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BROADSHEET



**NEW ZEALAND
ASSOCIATION OF
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MANAGEMENT**

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NEW ZEALAND ASSOCIATION OF RESOURCE MANAGEMENT
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Broadsheet is a newsletter of the New Zealand Association of Resource Management. Authors must be consulted before their articles are cited in publications.

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 by 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,

How do we stay in touch with what NZARM and its' members are up to? Well, we have a number of ways including the Broadsheet that comes out 3 times a year, Regional Meetings that occur sporadically but are increasing in number, and lastly we have our web site – www.nzarm.org.nz. If you have never visited the site you should. While it is not one of those flashy sites nor one that contains more information than you could ever need on a range of subjects, it does contain information about NZARM – who we are, what's going on, and what we are about.

I'd urge you all to go take a look because it is here that things such as upcoming courses, conferences, regional meetings get updated on a more regular basis.



Welcome to the

New Zealand Association of Resource Management

Who are we?

The New Zealand Association of Resource Management (NZARM) is an Incorporated Society with membership drawn from those engaged in the management of natural and physical resources.

Our Mission

- To represent and promote the views and interests of persons who are involved or interested in resource management
- To promote good practice, competence, and ethics in resource management
- To promote effective communication and transfer of information between members, other resource management practitioners, and the community, concerning resource management
- To encourage community awareness of the nature and value of resource management

In this web site...

Quick links

[KwMap.com](#) - browse the Keyword Map of Nzarm.org.nz



New stuff...

[51st NZARM Conference October 11,12,13 Gore - advance notice, programme and registration details](#) (10/06/04)

[2004 Training Courses from Gay Pavelka](#) (members discounts apply) (8/06/04)

The next issue of Broadsheet will be compiled early June and should be in the mail around late June (22/04/04)

[New Zealand Society of Local Government Managers \(SOLGM\) Conference, 5 – 7 September 2004, Dunedin.](#) For further information visit the website www.solgm.org.nz or contact the Conference Secretariat at megan@conference.co.nz

That's all this time around.

Cheers

Chris Phillips

PS. If anyone wishes to jump on a soap box and have a rave, feel free to send a letter in to the Editor or if something is really getting to you how about a Guest Editorial?

Guest Editorial

Blame the RMA?

What better place and time to discuss the Resource Management law than Corsa Café in Auckland's Dominion Road, with well known barista (cf barrister) Lee Whiley brewing up a mean flat white. Project Aqua had just been canned and recriminations were flying.

Business people and politicians were blaming the RMA as being the primary cause of the projects failure. Further criticism of the Act had also come from business people during the small and medium enterprise national tour that the Minister for Small Business, John Tamihere, had recently completed.

It seems to me that most people know very little about the RMA. Most developers and businesses seeking consents tend to rely on professional advice to negotiate their way through the various processes. Advice can come from regional and district council staff, government officials, lawyers, and consultants. All of these groups have been conspicuous by their absence in defending the RMA during the recent criticisms.

I personally believe that the RMA is still an excellent piece of environmental legislation, and I think most professionals involved with its implementation would agree.

Now, if you analyse the situation further, if the business people are struggling with the RMA processes, then surely this must directly implicate poor performance by the resource management professionals who they rely on. That is you, me, and the other guys, that have a working knowledge of the Act. Is our own poor performance the reason we have been lying low during the debates?

Having had no involvement in Project Aqua, I am not aware of what went on during its formative period, but I would like to make some comments. From the café where I am sitting, I would have advised Meridian that they had a major toughie on their hands. Surely the professionals advising them would have carried out a trouble shooting exercise and worked through the theoretical hurdles they would face. To me this would be followed by a huge exercise in getting the community on side. From my reading after the event, this did not happen.

Older readers will remember that the Waitaki River used to have its own catchment commission (a forerunner to a regional council), as it was such a nationally important river. (As an aside to anyone who visited the Tekapo soil conservator's house, wasn't it a fantastic spot with million dollar views over the lake?) Anyway, I was amazed to read that the regional council responsible for the catchment has no water allocation plan (statutory or non-statutory) for this supposedly nationally important river.

Which raises another point; the fact that it is supposed to be a nationally important river is not reflected in government policy. No policy exists at present (although something is on its way hopefully through the national Water Programme of Action) that picks the winner catchments in terms of their national importance. The RMA, which enables this to happen through various

tools including national policy statements, has been in place for over 12 years and this issue has only just started to be addressed!! Surely in a country where there is supposed to be a dodgy energy situation, and some potential for further hydropower development, this process should have been debated years ago?

So I have now fired shots at lawyers, consultants, various council staff and central government. When you next hear criticism of the RMA, I believe that this directly reflects on those professionals responsible for the processes, that is you, the other guys, and me. Perhaps we need to lift our game?

Remember, as Lee Whiley will tell you, a poor barista blames the coffee machine. Now I will return to stirring my coffee.

Bryan Bates
Cirrus Associates Limited
cirrusassociates@xtra.co.nz



Sediment Control pond - Auckland

Regional Roundup

Bay of Plenty

Giddy from the Bay of Plenty.

We farewell **Grant Burke** from the Bay of Plenty. Grant has moved back to Auckland where he has started a new role as Environmental Coordinator for the NZ Sugar Company. We wish Grant well in his new job and will miss him. We suggest that you contact Grant for to purchase bulk coffee crystals at whole-sale prices.

From **Andy Woolhouse** “ Where I come from we talk about 'Bad pennies turning up, I guess in NZ we should talk about 'Bad cents turning up' (not intended to be a play on words on his pig farming activities), but I am pleased to say that Fletchers loss is my gain in that I have teamed up with **Glenn** again to deliver environmental training to the Forest Industry. We are also delivering an environmental unit to Norske Skog Pulp and Paper Mill at Kawerau. I am working with Environment Waikato looking at an Accredited Operator Scheme for Forestry, which is following the lead of Environment Bay of Plenty. A spell at CHH Forests in Tokoroa with the environmental team and a resource consent for Kaingaroa Timberlands means that life is pretty varied and interesting. I almost forgot, a plug for Hawkes Bay Regional Council where Glenn and I were involved in an open day for Earthworks Contractors in the HB/Gisborne area. The day was a good mix of indoor and on-site. I think that these sorts of events are good for the industry and help to get the message across from Regional Councils in a very positive way - well done Joe and Garth.”

Norm Ngapo has been busy processing earthworks consents for Environment Bay of Plenty. His projects include looking at problems with earthworks running into the winter period, and gully control design for the gully erosion we visited at Lake Okareka during last years conference. He has also been involved with a catchment survey of the Nukuhou Stream catchment at Ohiwa Harbour.

The minor earthworks around his house are now completed, however he is pretty late for grassing the new back lawn (Norm probably didn't get a resource consent and appears to be in non-compliance in regard to meeting the vegetation standards for earthworks under the Regional Land Plan!) Norm says that the fishing has been patchy, but he has still been able to catch enough for a feed every time he goes out.

Rene Wetterings is back in central Kalimantan on a 3 month assignment helping prepare a strategic management plan for a logging concession which is having a hard time to operate under ITTO guidelines. He has been working in Jakarta with the company directors to work out an investment strategy for this ailing company. Rene is also acting forest adviser to the provincial

government under this EU project, a position he was asked to fill in for 3 months last year, directing a raft of short term consultants on a range of activities and keeping the project on budget.

Rene maintains that Forest Certification is a noble goal and all but impossible to achieve under conditions where there is illegal logging, apparently supported by all levels of government, gold mining, lack of licence and a host of other social issues that include customary ownership, no clear or secure rights to manage a forest on any basis let alone a sustainable one.

As **Andy Woolhouse** so politely points out, **Glenn Sutton** (together with **Grant Burke**) has been made redundant from Fletcher Challenge Forests as a result of the company's sale of its forests. Glenn has happily returned to self-employment as an environmental consultant and part-time farmer/orchardist. As well as working with Andy W, he is also helping **Ross Overington**, a Whakatane surveyor, in preparing subdivision proposals. **Norm Ngapo** and **Willie Shaw**'s team are also involved with providing information for some of those proposals.

At Environment Bay of Plenty we have **Ruth Feist** nervously awaiting the end of the river of appeals on the Regional Water and Land Plan, 27 at last count. Ruth is busy working out what has been appealed and which points Council can or can't accept. But it is not all appeals - there are also lake management projects, the Dairying and Clean Streams Accord, and trying to avoid the flu that everyone else has.

John Whale is putting the final touches to the 2003 NZARM Conference Proceeding (yes we know its late but nearly there), reviewing the Rotorua Geothermal Regional Plan, working with **Amy Reid** on the review of the On-Site Effluent Regional Plan, working with Sam on the Regional Coastal Environment Plan, AMA's etc. and checking over the Regional Water and Land Plan appeals with Ruth. John's boat is up in dry-dock (propped up on blocks on the lawn) while its rusty trailer gets fixed - so no fishing. Just work! Bugger!

Vance Fulton came aboard the Environment Bay of Plenty ship last July as a Land Management Officer (Lakes Quality), after spending the past five years working in Australia's Northern Territory. The position is a 50/50 role between the Environmental Investigations and Land Resources Sections. He works with land owners developing Environmental Programmes with an emphasis on reducing nutrient loading to the lakes and also helps in the development of the various Rotorua Lakes Action Plans with a emphasis of late on the proposed constructed wetlands at Lakes Okaro, Okareka and Rotoehu.

Wayne Smith has been enjoying the autumn fishing off the beach, along with 'newish' neighbour Norm Ngapo. Apart from that he has just completed several projects including a User Guide to the Bay of Plenty Regional Pest Management Strategy, an Environment Bay of Plenty version of the Clean Streams booklet and a couple of chapters for the Environment Bay of Plenty State of the Environment report. Work continues with developing Environmental Programme processes (including supervising the populating of historical data into the database) and developing Care Group manuals for staff and care group leaders.

In the Tauranga office of Environment Bay of Plenty, **Lawrie Donald**, **Daryll Hall**, **Phil Dykzeul** and Bob the contract monitor (not a lizard) are actively producing Environmental Plans

in agreement with landowners that include; restoring wetlands, managing riparian areas, bush protection and erosion control works. Care groups, particularly around small catchments that flow into estuaries are becoming more and more active. Often the motivation for such groups are from what the community sees as negative impacts of developments and the loss of values that were once enjoyed by themselves as youngsters and they mourn the loss of recreational and environmental values.

The people involved in this care concept are often the first of the baby boomers generation. Maybe as more and more baby boomers retire and are looking for a safe recreational activity they will all convert to being conservationists. Now there's a thought!

Ed Parkes reports that things have changed significantly for him recently with most of his time being spent completing the investigation of pesticide residues in Bay of Plenty soils. Some 130 properties covering 6 land uses (plus control sites) have been sampled and preliminary results indicate that just under 10% of the soils sampled have pesticide levels exceeding guide line values. The main contaminant is copper on old market gardening/horticultural sites. Ed is also helping with the assessment and remediation planning for a number of contaminated sawmill bark-dump sites around Whakatane.

Glenn Sutton and John Whale

Taranaki

Nothing from the 'naki this issue.

Lachie Grant

Waikato

I have recently taken over as the Waikato Regional Representative for NZARM - again, you may remember I was the Regional Rep from 1998-2000 prior to heading to the Sth America, Europe & SE Asia for 3.5 years. I am back working as a Land Management Officer for EW but am based in Taupo – **David Perry**.

In Hamilton, **Alan Campbell** is focused in driving EW's Clean Streams project whose major focus is on enhancing regional water quality. **Bruce Peploe** has been heavily involved in the Tongariro River Scheme and in the last few weeks several major objectives have been completed notably signing of a Memorandum of Understanding with the local Hapu Ngati Turangitukua, granting of a consent for river restoration work and lodging of a consent for stopbanking and gravel extraction. **Tane Desmond** and **Karen Hopkins** have recently joined the EW Land Management team and are getting stuck into Clean Streams and soil conservation projects in the

Waipa, Waitomo and Karapiro areas. Karen is also working on the Karapiro Arapuni Catchment Scheme monitoring Land Improvement Agreement (LIA) areas. **Sue McConnochie** is coordinating the Waikato Walkway project on Lake Arapuni and clean streams in the Middle Waikato Zone. The first stage of the Walkway project from the Arapuni Dam upstream to Jones' Landing is due for completion in the near future. **Michelle Gibbs** is involved in a willow clearance project on the Waitetuna Stream in the Whaingaroa (Raglan) Harbour catchment, Michelle is also coordinating landowners to fence cleared streambanks and replant with native species.

