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BROADSHEET



**NEW ZEALAND
ASSOCIATION OF
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NEW ZEALAND ASSOCIATION OF RESOURCE MANAGEMENT
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The Editor welcomes correspondence, reviews of recent publications, interim reports of current research or resource management issues, news items, other articles, and lighter items about members activities and career movements. Unless specifically indicated otherwise, opinions expressed in the Broadsheet are not to be regarded as the official view of the Association. Copy sent on floppy disk or E-mail is preferred, although typed copy is also acceptable. Items can be sent to:

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The Association's financial year begins on January 1st. Web site www.nzarm.org.nz

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Editorial

Dear All,

No Editorial this issue.

Cheers

Chris Phillips

PS. If anyone wishes to jump on a soap box and have a rave, feel free to send in a letter to the Editor or a Guest Editorial.



An interesting urban swale in Christchurch – glorified landscape architecture or functional stormwater management?

Regional Roundup

Marlborough

Nothing from Marlborough.

Eds. Note: from this issue on Nelson and Marlborough will be reported together by Martin Workman.

Bay of Plenty

Greetings all from the BOP chapter - good to see the plum blossoms out.

New member **Ruth Feist** has been busy with the Environment B·O·P proposed Water and Land Plan (RW&LP). She is starting to think about how to deal with the 2399 original submission points from the 146 submissions to the plan. Next job is to process the 34 further submissions. **Ruth** has also been going to various meetings relating to the RW&LP, e.g. lake water quality management issues, RW&LP implications for infrastructure requirements for the Western BOP SmartGrowth project, wetland forum meetings, and attending MfE's project on stock in waterbodies - the list goes on. **Ruth** says she is looking forward to Xmas holidays already! Ah but you've got lots of lovely pre-hearing meetings to organise before Xmas haven't you!!

John Whale has been following up on the implementation side of plans, working on getting the recent successful (no references) plan change to Environment B·O·P's On-Site Effluent Treatment Regional Plan operative, assisting Ed with negotiations on the Regional Air Plan. Keeping the troops in order and getting ready for summer fishing. On that, our **Norm Ngapo** was in luck at a recent fishing competition when he won a BBQ for catching a massive 0.585kg Gurnard (poor wee thing). It was the only one Norm weighed in, and even then was just on the off chance (we all thought it was a bit small and got a major surprise when it won). Unfortunately we ate the 3rd and 4th prize winners (yum)!! BBQ at **Norm's** sometime soon methinks!

Ed Parkes says that there is not a lot to tell apart from ongoing work on the Regional Air Plan - seeking resolution of the last two outstanding references, assisting with the preparation of the Draft River Gravel Management Guidelines, undertaking an assessment of historical land-use and the likelihood of any pesticide residues plus some preliminary work on contaminated sites. Ed expects to be helping with some pre-hearing meetings and the Staff Report on submissions to the Proposed RW&LP.

After 4 ³/₄ years with Environment Bay of Plenty **Grant Burke** is leaving to join Fletcher Challenge Forests (FCF) as a Harvest Planner. Since being with Environment Bay of Plenty **Grant** has processed and monitored many, many, many (did I say many) resource consent applications for cut to fill

earthworks, vegetation removal, discharges from earthworks site and developed catchments, structures in, on, over and under the beds of watercourses and dams and diversions. Other significant involvements include the development of the Environment B·O·P Draft Forestry Operators Accreditation System which will appear in the RW&LP. Now he can help set it up from the industry side of the equation!

Grant has also had input to the Environment B·O·P Draft Stormwater Strategy and produced various compliance monitoring reports. **Grant** and Tracey are going to stay living by the beach so life is all good. We wish you all the best in the real world **Grant!**

Colin Stace reports good progress on the routine setting up of Environmental Programmes around the Rotorua area. Lots of implementation fencing and planting works getting done. Monitoring of some of the "historic" works has been interesting of late and **Colin** reports a few issues dealing with new landowners who didn't know about the Farm Plan commitments entered into by previous landowners, and the need to keep channels clear where older riparian works have been neglected. **Colin** and his team are also setting up revegetation trials together with Forest Research, looking at options on various specie selection and spacing regimes, going for optimal canopy closure at minimal costs. **Colin** is also involved with Care Group activities with locals about the Ngongotaha and Awahou streams. They are into the clearance of brushweed and willow sand replanting with native species. Excellent stuff.

Lawrie Donald in the meanwhile is up to similar work over in the Tauranga area, he reckons he is assembling Rolls Royce Environmental Programmes, is involved in various land management issues on Matakana Island. They have some unique plant and animal pest issues to resolve and has had an initial meeting about some coastal issues. Lawrie is also involved with the LandCare Trust, forming community groups that were focussed on single issues into Catchment Management Groups looking at wider issues, main ones being land use management and coastal erosion. **Lawrie** is a busy boy!

Rumour has it that **Clive Tozer** took his Rivers and Drainage staff on a days 'team building' recently (a.k.a. fishing trip into the great blue BOP!). All was sweet till the sea roughened up in the middle of the day and Clive was spied with his head over the rail demonstrating reverse peristalsis. The outcome was acceptable however because the team came back with a decent feed of Tarakihi!

Both **John Whale** and **Clive Tozer** were also reported to be part of an Environment Bay of Plenty and Department of Conservation contingent walking the Whirinaki Forest Park. By all accounts the official inter agency evening meeting followed by a sumptuous steak meal with copious red wine and yarns till all hours in the Whirinaki Central Hut was the highlight of the winter. Just how the heavy supplies got to the hut remains a closely guarded secret!"

FCF's environmental team, **Glenn Sutton** (*feral plum farmer*) and **Gavin Williamson** (*eccentric leader*), are flat out preparing for FCF's impending Forest Stewardship Council (FSC) audit; submitting/referring on various district/regional plans including the dreaded Rotorua District Council's Variation 12 (*I'll never make fun of Mike Vine's role in this again!*); environmental training (with **Andy Woolhouse**); development of National FSC Standards; wildlife surveys (with **Willie Shaw**) - to name a few. There doesn't appear to be much time for fishing or hunting, let alone feed the cows and poultry at the moment. I used to think that **Clive T** just sat his desk all day, answering the odd phone call and thinking up projects for me to do.

Ross Bawden reports that his company has survived another winter and continues to enjoy the relatively stable environment that the forest markets have enjoyed over the last 12 months.

A recent experience whereby a Regional Council has required certain actions to be carried out on a harvesting site has illustrated the importance of definitions. The Council's requirement is based on its

rather unique interpretation of a commonly used engineering term. To date we have not complied with the request other than to areas where the generally accepted definition clearly applied. The other areas do not pose any environmental risk irrespective of how heavy the rainfall may be.

This experience does nothing to foster good relationships (and by implication good environmental outcomes) and it is suggested that a universally accepted compendium of terminology would be a positive move, perhaps spearheaded by NZARM!

Ministry for the Environment Project: Preparation and Delivery of Riparian Training Package

In April 2002, **Clare Feeney** (Environment and Business Group Ltd) and **Norm Ngapo** (Waiora Soil Conservation Ltd) were contracted by Ministry for the Environment to develop and run a series of riparian management workshops throughout New Zealand during the months of June and July. The project brief specified that the riparian training package concentrate on riparian management for pastoral land use.

John Quinn (NIWA) assisted Clare and Norm in developing the material, and the MfE manual “Managing Waterways on Farms” was used as the primary reference text, although a workshop manual was also used for the individual workshops.

A number of regional councils and unitary authorities were contacted to see if they were willing to host the workshops, and the programme resulted in workshops being held in Northland, Waikato, Manawatu, Tasman District, Canterbury and Southland.

The main target audience for the workshops were regional council/unitary authority staff, although there were also representatives from a range of other organisations including Department of Conservation, New Zealand Landcare Trust, Fish and Game New Zealand, District Councils, QE II National Trust, Fonterra, Dexcel etc. In addition, a number of farmers attended the workshops at Northland, Waikato, Manawatu and Tasman District. The workshop content had a generic component that was common to all of the workshops. However, each workshop was individually tailored to each region following feedback from needs analysis surveys.

The day long workshop concentrated on 4 main areas:

- Understanding the natural processes in riparian areas and streams;
- Implementation of riparian management;
- Getting the message out; and
- Where to from here?

The final training package for the project was completed with input from a number of regional and district council staff from around the country. The objective is for MfE to make the material available for people to use or refer to.

The over-riding impression from the riparian management project was the high level of expertise around the country. Workshop participants included people from a wide range of backgrounds who contributed greatly to the success of the programme. In addition, the resource information available from councils throughout the country (handout brochures, pamphlets, fact sheets etc) is excellent. The final report includes 22 pages of useful reference material (web sites, brochures, papers, contacts) collated into simple categories (such as by geographical region) to be more user-friendly.

Highlights from each workshop:

Waikato: Experiencing the aftermath of the weather bomb, and testing the training package to destruction (much to the benefit of subsequent workshops)!

Northland: Having John Quinn along, and enjoying the lunch provided by the Mangakahia River Landcare Group!

Manawatu: Catching up with lots of soil conservators, and at the evening meal debrief session, fighting over the last glass of wine with Garth Eyles and Neil Faulkner!

Tasman District: Experiencing Murchison on a freezing winter morning – you just had to be there!

Canterbury: The field trip; listening to a farmer who is enthusiastic about riparian management!

Southland: Experiencing warm southern hospitality despite a 7-degree frost!

Thanks to the MfE for providing the funding for the project, and thanks also to the host councils and staff who helped organise the individual programmes – your enthusiasm and assistance ensured that the workshops were successful and “everything came together on the day”.

Norm has just finished work on another project for MfE with Paul Blaschke "History of Environmental Farm Plans in New Zealand". So he is now looking forward to having a bit of a break in the next month or so and get in a bit of fishing (*not fishing again! - this will be very distressing for Simon Stokes if he reads this*) if possible.

The BOP executive are also well down the track of preparing next year's conference in our beloved region. We look forward to seeing you all here next September and perhaps there could be some fishing available for those who show potential and commitment. Anyway, time to put some sika venison steaks in the pan...

Glenn Sutton and John Whale

Taranaki

There has been some changes in Land Management in recent times, the most notable of which is that **Tony Burgess** has up and left for better things to be a Finance Manager for Rabobank. We will miss you Tony, particularly as you used to do Taranaki's little contribution to Broadsheet.

Dex Knowles has **Don Shearman**, **Darren Scown**, the two **Jasons**, **Lynne Hall**, **Mary Stewart**, **Melanie Candy** and **Maggie Bayfield** busily talking with farmers and preparing plans etc to stop erosion in the hill country, save wetlands and plant up our riverbanks on the ring plain. To date they have prepared 204 hill country management plans covering approximately 94,000 hectares (or 28% of

farmland in the eastern hill country) and 385 riparian plans covering 875 kilometres of streambank on the ring plain.

Talking about riparian management, the troops are half way through a review of Taranaki's riparian management programme. With Fonterra about to release its environmental policy and a possible requirement for dairy farmers to fence riparian margins we hope there will be a significant added demand on the Council's riparian planning and advisory services. The team is confident that our revised programme, particularly using the Council's new Geographic Information System, can meet the demand.

Life continues as normal for the Policy and Planning Section. **Gray Severinsen** continues to beaver away on the Council's second State of the Environment Report. It continues to take shape (probably not quickly enough for Gray's liking) with February 2003 being the likely date of release.

As for the rest of Policy and Planning, **Chris Spurdle** and **Katrina Lewis** are undertaking a non-statutory interim review of the Regional Coastal Plan for Taranaki. The Plan has been operative for five years now and it is timely to see how the Plan has stood the test of time in terms of environmental results, consenting trends, stakeholder views etc. **Nikki Lawrence** (aka the Waste Nazi) is working with the three district councils to implement on a regional level the New Zealand Waste Strategy. Nikki has been frighteningly effective in implementing waste minimalisation initiatives within the Council.

Finally, the Council's Geographic Information System is now on line. Named Taradise, all staff have access. The Land Management Section in particular will notice significant benefits. They can now work more efficiently and accurately without the arduous cross-referencing to maps and files that they were used to before. Aerial photographs with overlays showing existing and proposed vegetation and fencing, contours, waterways and land use capability are easily accessed. Time spent preparing a hill country management or riparian planting plan is significantly shorter.

Chris Spurdle

Waikato

Alan Campbell has relinquished the Waikato regional NZARM co-ordinator role and Bruce Peplow has now taken this up. Thanks for your past contributions Alan!

Bruce is a Programme Manager with Environment Waikato based in Hamilton and works with a number of Land Management Officers involved with managing existing soil conservation schemes and promoting new initiatives across the region. These initiatives include the recently adopted Project Watershed (see below) and the Clean Stream project. (See separate outline provided by Project Manager Alan Campbell). The land management team includes Steve Veix (Taupo Office), Rien van der Weteingh, Nicci Clark, Julie Beaufill, Michelle Gibbs and Estee Farrar (all based in Hamilton).

Project Watershed

This is a comprehensive catchment based project covering the entire Waikato River catchment. It is essentially a new rating system which will fund the ongoing maintenance of river management, flood protection and soil conservation schemes, and enable new initiatives to be promoted.

