



13-14 June 2023, Rotorua, New Zealand



Programme

Day 1. Tuesday, 13 June, 2023. Scion Rotorua – Rimu Room. Te Papa Tipu Innovation Park, Titokorangi Drive

Time	Description	Lead/Speaker
8:00 am	Registration desk opens	
8:20 am	Welcome – Mihi whakatau	
8:30 – 10:00 am	Session 1 – The need for resilient forests?	Chair – Henri Bailleres (Scion) – 10min
	<i>Research and Development investment via the Forest Growers Levy – an update</i>	Paul Adams – 15min
	<i>The Resilient Forests Programme: An uncertain future becomes an uncertain world</i>	Peter Clinton – 25min
	<i>Towards a responsible forestry sector – an initial review of the sustainability activities of New Zealand Forest growing companies</i>	Grace Villamor – 25min
	Q and A	15min
10:00 – 10:30 am	Morning tea	
10:30 – 12:00 pm	Session 2 – Better understanding our trees to improve resilience:	Chair: Mark Self (Ernslaw One Limited) – 10min
	<i>Speaker 1 – Predicting product performance: recent progress</i>	Jonathan Harrington – 15min
	<i>Speaker 2 – Backpack mobile laser scanning – progress towards autonomous mensuration and phenotyping</i>	Robin Hartley – 15min
	<i>Speaker 3 – Uncovering the radiata pine microbiome: A key to resilient forests?</i>	Kathryn Walker – 15min
	<i>Speaker 4 – Impact of Red Needle Cast on tree growth</i>	David Lane – 15min
	Q and A	20min
12:00 – 1:00 pm	Lunch	
1:00 – 2:30 pm	Session 3 – Management options to improve forest resilience:	Chair: Acacia Farmery (Rayonier Matariki Forests) – 10min
	<i>Speaker 1 – Red needle cast epidemiology</i>	Emily McLay – 15min
	<i>Speaker 2 – Control options for pine needle diseases</i>	Stuart Fraser – 15min
	<i>Speaker 3 – Advancing forest simulation through individual tree models</i>	Yvette Dickinson – 15min
	<i>Speaker 4 – The accelerator trials: what have we learnt over the last eight years?</i>	Simeon Smaill – 15min
	Q and A	20min
2:30 – 3:00 pm	Afternoon tea	

Day 1. Tuesday, 13 June, 2023 (continued)

Time	Description	Lead/Speaker
3:00 – 5:00 pm	Session 4 – Tools and approaches to increase resilience of the forest industry:	Chair – Roger Dungan (Scion) – 10min
	Speaker 1 – <i>Autonomous forest health monitoring</i>	Grant Pearse / Andrew Holdaway Nicolò Camarretta – 25min
	Speaker 2 – <i>Automatic mapping of red needle cast using satellite imagery</i>	
	Speaker 3 – <i>Application of a process based model to support management for ‘resilience’ under rapid change</i>	Don White – 15min
	Speaker 4 – <i>Developing strategy in uncertainty</i>	Andrew Clarke – 15min
	Speaker 5 – <i>From uncertainty to action: building resilient forests in a fast changing World</i>	Andrew Cridge – 15min
	Q and A Session	20min
	Summary	John Moore/Paul Adams – 20min
5:00 – 6:00 pm	Networking drinks and nibbles – networking hour (Eastwood Café)	
6:00 – 6:30 pm	Guest speaker – <i>Resilience and crystal ball gazing in forestry</i>	Ryan Cavanagh (CEO - Timberlands)
6:30 – 7:00 pm	Q and A	
7:00 pm	Close of Conference	

