

Plants in a human landscape – *conservation outside nature reserves*

NZPCN Conference programme

Christchurch

7–10 October 2010



New Zealand Plant Conservation Network

PO Box 16-102

Wellington

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www.nzpcn.org.nz

Sponsors

Principal sponsors for this conference are Biofunds, Department of Conservation, MAF Biosecurity New Zealand, Environment Canterbury, Christchurch City Council, Friends of Christchurch Botanic Gardens, Black Cat Cruises.

We thank them all for their support of the Plant Conservation Network and this conference.



Department of Conservation
Te Papa Atawhai



Welcome and conference overview

Welcome to Christchurch for the Plant Conservation Network's conference entitled *Plants in a human landscape - conservation outside nature reserves*. The conference organising team and I would like to thank you for participating and hope that you will enjoy this exciting event.

We are honoured to have Alan Mark attending to present this years Tane Ngahere keynote lecture on Saturday morning, as well as Professor Steve Wratten and John Clemens giving Keynote addresses as part of our conference symposia.

We also have an excellent, diverse line up of speakers that will I hope, with your help, continue the debate about how best to manage biodiversity outside of nature reserves.

I would like to thanks the team involved in planning and organising this conference. It takes a lot of effort to bring together an event like this so please make sure you let the organisers know that you appreciate their efforts.

I hope you will have a great time over the next few days. Please make the most of your time here, enjoy yourself and leave inspired and ready to continue conserving and promoting New Zealand's native plant life.

Philippa Crisp

President, New Zealand Plant Conservation Network

Quick guide to the conference

Thursday 7 October

5.30–7.30 p.m. Welcome event at the Christchurch Botanic Gardens Visitor Centre (off Armagh Street, see map opposite). Event sponsored by the Friends of the Botanic Gardens.

Friday 8 October

Canterbury Horticultural Society rooms, 57 Riccarton Avenue, Christchurch (see map opposite)

8.15 a.m. Registrations open

9.00 a.m. Conference first day begins

5.00 p.m. New Zealand Plant Conservation Network AGM

7.00 p.m. Conference dinner

Saturday 9 October

At the Canterbury Horticultural Society rooms

8.15 a.m. Registrations open

9.00 a.m. Conference second day begins

5.00 p.m. Conference second day ends

Sunday 10 October

8.30 a.m. (sharp) Field trips depart from Canterbury Horticultural Society rooms

4.30 p.m. Field trips return to Christchurch

Sponsors

Principal sponsors for this conference are Biosecurity New Zealand, Biofunds (of the Department of Conservation), Environment Canterbury and Christchurch City Council. We thank them all for their support of the Network and this conference.

The organising team

The organising committee for this conference were: Sally Tripp, Bede Nottingham, Rhys Taylor, Eric Scott, Mike Oates, Philippa Crisp, Susan Wisser and John Sawyer.

Venue

The conference will be held in the Canterbury Horticultural Society rooms (57 Riccarton Avenue, Christchurch). Morning and afternoon teas and lunches will be provided.

Emergencies

In case the building is to be evacuated (earthquake etc) the assembly area is the front or rear of the building.



Registration desk

The conference registration desk is located in the entrance to the Horticultural Society. It will be open from 8.15 a.m. on Friday 8 October.

Catering

All morning and afternoon teas and lunches will be served in the rooms in the venue. The conference dinner will be held on Friday 8 October at the conference venue.

Conference dinner and Network Awards ceremony

This will be held on Friday 8 October from 7pm onwards. The venue is the conference venue—the Canterbury Horticultural Society rooms.

Cell phones

Please have your cell phone turned off while in conference sessions.

Messages

All messages for conference attendees will be posted at the registration desk.

Name badges

Conference attendees are requested to wear name badges at all times as admission to sessions and morning and afternoon teas and lunches is by name badge only.

Instructions to presenters

If you are a presenter please read the following:

1. Note the date and time of your session and the time available for your talk.
2. Please see the Chair of your session 10 minutes before it starts
3. Please bring your presentation on a CD or USB/Flash Drive. Please ensure it is loaded onto the lecture room computer well in advance of your presentation.
4. Please note that most presentation slots are 20 minutes long. Session chairs will stop you at 18 minutes for questions before the next speaker.

Instructions to those with displays or posters

If you would like to put up a display of a poster please ensure it is installed on boards in the main Templin Hall before 9.00 a.m. on Friday 8 October. Please remove them by 5.00 p.m. on Saturday 9 October.

Public transport, taxis and airport transport

Christchurch has a relatively good public transport system. Most buses run through the centre of the city.

Taxis

Various taxi companies are available for all flights.

Travel time: 15–20 minutes to the city centre

Cost: \$30–50. Prices may vary by each taxi company.

Preferred suppliers at Christchurch International Airport are:

- Corporate Cabs—ph: 03 379 5888; free phone 0800 808 544
- Gold Band Taxis—ph: 03 3 795 795; free phone 0800 3795 795, www.goldbandtaxis.co.nz
- Green Cabs—ph: 0508 447 336
- Blue star—ph: 03 3799 799; www.bluestartaxis.org.nz/

Shuttles

A door-to-door service is available, from various companies, to all parts within Christchurch.

Travel time: 20–30 minutes to the city centre

Cost: \$15–20 per person. Cost reduces for two or more passengers travelling together.

Buses

There are three Christchurch bus services that run from the airport to the city centre, the number 3 to Sumner via the city, Avonhead and Riccarton, number 10 via Merivale and number 29 via Fendalton. All buses arrive and depart from international coach park, at the end of the International Arrivals Hall.