The catchment has been divided into significant subcatchment areas or management zones (Lake Taupo, Upper Waikato, Middle Waikato, Waipa and Lower Waikato) and these will become focus areas for the annual work programmes. Liaison committees comprising property owner, local authority and other agencies are to be set up in each zone to advise Environment Waikato on the work programmes. Rating will have an impact at regional, Waikato catchment and management zone levels. A local share applies to works and will be met by way of a direct charge on the property owner (soil conservation) or by way of a local differential rate (river management/flood protection). The grant for new soil conservation will be at a rate of 35% of project cost.

The adoption of a Funding Policy for Project Watershed followed approximately three years of development and consultation. To maintain all existing schemes and protection works across the whole catchment and to undertake recommended additional works, the programme is estimated at \$5.5m per year for the next five years with an ongoing programme to extent over a 15-year period.

The effect for the average ratepayer not within a direct flood zone is around \$10 - \$15 per \$100,000 capital value.

From Rene Weterings

Rene Weterings is currently doing some short term consulting work on a community forestry/soil conservation project in Haryana province in northern India, where there is a major initiative in reforestation work in the fragile arid ecosystem of the eastern Rajasthan desert. He is based in Panchkula, near Chandigarh, and is attached to the Haryana Forest Department. It has all the trappings of a bureaucracy with a very deep hierarchical chain of command, a vestige of the old Raj days, and provides a much needed social service in ensuring employment where once employed, you can never be sacked. It is a department where there are many who are very successful at imitating Venus fly traps.

The main role of his work there is to undertake departmental capacity building in using technology to improve data management systems. More particularly, he is involved with providing technical training across the Haryana Forestry Department in multi attribute mapping using GPS and GIS to record and manage the information as part of the Monitoring and Evaluation requirement of the project. Field work training sessions in the desert environment is a torture test of survival in +45C where the soft winds tend to suck the life out of you. But in this second 5 week part of this assignment, the winter months are approaching and the climate is more pleasant.

The project, which commenced in earnest in 2000, has established over 1300 ha to date in village woodlots planted on communal land, which is a considerable area given the small scale of operations and the large number villages to be found. A range of indigenous species such as *Acacia nilotica* and *A. tortilis* are planted, both armed with long thorns typical of plants found in the arid zones. In the areas with higher rainfall toward the foothills of the Himalayan mountain complex, a hybrid poplar is planted as a 5m rooted cutting. These are planted for the veneer market and are harvested with a diameter of 35cm plus after 5-7 years, depending on whether they are irrigated. The eucalypts are a hybrid of *E. camuldulensis* and *E. citriodora*. These commercially produced genetically modified species show extraordinary growth rates in a low rainfall area and there is no anti GM movement here yet to thwart the progress of soil stabilisation efforts in a landscape that has been dramatically modified by man for

centuries. All trees are multi purpose in nature, providing fodder, fuel wood, soil stabilisation, and timber. The scale of what can be achieved by manual labour in constructing irrigation and drainage channels, contour banks and water supply wells almost defies belief.

Adapting soil conservation techniques learned NZ and Australia and applying them in an arid landscape requires a different perspective. There are similarities in techniques used and innovation is a key attribute. The locals are masters at innovative approaches and much can be learned from them. The Department has some solid employees who are dedicated to the work they do and are reminiscent of our pre RMA style of soil conservators. The forest guards and foresters, who are much like our soil conservation technicians and soil conservators respectively, travel considerable distances over crowded pot-holed roads by motor bike, the ubiquitous Royal Enfield Bullet, a single banger designed to rearrange your profile should you manage to fall off it. But travel by road here is another story....

Bruce Peploe

Nelson - Tasman

Rod Witte continues to fly the NZARM flag at Nelson City Council. Rod kindly provides below an update on what is happening in the sunshine capital.

“Nelson City Council is finalising the last few references to its Resource Management Plan (a combined District, Regional Coastal and Land disturbance Plan) **Tony Quickfall** is well advanced managing the drafting of the Fresh Water Quality Plan which is one of the first to adopt the ANZECC water quality process to formulate local standards.

The other major plan development task is the Air Quality provisions of the RM Plan where the challenge is to reduce particulate emissions (mostly from solid fuel domestic heating) by 70% to comply with the latest MfE/MoH Guidelines. The task has been given added impetus from a recent decision of a panel of Commissioners which recommended Transit withdraw a Notice of Requirement for a new urban expressway because of the potential worsening of air quality. Transit rejected the recommendation and submitters have appealed.

A flood of applications for new apartment complexes on Nelson's Wakefield Quay (81 units at last count) has kept consent planners busy and is representative of the major growth pressures in the region and the tensions that creates. A proposal to remove a lowly ranked heritage house and redevelop the site attracted 160 submissions in opposition. The real issue for submitters was preservation of streetscape and reaction to change.”

Tasman District has even greater growth pressure than Nelson and **Steve Markham**, is leading the Council's efforts to provide for increased demand for housing while protecting productive land, and landscape and natural values. An innovative package of policy promoting low impact cluster housing that protects the rural character and productive land is shortly to go to Council. Carter Holt Harvey alone is looking at subdividing hundreds of hectares in coastal Tasman to meet the demand for people wanting to live in the area. In the meantime, the Council is putting through a variation to its plan to restrict earthworks near the coast to stop developers destroying cliffs and altering the landscape.

Andrew Fenemor has left Tasman District Council to take up a role with Landcare Research in Nelson as Programme Leader for the Integrated Catchment Management (ICM) Project in the Motueka catchment. This role will be half time, with Andrew spending the rest of his time carrying out other projects, and no doubt contracting back to the Council. It is great that Andrew hasn't been lost to the district and that he can play a leading role in this important ICM project.

Colin Michie says he's busy processing and monitoring land disturbance and gravel extraction consents. The message from Colin is that, he is yet to become an appendage to the computer (as many ex field staff have experienced). "Retirement is still a talking point but one should not hold their breathe."

Andrew Burton and **Martin Workman** have been struggling to keep up with inquiries from farmers for riparian plans. Fish and Game's expose on dairying in the Buller has got the farmers busy with bridges galore planned, and big improvements in practice underway. The Council has had a good response from farmers and has not had to resort to enforcement action to get cows out of creeks. But a lot more work is still left to be done to meet the standards set under the Buller Water Conservation Order. And with the Motueka River Conservation Order nearing completion their will be even more improvements required.

Martin Workman

Canterbury

Sustainable Farming with No-tillage in NZ

Promotion of No-tillage or direct drilling holds huge potential for most Regional Councils to make significant environmental gains, while improving the sustainability of Agriculture in their regions.

Farmers can now grow crops and specialist feeds without risking the soil and environmental degradation associated with cultivation. Other benefits include:-

- Eliminating water and wind erosion
- Reducing sediment and nutrients getting into streams
- Saving 75% in fuel and carbon emissions
- Reduced nutrient leaching
- Increased soil organic matter levels and soil moisture holding capacity.
- Higher earthworm numbers

After monitoring 70 paddocks in Canterbury for 3 years, Crop and Food has clearly demonstrated that no-tilled paddocks have significantly better soil structure than cultivated ones. Improved structural condition scores are closely related to higher productivity and crop yields.

The technique has improved to the extent that it can now be more reliable than cultivation. Yields are as good or better than conventional methods, with equal best milling wheat yields, 19 tonne /ha turnip crops, top freezer pea pay-outs. With the right equipment almost any seed can be drilled. (But not potatoes yet!)

One problem with no-till is that it involves learning a whole new way of doing things. Few farm consultants or advisors have experience or confidence with the technique. New farmers adopting no-tillage face a steep learning curve. They can feel quite isolated and feel like they are moving into the

lunatic fringe! Information, support and advice are hard to come by in some areas. This is one of the main factors limiting adoption.

With the demise of Monsanto there is no particular commercial body pushing No-till nation wide. Environment Canterbury and in particular **David Hewson** of the Councils Resource care team assisted in the formation of the NZ No-Tillage Assoc. Annual grant claims and report for MAF Sustainable Farming Fund have been completed. The NZ No-Tillage Association is carrying out a funding drive to secure \$150,000 to \$200,000 per year to employ an Executive Officer to promote No-Tillage, and provide farmers with a comprehensive information and advice service. The response from the commercial sector has been favourable with just under half the target being committed so far.

NZ No-tillage Association has a successful MAF SFF funded project to run 4 No-tillage focus farms throughout NZ. The focus farms are providing good opportunities for farmers to learn from successful farmers and help them gain confidence . The project has 2 more years to run.

Garry Grive the ex CEO of Monsanto NZ has been exploring the idea of stepping up the promotion of No-tillage by putting the Association on a commercial footing, with a full time co-ordinator. There are many similar organisations world wide.

A New Tool for Caesium Sampling

A monitoring programme to measure changes in soil depth by measuring the amount and distribution of caesium 137 present in soil samples is a key part of Ecan's soil monitoring programme. One of the practical difficulties in this exercise is the physical collection of soil samples.

Don Wethey and the Land Environmental Monitoring Section have overcome the problem by purchasing a 1982 Jeep with a Giddings soil rig from Landcare Research. This enables hydraulically powered core samples to be taken to below tillage levels.

So next time you're in Timaru and see a jeep with a couple of guys in sunnies and Hawaiian shirts you'll know it's the ECan team about to start their soil monitoring programme.

Enhancement of spring fed lowland streams

The health of Canterbury's spring fed lowland streams is of concern because fish numbers have become depleted, and some are unsafe to swim in. Fine sediment is a common problem in these waterways, as it clogs up gravels, coats aquatic vegetation, and asphyxiates stream life.

The sediment is coming from a variety of sources including heavy stock such as cattle, deer, and horses damaging stream banks, runoff and wind blown material from cultivated paddocks, urban storm water, and subdivisions.

Environment Canterbury's Resource Care Team has researched, developed and piloted a community based approach over the last 3 years to restore a significant number of lowland streams. The Group's approach which focuses on reducing sediment levels is endorsed by key stakeholders. (Fish and Game, Federated Farmers, Iwi and District Councils.)

Key aspects are an IEM (integrated environmental management) approach which focuses on whole catchments and community based action on the ground. Stream walks are done to map fencing and

landuse along streams, which ensures the team knows each streams issues, values, problems and potential solutions.

The focus on minimising fine sediment and getting stock out of streams means the promotion will also address faecal pollution and nutrient enrichment. The project will also provide opportunities to enhance biodiversity with bank-side planting assisted by the \$125,000 Environmental Enhancement Fund.

Rob Phillips

Otago

Hi from Otago! We are currently enjoying 20-degree temperatures and warm spring days, while also watching lake waters threaten to invade Queenstown again. Tom Heller is hiding in a back cupboard somewhere studying furiously for exams (although whether he gets to sit them with the lecturers threatening strike action is questionable!), so this broadsheet is a bit of a compilation from a few of us!

Rather than hear about Regional Council doings, we thought you might enjoy hearing about what some other members of NZARM get up to in Otago.....

Grant Richards, Cromwell, Central Otago: Water Resources Otago Limited, now in it's 6th year of operation is flat stick with a number of projects ranging from resource allocation planning for vineyards, both proposed and developing, increasing pastoral irrigation requirements, permitting investigations and processing, water harvesting investigation and design, along with investigation and development planning for a community water scheme that maybe established along the line of an old mining water race to bring water from a sub alpine catchment to a landowner group and a commercial development for irrigation and wildlife pond development.

Another cold day was spent yesterday with the keen lads from Mcniells Well Drilling and their aircore drill rig at Omarama looking for groundwater in an area with no drilling history. Demand for drilling is such that it has taken 5 months to get the rig onsite to this difficult and challenging environment, particularly when dealing with the planning implications of the Auhuriri WCO and demand on adjacent surface resources. We have completed three Stage 1 groundwater exploration programmes in Central Otago this winter with some interesting results. We await the outcome from a hearing for one of our clients having been apparent guinea pigs for the PRP:Water and it's implications for supplementary water allocation in the Upper Taieri Catchment.

All in all I have been busy with some much-needed help from my wife Vicki as we address cataloguing data for key files so that we may track and locate data within our rapidly expanding database and be more efficient with our management systems.

The fishing in Lake Dunstan looks okay so far this spring, I've had the kids (ages 7, 11, 14 and 16) out in the new boat over the last two weekends and we have managed to land 6 nice trout. Loretta has landed the biggest one so far and thats keeping the boys interested. We've pumped up the biscuit and look forward to some temperate weather so that the brave ones may get into the water.

Newest Otago member: **Craig Evans:** I returned to Dunedin in 2000, having spent 7-years in Taranaki working for the Regional Council and then Fletcher Challenge Energy. I have a house in Roslyn, a wife

and two children which manage to collectively keep my very busy, and am also active in Tae Kwon Do. Lately I have been involved in a multitude of water resource projects including the evaluation and development of high-yielding groundwater irrigation supplies and associated consents in Southland. An investigation of remedial options for leaking artesian bores in North Otago. An evaluation and report for the Otago Regional Council on the Papakaio Aquifer in North Otago. We are working on resource consent applications for a large irrigation scheme in Otago. I am leading a former open cast coal mine rehabilitation project and several other related projects for Solid Energy nationally. Next week MWH has me going to Europe (*late September –ed*) to speak at an internal MWH conference on opportunities for growth in our services to the oil and gas industry. Really, with all the other smaller projects I am involved in, I have barely enough time to write this blurb!