In Whitianga **Emily O'Donnell** is working on the Peninsula project with **Julie Beaufill** and **Rien van de Weteringh** as well as kick starting community projects in the Tairua and Wharekawa Harbour Catchments. In Taupo, **Jon Palmer** has overseen the construction of several soil conservation structures to contain active gully erosion in the Upper Waikato Zone. Jon has implemented a significant maintenance programme for existing LIA areas and coordinated a number of willow removal projects in existing LIA soil conservation areas where willows planted for soil conservation purposes are causing erosion and/or blockages these areas will be replanted later this winter. As for myself I have returned from 3 years in Europe and have been getting a crash course in river engineering in the construction phase of the Tauranga Taupo River Scheme and a programme of emergency work on the Tongariro River in Turangi as a result of damage sustained during the February 29 flood event.

John Quinn is off in June to conferences at Vancouver (North American Benthological Society) and California (American Water Resources Association Riparian Conference) presenting talks on the influence of riparian buffers on logging impacts on stream habitats, invertebrates and fish from Coromandel studies. These overview the findings published in four recent papers. Contact J.quinn@niwa.co.nz if you would like copies of these. John has enjoyed being part of a team led by **Dave Rowe** working with ARC (**Chris Hatton** & **John Maxted**) on protocols for assessing the ecological values of streams. The aim is to provide an improved basis for setting mitigation costs when streams are impacted by urbanisation, but it is hoped the approach will have wider application. John recently completed a report on NIWA studies on the effects of the first NZ trial use of alum as an in-lake restoration measure in Lake Okaro – a pdf of the report is available on request by emailing the address above.

The Peninsula Project

Better river and catchment management

The Coromandel Peninsula is a spectacular area known for its beautiful environment. However, a number of streams and rivers on the Peninsula are in poor condition and are causing widespread problems for our environment and our communities.

Inadequate management of the rivers, streams and their catchments is resulting in damage to buildings, bridges and roads, a loss of productive land, increased flooding and damage to native bush, estuaries and harbours. On the Thames Coast, flooding puts lives at risk.

The Peninsula Project aims to help resolve these issues, by working alongside local residents, iwi and agencies in the search for potential solutions. Environment Waikato has now developed and costed out a possible programme of work over the next 20 years to improve the state of Coromandel's rivers and streams.

Community involvement

Over the last year we have discussed with communities, iwi and other agencies, the issues on the Peninsula, what can be done about them and how any work might be paid for. All resident and non-resident ratepayers on the Peninsula have been sent three information booklets outlining the issues involved, proposed works and services and potential rating implications.

Key areas of work

The Peninsula Project aims to provide a consistent and coordinated approach to river and catchment management across the whole Coromandel Peninsula. This programme addresses goat and possum damage, soil conservation and associated damage to estuaries and harbours, and river erosion and flood protection. The programme will help to reduce the damage caused by flood events. It's estimated that around \$27 million will be needed over a 20 year period to address these issues.

This work will have significant environmental, economic, cultural and social benefits. For example, reducing damage to native vegetation and reduction of sedimentation into harbours and estuaries will benefit local coastal communities by protecting amenity and lifestyle values. It will also benefit the wider regional community because of the benefits to regional recreation and protection of biodiversity.

Next steps

The proposals for this project have been included in Environment Waikato's recently advertised Draft Long Term Council Community Plan. Submissions are currently being analysed and Council will make a final decision on the project at the end of June, following hearings and deliberations. Should the project be adopted, rating would commence 1 July 2004, with work on the ground beginning soon after.

David Perry

Nelson - Tasman

Nelson City Council

Nelson City Council (a unitary authority) has approved its Freshwater Plan Change for notification immediately its Resource Management Plan (a combined District, Coastal and Land disturbance plan) becomes operative. The RM Plan is currently before the Environment Court

awaiting final sign off, all references having been resolved. The Council used the valuable input from a working party to draft the Plan.

Megan Drake who was Consents Supervisor has returned after having two kids, as a part time contractor to provide quality assurance to consents processing

Don Ballagh has huge subdivision work loads - we have retained services of **Lisa Gibellini** of Staig and Smith Surveyors to help out.

Very significant consents workloads due to development pressures.

Have commenced Nelson Urban Growth study to provide a strategic framework for growth over next 10, 20 and 50 years. Using same consultants who undertook similar studies for Tasman District. from **Rod Witte**

Tasman District Council

A big step forward this month with the Kainui Dam Project. Tasman District Council has a policy approach that encourages and supports water augmentation and it was a key player with the Wai-iti Water Augmentation Committee in investigating the costs and feasibility of an augmentation scheme in the upper Wai-iti catchment. The Wai-iti Zone has long been an area that suffered water shortages every summer with the zone being over-allocated and users having quite low security of supply.

The committee's hard work resulted in two significant events this month. Applications for resource consents to build a dam have been notified and submissions received were mostly supportive. The Council also notified a variation to the Council's Resource Management Plan, which was needed to allow the Council to allocate and manage the additional water in the zone. **Mary-Anne Baker** is relieved that no-one has challenged what the Council wants to do. The Council is being rather innovative in using its rating powers to rate properties (where the owner also holds a water permit) to pay for the dam's construction and maintenance.

Another large farm dam (Parkes) built this summer in nearby 88 Valley. Nelson normally has settled dry summers but this year had an unusually wet February which frustrated dam construction. However, the weather did settle down. Neil Tyson reports that it meant no rationing of irrigators and led to a favourable farming year for most crops.

Andrew Burton is busy adding value to our water management work by making sure our soils information (including aspects relevant for irrigation management such as water holding capacities) is readily available on our GIS. Our water permit renewal programme in the Motueka catchment is focussing on better irrigation management and more efficient water use.

Mary-Anne Baker

Canterbury

The land and water chapters of the Canterbury Natural Resources Regional Plan (NRRP), will reach the proposed stage on 3 July 2004. The five chapters cover water quality, water quantity, beds and margins of rivers and lakes, wetlands, and soil conservation. **John Glennie** is looking forward to re-aquainting himself with his fly rod, shot gun, garden and wife, not necessarily in that order. Planning staff have also commenced the review of some 200 existing minimum flows, many set via consent on small streams.

Community advisory groups were set up in four areas to work through about 30 streams. A contract was let to NIWA to do identify a minimum/flow regime for aquatic ecosystem values in each stream, and flow requirements for the balance of values in each stream -natural character, landscape, indigenous aquatic plants, and tangata whenua values, were generated by consultants and runanga representatives through a series of site visits. The process has run fairly smoothly and is set to run over about six years.

Retirement: Ron Paulin

At the end of November **Ron Paulin** retired from his position as Biosecurity Manager with Environment Canterbury. His career in resource management began with Otago Catchment Board in 1967 and included soil conservation in East Cape and South Canterbury. The reorganization of local government in 1989 saw him involved in rabbit control, endeavoring to apply the integrated property management plan concept through the Rabbit & Land Management Programme. Further reorganization in Canterbury Regional Council resulted in him taking responsibility for animal and plant pest regulation throughout Canterbury from his base in Timaru. Ron served on the executive of the N Z Association of Soil Conservators (fore-runner to NZARM) as secretary in 1969 and from 1976-81. He was president in 1978-79.

Feeling he was not yet ready to be pensioned off to the bowling green, Ron has taken up a two-year assignment in Niue through Volunteer Service Abroad. He is a Resource Management Advisory Officer with Dept. of Agriculture, Forestry & Fisheries working on a coastal fisheries programme aiming to maintain the ecology of the islands fringing coral reef. His wife Dianne is teaching maths at Niue High School. Their e-mail address is paulin@niue.nu . They arrived in Niue three days before Cyclone Heta. The mild adventure they were anticipating turned out to be not so mild but it was adventure.

So what is this sustainable coastal fisheries programme?

Strategic Action Programme for the International Waters of the Pacific Small Island Developing States (IWP)

IWP is a five-year programme for 14 small island developing states of the Pacific. Participants are: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papa New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. The programme has two main components; an oceanic one that focuses on management and

conservation on Tuna stock in the Western and Central Pacific, and a coastal component that focuses on integrated coastal watershed management.

Niue has joined the coastal component and has chosen “sustainable coastal fisheries” as its principal concern. Although there are no measurable data, there is general agreement that the fringing reef round the island has declined as a source of food over the last 20-30 years. One may wonder why there is no factual data to confirm (or dismiss) the general consensus but the reef has traditionally been used for subsistence food gathering rather than for commercial harvest, so there has been no “economic” need to measure, or in fact to manage, the resource. The view of a degrade reef fishery is also held in other small island pacific nations but in Niue’s case it has occurred while the population has been declining, suggesting it can not simply be over harvesting.

After a period of public consultation a list of perceived possible causes of reef fishery degradation has been established. With the help of a marine biologist some treatments to remedy the more likely caused are to be implemented with assistance from local village communities. The villagers will determine how the conservation measures are to be applied and with assistance will be responsible for monitoring to evaluate the effects on the reef fish and shellfish stock.

Monitoring ranges from simple line transects across the reef flat, to timed “mantra tows” (snorkel divers counting fish while being towed behind a boat), to scuba transects at the bottom of the reef slope. Villagers are being encouraged to be involved in as much of the monitoring as possible, reasoning that they will be more committed to the treatments if they obtain (own) the data and have a say in modifying the management. Of course some of the monitoring techniques require skill and resources they don’t currently have (e.g. Scuba) and for the meantime agencies will have to collect that data.

The programme has selected two villages as pilot sites to test some initial treatments. The results from these tests will be used for consultation with other villages latter, possibly after the programme is finished.

In consultation with villages we are already into debates between education and regulation as the way to implement a management programme. The “hawks” and “doves” I have seen in N Z’s environmental management are also here in Niue. The Domestic Fishing Act 1995 makes provision for regulation as does the Environment Act passed last December. A Village Council Ordinance permits villages, with the approval of cabinet, to make bylaws for resource management.

One has to wonder how much regulation an island of less than 1500 people from about 500 households needs. Everyone knows everyone and there is a fair bit of familial interrelationship. In fact I wonder if regulation will work on such a small island!

If Niue is like small communities in N Z, it will be difficult to get villagers to enforce bylaws on their fellow citizens. Similarly there will be little will from Ministers or their departmental heads to enforce regulations. If they opt to go the regulatory way then I don’t think I will see any

results before I leave at the beginning of 2006. Public information, education and a bit of “neighbourly reason” might show some results in that time. We’ll see.

...and from Landcare Research. **Chris Phillips**, together with **Mike Marden** and **Donna Rowan**, recently completed a paper on sediment yield following plantation harvesting at Whangapoua Forest, Coromandel Peninsula. This project was associated with several studies carried out by colleagues **John Quinn** and **Kevin Collier** from NIWA and **Lisa Langer** from Forest Research. Chris is off to the University of British Columbia to work with Prof Hans Schreier on knowledge delivery tools in ICM and will follow that with a short stint at Macaulay Institute in Aberdeen, Scotland looking at how science is used and taken up by communities in resource management decision-making.

Ian Lynn has been heavily involved in managing and contributing (with **Sam Carrick**, **Trevor Webb** and **Allan Hewitt**) to the soil-mapping component of the growOTAGO project. In the lowlands of the Otago region this involved the correlation and rationalisation of published and unpublished soil mapping, new soil mapping in those areas of valley floor terrain where only the 4-mile soil set coverage existed, and the establishment of a correlated and rationalised regional lowlands soil legend. This work was then combined with the best available soil data for the hill and steeplands to produce forty-three 1:50,000 scale soil maps using the Topomap260 series template. Three regional 1:500,000 single attribute maps (profile drainage, profile readily available water, and natural soil fertility) were also compiled. The Otago Regional Council is printing a limited run of the soil maps, along with eleven climate maps (rainfall total, rain days, air temperature, growing degree days, frost incidence, potential evapotranspiration, wind speed, solar radiation, cool season chilling, soil temperature, and snow water equivalent) produced by NIWA. Currently available on CD the long-term plan is to have all this information available online through the web.