Smoking

Smoking is not permitted inside the Canterbury Horticultural Society buildings.

Field trips

Three field trips will be held on Sunday 10 October. All field trips depart at 8-30am from the Canterbury Horticultural Society building car park (57 Riccarton Avenue). They will return by 4.30 p.m. A packed lunch will be provided.

Three trips are being offered:

Banks Peninsula

This field trip highlights the conference's theme of "Conservation Outside Nature Reserves" with 4 different conservation models on private land as examples:

- Rununga land: Taukahara—forest
- QEII covenants: Zephyr Valley and Ohinetahi—regenerating forest/rock outcrops
- Private gardens: Sally Tripp—ferns/shrubs and other delights
- QEII covenant: Prices Valley—primary podocarp/hardwood forest
- Banks Peninsula Conservation Trust covenant: Hauroko (Mansons)—coastal shrubland

The 'Greening Waipara' project – biodiversity conservation in North Canterbury vineyards and Lincoln University Dairy Farm

The Waipara Valley in North Canterbury is New Zealand's fastest-growing wine region, with around 80 vineyards covering 1500 hectares. Greening Waipara is a world-leading, research driven project that aims to restore functional biodiversity to agricultural ecosystems by way of "ecological engineering"—making them more sustainable, profitable and marketable. The project is based at the Bio-Protection Research Centre, Lincoln University and since it began in September 2005, 52 Waipara Valley properties have joined the project and over 25,000 native trees, shrubs and groundcovers have been planted.

Vineyard biodiversity trails have been established at four Waipara vineyards and wineries: Pegasus Bay Winery, Torlesse Wines, The Mud House Winery and Café and Waipara Springs. A fifth trail is now underway in a very different setting—Omihiri Primary School, ten minutes north of Waipara on State Highway One.

The trails offer visitors a chance to see Greening Waipara in action, exposing visitors to a range of plant and animal species that were once common in the Waipara Valley landscape. They cover wetlands, dryland scrub forests with weta motels, lowland forests complete with lizard lounges and pine discs harbouring native snails, slugs and beetles.

The Lincoln University Dairy Farm aims to develop and demonstrate world-best practice in dairy farm systems, enhancing productivity while maintaining a sustainable environmental profile. As part of the farm's long-term plan, 16,000 eco-sourced native plants are being planted along road boundaries, drains and pivot lines to provide shelter and habitat for beneficial insects and birds, especially where shelter belts, hedges and trees have been removed as part of irrigation development.

Quail Island

Quail Island (81 ha) in Lyttelton Harbour was a source of food for the local Maori, a leper colony, a quarantine station for animals and a convalescence hospital. The island was farmed but never successfully. It was privately owned then managed by the former Lands and Surveys Department. In 1975 it was declared a recreation reserve and is now managed by the Department of Conservation. Sheep and rabbits reduced the vegetation on the island to resemble a closely cropped lawn.

For the past twelve years the Otamahua/Quail Island Trust has been planting eco-sourced indigenous trees on 31 ha. About 70,000 trees have now been planted. As well as planting the Trust has managed an animal pest control programme that has rid the island of rabbits, hedgehogs, rats, mustelids and, finally, mice. With the removal of predators bellbirds and native pigeons are increasing in numbers. The lizard population is flourishing. There is now a very successful white flippered penguin colony established on the island.

Leaf vein slugs, beetles and the Bank's Peninsula tree weta have been successfully introduced. Visitors will be escorted around the island and shown the progress of this restoration project and will have the opportunity to plant a tree or shrub.

Conference Programme

THURSDAY 7 OCTOBER (5.30–7.30 P.M.)

Food and drink—free event at the Christchurch Botanic Gardens Visitor Centre (the building near and car park accessed from Armagh Street, see map p. 5).

FRIDAY 8 OCTOBER

Registration is open from 8.15 a.m. till 9.00 a.m. at Canterbury Horticultural Society (see map p.5).

Most presentations will be made downstairs in the main Templin Hall.

When concurrent sessions are on the PC Brown room will be used. This is upstairs in the same building.

<i>Time</i>	<i>Speaker</i>	<i>Affiliation</i>	<i>Title (Abstract at page no.)</i>
Templin Hall (downstairs)			
Symposium: Biodiversity is a farmer's business (Chair: Philippa Crisp)			
0900–0905	Philippa Crisp	Network President	Welcome and housekeeping
0905–0940	Steve Wratten	Lincoln University	Biodiversity on farmland: it IS worth the bother (p. 44)
0940–1010	Nicola Holmes	Department of Conservation	Where to next for conservation on private land—a Department of Conservation perspective
Morning tea			
Symposium: Identification and conservation of ecosystems (Chair: Sarah Beadel)			
1040–1100	Susan Wiser	Landcare Research	A new classification of NZ woody vegetation based on permanent plot data (p. 43)
1100–1120	Nick Singers	Department of Conservation	An ecosystem classification system as a conservation planning tool (p. 33)
1120–1140	Rob Allen	Landcare Research	Implementing an Inventory and Monitoring Programme for the Department of Conservation's Natural Heritage Management System (p. 13)
1140–1200	Bev Clarkson	Landcare Research	Successes and challenges in mapping wetlands (p. 15)
1200–1220	Colin Meurk	Landcare Research	Recombinant Ecosystems and how we can make them Work for Conservation
Lunch			
Symposium: Threatened plants in a human landscape (Chair: Susan Wiser)			
1310–1330	Steve Pawson	SCION	Beyond the monoculture: conservation opportunities in plantation forests (p. 30)