And finally a contribution from long time NZARM member, **Murray Harris**-Land and Forest Consultant Dunedin

Kilmog stabilisation

Over the past 8-10 months I have been busy on a number of new jobs which has made an interesting change to the normal land Sustainability work programme as a private Consultant. I really prefer the word “Adviser” or “Facilitator” to Consultant as there are so many of these bods around now. At present I am coordinating work contracts managing and supervising land stabilisation plantings for Transit NZ on the unstable mudstone land mass known as “The Kilmog” on SH1 just north of Dunedin. It is interesting to note the areas that have been stabilised and dewatered using trees at a very small cost compared to some of the original engineering structures and plans that were proposed in the seventies and eighties at significantly greater costs.

Waikouaiti Waste Disposal

One of the other interesting projects I am involved in is in association with the Dunedin City Council Waste disposal Department where we are planting trees eg *Pinus radiata*, *Euc nitens* and *Euc ovata* to absorb and utilise irrigated human waste from small communities like Waikouaiti which is about 45km north of Dunedin. The area is closely monitored by the Otago Regional Council with respect to ensuring no nutrients get into the ground water and into the estuary close by.

Southland Dairy Farm Advice

The other project I have been heavily involved in since September last year is assisting the Southland Regional Council in an advisory role on new Dairy conversions. So far I have inspected and advised on about 46 farms and have been impressed with the standard of development. There is only a small percentage of dairy farms that one would be concerned about esp from a water quality viewpoint. There are a number of deer units where stock are wallowing in waterways and opening up tile drains that are as much concern as other farming systems.

Some of the real issues I see particularly on the recent dairy conversions now relate to lack of shelter systems (shelter in Southland can provide increased pasture/crop production of 10-15% order minimum), soil compaction esp on those farms where cows are wintered on, lack of biodiversity (esp the need for more smaller wetlands at strategic locations) and dairy effluent entering into tile/subsurface drains thence into waterways. The past two years has seen a major resurgence in land development on all farms in Southland but the concern is this mindset of dairy farmers to develop every square metre of land to produce more grass-when will this change!!!

Advanced Pond System project

The other interesting project in the south is the research study by NIWA in association with Dairy Research on the largest dairy effluent treatment system in NZ known as “Advanced Pond System” (APS).

Normally, the APS have been constructed on dairy farms in the north with 320-400 cows but this construction which has just been completed is designed for a 1000 cowherd. It is a massive earthmoving operation and covers about 1.7ha in area. The construction costs with the movable paddle is in the order of \$90000 but with the fencing and vegetation around the edges of the pond will come to about \$110000, no small cost for treating dairy effluent. The real test in time is hopefully that the liquid from the last pond and treatment system will be able to be discharged directly into the nearby waterway.

The APS system operates by four main ponds, the first is an anaerobic pond (for settling and digestion) followed by the high rate pond (where oxygenation occurs with help from a paddle wheel) then into a settling pond (where heavy algae settles out and approx. 60% solids removed) then finally into the maturation pond (where controlled discharge occurs and solar radiation and zooplankton graze). From the maturation pond the water can flow through a wetland area or more importantly reused for washing the dairy shed yards thus saving many thousand litres of water per year. Finally, the operation is in the process of being commissioned as I write these notes but I will keep NZARM members informed of its progress and result.

That's all from Otago this time round.

Nicola McGrouther

Southland

Environmental Awards: Environment Southland and the Ballance Farm Environment Awards

Environment Southland was approached by the Waikato-based Farm Environment Award Trust in October 2001 to host the Ballance Farm Environment Awards. A committee made up of representatives from Environment Southland, AgResearch, QE II, Federated Farmers, Ballance, ANZ, Fish & Game and Community Groups met regularly to progress the event.

We received 26 entries (2 later withdrew), which was an extremely good result. We appointed 24 judges from within the organisation and community and overall, it was a very positive experience for those involved in the judging process.

Environment Southland has hosted its own Environment Awards for the past 7 years, with growing success. We agreed to drop our farm section to accommodate the Ballance Awards. We have always found our own awards to be a very positive tool to help promote environmental awareness, to recognise environmental achievers and to support and encourage others to follow the example set by the entrants. Environment Awards are a very positive way of developing community and industry contacts and they enable us to offer practical assistance to entrants.

We achieved extremely good media coverage with both Awards, at a time when most of the environmental coverage in the local print media was fairly negative (in relation to dairy expansion concerns). The follow up field day was also a practical way of encouraging others to adopt sustainable land management practises –they were able to see first hand what the winners were doing and how they achieved their results.

The committee structure allowed positive contacts to be made and is invaluable for the further development and enhancement of community relationships. It also ensures judges are chosen from a wide and varied background, which should further enhance the entrant's experience. The judging process is designed to be a two-way exchange of knowledge and ideas.

I, being one of the judges, can say it was a fantastic experience and undoubtedly was an enjoyable time, filled with positive and beneficial exchange of information and ideas.

Land Development - In-Stream Works

Environment Southland staff and the representatives from the Department of Conservation, Iwi, Fish & Game and Federated Farmers have met and discussed the development of a protocol to identify when resource consents were required for in-stream works and streamline the process of applying for a resource consent.

Staff initially developed a draft form and framework to identify when a resource consent was required, with the concept of simple tick boxes to fulfil resource consent application requirements, and address the needs of potentially affected parties, so applicants need not obtain written approvals from these parties.

It was further decided that the tick box approach would be appropriate for bridges and culverts but a site visit was necessary for more extensive land development projects, which involve in-stream works. The site visit would involve ES land sustainability staff and representatives from Te Ao Marama Inc, DoC and F&G. It was also decided that one agency could act on behalf of the other agencies, if they were unable to attend. The decision as to whether the activity would require a site visit is the discretion of the ES land sustainability staff and possible applicant.

The site visit is to assist the possible applicant with identifying the potential adverse effects from the works, the resource consents required, and mitigation measures to address any adverse effects. Within 10 working days of the site visit, approval or comment would be received from the agencies above. If comment was not received within this time, it would be assumed they did not consider themselves a potentially affected party or were satisfied with the proposed activity and mitigation measures.

Southland Soil Data Sheets:

The Topoclimate South Trust has conducted a survey of Southland soils and climate between 1998-2001. Since the end of the survey the trust has handed responsibility for information distribution to Crops for Southland.

Environment Southland is in the process of developing a series of Soil Information Data sheets. This work draws on the Topoclimate data to provide a simple two-page summary of each of the major soil types. Those summary sheets will contain notes on distribution, broad physical and chemical characteristics and details on the environmental limitations and constraints associated with that particular soil type.

The indices proposed are structural vulnerability, compaction, nutrient leaching, erosion, water logging, organic matter loss and versatility rating for pasture, orchard, arable and forestry systems.

Riparian Management Workshop:

A one-day practical workshop was convened at Environment Southland recently, where 20 participants mainly staff from Environment Southland and also from the Otago Regional Council, Taieri River Trust

and MfE Christchurch attended. The Workshop was part of the Ministry for the Environment national programme “Reducing Agricultural Impacts on Water Quality” and was a follow up from the MfE published manual titled “Managing Waterways on Farms”. **Norm Ngapo** and **Clare Feeney** facilitated the workshop. The objective was primarily to train the trainers so they could understand the manual and implement the practices in the field.

It was an excellent day, where in the morning session was spent on defining and understanding what is a riparian zone, how land use affects streams and why these buffers are so valuable along with the benefits to land users. In the afternoon the group considered the big picture overview and then the preparation of a simple planting /riparian management plan.

The field trip was invaluable because various examples of waterways with good and bad practices were viewed highlighting the complexities of fencing out buffer strips and possible management implications or benefits. The other worthwhile aspect of the day was discussion by all the players in the process, ‘what is success’ and ‘how do we measure success’?

It was a very useful day especially looking at the range of people from planners to river inspectors and all discussing about riparian management and water quality under one roof.

Regional Bio-diversity Coordination Group:

Local agencies and organisations in Southland with responsibilities for managing biodiversity have identified the need to improve communication and co-ordination in biodiversity management on private land in the region. This has been stimulated by the New Zealand Biodiversity Strategy and the availability of associated Government funding.

It has been decided that a ‘Regional Biodiversity Co-ordination Group’ be formed to help facilitate biodiversity management on private land in Southland. Informal interest in this concept has been shown by Environment Southland, the Department of Conservation, Queen Elizabeth II National Trust, Southland District Council and Invercargill City Council. Environment Southland has indicated it would like to take a leading role in the establishment of such a group and has offered to prepare ‘Terms of Reference’.

The Regional Biodiversity Co-ordination Group (Technical Core Group and Sector Advisory Group) would aim to promote biodiversity protection and enhancement outside of public lands to meet key objectives set in the New Zealand Biodiversity Strategy. It will achieve this by providing co-ordinated advice and recommendations to the organisations that have biodiversity management interests and responsibilities in the region. The Group will consult with stakeholders to identify appropriate projects and then co-ordinate and support applications for funding offered by the Government to stimulate local involvement in biodiversity protection and enhancement.

Bala TikkiSETTY & Murray Harris

Manawatu - Wanganui

Horizons.mw Land Management Officers – Soils have just completed another pole season. Most of us have had a reasonable amount of difficulty finding sufficient poplar and willow poles to fill orders. However, with a bit of rationing and prioritizing we have been able to keep most people happy. The number of small commercial growers is increasing in the **Taumarunui** area and growers are increasing output each year. It is hoped that in the next three years we may source up to 50% of our pole requirements locally.

Sharn Hainsworth has got a successful SUB's and Sustainable Land Management groups up and running in the Taumarunui area. **Sharn** has also discovered a feedlot in the backblocks that has been in existence for 20 years without an effective effluent system. It appears that the landowner got a permit from the then district council and thought that was all that was required. Taumarunui seems to be all about effluent and cars in rivers at the moment.

Sharn is also having discussions with University of Waikato Earth Sciences who have been very involved with geological mapping in the northern area of the Wanganui catchment. They are producing 1:50000 maps based on lithostratigraphy and a bit of biostratigraphy which could prove very useful in future.

Ian Moore and Lachie Grant have been to a 'Wide Rivers' symposium in Australia. **Lachie** has decided to pack his bags and head for Taranaki. It's interesting that **Lachie** chucks the job in as soon as he gets home. He has been with horizons.mw for nine years so it's a bit of a surprise to see him decide to move. If anyone wants a move to Wanganui please contact **Ian Moore** for position details. Ian says that Lachie has been stolen by Taranaki.

Barry Goodwin is currently doing a survey of large (Bigger than 500 cubic metres per day) surface water abstractions. The idea is to see how many we can get on to a telemetry type metering system, so that we have real time data on surface water use in catchments that are currently under pressure from high irrigation demand. It's a part of the overall water allocation project and will eventually include the large groundwater takes as well.

Malcolm Todd is organizing our soil monitoring and research programmes. Looking at ways to integrate soil monitoring for state of the environment with education.

Off work **Malcolm** is training to go in the round lake Taupo relay event on his unicycle. It's a 40k ride for Malcolm with lots of nasty looking hills. So far Malcolm has done a half marathon, and a 35 km ride on his unicycle over the Hunterville to Wanganui road.

Dave Harrison and Kevin Rooke recently held a pole planting workshop at Taihape. Most of the North Island regions were represented. The day started with a demonstration of how to look after poles from arrival to planting and a discussion of planting methods. The workshop visited two properties, looked at lots of trees and discussed post planting care and planting densities. It appears that everybody learn't something and enjoyed the day.

Kevin Rooke has been in the wars lately. First of all he had the misfortune to run into a fat bullock on his way to work and put his ute out of action for a few weeks. **Rookie** says that there was no warning he just came over the brow of a hill and there was a mob of cattle crossing the road, slamming on all anchors didn't lessen the impact. The bullock apparently just shook his head and wandered off leaving the ute with extensive front-end damage. **Rookie** was a bit shook up but otherwise unhurt.

In the second incident he was attacked by a black swan at a trees for survival planting day. Down at a wetland with a black swan in residence, **Rookie** tried to do a 'Monty Roberts', though we can't call him the swan whisperer just yet – the moment he turned his back the black beast went for him...But the swan was soon successfully put in a wool fadge for a couple of hours while students got on with tree planting. Maybe **Rookie** has some form of animal magnetism.

Dave Harrison Jnr is off to the Melbourne cup in November. Apparently he is checking out the place with a view to taking his own horse (Mission Breeze) there next year. Dave is still looking for people to join his racing syndicate. He is on to a winner this time.

Tabitha Anthony is working with a couple of schools developing outdoor classrooms, one has a particular interest in incorporating growing native trees with the technology curriculum. How? Once they have grown the trees they will e - mail other schools to see if they would like them for their grounds. Also, they are building a sort of amphitheatre that will be planted with natives.

The visual bush assessment kit nears completion and should make an interesting addition to Waiora, **Tabitha** often gets asked out to camps to do Waiora, most of the time the camps have bush nearby too so will be able to make a full day of it. Apart from that the biggest thing for **Tabitha** is getting the environmental education strategy together.