Over the last two years Ian and Sam have mapped the Strath Taieri basin at 1:25,000 with an emphasis on high-class soils and the potential for irrigation. Swapping shorts and running shoes for gumboots and waders they have also mapped the balance of the Taieri Plains not covered by the existing 1:10,000 mapping, at 1:25,000. In a further effort to identify ‘high value soils’, Sam, Ian and Allan have mapped limited areas on the Otago Peninsula and the coastal fringe to Palmerston for the Dunedin City Council. Sam has also compiled some 50 technical and general soil fact sheets for the agriculturally significant soils in the Dunedin City Council area, following a successful format he established for Crops of Southland. Sam has now ducked off to Lincoln University and started a Masters programme.

James Barringer, Ian and **Grant Hunter** have also been involved in working up data and running scenarios for LINZ as background to the South Island high country land tenure review process.

Dave Maslen

Otago

Nothing from Otago in this issue.

Nicola McGrouther & Tom Heller

Southland

Mid Dome – Aerial Spraying Investigations

In the last land managers' group meeting, I have indicated that 'diquat' was sprayed on mid-dome to control wilding tree spread, particularly seed source from take-off places.

The results of an investigation of the spray drift from the Mid Dome aerial spraying operations in Feb 2004 was recently presented at a public meeting. An independent forensic consultant, who specialises in crop damage issues, undertook the report.

The report states that off-target aerosol spray drift did occur and was responsible for necrotic spotting on vegetation observed 48 hours after the spraying up to 10 km away from the spraying site. Aerosol spray drift occurs where very small particles of herbicide are formed and remain suspended in the atmosphere. The aerosol drift was caused by a number of factors, which combined at the time to cause an unpredicted effect. These included the topography and particularly the altitude at which spraying took place, the low water rates used in the spraying and the still, calm, humid weather conditions that produced an inversion layer and prevented normal dispersal of the fine spray particles.

The report also stated that there was unlikely to be any quantifiable losses due to diquat injury to crops, shelter trees or other vegetation.

Hopefully, this and other sites will form a part of the field trip during NZARM conference 2004. I take this opportunity to welcome you all to Southland for participating in the NZARM conference at Gore.

Bala Tikisetty

Manawatu - Wanganui

The Manawatu Storms of February 2004 – Malcolm Todd

Rainfall (Ruahine Ranges)

(Wettest since 1974)

January 2004	360mm
(Annual Average 216mm)	
February 2004	620mm
(Annual Average 235mm)	
	980mm

Rainfall (Ruahine Ranges)

24 Hour Rainfall Statistics

Maximum Ever (Mar 1975)	253mm
15/16 Feb 2004	247mm

Manawatu River – Largest Floods

Rank	Year	Size(cumecs)
1	1880	4000
2	1902	3800
3	2004	3500
6	1953	3150
7	1992	2830



Manawatu River – Design Standard

Design Flood

At Palmerston Nth	4500 cumecs
Below Palmerston Nth	3450 cumecs
2004 Flood	3500 cumecs

Rangitikei River – Largest Floods

Rank	Year	Size (m)	
1	1897	9.7	
2	1926	8.33	2004
8.24	1992	7.2	



Current Situation

Individuals not in their Homes	822
Uninhabitable Houses	339
Houses Destroyed/Condemned	29

Assessed Cost of Damage

Local Authorities	\$106 M
Rural Sector	\$180 M
Private and Business (Approx)	\$100 M
Total Current Assessed Costs	\$386 M

Soil Conservation

Planned Approach to Repairs

Costs:	\$ M
Land Restoration Cost	7.8
Cost to Manage Restoration	<u>2.2</u>
Total Damage Cost	10.0



Photo: Murray Jessen

Gisborne

DEMAND FOR ELEVATED BUILDING SITES SURGES IN GISBORNE RURAL DISTRICTS

Prospective buyers taken on site visit to absorb spectacular views



More on the NZARM – Gisborne Regional Workshop in this Broadsheet

Wellington - Wairarapa

Nothing from Wellington-Wairarapa this issue.

Dave Cameron/Roger Wood

Hawkes Bay

An autumn of extremes – wet and dry throughout the region has added some variety to lifestyles here. With plenty of moisture in the soil, it's starting to look like a normal winter after predictions of dry throughout. Damage to land however unfortunate, has had the usual spin-off of reminding landowners and government about the need for protection of land assets and of course the need to fund it.

What have the locals been up to?

Joe Devonport has been busy running a Forest Information Day for the forest industry in conjunction with Gisborne District Council and attending field days in Gisborne, Kotemaori and elsewhere. Also looking at harvesting options for part of the Tangoio Soil Conservation Reserve. Aerial inspections of storm damage to rivers, storm damage to land and the coastal hazard zone are obvious perks of pilots and **Neil Faulkner** has taken advantage (again) of the opportunity. He actually does work as well, but then you would wonder, as he has also spent time on stage at both the Waipawa Musical and Dramatic Club's production of CHESS as Walter, the head of the American delegation and again as a Pukeko at the Small Block Holders field day. Neil confessed to, but was not seen (luckily for him) stripped off and rescuing a floating sheep from a farm stream recently. Perhaps satellite imagery will eventually reveal the true nature of this heroic action.

Ewan McGregor has several major planting programmes on this year through his consultancy 'Trees and More'. The work includes three at peri-urban subdivisions involving exclusively natives. He notes that there is a huge upsurge in the use of natives, as others involved in land management may be aware of. But it's very exciting. *See also Ewan's article later in this Broadsheet.*

Simon Stokes as with other regional council staff, has been busy helping landowners to organise planting programmes and other work. There the common thread ends, as Simon has also had a never-ending stream of opportunities to talk and present land management issues to various groups and field days. The Hawke's bay Meat Wool Innovation monitor farm programme has started again. This time it isn't going to focus on one farm but on two issues - high performance breeding ewes and intensive finishing systems. Good to see the Ahuwhenua trophy for Maori Farmer of the year for the eastern region going to Tarawera Station in Hawke's Bay. It was apparent that they had made good use of the environmental plan to aid them in their win and there was plenty of comment on their environmental strategy for the next 10 years. Work is still

continuing on farm plans over Hawke's bay, mostly in Wairoa. Simon has just finished judging the environmental awards for the Deer Industry and as head judge got to see all of New Zealand. Very interesting and extremely motivating as the deer farms that had entered this year were of a high standard in some difficult locations. Congratulations to the deer industry on their emphasis on the environment.

Neil Grant comments on a some of the more satisfying work that he has been involved with recently, such as the completed application for funds from the Nature Heritage Fund to acquire a 20HA area of indigenous vegetation for addition to Boundary Stream Scenic Reserve and Mainland Island (behind Tutira). He notes the initial positive discussions with HBRC staff over the proposed review of the Regional Coastal Plan- to be a "coastal environment" plan this time and that it is good to see the long awaited announcement of the Mohaka Water conservation Order (over a decade after the original application)!

Garth Eyles has been frantically keeping up with biodiversity and soil conservation applications to the Regional Landcare Scheme which have been streaming in resulting in a shortage of planting material. A major concern is cut off of research for poplar and willow research in New Zealand. This, says Garth is a the single biggest blow to conservation research since the '50's. However, the WPRC has been working with engineers groups to try to ensure that some FRST money is allocated for such work.

Jude Addenbrooke has had a holiday – sorry discreetly checking out the geology of Mt Arthur/ Mt Owen (real mountains she says)! She has also had success in a riparian project incorporating areas of soil erosion in the Waimarama area in a very visible location and includes flood plain work on a Maori trust (a new process). People, not so much technology is the key to achieving work on the ground as we are sometimes reminded.

Peter Manson is doing his best to find environmental issues at Lake Waikaremoana and is pleased to report all is well and recommends further surveillance. Otherwise, its pole planting season!

Anna Lambourne has had a busy few months at Dexcel developing the Effluent Management Package. The package focuses at compliance and Best Practice and contains information sheets on a number of different aspects of the system and also includes 'A guide to managing farm dairy effluent' booklets for the Northland, Canterbury, West Coast, and Southland. Get in contact with Anna at 027 226 5334 if you would like a copy of the Effluent Management Package."

Peter Manson

Auckland

Treading water here in the Rural Resource Quality team. We are half-a-team down at present, - or perhaps we should say half-a-team UP!? – we like to at least consider ourselves as 'glass half-full' people rather than 'glass half empty'!

In terms of the 'glass half empty' - **Ross Abercrombie** has defected to EW recently, to their sustainable Agriculture programme, and **Rebecca Kemp** has been nabbed by **Jack Crow's** biosecurity section at ARC, working now as a biosecurity officer in the Rodney district. She is looking at trialing some new improved uniform items, including hot pink shorts! Fortunately, with Rebecca remaining in the ARC's employ, she can continue liaising with Landcare groups in the Rodney area, - at Puhoi, Matakana and Whangateau.

Amy Taylor has been slogging away organizing Trees For Survival logistics for the planting season which is now upon us. Approximately 50 erosion-prone and riparian sites will be planted this year by 48 participating schools, getting about 42,000 trees in the ground. Amy has also been chipping away at various other projects including soils/landform information bulletins, about to go to print, and supporting landcare groups in various ways.

Tony Thompson has been working also with landcare groups such as Awhitu and South Kaipara, and has been continuing to work with growers in south Auckland (Franklin) on soil erosion matters. The ARC, Environment Waikato, Franklin District Council and growers are continuing discussions about how best to effectively work together after June this year with sustainable crop production in the district. The parties intend to continue to work together in an education/advocacy capacity into the future, after the Franklin Sustainability Project comes to an end in July. Steve Bryant, contracted to the ARC, has been doing some great liaison work with the growers, getting them to draw up property sediment-control plans and implement works.

Glenys Kroon has been very busy with policy/planning stuff around the proposed Air Land and Water Regional Plan and has also been progressing well to establish riparian demonstration sites on farms. Two sites in the Mahurangi area have been identified and implementation plans are being discussed with the respective landowners. We are aiming to have 4 such demonstration sites in place by this time next year. Our riparian workshops are continuing to be popular amongst farmers, consultants, council staff and many others. We have just run a further 2 one-day workshops, attended by about 45 people. The ARC Riparian Zone Management Guidelines (TP148) is the cornerstone document around which the workshops are run. Workshop presenters include **Tony Thompson, Sam Hill, Shona Myers, John Maxted, Tim Lovegrove** and **Ngairé Sullivan**. Recently, **Clare Feeny** (Environment and Business Group) has provided a fantastic review of our workshop material and delivery, as we continually strive to make the workshops as relevant and interesting to attendees as possible.

The ARC has been assisting Landcare groups with various locally-initiated projects. Of particular note was the recent inaugural 'EcoHero Fun Day' initiated and run by the Awhitu Landcare Group. This event, sponsored principally by NZ Steel, recognised and rewarded local environmental champions for their efforts. The Puhoi Landcare Group also held a riparian walk to discuss issues and options for riparian management in the catchment, attended by about 30 local residents plus ARC and RDC staff.

Rural Water Quality

Glenys Kroon is left holding the baby here while we get staff back on board. Quality Consultants NZ Ltd (QCONZ) are progressing with their annual dairy farms inspections in accordance with our schedule.

Air Land and Water Plan deliberations have been completed and the Commissioners' decisions are being formulated into the final report.

A survey of some of the Region's hydroponic greenhouse operators is proposed for late May to better establish wastewater management practices. Our records indicate that there are currently more than 100 hydroponic greenhouse operations in the region and that wastewater management practices are highly variable. Canvassing operators on the constraints affecting their management of waste hydroponic solutions will assist greatly in the development of a practical code of practice for the industry. The ARC has drafted rules in relation to the management of wastewater from this industry.

Urban erosion and sediment control

April is traditionally an extremely busy month in the run up to the close of the earthworks season, and this year has been no exception. Over 100 applications for extensions to the earthworks season were received and successfully considered and responded to.

Team members traveled to Environment BOP and Gisborne to assess forestry operations in those regions. Good contacts and knowledge was obtained which will assist in addressing the issues that the ARC is facing with forestry in the Auckland Region.

Research – lakes

An intensive fishing campaign was undertaken in lake Wainamu (Auckland's west coast), using a variety of fishing nets. Staff from the environmental research, biosecurity and parks teams set 64 15-metre long nets over a four-day period as part of an ongoing investigation into reasons for the water quality deterioration observed in the lake since 1995.