<i>Time</i>	<i>Speaker</i>	<i>Affiliation</i>	<i>Title (Abstract at page no.)</i>
1330–1350	Dr Rob Smissen	Landcare Research	David Given Research Scholarship results: The identity of glabrous-leaved <i>Convolvulus</i> plants from the Awahokomo limestone tower, north Otago, and interspecific hybridisation in New Zealand <i>Convolvulus</i> (Convolvulaceae) (p. 34)
1350–1410	Paul Blaschke and Frances Forsyth	Blaschke & Rutherford Environmental Consultants, Wellington	Urban stream restoration in Wellington (p. 14)
1410–1430	Susan Walker	Landcare Research	The CPLA, the RMA, and the loss of residual indigenous species habitat in the eastern South Island (p. 39)
1430–1450	Trevor Partridge	Christchurch City Council	Rarity in an urban landscape (p. 29)

Afternoon tea

Symposium: Plant research on private land, in urban environments and in production, agricultural landscapes. (Chair: John Barkla)

1520–1540	Sarah-Jane O'Connor	Canterbury University	Seed dispersal of matai in fragmented forests (p. 28)
1540–1600	Philip Simpson		Heartwood: the contribution of totara to New Zealand's natural and cultural history
1600–1620	Alex Wearing		The role of hedgerows and roadsides in assisting the retention of native plants in extremely modified landscapes (p. 40)
1620–1640	Roy Montgomery; Helen Greenep	Lincoln University and Environment Canterbury	Greening greyspace: getting native plants into discarded or neglected urban settings (p. 27)
1640–1700	Jon Sullivan	Lincoln University	The effects of exotic pest aphids on endemic <i>Senecio</i> in mixed-use lowland landscapes (p. 37)
1700–1800	Annual General Meeting of the New Zealand Plant Conservation Network		

Conference dinner

1900–2200	Canterbury Horticultural Society rooms		
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SATURDAY 9 OCTOBER

<i>Time</i>	<i>Speaker</i>	<i>Affiliation</i>	<i>Title (Abstract at page no.)</i>
Tane Ngahere Lecture (Chair: Philippa Crisp)			
0900–0905	Philippa Crisp	Network President	Housekeeping
0905–0945	Alan Mark		Tane Ngahere Lecture: Rangeland conservation: The catch-up challenge (p. 25)
Symposium: Tangata Whenua perspectives (Chair: Bede Nottingham)			
0945–1005	Yvette Couch-Lewis	Ngāi Tahu	Ngāi Tahu and plant conservation
1005–1025	Peter Ramsden	Ngāi Tahu	Koukourarata/Port Levy – Ngā Whenua Rahui project
Morning tea			
Templin Hall (Downstairs)			
Symposium: Plants and the gardener (Chair: Rewi Elliot)			
1055–1120	John Clemens	Christchurch Botanic Gardens	A botanic garden's role in plant conservation (p. 16)
Concurrent session A. Templin Hall (Downstairs)			
1120–1140	Clayson Howell	Department of Conservation	Lessons learned from mapping weed range: importance of built-up areas, the role of gardeners and examples from overseas (p. 22)
1140–1200	Chris Ecroyd	SCION	Conserving threatened introduced tree species (p. 18)
1200–1220	Jaap Knegtmans	Biosecurity New Zealand	Biosecurity for plant conservation (p. 24)
1220–1240	Philip Smith	O2 Landscapes	The Missing Link : Between propagation and cultivation (p. 35)
Concurrent session B. PC Brown Room (upstairs)			
Symposium: Biodiversity is a farmers business (Chair: Shannel Courtney)			
1120–1140	Fred Allen	Kiwiplants	Perspective on Conservation Outcomes of Native Plant Remedies, Bioprospecting, and Access and Benefit sharing (p. 12)
1140–1200	Loralee Hyde	MWH-New Zealand	Conservation of plants on private land (p. 23)
1200–1220	Kate Whyte	Oashore Private Reserve	Oashore Private Reserve conservation programme (p. 42)
1220–1240	Miles Giller	Queen Elizabeth Trust	Challenges in managing threatened plants on protected private land (p. 20)

<i>Time</i>	<i>Speaker</i>	<i>Affiliation</i>	<i>Title (Abstract at page no.)</i>
Lunch			
Symposium: Biodiversity is a farmers business (Chair: John Sawyer)			
1330–1350	Alan White	Department of Conservation	BIOFUNDS – where to from here with funding private land conservation? (p. 41)
1350–1410	Nicky Eade	Marlborough District Council	Protecting significant natural areas without a silver bullet (p. 17)
1410–1430	Gerry McSweeney	Wilderness Lodges	Restoring a Canterbury Braided Riverbed in the Arthur's Pass High Country on a pastoral lease through ecotourism (p. 26)
1430–1450	Nick Head	Department of Conservation	The Mackenzie Basin—A case for protection (p. 21)
Afternoon tea			
Templin Hall (Downstairs)			
Symposium: Biodiversity is a farmer's business and Plants and the gardener (Chair: Marie Taylor)			
1520–1540	Pam Richardson	Federated farmers	Nurturing the farmer to value and encourage fencing and management of special places (p. 31)
1540–1600	Alexander Fergus	Gladstone School of Ecology	Can manipulating exotic agricultural biodiversity favour native biodiversity (p. 19)
1600–1620	Rhys Taylor	Sustainable Living Education Programme	Sustainable gardens as biodiversity hot-spots (p. 38)
1620–1640	Robyn Simcock	Landcare Research	Experience with New Zealand native plants for thin greenroofs and exterior greenwalls (p. 36)
1640–1700	John Sawyer	Department of Conservation	Threatened plant hotspots in New Zealand – the importance of private land (p. 32)
1700–1705	Philippa Crisp	Network President	<i>Conference closing and housekeeping</i>

Conference Talk Abstracts

Alphabetical by speaker.