Grant Cooper and **Grant McLaren** in Dannevirke report a wet winter, fairly constant rainfall but no heavy dumps of rain and a reasonable amount of minor erosion. Grant and Grant have an enthusiastic dairy SUB's group going with eight farmers involved. The group is up to the soil mapping stage. There has been a good uptake of regional grant with a growing interest in riparian work. **Grant Cooper** has just received his CPRM, must be one of the few to do so at this stage.

George Powell has been busy with regional grants, forest companies, dairy conversions and catching up with a lot of little jobs that have been on the backburner for some time. A successful trees for survival planting day was recently held but the only wildlife was 10 year olds and frogs. In October **George** is going on a field trip to study sand grain distribution and its relationship to wave action at Noosa. Will be thinking of you all - not.

George Powell

Gisborne

Heads down bum up for most here at Gisborne after the August 2002 down pour/ storm/ erosion event at Muriwai/ Manutuke (see article later in this BROADSHEET). At the GDC that means **Trevor Freeman**, **Kerry Hudson**, **Peter Fantham** and the rest of the Soil Conservation team, **Allan Hughes**, **Bill Dobbie**, **Kerry Pearce**, **Paul Scholes** and Water conservation team **Leighton Evans** and **Andrew Reid** have been stretched. Many of the latter guys are currently not members of NZARM, but as fill-in corespondent I did not actually know this until the Friday 27th meeting of re-activated Regional co-ordinators (a bit of army style volunteering!!!). I have just been getting a kick along from Chris every 3 months or so to write something.

So why are the younger guys not members? Mainly I think because they do not see huge benefits. A lot of that has been to do with professional certification hassles over the last five or so years. Something useful hopefully will develop out of the Regional Coordinators meeting in Wellington Friday 27th

September. For one, I have been able to clarify who are members and encourage others to come on board through some different approaches.

For other NZARM members a few 'old hand' NZARM members like **Mike Marden** have been overseas on the crown/ tax payer to France (actually the French Govt. via the Rainbow Warrior Trust fund – believe it or not – Ed!). Then good old **Don Miller** is soon to head off to the Islands - Vanuatu if "funding comes through.

Louise Savage is still tied down to being a full time Mum.

George Parker and **Malcolm Ross** are still well and truly retired.

Marty Watson from P.F.Olsens who I did not even know was a member until Friday 27th I will, track down and do a bit of a spiel about in the next Broadsheet

A couple of us have been talking about the idea of a evening meeting or two to look at slides/ overheads of soil erosion and dramatic pollution we have bumped into in Asia and the Pacific. So there is a start of an idea for a Regional Branch meeting initiative.

Peter Fantham

Wellington - Wairarapa

Just a brief update from the WRC Team. If it wasn't for Chris's persistence for copy this wouldn't have made this issue. I've just got back from family holiday to Horopito (halfway between Turoa and Whakapapa skifields). Managed a couple of fine days and a taste of skiing for the kids and a soak in the hot pools at Tokaanu.

Well winter was late arriving and still seems to be with us – a quick "polar blast" overnight (3 Oct.) has sprinkled some patchy ice/snow back on the Tararuas. Planting didn't kick off until July (ground moisture conditions were slow to build after a dry autumn) and really put the pressure on us to try and complete our planting programme by the end of September. September rainfall has been well below average so let's hope we are not in for another drought. The "experts" are talking of a weak – moderate El nino, unless they've recently changed their tune.

We've managed to fit in a few training opportunities and are looking for more CPRM credits. The Riparian Workshop capably run by **Norm Ngapo** and **Clare Feeney** at the Horizons headquarters was attended by **Rob Harrison**, **Stan Braaksma**, **Don Bell**, **Peter Cameron** (WRC's Akura Nursery manager), **Lucy Matinez** (Consents) and myself. Which reminds me I must approach both Don and Lucy re NZARM membership – in my role as NZARM Treasurer I think we need to persuade our colleagues to join up and strengthen our Association.

Dave Cameron has been away down South for two weeks – hopefully Dave and Linda you've been able to dodge the worst of the weather and perhaps have managed a round or two of golf. Soon, Dave will be immersed yet again in planning for Farm Environment Awards for 2003. Our first foray into the awards went well so it'll be interesting to see whether we can grow the interest.

Roger Wood

Hawkes Bay

A dry Spring has made an auspicious start to the summer in Hawkes Bay, but then that's the east coast. While conservators in the region are trying to decide whether its going to be a season for the beach, or another one out of the bag for farmers.

Neil Grant is leading a team to produce management guidelines for the Tutira Reserves which D.o.C. administers. The continued growth in Hawkes Bay has seen high subdivision activity and some of these have been in the coastal environment. Neil is also involved with a partnering group which considers environmental concerns over the expressway crossing at Ahuriri Lagoon – a process which he says works very well.

Ewan MacGregor has just completed a busy planting season on his own property and others, with an emphasis on deciduous trees over pasture. Most have been poplars, especially on two large Hawkes Bay properties where the objective has been providing shade, although these trees will be managed to improve the opportunity for commercial removal when appropriate. Protection from cattle is a big challenge. This has been done by ring-fencing them in groups, and further trialing of his "Buster's Hot Pole Protector", which involves brackets top and bottom of the pole, joined by four strands of electrified polywire. Many will have seen this award winning invention at the field days this year. Ewan is also involved with the Trees For Fodder project, funded by the Sustainable Farming Fund.

The National Waterways Project through schools is **Ian Cairns** main focus (other than a brand new – first- grand child). Ian is the Hawkes Bay facilitator for the Royal Society who administer the project which runs over terms 4 and 1 of the school year. It is linked to regional council web sites and the main tool used is the now well known SHMAK kit. Ian is also watching with great interest over his fence at the development of an environmental education centre on the old Hawkes Bay Fish and Game farm.

Stage 1 of the Ruataniwha Project – identifying and publishing the basic facts about probable development of the Ruataniwha plains – is nearing completion. **Nigel Ironside** is leading the way, with a study which will ultimately enable solid planning of water resource use as well as possible environmental effects of development on this, the last large area of relatively undeveloped flat land in Hawkes Bay.

Jude Addenbrooke deals with the wetlands and riparian areas for the HBRC and reports some very good progress with the Pekapeka wetland, where the major willow clearing work will be completed this year. A long term planting plan is next on the list and a sill for the outlet has been approved by all parties. Farmer catchment groups are becoming a useful tool for riparian management as well.

Assisting with the current years regional environmental awards has kept **Joe Devonport** busy recently. The Tangoio soil conservation reserve is a major focus. The reserve was little affected by recent storms. Joe has also been working on developing the local LUC information into a form which is suitable for GIS query. Along with athletic activities such as the HB duathlon he still finds time to look after his pines.

Garth Eyles took Peter and Joe with him to study the cross-boundary storm damage at the Kopuawhara/Maraetaha catchments. Some severe erosion was seen on both farmland as well as recently logged areas, young pines and even mid rotation aged trees. Judging at the HB Science Fair was also a good way to spend ones professional expertise.

The winter pole planting season has given an indication again that there could be significant growth in demand for services and materials in the next few years. Both **Neil Faulknor** and **Peter Manson** at each

end of the region have seen a steady flow of work on hill country properties. Some of this promoted by an occasional storm – the best form of extension yet. A 12 year old Japanese willow was excavated near Wairoa to assess the root mass and structure, with the conclusion that it was respectable for the size of tree and therefore useful for gully control. Neil is also involved in the SFF fodder tree project which is providing some long awaited quantitative data.

Simon Stokes, having shifted house and little Lachie nearly 6 months old says there hasn't been much time for work. However he has managed to scrape a few days together completing two farm plans covering nearly 9000 hectares in the Wairoa area, a job which has been providing some magnificent scenery, some very scary deep sinkholes of Takaka proportions, and some very unsustainable landscape. The basic principle of each plan has been to establish where a pastoral farm could be maintained firstly within the constraints of some pretty extensive soil conservation work and what should happen to the rest of the landscape. The interesting thing is that where a lot of regeneration has occurred, and with enough time flourished with indigenous undergrowth springing through the manuka and kanuka, the landowners are quite enthusiastic about long-term protection work - one property alone has 2000 acres put into the Nga Whenua Rahui management scheme. However there is still a lot of excitement over scattered scrub and with aerial spraying costs quite reasonable we are seeing a lot of re-vegetated country being allocated its fair share of spray. This is practical to some degree (depending on long-term capability) but is also accounting for some marginal areas being sprayed more extensively than they should. It is an issue for the Wairoa area, as present farming returns provide funding for re-clearing land that reverted because of poor returns AND its extremely marginal nature. Interestingly, the Wairoa District Council is now the only authority to have a rule specifically looking at what is being sprayed other than the discharge itself and it has yet to stand the test of time.

Other than that Simon has been putting together the physical resource knowledge for the Hawke's Bay Guide to Farm Forestry which is proving to be quite a project. Hawke's Bay has been broken into 9 different areas based on geographic location, physical resource - mostly relating to soils and water, and climate - particularly wind, rainfall, and frost which nearly every surveyed farm forester listed as an issue for concern when planting. To this knowledge we are adding the species suitable for various uses that will do well in that particular region. The general idea is to help people in various parts of Hawke's Bay to gain much more accurate farm forestry knowledge.

The Green project has been quietly moving ahead with the draft standards with Standards New Zealand. The farmers involved thus far are enthusiastic and the results of the trial 'on-farm' audits have shown some unexpected high levels of standard when considering most environmental issues. However it would be fair comment that the farms assessed have very good landscape to start with. Having said that it is interesting the issues that a quality landscape farm throws up - such as potential DDT residue problems, lack of shading, potentially more impact on water quality through a higher level of intensification and diverse range of external inputs when compared to a traditionally unstable landscape. Yes erosion and therefore sedimentation of waterways is usually the dominant issue but riparian vegetation, indigenous bush protection, shelter and shading for stock, and soil health issues are generally very well provided for. The season has been good for tree planting thus far so hopefully we'll get a good run till Xmas

Peter Manson

Auckland

One can often contemplate the pros and cons and whys and wherefores of living in Auckland, but now and then it certainly does have its benefits! – with the Louis Vuiton cup beginning and America's cup following, staff have an opportunity to be rostered onto the patrol boats and be in the midst of all the action!! – but then again.... there's the sea-sickness/vomit thing and sun-burn and dealing with obnoxious boatie types who get in the way, and missing the desk work back at the office.....

On another tack, for the record, **Kylie Falconer** (alias Soila E) has jumped boat, at least on a temporary basis we hope, to take up a secondment position within ARC doing compliance monitoring work. So, if there is anyone out there who would like a 10-month secondment working the ARC Rural Land Management area, to see how and what we do here, let us know!

A few bits and pieces of potential interest:

NEW WATER RESOURCE REPORT FOR THE AUCKLAND REGION

The ARC's Water Resources section has published a report 'Auckland Water Resource Quantity Statement 2002, Technical Publication 171. This is a summary of surface water, groundwater, rainfall and water allocated for the region. It is on the ARC web site and available from Enviroline 09 366 2070 (or 0800 806040). Cost is \$50 per copy.

'Rural Land-users Liaison Group' (RLLG).

The RLLG forum is hosted and convened by the ARC approximately every 3 months for the purpose of fostering improved communication between the ARC and the rural sector on current initiatives and programmes. The forum provides an opportunity for all parties to become more aware and increase their understanding of different sector programmes. The forum is attended by most rural industry and interest groups from the region, including Federated Farmers, Rural Contractors Federation, Auckland Growers, Landcare Group convenors, Wine-growers, Fruit-growers, Forest and Bird, TLA's and many others. The RLLG forum convened on 30 August and discussed 'geology, soils and landforms of the Auckland region', 'soil health' and the recently produced 'Auckland Region Water Quantity Statement'. The meeting also included industry news briefs on current issues and initiatives.

ARC Rural Team

The ARC's 'rural team', comprising Land Management (Tony Thompson and Kylie Falconer) and Pollution Control (Rebecca Kemp, Ross Abercrombie and Glenys Kroon), are currently compiling a report on activities and outcomes from 2001/2002. This report will be available shortly.

Riparian Zone Management (RZM) guidelines and workshops.

Four RZM workshop courses are scheduled for this financial year. These one-day workshops are free to any interested people involved in planning or implementing riparian management systems. In the previous 12 months, the ARC convened 7 workshops, attended by 130 people, including ARC employees, consultants, landowners, planners and iwi. These workshops were very well received by attendees who received a free copy of the ARC's 'Riparian Zone Management Guidelines, Strategy and Planting Guide'. Four workshops are planned in November and February. If anyone is interested in attending, contact Tony Thompson at ARC.

Trees for Survival (TFS)

We now have 50 schools involved in the TFS programme in the Auckland region, involved in the growing and planting-out of native trees for riparian management and erosion control. This season, 45,000 trees were planted on 44 erosion-prone and riparian sites, involving about 1600 people. Since the programme began in 1991, 210,000 trees have been planted through TFS in the Auckland region. This programme provides an important strategic link with other programme areas such as riparian management and adds capacity in growing positive community partnerships in environmental management.

