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New Zealand

Freshwater Sciences Society

Newsletter

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Contents

Introduction to the Society

The New Zealand Limnological Society was formed at a meeting in Christchurch in January 1968. It was renamed the New Zealand Freshwater Sciences Society[1] (NZFSS) in 2005 to reflect the broad interests of the membership. Its fundamental aims since inception have been to promote a common meeting ground for freshwater workers in New Zealand and to encourage and promote the exchange of news and views among them. In particular, a newsletter and a list of research workers and their interests is compiled and circulated at least once per year and an annual conference is held. The 2007 subscription is $40.00 per annum (student/unwaged/retired persons rate is $10.00 per annum; life membership is $1000.00).

Editorial

Welcome to the 47th edition of the Freshwater Sciences Society Newsletter. This is my last newsletter as editor. Work commitments mean I'm really feeling stretched to generate sufficient enthusiasm these days for producing the newsletter. Also, I feel it's time for fresh input. I've really enjoyed putting this together and appreciate the support I've received over the last 3 years. I do wonder whether this kind of newsletter is really the most effective mechanism for informing members. It has got more and more difficult to extract contributions from members and I suspect time commitments are the most likely culprit (see Kevin's letter later also). There will be discussion on what you as members would like to see in the Society newsletter at the AGM. Come along and have your say.

All the best in your freshwater endeavours,

Ngaire Phillips

Newsletter Editor, New Zealand Freshwater Sciences Society

[1] NZ Freshwater Sciences Society is the trading name of the New Zealand Limnological Society (Incorporated)

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President's Bit

In these volatile and uncertain economic times, there is at least one thing you can count on: the NZFSS annual conference which this year will convene in Taranaki. Conferences in heartland areas bring the added value of raising the profile of freshwater science in rural parts of the country where the message of sustainable management is particularly relevant. Rosemary Miller and her committee have been working hard to develop an interesting programme and to ensure we get a taste for the local issues.

In some ways, economic downturns can benefit the environment by slowing down the rate of development, but equally they can also mean less money is available for remediation or to advance the science needed to underpin effective management. As noted in my open letter published in this newsletter, increasing pressure on freshwater ecosystems can translate into increased pressure on freshwater science workers if resources don't increase correspondingly. So, keep any eye out for each other and let's hope you, the support for science, and the environment come through this period of uncertainty unscathed.

Despite all the turmoil, one thing is for sure…in 2009 there will be another NZFSS conference. Next year we will continue the theme of bringing freshwater sciences to the provinces by holding our first conference in Whangarei in association with the New Zealand Hydrological Society. Rudi Hoetjes, a long-standing NZFSS member, is the co-chair of the organising committee so if you have any early enquiries regarding that conference please approach Rudi (rhoetjes@clear.net.nz).

In the meantime I look forward to seeing you in New Plymouth!

Kevin Collier

President

New Zealand Freshwater Sciences Society

Research News

Fish and Game

Eastern Fish and Game Region

Eastern Region staff, including **Matt Osborne**, based at Rotorua, have continued to be involved with angler creel surveys within the Rotorua Lakes. The decline in lakes water quality has been a hot topic for a number of years now (and remains so) and potential rehabilitation projects include engineering and chemical interventions. Fish & Game are monitoring the fisheries to assess any potential changes resulting from these actions.

An angler creel survey was undertaken at Lake Waikaremoana over the 2007 summer with funding from the Waikaremoana Sports Fish Fund. This followed reports from anglers of a decline in fish condition over recent years. A water quality monitoring buoy is soon to be installed within the lake to gain further insight into lake dynamics.

We have contributed support to various agencies over the last year including:

- Assisting the University of Waikato with provision of trout otoliths from Rotorua Lakes to determine trout growth and movement.
- Working with DOC (Turangi) and Victoria University in collecting genetic material from Lake Tarawera spawning fish to compare the timing of spawning runs and age at maturity with Lake Taupo spawning fish.
- We are interested in determining the spawning success within Lake Tarawera tributaries to determine if any negative effects are occurring due to land use change or development within the catchment.

Free wetland restoration advice and assistance is provided, led by **John Meikle**. Significant uptake has occurred with the multiple landowners along the Waiotapu Stream with 23ha of remnant oxbows to be restored over 3 years. The 24ha Ohaaki Wetland is to be created as a result of geothermal abstraction resulting in subsidence. Both the projects have required in excess of $1 million funding, which has been obtained. Both projects will contribute to the improvement in water quality within the Waikato River.

Eastern Region has continued with ongoing gamebird monitoring, led by **Matt McDougall**, involving aerial trend counts of Canada Geese, Swan and Paradise Shelduck, as are also undertaken in all Fish and Game regions. Duck banding of Mallards and Paradise Shelduck also occurs in Eastern and a few other regions in any given year. A National Survey of New Zealand Shoveler has been coordinated by Matt, as this very mobile gamebird is considered to have a national population with some banded birds flying from one end of the country to the other. All waterfowl are part in parcel of freshwater biology.

Iain Maxwell of Hawke's Bay Fish and Game reports:

Intensive investigations are continuing into the affect of land use changes on the instream ecology of the upper Mohaka and Taharua rivers. F&G, Hawke's Bay Regional Council, Cawthron staff along with assistance from Envirolink and Westervelt Sporting Lodges are continuing a programme of work to look at water quality change impacts on macroinvertebrate drift and subsequent growth of brown trout in the upper Mohaka River. This river is specifically protected by a Water Conservation Order that

recognizes the nationally outstanding trout fishery. Recent changes in land use are understood to be contributing to a significant decline in water quality in the upper Mohaka River. Anecdotal evidence, supported by recent drift diving suggests a serious decline in the size and abundance of brown trout in the river. The investigations are being undertaken in an effort to better understand the relationship between the water quality declines and the change in the trout fishery.

Hawke's Bay is also on the cusp of an adaptive management project with grass carp about to be liberated into Lake Tutira in an effort to eradicate *Hydrilla verticillata* from Tutira, Waikopirau and Opouahi lakes. Fish and Game New Zealand's involvement with the programme has been through the provision of services to undertake a year long survey of anglers fishing the lake. The survey is intended to form a baseline of the status of the fishery to compare with subsequent surveys as the eradication response develops.

Nelson Marlborough Fish and Game Region

Lawson Davey and **Vaughan Lynn** have been busy with Ryder Consulting to stock fish with PIT and some acoustic tags in the upper Branch catchment as part of consent requirements for Trustpower to retain adequate fish stocks in the upper river which have been affected by the Branch power scheme. Wairau River fishery investigations are ongoing given the Trustpower application for a new run-of-the-river hydro scheme in the Wairau, including aerial salmon and trout spawning counts and drift dives, with **Ricky Olley** also analyzing trout otoliths from throughout the catchment to find the spawning origin of adult brown trout.

Lawson, **Neil Deans** and Cawthron, Landcare and NIWA researchers have been contributing to detailed examination of drift diving as a technique in the Motueka River integrated catchment management research project, as well as the effects of fine sediment on fish numbers, the effects of high and low flows on spawning and rearing success of juvenile brown trout in the Rainy River, in the upper Motueka River catchment as well as starring in the 'Country Calendar' documentary on the Motueka ICM project.

Vaughan Lynn and **Rhys Barrier** are undertaking weed control in the Para wetland; Marlborough's largest freshwater wetland, which is largely administered by Fish and Game. Rhys has continued with his biodiversity advice, including branching out into farm planning and wetland enhancement. Rhys has been invited to become a trustee on the National Wetlands Trust. The Fish and Game team were successful in its review of the Gowan provisions of the Buller Water Conservation Order, which was challenged by the Majac Trust to develop and hydro power scheme. The brown trout fishery, with its highest density in the 100 Rivers dataset, has now been recognised as outstanding.

The Nelson Marlborough team undertook brown trout monitoring at 23 sites throughout the region this season.

Neil has been engaged in various freshwater activities at a national level, including giving evidence on wetlands at the Waitaki hearings, traveling on the roadshow with the National Environmental Standards for Ecological Flows and Levels and interviewing senior Freshwater Science Society members as part of the Society's 40th Anniversary project.

West Coast Fish and Game Region; from **Dean Kelly**

Over the past 15 years we have been monitoring length, weight and relative abundance of trout in Lake Brunner by netting. There is about a 20% mortality rate with netted trout and from these fish we have collected otoliths for aging and micro chemical analysis.

In 2007 we collected trout fry from all known spawning areas (known from in-depth spawning surveys) to ascertain micro chemical signatures. These have just been analysed in Australia along with the adults from the netting surveys. Modelling is currently being applied by **Rasmus Gabrielsson** with something expected in January.

The goal is to identify the natal tributaries of adult takeable trout in the lake. We can then focus on the streams identified when it comes to management decisions and advocacy to the appropriate authorities responsible for the habitat. Combined with this we have advocated for the West Coast Regional Council to apply for Envirolink funding for the Cawthron Institute to investigate the quality of the spawning habitat available in these tributaries and the effectiveness of the Land and Riverbed Management Plan and Water Plan in protecting these areas.

From the analysis we will also be able to ascertain the size/age distribution of trout in the lake and apply John Hayes' growth modelling to see what factors are determining size, e.g. overfishing, food restriction, temperature. Although after looking at the Rotorua lakes and the sizes attained by browns on smelt it is likely to be food.

North Canterbury Fish and Game Region

North Canterbury have had a change of resource management staff, with **Jason Holland** leaving to go to the Ministry for the Environment. He has been busy with Central Plains Water, along with **Davor Bejakovich** who has been producing evidence on fish screening requirements. The region is applying for a water conservation order for the upper Hurunui River which has just been notified. There has been research on salmonid movement using otolith chemistry techniques in this river.

Central South Island

CSI Fish and Game region are flat out with major projects such as the north bank tunnel project of Meridian in the Waitaki and also the Hunter Downs and other lower Waitaki water take applications (which DOC have been excluded from participation in); upper Waitaki water abstractions and land use intensifications in the lake catchments.

Otago Fish and Game Region, reported by **John Hollows**

Otago Fish & Game staff, in conjunction with Contact Energy Ltd, are involved in a project to enhance the salmon fishery in the lower Clutha River. By using otolith analysis to investigate the life history and migration patterns we hope to determine the location source of returning salmon and use this information to determine enhancement options for the lower Clutha River salmon fishery. The project resulted from the Clutha River hydro consents process and has an aim of establishing an annual run of 5000 salmon in the lower river.

Otago is also applying for the Nevis River to be included in the Kawarau Water Conservation Order, with hearings expected shortly.

Southland Fish and Game Region

Maurice Rodway reports that his team have been involved in detailed trout spawning surveys in the Irthing, Nokomai, Aparima, Waituna, Waikaka, Waimatuku and Oreti Rivers; assessing trout populations by drift diving in the Waiau River (which has showed a decline in medium but not large trout which might be due to didymo) Mataura, Eglinton, Monowai and the Mararoa Rivers.