Please note: abstracts are not available for all talks.

Conservation Outcomes of Native Plant Remedies, Bioprospecting and Access and Benefit Sharing

Fred Allen, Managing Director. E: www.kiwiplants.co.nz and www.kiwiherbs.com.

Kaitiaki Te Atiawa Iwi Wellington rohe.

Conservation outcomes of native plant remedies, explores the participants collecting medicinal raw materials, the diversity of the collected materials, types of raw materials, methods to supply raw materials and harvesting from the wild. Biological compound extraction processes, product development, sustainable harvest practices, and risks to plant conservation. Bioprospecting and access and benefit sharing explores the speakers personal history of bioprospecting from the 80's, and policy development, legislation, Treaty of Waitangi claims, to the development in progress of the international CBD regime, the set of rules to apply for access and benefit sharing for all NZ biological materials and the risks to plant conservation. The speaker's Maori perspective will be incorporated throughout the presentation.

NOTES

Implementing an Inventory and Monitoring Programme for the Department of Conservation's Natural Heritage Management System

Robert B. Allen, Elaine W. Wright, Peter J. Bellingham, David M. Forsyth, Catriona J. MacLeod.

E: allenr@landcareresearch.co.nz

The Department of Conservation (DOC) is the central government organisation charged with conserving the natural and historic heritage of New Zealand on behalf of, and for the benefit of, present and future New Zealanders. DOC needs to know if heritage outcomes are being achieved. Implementation of an Inventory and Monitoring Programme will provide unbiased, repeatable ecological integrity indicators estimated across all conservation lands. Indicators are the currency used in many human endeavours to simplify the information needed for decision making and product assurance. The indicators adopted in this programme can be applied at many scales although the design outlined has a national focus and integrates with a nested hierarchy for monitoring on conservation lands. The spatially extensive, robustly designed programme outlined will position New Zealand strongly, both nationally and internationally, to report on the effectiveness of biodiversity conservation.

NOTES

Selecting the right species for urban ecological restoration projects

Frances Forsyth and Paul Blaschke, Blaschke & Rutherford Environmental Consultants, Wellington.

E: paul.blaschke@xtra.co.nz

Restoration in urban environments presents some particular challenges, some of them philosophical, some practical. We discuss these challenges and issues with reference to two case studies from southern Wellington City. We are particularly interested in criteria for plant species selection, the feasibility of establishing rare and threatened plants, and the desirability of planning restoration around habitats rather than species.

NOTES

Successes and challenges in mapping freshwater wetlands

Bev Clarkson, Landcare Research, Hamilton. E: clarksonb@landcareresearch.co.nz

Mapping of wetlands is challenging because they are often small, fragmented or composed of complex mosaics reflecting local variation in environmental conditions. Vegetation structure and composition in wetlands are determined by specific environmental characteristics centred on water and nutrient regimes. A project (SMF) to develop tools for classifying, mapping and monitoring extent and condition of wetlands involved researchers and endusers from throughout New Zealand. One of the products was a hierarchical classification system that classifies wetlands at increasingly detailed levels: level 1, wetland hydroclass (e.g., palustrine); level 2, physical environment (hydrology, chemistry, substrate); level 3, vegetation structural class (e.g., reedland), and level 4, canopy species composition (e.g., raupo). Wetlands can also be classified at level 2 as bog, fen, swamp etc using just physical characteristics, but in practice, vegetation is easier to sample and is readily interpretable using aerial photographs. The applicability of the wetland classification system for mapping wetlands at different scales was tested in several wetlands. At a regional scale, historic baselines of vegetation type and extent were used to assess representativeness of present-day wetlands to help identify priorities for wetland conservation. At a national scale, DOC has developed a rules-based GIS approach (WONI - Waters of National Importance) to map and prioritise wetlands throughout New Zealand. This is currently the only national assessment of historic and present day wetlands and is a valuable reference resource. To make it even more useful, we are improving the maps in Southland (with DOC and Environment Southland) through local knowledge and detailed field verification, as a basis for refining the overall WONI approach.

NOTES

A botanic garden's role in plant conservation

John Clemens, Curator, Christchurch Botanic Gardens. E: John.Clemens@ccc.govt.nz

While they might appear to be places of peace and stability, botanic gardens express a dynamic balance of diverse and sometimes conflicting roles embodied in the labels research, education, conservation and display. Their permanence over the decades and centuries has also yielded a legacy of memories, associations and artefacts, sometimes overlying still earlier cultural histories, indicating a role in heritage conservation. In the last decade this dynamic balance has shifted towards the twinned roles of conservation and education, yet these cannot be achieved if other roles are neglected. Botanic gardens have also become less centred on their own grounds, and more concerned with educating widely, and conserving what is in their surrounding cities, districts and regions as part of an overall collaborative strategy to achieve conservation goals. The targets botanic gardens seek to achieve will be described, and illustrated in relation to the steps initiated at the Christchurch Botanic Gardens.