Day 2. Wednesday, 14 June 2023 Field Trip, Kinleith

Time	Description	
8:00am	Meet at Scion for bus transportation to Kinleith. Depart Scion.	Te Papa Tipu Innovation Park Titokorangi Drive (formerly Longmile Road) Rotorua
9:00am	Stop 1. Schnapper Road Site	
9:00am – 9:30am	Welcome to site (Manulife)	<i>Intro / H and S talk</i> – Mike Baker (Manulife Investment Management)
9:30am – 11:30pm	Red needle cast copper exclusion trial and sensor network	<i>1: Copper exclusion trials and sensor networks, Stuart Fraser/Damien Sellier</i> <i>2: UAV Demo, Peter Massam/Robin Hartley</i>
11:30am	Lunch	
12:00pm	Travel to Stop 2	
12:30am	Stop 2. Maiden Road	
12:30pm – 2:30pm	Red needle cast genetics trial	<i>1: Progress to date breeding for RNC resistance, Natalie Graham/Blaise Ratcliffe</i> <i>2: Competition, disease and tree growth dynamics, Dave Pont</i>
2:30pm	Depart Kinleith Forest	
3:30pm	Arrive back at Scion	

Presenters

Acacia Farmery

FOREST ESTATE MANAGER – RAYONIER MATARIKI FORESTS

Session: Chair Management options to improve forest resilience



Acacia Farmery is the Forest Estate Manager at Rayonier Matariki Forests (RMF) and manages their R&D, genetics, and biosecurity programs. She has over seven years' experience with RMF since graduating with a BForSc from the University of Canterbury. Acacia's roles at RMF have included a graduate role with the R&D team, establishment

forester, and forest manager before moving into her current role. Since 2017, Acacia was a founding member of Future Foresters and has only recently passed on the torch. Industry involvement is one of Acacia's favourite parts of her role, including being a member of the Resilient Forests TST since 2022. She is passionate about promoting the sector and has done a lot of work in this space with schools and careers events over the last seven years.

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Andrew Clarke

HEAD, FOREST INVESTMENT SERVICES – ERNSLAW ONE LIMITED

Developing strategy in uncertainty



Andrew Clarke is the Head of Forest Investment Services at Ernslaw One Limited. This role manages many of the strategic and internal support functions of the business including Estate Planning, Carbon, Spatial Analysis, Business Improvement, Technical Forestry, Land and Investments.

Andrew is a Registered Member of NZIF and prior to joining Ernslaw, Andrew spent a decade in Forestry Consulting with a diverse range of project and clients. Key areas included valuations, due diligence for acquisitions, carbon, insurance, woody biomass feasibilities and right tree right place projects. Andrew has a diverse range of experience including roles in harvesting, silviculture, supply chain planning and log procurement in the wood processing industry.

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Andrew Cridge

PORTFOLIO LEADER, TREES TO HIGH VALUE WOOD PRODUCTS – SCION

From uncertainty to action: building resilient forests in a fast changing World



Dr. Andrew Cridge is a Senior Scientist and the portfolio lead of Trees to High Volume Wood Products at Scion. His research applies modern genomic, biochemical and bioinformatic approaches to find integrated and sustainable solutions for managing insects and plants in New Zealand's native and productive ecosystems. He has considerable expertise in using

environmental DNA (eDNA) techniques to monitor insect biodiversity in terrestrial environments. Andrew received the 2021 Science New Zealand Team Award and the 2019 University of Otago Commercialisation Research Award.

Andrew is a passionate advocate for science education and outreach. He has worked with schools and community groups to inspire the next generation of scientists. Andrew has a PhD in Biochemistry from the University of Otago and a Bachelor of Science (Honours) in Biochemistry from Lincoln University.

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David Lane

FIELD AND LABORATORY TECHNICIAN,
PATHOGEN ECOLOGY AND CONTROL – SCION

Impact of Red Needle Cast on tree growth



David Lane is a Field and Laboratory Technician at Scion, working with research scientists investigating the *Pinus radiata* disease, red needle cast (RNC). He has worked in the forestry science field for two and half years and is particularly interested in the history of disease and the severity of RNC over time.

Lane's main work involves collecting field data from the pine forests in New Zealand such as needle trap, wood core, timelapse photography and environmental data, to provide insights into the impact of RNC and its spread through long-term plots.

Prior to working at Scion David was working as a laboratory scientist for a private biotechnology lab developing yeast cultures to produce biofuels. He also worked as a plant pathology scientific advisor for the Australian Government biosecurity department. David's work in plant pathology started at university where he investigated the germination of the fungal plant pathogen *Sclerotinia sclerotiorum*.