A catch and release trial in the Oreti River has revealed the following: the numbers of trout in both the C&R and in the control zone, where 2 fish per day are allowed to be kept, are about the same. This suggests that the C&R regulation is having limited effect, or that anglers release virtually all of the fish they catch anyway. The regulation was altered in 2004 so that all fish over 40cm have to be released. Due to the size structure of the fish population this has not resulted to any significant change to the effect of the C&R rule. The data collected so far will be useful in measuring any long term impact Didymo may have on this trout population.

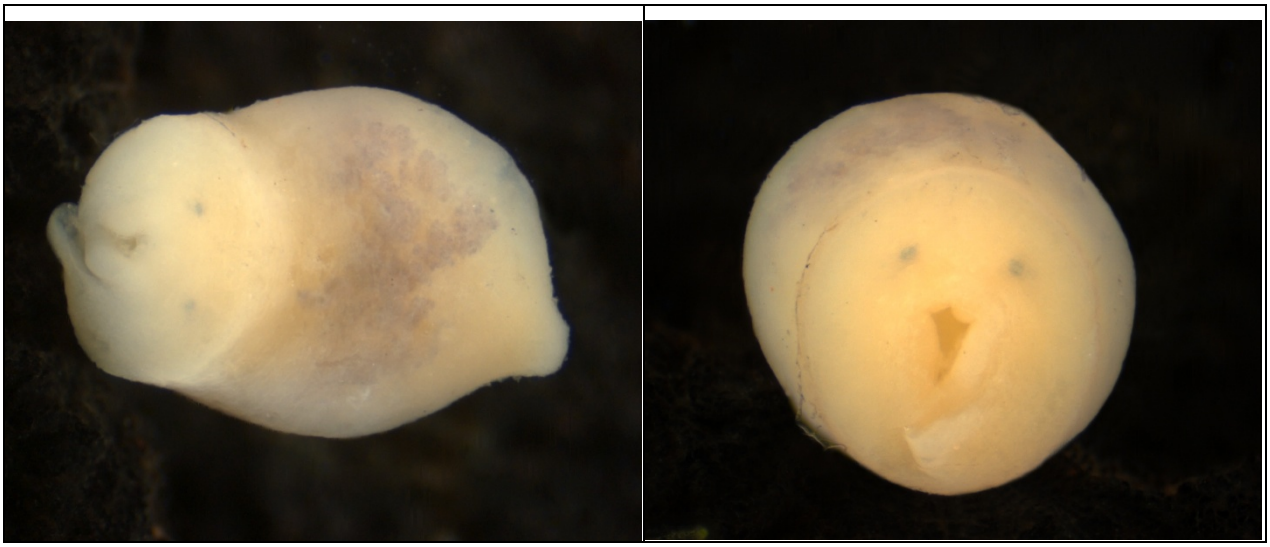
Compiled by Neal Deans

Stephen Moore, Landcare Research

Stephen Moore is part of the built environments team based at the Tamaki office of Landcare Research. His main areas of work are:

- assessing the early effects of urban development on stream faunas by re-sampling many of the Auckland sites he assessed a few years ago in pre-development AEEs,
- occasional overseas contracts (Brunei and Papua New Guinea in 2007),
- analysing freshwater invertebrate samples sent by clients from all over NZ.

Among the stranger beasts he's encountered during recent sample analyses have been Dalyellid rhabdocoels (Phylum Platyhelminthes, Class Turbellaria, Order Rhabdocoela, Suborder Dalyelloida, Family Dalyellidae) from Waikato and Auckland samples. They're easily overlooked being only about 1-2mm long and many specimens barely resemble animals. The eyespots and the forward directed pharynx help to identify them (photos below).



Centre for Biodiversity and Ecology Research [CBER] aquatic group, University of Waikato

The FRST-funded Freshwater Restoration project continues to be a key focus for research staff within CBER, with a key success in the integration of the two Intermediate Outcomes (Harmful Algal Blooms and Invasive Fish) through our research on Lower Karori Reservoir, in Wellington. This 2.3-ha lake has been dominated by severe algal blooms since 1992 and more recently almost solely by the invasive blue-green alga *Anabaena planktonica*. We initiated a removal experiment to test the hypothesis that zooplanktivorous perch in the lake were responsible for the blooms. The CBER team (with **Susie Wood**, Cawthron Institute) is continuing its analysis of the effects of European perch removal from the lower Karori Reservoir within the Karori Wildlife Sanctuary. **Nick Ling**, **Brendan Hicks**, **Ian Duggan, Dudley Bell, Jeroen Brijs, and Warrick Powrie**. Our boat electrofishing and netting has revealed that the reservoir has a very unusual fish community that is completely dominated by one species, the European perch. Our preliminary estimate of 20,000 to 22,000 perch in the Lower Karori Reservoir, with the age-0 and age-1 fish making up over 80% of the population, suggests perch are very likely to have a large effect on the zooplankton size and abundance. Temperature, nutrients, and phytoplankton and zooplankton populations have been monitored routinely in the Lower Karori Reservoir since 2005. We removed 4,000 perch in Feb 2007 and 4,700 perch in Feb 2008, and on each occasion, algal densities fell dramatically within two weeks of perch removal. Densities of grazing zooplankton increased following each perch removal. Fishing on 3-7 Nov 2008 removed 825 age-1 and older fish. No young of the year were caught, and fish were running ripe, suggesting that spawning was about to occur; water temperature was about 13°C. The reservoir has seemingly been less prone to algal blooms since fish removals have occurred.

David Hamilton is currently preparing for two workshops to be held at the University of Waikato: a water quality modelling workshop from 8-10 December 2008 (see http://www.lernz.co.nz/workshop/index.html) and the Global Lake Ecological Observatory meeting from 1-5 February 2009. See www.gleon.org for more information about GLEON. Ph.D student **Dennis Trolle** is now in the final stages of his research and is currently modelling the effects of climate change on the ecosystems of lakes Okareka, Rotoehu and Ellesmere. The outcome of his work during the past three years is now starting to appear through papers published and in press. **Deniz Ozkundakci** is also working up his data for publication, including the effects of flocculent applications on Lake Okaro. **Nina von Westernhagen** (PhD student) is continuing her analysis of Lake Rotoiti,

including 3-D ecological modelling of the whole lake. **Joseph Butterworth** (MSc) has completed his MSc on kakahi (freshwater mussel) populations and water quality of Lake Rotokakahi. **Matthew Prentice** (MSc) has completed his MSc on temporal and spatial variations of cyanobacteria in Karori Reservoir, and is now doing a PhD in Australia. **Andreas Rueckert** continues Post-doctoral research and has recently developed a molecular-based assay to quantitatively measure expression changes in toxin producing genes.

As part of his PhD research, **Jonathan Puddick** is developing a method known as MALDI-TOF mass spectrometry for cyanotoxin detection. This rapid, inexpensive method detects toxins based on their specific mass. Post-doctoral researcher **Susie Wood** is working with Jonathan to investigate how factors such as nitrogen concentrations alter toxin variant ratios. Masters student **Richard O'Rorke** has completed an extensive study of a Waikato lake focused on the role of lake microbes (eg; bacteria/viruses) in the senescence of algal blooms. Richard aims to gain a comprehensive understanding of microbial/cyanobacterial interactions, which may enable predictions of cyanobacterial bloom 'crashes' and potentially lead to the use of these microorganisms for bio-control.

Brendan Hicks continues to lead the invasive fish programme of the University of Waikato's Outcome Based Investment (OBI) entitled "Restoring freshwater ecosystems and resurrecting indigenous lake biodiversity". Considerable progress has been made on a component of its research into the biology of koi carp. Information gained through our quantitative boat electrofishing reveal koi carp comprise an average of 70% of the fish biomass at sites in the Waikato basin, and up to 97% at some sites. Previous techniques were unable to make this finding. Further, we have discovered that boat electrofishing at night is much more effective than day-time fishing for removing perch from the Lower Karori Reservoir. Our boat electrofishing has also revealed the widespread nature of feral goldfish, suggesting that they are potentially as problematic as koi carp. **Adam Daniel's** PhD research into koi carp movement by radio and acoustic tracking is proceeding well, and we have shown movements in single fish of up to 232 km in 6 weeks. Adam's collaboration with the Department of Conservation and Environment Waikato (**Bruno David**) continues. **Brenda Baillie**, based at Scion in Rotorua, continues her research into the effect of removal of large woody debris (LWD) on fish and invertebrates in the East Cape of the North Island. LWD removal had a profound effect on channel morphology, causing marked bed degradation and loss of pool-riffle structure. **Matt Riceman** has completed his MSc on otolith microchemistry of rainbow trout and common smelt. This study showed that laser ablation analysis of otoliths is able to discriminate natal habitats of rainbow trout and thus movement between lakes Rotorua and Rotoiti. **Salman Ashraf** continues his PhD student using remote sensing to evaluate macrophytes in littoral margins in a project that is supported by EW. Recent MSc completions **Jennifer Blair** who researched koi carp spawning areas, also by LA-ICP-MS of otolith microchemistry; and **Brenda Aldridge**, restoring giant kokopu populations in Hamilton's urban streams by releasing juveniles and adding structure to channels in a replicated experimental design. **Mat Allan** completed his MSc thesis on remote sensing of water quality in Rotorua and Waikato lakes. He has now begun a PhD in remote sensing, mapping water surface temperatures, suspended sediment, and chlorophyll *a* from satellite images. **Ray Tana**, supported by a Te Tipu Putaiao fellowship, is using otolith microchemistry and population dynamics to investigate torrentfish migrations in the Waikato River and Northland.

Ian Duggan is continuing his Marsden funded research examining invasions in constructed waters (e.g., reservoirs, constructed ponds, retired quarries, etc). He has recently had a paper accepted in Diversity and Distributions with **Chris Banks** that shows calanoid copepod invasions in New Zealand have been facilitated by the construction of such waters. Two students, **Claire Taylor** and **Samantha Parkes**, are currently working with Ian on this project. Ian is also nearing completion of a study of invasion risks posed by "incidental fauna" in the aquarium trade.

Ian Hogg has been collaborating with Ian Duggan on the genetics of zooplankton species, including analysis of invasion pathways of calanoid copepods into New Zealand constructed waters. Ian is also continuing research on the population genetics of Antarctic fauna.

Kevin Collier continues to lead a dual life at the university and the regional council. In between lecturing, his 1-day per week at the university has helped bring a few papers to fruition and has also involved conference presentations on Hamilton urban streams at the Stormwater conference in Rotorua and the Ecological Society conference in Auckland. Kevin has also been developing collaborative projects between the university and regional council on the Waikato River. Earlier in the year, this involved a preliminary study of deadzone ecology and processes along river margins, and a few student projects are now in the pipeline.

Craig Cary is leading a research group investigating toxin production by cyanobacteria, which may lead to a better understanding of the ecological role of cyanotoxins, and ultimately assist in predicting occurrences in lakes.

Chris McBride continues work on developing and implementing monitoring buoys, measuring key meteorological and water quality parameters, which is then transmitted to the web in real-time over the iQuest's HydroTel network. The data is available to view at https://data.iquest.co.nz using the "guest" log-in. There is already a high level of interest in these monitoring buoys, which have so far been installed in: Lake Taihu, (China), and are planned for installation in Lakes Rotoiti, Tarawera, Tutira, and Waikaremoana.