Landcare

Landcare groups continue to be very active across the region with local environmental enhancement projects. Main group activities are at Awhitu, South Kaipara peninsula, Puhoi, Matakana, Whangateau, and Orewa. New groups are starting at Hunua and Clevedon in response to the recent Wairoa catchment study. Key current projects include fencing and riparian enhancement of lakes Ototoa and Kuwakutai, possum and mustelid control at Puhoi, weed-control projects (e.g. Ginger eradication at Matakana), erosion management research at Awhitu and protection of natural wetland areas and bush remnants. The ARC supports Landcare groups in a number of different ways and gains considerable leverage in environmental outcomes by engaging and supporting local community environmental initiatives. 'Landcare' is a component of the ARC's wider 'Care' programme which continues to build very effective and positive partnerships with the community.

Franklin Sustainability Project (FSP)

The Franklin Sustainability Project is a collaborative initiative addressing issues associated with outdoor vegetable production activities in south Auckland. Stakeholders include ARC, Environment Waikato, Franklin District Council, Pukekohe Vegetable Growers Association and MAF's Sustainable Farming Fund. The project was initiated in 1997 in response to concerns about erosion, soil loss, water quality and pest management. The current programme of grower education and extension involves the employment of a full-time field representative and continues through to June 2004. The field representative, Glenys Pellow, is initiating sub-catchment grower groups to discuss and implement measures to avoid or minimise soil erosion and off-site loss. A range of media is being used to communicate messages, including posters, field-days and regular newsletters. A range of sustainability issues are being addressed including soil health, nitrate leaching and agrichemical use. Sediment control guidelines and design criteria for cultivation are also currently being prepared. These guidelines will build upon previously produced sustainable management guidelines for growers entitled 'Doing it Right'

Rural sector communication strategy

A rural sector strategy is currently being scoped and drafted under the 'Big Clean Up' campaign strategy. A meeting is being convened with all other ARC staff who have a working interest in the rural sector to progress this strategy and develop a communication and education action plan.

Soil and landform information

The Land Management team are embarking on developing user-friendly information on soils and landforms of the Auckland region, to assist landowners in identifying and interpreting soil and landform information on their own properties and relating this to management, productive capacity and limitations to use. A combined field-day with the Farm Forestry Association was recently held at TeHana to demonstrate farm-scale mapping of soils, land-form and land-use capability.

PESTICIDE RESIDUES IN HORTICULTURAL SOILS IN THE AUCKLAND REGION - UPDATE

The frequent application of persistent agri-chemicals on horticultural land has caused widespread, elevated levels of metals and pesticides within the surface soils. A practical and economic technique is required to remediate these sites for future residential development.

Vertical soil-mixing is a process of remediating contaminated surface soils by mechanically mixing them with cleaner soil found at greater depths. This method is based on the theory that the main environmental and public health risk from contaminants is a function of surface soil contaminant concentrations to which a person is exposed, or from which sediment can run off into the surface waterways. This technique has been used effectively overseas, particularly in Australia (NSW EPA, 1995) for dealing with this problem.

ARC undertook trials between April and May 2002. The principal aims of the trials were to:

- Assess the effectiveness of vertical soil-mixing to reduce surface contamination levels to the currently recommended guidelines
- Establish which equipment/methods achieved the most effective mixing
- Assess the potential effect on the environment of vertical soil-mixing
- Assess the appropriateness of vertical soil-mixing under New Zealand conditions
- Provide guidance on suitable practices to enable implementation of vertical soil-mixing on horticultural land.

Vertical soil-mixing is only considered appropriate for the remediation of broad-acre soils with moderate, rather than extreme, contamination levels since soil-mixing does not remove or destroy the contaminants. Specific prerequisites are required to be met before any horticultural land may be remediated using vertical soil mixing.

Effective contaminant concentration reduction has been achieved using specific combinations of rippers, ploughs and hoes with a bulldozer or a tractor. To date, the results indicate that deep ripping is required, preferably together with the use of a plough and deep hoeing to achieve the best results. The trials also indicate that soil needs to be worked at least six times (six passes) and at cross-angles.

High contaminant concentrations occurred in sediment runoff from the trial mixing areas. Effective sediment control is therefore essential across all surface runoff flowpaths from the soil-mixing areas to ensure that there are no adverse effects on the environment.

EROSION AND SEDIMENT CONTROL ANNUAL WORKSHOP

The Auckland Regional Council Stormwater/Sediment team's showstopping Annual Workshop was again held at Long Bay Regional Park in September 2002 with a positive response returned from the day's activities. Unofficial estimates of the turnout was recorded at 240+ people with the attendees coming from a wide cross section of the earthworking community. Similar to previous years events, the day commenced with a formal presentation by team members on the direction of the program with an emphasis on TP90 (Erosion and Sediment Control Guidelines) and the revised TP10 (Stormwater Control Devices). Additional input was provided by the Pollution Control Team (PCT). Consultants and contractors were given the opportunity to showcase their services by way of static or active displays.

Some of the highlights from the day, apart from the resplendent setting and beautiful spring weather, was Allen Wright of the PCT exceeding the height of his waders whilst presenting a talk on oil-spill response. There was also a display of tree-felling and mulching of a 15m high gum tree on the banks of the

Vaughan Stream. To compliment the spring weather was the smell of barbequed sausages washed down with Steinlager.

TP90 FORESTRY WORKING GROUP

A joint collaborative initiative between the Auckland Regional Council and the forestry industry in the Auckland region was convened to update the vegetation-removal section of TP90. The aim was to 'bring to the table' the collective experience and expertise that the forestry industry has with erosion and sediment control practices in their sector to the established techniques outlined in TP90.

Several group meetings have been held including an on-site inspection of operative erosion and sediment controls with the next step to formalise into TP90.

Tony Thompson

Northland

Nothing from the far North. **Ed.**



New Members

The Executive extends a hearty welcome to the following new members to NZARM.

Approved at the Executive meeting on 28 June 2002

<p>Scott Crawford</p>	<p>Environmental Information Manager Environment Southland. Currently responsible for:</p> <ol style="list-style-type: none"> 1. Environmental monitoring & reporting 2. Environmental investigations & research 3. Environmental education. <p>Previously positions with Environment Canterbury, CSIRO Division of Soils, Conservation Commission of the Northern Territory, & Griffith University</p>
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The Executive wish to report that no resignations were received.



Advance notice

NZARM ANNUAL CONFERENCE 2003 BAY OF PLENTY

14-16 September 2003

The NZARM Bay of Plenty Branch Executive has been approached (coerced) by the NZARM National Executive to host the NZARM Conference in 2003. We thought about it and decided that if we could get backing from an organisation able to provide logistic support then we should give it a go. It is the 50th anniversary of NZARM and its predecessor organisations so would need to be a **really good doo!** Environment B·O·P have come to the party with both logistical and some sponsorship support. As a result the Branch Executive, after looking into the why's, how's and where's have agreed to run the event.

Essentially the event will be based in Rotorua (venues, airport, etc) in mid September (Sun 14, Mon 15 and Tue 16) next year. We would run it on a cost recovery basis with hopefully some sponsorship from organisations such as Landcare Research, NIWA, IGNS, Landcare Trust, Forest Research etc. to help out (they haven't been asked yet!).

The theme chosen is **NZARM Gold – our past, present and future**, emphasising the integrated catchment management approach (or lack of it) over the years. We will be looking back at what NZARM and its predecessor organisations have been involved with through the decades from the 1950's to the present, discussing current topical issues and looking at what may be before us over the next 50 years! We have chosen Lake Okareka as the focus for the Tuesday field trip as it is a good example of a site that encompasses many of the (historical) management issues faced by soil conservation, planning and science, and the need for robust integrated catchment management approaches into the future.

The dinner on the Monday evening needs to be special, it will have a theme relating to the 50th anniversary of the association and any thoughts on the programme would be welcomed. Suggestions so far include:

- Past presidents giving a tag team presentation on the history of the organisation, one for each decade,
- Golden Oldies Club 25+ years membership presented with a lapel pin for the guys and a brooch for the ladies,
- Norm thinks that a golden jubilee model Triumph motorbike would be appropriate,
- All life (honorary) members to be there,
- Fun entertainment and music items.

We want to make it a practitioner's conference, the tone oriented to the practicable hands-on side of our profession rather than the theoretical. We want it to be a stimulating but fun event with a good balance of crunchy issues and entertainment, something to remember.

We have a coordinator, Jessica Smith, who has experience in running such events. We decided to promote accommodation at the venue but not to include it in the package as NZARM members are notoriously frugal and may want to stay with friends or relatives.

The draft programme is:

- Sunday evening; NZARM Executive and Regional Coordinators Meetings etc.,
- Monday; registration, presentations during the day, AGM and conference dinner,
- Tuesday; field trip (Lake Okareka) with a fun evening to finish,
- Wednesday; possibly a charter fishing trip (weather permitting) if there is interest.

Any suggestions welcomed, photos and stories much appreciated. It is our goal to have most of the event organised this side of Xmas and advertised early in 2003. No excuses!

WATCH THIS SPACE!

HONOUR FOR CHRIS VAN KRAAYENOORD

On Sunday 16 June, a large gathering of friends and colleagues had convened in great secrecy at "Wharerata", the Massey University Staff Club, to surprise Christiaan Willem Schmeil van Kraayenoord who has received the ONZM, the award of Officer of the NZ Order of Merit "for services to agriculture and forestry". Chris was indeed surprised that some 60 family members, friends, work colleagues, and fellow parishioners had come to celebrate this memorable occasion with him. His daughter Christa had especially come over from Brisbane, Queensland, and his other daughter Annetta had come across from Taranaki with husband Craig and their sons. His wife Lous also took part in the celebrations.

Chris was welcomed by the local MP and Minister Hon Steve Maharey who said that the work of "Mr Poplar" was recognised throughout the country. He was pleased to have been able to support this well deserved application for the award. Garth Eyles (Hawke's Bay Regional Council) said that where you see willows and poplars in the NZ landscape, you see evidence of Chris' work - thoroughly good and useful plant research. Garth said that under Chris' leadership, scientists at the National Plant Materials Centre in Aokautere took steps to counter the effect of poplar rust that was expected to come across from Australia. When it did come in 1973, rust resistant poplar clones had been selected, and bulked up, using the new technique of tissue culture, for release to the Catchment Boards. However, when the willow sawfly reached NZ some 4 years ago, no counter measures had been prepared because of the reduction in research capability and change in funding procedures.



Chris and Lous van Kraayenoord outside Wharerata in Palmerston North

The Palmerston North Mayor Mark Bell-Booth emphasised Chris' involvement in local tree planting efforts. He had been telling school children at a tree planting ceremony about a special honour received by a local tree person when the children called out: "He is here!" Mark congratulated Chris, on behalf of the city, for the well-deserved award.

Steve Blackmore (Wellington Regional Council) recalled bundling rooted poplars on a wet day and thinking: "Chris has a lot to answer for!" But on a fine day, he acknowledged that the "lot" was trees for shade, shelter, fodder, sustainable land use, and erosion control.

Chris' older daughter Annetta recalled that during the early days of Chris and Lous in NZ, her father's major preoccupation had been chasing rats in the roadman's cottage in Tangoio, Hawke's Bay, that was their first home. Lous' doctor condemned the cottage as unfit for human occupation, especially since her mother was pregnant at the time. Annetta also described the many family outings which often "degenerated" into searches along dusty, winding country roads for trees that Chris had heard about or had planted himself. His work late at night often led to calls for assistance from people who had got stuck along the Manawatu River, or made it difficult for her to sneak home after a late night party.

His younger daughter Christa spoke of her father's high record keeping and general scientific standards, his Christian faith and principles, his complete commitment to NZ, the loyalty from his NPMC staff, and his humour.

Professor Ken Milne described Chris' pivotal work for the Manawatu Tree Trust that was formed in 1984. Chris was involved in its various activities from donating trees to schools, planting commemorative trees, and drawing up a record of "notable trees" which has been incorporated into the PNCC District Plan. To mark the occasion, he presented Chris with a large poplar platter; its inscription reads: *"He that planteth a tree is the servant of God, he provideth a kindness for many generations and faces that he hath not seen shall bless him. This poplar plate was presented to Chris van Kraayenoord by his friends in celebration of his royal honour. June 2002."* This quotation is from the American Professor of Education and Presbyterian Minister, Henry van Dyke, 1852-1933.

The Master of Ceremonies Dex Knowles (Taranaki Regional Council) managed with great skill and authority to deny Chris the opportunity to speak until after the dinner provided by the PNCC. When the time finally came for Lous and Chris to cut the ceremonial cake, especially decorated in the red, white and blue of the national colours of the Netherlands, Chris said that he was really "flattened" by the surprise occasion and all the kind words that had been spoken of him. He recalled the early days of surveying the poplars and willows then present in NZ, establishing reference collections at a central site, importing new materials for the Catchment Boards, settling at a nursery site on a river flat near Massey University, and then under Ministry of Works acquiring the horticultural land at Aokautere in 1967 for the establishment of the National Plant Materials Centre. He said that receiving the ONZM was largely due to the excellent and enthusiastic staff at the Centre. They were loyal and worked together well as an integrated research team and achieved a great deal, using many innovative techniques. Their work has been described in the 3-volume handbook "Plant Materials for Soil Conservation" which was published in 1986. He said that it was a chance meeting with NZ's chief soil conservator at a conference in the Netherlands that made him come out to NZ in 1952 with a master's degree in forestry from Wageningen University, and with his wife Lous. He paid tribute not only to his former colleagues and his many friends, but also to his wife for her courage and support that had contributed greatly to his achievements. He gave special thanks to Alan Fielding (PNCC) whose persistence in overcoming many bureaucratic obstacles had led to this festive and memorable occasion.