Over 1,700 fish were captured and comprised the exotic species of perch, goldfish, tench, rudd and catfish. The catch was dominated by small perch and large goldfish. Only a small number of the other species were encountered. Staff will evaluate the results and compile a report on the exercise during the proceeding months, with a view to making recommendations on future operations.

Upper Waitemata Harbour Development Impact Assessment

NIWA have been commissioned to undertake a catchment and receiving environment study to determine the potential effects of urban development on the Upper Waitemata Harbour. NIWA made a presentation to a working group meeting on 22 April on modelling results from the first development scenario. The working group is currently considering additional scenarios for further modelling.

Sediment Effects Review Report

NIWA are preparing a synopsis of the ARC's extensive recent investigations of the effects of sediment on receiving environments. This will provide TAs and consultants with a consolidated document for use in policy making and implementation.

Regional Discharges Project

A review of monitoring protocols for assessing stormwater impacts on sediment chemistry, benthic ecology, water quality, and bathing beach quality is being carried out. Updates to the RDP Blueprint for Monitoring the Marine Receiving Environment (TP168) will reflect the outcome of this review and proposed changes to the Air, Land, and Water, and Coastal Plans, following deliberations by the Hearings Committee.

Rainfall

The rainfall for the month of April across the Auckland region was significantly less than normal. On average, rainfall was 64% below normal, comprising an average rainfall depth of 40 mm (refer to the plot).

Pollution response in Auckland - April

Pollution complaints continue to absorb the majority of the Pollution Response Team's time, with around 100 reported pollution events in the last month. A review of complaints for the calendar year shows that around 1,300 complaints were received last year. Complaint numbers have sustained the high level attained as a result of the ARC's 'Big Clean Up campaign' as the awareness of the ARC activities continue to have a high profile.

The highest proportion of complaints in recent months have related to sewer overflows (around 30% of the total). This may be related to lower public tolerance of poor management practices by the wastewater network operators and the knowledge that we will ensure that problems are resolved.

The Great Drain Game, our interactive stormwater pollution teaching tool for children, has been highly sought after in recent months. The game was most recently used at the Amcor Packaging Health, Safety and Environment festival and, despite appalling weather on the day, was a great success. Further bookings continue to be received from schools, ecological festivals and other educational opportunities through until June next year with requests being received from as far away as Nelson!

Pollution Prevention

Auckland BusinessCare Enviro-Mark Programme

The Auckland Regional Council is partnering with a number of other Auckland Councils (Auckland City, Waitakere City, North Shore City, Manukau City, Papakura District), the Ministry for the Environment and Landcare Research to deliver a programme that promotes business sustainability in the region. Called the Auckland BusinessCare Enviro-Mark Programme, the initiative aims to help businesses to achieve environmental objectives by providing:

- personal, expert advice about environmental management;
- a contribution towards programme costs;
- practical "how to" information; and
- certification with a recognised programme, Enviro-Mark®NZ.

A pilot programme was run on the North Shore last year with nine businesses participating. The programme has been refined, extended to a period of two years and is available to 70 businesses of different types and sizes in Auckland.

Both the Pollution Prevention and the Resource Efficiency teams are involved with this initiative. Benefits to the ARC include an opportunity to proactively engage businesses in sustainable practice, enhance relationships between Councils and the Auckland business community and the potential to influence more than just the companies involved in the initiative through the influence of company supply chains.

Businesses will benefit from expert advice and support in identifying opportunities for improvement and cost savings, site visits and certification of a recognised health, safety and environmental management system.

A monitoring and review programme has been established to measure the outcomes of the programme and provide case studies to further promote sustainable practice beyond this initiative.

Landcare Research & Auckland Regional Council Joint Research – Partnerships & Influence & Proactive Pollution Control: Comparison of Strategies to Engage Business in Pollution Prevention & Control

A partnership has been developed with Landcare Research to investigate the impact of pollution prevention and control initiatives that have been used by the Council in the past. The project is called “Partnerships & Influence & Proactive Pollution Control: Comparison of Strategies to Engage Business in Pollution Prevention & Control”. The initiatives to be reviewed include industry group projects (such as the Electroplating Workshops Project (1999), Concrete Cutting Industry Group Education (2001), Area Blitzes and Catchment Surveys, such as the Upper Otara Creek Target Catchment Survey (1999), the Span Farm Industrial Area Blitz (2000) and other initiatives such as the Environmental Operations Plan, a do-it-yourself guide to identifying and addressing environmental issues associated with a particular company’s activities.

The purpose of the research project is to identify the influence that these programmes have had on the environmental management of the businesses involved, and identify opportunities for improvement in the way in which proactive pollution prevention work is undertaken.

Up to 130 businesses will be interviewed between April – June 2004 by Landcare Research to provide feedback on the pollution control and prevention initiatives and the results will be reported back in July 2004. This information will feed into the development of future proactive programmes.

Contaminated sites

Mary Manastyrski has now returned from a big OE thing, and is currently leading the team while **Sharon Vujnovich** is on maternity leave.

Contaminated site remediation projects continue to be received, assessed, and, where necessary, consented, for a wide range of high risk industry types, particularly those involving the petrochemical industry.

A national project assessing sheep dip sites has been initiated by MfE and the ARC is contributing by assessing our Parks for the presence of old sheep dip sites. In June, trained “sniffer dogs”, like those used by customs to locate drugs, will be brought into New Zealand from Australia for a trial to see if this is the most efficient and effective method of locating sites. The dogs have been trained to use their extremely sensitive sense of smell to locate toxic substances like Arsenic and Organochlorine Pesticides. In Australia, the dogs have been successful at finding these substances, even when the old dip sites have been covered over and/or where, through change of ownership, knowledge of dip site locations have been lost. The dogs will be used at some of our parks to corroborate the information that we currently have on the location of the sites.

Tony Thompson

Northland

Nothing from the far North.



Art meets foresty – Outside Tapawera tearooms

New Members

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

Approved at the Executive meetings on 14 September 2003 and 1 June 2004

- Karyn Hopkins** Has an MSc in Earth Sciences from Waikato Universtiy. Previous worked at Auckland Regional Council processing, monitoring and enforcing Consents. Currently working for Environment Waikato as a Land Management Officer.
- Robyn Skelton** I have recently joined the NZ Landcare Trust as the Regional Coordinator for the Central North Island, based in Tauranga. My position involves the promotion of sustainable land practices and assisting communities to become more involved in land use issues and land management best practice.
- While I will now be involved directly with resource management issues, previously I was only involved indirectly. My previous positions included teaching, workplace-based training, environmental education at a tertiary level and being a member of the Bay of Plenty Conservation Board. I have a BA from Waikato and a Master in Education (Science, Health and Environmental Education) from Deakin, Melbourne.
- My current position with the NZ Landcare Trust requires me to play a sustainable land management co-ordination role at the regional level. This includes working with community, individuals as well as key organisations involved in sustainable land management (government departments, regional councils, trustee groups, ngo's and research organisations).
- Emily O'Donnell** No details to be published
- Richard Falconer** Completed a Bachelor of Science (Technology) majoring in resource and environmental planning at Waikato University. As part of the requirements of this programme completed work experience at Perry Environmental Ltd and Wildland Consultants. Experience gained from these two employers involved waste management strategy including waste reduction and resource reclamation and the relevant sections of the RMA. Also completed fieldwork in ecological surveying and monitoring that relate to NZ commitment to the UNFLLC and the Kyoto Protocol.
- Dennis Cronin** B Agr Sc Lincoln 1972 CP Ag
Farm Advisor MAF Taranaki 1972-81, Consultant Manager MAF/MAF Tech Motueka 81-95, Consultancy Manager Ag NZ Richmond 95-99, MAF Policy Analyst Richmond 99-93, Soil conservator GDC since August 2003. Wide experience in 1:1 consultancy, facilitating sustainable agriculture projects, managing teams of consultant scientists. Now involved in resource consents, general advocacy of resource management matters and editor of 'conservation Quorum'
- Kathy Mortimer** No details to be published

Peter Weir

Currently with Ernslaw One Ltd as an Environmental Manager. Committee member, NZFOA/FIC joint environment committee, joint Education, training and health and safety committee. Nov 2003 - elected to Board, NZ Forest Owners Association.

2001-02 Chair, Forestry Division, Association of Prof. Engineers and Geoscientists BC, previously chair of forest practices guidelines subcommittee.

2001-02 Principal consultant, forest hydrologist & geoscientist, BC. Developed a Land Management handbook on snow avalanches for BC Ministry of Forests.

1999-01 - Senior forest hydrologist & geoscientist, BC multi-disciplinary consultancy. Terrain stability field assessments and Watershed assessments.

1997-1999 - Consultant hydrogeologist, ECAN (auditing AEEs) and other clients, Canterbury

1982-1990 - Geohydrology then Land Use Impacts Group, NZ Forest Research Institute (technical office).

1981 - Environmental Hydrology Group. Soil and Water division, MWD (technican).

James Risk

Gained Bachelor Resource Studies at Lincoln University, worked for three and a half years for Topoclimate South. This was a community-funded project mapping soil types and micro climates throughout Southland and South Otago. My involvement was soil mapping where I was employed as a Pedologist. On the completion of topoclimate I started working as an Environmental Technical Officer for Environment Southland, this involved all major aspects of environmental monitoring, including groundwater, surface water and air monitoring and the running of hydrological and flood warning networks. At the start of 2004 I changed jobs withing Environment Southland to further my career aspirations and am now employed as a Land Sustainability Officer.

Resignations have been received from:

Mary Stewart, Emma Doherty, Nicki Kinghorn, Helen Ritchie

NZARM ELECTIONS

It's an election year for the NZARM Executive Committee.

How about giving some thought to serving NZARM by putting your nomination forward.

Here are some important dates to note:

When	What	Action
16 August	Call for Nominations	Nomination Papers will be sent to all members
13 September	Nominations Close	All Nomination Papers to be with the Secretary
20 September	Voting Papers and Notification of AGM	Sent to all members

All nominations must be **seconded** and **accepted** by the nominated person.

The election closes a week prior to the AGM, the new Executive Committee will be announced at the AGM.

The Executive Committee consists of:

Chairperson

Treasurer

Secretary

Committee Member

**NZARM CONFERENCE 2004
AT CROYDON HOTEL, GORE
11-13TH OCTOBER 2004**

A message from the Convenor Murray Harris and 2004 team

Greetings all from down south as we move into the winter. We are looking forward to hosting this year's conference, which will be centred at Gore. It will have a Southern flavour so those of you who have not ventured south before now is the time to approach your boss and complete the registration form. Time is of the essence as the number of beds may be an issues for those wanting to stay at the conference venue which is the Croydon Hotel .

We have a very small but energetic planning committee and have a few surprises in stall for those who come south. It should be a great learning experience as we tend to do things differently down here but still achieve the objectives of sustainable land and water management.

I would briefly like to comment on some key aspects that members need to be aware of namely:

- **Date planning-** please make a commitment now and put in your diary. You may wish to tie the trip in with holidays with the family for late skiing or a trip to Stewart Island. It is approximately 150 km from Croydon Hotel to Queenstown.
- **Book early-accomodation** -Our aim is to get as many registrants to stay in the Croydon Hotel as possible so book as soon as possible and **share a room if possible**. There are other motels in Gore but these **do not** have reserved bookings.

Please note also that you are asked to make your own bookings for accomodation at the local motels or at the Croydon Hotel.

- **Transport services—Please note** because of the location of this conference we have agreed to provide on Monday 11th 2 buses from the Invercargill airport to Gore and one bus from the Dunedin airport to Gore by 12.30pm at the latest. We will not be providing any special requests for later arrivals unless that works in with our own travel arrangements from Invercargill.

The conference is planned in such a way that we end the conference by way of a field trip which arrives at the Dunedin airport by 3.45pm on Wednesday 13th October. We have checked out flight times & 3.45pm will allow everyone to link in to fly back home.

- **Social activities**-both evenings will be centred around a social function. On the Monday evening after the AGM we will dine informally at the “Moth Restaurant” at Mandeville. *This is optional* so registrants who decide not to come can stay and dine at the Croydon Hotel if they wish or dine elsewhere in town.

On the Tuesday evening we will have the more formal Conference dinner at the Croydon and hope that all attendees are present for this special southern treat

- **Field Trips-great scenery and lots to learn about**

We have planned **two** field trips. Firstly, on the *Tuesday* we will focus on changes in landuse & intensification pressures & travel to the headwaters of the large Mataura catchment arriving back in Gore for the conference dinner. On the last day *Wednesday the 13th* we will travel (with all our gear) northwards looking at landuse management & water quality issues in the Washpool creek area of South Otago & then the complex water quality issues and enhancement programmes on the Lower Taieri catchment then ending at the Dunedin Airport.