NOTES

Protecting significant natural areas without a silver bullet

Nicky Eade, Marlborough District Council. E: Nicky.Eade@marlborough.govt.nz

The Resource Management Act requires that the protection of significant natural areas and significant habitats of indigenous fauna are recognised and provided for as a matter of national importance. Most councils around the country have made some effort to identify or “recognise” significant natural areas in their area and some have come up with strategies to “provide for their protection”.

This is the story of how the Marlborough District Council (a unitary Council), has gone about this task in a region with diverse environments and landscapes. The approach has been focussed on private land and based on field surveys and building relationships with landowners. It is non-regulatory in the main, using social and financial incentives to achieve recognition and protection of significant natural areas and habitats. In some parts of Marlborough there is less than 1% natural habitat remaining so along with protecting and stabilising existing areas there is also an emphasis on encouraging the re-building of habitat through restoration planting.

NOTES

Conserving threatened introduced tree species

Chris Ecroyd and Ekehard Brockerhoff, SCION. E: chris.ecroyd@scionresearch.com

New Zealand has an extraordinary number of plant species in cultivation including more than 100 threatened introduced tree species. We have *Dracaena umbraulifera* and *Franklinia alatamaha*, both extinct in the wild, and other species which are Critically Endangered, Endangered or Vulnerable, according to the IUCN Red Data List. As a party to the international Convention on Biological Diversity and through the New Zealand Biodiversity Strategy we have obligations to help conserve these threatened species. Problems with ex-situ conservation are discussed and recommendations made.

NOTES

Can manipulating exotic agricultural biodiversity favour native biodiversity?

Alexander J. F. Fergus, University of Zürich and the Gladstone School of Ecology and Geosciences. E: fergus.alex@gmail.com

Researchers working in Europe and North America have championed biodiversity-ecosystem functioning experiments. By manipulating species richness in grassland communities they have quantified the effect of biodiversity on ecosystem processes, generally measured as productivity. There are limitations to these experiments that randomly assemble plant communities; we see the feedback from biodiversity to production, but without including many natural processes. Such experiments then are likely to be more informative for processes in other artificial communities – like New Zealand grassland production systems—as opposed to processes in native communities. Given that many European experiments share a suite of species common to New Zealand grassland production systems, then increasing diversity is both a frugal and potentially rewarding endeavour. Increasing either the species richness or the functional diversity of grassland communities can result in increased productivity either via complementary resource use or by avoidance of negative feedbacks caused by build ups of deleterious micro-fauna. Achieving higher production with community composition could in turn reduce the need for fertilisation and irrigation and at once instil a greater resistance and ability to recover from drought or pests and pathogens. Reduced fertilisation and irrigation could also benefit surrounding natural communities that would be less at risk from aggressive invasive species that can better exploit areas with superfluous nutrients. The challenge is selecting supplementary species as very few of our indigenous species are palatable, leaving only naturalised non-aggressive somewhat productive exotics as viable options; potential risks and benefits of bolstering exotic biodiversity within New Zealand grassland production systems are discussed.

NOTES

Challenges in managing threatened plants on protected private land

Miles Giller, QEII regional representative, North Canterbury. E: broadleaf@actrix.gen.nz

The beneficial consequences of fencing and destocking bush remnants are well recognized. However, drier parts of the country often lack primary forest remnants, hence modified or secondary vegetation can assume high ecological significance. Such associations often lack a number of their former species, thus cannot be expected to fully recover former values. Such associations in drier parts of lowland Canterbury are often dominated by scrub and shrubland, characterized by a range of divaricating species. These are frequently undervalued and thus lack appropriate support for their protection. Additionally, they are often susceptible to damage by animal and plant pests. Thus it is important that the ecological values, trends and threats are well understood at the outset, that management is tailored to realistic targets, and that monitoring tracks changes, with adjustments to management being made if necessary. Every protected area is unique.

NOTES

The Mackenzie Basin—a case for protection

Nick Head, Department of Conservation, Canterbury Conservancy. E: nhead@doc.govt.nz

The Mackenzie Basin contains extensive sequences of undeveloped low lying semi-arid ecosystems of chiefly moraine and fluvioglacial outwash surfaces. Many of the ecosystems and species present within the Mackenzie Basin are classified as naturally rare and nationally threatened, making it an important stronghold for New Zealand's indigenous dryland biodiversity. Tenure Review surveys on crown pastoral lease land have identified significant inherent values that 'require' protection under legislation. Tenure Review presents one of the 'last' opportunities in New Zealand to protect extensive sequences of rare and under-represented semi-arid ecosystems and associated biodiversity. Biological values and protection proposals are threatened with increasing intensive agricultural development in the Mackenzie Basin which is causing unprecedented levels of loss of dryland ecosystems and indigenous biodiversity.

NOTES

Is your hectad a weed hotspot? Presence and absence of environmental weeds in New Zealand.

Clayson Howell. Department of Conservation, Wellington. E: chowell@doc.govt.nz

Distributions maps of environmental weeds can be used for control prioritisation, identifying invasion frontiers and predicting range expansions. Dot-distribution maps can be readily generated from point data but it is difficult to know whether gaps in the resultant maps are caused by incomplete data, genuine absences, or both. In this investigation I examined distributions of a list of environmental weeds by using electronic distribution records to derive presence and absence in a grid system and validating resultant distributions through an extensive series of meetings. Distributions solely based on electronic records underestimate known range by at least 80%. There is great potential for gardeners to contribute to known ranges of environmental weeds. Additional records should be input into existing herbaria collections or submitted to databases.