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Don White

TREE PHYSIOLOGIST – SCION

Application of a process based model to support management for 'resilience' under rapid change



In a career spanning 35 years, Don White has worked on a wide range of issues related to the resilience and vulnerability of planted forests including drought mortality, secondary salinisation of agricultural land, the effect of planted forests on water resources and sustaining productivity over multiple rotations. Don co-developed CABALA, a

process-based model that simulates the effect of disturbance (disease, defoliation, windthrow), management (pruning, fertiliser, genotype, irrigation, thinning, weed control, coppice management) and climate (temperature, CO₂ concentration and rainfall) on the carbon, water, and nitrogen balance of forests. Don will test the model using data from the Hawkes Bay area and then simulate the effect of management (including whole tree harvesting) on growth, carbon storage, drainage, and nitrogen cycling.

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Emily McLay

TEAM LEAD, PATHOGEN ECOLOGY AND CONTROL – SCION

Red Needle Cast Epidemiology



Dr. Emily McLay is a promising early-career researcher at Scion, where she specialises in the field of forest pathology. At Scion, Emily seeks to identify and quantify the key drivers of pathogen-host interactions in plantation forest ecosystems, which can help inform the development of more effective and sustainable disease management

strategies. Currently, she is working on building a process based epidemiological model to predict the infection risk of red needle cast based on past and forecast weather. Emily also leads projects on the early detection and control of Radiata pine diseases.

Emily completed her PhD in plant pathology at Massey University, followed by a position as a R&D scientist at BioLumic where she developed innovative UV-B treatments of seeds and seedlings to improve the crop's tolerance to disease.

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Grace Villamor

RESEARCH GROUP LEADER,
ECONOMY AND SOCIETY

Corporate responsibility: current practices and opportunities of forest companies in New Zealand



Grace Villamor's current research is focused on managing risks and uncertainty for Resilient Forests, developing integrated assessment tools for understanding the waterflows in plantation forests and assessing socio-economic impacts of forest-based biofuels in New Zealand. Grace was a contributing author for the IPCC Working group

report on gender and land desertification and is currently serving as one of the lead authors for the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Nexus Global Assessment on Scenario modelling.

Grace has a PhD in Human Geography from University of Bonn, Germany. Her research interests include understanding human decision making and behaviour of land managers under different internal and external factors and using participatory approaches and its interactions with biophysical models. She has worked on various climate change adaptation research both in developing and developed countries for more than 17 years.

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Grant Pearse

TEAM LEAD, REMOTE SENSING AND GIS – SCION

Autonomous forest health monitoring



Dr Grant Pearse leads the Remote Sensing and GIS team at Scion. The team's research covers a diverse range of topics including measuring forest growth and yield, detecting and managing forest biosecurity risks and the use of lidar, satellite and UAV data. The group also has an active tree phenotyping programme using state-of-the art hyperspectral,

thermal and lidar sensors. Grant's specific interests lie at the intersection of data science and remote sensing where he has developed and operationalized a range of tools based on deep learning. He obtained his Bachelor of Forestry Science from the School of Forestry in 2012 before completing his PhD in remote sensing at the University of Canterbury in 2016

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Henri Bailleres

GENERAL MANAGER FOR FORESTS TO TIMBER PRODUCTS – SCION

Chair – The need for resilient forests?



Henri was born in Toulouse, France and grew up in the southwest, surrounded by the vast Landes Forest. His love for trees led him to pursue studies in forest management, become an engineer in the wood industry, and earned a PhD in wood science. His career in Research, Development, and Innovation for the forest-wood

chain spans several continents and cultural origins, and he strives to make a positive and sustainable impact on the community and industry. For 14 years in Australia, Henri led the Forest Products Innovation Team, working on projects related to forest performances and engineered wood products. Henri has also specialised in manufacturing, optimising and applying cross-laminated timber and glued laminated timber (glulam) products. Currently, at Scion, he is focusing on research initiatives that support the transition from a linear to a circular economy in the forestry sector, increasing value capture from forest to product, and equipping the industry with tools to address potential risks and increase productivity.

