

Staff highlights

Revealing coastal habitats

Marine ecologist **Dr Mark Morrison** is leading a research programme that has generated fascinating seafloor habitat maps of two very different coastal systems – the Poor Knights Islands and the inner Hauraki Gulf – using multibeam and sidescan sonars.

These maps, which will be supplemented with underwater video surveys, are being used to underpin targeted research on the impacts of ecotourism and recreational fishing (respectively) on coastal ecosystems. ‘The exciting technologies available now are allowing scientific initiatives that weren’t feasible even 5–10 years ago’, says Mark.

Mark also led a major nationwide survey of seagrass meadows, collecting crucial data on these important, but poorly studied, coastal habitats.

On the hunt for marine pests

Dr Graeme Inglis is our science leader for marine biosecurity, and an expert in specialised survey designs and detection tools for finding unwanted species in the marine environment. It’s a new field of research: ‘Some of the things we’re doing haven’t been tried anywhere else in the world’, he says.

Graeme’s work includes leading two major programmes for Biosecurity New Zealand, looking for unwanted species in ports and marinas. The techniques Graeme helped develop were also used extensively this year in our surveys for the invasive sea squirt, *Styela clava*.



Dr Graeme Inglis outlines the dive plan for a reconnaissance survey of the port of Nha Trang, Vietnam, during a training workshop.

Coastal hazards at home and away

In the late 1990s, **Doug Ramsay** was the coastal management advisor on Kosrae, a small island in the Federated States of Micronesia, just north of the equator.

At NIWA, Doug leads the Natural Hazards Centre and coordinates coastal consultancy work in our Hamilton office, but he continues to work on Pacific projects. This year, he was commissioned by the United Nations Development Programme to develop a long-term

strategy for reducing coastal hazard risks on Tokelau. ‘We’re there to provide the local communities with ideas and methods to aid their own risk reduction decision-making,’ he says.



Greenhouse gas expertise in demand

Dr Dave Lowe leads our tropospheric chemistry group at Greta Point which specialises in greenhouse gases, particularly analysis of their isotopic composition to determine their source. After the sudden death of the highly respected American climate scientist Dr Charles David Keeling in 2005, Dave has become mentor of Dr Keeling’s research group. He has been visiting the group in San Diego

every couple of months to provide direction, raise funds, help search for a permanent leader – and catch a wave or two when there’s

time. Back home, he’s juggling his roles assessing greenhouse gas research for the Intergovernmental Panel on Climate Change, continuing other research and staff leadership at NIWA, and teaching at Victoria University.

Data in good hands

Kathy Walter manages the National Hydrometric Database. The database provides time series of water level, river flow, and related data, and is classified as a ‘nationally significant database’. Through it, NIWA delivers lake level and hydro inflow data to M-co, for the wholesale electricity market, and directly to electricity generators.

Kathy handles requests, audits data, and troubleshoots. During the June 2006 snowstorm, for example, Kathy was busy liaising with clients and field teams about when and how the data transfer could continue from places which were snowed in.





Electricity and fishing do mix

Marty Bonnett is a freshwater fish ecologist. He spends much of his time studying the effects of hydropower developments on native fish, but he's probably best known for a more direct impact of electricity on fish – electric fishing.

This technique uses high voltage, pulsed current to attract and momentarily immobilise fish in fresh water, so that they can be collected and returned unharmed. Over the years Marty has trained more than 500 people, from Warkworth to Te Anau, on the safe, ethical, and effective use of the electric fishing machines that are designed and manufactured by NIWA Instrument Systems.

Introducing Mr Lauder

When NASA wants to bring a 40-foot container complete with ozone-measuring lasers, laboratory consoles, and diesel generator to New Zealand, **Graeme Strang** makes the arrangements.

Graeme is the admin support person for NIWA's atmospheric research station at Lauder, Central Otago. The job involves almost everything except IT, from import and export of scientific equipment to accounts payable, project management, and maintenance. When we spoke in June, Graeme was heading across country to retrieve equipment sent up by balloon into the stratosphere and returned to earth by parachute.

Graeme also chairs NIWA's national health and safety committee, where the challenges can be just as diverse.



Seaweed expert in demand

As New Zealand's foremost expert on seaweeds, **Dr Wendy Nelson's** skills are in demand for making marine resource decisions, recognising and assessing threats from foreign species, and developing seaweed aquaculture and commercial uses. With about 1000 known species in New Zealand and many more nameless ones, the taxonomic work alone could keep her busy for several lifetimes.