Jeroen Brijs, research assistant, continues to support the Freshwater Restoration programme, assisting Brendan and Nick Ling, writing reports, and making didymo sampling kits.

Denise Bruesewitz is a recent addition to the Freshwater Restoration team, beginning a post-doctoral appointment in June. She will be working on characterisation of denitrification in the Rotorua lakes. Gaining a clear understanding of seasonal patterns of denitrification in the lakes will help us understand how nitrogen and phosphorus cycles interact in the lakes, and ultimately how these cycles may affect the occurrence of harmful algal blooms.

Another recent arrival to the University is **Andrea Cardenas**, working with **David Hamilton** and **Chris McBride** to link lake research data from the University of Waikato to the greater limnology network. **Ryan Kroiss** is a computer science student at the University of Wisconsin-Madison (USA), assisting David Hamilton with the Global Lake Ecological Observatory Network (GLEON) by developing software to calculate various indices that help analyse temperature profiles of lakes.

We have recently hosted two international intern students, **Tjorben Posch** who is writing a bachelor thesis on the analysis of nutrients in sediment pore water from the Rotorua lakes, and **Nicolas Gillon,** whose Masters research included the estimation of future nutrient flow coming from groundwater to the Okataina Caldera lakes complex, in particular Lake Tarawera.

A FRST-funded study undertaken by **Matt Knox, Ian Hogg and Brendan Hicks** tested a DNA-based detection system for invasive fish species. Whilst sufficient sequence variability was difficult to obtain using a 250-base pair region of 16S rRNA (amplified and sequenced from white muscle, faecal material and slime), a 700-base pair region of cytochrome oxidase I (COI) mitochondrial DNA successfully delineated a variety of native and introduced fish species using fish-specific primers.

Follow up monitoring of the translocated black mudfish has revealed juveniles from successful spawning by the fish released in a wetland at Lake Kaituna in 2006 as part of **Amy McDonald's** MSc

research. The monitoring has also revealed invasion of the wetland by shortfin eels and mosquitofish – both of which prey on mudfish. Further releases of mudfish are planned to augment the adult population that appears to have been depleted by predators, and monitoring will continue over the next few years to judge the long-term success of the translocation project.

Nick Ling leads the fish pheromone work associated with University of Waikato's OBI. **Cherie Boult**, MSc student, co-supervised by **Merilyn Manley-Harris** from the Department of Chemistry is examining pheromone production in invasive fish. Nick is still involved with a major study of fish and koura health in Rotorua Lakes in association with **Michael Landman** at Scion in Rotorua. **Natalie Bleackley**, has completed her MSc thesis on the influence of inland distance on diadromy and reproductive isolation in common bully in the Tarawera and Rangitaiki Rivers. **Sean Taylor**, Nick's MSc student, is evaluating histochemical identification and flow cytometric quantitation of blood cells of common native freshwater fish species. Both Natalie and Sean are working at Scion in Rotorua. **Grant Tempero**, Nick's PhD student, is examining the ability of freshwater fish erythrocytes to respond to environmental factors like temperature and hypoxia; in vivo and in vitro.

Complied by Ian Duggan, Brendan Hicks, and Kylie McKee

Department of Conservation

Staff news

The DOC Freshwater TSO meeting was held recently and was a chance for everyone to catch up on freshwater issues and work happening around the country. There were a few new faces around the table this year so we thought it might be useful to list the main contact for each Conservancy as well as the Head Office, Research and Development Group staff:

Northland - **Amy Macdonald**, Auckland - **Louise Mack**, Waikato - **Mike Lake**, BOP - **Rebecca Lander**, East Coast Hawkes Bay- **Jane Goodman**, Tongariro- Taupo - **Jessica Wallace** & **Michel Dedual**, Wanganui - **Logan Brown**, Wellington - **Nadine Bott** & **David Moss**, Nelson/Marlborough - **Martin Rutledge**, West Coast - **Darin Sutherland**, Canterbury - **Jonathon Bray**, Otago - **Murray Neilson**, Southland - **Emily Atkinson**

Freshwater Section, Research and Development Group, Head Office - **Eduardo Villouta, Natasha Grainger, Dave West, Dave Kelly** and **Hugh Robertson**.

There have been a few changes in the Head Office team. **Bruno David** has left DOC and taken a position at Environment Waikato. **Natasha Grainger** returned from maternity leave and **Sjaan Charteris** finished her secondment and returned to Canterbury Conservancy. Sjaan is now on maternity leave, and we wish her all the best when her first child arrives. **Wendy Evans** who was leading the didymo liaison and research work has taken another position in DOC. **Hugh Robertson** has been appointed to the Freshwater Scientist, Wetlands position and will be working on the Arawai Kakariki Wetland programme as well as some general wetland research.

DOC is involved in many aspects of freshwater conservation management and research at many levels whether it is national or local. Here is a summary of some of the work DOC staff are involved in.

Arawai Kakariki

Some significant news from the Arawai Kakariki Programme is the appointment of **Hugh Robertson** as a wetland scientist to do justice to the myriad of research challenges restoring the three Arawai Kakariki sites and other wetland conservation projects across NZ. Hugh completed his Honours at

Otago, and PhD on the environmental water requirements of wetland vegetation at Deakin (Melbourne). Research & Development (R&D) staff on the technical advisory group (**Hugh Robertson, Dave West, Collin ODonnell** and **Kate McNutt**) are currently coming up with habitat mapping specifications for preparing GIS maps that document biophysical features and provide baseline information for assessing the effects of management activities on the restoration of Arawai Kakariki wetlands. Robust monitoring methods for poorly studied species such as wetland birds are being prepared, and R&D is also working collaboratively with the Universities of Canterbury and Otago on paleoliminolgical research.

The Waikato, Southland and Canterbury Conservancies also continue to invest significantly in Arawai Kakariki, with various onground management, baseline monitoring and operational planning activities underway at each of the three sites, Whangamarino wetlands, O Tu Wharekai (Rangitata River and Ashburton Lakes) and Waituna Lagoon/Awarua Wetlands.

Freshwater CDRP

Dave Kelly is leading the Freshwater CDRP Research Project which is a Cross Departmental Research Pool FRST funded project directed towards quantifying relationships between human pressures and ecological integrity in lakes and rivers. This research will develop freshwater biodiversity measures that will be central to effective freshwater management and permit informed overview, reporting and audit.

In 2006, DOC and Landcare Research developed pressure measures from a range of national databases to assess the ecological integrity of river and wetland ecosystems. Unlike traditional indicators (eg: water quality measures, biotic indicators), these are spatially explicit, comprehensive and scalable from stream-reach to the nation. What is now lacking is empirical data to relate measures of pressure with ecological integrity. For example, what freshwater biodiversity loss is associated with clearance of catchment vegetation? Understanding this relationship will underpin national and international reporting obligations, inform management and policy and may have significant economic benefits.

Currently, there are a number of ways in which indicators of ecological integrity are expressed, including the recent development of functional indicators for freshwaters of New Zealand freshwaters. Part of the research program will be to incorporate some of these new indicators with more historical indicators (diversity indexes, %native dominance) to quantify human pressure gradient effects. Thus the primary goal of the research will be to develop the scope for indicators of ecological integrity in freshwaters, and to quantify how these measures are related to spatially comprehensive pressure indexes developed for the all river and lake catchments in New Zealand. Research project partners include researchers from the Cawthron Institute, NIWA, University of Otago, Massey University, Canterbury University, and Environment Waikato (Project contact: Dave Kelly, DOC).

Project Themes:

Project 1: Defining and developing a measure of Ecological Integrity for Freshwaters

Project 2: Pilot quantification of EI indicators against pressure gradients using existing environmental indicator datasets

Project 3: Collating and expanding field monitoring of appropriate EI indicator variables in Freshwaters

Project 4: Quantifying relationships between EI indicators and River and Lake Catchment pressure indexes

Project 5: Integrating relationships between multiple human stressors into site prioritization tools

Fish removal tool development

Our testing of tools for removal of unwanted fish from flowing waters continues after pH field trials at Karori Wildlife Sanctuary lead by **Bruno David** did not elicit avoidance behaviours seen in laboratory. Working with Karori Wildlife Sanctuary and Wellington DOC staff we have started consultation, preparing resource consent documents and planning for using rotenone to remove fish in the upper reservoir and tributaries.

WONI

Work has continued on systematic planning tools such as Waters of National Importance (WONI) under the Natural Heritage Management System (NHMS). **Dave West, Natasha Grainger** and **Dave Kelly** are in the process of determining how best to disseminate the information collected in the last few years including giving access to GIS layers developed e.g. current wetland distribution, look for posters at 2008 NZFSS conference.

Didymo

Dave West has been co-ordinating this significant research programme with help from **Dave Kelly** and **Natasha Grainger.** Several projects having been completed. Client reports have been received from NIWA staff Cathy Kilroy, Shannan Crow, Marty Bonnet, Don Jellyman on the following topics

- Assessing the effect of didymo on the lowland longjaw galaxiid
- Didymo effects on native fish
- Methods to estimate didymo biomass
- Data and literature review for rivers containing didymo

Work is underway to finalise this years programme but will include:

- Temporal patterns of didymo biomass
- Assessing the effect of De-Bug treatement on didymo cells
- Naturally occurring water chemistry that limits didymo growth
- Decontamination facility effectiveness study
- Alternative 'low impact' control methods
- Pathways of invasion analysis
- Effects of didymo mats on movements of macro-invertebrates (especially drift) and fish
- Assessing effects of didymo on braided river birds and blue duck

Collating ideas for and then designing studies to help DOC and other freshwater organisations understand didymo post BNZ leadership has been a real challenge due to the pervasive but surprisingly subtle impacts didymo seems to have on freshwater communities.

Natasha Grainger and **Anna Paltridge** (Canterbury Conservancy) co-ordinate DOC's extensive operational work and represent DOC on MAFBNZ's Long Term Management Steering Group.

Ramsar COP10, Changwon, Republic of Korea

Nicola Scott (International Relations, Head of Delegation), **Richard Suggate** (SRO, Operational advice) and **Hugh Roberston** (R&D, Technical advice) represented New Zealand at the 10th Convention of the Contracting Parties (COP10) to the Ramsar Convention held in Changwon, Korea between 28 October and 5 November 2008.

The COP meetings are held every three years to provide an opportunity for the 158 Contracting Parties to discuss the implementation of the Ramsar Convention on wetlands. Delegates and NGOs from across the world attended.

The National Ramsar report for New Zealand, prepared with assistance of **Sjaan Charteris** and **Natasha Grainger** can be downloaded from www.ramsar.org. The Oceania report and the Resolutions adopted at COP10 are also available.

Northland – Amy Macdonald

DOC Northland has been supporting **Steve Pohe** and **Olly Ball** from Northland Polytechnic with their research into black mudfish habitat use and the effects of *Gambusia* and cattle grazing at Hikurangi Swamp. **Patrick Whaley** and his team from the DOC Kaitaia office have continued annual monitoring of a shortjaw kokopu population in the Mangamuka River. The monitoring uses visual implant tags and detailed stream habitat mapping to record fish locations at the micro-habitat scale and also tracks growth rates of resident fish. This project is in its fourth year, with 59 fish tagged to date.