We look forward to seeing you in Gore--read on now for the details.....

Regional Meeting Funding

At a recent Executive meeting we discussed the use of NZARM funding under the Regional Meeting title, as there had been little uptake over the last two years. I was concerned that the title conveyed a structural meeting requirement rather than outlining an opportunity for seminars, workshops, and meetings etc. The opportunity to meet and emphasize NZARM issues can and will arise at other types of days organised by members.

The new title is 'Guidelines for NZARM Financial Support', with the aim:

- To assist NZARM members in applying for funding to organise regional meetings, seminars, workshops, field days, and training courses.

It is a subtle change, but one that has prompted two applications for funding. The Gisborne soft-rock harvesting workshop and the Taihape erosion mapping workshop. Articles in Broadsheet are to follow from those workshops.

Every member has the opportunity to apply for financial support, and these events are seen as opportunities for all members. I would really like to encourage non-council members to look at the opportunities this affords you.

Remember that if you intend organising a gathering please ensure there is plenty of time available for people to plan ahead and attend.

You must notify Chris Phillips the NZARM Website Webmaster (Phillipsc@LandcareResearch.co.nz) to also get the event onto the website.

Non-members are very welcome to these kinds of events and should be a part of the audience, but not necessarily. It is a good chance for us to show off NZARM and gain more members.

There will be a full report on all applications that have occurred in 03/04 at the AGM in Gore.

If you have any comments or issues please don't hesitate to call.

I am hopefully going to have a workshop on the use of native trees on farms later this year, in conjunction with Tane's Tree Trust. But you will all be well informed.

Simon Stokes

**NZARM Regional Workshop Gisborne
Forest Harvesting on Soft Rock Hill Country
29th April 2004**

The End of the Golden Weather

I guess you all remember the “German tourists” episode of *Faulty Towers* where Basil’s catch cry was “Don’t mention the war!” Well here in Gisborne we have learnt not to mention the weather – not in front of Trevor anyway. Those who attended this workshop will understand what I mean.....

The one-day workshop was aimed at Regional Council staff involved with land management, land use planning and land use consents. The aim was to share experiences and to discuss the parameters needed to ensure that forest harvesting is environmentally sustainable. It was attended by 29 delegates representing all North Island Regional Councils and one South Island Unitary Authority.

The ice was well and truly broken by a dinner held on the Wednesday evening at a local fishing club (renamed, for the occasion, the “The Soft Rock Café”) – within walking distance of the accommodation. It was during this dinner that 7 weeks of warm dry calm weather ended..... I don’t think anyone actually walked home....

The field trip was to Mangatu Forest - the first conservation forest to be harvested in this district and one in which harvesting has been underway since 1989. A number of discussion points had been circulated prior to the field day but the reality of the trip was that the sheets of paper on which the notes were printed turned to mush and slipped from numbing hands as we concentrated on hearing the words of various speakers above the thunder of raindrops on a sea of umbrellas. At least we were seeing the forest in a realistic state.

The first stop was at the infamous Tarndale “slip”. The road across this feature was finally closed 2 years ago and now it is difficult to even walk across the remaining razor back. This was followed by a further 4 stops where relevant features, issues, consent conditions and outcomes were discussed.

The hoped-for sweeping vistas across vast landscapes of harvested slopes only eventuated now and then, but the discussions were worthwhile anyway. Eventually cover was sought in one of the few remaining buildings from NZFS days, where the issues raised on the pre-circulated notes (summarised below) were discussed in relative comfort.

1. Changes in Forest Management: there have been five different entities managing the forest since 1989 with another assumed to soon to take over.

Q. How can these changes in management be accommodated to best further environmental objectives? Training courses? Forest managers and Contractors be made explicitly jointly responsible?

2. Third Party Involvement in the Consent Process:

Q: Who should be considered as affected parties? Can harvesting effects be construed as being minor? How are cultural concerns handled outside of public notification?

3. The Basis of Consent Conditions: This was the first soft rock hill country forest to be harvested. Under the RMA some researchers had insisted that further research was required before harvesting could commence. GDC was faced with a start from zero in developing consent conditions with a distinct lack of information relevant to the Mangatu situation.

The conditions used have been changed, refined, deleted and added to over the years. The most pronounced driver for change has been ongoing practical experience.

Q: How much reliance should be placed on published research, expert “scientific” advice and practical experience when determining consent conditions? Is there a requirement for additional research to confirm or refute consent conditions? Should practical experience be weighted as heavily as Gisborne District Council uses it? What political support is there for regional councils to carry out or commission research per se?

4. Sourcing Roding Metal: Reasonable quality gravels or stone for forestry roading are in short supply in the soft rock hill country. There is so much aggradation in the upper reaches of the forest that gravel removal has little effect. However, extraction of better quality gravels from the smaller tributaries may have negative effects on hillslope toe support and so the GDC requires a consent for gravel extraction.

Outcrops of harder rock close to roads may be quarried but the overburden from these operations has the potential to overload slopes.

Q: What consent requirements do Councils have for gravel extraction and small scale quarrying? How are these integrated with other forest harvesting activities? What effects are covered by consent conditions? Is resource depletion of concern?

5. Positioning Roadlines: Roads on river beds are not usually accepted practice but here on the aggraded gravels at Mangatu roads have caused no problems. Disturbance is restricted to grading gravels to obtain a smooth surface.

Sidling roads were initially viewed as a significant concern on account of potentially destabilising cuts and fills; both on steep slopes and on gently sloping earthflows. It was learned early on, however, that restricting road locations could complicate harvesting and actually increase ground disturbance.

In practice, with appropriate water control and replanting, sidling roads and landings have caused few problems. Is this a reflection of 15 years of benign weather? (Sorry Trevor – had to use that word).

Q: Should Councils seek detail behind the logging planning practices that result in consent applications, in order to properly consider alternatives? How should cuts and fills be controlled on both shallow regoliths and deeper, crushed materials such as found at Mangatu?

6. Logging Systems which Minimise Ground Disturbance: Heavy machinery and heavy logs travelling across the ground surface can cause intense cultivation, compaction, soil translocation and soil burial.. Disturbed soils are more susceptible to surface erosion.

Various ground based machinery types have been used at Mangatu to reduce ground pressure and soil disturbance. Consent conditions focus on one end of the log being off the ground, safe machinery passage and operating only when soil conditions are not excessively wet.

Ground based tracking across hill country inevitably triggers a consent requirement but track lines may not be known until harvesting begins. Consent conditions therefore moved toward a maximum percentage of ground disturbance rather than defined track lines.

Early cable hauler systems caused excessive log dragging and channels on easy hill country where deflection was hard to achieve and ground based logging proved superior. On steeper slopes factors such as tower height, log loadings etc., that remain critical are not specified in the consent conditions but profiles demonstrating suspension capabilities may be sought as part of the applications.

Downhill hauling is much more limited today as additional roadlines sit haulers lower on long slopes. On concave slopes logs are literally plucked off the slope with little disturbance.

Q: How can Councils best ensure logging systems reflect an appropriate balance between environmental protection and logging cost? What is that balance? What experiences have other Councils had with soil disturbance by haulers? Research shows soil compaction is a temporary effect, likely to be naturally corrected during the next forest rotation – why should we be concerned?

7. Runoff Water Control: In soft rock hill country suspended sediment entering watercourses is not of high priority compared with gross introduction of soil regolith and gravels. This is clearly different where stream values and water quality are higher.

Run off measures are aimed at dispersing water to avoid concentrations initiating gullying, and at keeping as much water as possible away from erosion features such as earthflows, gullies and slumps. In doing so, obviously sedimentation is reduced, but high level measures such as sediment traps are not used.

Concentration of water down hauler lines was an initial concern, but undulating ground and slash deposits seem to combine to prevent this, at least until revegetation occurs.

Roads are metalled, water tabled and culverted. Breastworks are only required on culverts used for stream crossings. Post logging maintenance is critical and there is a tendency, once logging is completed, to ignore preventative maintenance.

Q: What measures should be put in place for runoff control from tracks and landings? Does runoff down hauling channels cause soil erosion problems? What are the critical factors in culvert placement? How can maintenance be assured within the resource consent framework?

8. Slash and Pulpwood Management: There will always be slash, log ends and tree tops left behind after harvesting. Some slash and tree tops gravitate downslope and may be hard to extract from watercourses. Debris pushed off landings may initiate landslides.

At Mangatu accumulations of logging debris have been burnt but now the emphasis is on avoidance. Forestry companies tend not to burn in this forest. Slash is managed to minimise deposits in sensitive areas. Deposits up to a certain mass and piece size are accepted in tributary water courses.

Q: What slash deposits are acceptable in which locations and circumstances? What are the practical solutions to dispose of accumulations in sensitive areas? Is nutrient depletion an issue?

9. Catchment Effects: The success of Mangatu Forest plantings in arresting erosion in the larger gullies and long earthflows has been partially attributed to the benefits of whole catchment harvesting. To avoid a new cycle of erosion beginning following harvesting, larger catchments contributing to a single gully feature have been harvested in two roughly equal “bites” with a 5 year interval. Long earthflows have similarly been split laterally in mid slope.

The five year period is to ensure the critical period between root decay and new root growth is limited to half of the catchment at any one time.

Q: For what size catchments should partial catchment harvesting be required? Is five years an appropriate timeframe? Is this principle something that could be beneficial and defensible where water quality is paramount?

10. Replanting Requirements: The Crown Forest Licence for Mangatu requires replanting. This provision was only included following extensive lobbying from the local community. Consent provisions specify replanting the winter immediately following logging.

The replanting stocking rate is specified. There is good research data on the erosion control effectiveness of trees over time. This can be radically influenced by thinning regimes but general assumptions are made. There are no conditions governing silviculture. The stocking rate required is higher than that used commercially on less erodible land in the Gisborne District where there are no replanting requirements. Stocking rate conditions have changed with time in

Mangatu. Although Mangatu Forest has a mix of land classes when mapped at a detailed scale, for catchment effects and for simplicity, the replanting stocking rate is universally applied.

Q: On what classes of land should replanting be a requirement? What should stocking rates be? Should there be thinning specifications too?

11. The Role of Alternative Exotic Tree Species: In forestry the net return rules and although several species were planted by NZFS in the first rotation all of those areas have now been replanted in *P. rad.*

Consent conditions have required that certain mobile areas be replanted in coppicing species so that root system remain alive at harvest and regrowth be rapid from living stumps.

There some areas that did not hold first rotation forest for several reasons. Consent conditions require that these areas be planted where conditions may have improved and where there is now some ground cover. Coppicing species are required in the harsher sites.

Willow planting is required in very wet areas and in areas where there is stream bank erosion. Planting standards and spacings are critical, as is protection from grazing animals. Altitude and rainfall tend to restrict willow sawfly damage.

Q: In what circumstances can alternative species be justified for mandatory re-planting? Which alternative species should be considered? Do indigenous species have a preferential role?

12. Riparian Setbacks: Main watercourses that do not have aggraded beds are identified on consent maps as “protected watercourses”. These have setbacks for *Pinus radiata* planting. Willows may or may not be required along the gully channel itself, but the intention is to allow indigenous scrub and tree reversion in such areas.

Natural re-growth after harvesting is dense and is predominantly indigenous. Typical species are wineberry, tutu, coprosmas, lemon wood, ferns, flaxes and manuka.

Setback boundaries are specified along obvious slope changes such as the edge of incised watercourses, or as set distances from the channel edge.

In the Mangatu situation it is accepted second rotation harvesting will cause some damage through log dragging. Riparians are not necessarily envisaged as pristine “no-go” areas as that would complicate harvest planning and most likely increase land disturbance. The indigenous vegetation will however negate the need for close stream harvesting where the environment is at its most sensitive and log quality mediocre.

Q: What will be the shading effect upon riparians? How wide should riparians be? Can riparians be successfully integrated with willow trees? Under what circumstances, especially stream size should riparians be considered? Are weeds likely to be a concern?