(Eds Note: The above article was written by Nick Lambrechtsen and was itself based on an article written by Bruce Bulloch for Tree Grower August 2002, Vol 3 p 25)

Regional Coordinators Report

Meeting held at MFE on the 27th Sept 2002

(Special thanks to Sue Powell and MFE for their time and use of building)

Basically several people were asked if they could fulfil the role of a Regional Coordinator for NZARM and they were generally shoulder tapped as being interested previously or hood winked into it by being correspondents for the last little while. This is not a new initiative but had really never been actioned hence the meeting.

The basis for having Regional Coordinators is this. We need to improve the links throughout NZARM by developing better communication channels with members, providing local liaison points, and people who are well informed about NZARM procedures and activities. This is especially important with the introduction of the funding available through NZARM for meetings etc, and the development of CPRM. One of the areas NZARM needs to improve is giving members better reason for belonging and developing greater benefit of belonging to the association - particularly encouraging training opportunities - hence the funding accessibility. In other words the Regional coordinators will help to build a better framework into the future and to give us a more professional edge.

The role will not create large amounts of work for the RC's. The idea is to provide them with a information pack containing membership forms, brochure's, CPRM stds and explanatory information, regional membership lists, Guidelines for NZARM Regional meetings, and anything else we can think of. On a more serious note they are the first point of contact for attaining funding for Regional meetings etc as their approval is required initially before it is forwarded to other approval points. They will also act as a conduit for membership issues that arise from (hopefully) more gatherings during a year. Check the website for the Guidelines. (www.nzarm.org.nz)

Currently the following people have agreed to be that link for an undecided given period.

Southland - Bala TikkiSETTY

Otago - Nicola McGrouther

Canterbury - undecided as yet - Rob who is it!

Marlborough/Nelson - Martin Workman

Murray Harris will help throughout the southern South Island

Wellington - Roger Wood

Taranaki - Don Sherman

Horizon's - George Powell

Hawke's Bay - Simon Stokes

Gisborne - Peter Fantham

Waikato - Bruce Peploe

Auckland/Northland - Tony Thompson

EBOP - John Whale

Now I know the RC's have a strong Council flavour to them but that is where we are at present. As time goes by and we develop a good working system we will endeavour to widen the net and bring some non-council people. The next meeting for the RC's will at the next conference in the Bay of Plenty.

So give it time, hopefully you will be asked to have a regional get-together before the year is out. We have a couple of Regional meeting topics that will become more 'concrete' later this year or early next year. For training opportunities in particular we see good linkages possible with the National Land Managers Group and there training requirements - providing a supporting sponsorship etc

Any comments are most welcome to your local rep or myself.

Cheers Simon National Coordinator

Contact: simon.stokes@hbrc.govt.nz

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Clean Streams

Environment Waikato's Award Winning Riparian Incentive Scheme

Alan Campbell

Way back in the dim dark past, as Environment Waikato was preparing its RPS, the argument was successfully put forward that streamside management was a major issue for our region and that incentives would be needed to achieve any significant change. The proposal survived the rigours of the RPS process and was reinforced when our State of the Environment Report identified in 1998 that only 34% of the sites we monitor complied with recreational standards, and that non-point sources, particularly from agricultural land, was the main cause.

So it was that in 2001, our Strategic Plan and Ten Year Financial Strategy provided for a ten million dollar commitment over ten years as an incentive for farmers to protect and enhance water bodies. The money is coming from earnings on our investment fund, and sends a very strong signal to our community that this is a very serious matter. A year was spent in consultation and development of this proposal and "Clean Streams" was launched at the Mystery Creek Fielddays this year.

How it works

The scheme is an assistance package to help farmers to protect water bodies. Its objective is stated as follows;

The Clean Streams Project will establish exclusion of livestock as a standard farming practice in the Waikato Region over a ten year period.

In achieving this objective it is expected that the following targets will be met:

- *4,000 km of water body margin protected under this project*
- *2,000 farmers participating*
- *Key industry partners actively promoting water body margin protection*
- *Business and other agencies actively supporting farmer initiatives to protect water body margins.*
- *Protection of water body margins continues after the completion of the Clean Streams Project.*

So this scheme is as much a promotion, advice and partnership project as an incentive scheme.

Incentive

Although cost is not always the main barrier for farmers in stream protection, the offer of financial assistance is certainly getting their attention. We offer up to 35% of the costs of fencing and planting (materials and labour) and will also contribute to additional water troughs where necessary, and to the costs of releasing and blanking for three years. Maintenance is entirely up to the farmer.

Promotion

We started the scheme with a blaze of publicity at the Fielddays, using every advantage from our site in the Premier Feature Area which gave us plenty of free newspaper and radio publicity. This was undoubtedly helped by having that \$10 million over 10 years slogan which tends to attract reporters. We had great support from our PR consultants who produced some really good ads, and a couple of unfortunate incidents with water quality in the Waikato river leading up the Fielddays were an absolute bonus in getting people's attention. Now we're focussing our promotion on a few key priority zones using local papers and networks. We also have a page dedicated on our website (www.ew.govt.nz) that contains all our information about the scheme. I note however that despite really pushing the website in all our publicity, it has had only two hits so far!

Advice

We have two key elements in our advisory package. One is our Land Management staff who visit every applicant and help them to develop their plans. This is usually a two to three hour visit and inspection and is usually very focussed on stream management and getting the application form completed. The second element is our guideline book "Clean Streams" written by Angie Legg. It's a simplified version of the MfE manual "Managing Waterways on Farms" designed specifically for Waikato farmers and it has had excellent reviews from both farmers and technical experts.

Partnerships

A critical factor for us in developing the project was identifying the role that others play in influencing farmer attitudes and behaviour. So we've worked closely with Federated Farmers, Fonterra, Dexcel, Nurserymen, Landcare Groups, Department of Conservation and others to ensure a consistent message is going out to farmers about the benefits to them of good management of water bodies. This has meant we have been able to avoid any blaming or criticism and have kept the discussion focussed on practical methods of improving the situation.

Applications

One of our goals is to keep the administrative costs of the project to a minimum, so we have developed a very simple application process. We have a pretty straightforward application form that gives basic information about the proposal, including a table of costs. The farmer fills that out, usually with help from our staff, and it is then considered against a set of criteria that includes location in the region, position in the catchment, proximity to native bush, demonstration value, and relationship to other stream works in the catchment. It takes about five minutes for staff to complete that assessment once they've inspected the site. There is a simple form for them to score the proposal, and no reports to write.

Progress so far

In our first year of operation we have a budget of \$400,000 to allocate in grants, allowing time for the project to build up to an average of \$1 million per year over the ten years (including administrative costs). Next year we anticipate having \$800,000 available.

After two months of operation, the total works cost of the 59 applications received is \$618,000. Of these, projects to the value of \$436,000 have been approved for 31 properties (Environment Waikato share being \$153,000 - 35% of cost). The works approved to date represent 30% of the total allocation available for the 2002/2003 financial year, and we are still going through the rest of the applications.

RMLA Award

At its recent Annual Conference the Resource Management Law Association awarded Clean Streams the award "for best practice in the implementation of a programme addressing a significant resource management issue". This recognises the clear pathway between the identification of the issue, through analysis of options, to development of a comprehensive suite of policies, and finally the implementation leading to action on the ground.

Conclusion

This has been a great project to work on. It's a great luxury to work on such a focused project that doesn't get diverted by having to take into account this or that related matter. All those considerations have been taken care of in the policy setting stages. Now we can just get on with it and get a whole lot of streams protected as quickly as possible. It's easy to sell the idea because it's simple, and it's good not only for the environment, but also for farm management, and for our international marketing.

If you want to know more about Clean Streams, check out our website at www.ew.govt.nz

Research into Landowner Attitudes Towards Riparian Management

Terry Parminter¹

INTRODUCTION

Of interest to Regional Councils, are the different approaches being taken by landowners to riparian management, and the factors influencing these approaches. An on-going study by AgResearch has particularly focussed on the relationship between landowner attitudes and their management of riparian areas. It is considered that the results of this research project can be used by Regional Councils to identify the mix of policy instruments that best support their water quality responsibilities. The results will especially provide guidance on the information that is needed by landowners to make fully informed decisions when selecting the riparian practices that most suit their property and personal circumstances. The research project on riparian management decision making was begun in 1998 and in the first year used a survey of King Country farmers to identify some of the factors influencing their decision making². Qualitative studies in Taranaki and Hawkes Bay developed these further. A second survey was carried out in 2000 to quantify some of the decision variables examined previously in qualitative studies. Three districts were chosen to represent the farming community based upon access to the Electoral Rolls, their convenience and the likely range of farming styles they contained. These districts were Northland, the western side of the Waikato, and Coromandel.

RESULTS

Survey Response Rate

A written survey was mailed out in June 1999 to farmers in Northland, West Waikato, and Coromandel. The survey had an average response rate of 35%.

Application of Riparian Management

Most respondents (85%) said that they had a waterway with permanently running water, either on their property or on the boundary of their property. Respondents were also asked if they managed the banks of their waterways differently to the paddocks alongside them. Approximately a third did, a third did not, and the remaining third said that they managed some parts differently.

A greater proportion of part-time farmers and non-farmers (55.6% combined) managed their waterway banks differently, compared to only 31.7% of full time farmers. This may be related to the size of the properties managed by full time farmers, compared to part-timers. As farm size increased, the proportion of respondents who said that they managed waterway banks differently decreased; however with increasing farm size the proportion that managed some parts differently increased.

Respondents over 70 years of age had the lowest proportion of waterway management (50%). The highest proportion of waterway management was in the 61 to 70 year age category, where 80% managed some or all of their waterway banks differently. The women farmers surveyed tended to apply riparian management practices to their waterways less commonly than men.

Use of Riparian Practices

Respondents were asked to indicate from a list of options, the major riparian practice(s) that they used for their most significant waterway. The list of practices, and the percentage of respondents using these practices, is shown in table 5.

¹ Terry is a scientist working with AgResearch at Ruakura, studying issues associated with human behaviour and environmental management. He can be contacted by phone at +64 (0)7 838 5271 or email: terry.parminter@agresearch.co.nz.

² Parminter TG, Tarbotton IS and Kokich C, 1998. A Study of Farmer Attitudes Towards Riparian Management Practices. NZ Grassland Association 1998.

The most commonly used riparian management practice (Table 1) was to restrict fertiliser applications to at least 10 m from waterways (18.7%), this was followed closely by the construction of permanent fences (17.9%) along the riparian area.

Table 1. Level of Use of Riparian Management Practices

PRACTICE	PERCENTAGE OF ALL RESPONDENTS USING EACH PRACTICE
No fertiliser within 10m	18.7
Permanent fencing	17.9
No pesticide within 10m	13.7
Native trees, restricted/no grazing	10.0
Conservation trees, restricted/no grazing	8.9
Temporary fencing, stock out over winter	7.5
Native trees, regular grazing	6.8
Wetland buffer	5.1
Timber trees, restricted/no grazing	4.2
Conservation trees, regular grazing	3.6
Timber trees, regular grazing	1.9
Other	1.7

Riparian Management Objectives

Respondents were asked to identify their farming goals and describe their riparian management objectives. There were ten farming goals for respondents to evaluate and the ones most related to riparian management were: looking after nature, building a valuable business, and keeping the farm how it is now.

Looking After Nature

112 (60%) respondents said that the riparian management objective statements they had written were most related to the goal 'looking after nature'. Some of the objective statements that people wrote, relating to 'looking after nature' included;

“To keep banks clear of noxious weeds and encourage native regeneration”

“To shade the stream and thereby hopefully improve the water quality”

“Do as little damage as I can”

Building a Valuable Business

The goal 'building a valuable business' was most related to 23 (20%) of the respondent riparian management objectives. Some of the objectives written by respondents, related to this goal, included;

“Keep waterways clean and manageable and try to keep stock out of the water and avoiding erosion of edges”

“To maintain an unpolluted and permanent water supply”

“Stop stock losses from animals falling in. Stop erosion”

Keeping the Farm How it is Now

The goal 'keeping the farm how it is now' was most related to 23 (20%) of respondents riparian management objectives. Some of the objectives written by respondents, related to this goal, included;

“Minimise erosion and retain weed free pasture along stream edge”

“Freedom of weeds. Maintain in present state”

“Maintain sensible and sustainable farming practice”

At first glance, it may appear that people’s objectives do not line up with the expected goals? This reflects the observation that people can use the same or similar objectives to achieve different goals. It cannot be assumed by observers that people sharing similar objectives or farming practices will have the same goals in mind.

To examine the relationship between their objectives and farming practices, farmers’ riparian objectives were categorised in the study into four groups (Table 2):

- to maintain sustainable production,
- to have control of erosion,
- to develop nature areas,
- and to improve waterway health.

Table 2. Farmers’ Objectives and Their Riparian Management

Proportion of Waterways With Riparian Management Practices	Riparian Management Objective					Total Number
	Sustainable Production	Erosion Control	Waterway Health	Develop Nature Areas	Other	
All waterways	22	15	11	15	2	65
Some waterways	19	16	12	7	5	59
No Waterways	35	8	5	4	9	61
Total	76	39	28	26	16	185

Most farmers (41%) wanted their riparian management to assist them achieve sustainable production.