Taupo Fishery - Michel Dedual

It has been a challenging winter due to the atrocious weather conditions. It has been particularly hard to manage the three fish traps that we operate. Furthermore and more importantly, the degradation of the economic environment has caused a slowing down in tourism which in turn has resulted in a drop in the number of fishing licences sold which has seriously impacted on the resources available for managing the fishery. Also the conditions of fish this year has not recovered yet from the 2005 conditions that existed in the lake and it has also been challenging to explain to the anglers and to the wider public what can be done and what can't or shouldn't be done to accelerate the recovery process.

Research – In collaboration with GNS and University of Otago we have initiated pilot studies to explore the use of stable isotopes distribution and micro chemistry of otoliths of trout to identify their origin. It has also been the second year of a large genetic study with the University of Wellington aimed at describing the genetic make-up of Taupo trout with an emphasis on examination of the shift in spawning time observed for the last few years.

East Coast Hawkes Bay Conservancy - Jane Goodman

The main focus of the East Coast Hawke's Bay Conservancy's freshwater work in 2008 has been on biosecurity and water allocation.

ECHB conservancy staff have been working with Hawke's Bay Regional (HBRC) Council, Fish and Game and Iwi to develop a regional response plan for Didymo. A simulated Didymo incursion run by MAF Biosecurity New Zealand (MAF BNZ) in Napier in late September provided a valuable learning exercise for all involved. Another high priority freshwater biosecurity issue that ECHB staff have been working on is the aquatic weed Hydrilla. Hawke's Bay has the only known Hydrilla infestation in New Zealand. The Department is currently processing an application from MAF BNZ to eradicate Hydrilla using Grass Carp and Endothall.

Rivers in Hawke's Bay are increasingly under pressure from water takes for out-of-stream use. The Department has been working with HBRC, Fish and Game and Iwi to resolve minimum flow and allocation issues.

Nelson Marlborough Conservancy – Martin Rutledge

Those freshwater consents just keep on rolling in and are keeping us busy! Major consent applications dealt with this year including those with actions now proceeding to the Environment Court include those by TrustPower for a hydroscheme on the Wairau River and New Zealand Energy for a hydroscheme on Lake Matiri. Pest fish operations focussed on the Motueka area are making good progress. This year DOC Nelson is hosting **Katharina Doehring** (School of Biological Sciences Canterbury Uni.) as she continues her MSc research on native fish communities in Nelson rivers and the migration abilities of inanga and other whitebait species. Restoration of a lake and wetland system at Moawhitu Durville Island is progressing and also progressing are plans for restoration for the Black Valley wetland at St Arnaud. Providing talks and technical information to local river and landcare groups is also making good gains in freshwater advocacy within farming and rural communities.

Compiled by Natasha Grainger

Cawthron Institute

Coastal and Freshwater Group

John Hayes has spent much of the past year consulting on large water allocation consent projects – including the Central Plains Water Enhancement Scheme and Meridian's Mokihinui Hydropower Proposal. He is now enjoying getting back into research - clearing a backlog of FRST and Fish and Game research projects which last year were amalgamated into NIWA's Water Allocation Programme. These include determining: rainbow trout habitat suitability criteria, invertebrate entry rates (into the drift), trout abundance with DIDSON (Dual Frequency Identification Sonar), effects of natural flow variation on juvenile trout; and investigating rainbow trout foraging and bioenergetics models.

Robin Holmes has been working with **John Hayes** and **Joe Hay** on assessing and monitoring the potential effects of the proposed Mokihinui hydro-power scheme on trout angling. Related to this work is a Cawthron report produced for Meridian energy on the effects of dams on trout fisheries in New Zealand. Robin has also been working with **Dean Olsen** on the N.C.C. Maitai and Roading water quality reports and has continued to provide technical support on various projects both in the field and in the taxonomy lab.

Dean Olsen continues to work on a mix of research and commercial projects including development of an invertebrate time-series model with **John Hayes** and **Doug Booker** (of NIWA), which is funded under the Water Allocation Programme, continuing genetic studies of NZ mayflies, and presentation of evidence at the ECan hearing for the Central Plains Water Scheme.

Roger Young continues his involvement in Integrated Catchment Management research in conjunction with staff at Landcare Research, Tasman District Council, NIWA and GNS (http://icm.landcareresearch.co.nz/). Roger has recently written up work on patterns of catchment-wide fish movement in response to flow and water temperature (with **Jeremy Wilkinson, Joe Hay** and **John Hayes**), a paper on collaboration and integrated research (with a whole bunch of collaborators), a study on contrasting responses to stress gradients among different river health indicators (with **Kevin Collier**), and work on how river-aquifer interactions affect thermal patterns and trout growth (with **Dean Olsen**). Roger has also been working with **Garth Harmsworth** (Landcare Research), **Dean Walker** (Tiakina te Taiao) and **Trevor James** (TDC) on linkages between cultural and scientific indicators of river health. Roger has also been helping several councils with advice on water allocation and SoE monitoring.

Joanne Clapcott along with **Roger Young** and many others are working on an interesting project relating to human pressure measures and the ecological integrity of rivers. Specifically, Joanne is investigating ways in which functional indicators respond to gradients in human pressures, whilst also contributing to two Envirolink projects on national Stream Habitat Assessment Protocols and Stream Restoration Protocols. Joanne continues to collaborate with Australian colleagues on stream indicators for forestry and a national headwater stream review. Joanne also visited Fairbanks, Alaska this year to help Masters student **Emily Benson** (University of Alaska) establish her field experiments.

Susie Wood is continuing work on her FRST funded postdoc in collaboration with Prof Craig Cary (Waikato University). Their work to date has led to the development of an array of molecular tools which are being use to help to understand cyanobacterial bloom dynamics and cyanotoxin production. In collaboration with **Prof. David Hamilton & Wendy Paul** (Waikato University), **Karl Safi** (NIWA) & **Wendy Williamson** (ESR), Susie is currently writing national guidelines for cyanobacteria in recreational waters. Susie has also been working with Masters student **Mark Heath** (Victoria University) who is nearing the completion of his research into toxic benthic cyanobacteria in the Hutt River (Wellington).

Karen Shearer continues to keep herself busy with freshwater monitoring-compliance projects around the country and environmental assessments for renewals of resource consents. Earlier this year, Karen, **Susie Wood** and **Claire Conwell** were involved in an interesting project to assess the potential long-term environmental effects of a copper-based compound developed for the control of didymo. This work followed on from in situ trials of the compound undertaken by NIWA in early 2007. Non-work related highlights for the year have included being chosen as a reserve for the National Masters hockey team and winning a gold medal at the National Senior hockey tournament in Auckland. Another highlight was winning a competition to spend two nights at Huka Lodge in Taupo (bloody fantastic!!).

Compiled by Joanne Clapcott

Hawkes Bay Regional Council

Taharua River Targeted Investigation Study The Taharua and upper Mohaka River study is in the final throws of completion. Periphyton nutrient agar bioassays revealed that the middle to lower reaches of the Mohaka River displayed nitrogen limitation in summer and phosphorus limitation in winter. The upper reaches in the vicinity of the Taharua River confluence showed less difference between treatments indicating that other factors (light levels, and / or velocity) may be playing a greater role in determining periphyton growths in these reaches. The study also showed that the macroinvertebrate fauna displayed the greatest decline in health downstream of the Taharua River Confluence. The study recommends following up with a study on light levels up and downstream of the Taharua River and a repeat of nutrient agar bioassays at the Ripia confluence in summer.

Riverside Farms - We have completed 4 years of monthly monitoring of a created wetland and riparian margins to better understand the benefits these works have had on water quality and ecology. Comparisons of inflowing water with the outflowing water suggests the wetland has been effective in removing suspended sediments, nutrients and indicator bacteria. The benefits of the riparian margins have been less clear. Water chemistry monitoring will continue for a further year.

Didymosphenia geminata We recently did a desktop didymo incursion response scenario with Gisborne District Council, Biosecurity NZ, DOC, Fish and Game and an Iwi representative. It was a useful exercise and we feel better prepared in the event that a real incursion did occur.

Cyanobacteria monitoring – phytoplankton monitoring of toxic blue green algae in Lake Tutira is continuing and we are now embarking on benthic cyanobacterial monitoring of the Tukituki River on a monthly basis through until march 2009.

Lake Trophic Level Monitoring We have completed two years worth of monthly water quality monitoring of the western Kaweka Lake. A Lake SPI assessment conducted by NIWA indicates that the lake is in a near pristine condition, scoring slightly above that of Lake Waikaremoana. Our monitoring now focuses on lakes Tutira, Waikapiro and Opouahi for the next two years. This work coincides with the commencement of a Hydrilla eradication programme of these lakes which has been enacted by Biosecurity New Zealand.

Fish Monitoring Programme: Our SOE fish monitoring commenced on November 6th and we have 10 sites programmed to be monitored this year. We are also commencing work on a fish barrier monitoring project so we are in a better position to report on known barriers within the Hawke's Bay Region.

LTCCP Planning – we have been busy forecasting expenditure and putting together research proposals for our upcoming LTCCP 3 year term. These will be submitted to Council in June 2009.

Bathing Beach Monitoring: our bathing beach surveys commenced on November 10 and will continue through to March 16.

Staff Changes

Vickie Hansen recently resigned as our water quality technician after 28.5 years. We are sorry to see her go after such a long time.

Compiled by Brett Stansfield

Environment Waikato

Kevin Collier has been analysing the last three years of regional council SOE monitoring data which includes assessment of macroinvertebrates, aquatic plants and habitat quality. As part of this work, Kevin has been evaluating a couple of approaches for aggregating macroinvertebrate metrics to summarise stream health. **Mark Hamer** and **Tony Olsen** of the USEPA have been helping to redesign the monitoring network to include a set of randomly selected sites that will enable the state of the region's wadeable streams to be estimated on a per km basis. A set of non-wadeable and large river sites has also been randomly selected for initial monitoring this summer. As part of this, river metabolism and cotton strip decomposition will be assessed in association with **Joanne Clapcott** of Cawthron Institute. Finally, Kevin has been working with **Bill Vant**, **David Hamilton** and **Clive Howard-Williams** as editors to initiate a publication summarising the current ecology of the Waikato River.

Mark Hamer, **Kevin Collier** and **Bruno David** have been trialling the use of UV stabilised mussel spat ropes as a simple and effective retrofit to perched culverts to improve the passage of native fish species in the Waikato region. After constructing a perched culvert in the lab, two rope types were tested with banded kokopu whitebait being used as the first trial fish species. Using a vertical perch

height of 0.5m and culvert diameter of 0.25m both ropes (hanging vertically) worked equally well during the 4 replicate trials with each rope type. Results to date indicate that 80%-95% of the subjects (n=30 fish per trial) were able to successfully negotiate the structure and inner pipe to reach the resting chamber above. Currently *Paratya* shrimps are also being subjected to the test. It is hoped that these ropes will provide a relatively cheap (cost = NZ$1 to $2 per metre), effective and easy to install system to enable fish to surpass perched culverts including the inner pipe throughout the district.