13. Marginal Strips: Although the cutting rights for Mangatu Forest have been sold, under S24 of the Conservation Act 1987 marginal strips have been set aside for conservation purposes and public access. These extend for 20m from the edge of watercourse beds greater than 3m wide, and of course with aggradation there are many such situations throughout the forest. The strips are often in exotic forest and managed as part of the forest.

Marginal strips are the responsibility of the Department of Conservation. At present the Department appears content or puts up with forest management practices but from time to time some of their staff have suggested ways of changing the land use in these strips to indigenous forest. Such a move, even if over the long term, would have significant impacts on forest harvest planning and most likely increase road construction requirements.

Q: How are marginal strips managed in other regions? Should they necessarily have an indigenous vegetation focus? Does anyone know of any DOC policies regarding marginal strips?

14. Release Spraying: Forest management and Gisborne District Council want replanted seedlings to grow vigorously in order to re-establish a protective tree cover as soon as possible. Competing regrowth can be a wide range of indigenous shrubby species, exotic weeds and grasses. Grass and flat weeds do not tend to establish as a dense sward.

Release spraying is restricted to spot spraying in order to retain the interim soil conservation value of other seedlings between the replanted second crop. Also, protection of riparian areas from helicopter spray drift is far from certain.

Applications for consent condition variations are invited and these have been received with respect to spraying. In the last few years applications have been approved where well established regrowth and in particular hard to eradicate nuisance weeds are present.

Q: How practical is it to manage drift from helicopter spraying of hill country? What is the soil conservation value of indigenous regrowth?

15. Remnant Pines and Wildings: Wilding *Pinus radiata* are a significant issue in the cutover at Mangatu Forest. They have caused forest management difficulties in that superior planted seedlings may be indistinguishable and require expensive hand releasing. This has clearly been one of the reasons behind aerial release spraying aspirations.

From the environmental perspective wildings are of concern in riparian setback areas where it is sought to establish indigenous vegetation by natural regeneration. There have been no attempts to manage wildings in such areas by Gisborne District Council, forest management or third parties.

Q: What density of wildings could cause difficulties in riparian areas? How could wildings be controlled in these areas? Who should be responsible?



Oh – it really did look like one of those trips where you just wanted to stay in the truck!

INDUSTRY TO BUILD GROWER SUPPORT FOR FOREST LEVY

The forestry industry intends to work to build forest growers' support for the introduction of a compulsory commodity levy to promote the development of the industry.

Forest industry organisations – New Zealand Forest Industries Council (NZFIC), the New Zealand Forest Owners Association (NZFOA) and the New Zealand Farm Forestry Association (NZFFA) – today (June 3) released a study by international forestry experts, Jaakko Poyry. The study was commissioned last December to gauge the attitudes and opinions of major stakeholders around the possible introduction of a levy under the Commodity Levies Act.

NZFOA President Peter Berg said that finding a means of equitable and secure funding for industry good activities remained vital for the industry's future.

“Jaakko Poyry's conclusions were drawn from comprehensive interviews with a wide cross-section of industry representatives including most of the leading forest growers and processors as well as a range of smaller growers,” said Mr Berg.

“While the report concluded that there is already a substantial body of grower support for a commodity levy, some significant concerns arose that will need to be addressed if a future industry-wide referendum seeking approval for a levy is to be successful. We will take the time over the coming months to address these concerns.”

Mr Berg reiterated that no levy would be implemented without the clear support of potential levy payers. “We are committed to the utmost transparency with this process and hence our decision to release the Jaakko Poyry report today. ”

New Zealand Farm Forestry Association President Nick Seymour said that farm foresters views had been actively sought during the consultation process.

"Farm foresters are familiar with levies in the agricultural sectors and will want to ensure that any levy will produce net benefits for the payers. We need to do more work to clearly demonstrate the links between proposed levy spending and returns to the forest growers paying these levies."

New Zealand Forest Industries Council Chairman Lees Seymour said the future of existing industry organisations had been identified as an area needing further clarification.

“New Zealand's forest estate is a significant revenue generator within the economy and with production value predicted to quadruple to \$NZ20 billion by 2025, it is critical that there is a united approach within the sector,” he said.

“A more unified and better funded industry structure would also enable us to leverage the new funding for market access and development coming forward under the Forest Industry Framework Agreement (FIFA) announced by the Government last week. Industry will only be able to access these new programmes if it has its own source of funding and structures able to deliver agreed outcomes.”

Jaakko Poyry is an international forestry consultancy company with wide experience in this field. They completed a similar industry report for the Australian forestry sector. Copies of the Jaakko Poyry may be downloaded from the websites of NZFOA (www.nzforestry-nzfoa.co.nz), NZFIC (www.nzfic.org.nz) or NZFFA (www.nzffa.org.nz).

Irrigation likely to have big impact on future New Zealand economy

MAF Media Release 31 May 2004

Irrigation has the potential to make a big impact on New Zealand's economy through increased productivity, according to a report released by the Ministry of Agriculture and Forestry.

The Economic Value of Irrigation in New Zealand report says development in irrigation could increase annual farmgate GDP by between \$330-million and \$660 million by the year 2013.

Currently, irrigation's net contribution to GDP at the farmgate is estimated to be in the order of \$920-million in 2002/03. This is about 11% of total farmgate GDP from all agriculture and horticulture production, and is produced from 475,000ha (3%) of farmed land.

Report author, MAF senior policy analyst, Murray Doak says irrigation has some clear benefits for New Zealand that need to be balanced against other uses such as recreation and environmental objectives.

"Water needs to be sustainably managed, so it is important to find a balance between its economic, environmental, social and cultural perspectives as well as between national and regional interests," he said.

The report looks at two different scenarios for irrigation development.

It says the more likely scenario increases the irrigated area by 201,000 hectares while the possible scenario assumes the irrigated area increases by 470,000 hectares.

The likely scenario consists of about 84,000 ha of private development and 117,000 ha of community scheme development. The second scenario uses the same increase in private development and assumes 386,000ha of community scheme development by 2013.

The modelling was based on valuing the production from current landuse with irrigation, and then deducting the value of the production from the same land if it was in dryland farming systems.

About \$550m of the current value total is from horticultural landuses and \$270m from dairy farming. About 36% of the value comes from Canterbury, although the region contains 60% of the irrigated land.

In the future, horticulture will generate most of the value from new irrigation developments.

In the likely scenario, \$190 million dollars could be produced from additional horticultural production as a result of irrigation. The region to gain the biggest benefit would be Canterbury, followed by Hawkes Bay, Northland, Bay of Plenty and the Waikato.

Additional dairying would add in the order of \$110m nationally, most of which would be generated in Canterbury.

Under the second scenario, the benefits of irrigation would produce in the order of an additional \$274-million of horticulture output and \$195m of dairy output.

For more information contact MAF senior policy analyst, Murray Doak, Tel. 03-358-1860.

Topoclimate South

After months of hard work by a dedicated team from Venture Southland, Environment Southland, Flatout web design, and others too numerous to mention, I am pleased to advise that a key component of the "Farming in Southland" section of the southlandnz.com web site is now 'live' and available to all. This is the on-line delivery of Topoclimate soil and climate maps of Southland. It represents a significant step in The Topoclimate Trust's original undertaking to provide the Southland community and the Government with a tangible and accessible return on their substantial investment in the project.

Close collaboration and cooperation between the team members has resulted in a product which, we believe, is as good as anything you'll find on the Web anywhere in the world. But the proof of the pudding is in the eating, so I am inviting you and a selection of people who have had an interest in the Topoclimate project to thoroughly explore the new on-line resource and give us your personal evaluation.

We do not intend to publicise or actively promote this new site for a couple of months yet because we want you to thoroughly test it first. There are also several other developments still in the pipeline which form part of the "Farming in Southland" suite of Internet information services and which will come on stream over the next few weeks.

At the same time as the Topoclimate maps, we launched the "Weather in Southland" section. This, too, is a 'first' because it is arguably the most comprehensive web-based regional weather forecasting site in New Zealand. It draws upon data provided by the NZ Meteorological Service and features:

- a.. Current weather situation for more than a dozen sites in the region
- b.. isobaric map prognoses, satellite imagery and rain radar
- c.. Ten-day forecast
- d.. National and regional severe weather warnings

Still to come: Pasture Growth

This section will provide monthly pasture growth data for monitor sites throughout Southland and South Otago, plus growth predictions for selected sites.

Please visit the site at southlandnz.com and tell us what you think. I have deliberately pointed you to our home page rather than directly to the sections in question because we want your comments on the whole site structure and navigational experience.

Wayne Hutchinson
Enterprise Manager - Rural Development
Venture Southland

The growOTAGO soil maps – compilation, structure and interpretation

**Ian H Lynn
Landcare Research
Lincoln**

Further to Murray Harris's report in Otago Regional Roundup, Otago Regional Council News, *Broadsheet*, February 2004, the following background and brief description of the soil map component of the council's **growOTAGO** project may be of interest to members.

Landcare Research soil scientists Ian Lynn, Sam Carrick, Trevor Webb and Allan Hewitt, along with GIS specialists Steve Ferriss and James Barringer have largely been responsible for the compilation and presentation of the 43, 1:50,000 scale **growOTAGO** soil maps, and the regional indicative 1:500,000 profile drainage, profile readily available water, and natural soil fertility coverage's.

Derivation of the soil maps

The aim of the **growOTAGO** soil maps is to provide a 1:50,000 soil map coverage for the Otago region. The soil maps are a compilation of a large number of published and unpublished soil maps at various scales together with additional soil surveys undertaken during 2001–2003. During the compilation a number of previous soil series have been merged to provide a uniform coverage of soil series. A regionally correlated and rationalised soil legend is provided for the lowlands (Carrick *et al.*, 2003), while the existing soil set nomenclature (New Zealand Soil Bureau, 1968) has been used for the uplands.

The terrain of the Otago region ranges from rugged steep mountain lands and high upland plateaus, where existing detail on soils is poor, to gently undulating lowland valley floors and downlands, where detail is better but patchy. To accommodate this wide range of terrain and the patchy distribution in the amount of existing detailed soil mapping, two different approaches to presenting the 1:50,000 soil coverage were adopted.

Soil coverage of the Lowlands

In the lowlands of the region DSIR Soil Bureau, latterly DSIR Land Resources had mapped much of the flat to easy rolling land on the valley floors, in the inland Central Otago basins, and the North Otago downlands prior to 1992. Published and unpublished map scales range from 1:7,960 to 1:126,720. The areas where detailed soil mapping was available were field checked, the soils were correlated across the whole Otago region, inclusive of the **growOTAGO** funded work, and the mapping units rationalised for presentation at the 1:50,000 map scale. Correlation was necessary because previous soil surveys had been carried out by a number of pedologists with different objectives over a wide time frame in which there has been significant advances in our understanding of soils, their properties and behaviour. Publication of existing soil mapping dates from 1952 to 1992, and some of the original fieldwork was undertaken before 1946!

The lowland areas lacking existing detailed soil mapping were surveyed at 1:50,000 scale as part of the **growOTAGO** project. Extensive use was made of aerial photographs to identify and map landforms. Soil landscape models derived from the earlier work were extended and field observations including some more detailed 1:25,000 scale mapping funded by the Dunedin Rural Development Inc. were utilised.

Soil types were mapped according to differences in their New Zealand Soil Classification (NZSC, Hewitt 1998). In the lowland areas a new name was assigned where a different NZSC class was identified. Where possible, soil names were based on those previously identified in earlier surveys. Soil names were changed or new soil names were assigned where:

- the same soil name may have been used in different soil surveys to identify different soil types
- different soil names may have been used to identify the same soil type
- a soil type may not have been previously identified.

The correlation and rationalisation of these soil series and the incorporation of those identified in the new mapping undertaken during the programme resulted in a 2400-row by 55-column spreadsheet causing our PC's to struggle!

The Lowland soil series are depicted by codes unique to the **growOTAGO** soil maps and begin with letters, Fig 1.

Soil coverage of the Uplands

In the limited areas where detailed soil mapping in the uplands existed, these areas were simplified to 1:50,000 scale. The soil series recognised in these areas of detailed mapping have been included in the regional lowland soils legend, and are also depicted by codes beginning with letters. To further assist in distinguishing these areas on the soil maps they are also depicted by the lowland colour shades.