NOTES

Conserving plants in the farming landscape

Loralee Hyde, National Communications Manager, MWH New Zealand. E: loraleehyde@xtra.co.nz

Much of our bush and many of our wetlands have been cleared for farming and development. A voluntary QEII covenant in perpetuity is an effective mechanism to protect natural features on private land. The motivation for the formation of the QEII National Trust in 1977 came from farmers and conservationists who recognised the significance of protecting natural values.. There are now 3,400 registered covenants protecting 95,000 hectares. Farmers 'connect' with their bush and wetland areas, appreciating these features in the landscape and the birds they attract. Forest remnants reduce wind and provide shelter and shade, enhancing stock management and production. Fencing allows regeneration of native species and keeps stock out of hard to manage areas. With contributions for fencing and weed and pest control from agencies such as QEII, regional and local councils and the Biodiversity Condition Fund, protecting native vegetation is a 'win-win' for many farmers. But the plants protected are relatively less known by landowners than wildlife such as birds. It is often a QEII representative or council biodiversity officer who identifies the species. There is a need for increased advocacy about plants to ensure landowners realise their value and continue to protect them.

NOTES

Biosecurity for Plant Conservation—Kauri dieback case study

Jaap Knegtmans, Senior Adviser Conservation with MAFBNZ, Post Border Directorate.

E: Jaap.Knegtmans@maf.govt.nz

In this talk Jaap will provide a brief background to the New Zealand biosecurity system. How is the future of plant conservation reliant on MAF Biosecurity New Zealand's role in managing biosecurity risks through international trade and travel? As a plant conservation case study, Jaap will focus on the Kauri dieback management programme. A recently re-identified established risk organism is killing the iconic Kauri tree across our landscape. A joint agency has been set up to manage this organism. Jaap will inform us of the organism that is killing our Kauri stands and how a collaborative approach is the best hope in managing kauri dieback into the future.

NOTES

TANE NGAHERE LECTURE—Rangeland conservation: the catch-up challenge

Alan F. Mark, Department of Botany, University of Otago. E: alan.mark@botany.otago.ac.nz

The absence of formally protected areas in New Zealand rangeland, indigenous grasslands used for pastoral farming, was a major impediment to researching the ecological effects of the pastoral practices of burning combined with mammalian grazing. The history of correcting this deficiency will be outlined from its beginnings in late 1960s – early 1970s, with the acquisition of Maungatua (553 ha) and Black Rock (144 ha) in eastern Otago, to the major debates over the nearby Nardoo (1000 ha) and western Southland's Burwood/Gorge Hill (1500 ha) proposals, and the Clayton Report of the mid 1980s, which resulted in limited acquisition but were important scene-setting exercises. Since then, major acquisitions through five whole-property purchases and tenure review, now completed on 67 of the original 304 Crown leasehold properties, has resulted in >300,000 ha of indigenous tussock grasslands in the South Island rangeland region being formally protected. These protected areas are predominantly uplands which provide important ecosystem services of water and soil conservation, and water production, as well as indigenous biodiversity and recreational opportunities. Threats and restoration problems will be briefly discussed. Mid- and low-altitude areas are seriously under-represented, as is the case globally, and needs to be urgently addressed.

NOTES

Restoring a Canterbury Braided Riverbed in the Southern Alps High Country through eco-tourism.

Gerry McSweeney, Wilderness Lodge, Arthur's Pass, Canterbury. E: anne@farmside.co.nz

Broad Stream, a braided tributary of the Upper Waimakariri River in Canterbury, has for at least 350 years been subject to severe human induced modification. There has been repeated burning by Polynesian and Europeans traversing the Southern Alps over Arthur's Pass. Since 1862 sheep and cattle have grazed here near the homestead of Cora Lynn high country farm. Broad Stream now hosts invasive weeds including gorse, broom, coltsfoot and Douglas Fir and introduced pest mammals including feral pig, cat, deer, chamois, hare, possum, rat, mice and stoat.

These pressures pose great challenges to native plant and animal restoration. However as inhabitants of a dynamic alluvial system, Broad Stream's native plants and animals also have a high degree of resilience.

A twelve year long project to restore Broad Stream by the landowner assisted by volunteers and eco tourists has involved the removal of domestic stock and the control of pests and weeds. It has resulted in the recovery of threatened and endangered native species. These include Kirk's broom, Waimakariri *Helichrysum*, red, yellow and golden mistletoe, palatable native grasses, fuzweed (*Vittadinia australis*) and 3 Hebe species. An endemic grasshopper has also been discovered in the river gravels and a native gecko is now common here.

The Broad Stream project shows the ecological importance of protecting altitude and soil age natural sequences to complement existing protected areas that often exclude lower slopes and valley floors. By safeguarding seral communities, a more complete picture of natural ecological patterns can be preserved and threatened species provided with a more secure future. The project highlights the resilience of native species when degrading activities and introduced pests and weeds are removed.

Valley floor and riverbed stock grazing remains widespread even within National and Conservation Parks. Even where domestic stock are removed, few of these protected areas are subjected to regular and extensive pest control. A notable exception to this is the Haast Valley floodplain ecosystems of the former Landsborough Valley Station within Mt Aspiring National Park.

NOTES

Greening greyspace: getting native plants into discarded or neglected urban settings

Roy Montgomery, Lincoln University, and Helen Greenep, Environment Canterbury.