Mark and Bruno have also been trialling a standardised fish monitoring and survey methodology for wadeable streams in the Waikato district. Using the USEPA protocols for standardised monitoring of fish communities across the Western US, Mark and Bruno have modified the template slightly (with permission) to suit New Zealand conditions. An initial field trial using the prescriptive methods has been very promising and after some minor tweeking will be tested in 40 wadeable sites across the Waikato region. It is hoped that this test will potentially form the basis for long term monitoring and reporting on the state of fish communities in wadeable streams for the Waikato region and overlap with invertebrate and instream habitat assessments where possible.

Bruno David and **Keri Neilson** have been working on the development of indicators for assessing the 'health' of shallow lakes across the Waikato region. Former testing of various biological and functional indicators by Keri, **Johlene Kelly** and **Kevin Collier** included the testing and use of decomposition rates of wood (birchwood coffee stirrers), metrics of benthic and littoral invertebrates, zooplankton (including the rotifer trophic level index), macrophyte composition (Lake SPI) and water quality parameters. While many of these indicators had potential at an individual lake level, three have been selected for their cost-effectiveness and utility across the variety of shallow lakes within the Waikato Region. This year the three indicators of water quality TLI (also known as the 'Burns' TLI), Rotifer TLI (pioneered by Ian Duggan at Waikato University), and Lake SPI will be used to assess lake health across the region. It is envisaged that these three metrics will provide baseline information through time against which effectiveness of restoration efforts may also be assessed.

Compiled by Kevin Collier

NIWA Hamilton

Max Gibbs has been investigating the efficacy of sediment capping agents for blocking P release from sediments in the Rotorua Lakes for Environment Bay of Plenty. Max is maintaining the long-term water quality monitoring on Lake Taupo for Environment Waikato, and he is leading a project preparing an autonomous monitoring buoy with telemetry link to record high frequency (10-minute interval) water quality data at the mid-lake monitoring site on lake Taupo. He is also providing advice on the management of Auckland's water supply reservoirs for WaterCare Services Ltd.

Richard Storey has been spread over a number of short-term projects this year. On the ecological side he has continued teaching the Stream Ecological Valuation method to consultants, and has been applying the method to assess the functions of zero-order headwater streams in the Waikato. An interesting upcoming project is a study of genetic differences between invertebrate species inhabiting both intermittent and perennial streams in Hawke's Bay (with **Ngaire Phillips**). On the hydrological side, he has been developing a high-resolution digital stream network for Auckland Region, using recently-surveyed LiDAR data, in order to calculate the total length of perennial, intermittent and ephemeral streams in the region. He has also been dabbling in biogeochemistry, trying to assess the effects of the nitrification inhibitor DCD on wetland nitrogen processing.

John Quinn has continued studies on the impacts on Coromandel streams of logging and recovery rates after logging and the influences of riparian buffers. Recent focus has been on thermal recovery rates, fish (with **Dave Rowe**) and impacts of harvest slash (with **Aslan Wright-Stow** and **Mark Meleason**). The short-term effects of a farm-scale Integrated Catchment Management study at Whatawhata have been published in NZJAgSci, Agricultural Systems, and the Proceedings of the Grasslands Association, and a paper in prep for NZJMFR. These have shown quite rapid responses of the farm pastoral system, sediment and nutrients loads, habitat, and stream invertebrates to the changes in land and riparian management put in place in 2001. The Whatawhata research had a boost with sabbatical visits by Profs **Sherry Schiff** and **Mike English** from Waterloo, Canada, who applied their combined isotope/biogeochemistry and hydrology skills to investigate how nitrogen export was influenced by the various land use treatments combined with the historic Waikato drought, before and after the drought broke. John has continued to develop a Bayesian Network of dairying management options and aquatic values in Southland's Bog Burn/Oreti catchments (with **Bob Wilcock** and **Ross Monaghan**) and reaction from stakeholders indicates this is a very useful approach for summarising knowledge to support on-farm decisions and regional council policy. Along the way he has been involved in studies on the effects of treated sewage from his hometown Waipukurau on nutrients and periphyton in the Tukituki River, deliberations on forestry and nutrients in the Taupo catchment as part of the Environment Court case on the Taupo variation to EW's regional plan and running workshops on targeted riparian management.

Ngaire Phillips continues her involvement in the ecology of customary fisheries in the Rotorua (Te Arawa) lakes. After successfully completing a 3 year FRST-funded programme aimed at developing a sustainable management framework for Te Arawa, the team was successful in gaining a further 3 years funding from FRST. Some of the programme outputs can be downloaded at http://www.niwa.co.nz/maori/research/freshwater/te_arawa_lakes. The new programme (Barriers to environmental sustainability) focuses on 2 ecological drivers in the lakes, namely invasive macrophytes and cyanobacterial toxins and their effects on koura, kakahi and smelt. All are culturally important to Te Arawa, who are charged with developing management plans for each of the species (through recently enacted Te Arawa Lakes legislation). The team includes a broad range of scientific experts (**John Clayton, Sue Clearwater, Chris Hickey, Susie Wood** (Cawthron), consultants **Steph Parkyn** and **Ian Kusabs**, as well as **Roku Mihinui** and **Hera Smith** of the Te Arawa Lakes Trust). Ngaire also continues her research on kakahi (freshwater mussels) and is working on manuscripts examining key drivers of distribution and abundance, as well as contaminant effects on kakahi condition (also see posters at FSSOC). Other freshwater research includes her 2-year ARC funded project examining inter-generational effects of contaminants on freshwater clams. This has involved undertaking a challenging selection experiment (with **Glenys Croker** and **Anathea Albert**) and involves ecological and genetic investigations. Her studies into the genetic basis to ecological resilience have continued this year (albeit in a salty environment), with a field experiment using cockles in contaminated estuaries in the Manukau Harbour complementing experiments undertaken last year in the Waitemata. A lab validation of this work has been undertaken by **Brenda Walles**. Ngaire is hosting Brenda as part of her MSc internship with the Wagenegin University in Holland. The 4 month placement has been very productive. Ngaire also continues leading the Health Research Funded programme on contaminants in traditional foods. And on top of all that she maintains her interest in invertebrate species traits.

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V.H. Jolly Student Travel Awards

NZFSS encourages student attendance at its conferences by supporting student travel through the V.H. Jolly Awards. The Awards are named in honour of the late Violet Hilary Jolly, a founder member of the Society and one of New Zealand's foremost pioneering limnologists, who was instrumental in encouraging and supporting student involvement in New Zealand limnology.

The criteria for the Awards are as follows:

1. The Awards are solely for the purpose of supporting the travel expenses of students attending the annual conference of NZFSS.
2. The Awards are restricted to full-time students who are financial members of the NZFSS, as defined in the Society constitution.
3. Only those students who present either an oral paper or a poster paper at the conference for which an Award is sought are eligible.
4. Students who are residents of the town where the conference is being held are not eligible.
5. Students who are in receipt of other forms of travel support to attend the conference are not eligible.
6. Students may apply for an Award in person by identifying themselves to the Secretary/Treasurer during the conference.
7. The sum awarded shall be up to $100.00 per student, and the funds available for Awards shall be half of the interest earned in the previous financial year on the Society's bank accounts.
8. In the event of the number of applications exceeding the available funds, the Secretary/Treasurer shall distribute the available Awards on the basis of the distance travelled to the conference.

NZ Freshwater Sciences Society Medal and Honorary Membership

Rules:

1. *The New Zealand Freshwater Sciences Society Medal is for an outstanding contribution to our understanding and management of freshwaters by a member of the Society, with criteria for consideration of nominations as set out below.*
2. *Nominations for Medals are considered by the Awards Committee (currently comprising the President, Secretary-Treasurer, a SIL Trustee and two members elected at an AGM).*
3. *Honorary membership of the Society can be voted at a General Meeting of the Society, for those members who have performed significant service to the Society usually over a long period, on the recommendation of the Executive Committee as set out in the Society rules.*

Criteria for the Medal:

Matters for consideration by the Awards Committee (not all need apply in any particular case and not in priority order):

- National or international recognition of research or management output
- Leadership in particular fresh or brackish water science field
- Quantum and quality of research or management output
- Contribution to education or public knowledge of freshwater science
- Contribution towards sustainable management of freshwater environments
- Contribution towards the conservation of one or more species, habitats or freshwater ecosystems

There would be an expectation that any members nominated and considered worthy of this elevated status would be recognised in an appropriate fashion, such as in an award ceremony at the annual conference, to which the person awarded would be invited at the Society's cost and expected to provide a presentation. Nominations would include relevant biographic information, a statement of the nominated person's specific outstanding contributions to freshwater science in New Zealand and letters of support from at least two additional members of the Society at least one of whom is not employed by the same organisation. Closing dates for nominations are 30 June of each year. There would be no expectation that any Award need be presented in any given year. It is recommended that nominations are made without prior knowledge of the nominee.

Criteria for Honorary Membership of the Society:

As is set out in the Constitution, persons considered eligible for honorary membership are recommended to a General Meeting of the Society by the Executive Committee. Criteria for the award would usually involve significant service to freshwater science and/or to the Society, usually over a lengthy period. It is recommended that any nominations for honorary membership could be received by the Executive committee from members at least two months prior to any General Meeting of the Society, to provide time for the Committee to consider these and make a recommendation to the General Meeting with adequate notice as required in the Society Rules.

Established 1968

New Zealand Freshwater Sciences Society

GST No. 51-999-762

Website: http://freshwater.rsnz.org

10 November 2008

OPEN LETTER TO FRESHWATER SCIENCE WORKERS, EMPLOYERS AND FUNDERS

Work-related stress

The New Zealand Freshwater Sciences Society (NZFSS) enjoys the support of over 320 members engaged in freshwater research, education, consultancy and management throughout the country. As current President of this Society, I have recently become concerned over the levels of work-related stress some of our members are experiencing. Workplace stress is a concern for the Society if it interferes with the generation and transfer of information or deters members from pursuing careers in freshwater science and management, not to mention the effects on general well-being.

The declining health of our freshwater ecosystems is widely acknowledged as one of New Zealand's top environmental issues. Therefore, it is particularly important that New Zealand maintains and enhances the capacity that it has in freshwater science and management. The demands on existing capacity appear to be increasing and workplace burnout has become a concern for some of our members. With increasing awareness of this issue, I conducted a poll to get a feel for the significance of work-related stress among NZFSS members.

The intention of this open letter is to share the results of this poll with employers, funders, and individuals engaged in freshwater science in the hope that it may highlight some issues and potential solutions that help alleviate work-related stress in the future. The poll was emailed to all NZFSS members with 63 responses received, equivalent to a self-selected response rate of around 17%. Recipients were asked to indicate (i) their levels of work-related stress (very low, low, moderate, high, very high), (ii) whether work-related stress was affecting their sense of personal well-being (yes, no), and (iii) how much stress levels had increased over recent years (no increase, a little, a lot).