That's why Wendy launched the New Zealand E-flora project this year, enlisting the help of overseas experts to describe and document New Zealand's entire seaweed flora over the next 10–15 years.

Wendy also leads NIWA's FRST biodiversity and biosecurity programme, serves on the New Zealand Conservation Authority, and has editorial responsibilities for three journals.



Making climate products accessible

Dr Andrew Tait is a lynchpin in the development of ClimateExplorer, our new online service for delivering climate-based products. He has helped produce the



hundreds of climate maps available on ClimateExplorer, and led the project overall, working with other NIWA climate scientists and our data management team.

Most of Andrew's work involves producing climate information to suit specific client needs, from gridded daily wind speed data for wind energy development to maps of crop potential. Other recent projects include work with Infometrics and the Ministry of Economic Development on the effect of climate on energy supply and demand and the economy.

To Antarctica by FedEx

When RV *Tangaroa* suffered a parts failure in Antarctic waters, **Fred Smits** (NIWA Vessels General Manager, Operations) came to the rescue. How to get spare compressor springs from the manufacturers in Houston to our ship in just four days?

FedEx wasn't an option, so Fred turned courier, making a 62 hour trip from Wellington to Houston to Christchurch, where he delivered the springs to a waiting Hercules. The springs reached *Tangaroa* via the Italian base at Terra Nova Bay (Ross Sea), just a few hours before the base was closed for the winter.

'It really was touch and go. If I'd missed a connection, *Tangaroa* would've had to abandon her Ross Sea survey and come back to New Zealand', says Fred.



Staff highlights

From basic science to practical public policy

Dr John Zeldis's expertise revolves around why and how coastal waters become productive. His brief ranges from leading research on fundamental processes such as coastal upwelling (which brings nutrient-rich water to the surface) to developing novel frameworks for sustainable management of marine farming. John was instrumental, for example, in the development of the 'Limits

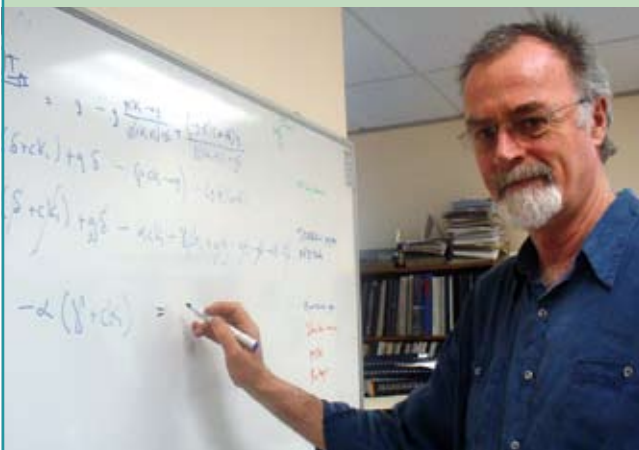


of Acceptable Change' framework which Environment Waikato uses in the Wilson Bay aquaculture management area. 'It's really neat to work on fundamental and seemingly esoteric science and see it eventually produce concrete outcomes for society and environmental sustainability,' he says.

Statistics for the real world

To discover **Graham McBride's** expertise, start with the title of his textbook, published in 2005 by the prestigious science publishing house John Wiley & Sons: 'Using Statistical Methods for Water Quality Management: Issues, Problems and Solutions'.

Graham helps agencies address such health and environmental issues as polluted water, sewage treatment, and their association with any illnesses. He says three 'very enjoyable, interlinked, aspects' to his work are: research on mathematical and statistical ideas and procedures to grapple with real water and environmental management issues; involvement with resource management agencies in the implementation of new water and wastewater schemes; and involvement in the development of public policy.



It's about priorities

Kā pūwaha te tai nei hoe tahi tātou

'When Māori stand up at a hui, begin by saying this is my mountain, my river, my ancestor, and only after that talk about ourselves, it's about priorities. The importance of the environment, genealogy, and relationships: if we don't look after these things, we're nothing,' says **Weno Ite**. Weno

(Ngāti Maniapoto, Te Atiawa, and Ngāti Tauāiti) is NIWA's Māori Development Assistant, supporting our Māori Development Manager, Apanui Skipper. His role is to provide advice and support for staff, and assist in iwi and hapū development. As part of this, Weno and Apanui run regular Noho Marae (marae-based language and culture courses) to give NIWA's staff confidence in building links with Māori. He talks with pride about seeing scientists and local people respectfully sharing knowledge and working together as a result.

