDowell,</b> <i>Our Land and Water NSC</i>	Pesticides in New Zealand’s running waters: a survey of agricultural streams. <b>Christoph Matthaei,</b> <i>University of Otago</i>
2.00 - 2.15pm		Development and implementation of a robust, regionally representative water quality monitoring network for lakes. <b>Mark Hamer,</b> <i>Waikato Regional Council</i>	Citizen Science and Freshwater Monitoring in Aotearoa from an NGO Perspective. <b>Liz Gibson,</b> <i>Mountains to Sea Wellington, The Whitebait Connection.</i> <b>Kim Jones</b> <i>Mountains to Sea Conservation Trust, The Whitebait Connection</i>	The land use suitability concept: A Southland case study. <b>Amy Whitehead,</b> <i>NIWA</i>	Towards more realistic ecotoxicology: evaluating chronic effects of neonicotinoids using a ubiquitous New Zealand mayfly. <b>Sam Macaulay,</b> <i>University of Otago *</i>
2.15 - 2.30pm		Are non-indigenous fishes exploiting empty niches in lacustrine environments? <b>Alton Perrie,</b> <i>Greater Wellington Regional Council *</i>	Empowering the community; volunteers monitor hut River 'swimmability'. <b>Juliet Milne,</b> <i>NIWA</i>	Sediment delivery from erosion source to catchment outlet – where should erosion-management be focussed? <b>Arman Haddadchi,</b> <i>NIWA</i>	Deconstructing individual chemical stressors in two contrasting catchments. <b>Michael Stewart,</b> <i>Streamlined Environmental Ltd</i>
2.30 - 2.45pm		Improving lake marginal habitat for native fish using structure. <b>David Kelly,</b> <i>Cawthron Institute</i>	Florida LAKEWATCH: Citizen Scientists protecting Florida’s aquatic systems. <b>Mark Hoyer,</b> <i>University of Florida</i>	Land-use effects on aquatic ecosystems: strengthening the evidence-base. <b>Scott Larned,</b> <i>NIWA</i>	Stressor dominance and sensitivity-dependent antagonism: Disentangling freshwater insecticide and agricultural stressor effects. <b>Jon Bray,</b> <i>University of Canberra</i>
2.45 - 3.00pm		Changes at the edge: food web impacts of degradation of littoral habitats. <b>Simon Stewart,</b> <i>Cawthron Institute</i>	What were we swimming in? Citizen study of the water quality in Lake Wanaka, NZ. <b>Chris Arbuckle,</b> <i>Aspiring Environmental</i>	Recent advances in reporting and interpreting water quality trends. <b>Ton Snelder,</b> <i>LWP Ltd</i>	Environmental drivers of Microcoleus (Phormidium) blooms in the Maitai River, Nelson and development of a predictive model. <b>Georgia Thomson-Laing,</b> <i>Cawthron Institute</i>