Around 60% of respondents indicated that work-related stress levels were "high" or "very high" and affected their well-being, with almost half reporting that stress had increased "a lot" over recent years. Respondents were also asked to indicate causes of stress and what could be done to alleviate it. I have grouped these responses into themes in the attached table with specific points

presented in order of importance indicated as the percentage of times related issues were highlighted by respondents. For me, several key points emerged from these responses:

- High and fragmented workloads coupled with tight deadlines and high client expectations are a major cause of stress.
- Declining and insecure funding is increasing workload pressure and causing job security concerns.
- Increasing pressure on freshwater resources can translate to increased pressure on freshwater science workers who are highly self-driven and strive to achieve beneficial outcomes in the face of declining resources.
- Increased levels and security of funding, particularly long-term core funding, to provide stability and enable increased support are by far most likely to decrease work-related stress.
- Several workplace and personal strategies can help reduce work-related stress.

As stated above, the purpose of this letter is to share the results of this poll with individuals and organisations who might be interested. I hope you find some of this information helpful in identifying and alleviating work-place stress.

Yours sincerely

Dr Kevin Collier

President, New Zealand Freshwater Sciences Society

PRESSURES	%
Workload	**44**
• Fragmented	10
• Tight deadlines	10
• Too high	8.9
• Client demands/expectations	5.7
• Diversity of roles required	3.2
• Presenting evidence at hearings	3.2

SOLUTIONS	%
Funding, resources and processes	**58.3**
• Change competitive science model - stable/long-term funding	22.2
• More resources for technical/science support	15.3
• More funding	12.5
• Simplified funding process	5.6
• More financial incentives/remuneration	1.4
• Consensus based approach to environmental legislation	1.4

PRESSURES	%
• Complex and adversarial legislation	3.2
Funding	**26**
• Insufficient/declining resources	9.5
• Insecure/inconsistent funding	7
• Science funding process/ bureaucracy	7
• Commercial requirements	2.5
Workplace	**15**
• Staff/student management	4.4
• Administrative requirements	3.2
• Lack of management communication/planning	3.8
• Technical difficulties/lack of support	1.9
• Workplace bullying	1.3
• Working environment	0.6
Personal	**15**
• Self-driven/commitment	6.3
• Lack of planning/reading time	3.2
• Increasing pressure on freshwater environments	3.2
• Tension/competition among peers	1.3
• Poor time management	0.6

SOLUTIONS	%
Workplace and workload strategies	**20.8**
• Reduce administration load/more admin. support	6.9
• Better organisational planning and prioritisation	6.9
• Strategies to deal with workplace bullying	2.8
• Improved workplace environment	1.4
• Provide more tools for managers	1.4
• More flexibility in deadlines	1.4
Personal strategies	**20.9**
• More thinking/reading/planning time (incl. sabbaticals)	6.9
• Increased exercise breaks	4.2
• More field work	2.8
• Increased social contact	2.8
• Improved time (and desk) management	2.8
• Slow down resource use	1.4

Minutes of the 40th Annual General Meeting of the New Zealand Limnological Society Inc.

(Trading as NZ Freshwater Sciences Society)

The AGM was held at the Millennium Hotel, Queenstown. The meeting opened at 12.30 hrs, 5th December 2007.

Present: Kevin Collier, President

Brian Sorrell, Secretary-Treasurer

and 73 members

Apologies:

Tracey Dean, Steven Moore, Rob Smith, David Speirs.

Motion: That apologies be accepted. *(Neil Deans/Carolyn Burns carried).*

Minutes of the 39th AGM:

Matters arising from minutes:

Dealt with under general business.

Motion: That minutes be accepted as a true and correct record of the 39th A.G.M. *(B. Sorrell/Chris Arbuckle carried)*

President's report:

This is a special year for the Society. It's our 40th birthday. There is something about turning 40 – for many it signifies the onset of middle age and the accompanying receding hairline, fading vision and expanding waistline. While our Society has certainly expanded over the years, from 45 members initially to over 360 now, our vision has broadened enormously and each year our members continue to cultivate vibrant new crops of freshwater science graduates.

Maturity also brings reflection, and now is a good time to ponder what the Society has achieved since 1968, reminisce on how and why things have changed over that time, and above all honour those who have made it possible. The Society was formed at a meeting in Christchurch in January 1968. Vida Stout was "Chairman", Max Burnett was Secretary-Treasurer, Ann Chapman was

Newsletter Editor, and the Committee comprised Geoff Fish and Donald Scott. In 1968 the annual subscription was 50c. You can imagine the debate when the fee was doubled only a year or so later. Since then we have had 13 Presidents, 15 Secretary-Treasurers, 12 Newsletter Editors, and many Committee members. Brian Sorell is our longest-serving Secretary-Treasurer at 7 years. Joy Talbot was our longest-serving Newsletter Editor surviving 8 years, and Mike Winterbourn is the only person to have done that job twice! We now have 11 honorary life members, 5 Royal Society Fellows, and 5 recipients of Science and Technology Medals.

Our logo was originally designed by Carolyn Burns and has stood the test of time. We have of course changed our name from the New Zealand Limnological Society, a proposal first mooted back in 1975 – it eventually happened in 2004. In the same year there was also talk of a joint conference with the Australian Society of Limnology – our first joint meeting was held in 1999. Things may not have moved fast back then, but in my view this was not a sign of inaction but rather contentment of the way we were. The Society was very active academically over this early period – there were discussion groups on a broad range of freshwater topics and much of the scientific groundwork done then laid the foundations for our understanding of aquatic ecosystems now. Many members also played key roles in defining the freshwater policy that drives much of what we do today. Our discussions are no longer restricted to conferences, and we now have the capacity to debate through email or our recently established public forum. Despite easier communication and increased membership, there is perhaps a greater hesitancy to engage in debate. Are we too busy now, or more influenced by commercial and political sensitivities than we were back then?

Over the years, the scientific focus of the Society's membership has shifted from lakes to fish to streams, and now it seems to be fairly evenly distributed across a range of freshwater disciplines with an increasing emphasis on environmental management. Our demographics have changed from a membership initially dominated by university academics, to increased presence of government scientists, consultants and management agencies, reflecting shifts in science funding and statutory responsibilities. these changes are reflected to some extent in our members' publication profile which was dominated initially by scientific papers, and then by reports or popular articles during the days of *Freshwater Catch* and *Water & Soil*, only more recently to become dominated again by scientific papers in response PSGF contract requirements and PBRF ratings.

Back in 1968 there were two newsletters per year, something we have recently reinstated. It is enlightening to remind ourselves of some of the editorial observations in those first newsletters:

> "More workers and considerably greater funds are urgently needed to fill the many gaps in our basic knowledge of freshwater environments before civilisation with its multiplicity of polluting and destructive agencies overtakes them irreparably. It is to be hoped that liberal and enlightened attitudes will prevail".

Have things changed significantly today? Have we arrested the environmental decline or has the knowledge generated over that last 40 years highlighted different environmental challenges that need equally pressing attention?

This year has been my first as president, and I have greatly appreciated the support and work of your executive committee. Thanks to Ngaire Phillips for her editing of the newsletters, David Burger for managing the web site from afar, and of course Brian Sorell for running the Society. Marc Schallenberg has instituted the new public forum, and Neil Deans has provided valuable input on RSNZ issues. Thanks also to Chris Arbuckle for heading the committee that has organised such a great conference, and of course all those on the organising committee and who helped in other ways. I also appreciate the efforts of Jon Harding, Ian Boothroyd and Carolyn Burns for participating in

committees, helping with 40th anniversary commemorations, and representing the Society on various matters.

This year we have made submissions to the Royal Society on the future of its journals and on the process for awarding Science and Technology medals. We supported the open-access and free on-line aspects of the journal proposal but opposed the amalgamation of all Royal Society journals into one volume. A New Zealand Freshwater Sciences Society medal has now been minted, and a review of our web site has been initiated. I look forward to seeing some of the changes you want implemented on our web site coming to fruition over the next year. Of course to do this we need to know what you want so please provide feedback to David Burger.

So what does the future hold? Where will freshwater sciences and the Society be in another 40 years? Already we are seeing the potential of technologies such as GIS, remote sensing and genetic analyses which, at different ends of the spectrum, offer the capacity for large-scale environmental mapping and prediction, and the promise of one day being able to analyse community data at the species level simply by putting samples on a gel. Although these advances will no doubt profoundly affect the way we do monitoring and management in the future, I can't help keep thinking of one of the first things Mike Winterbourn told me – when painting big picture the key is always in the fine brushwork. Last year Mike told us about the "sense of wonder" that has motivated him over so many years. Let's hope we maintain our close connection with the natural world in the face of new technology and keep up with the fine brushwork.

Maybe by 2047 the competitive business model for ecological science will be abandoned and progress encouraged through interagency collaboration? Already the benefits of interagency teamwork are becoming apparent through projects funded by the Cross-Departmental Research Pool and Envirolink. Perhaps when we refer to someone's "IP" we will mean "intellectual prowess", and our work will be supported by an organisation called "Friends of Research Science and Technology". Will the Society be more proactive in supporting freshwater sciences in the South Pacific, and will we be publishing or own journal? You can have your input into the strategic directions of the Society through the public forum.

Of course, no one can predict the future, and back in 1968 our founding members surely could not have envisaged the Society we see today. Another newsletter quote from 1968 is:

> "It would however be very dangerous to feel smug at this early stage and we should withhold our congratulations for another two or three years until we are sure that the original enthusiasm has generated a self sustaining body with a continual inflow of members".

After 40 years I think congratulations are long overdue!

I move from the Chair that this report be accepted. *(Kevin Collier/Carried).*

Fortieth Anniversary

The occasion of the Society's 40th anniversary was celebrated by the meeting. In addition to the President's comments in his address, former President Ian Boothroyd reminisced about changes in the nature of the Society from a small group of University academics to a diverse group including many resource managers, and in the type of freshwater science featured at conferences. All members present joined in a performance of a new original song "Forty years a flowing" celebrating the Society and its achievements (written and sung by John Quinn).

Two special awards were made to deserving members with outstanding careers in freshwater science.

- Ian Jowett was the inaugural recipient of the NZ Freshwater Sciences Society Medal. The Award to Mr Jowett recognised his many years of research and consultancy on environmental flows in streams, and in particular his development and application of the IFIM methodology in New Zealand systems. Mr Jowett made a statement to the meeting thanking the Society.

- On the Society's 40th anniversary, the President noted the enormous contribution made by Professor Carolyn Burns to the Society and the science of limnology over the 40-year period of the Society's existence. He recommended to the meeting that the award of an honorary life membership of the Society to Professor Burns was strongly merited and long overdue.

Moved from the Chair that Professor Carolyn Burns be awarded an honorary life membership. *(Kevin Collier/Carried).*

Professor Burns was duly congratulated on her well-deserved honorary membership (the twelfth in the Society's history), and made a brief gracious reply thanking the Society for its support and declaring her intention to continue her limnological leadership into the future.

A 40th anniversary cake was cut by Professor Burns, and the President thanked Chris Arbuckle for organising the sending of anniversary cakes to all the honorary members who were unable to attend the meeting.

Secretary/Treasurer's report:

Membership

Total membership at 28 November 2007 was 364.