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Greenfields, brownfields and even greyfields (abandoned light industrial or commercial sites) have become the focus of attention for biodiversity initiatives in recent years. In most cases the underlying aim is the permanent protection or reclamation of a parcel of land. Less attention has been given to making use of the permanent pool of temporary plots in a city at any given time which, if managed at all, are treated on a hazard mitigation basis rather than for constructive or proactive amenity purposes. Using examples of research experiments in Christchurch this paper argues for the formalised recognition of greyspace by planners, landowners and ecologists as a native urban biodiversity reservoir.

NOTES

Seed dispersal of matai in fragmented forests

Sarah-Jane O'Connor, School of Biological Sciences, University of Canterbury

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Seed dispersal is a key ecological process which is likely to have been affected by the extinctions and introductions New Zealand experienced along with the arrival of humans. In this PhD, I am studying the dispersal of matai (*Prumnopitys taxifolia*, Podocarpaceae) in a fragmented habitat in Canterbury. Matai is a native, dioecious podocarp which grows up to 25 metres. It has small (~ 8 mm diameter) purple-black fruits that are readily consumed by a range of birds and mammals. Matai, along with several other podocarp species, was once abundant across Canterbury but is now limited to small fragments particularly on the Port Hills and Banks Peninsula. The ability to disperse seeds under such conditions may be critical for the longevity of species.

Through studying the seed dispersal of matai on the Port Hills, I have worked in forest remnants ranging from fully fenced Council operated sites, to unfenced privately owned sites. As it turns out, this has forced a constant re-evaluation of experimental design and field planning based on the unique characteristics of these sites. In this talk I will highlight the different approaches for the varying sites, and the research this has allowed in the different levels of fencing and protection.

NOTES

Rarity in an urban landscape

Trevor Partridge, Christchurch City Council, PO Box 73104, Christchurch 8154.

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The urban environment provides a set of challenges and opportunities for the protection and management of rare species, that differ from those in less densely settled environments. These differences are the result of such environments being the highly modified and managed habitat of the mammalian species *Homo sapiens*. Activities occurring within the urban environment can push even normally common species to the category of local rarity. Therefore, in order to maintain biodiversity values, a very different set of actions needs to be undertaken to protect a much larger range of species than those normally listed as threatened.

But, the urban environment also provides opportunities that more remote environments lack, and this also comes from the presence of a large human population. Without such a resource base of motivated citizenry, coupled with greater funding opportunities, protection of rare species can be achieved despite the pressures of the urban environment.

This presentation examines the status of a range of plant species found within the urban environment of Christchurch, and the range of protection measures employed to ensure their ongoing survival. This will range from local iconic species such as *Myosotis australis* subsp. *lytteltonensis*, to local rarities such as *Lepidosperma australe*. It will cover successes and failures, and will describe some of the difficulties, especially in relation to what Local Authorities can and cannot do in regard to protection and management.

NOTES

Beyond the monoculture: conservation opportunities in plantation forests

Steve Pawson, Eckehard Brockerhoff, Chris Ecroyd, Richard Seaton, and William Shaw.

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Exotic plantation forests are now an integral component of the lowland New Zealand production landscape. Plantations, particularly *Pinus radiata* and to a much lesser extent Douglas fir and *Eucalyptus* spp. now cover approximately 1.8 million hectares. Almost without exception these are managed as even aged monocultures that are clearfell harvested at maturity. The historical view of plantations in New Zealand (and globally) is highly negative, tainted by memories of native forest destruction as plantations were, in some cases, established on former native forests. However, over time research has shown that plantations are not the ecological deserts they were thought to be. Admittedly they will never replace species rich pristine native forests, however when compared to other production land uses they present significant opportunities for the conservation of native flora and fauna. This talk will briefly outline the New Zealand plantation forest industry and why it is significant for the conservation of forest adapted species, particularly in lowland regions. We will review the opportunities that plantations have created for a range of native plant species, including a large number of threatened species. Specific case studies will be provided for understory shrubs, ferns, and orchids. Finally the risks and benefits of forest management to the survival of native plants in our production landscapes will be discussed.

NOTES

Nurturing the farmer to value and encourage fencing and management of special places

Pam Richardson, Banks Peninsula Branch of Federated Farmers facilitator. E: iprichardson@xtra.co.nz

Farmers are drawn to their properties because of what is so unique about the land. For many it is the indigenous vegetation that is outstanding. It is where they live and work, where they can enrich their landscapes and their lives with improving knowledge. It provides shelter and shade, assists with pollution management, provides an extremely valuable contribution to the function and health of our ecosystems etc. It is about integrating nature conservation and production.

Some landowners were involved with the Protected Natural Areas programme in the early 1980s where many sites were being described as Recommended Areas for protection within ecological regions and districts. They were to form the basis for future discussions with landowners as to how nature conservation values on their land could be best managed and protected. Over twenty years later landowners are still waiting to be visited.

The Resource Management Act is the legislation now being used to identify areas of significant indigenous vegetation. Many District Councils have been very slow to move the processes forward and have shown little support, contribution of funding or assistance towards the management of these areas.

Despite the slow progress, there is enough indigenous vegetation still remaining in many catchments to form the basis of a comprehensive and inspiring conservation programme involving willing landowners, local communities and agencies. What are the necessary ingredients?

NOTES

Identification and management of threatened vascular plant hotspots in New Zealand

John Sawyer and Paul Hughes, Department of Conservation, Wellington, New Zealand

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Ten sites are identified in New Zealand as Important Plant Areas because they support a disproportionately rich threatened vascular plant flora relative to the rest of the country. 185 indigenous vascular plant species were listed in 2009 as Nationally Critical, Endangered or Vulnerable by the New Zealand threatened plant committee. This represents a 40% increase in threatened plant species since 2004 and demonstrates the continuous decline in status of New Zealand's threatened plant life. A GIS based 'hot spot' analysis was undertaken of these threatened vascular plant species using distribution data held on BIOWEB—the national flora database—to identify sites of threatened vascular plant species richness.