3.00 - 3.15pm		Learning from the past to identify lake resilience and enhance restoration. <b>Marcus Vandergoes,</b> GNS Science	Nature Agents – Participatory Science for Environmental Improvement. <b>Kirsty Brennan,</b> EOS Ecology	Investigation of Methods to Predict Groundwater Redox Status Using Limited Sample Data. <b>Scott Wilson,</b> Lincoln Agritech	PFAS in New Zealand Fish: Is this the next threat to our aquatic ecosystems? <b>Nerena Rhodes,</b> Pattle Delamore Partners Ltd
<b>3.15 - 3.45pm AFTERNOON TEA</b>					
	<b>CONCURRENT SESSION 7</b>	<b>Special session: Characterising lake communities continues</b> <b>Room: Maitai 1</b> <b>Chair: Susie Wood</b>	<b>Special session: Freshwater citizen science continues</b> <b>Room: Maitai 2</b> <b>Chair: Richard Storey</b>	<b>Special session: Land use and freshwater continues</b> <b>Room: Waimea</b> <b>Chair: Scott Larned</b>	<b>Special session: Freshwater mussels</b> <b>Room: Wairau</b> <b>Chair: Sue Clearwater</b>
3.45 - 4.00pm		Ecosystem services at Lake Wairarapa: insights into its past, present, and future. <b>Sky Halford,</b> Victoria University of Wellington *	Citizen science invertebrate monitoring provides similar assessments of ecological health as professional monitoring. <b>Martin Neale,</b> Puhoi Stour Ltd	CLUES calibration – can we use CLUES to estimate attenuation? <b>Annette Semadeni-Davies,</b> NIWA	Characterising the fish fauna associated with freshwater mussels in Waikato streams. <b>Nicole Hanrahan,</b> NIWA *
4.00 - 4.15pm		Tracking historical cyanobacterial communities in five contrasting shallow New Zealand lakes. <b>Mailys Picard,</b> Cawthron Institute *	Assuring quality of community-based water monitoring data. <b>Rob Davies-Colley,</b> NIWA	A regional council application of tools – taking the road less travelled. <b>Elaine Moriarty,</b> Environment Southland	Temporal partitioning of reproductive resources in two sympatric Echyridella freshwater mussel species in Waikato streams. <b>Michele Melchior,</b> Waikato University *
4.15 - 4.30pm		One shakey lake: Impacts from 1000 years of natural tectonic disturbance on in-lake communities. <b>Katie Brasell,</b> Cawthron Institute *	Project Baseline Lake Pupuke Initiative, a case study for effective citizen science. <b>Ebrahim Hussein,</b> Auckland Council	Measuring actual denitrification to understand nitrogen attenuation. <b>Heather Martindale,</b> GNS Science	Glochidial development of the New Zealand freshwater mussel ( <i>Echyridella menziesii</i> ) on non-indigenous fish. <b>Tom Moore,</b> Waikato University *
4.30 - 4.45pm		Reconstructing lake diatom community change: comparing novel DNA metabarcoding with traditional morphological techniques. <b>Rose Gregersen,</b> University of Auckland *	Discussion	Variability of <i>E.coli</i> in rivers: implications for interpretation of grab samples. <b>Richard Muirhead,</b> AgResearch	Can kākahi ( <i>Bivalvia: Hyriidae</i> ) prey on non-indigenous <i>Daphnia</i> ? <b>Anita Pearson,</b> Waikato University *
4.45 - 5.00pm		Lake sediment as sentinels of historical food web dynamics: A case study of two eutrophic lakes in Central Otago, New Zealand. <b>Samiullah Khan,</b> University of Otago *	Discussion	The Illinois River Watershed, USA – The Convergence of Science and Policy. <b>Brian Haggard,</b> University of Arkansas	The biology of kākahi a taonga species, insights into restoration across waterways in Canterbury. <b>Channell Thoms,</b> University of Canterbury *
<b>CLOSE OF DAY THREE</b>					
<b>5.00 – 6.30pm NZFSS AGM // Maitai 1</b>					
<b>7.00 – 8.30pm Public Seminar // Maitai 1</b>					

## THURSDAY 13 DECEMBER

<b>7.30am Registration Desk Open</b>	
<b>8.45 - 10.15am</b>	Housekeeping (10 mins)  <b>Keynote Speaker 7: Neil Deans</b> NZFSS – 50yrs young  <b>Keynote Speaker 8: Hon David Parker</b> Making Polluted Rivers Clean again  Chair: Roger Young
<b>10.15 - 10.45am</b>	<b>MORNING TEA</b>