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John Moore

RESEARCH AND DEVELOPMENT MANAGER – TIMBERLANDS LIMITED



As the Research and Development Manager at Timberlands Limited, John Moore focuses on improving productivity of the future tree crop, and understanding wood quality and how to make the forest more resilient to future threats. He is also investigating how to implement precision forestry within the company through

better use of data and technology.

Prior to joining Timberlands, John was a senior scientist at Scion specialising in silviculture. His early research focused on quantifying the risk of wind damage in forests and the development of strategies to mitigate this risk. He also spent five years working in Scotland researching the timber quality of Sitka spruce.

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Jonathan Harrington

SCIENTIST, PLANT MORPHOLOGY AND PHYSIOLOGY – SCION

Predicting product performance: recent progress



Dr Jonathan Harrington is a mechanical engineer and computational material scientist. His skills include instrumentation, automation, data science, numerical analysis and wood physics. He has worked on a wide variety of projects across the forest products value chain from tree breeding to product development. His current major

focus is equipping industry with material data and simulation tools to enable value to be extracted more effectively from our forests and to de-risk investment. His hope is that one day the things made by people will be indistinguishable from those made by nature.

Kathryn Walker

SCIENTIST, MICROBIAL ECOLOGY - SOIL SYSTEMS – SCION

Uncovering the Pinus Radiata microbiome: A key to resilient forests?



Dr Kathryn Walker's research focuses on the role of microbes in forest health and resilience in a changing climate. She contributes to interdisciplinary projects such as the Resilient Forest Programme and the Tree Root Microbiome Project. Her work focuses on characterising the microbiome of different components of *Pinus radiata* (needles, wood,

pollen, roots etc.) and, investigating how the microbiome changes over time with changing conditions and disease pressure. She also leads a project investigating methane exchange in forest soils and the possible role of forest soils in balancing NZ's methane budget.

Kathryn's expertise include environmental microbiology, plant-soil-microbe interactions, and microbial ecology. She received her PhD from Lincoln University in 2017 in plant and soil microbiology and prior to starting at Scion in 2021, she undertook a postdoctoral fellowship at the University of Canterbury looking at methane driven denitrification in groundwater.

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Mark Self

PRINCIPAL FORESTER – ERNSLAW ONE LIMITED

Session Chair – Better understanding our trees to improve resilience



A disruptive influence within New Zealand and Australian forestry for nearly 40 years, Mark began with a 12-year term at FRI under the New Zealand Forest Service. Mark currently works as a biosecurity consultant to the World Bank, Executive Director Genera New Zealand and Genera Australia, and most importantly Principal Forester,

Ernslaw One.

Mark studied at Canterbury School of Forestry and the University of Queensland. Mark's proclivities have included planting Eucalyptus, Cyresses, Redwoods and Spruce in Kaingaroa where Radiata Pine grew perfectly well; negotiating for and implementing phosphine fumigation as an unproven phytosanitary treatment for export pine logs on which methyl bromide worked; and advocating 15 years ago that log prices strongly disincentivised heavy thinning because stand volume trumped individual log value for the then foreseeable future.

The deployment of best science, best genetics and most effective technology has been a long-term focus for Mark.

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Nicolò Camarretta

SCIENTIST, REMOTE SENSING AND GIS – SCION

Automatic mapping of red needle cast using VHR satellite images



Nicolò Camarretta completed a Bachelor and Master of Science in Forestry at the University of Florence, and a Ph.D. in forest restoration and remote sensing at the University of Tasmania. During his research career, Nicolò has focussed on the use of remote sensing technologies to map and monitor forest ecosystems. He favoured the use of airborne and

terrestrial lidar sensors to study forest structural complexity, particularly for their potential application to effectively monitor ecological restoration plantings. Nicolò has also worked with imaging spectroscopy sensors (mounted on satellite, airplanes, and UAVs), to successfully segregate between species and between genetic provenances of the same species. His current research is focused on monitoring of forest health status and disease expression through satellite imagery; and on the use of regional scale airborne laser scanning to map, quantify and monitor the growth of the exotic forest estate of New Zealand.