Things to do on your OE

You're young, smart, and bored out of your brains in an office job, what do you do? If you're **Steve de Lima**, you develop software to support Unidata's entire product range.

Steve was in fact on his OE, between stints with NIWA Instrument Systems, when he started developing the Starlog software. Now he's back home. NIWA purchased the intellectual property and funded development so Starlog could replace the previous outdated software. Starlog enables users to configure complicated environmental monitoring systems easily without any in-depth computer programming knowledge. Meanwhile, Steve continues to develop software to meet NIWA and external client needs.

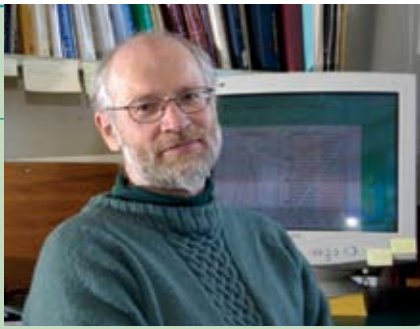


Multi-tasking marvel

As the Nelson regional office's sole support person, **Jenny McLean** wears many hats. Receptionist, project administrator, accounts manager, site safety advisor, PA to the Regional Manager – Jenny relishes the variety in her job and does it all cheerfully and efficiently.

Jenny has had a long association with the Nelson office, going back about 20 years. She's affectionately known round the office as 'Mother', keeping everyone in line and making sure they get back from fieldwork safe and sound.





Connecting maths with fisheries

Chris Francis is one of a rare breed: a mathematician who can apply his understanding of numbers to real world problems. 'Making this connection is what I find really interesting', says Chris, a Principal Scientist with NIWA.

Chris has primary responsibility for assessing New Zealand's hoki stocks (our largest fishery), and also advises on orange roughy stock assessments.

'Chris is the best stock assessment scientist New Zealand has', says Ministry of Fisheries Chief Scientist Dr Pamela Mace. 'His work has provided the basis for harvest strategies in many New Zealand fisheries'. He's also frequently called in to review fisheries stock assessments in other countries.

Award-winning marine scientist

NIWA Principal Scientist **Dr Dennis Gordon** won the prestigious New Zealand Marine Sciences Award for his outstanding contribution to marine sciences. Dennis is a global authority on living and



fossil Bryozoa (coral-like organisms), which are particularly diverse in New Zealand.

Dennis has published nearly 100 refereed papers and is a spokesman for marine biodiversity nationally and internationally. A Fellow of the Linnean Society, his

professional roles include chairing the Royal Society of New Zealand's Biodiversity Committee and serving on two international editorial boards.

He plays a leading part in NIWA's marine biodiversity and biosecurity programme, and is the driving force behind Species 2000: New Zealand – a review and inventory of all life through all time in New Zealand.

Taking New Zealand skill to Europe

Dr Ton Snelder has won a prestigious Marie Curie Fellowship from the European Union to spend two years at France's national institute for research in agriculture and the environment, CEMAGREF.



Ton is a leader in the development of Geographic Information Systems-based environmental classification systems, including New Zealand's River Environment Classification (REC), which is widely used for river management.

One remarkable innovation of the REC is that it classifies sections of a river according to important ecological attributes of that segment or its upstream catchment. While in France, Ton will adapt and apply this approach for European situations where most environmental classification systems at present merely subdivide the landscape into large blocks.

Community support vital in fight against didymo

Neil Blair is part of our Alexandra field team, but has spent about 6 months this year away from home. He established the research site at Monowai, Southland, where we are testing biocides for Biosecurity New Zealand to control didymo without unacceptable environmental side-effects.

Of course, there have been many long days of sampling and scientific observation in cold rivers, but a vital part of Neil's brief has been to gain full and wide community support for the project. Neil has worked particularly closely with Fish & Game Southland, Bubba Thompson (Ngāi Tahu), the staff of Pioneer Generation Ltd, staff from several universities, as well as the rest of the team at NIWA.