Membership figures for the last four years are shown in Table 1 & 2. Total membership is similar to other years.

Subs renewals forms for 2007/08 have been delayed due to problems with a dispute with our bank over visa charges – still to be resolved.

There have been 29 new members joining since December 2006 (15 student/unwaged, 12 ordinary, and 2 corporate).

Table 1. Financial status of membership.

	2007	**2006**	**2005**	**2004**	**2003**
Members current:					
Paid	252	178	237	154	162

Unpaid	44	76	42	100	109
Members in arrears:					
1 yr	37	48	38	47	34
2 yr	2	28	20	24	12
3 yr	-	11	8	8	15
Other:					
Honorary	11	11	11	11	11
Life	3	3	1	1	-
Legal req.*	1	1	1	1	1
Societies	5	5	5	5	5
Libraries	9	9	9	9	9
Total	**364**	**370**	**372**	**360**	**358**

* Not a member

Table 2. Type of membership

	2007	**2006**	**2005**	**2004**	**2003**
Ordinary	235	244	260	252	249
Corporate	32	30	24	23	22
Honorary	11	11	11	11	11
Life	3	3	1	1	-
Unwaged/student	78	77	71	68	71

Other (Societies)	5	5	5	5	5

Finances:

- The accounts were audited by Stephen Dine of Brown Web Richardson, Hastings.
- The Society continues in sound financial condition and is in a good position to continue supporting its aims. Our total assets (including equity in stock of unsold invertebrate and Freshwaters books) at 30 June 2007 was $71,379. Our 50% discounting of the invertebrate book value has led to a slight decrease ($1148) in our total assets compared with 2006/07, although our cash flow income exceeded expenditure over the year.
- Book sales continue to be an important source of revenue. As of 30 September 2007, there are 138 out of 1000 *FoNZ* copies in stock and we banked $2615 as our share of *FoNZ* sales in 2006/07. Sales of the revised Bulletin are strong and our share of 119 sales in 2006/07 was $839, plus we have banked another $779 since 1 July 2007. The invertebrate book also continues to make a modest contribution to our income.
- The net profit of the Rotorua conference was $883.
- Expenditure was low in 2006/07 with the main expenditure items being $3198 for the macrophyte poster printing and $1000 for Jolly Travel support.
- We have one term deposit, the combined Jolly Fund, with $44,914.87 at 28 November 2007. The Current Account at 28 November 2007 was at $24,041.82.

Motion: That the Society Accounts for 2006/07 be accepted. *(Brian Sorrell/Colin Townsend– carried).*

Motion: That the Auditor for the next financial year be Brown Webb Richardson Ltd., Hastings. *(Brian Sorrell/Chris Arbuckle– carried).*

SIL Trust report

The Treasurer was unable to attend and provide a report. A report will be provided for the next newsletter.

Following the strong support for the Trust and its activities declared at previous AGMs, the Secretary/Treasurer reported correspondence between the Executive and the Trustees endorsing the continuation of the Trust, and the recognition of the need to elect a new trustee by the Society at the AGM as specified in the Trust Deed. Nominations for a new trustee were duly called for.

Nomination: Jon Harding (Neil Deans/Carolyn Burns).

Motion: Nominations close (Angus McIntosh/Colin Townsend carried)

Jon Harding elected as a new SIL Trustee unopposed.

Publications

Posters: The President reported correspondence from Dave Speirs on continued high demand for the posters and that Environment Waikato had funded a reprinting of the Fish and Invertebrate posters. Volunteers are required to provide copy for a wildlife poster as the next poster initiative.

Invertebrate book: Mike Scarsbrook noted that the invertebrate book was now on sale at $24.95 a copy and that sales at this price had plateaued with 150 copies remaining. He suggested that remaindering the book at $10 per copy may be necessary to sell the remaining copies.

Ann Chapman and Maureen Lewis are continuing to work on the revised Crustacean book – the President promised to keep the members informed on progress.

Future Conferences

The President thanked the Queenstown committee lead by Chris Arbuckle for organising a highly successful 2007 conference.

Rosemary Miller has generously volunteered to chair a committee organising the 2008 Taranaki conference, also including Kimberly Hope, Chris Fowles, Bart Jansma, Logan Brown, Allen Stancliff, Mike Joy, along with Julie Baxendine from OnCue. She presented an account of progress for the conference, and confirmed that the dates would be 24 – 28 November 2008. The Plymouth International Hotel in New Plymouth is the likely venue. Rosemary invited members to contact her with nominations of themes for the conference.

The President noted that he has been approached by members of the Hydrological Society, with whom we have not had a meeting since 2001, about a possible joint conference in Whangarei in 2009, and has begun discussions with HydroSoc President Tim Davie. Ian Boothroyd noted the NZ Geochemistry Society as another potential partner with whom we have some common interests and who could be a third party. It was noted that there may be logistic issues with size for an appropriate venue in Whangarei if the conference is too big. Colin Townsend expressed a note of caution in having multiple joint partners with only limited common interests.

Angus McIntosh noted the cost issues for South Island students and the need to support their attendance, given the limited and expensive air connections into Whangarei. Richard Allibone also noted the logistic difficulties in attending remote conferences, pointing out the cost of the Queenstown conference for North Island delegates. John Quinn suggested that these problems were not insurmountable and could for example be addressed by providing bus transport from Auckland, which has cheap air connections with South Island centres. The Secretary reminded the meeting that bus transport from Auckland was used successfully to move large numbers of delegates from Auckland for the 1999 Wairakei conference.

Tanya Gray (Northland Regional Council) kindly offered to investigate the suitability of venues in Whangarei and to liaise with the President and HydroSoc exploring the possibility of a 2009 joint conference with HydroSoc.

General Business

- RSNZ Journals: The President outlined the Society's submission to the committee being chaired by Bob McDowell, which supported the development of the NZ Journals (particularly NZJMFR) as on-line only journals without page charges, but opposed the notion of combining the journals into a single journal covering all disciplines. Carolyn Burns reported that she had attended the RSNZ Constituent Societies meeting in November on NZFSS's behalf, where it

was announced that RSNZ now has a new proposal which retains the original journals (except that the "Agricultural" and "Crop and Horticulture" journals will be combined). The President thanked Professor Burns for attending the meeting and representing the Society.

- Website: The President reminded the members about David Burger's proposals for enhancing the website. Costs for a professional redesign of the website would be ca. $2000 plus software. The meeting thanked David for continuing to manage the website from afar and thanked Wendy Paul for her offer of additional help. The President invited members to continue to provide feedback and suggestions to David on the Yuku bulletin board or by email. There was general support for re-developing of the website and the meeting endorsed that the Executive move ahead with the website redesign. A number of members opposed any development of a log-in, members-only area of the website, citing problems caused by these for other organisations. The issue of the posting of the spring newsletters on the website with the member addresses included was re-canvassed.

Meeting closed 14.05 hrs.

S.I.L. 1987 Trust Fund Awards

The Society administers grants for overseas travel by young scientists and visits by overseas scientists through the SIL 1987 Trust Fund. The two grants are:

S.I.L. 1987 Trust Fund Travel Award

S.I.L. 1987 Trust Fund Guest Lecturer Award

S.I.L. 1987 Trust Fund Travel Award

Objective: To enable outstanding young scientists to attend overseas conferences, seminars or workshops, or to visit institutions to learn techniques, develop expertise, use equipment, collections or library facilities not available in New Zealand.

Eligibility: Applicants shall be New Zealand based members of the New Zealand Freshwater Sciences Society. Preference will be given to candidates less than 35 years of age, or who graduated in the previous 10 year period.

Previous awards: No person shall be ineligible for an award because of a previous award.

Applications: Applications shall be made on the electronic form available either on the website (http://freshwater.rsnz.org) or from the Secretary of the New Zealand Freshwater Sciences Society (b.sorrell@niwa.co.nz) by the date shown below.

Applicants will need to state their aims and objectives, submit a draft itinerary, supporting letters from relevant institutions, overseas contacts, a curriculum vitae, a list of publications, a draft budget showing other sources of financial support obtained or being sought, and name two referees.

Criteria: Applicants will be judged on the benefits that are likely to accrue to the candidate and limnological research in New Zealand as a result of the trip.

Reporting: The successful candidate will submit a trip report for publication in the Society's newsletter. Where appropriate, the successful candidate will also describe the work done during the trip at the next annual meeting of the Society.

Award: The award will cover the costs of travel (up to 100% for the grantee only) together with a contribution towards accommodation and living expenses up to $2000.00 or such higher sum that may be determined by the Trustees.

Tenure: Such period/periods as the Committee thinks fit.

Frequency: The award may be made annually provided there are suitable candidates. The Committee may decide not to make an award in any particular year.

Closing date: Applications must be submitted to the Secretary/Treasurer by 30 November in any year for travel the following year. All material (including letters of support from referees) must be submitted electronically as pdfs or Word documents to the Secretary/Treasurer. Material received as hard copy cannot be considered.

S.I.L. 1987 Trust Fund Guest Lecturer Award

Objective: To provide financial support for visits to and/or within New Zealand by eminent overseas limnologists, whose visits will benefit New Zealand's limnological research community as a whole.

Eligibility: Candidates should be eminent in some field of limnological research and have the ability to make a contribution to limnological research in New Zealand.

Previous awards: No person shall be ineligible for an award because of a previous award.

Applications: Applications shall be made on the electronic form available either on the website (http://freshwater.rsnz.org) or from the Secretary of the New Zealand Freshwater Sciences Society (b.sorrell@niwa.co.nz) by the date shown below.

Nominations: Candidates must be nominated by a financial member of the NZFSS who will submit on their behalf a letter outlining the aims and objectives of the trip, a curriculum vitae, a list of publications, a draft itinerary, a draft budget showing other sources of finance if any, and the names of two referees.

Criteria: The candidates shall be judged on their eminence in the field of limnological research and their ability to make a contribution to New Zealand's limnological research community. Visitors will be expected to address the annual meeting of the NZFSS and to visit several New Zealand research institutions including universities.

Reporting: The successful candidate will submit a trip report for publication in the Society's newsletter.

Award: The award will cover the costs of travel (up to 100% for the grantee only) together with a contribution towards accommodation and living expenses up to $2000.00 or such higher sum that may be determined by the Trustees. In determining the value of the award the Committee shall take into account the fact that overseas scientists are often better able to receive financial assistance than New Zealanders.

Tenure: Such period/periods as the Committee thinks fit.

Frequency: The award may be made annually provided there are suitable candidates. The Committee may decide not to make an award in any particular year.

Closing date: Applications must be submitted to the Secretary/Treasurer by 30 November in any year for Guest Lecturers proposed for the following year's conference. All material (including letters of support from referees) must be submitted electronically to the Secretary/Treasurer as pdfs or Word documents. Material received as hard copy cannot be considered.