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Paul Adams

RESEARCH AND DEVELOPMENT DIRECTOR – FOREST GROWERS RESEARCH LIMITED

Research & Development investment via the Forest Growers Levy – an update



Paul is the Research and Development Director for the national programme of work funded by the Forest Growers Levy. He is also the CEO of Forest Growers Research Limited (FGR), the industry-owned research management company. His role is to provide trans sector leadership on all aspects of forest growing research in

New Zealand.

Paul's expertise in forestry science, research and operational management comes from more than 35 years working in the softwood and hardwood industry in both Australia and New Zealand. Prior to joining FGR, he was the Forest Estate Manager at Rayonier Matariki Forests.

Paul is passionate about science-based forest management, capturing innovation and delivering practical results that lead to improved productivity, value, and sustainability of New Zealand's production forests.

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Peter Clinton

PRINCIPAL RESEARCHER, MICROBIAL ECOLOGY - SOIL SYSTEMS – SCION

The Resilient Forests Programme: An uncertain future becomes an uncertain world



Peter Clinton has more than 35 years of experience in co-designing and delivering science with impact for New Zealand's forestry sector and currently leads the Resilient Forests programme at Scion. He is a forest ecologist whose research interests cover carbon and nutrient dynamics and plant soil interactions, with a particular focus on maintaining the

productive capacity of commercial forests. He is one of New Zealand's leading experts in sustainable forest management including production ecology, tree nutrition, biogeochemistry and the sustainability of forest soils. He considers himself fortunate to have worked in both indigenous and exotic forests, providing him with a wide appreciation of diverse forest ecosystems.

Peter led Growing Future Forests, New Zealand's largest single investment in diverse multi-disciplinary and multi-year forestry research. Peter gained his PhD from the University of Canterbury, where he examined mechanisms of competition between radiata pine and pasture species.

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Robin Hartley

GEOSPATIAL SCIENTIST, AUTONOMOUS SYSTEMS – SCION

Backpack mobile laser scanning – progress towards autonomous mensuration and phenotyping



Robin Hartley's research is on developing methods for applying proximal and remote sensing tools to forestry to aid in automation, working with UAVs for the past seven years. Working in the Resilient Forests programme, his current focus is the use of backpack mobile laser scanners for inventory and phenotyping. He is currently

undertaking a Master for Science on the use of MLS for phenotyping the branch structure of *Pinus radiata*.

Robin is a founding and current committee member of Tools for Foresters, a cross-industry collaboration to democratise technology for automating forest management processes. They are working on the development of UAV standard operating procedures for operational quality control. Robin has been instrumental in developing the UAV-based thermal hot spot detection methods, currently used in wildfire fighting techniques. He was awarded the FGR Science of International Quality award as part of the Phenotyping Team of the Growing Confidence in Forestry's Future programme.

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Roger Dungan

GM STRATEGIC PARTNERSHIPS AND COMMUNICATIONS – SCION

Session Chair – Tools and approaches to increase resilience of the forest industry



Roger started his career as a forest scientist at the University of Canterbury, using process-based models of canopy photosynthesis to investigate the carbon dynamics of New Zealand's indigenous forest ecosystems. More recently, Roger has been applying that evidence-based worldview to protect and promote New Zealand's interests as a diplomat

at the Ministry of Foreign Affairs and Trade. His offshore postings include four years in Paris as New Zealand's Deputy Ambassador to the OECD, and in Seoul leading work on the Korea-New Zealand Free Trade Agreement. He was part of the New Zealand team that negotiated the Paris climate change agreement, led policy thinking on climate migration in the Pacific, and on mobilising private-sector investment in climate outcomes in developing countries. His Wellington-based role is to develop and coordinate key stakeholder relationships, making sure Scion is in the right conversations at the right times to support a forest-based transition to a prosperous, low-carbon future.