	<b>CONCURRENT SESSION 8</b>	<b>Session: Fish and fisheries</b> <b>Room: Maitai 1</b> <b>Chair: Kati Doehring</b>	<b>Session: Wetlands, lakes and estuaries</b> <b>Room: Maitai 2</b> <b>Chair: David Kelly</b>	<b>Session: Urban streams</b> <b>Room: Waimea</b> <b>Chair: Timothy Hopley</b>	<b>Session: Water quality</b> <b>Room: Wairau</b> <b>Chair: Olivier Ausseil</b>
<b>10.45 - 11.00am</b>		The New Zealand Whitebait Fishery - current knowledge and research gaps. <b>Jane Goodman,</b> <i>Department of Conservation</i>	Wetlands Must Be Wet: Paludiculture for the Climate and the Future. <b>Brian Sorrell,</b> <i>Aarhus University</i>	Environmental Education for Auckland's Industry - Industrial Pollution Prevention Programme. <b>Rhianna Drury,</b> <i>Auckland Council</i>	Fire Water: The effect of the 2017 wildfires on the streams of the Port Hills, Canterbury. <b>Jenny Webster-Brown,</b> <i>Waterways Centre for Freshwater Management</i>
<b>11.00 - 11.15am</b>		Trapping methods: evaluating soak time, fish density, predator presence, and baiting for inanga population assessments. <b>Andrew Watson,</b> <i>University of Canterbury *</i>	Nutrient load limit setting for estuaries - the New Zealand Estuary Trophic Index approach. <b>David Plew,</b> <i>NIWA</i>	Assessing flow and nutrient contributions from rheocene springs and groundwater seepage in two urban waterways. <b>Belinda Margetts,</b> <i>Christchurch City Council</i> <b>Peter Callander</b> <i>PDP Ltd</i>	Stream and sediment chemistry interact to control dissolved reactive phosphorus concentrations at baseflow. <b>Zach Simpson,</b> <i>Lincoln University *</i>
<b>11.15 - 11.30am</b>		Whitebait wizardry: modelling the composition of a mixed species fishery. <b>Bridget Armstrong,</b> <i>University of Canterbury *</i>	Nutrient thresholds for protecting wetland ecological integrity. <b>Hugh Robertson,</b> <i>Department of Conservation</i>	Understanding what's left: assessing the ecological health of Wellington's urban streams to inform Whaitua Te Whanganui-a-Tara. <b>Evan Harrison,</b> <i>Greater Wellington Regional Council</i>	Changes in the water chemistry of Cannel Creek following remedial works at Bellvue Mine. <b>Marlese Fairgray,</b> <i>University of Canterbury *</i>
<b>11.30 - 11.45am</b>		New Zealand Whitebait – Assessment of Ecosystem Services. <b>Hannah Mueller,</b> <i>Tonkin + Taylor Ltd</i>	Denitrification and burial of N and P in lakes explain seasonality of algal growth limitation. <b>Piet Verburg,</b> <i>NIWA</i>	Lifting the lid on piped streams. <b>Alex James,</b> <i>EOS Ecology</i>	Land-use and Waterway Quality at Mt. Grand Station, New Zealand. <b>Shyam Provost,</b> <i>Lincoln University *</i>
<b>11.45 - 12.00pm</b>		Behavioural response of Taupo anglers to new liberal fishing regulations. <b>Michel Dedual,</b> <i>Department of Conservation</i>	Waiwiri: Trembling waters, beauty of the South...plans to restore a Manawatu lake catchment. <b>Phillipe Gerbeaux,</b> <i>Department of Conservation</i>	Heavy metal contamination from storm water in an industrial catchment and the relationship with antecedent dry periods. <b>Timothy Hopley,</b> <i>University of Auckland/Auckland Council</i>	Comparison of traditional and emerging methods of trend analysis and load calculation in Lake Rotorua streams. <b>James Dare,</b> <i>Bay of Plenty Regional Council</i>
<b>12.00 - 12.15pm</b>		Brown trout natal homing in the Taieri River estimated by otolith microchemistry. <b>Pavel Mikheev,</b> <i>University of Otago *</i>	A case study: linking catchment land use management to lake water quality. <b>Keryn Roberts,</b> <i>Environment Southland</i>	Monitoring and salvage of kākahi (Echyridella menziesii) in a non-wadeable lowland river subject to dredging. <b>Greg Burrell,</b> <i>Instream</i>	What's to blame for low oxygen in streams – effluent, stream flow, macrophytes or groundwater? <b>Thomas Wilding,</b> <i>Hawkes Bay Regional Council</i>
<b>12.15 - 12.30pm</b>		DOC's freshwater fish monitoring – what, why, when, where and how? <b>Natasha Petrove,</b> <i>Department of Conservation</i>	Valuing rural riparian zones and wetland areas. <b>Carla Muller,</b> <i>NIWA</i>		Long-term trends in water quality of Canterbury's high-country lakes. <b>Tina Bayer,</b> <i>Environment Canterbury</i>
<b>12.30 - 1.30pm LUNCH</b>					
	<b>CONCURRENT SESSION 9</b>	<b>Workshop: Fish passage guidelines</b> <b>Room: Matai 1</b> <b>Chair: Eleanor Gee</b>	<b>Special session: MfE policy update</b> <b>Room: Maitai 2</b> <b>Chair: Alison Collins</b>	<b>Workshop: Multi-Criteria Decision Analysis</b> <b>Room: Waimea</b> <b>Chair: Simone Langhans</b>	<b>Special session: Constructed wetlands</b> <b>Room: Wairau</b> <b>Chair: Rebecca Eivers</b>
<b>1.30 - 1.45pm</b>			Key policy priorities in Water and Climate Change. <b>Cheryl Barnes,</b> <i>Ministry for the Environment</i>		Constructed wetlands for dairy run-off: are they working? <b>Suzanne Lambie,</b> <i>Manaaki Whenua - Landcare Research</i>