For the balance of the upland hill and mountain lands, the New Zealand Land Resource Inventory (NZLRI), (National Water and Soil Conservation Organisation 1975-79) interpretation of the 4-mile soil set coverage has been used. The NZLRI soil boundaries provide a 1:63,360 scale interpretation of soils and landforms. This coverage has been overlain on a 1:50,000 scale digital terrain model allowing the texture, aspect and grain of the hill and mountain lands to be readily visualised through the soil layer.

The upland soils are depicted by codes beginning with numbers, which are the same as those used for the soil sets of the General Survey of the soils of South Island, New Zealand (New Zealand Soil Bureau 1968), Fig 1.

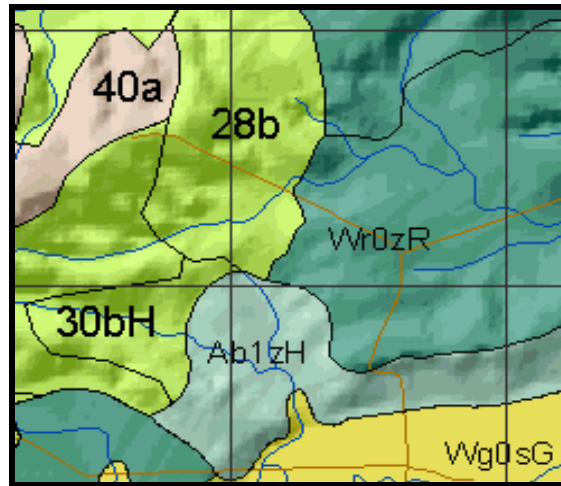


Figure 1: Part of soil map I42, Waikouaiti showing the upland soils coded by numbers, (28b Warepa soils, 30bH Abbotsford Hill soils, and 40a Taratu soils); and the lowland soil series coded by letters, (Wr0zR Warepa deep silt loam rolling, Ab1zH Abbotsford moderately deep silt loam hilly, and Wg0sG Wingatui deep sandy loam gently undulating).

Understanding the 1:50 000 soil maps - Soil Classification and soil map colours

Both the upland and lowland soils are depicted on the soil maps using standard sets of colours. Soils have been coloured according to their classification at the Order and Group levels of the NZSC (Hewitt, 1998). To distinguish the detailed upland and lowland surveys, from the more generalised uplands survey, different colour shades have been used.

Soil classification is a means of identifying the underlying order and pattern that occurs in the soil landscape and allows different soil types to be identified in a consistent manner throughout New Zealand. The NZSC is based on identifying clearly defined measurable soil properties, and the depth at which these properties occur within a soil profile. In this sense, soils in Otago, Canterbury, and Southland with the same soil properties will have the same NZSC, and once a national wide correlation has been completed these soils will have the same soil series name. This consistent classification between regions allows for greater sharing of knowledge in the development of New Zealand's collective understanding of its soil resource.

The NZSC is based on a four-tier hierarchical structure:

Order > Group > Subgroup > Soilform

Unique soilforms are identified as soil series and given geographic names, e.g. Gladbrook soils. The level of detail of soil properties increases at each level down the hierarchy. The soil types of the Otago region are classified to soilform level. An example of how the hierarchy applies to the classification of some common Otago soil types is given in Figure 2.

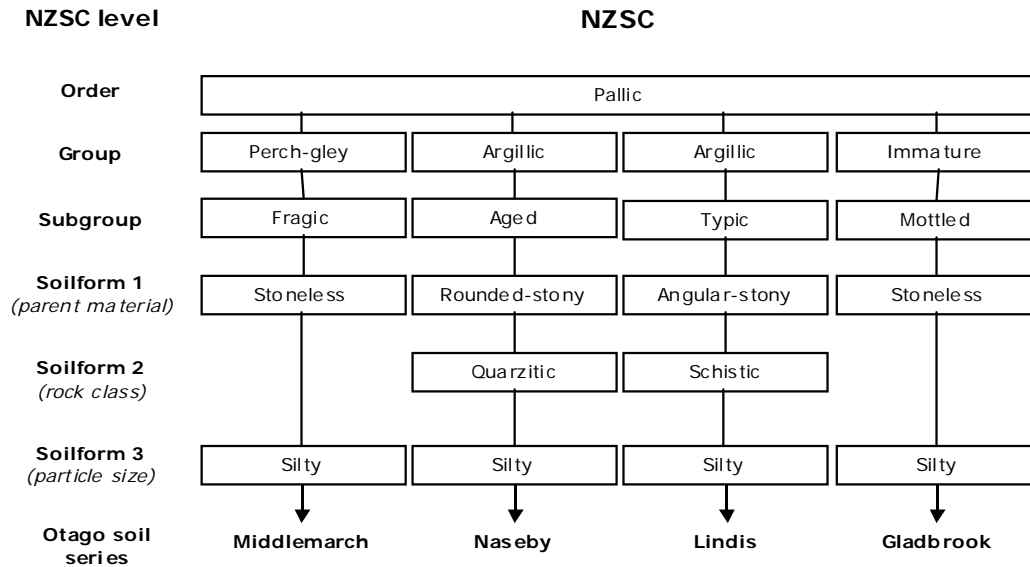


Figure 2: The New Zealand Soil Classification relationship of four common Otago soils.

An explanation of the key concepts for the first level of the NZSC by which the soils are coloured on the soil maps is set out in Table 1.

Lowland soil legend

Interpreting lowland soil symbols

On the **growOTAGO** soil maps the abbreviated soil symbols used for the lowland and upland areas with existing detailed mapping have four components. The first two letters (eg. **Gd**) represent the soil name and can be identified by reference to the lowland soil legend, arranged by landform, parent materials, age and soil depth on the left hand side of the map sheet. The following number (**0, 1, 2, 3, or 4**) denotes the depth of the soil profile. The following lower case letter or combination of letters separated by a back slash, represents the fine earth texture of the soil in stratigraphic sequence down the profile. The following upper case letter (**G, H, R, S, or U**) denotes the slope or topography of the land. In some cases there is an additional ^ and upper case letter or combination of letters that denotes extra information defined as a phase or 'variant'.

- For example: **Gd0zU^M** = Gladbrook deep silt loam, undulating, mottled phase.

The values associated with each class of depth, texture and slope are detailed in an 'Interpreting lowland soil symbols' box on the soil map legend.

Table 1: Explanation of the growOTAGO soil map colouring scheme.

Map colour	Soil Order and explanation of the key concepts of the Order
Orange	Anthropic soils - soils disturbed/created by man e.g. as a result of mining activity.
Brown	Brown soils - have yellowish brown subsoils, stable well structured topsoils, are well to imperfectly drained, with low to moderate fertility and are generally drought free.
Grey	Melanic soils - have high fertility, dark, well structured topsoils, and are associated with lime-rich rocks or dark (basic) volcanic rocks
Blue	Gley soils - are saturated by water for prolonged periods and have pale greyish subsoils, originally wetlands.
Dark Blue	Organic soils - formed from partly decomposed plant materials (peat), are strongly acidic and have high water tables.
Green	Pallic soils - have pale coloured high bulk density subsoils, weak structure, are slowly permeable and have limited rooting depths. They are dry in summer and wet in winter.
Yellow	Recent soils - formed in young sediments. Have distinct topsoil, but weakly developed subsoils, with moderate to high fertility and are well to imperfectly drained. They have widely variable rooting depths and water storage capacities.
Pink	Semiarid soils - are dry for most of growing season, with moderate to high natural fertility, and are well to imperfectly drained. They are fragile with weak soil structure, and very low organic matter.
Light Pink	Allophanic soils - dominated by allophanic minerals that maintain a porous, low bulk density structure with weak strength. They have stable topsoil structure and high phosphate retention.
Light Yellow	Raw soils - are very young soils lacking distinct topsoil, on active sites of deposition or erosion.
Purple	Podzol soils - occur in high rainfall areas, are strongly acid and strongly leached, with very low fertility. Drainage is variable from well to poorly drained.

Upland soils

The upland soils are depicted by codes beginning with numbers (Fig 1), which are the same as those used for the soil sets of the General Survey of the soils of South Island, New Zealand (New Zealand Soil Bureau 1968), for example 41b, Silver Peaks Steepland soils. Further information

on the parent materials, native vegetation, topography rainfall, a representative profile etc is contained in Soil Bureau Bulletin 27 (New Zealand Soil Bureau 1968).

Indicative Regional attribute maps

Three indicative maps have been produced to provide a regional overview of profile drainage, profile readily available water, and natural soil fertility at a scale of 1:500,000. These maps have been generated from the regional 'fundamental data layers', part of the National Soils Database, (Barringer *et al.*, 1998). Attribute values have been determined for each of the soil sets mapped in the Otago region.

Further details on the soil and climate parameters of the **growOTAGO** programme are contained in the companion booklet to the **growOTAGO** project soon to be published by Otago Regional Council, Tait *et al.* (2004).

Although not directly satisfying Murrays' request for soil mapping at a scale of 1:20,000 suitable for farm planning, (should the community be paying for this level of detail?), the **growOTAGO** 1:50 000 scale soil maps provide for the first time a correlated and rationalised soil coverage of Otago suitable for regional and local scale decision-making and planning.

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Mutterings from the Ministry.....

Sue Powell
MfE

Lake Taupo

As you are aware Lake Taupo water quality is under threat mainly by nitrogen inputs from farms. Environment Waikato has identified that these inputs need to be cut by at least 20% to maintain current water quality in the long term.

Environment Waikato, together with Taupo District Council and Ngati Tuwharetoa, has been working with us to look at ways they can reduce the nitrogen levels. They are proposing to encourage landowners to diversify to low nitrogen land uses through a mixture of financial incentives and regulations. It is hoped that land use regulations will prevent or severely limit landowners' ability to increase nitrogen inputs by intensifying pastoral production within the catchment. This anchors in gains made when land owners opt to change from pastoral to alternative lower nitrogen leaching land uses (e.g. forestry or horticulture).

This is the first time that such an ambitious environmental package requiring land use change has been undertaken on this scale. It has involved a massive collaborative effort, and a lot of hard work. Local Government are really contributing the majority of the work, which we are supporting through government funding. In the Budget 2004, the Government committed \$7.5 million to Lake Taupo over four years, which is great news.

Manawatu Floods

As a way of providing assistance to councils, we will undertake an overview study of the river systems and catchments in the Manawatu region drawing. The study will look at the impacts of the flood event on the flood protection works in the region, and the current capacity of the river channels to receive flood waters. It will also look at what is required to repair existing schemes (the flood damage claims), the extent of the hill country erosion and what effect this erosion debris will have on the capacity of river channels, and what new protection works may be needed for small communities not currently protected etc.

The study will also feed into other independent reviews on sustainable pastoral hill country and river systems.

Just out of interest, the Ministry of Civil Defence and Emergency Management are processing the damage claim submitted by Horizons Regional Council, under the Civil Defence Recovery Plan.

Land Cover Database 2

The land cover database is set to be launched in July. It is based on the landsat images taken during the summer of 2001/02 and documents the changes in land cover since the summer of 1996/97. We hope it will be a great resource for both local and central government.

Water Programme of Action

The Water Programme of Action is gaining real momentum at the moment. The three working groups are in the process of finalising their summary papers. We hope to brief the Government and seek approval for the next steps by the end of June this year. The Stakeholder Reference Group met for the first time at the beginning of March and is set to meet again soon. The Maori Reference Group has also met. These two groups will provide a sounding board for policy development and provide advice on consultation processes. We are aiming to run public consultation in September/October 2004. The input we have received from Regional Government has been highly valuable and a great resource for the Water Programme of Action.

Biodiversity on private land

Research, by MfE, DoC, and Local Government New Zealand, into New Zealand's biodiversity on private land has shown that more than 146,000 hectares of New Zealand's total land area is protected by covenants on private land, which is great! Central and local government have also been playing their part by providing approximately \$5 million each to contestable funding for biodiversity in 2002/03. This highlights the great job local government is doing in protecting biodiversity on private land.



One of those old East Coast historical photos

TREATING POPLAR AS A CROP SILVOPASTORALISM USING TENDED POPLAR

Ewan McGregor
Waipawa

Introduction

The integration of trees into farming systems has become a practice increasingly adopted by the modern New Zealand farmer for a range of reasons. This enlightened development in landuse technique has followed a century of purposeful, but thoughtless deforestation by a succession of generations of farmers in the belief that trees were an impediment to livestock farming, which to a large extent they obviously were.