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Ryan Cavanagh

CEO – TIMBERLANDS

Resilience and crystal ball gazing in forestry



Ryan is the CEO of Timberlands Limited and has been in this role for 3 years. Timberlands manage the Kaingaroa plantation forest out of Rotorua which is one of the southern hemisphere's largest exotic wood plantation forests. Prior to joining Timberlands Ryan worked for McKinsey & Company for almost 5 years based in Auckland and was

involved in large scale transformation programs in New Zealand, Australia and Asia. Most of Ryan's career was spent with Rio Tinto working in UK, Zimbabwe, New Zealand and Australia where he was accountable for running assets like the Tiwai Point aluminium smelter. Ryan has a PhD and BEng in Chemical Engineering from the University of Birmingham in the UK and is a graduate of the Australian Institute of Company Directors. He is married to Emma and has three wonderful daughters, Maisie, Tui and Primrose.

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Simeon Smail

TEAM LEAD, MICROBIAL ECOLOGY - SOIL SYSTEMS – SCION

The accelerator trials: what have we learnt over the last eight years?



Dr. Simeon J Smail has over 20 years' experience researching interactions between soil, plant and microbes in forestry systems. Simeon's research includes nursery management (native and exotic species), responses to fertiliser and biostimulant treatments, mitigation of plant stress, nutrient modelling and the interactions between

greenhouse gases and soil processes. Many of these topics are being actively explored within the Accelerator trial series, established by Simeon. His overarching goal is the development of sustainable forestry practices that promote soil health and ecosystem resilience, with a particular focus on climate change.

Simeon's collaborations are vast nationally and internationally. Within New Zealand, he works with NZFFA, Overseer, Ballance Agri-Nutrients, forestry companies and sits on the Small & Medium Enterprise committee of the FOA. Internationally, he has acted as an investment adviser for Forest and Wood Products Australia and the Natural Sciences and Engineering Research Council of Canada. He is an Adjunct Professor at East China Normal University.

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Stuart Fraser

RESEARCH GROUP LEADER, ECOLOGY AND ENVIRONMENT – SCION

Control options for pine needle diseases



Stuart Fraser is a Forest Pathologist and Research Group Leader, Ecology and Environment at Scion. His research focuses on the ecology, epidemiology, and management of forest diseases. He leads and contributes to interdisciplinary projects that aim to improve the resilience of both commercial and natural forests.

His research has focused on foliar diseases, including those caused by ascomycetes, rusts, and phytophthoras. He leads Research Area three of the Resilient Forests Programme, which aims to enhance the resilience of radiata pine forests to biotic impacts. Research here focuses on growth impacts of pine needle diseases, disease epidemiology, forest resilience, control options, and autonomous forest health monitoring. Prior to joining Scion in 2017, Stuart undertook a Postdoctoral Fellowship at the Forestry and Agricultural Biotechnology Institute, South Africa. He gained a PhD at the University of Aberdeen, Scotland in 2015 working on *Dothistroma* needle blight.

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Yvette Dickinson

PORTFOLIO LEADER, DESIGNING FORESTS – MAHI TAHI WHAIHUA – SCION

Advancing forest simulation through individual tree models



Yvette Dickinson is a Silvicultural Scientist at Scion and the Portfolio Leader for Designing Forests – Mahi Tahī Whāihua. Her research navigates the intersection of forest ecology and management. She applies forest ecology principles to the sustainable management of our forests for a wide variety of

benefits. Yvette uses empirical field experiments and modelling to understand the influence of our management on stand dynamics and the provision of ecosystem services. She has worked in a wide variety of forest ecosystems, including native forests and exotic forest plantations of New Zealand, mixed hardwoods in eastern United States, and the conifer forests of the Southern Rockies. She holds a Bachelor of Forestry Science and Master of Science in Environmental Science from the University of Canterbury, and a Ph.D. in Forest Resources from Pennsylvania State University.

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Field Trip

Blaise Ratcliffe

SCIENTIST, QUANTITATIVE GENOMICS – SCION



Dr. Blaise Ratcliffe is a quantitative geneticist who recently relocated from North Vancouver, Canada to New Zealand to join the Scion team. He completed his PhD at the University of British Columbia and later stayed on as a post-doctoral research and teaching fellow in quantitative genetics and tree improvement.