S.I.L. 1987 Trust Fund Report

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UNIVERSITY OF CANTERBURY
Te Whare Wanaga o Waitaha
CHRISTCHURCH NEW ZEALAND

26 September 2008

Brian Sorrell
New Zealand Freshwater Sciences Society
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Dear Brian,

S.I.L. 1987 Trust Travel Award Report

The 22nd Annual Meeting of the Society for Conservation Biology was held in Chattanooga, Tennessee over five days in July 2008. The conference titled, *From the mountains to the sea*, focused on conservation in freshwater, marine and terrestrial ecosystems, both as separate components and as connected entities. There was a very strong focus on freshwater ecosystems, with a number of sessions on conservation issues within and adjacent to freshwater environments. The conference was well attended by leading conservation scientists working with a wide range of conservation issues across the globe.

I have a very strong interest in conservation biology, both freshwater and terrestrial, and this conference was an excellent forum for learning about the work being undertaken in a wide range of fields and locations. It also provided the ideal opportunity to present my research on blue duck conservation in New Zealand to the international scientific community and to make many useful contacts. I gave an oral presentation in the Bird Conservation session titled *Assessing habitat suitability for species with fragmented distributions: How do we determine potential whio range?* This was very well received and I was able to get some helpful feedback which will help to direct some of my future research.

While in the United States, I also visited two universities to build on existing academic relationships and develop new ones. I was invited to give a seminar on my PhD research at the Natural Resources Ecology Laboratory at Colorado State University. This lab is at the forefront of mark-recapture research and I received some very positive feedback on my work. I also spent a week at the University of Georgia, working with colleagues from the Georgia Cooperative Fish and Wildlife Research Unit within the Warnell School of Forestry and Natural Resources.

I am extremely grateful to the New Zealand Freshwater Sciences Society for awarding me a SIL 1987 Trust Travel Award which enabled me to attend this conference.

Yours sincerely

Amy Whitehead

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Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

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New Zealand Freshwater Sciences Society
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Dear Brian,

S.I.L. 1987 Trust Travel Award Report

Thanks to an SIL Trust Travel Award I was able to attend the 138th Annual Meeting of the American Fisheries Society in Ottawa, Canada this year. The five-day conference had the meeting theme, *Fisheries in Flux: How do we ensure our sustainable future*, so was focused on the ongoing challenges faced when managing both freshwater and marine fisheries. With over one thousand attendees, and up to eighteen concurrent sessions there was no shortage of excellent oral presentations to attend. Of particular interest and relevance was a 25 session symposium on "Community ecology of stream fishes" in which leading freshwater fisheries scientists from around the world presented research. The symposium ended with a very interesting and well-balanced 40-minute discussion lead by a number of prominent scientists highlighting new areas and ideas for research in freshwater ecosystems. Many freshwater fisheries managers also described difficulties they encountered when interpreting scientific papers and made insightful suggestions about what could be improved to ensure quicker uptake and implementation of critical research findings.

I was one of only sixteen student papers selected (over 200 students presented at the conference) to be presented in the 'best student paper' symposium. I gave a well attended oral presentation titled "*The role of disturbance and ecosystem size in structuring stream food webs*". Despite the loss of the projector for part of the presentation (due to lightning striking the conference centre!), the response to the talk was very positive. The talk generated many questions about New Zealand stream food webs and the study systems I work in, and the comments/discussions with freshwater scientists after the talk gave me useful feedback and directions for future work.

On route to the conference I was able to visit a colleague in the United States now working for the US Department of Fisheries and Wildlife. In addition to learning about how the US currently manages trout fisheries and their data collection networks for modeling commercial salmon stocks, we also discussed future manuscript collaboration on food web data sets collected in New Zealand.

I am very thankful to the New Zealand Freshwater Sciences Society for having awarded me the SIL Trust Travel Award that gave me the opportunity to attend this conference.

Yours sincerely

Phillip Jellyman

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New Zealand Freshwater Sciences Society

How do I join?

Print out the following details, fill in the boxes and mail to Secretary/Treasurer, Brian Sorrell, c/- NIWA, PO Box 8602, Riccarton, Christchurch, New Zealand. b.sorrell@niwa.co.nz

---

Title:.....**Surname**:.....

Initials:.....**First Name:**.....

Address:

Telephone: (main).....

(other).....

Fax:..... **Email**:.....

Membership type (corporate, waged, student, unwaged):

.....

Please fill out the following permissions:

I agree to the NZ Freshwater Sciences Society publishing my membership details.

Choose one: Yes No Please sign: _____

I give permission for my email address to be added to the NZFSS email mailing group

Choose one: Yes No Please sign: _____

My preferred format for receiving the NZFSS newsletters is as a:

Choose one: Electronic pdf Hard copy

Brief List of Your Professional Interests:

Payment:

Waged/Corporate $40

Student $10

Unwaged $10

Royal Society of New Zealand Travel Grants* (optional) $4

TOTAL AMOUNT....$.....

Make cheques payable to "NZ Freshwater Sciences Society"

Payment by Credit Card:

Visa Mastercard (circle one)

Name on card: .....

Card no:.....

Expiry date:.....

Signature:.....

Send to:

Secretary/Treasurer Brian Sorrell, c/- NIWA, PO Box 8602, Riccarton, Christchurch, New Zealand. b.sorrell@niwa.co.nz

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*used for overseas travel awards for beginning NZ scientists and administered by The Royal Society of New Zealand

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Constitution

Constitution

The name of the Society shall be the New Zealand Limnological Society Incorporated.

Objectives: To establish effective liaison between all persons interested in any aspect of fresh and brackish water research in New Zealand, and to encourage and promote these interests.

3 Means of Attaining Objectives:

(a) The establishment and maintenance of a register of all persons working in the appropriate fields in New Zealand, giving details of their current interests.

The holding of meetings and conferences to deliver scientific papers, and to discuss scientific topics.

Co-operation and affiliation with other scientific bodies when appropriate.

The production of a newsletter including information about the current interests of freshwater workers, and listing relevant new publications and other items of interest.

The distribution of the Newsletter to appropriate organisations in New Zealand and overseas.

4 Membership:

(a) The members of the Society shall be:

1 Ordinary members who shall be persons admitted to membership by the committee, and whose annual subscription as fixed from time to time shall be accepted by the Committee.
2 Unwaged Members who shall be any full-time student of a secondary or tertiary educational institution, and who shall pay such annual subscription as shall be fixed from time to time.
3 Honorary Members who may be elected at a general meeting on the recommendation of the Committee.
4 Life Members who shall be persons admitted to membership by the committee, and whose lifetime subscription shall be paid in advance as a single fee as fixed from time to time.

(b) Newly elected members shall be notified by the Secretary of their election and sent a copy of the constitution.

(c) Any member may resign by giving notice in writing to the Secretary, and paying all subscriptions due.

(d) Any member shall notify the Secretary in writing of a change of address.
(e) The Committee shall have the power to cancel membership in the case of conduct considered prejudicial to the Society.
(f) All members are entitled to receive the Society's Newsletter free of charge.

5 Executive and Meetings:

(a) There shall be an Executive Committee consisting of the President, the immediate Past President (ex officio), the Secretary-Treasurer, the Editor, and two (2) other members,

(b) The Committee shall implement the Society's general business, and a simple majority shall decide all questions at Committee Meetings. If voting is equal, a motion is lost. A quorum at a Committee Meeting shall be three (3).

(c) The officers shall be elected every two years, either at a General Meeting or by postal ballot as the existing Committee determine. The postal ballot shall be held before the end of the financial year, and if a General Meeting is not held, the committee shall have the power to scrutinize and count the votes, and declare the results.
(d) The newly elected officers shall take office 1 month after their election.
(e) Candidates for positions as officers shall be nominated at the General Meeting, or in writing signed by two other members, received by the Secretary before the time of such meetings, or by the 31st of August if a meeting is not held. Every candidate shall signify personally, or in writing his or her acceptance of nomination. The Committee shall have the power to co-opt members of the Society to fill any casual vacancies on the Committee.
(f) The Executive Committee may summon a General Meeting or a General Meeting shall be summoned on receipt of a request signed by no fewer than ten (10) members entitled to vote. General Meetings shall be summoned by notice in writing, specifying the business to be considered, and notices shall be posted not less than fourteen (14) days prior to the proposed date.
(g) At all General Meetings, ten (10) members entitled to vote shall constitute a quorum, and a simple majority shall carry a motion. Voting shall be on the voices, or by show of hands or by ballot at the discretion of the chairman, provided that, if any member so demand, voting shall be by ballot. The Chairman shall have a deliberative and a casting vote.
(h) Votes of members. Each Member shall have one vote at a General Meeting, and each Affiliated Body shall have the right to appoint a delegate who shall have one vote at a General Meeting.

6 Finance:

(a) Annual Subscription: shall be due on the 1st of July in each year and the amount shall be fixed at a General Meeting. Members whose subscriptions are not paid by the succeeding 30th of June shall be unfinancial and shall be liable to forfeit all benefits of membership. The financial year shall conclude on the 30th of June.
(b) The funds of the Society shall be controlled by the Executive Committee and shall be banked in the name of the Society. Cheques and bills shall be signed by any one of the President or Secretary-Treasurer, and must be approved in writing by other members of the Executive Committee. The Society shall not have the power to borrow money.
(c) Any income, benefit or advantage shall be applied to the charitable purposes of the Society as described in Sections 2 and 3 above.

(d) No member of the Society, or any person associated with a member, shall participate in or materially influence any decision made by the Society in respect of the payment to or on behalf of that member or associated person of any income, benefit or advantage whatsoever.

(e) Any such income paid shall be reasonable and relative to that which would be paid in an arm's length transaction (being the open market value).

(f) The provisions and effect of clauses 6(c), 6(d) and 6(e) shall not be removed from this document and shall be included and implied into any document replacing this document.

(g) Payment of accounts must first be approved by the Executive Committee. This may be done at a meeting or by mail, and items may be approved in advance for one financial year.

(h) An Annual Report and Financial Statement shall be prepared and posted to members. The Financial Statement shall be audited by a person appointed at the previous General Meeting.

7 Organisation:

(a) The Secretary-Treasurer shall keep (i) a Minute Book containing full minutes of all meetings, and (ii) a Register with the names, addresses, professional interests and date of joining of all members.

(b) Affiliated Bodies. Incorporated or unincorporated bodies, and other organisations approved by the Committee, may become affiliated with the Society on acceptance by the Committee, and on payment of such annual subscription as may be fixed from time to time.

(c) Changes in the Constitution may be made only on a two-thirds majority of the votes polled, and this vote shall be conducted by letter.

(d) No addition to or alteration or recession of the rules shall be approved if it affects the charitable objects, the personal benefit clauses, or the winding up clause, except as specified under clause 7(g) below.

(e) The Common Seal of the Society shall be in the custody of the Secretary, who shall in pursuance of a resolution of the Committee to that effect, affix the same to all instruments requiring the same.

(f) The Society shall not be wound up except on a two-thirds majority of a postal vote, but shall be dissolved in the event of the membership being fewer than five (5) persons. In the event of dissolution of the Society, its assets shall become the property of the Royal Society of New Zealand which shall dispose of the assets in accordance with the aims of the Society.

(g) The provisions and effects of this clause 7(f) shall not be removed from this document and shall be included and implied into any document replacing this document, except that another organisation, which must be an Inland Revenue Department approved charitable organisation, may be named in place of the Royal Society of New Zealand.