The next most important objective to farmers was controlling erosion (21%).

The highest proportion of farmers implementing riparian management on all their waterways was that group of farmers with “nature area” objectives. The lowest proportion of farmers implementing riparian management on all their waterways was that group of farmers with “sustainable production” objectives.

Riparian Management Issues

Respondents were asked about four issues relating to riparian management. These were; sediment levels, nutrient levels, high water temperatures and disease organisms. Respondents were asked how important each of the issues was for the most significant waterway on their property (1 = no importance, 20 = great importance). Of the four issues, disease organisms had the highest average rating (12.7). High water temperature had the lowest average rating (7.5). See table 3.

Sediment levels were most closely related to the stream bank management objectives written by respondents in an earlier question with an average rating of 12.5. High water temperatures had the lowest average rating of 7.6.

Respondents were asked about the effect of other land managers’ practices, and their own management practices, on these issues (1 = making levels much worse, 10 = neutral, 20 = making levels much better). The average response about the effect of management practices of other farmers, for all four issues, was

very close to being neutral. The highest average was for high water temperature (10.1), and the lowest for nutrient level (9.4).

People gave their own management practices a higher rating than those of other farmers and better than neutral upon waterway quality. Sediment levels had the highest average importance (12.8). High water temperatures had the lowest average importance (11.3). These results indicate that the respondents didn't really consider farming (their own or other people's) to be having any deleterious effect upon water quality. If there was an effect it was usually due to other farmers rather than themselves. The lack of discrimination between the issues on the scales may indicate that the respondents had thought about water quality as a generic issue but had not considered which components of water quality were of most relevance to them. The low ratings for water temperature may be because it is the least important issue to farmers, the issue with the poorest understanding, or the issue least related to riparian management.

Table 3. Average Rating for Waterway Bank Management Issues

	SEDIMENT	NUTRIENTS	TEMP	DISEASES
Importance of issue (1 = no importance, 20 = great importance)	12.4	10.6	7.5	12.7
Relationship with riparian management (1 = not related, 20 = closely related)	12.5	9.6	7.6	10.7
Affect of other farmers (1 = making much worse, 20 = making much better)	9.5	9.4	10.1	9.7
Affect of own management (1 = making much worse, 20 = making much better)	12.8	12.4	11.3	12.2

Respondents were classified according to the difference between their responses to questions on the effects of other landowners and their own practices on water quality. They were classified as perceiving themselves to be making water quality worse than others, better than others or that they were about the same as others (neutral) (Figure 2).

When people's perceptions about their performance on all four waterway issues (i.e. sediment, nutrients, temperature and disease organisms) were combined, 55.7% were neutral about their own effect and the effect of others. 14.5% thought they were making water quality better, but were neutral about the effect of others. 9.9% thought that they were making water quality better, and that others were making it worse. 3.9% thought that they and others were both making water quality worse. No one thought that they were making water quality worse, while others were making it better. 1.9% considered their own effect to be neutral but thought that others were making water quality better.

People who considered that they managed their waterways better than other farmers were more likely to have changed their riparian management.

Analysis

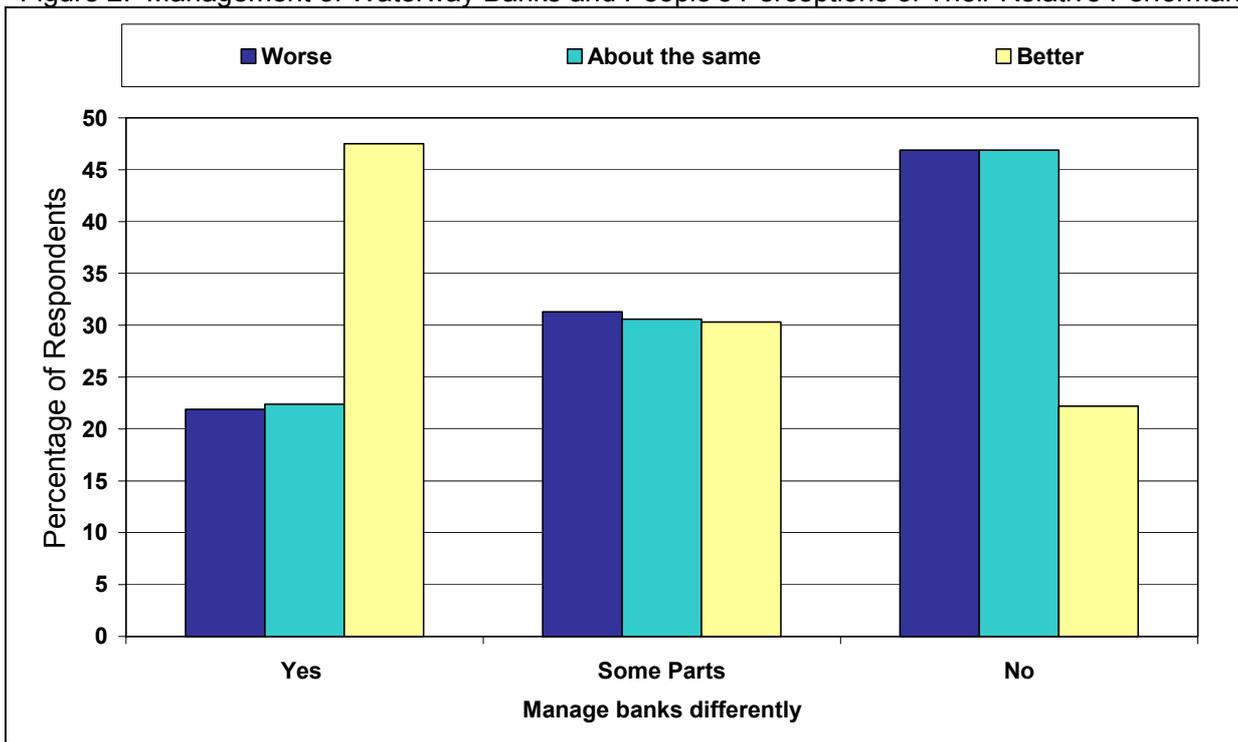
A regression analysis was carried out using the variables in the survey to predict farmers' riparian management behaviour (Table 8). The variables that contributed to reasonable predictions of whether or not people had implemented riparian management practices by managing all their stream banks differently included:

- The goal of "maximising farm profits" which was negatively associated, therefore the higher that landowners ranked this goal the less likely they were to implement riparian management practices.

- Occupation and farming area. People who were full-time farmers with increasing farm size were less likely to implement riparian management practices.
- Occupation and riparian objectives. People who were full time farmers with riparian management objectives based upon erosion control, and sustainable production were less likely to implement riparian management practices than farmers with “developing nature areas” objectives, or the nonfarmers.
- Occupation and self-compared-to-others. Nonfarmers and farmers who considered that they were better at managing their waterways than other farmers, were more likely to be implementing riparian management practices.
- Occupation and riparian management issues. Nonfarmers and farmers who linked riparian management to their own farming objectives were more likely than other farmers to implement riparian management practices.
- Occupation and sediment effects. Nonfarmers and farmers who considered that they were causing sediment damage to waterways were most likely to implement riparian management practices.

The above variables are in order of their increasing predictive ability.

Figure 2. Management of Waterway Banks and People’s Perceptions of Their Relative Performance



DISCUSSION AND APPLICATION

Most of the farmers (75%) in the regions that were examined considered their financial goals to be the most important and ranked “looking after nature” as third or lower. Younger dairy farmers, less than 40 years of age, (15%) were the people most likely to consider paying off debts as more important than resource management. Older livestock farmers (15%), greater than 60 years of age, particularly those farming part time, were likely to consider being self-reliant in their decision making as a more important

goal than resource management. These two groups of farmers are likely to respond least to mass communication methods of promoting resource management ideas.

Communication to rural landowners should clearly differentiate between farmers and part-time or nonfarmers. Farmers are more likely to implement riparian management practices that relate to their farming objectives for stream banks especially if those objectives include developing “nature” or wildlife” areas.

Farmers appear to be strongly influenced in their riparian behaviour by their awareness that they have been contributing to waterway sedimentation. Waterborne diseases were a more motivating issue for farmers but they were not so well linked by them to their riparian management.

Agencies that provide monitoring information to farmers about how their properties are affecting waterway quality are providing the best basis for encouraging farmers to improve their use of riparian management practices.



RESOURCE MANAGEMENT PHILIPPINO STYLE

Recently I was invited over to the Philippines to help an old mate celebrate his fiftieth birthday. Get your butt over here and I'll show you a good time said Rob, an ex Kaitaia multisporter from way back. I ask you what could a man do? Three of us took up the challenge packing our mountain bike shoes and various other sport toys and off we went. Rob roamed the world after his Lincoln days eventually spotting a cheap source of jewelry in the Philippines. He now manufactures it over there and distributes and sells it through various outlets in NZ (Santorini and Aquarius), Canada and Hawaii. More recently he has picked up half shares in a bar and a tourist resort. Bugga, I knew we were in for a miserable time!

Oops, back to the resource management bit. It is a long time since I have been in Asia and it was a massive cultural and climatic shock walking out of the Cebu airport. Hot and crowded there seemed to be no definite traffic rules. People just aimed at each other then veered off to one side at the last minute! From memory the Philippines supports about 70 million people on a land area not too much different to NZ. Overcrowding is therefore a major problem in some areas such as parts of Cebu City where we were based. This is exacerbated by a chronic lack of infrastructure we all take for granted. There did not appear to be any reticulated water, sewage or electricity in most areas, with housing consisting of packing cases and roughly constructed huts. Local streambeds appeared to be the resting place for much of the rubbish either being dumped there washed or blown. Presumably they are flushed out with each rainfall event. Without the resources to control stream bank erosion the buildings are simply sited or relocated further back. How can people be persuaded to clean up their act when they have been born into this lifestyle, take it for granted and spend most of their efforts on survival?

Corruption is at the core of society with government officials taking bribes in lieu of wages. Even taxes are paid to officials who make up the rules as they go along, barter for as much as they can get then more than likely put most of it in their own pockets. With this happening I guess there is little to go back into the fundamentals of society we take for granted such as education health and welfare let alone environmental management. Various countries pumped in aid at different times, the latest USA presumably as part of a deal with their military base. Now the base has gone this source looks fragile for the future. Maybe our Western styled beurocracies do have their good points after all.

It was not all bad news. The people seemed to be remarkably healthy and happy despite their crowded and polluted environment. As Spyda commented you will notice two things here, babies don't cry and dogs don't chase cats. His explanation was that babies had so much family support that they were very secure and that the dogs were probably just too lazy! It was hilarious to be biking up in the mountains behind Cebu to have the peaceful serenity suddenly shattered by a teenager with a battery powered getto blaster on his shoulder!

Some parts of the country are really beautiful including the beach at Rob's resort. And what did we get up to? Apart from running, mountainbiking, swimming, golfing, windsurfing, scuba diving and partying not much really. The Philippines are understandably not many people's first choice as a holiday destination but if you are going in that direction let me know and I'll get Rob to show you a good time! He is hankering for more Kiwi company aren't you Rob? If you feel like a real life challenge maybe there are resource management opportunities waiting for you over there?

Cheers,

Lee Whiley

GISBORNE'S 5-7 AUGUST 2002 STORM – LAND USE IMPLICATIONS

**Based on a report to Gisborne District Council
Trevor Freeman (District Conservator)**

INTRODUCTION

As we all know storms that drop significant rainfall have the potential to cause substantial damage when they impact on soft rock hill country. Soil erosion causes immediate damage to structural assets such as fences, tracks, culverts and bridges as well as loss of productive capability through vegetation inundation or removal. The first priority becomes repair or restoration of the damage. There are however also longer term considerations of land use; what can be changed or done better to reduce the impacts of future storm events.

This report looks at the hill country damage caused by the 5-7 August storm in the Manutuke, Muriwai areas in an arc approximately 15 kilometers East, to 25 km South east of Gisborne city. The report also examines the land use implications. Some information, notably rainfall data, oblique and vertical aerial photography had been made available in advance of the Council report to Federated Farmers (Gisborne-Wairoa Province) in support of their case for government assistance.

RAINFALL

Council's network of rainfall stations provided very useful information on the rainfall that occurred during the storm, including rainfall intensities. However in a localised event a greater density of records is required to provide a reasonable representation of rainfall. Accordingly Water Resource Staff collected additional rainfall totals from landholders in the general vicinity and Hawkes Bay Regional Council. This is presented as isohyets on a separate map.

Rainfall exceeded 400mm in a narrow band from Te Arai Valley to the Wharerata Hills. The gradient from S.H.2 inland was particularly steep, total rainfall rising from 100mm at Nicks Head Station to at least 400mm only 6km to the West.

Rainfall intensities were highest during the afternoon and evening of 6 August, exceeding 20mm/hr at Waingake and Waerenga-O-Kuri. Localised intensities in excess of 20mm/hr would undoubtedly have occurred elsewhere as a result of very heavy cells of rain moving over the area. The Waerenga-O-Kuri data suggests the storm could have been greater than a 1 in 100 year event at that site.