Ratcliffe's research interests primarily focus on using and integrating genomics in conifer tree improvement programmes to increase their efficiency. As a researcher, he is very passionate about finding ways to leverage high-dimensional phenotypic data to enhance conifer breeding programmes.

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Damien Sellier

PHYSICS BASED MODELLING SCIENTIST, DATA AND COMPUTATIONAL SCIENCES – SCION

Red Needle Cast – live monitoring of growth impact



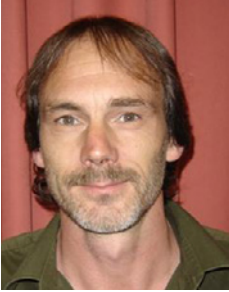
Dr Damien Sellier is a research scientist with 20 years of experience in the fields of tree physiology and applied mathematics, with a particular interest in wood formation, dynamical systems and plant biomechanics. He currently works at Scion where his research focuses on tree function in a changing environment. Damien has

been involved in a range of research projects related to forestry as a sustainable source of lignocellulosic materials. He has investigated how to maintain productivity, health and wood quality in plantation forests, and has explored how the fundamental biological processes driving tree growth interact with each other and micro-climatic drivers. Before joining Scion, Damien worked at INRAE in France and at CASAI in Beijing, where he conducted research on tree-wind interactions and mechanisms minimising the risk of wind damage in forests subject to extreme storm events.

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David Pont

RESEARCH GROUP LEADER,
PLANT DEVELOPMENT AND PHYSIOLOGY – SCION



David Pont is a Scientist at Scion and the Research Group Leader for Plant Development and Physiology. He has over 40 years forestry research experience. David's research interests include the measurement and modelling of individual tree growth, branching, stem form and wood quality. David uses advanced remote and proximal sensing

methods, including lidar and imagery from airborne, UAV and mobile platforms to create ultra-high-density representations of exotic and indigenous trees, trials and forest stands. This data is combined with environmental and genetic information to understand the interplay of genetics, environment and management effects on tree growth, form and wood properties. David holds a Master of Forestry Science and a Ph.D. in Forest Science from the University of Canterbury.

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Natalie Graham

SCIENTIST, QUANTITATIVE GENOMICS – SCION



Natalie Graham is a scientist in Scion's Forest Genomics and Biotechnology group. Her interests lie in finding ways to solve forest industry challenges using molecular technologies and approaches. These include developing the first commercial SNP array for radiata pine, which is now being used by the Radiata Pine Breeding Company and

other industry partners to reconstruct or verify pedigrees and generate genomic breeding values. Natalie has also been a key contributor to sequencing the transcriptome and mega-genome of radiata pine, which now underpins several ongoing research programmes. She has also screened radiata pine for resistance to red needle cast as part of the Healthy Trees, Healthy Future Programme. She is currently working with Scion's Tree Root Microbiome Programme, exploring the effects of host genetics on the microbiome.

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Peter Massam

UAV OPERATIONS MANAGER/TEAM LEAD, AUTONOMOUS SYSTEMS – SCION



Peter Massam is a skilled surveyor and UAV pilot, with a wealth of experience in the field of geospatial data acquisition and analysis. Peter began his career in the New Zealand Defence Force (NZDF), where he served for over two decades as a surveyor, field engineer and geospatial specialist. During his time in the NZDF, he gained extensive

experience in leadership and conducting geospatial surveys, mapping, and aerial reconnaissance operations in various locations around the world, including the Pacific islands, the Middle East and Afghanistan.

Peter joined Scion in 2018 and has worked on a range of projects related to geospatial data acquisition, including developing new UAV-based surveying techniques, sensor data acquisition methodologies, and developing custom tools and software for data processing and analysis. He has been involved in international collaborations focused on using UAV technology to support forestry management and conservation efforts.

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Key contacts

If you have further questions or enquiries following the conference, please contact a member from the project team.



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