Climate clues from marine mud

Palaeoceanographer and marine geologist **Dr Helen Neil** is part of a global collaboration to investigate past climate change using marine data. She was one of the prime movers in this year's multinational research voyage on the French



oceanographic research vessel *Marion Dufresne*, which bored deep into New Zealand's seafloor to get a picture of past climate change. Helen applies stable isotope techniques to a range of materials – from corals to ancient seafloor sediments – to reconstruct New Zealand's climate history, and also uses them as a novel way to age fish and shellfish.

great staff

Staff highlights

Forty-two and a half years

Bob Murray joined the Ministry of Works as a cadet fresh out of high school in the 1960s. There he was introduced to hydrology: 'I thought it was the ultimate environmental job, and that's never left me.'



Through various restructurings, Bob came to NIWA. He managed all our Hamilton region branches, providing data and hydrological solutions to commercial clients as well as scientists.

In June 2006, Bob retired after 42 and a half years in the field, with his enthusiasm intact: 'I enjoyed every minute of it.'

Kingfish get the Midas touch

Steve Pether is a senior aquaculture technician at NIWA's Bream Bay Aquaculture Park.

Steve was instrumental in taking juvenile kingfish production to a commercial level this year, producing more than 250 000 fingerlings. This involved, among other things, producing 1.4 billion rotifers and 400 million brine shrimps per day to feed the larvae, reducing larval deformities, and developing techniques to transport thousands of oxygen-hungry fish to customers in the Marlborough Sounds.

Steve says he never gets tired of eating fish and shellfish, despite working with them all day.



The man who gets into the sewer tank

Ray Nunns is site services manager for NIWA's largest campus, Greta Point, Wellington. He looks after all the buildings and vehicles, assisted by Dale Bowers.

Without any prompting, Ray claims 'It's the most satisfying place I've ever worked. Staff appreciate what we do, and we're always getting positive feedback. We've made lots of changes, and things never stop.' Coming up, there's new space required for geological and biodiversity collections, upgrading a microbiology lab, and installing an emergency generator.

Probably the worst job is working in the sewer tank when the pump fails: 'I can't find a contractor in the whole of Wellington who's prepared to do it.'



Men of the sea

Mike Steele and **Peter Healey** are bosuns on RV *Tangaroa*. Bosuns are in charge of all deck operations, including driving the winches during trawling. Mike's been on research vessels for 29 years, and Peter's now spent 15 years with us. 'It's different from a fishing vessel,' says Peter. 'We use a huge variety of equipment, and you've got to think of practical ways to deploy gear which scientists may never have operated at sea before.' Mike agrees: 'Never put it in the too hard basket. We talk to the captain, officers, and scientists about how to deploy and retrieve things safely and undamaged.'

Education & Training

NIWA contributes substantially to the promotion of science in schools and universities and to the general public.

In 2005–06 we continued as the major sponsor for **Regional Science & Technology Fairs** in Auckland City, Waikato, Bay of Plenty, Nelson, and Wellington. We also assisted with sponsorship of the Central Northland, North Harbour, Taranaki, Marlborough, Central South Island, and Otago Science Fairs. These sponsorships promote science in secondary and intermediate schools, with over 1600 students taking part in the NIWA-sponsored fairs.



We continued our sponsorship of marine educational facilities at Kelly Tarlton's Underwater World by supporting the development of the new children's Interactive Room. The **NIWA Interactive Room** offers hands-on learning about the marine and Antarctic environments, including the opportunity to study shark skin and other marine samples under the microscope and to climb inside a remote underwater vehicle. Kelly Tarlton's estimate that almost 60 000 children visit the room each year during school visits alone, with feature activities during school holidays further boosting visitor numbers.

Our support of education initiatives is strengthened by association with the Royal Society of New Zealand's Sciences, Mathematics, & Technology **Teacher Fellowship** scheme. In the 2006 school



Training electric fishers

year we hosted two Teacher Fellows working in fish genetics and stream ecology. We also continued our involvement in the development and implementation of the **SERED** project which has developed teaching resources for use in Pacific Island schools on weather, climate, and sea level rise.

NIWA's strong relationship with several universities continues. We have joint postgraduate **Centres of Excellence** with the University of Auckland (Institute of Aquatic and Atmospheric Sciences), Canterbury (Centre of Excellence in Aquaculture and Marine Ecology) and Otago (Centre of Excellence in Chemical Oceanography).

NIWA staff supervised 58 **postgraduate students** in six universities, 49 at PhD level. We provided one PhD scholarship and several of our supervised students have received funding from the Foundation for Research, Science & Technology's Enterprise Fellowships, Tūāpapa Pūtaiao Māori Postgraduate Fellowships or Bright Futures Fellowships. We also provide infrastructure and operational support for many of the jointly supervised students.