SOIL EROSION

Soil erosion as a result of the storm loosely follows rainfall isohyets with differences mainly due to slope and vegetation. Underlying geology is mostly massive mudstone, merging into alternating bands of mudstone and sandstone and then into sandstone in the southern area. Where slopes are steep, soils are prone to surface slipping and this is in fact the predominant erosion form as a result of the storm.

On the pastoral hill country severe slipping is most extensive on steep areas above the 400mm rainfall isohyet. Out to the 300mm line it is less so, but still very significant. There are additional patches out to the 250mm zone, interspersed with scattered slight to moderate slipping. Slips have clearly been very fluid at the time of movement as indicated by long debris trails, in places travelling over rather than burying pasture, and often carrying debris all the way down slope to watercourses and valley bottoms.

There are patches of fresh gully erosion, some of it severe, where geology and vegetation is conducive to downcutting by fast flowing concentrated water flows. Four large deep seated slumps have been noted, the largest on Ranganui Station where it has blocked the watercourse. This site has been visited by both land care research staff and GNS geology staff, and may be subject of separate more detailed analysis. By far the most significant erosion type however is the surface slipping.

Cyclone Bola in 1988 produced a similar total rainfall over most of the localised (Muriwai/ Manutuke) storm affected area, although rainfall was higher in the South and a lot higher over much of the district. It is important to realise that Cyclone Bola storm intensity for this specific area Muriwai/ Manutuke was not extreme. Some farmers in the Muriwai/Manutuke area have as a result commented soil erosion and flooding this time, is worse than in 1988. This is supported by aerial photography and is due to the high intensity of the rainfall. Extensive, surface slipping is a typical effect of high intensity, short duration rainfall.

Slipping is very light in recently logged areas within Wharerata Forest. Although treeless, residual stumps and roots as expected continue to give good protection. Where areas have been logged approximately 3 – 7 years previously however, roots from the previous forest have largely rotted and the replanted trees are not yet large enough to give an adequate soil binding effect. Here slips have occurred, many from road and landing edges and although not extensive, either within this age of forest or the forest as a whole, effects have been dramatic where they have occurred. The overland movement of fluid spoil down steep slopes has carried with it logging slash off the slopes and thence down the watercourses to be deposited on the lower flats and against structures.

The same type of storm damage occurred 10 years ago soon after logging began, in a very localised area in the forest, but with enough debris to block a railway culvert and close the line.

A detailed assessment of soil erosion from the storm will be carried out to aid in future policy development and setting of resource consent conditions.

Photos are available by arrangement with the GDC Conservation Division (and probably through the Hawkes Bay Regional Council (Garth Eyles).

VEGETATION INFLUENCES

The density and distribution of trees on the hill country, as would be expected from research findings over the years, has had a marked mitigating effect on the incidence of soil erosion damage.

Much of the grazed area has had a history of poplar and willow pole planting. These are concentrated along gullies, either side of major watercourses and up colluvial slopes where accumulated soil depths are greater. Where present in adequate numbers these trees have been very effective at controlling gully erosion in particular, compared with unplanted areas. Often the steepest drought prone slopes do not have adequate trees either from inability of poles to survive in such a harsh environment or because trees have not been planted on the steepest slopes.

Most of the silt deposits on the flat land have originated from soil erosion of the pastoral areas. Often spoil has travelled down from above, around any trees and into watercourses. High watercourse flows have washed out some riverbank willow plantings and also deposited these downstream.

Exotic forest blocks about 7 years old or less have in places suffered soil erosion damage similar to that of the same class of land under pasture. Older forest areas have generally provided very good protection

except where earthworks have disturbed normal slope angles such as above and below tracklines. The exception is in the Maraetaha catchment where 10-15 year old pines have slipped or slumped into watercourses in places. Here there has been some slipping between trees, while at the top of the catchment one small area has incurred similar slipping to the adjacent pasture land. Soils in this vicinity are relatively thin and on steep sandstone. Rainfall has possibly been sufficient to induce slipping almost irrespective of vegetation cover.

Indigenous forest areas and scrub appear generally, to have afforded similar soil protection as exotic trees. This however needs closer examination. Indigenous vegetation is concentrated along riparian areas where soil erosion risk is often greatest.

The inability of indigenous vegetation to always hold riparian areas is often a function of age (but may be related to type as well). As scrub cover is succeeded by a tree cover it can be expected to become more effective.

Logging and whole tree debris from forested areas has been raised as a matter of concern by a number of farmers. This debris has destroyed floodgates and bridges, blocked culverts and been dumped onto the flats. Juken Nissho Ltd have undertaken clearance work in the lower Waiau Stream valley as a goodwill gesture to property owners downstream and to mitigate long term damage to the trout fishery. The response from other forest owners has been more muted.

FUTURE LAND USE

Being early Spring, the timing of the storm *was* conducive to rapid re-establishment of pasture cover on hill country. Past experience has shown oversowing with pelleted seed while soil conditions are still sticky gives very good results. Many farmers have done this, although limiting follow-up grazing will be difficult where fences are down, slipping is extensive or stocking densities cannot be reduced.

Similarly, silted areas (once any woody debris has been cleared) will be able to be oversown if they have not already been so, or alternatively cultivated for cropping. Silt deposits are often beneficial in the long term as they raise the height of land and tend to be of favourable texture and fertility.

Whilst the products of soil erosion (i.e. slip debris and sediment, but not forest/ tree debris) can be re-vegetated and sustainably managed for continued production be that cropping, pastoral farming or forestry, the sources of the erosion offer a narrower choice. The fact that soil erosion has occurred is an indicator of unsustainable land use as soil loss will mean very much reduced production for a very long time. This does need to be considered in context however. The slip scar component of the slipping is very small by aerial extent; most of the bare ground is actually debris tails in this case commonly almost painted as a thin slurry. Also, this was an exceptional event and on average should be expected to re-occur very infrequently, as indicated by rainfall data.

Eroded pastoral areas and other similar pastoral slopes require tree planting to afford a better level of protection from storms of this kind. These areas tend to be the steepest and upper sections of slopes where tree establishment is most difficult due to thin soils and susceptible to drought. They are also often difficult to isolate by fencing out. This means in reality strategic afforestation using a limited range of species to practical fencelines. Pole planting of willows and poplars is a useful adjunct where soils are thicker or gullying is occurring.

The reviewed East Coast Forestry Project is able to offer assistance to the required treatment options where target land is present. The eligible land in this specific location is relatively limited within the storm affected area when assessed at the regional scale.

There will however, undoubtedly be additional pockets of eligible land when assessed at a detailed farm scale. Note East Coast Forestry Project Land is "3T" land and is the focus of the ongoing Sustainable Hill Country Project looking at regulatory options.

Eroded forestry areas may be able to be blanked to fill in canopy gaps if sufficiently young. This was a practice carried out extensively after Cyclone Bola, albeit often assisted by subsidy. A forest cover affords the best long term protection, although this can still be affected by storm induced soil erosion when young or when storms are exceptionally severe.

Alluvial floodplains are formed from flood deposits. Land use needs to recognise this. Flood hazard mapping in the District Plan clearly identifies the risk in areas with an established history of flooding. In smaller valleys proximity to hillsides is a major factor. Permanent horticultural crops should only be considered where siltation can be avoided or prevented.

CROSS BOUNDARY EFFECTS

The Gisborne District Council/Hawkes Bay Regional Council boundary does not follow any catchment boundary. Included within the Gisborne District is a small part of the Tarewa Stream catchment (which flows into the Nuhaka River) and the upper reaches of the Waiau Stream, the major contributor to the Kopuawhara Stream. These areas are almost exclusively in exotic forest interspersed with indigenous scrub and forest. Most is part of the Wharerata Forest.

Storm induced soil erosion has been very largely confined to the Gisborne District but the silt and tree debris resulting from damage within the Tarewa and Waiau Stream catchments has been deposited outside the district. Deposition is extensive on the flats towards Mahia.

Hawkes Bay Regional Council staff expressed an interest at an early stage. A joint flight over the area assessed the extent and nature of the soil erosion sources. On their request aerial photography was extended beyond the Gisborne District Boundary.

Exotic forest harvesting issues with respect to soil erosion damage are evident. There are forest management practicalities to consider and HBRC/GDC staff involved have had varying experiences in this field of environmental management. Initial contact has been made towards a joint HBRC/GDC/Forest Industry workshop to discuss the technical matters involved and determine if changes to present resource conditions are required. In part this will address farmer concerns of logging debris washing through waterways.

T G Freeman
DISTRICT CONSERVATOR

Agroforestry Teaching and Research at Lincoln University

Agroforestry teaching

At Lincoln University, we teach agroforestry courses in both diploma and degree programmes. A range of forestry papers is taught at second and third-year level, but the flagship is the third year degree paper, which is taught in the second semester. The first half of this paper reviews basic forestry and land resource topics relevant to agroforestry-including land use capability and land resource inventory. The second half of the paper covers application of these principles to farm management in New Zealand. Guest lecturers make valuable contributions to the course-Peter Smail covers windbreaks and farm shelter, Dugald Rutherford talks about the NZ Farm Forestry Association and farm-forestry investment, and Phil McGuigan of ECAN gives a talk on the extension role played by regional councils.

An important part of the course is the field project, where small groups of students carry out a feasibility study of an agroforestry project on an actual farm. Students are expected to plan and execute the study, liaise with the farmers, and present the results of their work in oral and written form. Not surprisingly given Lincoln's location, a lot of the projects involve windbreaks and woodlots for stock shelter on the Canterbury Plains. However students have also worked on hill country properties, dealing with problems as diverse as steepland harvesting and native forest conservation.

Agroforestry research

Agroforestry research at Lincoln University has concentrated on three main problems:

- Interaction of radiata pine with pasture species (Agroforestry trial no1).
- Growing trees for fuelwood (Eucalyptus fuelwood trial).
- Interaction of other plantation species with pasture (Agroforestry trial no2).

Lincoln University has also carried out research into tree crops (chestnuts, walnuts), farm shelter, and into dryland plants for animal forage.

The Agroforestry trial no1 was planted in 1990, and has been measured continually since then. Measurements include annual tree growth, pasture and animal production, soil water and nutrient levels, and tree physiology.

The trial has been studied by twelve post-graduate students since 1990, many of whom have come from overseas (Sri Lanka, Nepal, Argentina, Brasil.) The trial has also been used for post-doctoral research and for undergraduate teaching.

The trial is unique in the South Island, and perhaps in New Zealand, and the continuous records of measurements since planting make the trial a highly valuable research asset.

The eucalyptus fuelwood trial was established in co-operation with the NZ Forest Research Institute. The trial investigated woody biomass production of two eucalypt species, as well as poplars, willows, acacias and *Casuarina*.

The trial has now concluded, but has successfully demonstrated very high rates of biomass production. Trees were harvested within three years of planting, with harvested trees regrowing from coppice shoots, thus allowing continual production without the need to replant.

The Agroforestry trial no 2 trial was established to investigate the influence of pasture understories on the growth of five agroforestry species-alders, cypress, eucalyptus, poplar and radiata pine. The trial was concluded in 1999, with significant differences in pasture interactions being demonstrated by the agroforestry species.

Conclusion

Lincoln University has a small but healthy agroforestry programme that includes teaching and post-graduate research. Admittedly this programme has faced the usual funding pressures, but undergraduate numbers remain healthy. It's encouraging to note the number of agriculture and agricultural science students who want to learn about trees on farms. Perhaps all those years of work by farm forestry associations, soil conservators and forestry extension officers are starting to bear fruit!

Mark Bloomberg
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COMING EVENTS - CALENDAR

(from Royal Society NZ Alert)

10-14 November 2002	NZ Limnological Society Conference, Shantytown, West Coast
20-22 November 2002	Meteorological Society of NZ Conference, "Vulnerability". Sky City, Auckland. http://metsoc.rsnz.org/2002.html
25-29 November 2002	NZ Soil Science Society Golden Jubilee Conference, VUW. Janet Simes, ph (04) 562-8792 organiser@conferences.co.nz or www.rsnz.govt.nz/clan/nzsss/index.htm
2-6 December 2002	Geological Society of New Zealand's Annual Conference, "Northland 2002", Forum North, Whangarei. http://www.gsnz.org.nz/gSCO.htm
3-6 December 2002	NZ Hydrological Society Symposium "The easy water is gone: making the most of a scarce resource", Blenheim. Contact: cmi@marlborough.govt.nz http://www.hydrologynz.org.nz/society-conferences.html
5-7 December 2002	Social Science for the 21st Century: Challenges to Theory, Policy and Practice. www.soci.canterbury.ac.nz/SAANZ2002
14-16 May 2003	The 3rd South Pacific Conference On Stormwater And Aquatic Resource Protection combined with the Annual Conference Of The Australasian Chapter Of The International Erosion Control Association "Communication And Linkages For Aquatic Resource Protection" Contact: water@nzwwa.org.nz
22-24 May 2003	New Zealand Planning Institute Conference Hamilton.
6-11 July 2003	"Windows on a Changing World" 22nd conference of the New Zealand Geographical Society, Auckland University. Contact J. Logie: nzgs2003@sges.auckland.ac.nz or go to: www.geog.auckland.ac.nz/nzgs2003/
1-5 December 2003	3rd International Wildlife Management Congress, Christchurch. www.conference.canterbury.nz/wildlife2003