This latter-day reforestation has taken a number of forms for a range of objectives. It may be woodlots primarily for timber, but also for erosion control, weed suppression and stock shelter. It may be shelterbelts along fence lines; native bush restoration for ethical reasons; amenity plantings; or willow (*salix*) and poplar (*populus*) pole plantings over grassland for a combination of reasons.

It is the very last - ***Silvopastoralism using tended poplars*** - that is the subject of this paper.

The following areas of the subject will be covered;

- **Genus choice**
- **Benefits**
- **Formula for success**
- **The need to utilising the mature tree**
- **Conclusion - our choice**

Genus Choice

Why poplar?

1. Because poplar has, with the closely related genus willow, an ability to readily propagate under field conditions from a pole - simply a large cutting long enough to be above the reach of sheep and small cattle. Willow however, while able to establish under harder conditions, especially exposed windy, and very wet sites, lacks the apical form of poplar. This makes it an ideal tree for pollarding or coppicing for the purposes of high-value supplementary stock fodder, in addition to the other reasons for which it may be planted, but this is not the subject of this paper. The central-leader form of poplar is a crucial characteristic in the practice of the silvopastoralism, which I am promoting here.

There is no reason why we can not establish silvopastoral systems using species other than poplar, but the small rooted transplanted trees will need more comprehensive protection, or the removal of stock while they establish. The relative ease of establishing poplars from poles while grazing continues is a vital advantage that enables extensive plantings over commercial farmland.

2. Poplar is a robust grower under New Zealand conditions, as is evidenced from plantings over many decades. Like most hardwoods though it is relatively site-selective and growth rates fall off rapidly under harder conditions. Such sites should be avoided. Under favourable conditions

the poplar can reach a substantial size within two to three decades. This compares with radiata pine, but pine is far more adaptable on difficult sites - we are spoilt by this superbly productive species.

3. Poplar is deciduous. This to my mind is crucial in that for an extended period the tree is leafless and allows sunlight penetration to the pasture over the very period when it is most needed. There are also the factors of feed supplementation from leaf-fall, especially under drought conditions, and the impact on soil fertility. The higher mineral content of these shed leaves has implications for both those factors - stock nutrition and soil fertility.
4. Poplar is a tree offering fine amenity enhancement. It has the ability to majestically adorn the vista with its high colour in both spring and autumn (the latter with the modern rust-resistant varieties), and the greening of the summer landscape - remember I come from coastal Hawkes Bay. This is a statement best made by photographs.
5. Poplar has natural apical form. That is, it has a propensity to maintain an erect central leader without heavy and dominant branching until a crown develops in the maturing tree. It might need a little help from man though.

At the top of the pole usually several shoots will sprout which may lead to several secondary leaders or competing leaders of equal dimensions. This can be easily corrected with pruners after one or two years. This is the most fundamental act of silviculture that will set the form of the tree for the rest of its life, even if there is no further side-branch pruning.

But to get the best out of the tree pruning should be carried out for at least 5 or 6 metres. This will serve to keep the crown of the tree well above the pasture, hence reducing eventual excessive shading. And naturally it will significantly improve the tree for the purposes of harvesting for timber. Unfortunately poplar's propensity to coppice, a characteristic enabling its establishment from a pole - makes good pruning practice somewhat challenging, but certainly possible.

6. Globally poplar is an accepted timber producer. Poplar is one of the most commonly cultivated geneses for timber production over many countries and continents. It is applied to a wide range of uses including pulp, processing, veneer (it peels well), manufactured board, lumber, medium-value furniture, and internal panelling, and speciality uses, especially where foodstuffs are involved. It is also used in the Netherlands for clog manufacture.

If we are seriously to commercialise poplar we must focus on niche and medium to higher value markets that match the limited resource. Unfortunately we tend to see radiata as the benchmark in our timber thinking, and of course nothing, including poplar, can seriously compete in scale. But poplar is a timber with different characteristics and grown under different landuse regimes.

If I were setting aside land from pastoral use and dedicating it to timber production poplar would not be my species choice. There are many more productive and valuable species available to the New Zealand forester. It is the combination of other characteristics listed above that makes poplar the priority choice under silvopastoral systems. The fact that it has a commercial timber value is a bonus demanding exploitation.

Benefits of poplar silvopastoralism

Silvopastoralism is the combination of timber and livestock production. I view it from the perspective of the farmer where the emphasis is on the latter, with timber being the bonus. With plantation woodlots the emphasis is the other way around with the land dedicated to wood production and limited grazing and stock shelter being a by-product.

The benefits to the farmer are:

- ✓ Protection of natural resources - soil, water and atmosphere. This may include the mitigation of ground-water pollution either through mineral up-take or water reduction through transpiration under intensive all-cattle systems, especially dairying. This is an area demanding more scientific investigation.
- ✓ A direct aid to livestock production. These are -
 - Shelter from cold and/or wet weather. This is during the period when the tree is in leaf, but while shelter will be greatly reduced during winter there will be some wind reduction from mature leafless trees.
 - Shade. Under extreme conditions of summer heat temperatures in the shade of a tree will be reduced by about a third from those in full sun. Stock naturally seek shade through extended periods of the day, moving out periodically for grazing and water. The stock therefore testify to their own comfort.
 - Supplementary fodder from prunings and autumn leaf fall. The latter is especially a factor during periods of drought when fresh leaves are shed as the tree defends itself against transpiration. These are readily ingested by stock, which are obviously likely to be grazing drought-affected pasture. Tied into this is a higher mineral uptake from tree leaves. This is an entirely costless process - pennies from heaven!
- ✓ Ability to meet market expectations that our animal products are derived from livestock reared under demonstrable conditions of good welfare and comfort. This is looming increasingly as a potent marketing factor and the producer, both individually and collectively, will ignore it at his peril.
- ✓ Landscape enhancement. This, if done thoughtfully (often not the case), will emotionally enrich the life of those who live on, work on or visit the land. But it will also make a significant commercial contribution through capital enhancement - a landscaped property commands a higher real estate value - and adding to the dimension of landscape within the tourist industry.
- ✓ Timber.

General indication of likely Cost/Benefit

Assumes the sustained planting of 400 poles and harvesting 370 logs annually on a 30-year rotation. (Therefore on a 400 hectare property there would be an average stem density of about 30 per hectare)

Cost:

400 trees @ \$18 per tree including full silviculture.....\$7,200

Benefit:

Resource protection - What \$ value?

Increased production through improved animal welfare and influences on fodder.....5% increase

Increased market returns by promotion of national stock & environmental standards....1% increase

Capital value increase & improved living environment through amenity enhancement - what \$ value?

Timber - 370 logs @ \$100 (net) each.....\$37,000

Formula for success

Successful silvopastoral practice with poplars depends on -

1. Selection of correct varieties. Our poplar (and willow) breeders have done tremendous work over a long period and the grower has available a range of varieties developed for New Zealand conditions. Regional Council Land Management Officers have the experience to give good advice.
2. Appropriate site selection and planting method. If the digging is hard, find an easier site! On marginal soil conditions I favour digging a hole and back-filling and ramming the pole as opposed to crowbarring a pilot hole and driving the pole.
3. Protect the pole from ring-barking and from damage by cattle for an appropriate time (suggest two years). Under all-cattle systems you have a problem - consider hot wire protection.
4. In the first year take the trouble to water if it will help ensure establishment. Perhaps once with a 20-litre container will be enough. A release spray around the pole will also aid soil-water retention.
5. After a year or two at least reduce shoots to one strong leader. Ideally prune to (say) six metres.
6. If widespread failure is experience through a dry, windy first season (as occasionally happens, unfortunately) don't lose your nerve. Go back the next year and replant - it usually turns out to be a good one. If you get dumped from a horse, get right back on it.

The need to utilise the mature tree

With timber plantations the management process from seed collection, through genetic enhancement, propagation, silvicultural management to utilisation is focused on the removal of the tree from the landscape - i.e. harvest.

At the other extreme is the pure conservation indigenous forest estate where the death of the tree is part of the biodiversity dynamics.

In the middle - our amenity, resource protection, and shelter plantings - however, our strategic preparation for the trees removal is woefully inadequate. Indeed it usually rates not at all. This applies to most of our poplar plantings, although I hasten to acknowledge an increasing tendency by some farmers to manage the tree and of Regional Council Officers to at least make passing reference to the desirability to do so.

I regard the commercialisation of the poplar trees as not just an opportunity but an obligation. It is not only to turn the traditional cultivation of poplar to direct economic advantage through the production of a marketable log, although this would naturally be welcome. It is to remove without financial burden these trees when they reach the point where their presence on the landscape becomes a diminishing asset and an increasing burden, and to allow for a renewal of the process.

Unless we establish a standard, *indeed an ethic*, of disciplined silviculture combined with a strategy to develop markets for poplar timber we will be leaving a heavy burden for future generations of landowners and New Zealanders generally. These trees will grow to a prodigious size within a century or so and their removal, if they have no commercial value, will be a gigantic and costly task. Poplar, by the way, has reasonable above-ground durability and, further, is a poor burning timber. (There is no better illustration of what is likely to be the long-term outcome of no removal strategy than the *Populus deltoides* at Frimley Park in Hastings - at 2.8 metres in diameter the biggest in the world.)

Such a degradation of the landscape - the very antithesis of the original planting objectives - must not be allowed to happen and it need not happen!

Primary responsibility for implementing silvicultural standards lies of course with the landowner, but as poplar and willow planting programmes have been promoted, and in some cases subsidised, for years by Regional Councils these bodies have a responsibility too. In my view this is an area crying out for public leadership. It is lamentably lacking. To just establish the tree and then leave it to do its own thing is akin to raising lambs to weaning, and then just leaving them to their own resources. Our task must extend beyond just *establishing* trees over our pastureland, and our vision must extend beyond the stage when the tree most optimally meets its purpose.

Conclusion

I believe we have a clear choice. We can to continue poking poplar (and willow) poles in the ground for the benefit of one, maybe two generations, but with no contemplation of the long-term consequences and thus destine generations beyond with a major land imposition on the landscape.

This approach is visionless and selfish.

Or we can treat poplar as a crop dignifying I with managerial disciplines that both further their effectiveness throughout their useful life and provide a harvestable product at the end of that useful life. This I see as an exciting new dimension to our farming industry.

The choice is ours.

PS: Poplars (and willows) cultivated without an exit strategy are likely to become an encumbrance on the landscape. Indeed, they already are in some cases, with at least a hundred years of growth still to come.

(I was invited to present this paper by Don Polson, who, I am sure you appreciate, had his and his brother's farm devastated in the February floods.)

COMING EVENTS - CALENDAR
(from Royal Society NZ Alert)

2-11 July 2004	New Zealand's icon science event celebrating and promoting the country's achievements and advances in science, technology and the environment. Please contact us for more info or to register your interest in participating. Michelle McCormack, PO Box 5819, Dunedin 03 474 9256 03 474 9246 projects@scifest.org.nz http://www.scifest.org.nz
6-9 July 2004	International Conference on Sustainability Engineering and Science Sheraton Hotel and Towers, Auckland, New Zealand Vicky Adin, PO Box 272 1460, Papakura 09 299 7538 vickya@kiwilink.co.nz http://nzsses.org.nz
10-13 August 2004	International Conference on Forest Entomology and Biosecurity Hanmer Springs, New Zealand eckehard.brockerhoff@forestresearch.co.nz http://www.forestresearch.co.nz/iufro2004
10-11 August	6th New Zealand Natural Hazards Management Conference Baycourt, Tauranga, New Zealand Diane Tilyard, Private Bag 2000 Taupo 07 374 8211 07 374 8199 d.tilyard@gns.cri.nz http://www.gns.cri.nz/news/conferences
11-13 October*****	51st NZARM Conference Sustainable Progress – the Southern Approach Croydon Hotel, Gore Murray Harris 03 467 9257 landfors@es.co.nz
19-21 October 2004	New Zealand Grassland Association Annual Conference Methven, New Zealand mail@grassland.org.nz http://www.grassland.org.nz
4-6 November 2004	"Risk in the Real World" 2nd national conference of the NZ Society for Risk Management, Te Papa, Wellington 4-6 November 2004 International and NZ experts on the technical, social and environmental aspects of risk. Special focus on risk governance and decision making. Key topics: risk and culture, legal, environment, finance, social policy, security, risk communication. Jules Maher, jules.maher@telecom.co.nz REGISTRATION http://www.risksociety.org.nz