1.45 - 2.00pm			The Water policy work programme <b>Martin Workman,</b> <i>Ministry for the Environment</i>		Accelerating uptake of constructed wetlands through recognition of performance in the limit-setting process. <b>Aslan Wright-stow,</b> <i>DairyNZ</i>
2.00 - 2.15pm			Science in contested places: principles and roles. <b>Alison Collins,</b> <i>Ministry for the Environment</i>		Constructed wetlands to reduce contaminant losses from agriculture: what don't we know? <b>Chris Tanner,</b> <i>NIWA</i>
2.15 - 2.30pm			The science and policy interface 'on the front lines'. <b>James King</b> <i>Ministry for the Environment</i>		Design considerations for constructed treatment wetlands mitigating diffuse pollution from intensive agricultural catchments. <b>Rebecca Eivers,</b> <i>Streamlined Environmental Ltd *</i>
2.30 - 2.45pm			Ecosystem Health – a new framework to focus our water science and policy. <b>Carl Howath,</b> <i>Ministry for the Environment</i>		Constructed wetlands – the good, the bad and the ugly. <b>James Sukias,</b> <i>NIWA</i>
2.45 - 3.00pm			Discussion		A GIS model to assess the landscape suitability for installation of storm water detention bunds. <b>John Paterson</b> <i>Phosphorus Mitigation Project</i>
3.00 - 3.15pm					Discussion

3.15 - 3.45pm

AFTERNOON TEA

3.45 - 4.45pm	PLENARY 9	<p style="text-align: center;"><b>PECHA KUCHA</b></p> <p style="text-align: center;">Stream rehabilitation in NZ: unscrambling eggs or turning ecological lemons into lemonade? A PhD in 7mins. <b>Robin Holmes,</b> <i>Cawthron Institute.</i></p> <p style="text-align: center;">Conservation status of New Zealand freshwater invertebrates – 2018 update. <b>Tom Drinan,</b> <i>Department of Conservation</i></p> <p style="text-align: center;">Faecal Indicator Bacteria in New Zealand Freshwater Fish: A Pilot Study. <b>Sarah Coxon,</b> <i>ESR</i></p> <p style="text-align: center;">Were the New Zealand and Australian graylings (<i>Prototroctes</i> spp.) distinct species? <b>Gerry Closs,</b> <i>University Of Otago</i></p> <p style="text-align: center;">Drain impacts to wetland hydrology, and restoration planning. <b>James Blyth,</b> <i>Jacobs NZ</i></p> <p style="text-align: center;">Kaikōura Earthquake - the many crossings along the road to recovery. <b>Tanya Blakely,</b> <i>Boffa Miskell Ltd</i></p> <p style="text-align: center;">The Final Frontier: Using enterprise modelling to implement freshwater accounting. <b>Mark Heath,</b> <i>GWRC</i></p> <p style="text-align: center;">DOC's Freshwater Stretch Goal "50 freshwater ecosystems restored - from mountains to the sea" <b>Tracie Dean-Speirs,</b> <i>Department Of Conservation</i></p>			
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4.45 - 5.00pm

CLOSE

Official Conference Close

6.30 - 11.30pm

CONFERENCE DINNER // Trafalgar Centre, Paru Paru Rd, Nelson

## FRIDAY 14 DECEMBER

Various Times,  
please check the  
conference  
handbook

FIELD TRIPS // All departing from Rutherford Hotel