We funded eight **postdoctoral fellowships** in areas where we need a rapid input of high quality expertise to help develop new directions. These included biodiversity, water resources, simulation modelling, bioactive chemicals, and coastal processes. NIWA also provided supervision and operational support for another five postdoctoral fellows who are supported by the Foundation for Research, Science & Technology, Biosecurity New Zealand, and the Sloan Foundation.

In **public education**, we continued to offer a range of courses within our core areas to assist in the professional development of staff in regional councils, government departments, and consultancies and iwi. These courses transfer NIWA's technology and information to users, with topics including electric fishing, identification of sedges and rushes, and freshwater invertebrates. We ran 12 courses this year, attended by more than 240 people. We also ran three workshops (on marine benthic habitats, coastal hazard mitigation, and effects of land-based activities on the coastal environment) that provided training for 145 people.

Internally, we have provided educational opportunities for capacity-building in NIWA with awards to 11 staff for technical training in overseas institutions.



NIWA's Interactive Room

NIWA's Executive team



Rick Pridmore

Chief Executive Officer

Rick became Chief Executive Officer of NIWA in August 2002 after having served as Deputy Chief Executive (Strategic Development) and Research Director of NIWA. Born in the USA, Rick came to New Zealand in 1976. He completed his PhD at the University of Otago in 1980, and from 1980 to 1993 he worked as a government scientist, specialising in marine and freshwater ecology.



Bryce Cooper

Director, Strategic Development

Bryce has a PhD in microbiology and is a graduate of the London Business School Senior Executive Programme. He has held research leader and Regional Manager roles in NIWA, and is currently responsible for overseeing NIWA's strategic initiatives, including commercialisation of research and building partnerships with central and local government and industry.

General Managers



Clive Howard-Williams

GM Freshwater & Coasts

Clive is an aquatic ecologist with a PhD from the University of London. He was a research scientist at the Max Planck Institute for Limnology, has specialised in research on water quality, water plants, and wetlands, and has a wide interest in freshwater degradation and change and in Antarctica. He is a Fellow of the Royal Society of New Zealand, and an Adjunct Professor at the University of Canterbury.



Andrew Jeffs

GM Aquaculture & Biotechnology

Andrew has a research background in marine ecology and aquaculture, with a strong interest in applied research. He has a PhD from the University of Auckland and worked as a scientist for the Cawthron Institute and the Department of Conservation before joining NIWA in 1997.



John McKoy

GM Fisheries

John is a marine zoologist with a PhD from Victoria University of Wellington. He has contributed in a range of roles to fisheries research in New Zealand since 1973, in MAF, MAF Fisheries, and, since 1995, NIWA. He has worked in crustacean and molluscan aquaculture, fisheries biology, and resource management in New Zealand, Australia, the Middle East, and the Pacific.



Mark James

Director, Operations

Mark completed his PhD in aquatic ecology at the University of Otago, and spent more than 20 years as a scientist specialising in lake and coastal ecology research and consulting. In 2000 he moved from Christchurch to Hamilton to take up the position of Regional Manager, NIWA, Hamilton, and he was appointed as NIWA's Director of Operations in September 2002.



Rob Murdoch

Director, Research

Rob has a PhD in marine science from the University of Otago and has specialist interests in oceanography and marine ecology. He held the positions of research leader and Regional Manager at NIWA in Wellington before taking on roles overseeing NIWA's strategic research and NIWA Vessel Management Ltd.



Kate Thomson

Chief Financial Officer & Company Secretary

Kate is a chartered accountant with a BCom from the University of Canterbury. An experienced Chief Financial Officer, she held similar roles with Learning Media and in the private sector before joining NIWA in 2006. Kate was previously a policy analyst with the Treasury.



Murray Poulter

GM Atmosphere, Natural Hazards, & Energy

Murray has a PhD from the University of Canterbury and worked in England and Germany on wave propagation in the atmosphere and space. He returned to New Zealand where he applied radar methods to determine the role of ocean waves in coastal and air-sea interaction processes, working in New Zealand, Canada, the USA, and Antarctica, before taking on a management role in NIWA.



Don Robertson

GM Aquatic Biodiversity & Biosecurity

Don holds a PhD in marine biology from the University of Otago and has spent much of the last 30 years in marine fisheries research, including deepwater fisheries around New Zealand, and Antarctic marine resource management. He has had roles in marine science leadership, regional management, and information services in MAF Fisheries and NIWA. More recently, Don took on the lead role for NIWA's marine and freshwater biodiversity and biosecurity research and services.



Charlotte Severne

GM Māori Development & Oceans

Tēnei te mihi mahana o NIWA ki ngā iwi huri noa i te motu. Ko Charlotte Severne tōku ingoa. Ko ahau tētahi o ngā uri o Tūwharetoa me Tūhoe Pōtiki. Heoi anō he Tumu Whakarae ahau mō ngā tūranga e rua, arā, tētahi mō te roopu rangahau Māori, e kiia nei ko Te Kūwaha, ā, ko tētahi atu mō te takutai me te moana. Ko te tino kaupapa o Te Kūwaha he mahi rangahau pūtaiao hei tautoko i ngā tūmanako, wawata o te iwi Māori. I whiwhingia e au tōku Tohu Kairangi mai i Te Wānanga-o-Tāmaki Makaurau. Ko taku kaupapa matua te rangahau i ngā tātaitanga mō ngā puia o Tokaanu me Waihi. I mua i taku taenga mai ki NIWA i te MfE ahau e mahi ana.

great staff

Regional Managers



Ken Becker



Andrew Forsythe



Barry Biggs



Charles Pearson



David Roper



Terry Hume



Ken Grange



Andrew Laing



Rosemary Hurst

great staff

Auckland: Ken Becker

Ken is a marine biologist with a BSc (Hons) from the University of Liverpool. He spent 24 years as a scientist and project manager with Auckland Regional Council, working on marine ecology, water quality, wastewater treatment and disposal, stormwater management, and water resource management, before joining NIWA as Regional Manager in July 2005.

Bream Bay: Andrew Forsythe

Andrew Forsythe is a veterinarian with a BSc in marine biology from the University of New Brunswick and a DVM from the University of Prince Edward Island. Andrew came to NIWA in 2005 as Regional Manager Aquaculture Facilities with more than 20 years of aquaculture industry experience from North America and Europe.

Christchurch: Barry Biggs

Barry is an environmental scientist with a PhD from the University of Canterbury. He worked in environmental science management with the Ministry of Works & Development in Wellington and the DSIR in Christchurch before joining NIWA in 1992, specialising in the effects of hydropower development on river ecosystems, water allocation, stream periphyton, and bioinvasions.

[Barry was appointed General Manager, Environmental Information & International on 3 July 2006]

Christchurch: Charles Pearson

Assistant RM Christchurch & RM Lauder
Charles is a hydrologist with an MSc (Hons) from the National University of Ireland. He specialises in the analysis of hydrological and other geophysical and climate data for purposes such as estimating flood risks. He is an executive member of NZ's Hydrological and Meteorological Societies and the World Meteorological Organization's Hydrological Advisor for its Asia-Pacific region.

[Charles was appointed Regional Manager on 3 July 2006]

Hamilton: David Roper

David has a PhD in marine science from the University of Otago. He has worked as an environmental scientist for the past 27 years, specialising in environmental impact assessment and resource management with NIWA and then ECNZ (later Mighty River Power), before returning to NIWA as Regional Manager in 2002.

Hamilton: Terry Hume

Assistant RM
Terry is a marine geologist/coastal oceanographer with a PhD in earth sciences from the University of Waikato. He holds an Hon Assoc. Professorship at the University of Auckland and an Hon Lectureship at the University of Waikato. He has more than 30 years' experience in environmental research and consulting for government departments, local authorities, and private companies.

Nelson: Ken Grange

Ken is a marine ecologist with a PhD in marine ecology from Florida International University. He initially researched the marine environment in NZ fiords, particularly the ecology of black corals, with the Oceanographic Institute, DSIR, in Wellington, before moving to Nelson as Regional Manager in 1994.

Wellington: Andrew Laing

Andrew is a marine meteorologist and physical oceanographer with a PhD in fluid mechanics from the University of Canterbury. He had more than 20 years' experience with the NZ Meteorological Service, in the UK, and at NIWA, before becoming a Regional Manager in 2000.

Wellington: Rosemary Hurst

Rosie is a fisheries scientist with a PhD from Victoria University of Wellington. She worked for MAF Fisheries from 1979 before joining NIWA in 1995, becoming a Regional Manager in 2000. She is also the science leader for hoki and middle depth fisheries research.