These sites were listed as internationally important for threatened vascular plant conservation due to classification as Important Plant Areas (IPAs). New Zealand IPAs include sites that: **support significant populations of one or more species of global or Oceanic conservation concern or have an exceptionally rich flora in an Oceanic context in relation to its biogeographical zone or are outstanding examples of a habitat or plant community type of global or Oceanic conservation and botanical importance.**

Management and monitoring of these threatened vascular plant hotspots are discussed in the context of various threats including a changing climate, habitat destruction and the spread of exotic organisms especially naturalised plants. The importance of adequate legal protection for hotspots and the need for their on-going in-situ conservation management and long term monitoring is discussed. The curation of accurate, up-to-date biogeographic datasets of New Zealand's threatened vascular plant flora is shown to be critical for understanding ecological processes (including threatening processes) and the role of a changing climate in affecting plant status. The need for IPA identification and protection worldwide is highlighted.

NOTES

An ecosystem classification system as a conservation planning tool

Nick Singers, Department of Conservation, Christchurch. E: nsingers@doc.govt.nz

A comprehensive purpose built ecosystem classification system was developed as the basis for the departments optimising ecosystem management project. The system is hierarchal and links together environmental variables with biological communities to describe conservation planning units. Primary environmental variables identified were: temperature, extreme parent chemistry, hydrology, geothermal heat, disturbance and lack of solar energy. These variables delineated warm, mild and cool forests, low and high alpine, cold air temperature inversion basins, saline, ultramafic, wetlands, geothermal ecosystems, braided rivers, dunes and cliffs and cave ecosystems respectively. Further ecosystem delineation into finer planning units was made using moisture gradient, fertility, landform and soil type, in total separating 133 planning units. The basis of each conservation unit relies heavily on previous classifications and published material, thus is largely a synthesis of previous works applied to our purpose.

NOTES

The identity of glabrous-leaved *Convolvulus* plants from the Awahokomo limestone tower, north Otago, and interspecific hybridisation in New Zealand *Convolvulus* (Convolvulaceae)

Rob Smissen and Peter Heenan, Allan Herbarium, Landcare Research, P O Box 40, Lincoln 7640.

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The affinities of glabrous-leaved *Convolvulus* plants from the Awahokomo karstland (New Zealand, South Island, Otago) were investigated by comparing their AFLP profiles with those of the currently recognised indigenous species *C. waitaha*, *C. verecundus*, and *C. fractosaxosa*. The glabrous Awahokomo plants, *C. fractosaxosa* and *C. verecundus* could not be distinguished from each other by their AFLP profiles. Conversely, *C. waitaha* is well differentiated from the other indigenous species by its AFLP profiles. Hybrids between *C. waitaha* and the other species appear to be common when the species are sympatric, and the fertility of these hybrids is evidenced by the presence of a back-cross individual near Awahokomo. The AFLP profiles provide no evidence of a hybrid or introgressant origin of the glabrous Awahokomo plants and these, along with the genetically similar *C. fractosaxosa*/*C. verecundus* complex, require further study.

NOTES

The Missing Link : Between propagation and cultivation

Philip Smith, O2 Landscapes. E: p.smith@o2landscapes.com

Conservation of threatened species is a topic that, in principle, meets with widespread approval. Despite this, it remains difficult to interest landscapers and gardeners in a great number of our threatened species.

Several nurseries undertake an active leadership role in growing and advocating for New Zealand's threatened flora, but do not receive sufficient support from the market (which is, after all, the ultimate destination for most of their plants). This paper looks into ways of bridging this gap, with a special focus on aesthetics and garden paradigms.

NOTES

New Zealand plants in greenroofs and greenwalls

Robyn Simcock et al. Landcare Research NZ Ltd, Auckland. E: SimcockR@landcareresearch.co.nz

The presentation uses a 'top ten' of New Zealand greenroofs to showcase their different functions and outcomes. Light weight greenroofs are now a recommended way to attenuate stormwater runoff in New Zealand cities—protecting streams from erosion and potentially reducing combined sewer overflows by storing and transpiring rain. Green roofs are increasingly used to reduce the visibility of buildings in outstanding natural landscapes and in the past have been extensively used to hide reservoirs. Some owners value green roofs' ability to insulate against heat and noise; in parts of Asia and the United States they are most valued for their ability to cool urban centres and increase the efficiency of air-conditioning units, reducing peak summer energy demand. Green, or living roofs are used to conserve ruderal invertebrate, lizard and plant biodiversity in Switzerland and England. The identification of native plant species to enable rooftop conservation in New Zealand is a focus of our research particularly supported by Waitakere City. The outstanding plants: native, non-native, planted and adventive, that thrive in droughty, exposed, and hot conditions in only 50 to 100 mm of coarse substrate are presented, based on four years of trials of native and non-native plants in glasshouses and roofs.

Preliminary results on native plants for greenwalls (vertical gardens) will be presented if time permits!

NOTES

Aphids + weeds = declining endemic herbs in lowland landscapes? A case study with *Senecio*.

Jon J. Sullivan, Lincoln University. E: Jon.Sullivan@lincoln.ac.nz

New Zealand ecologists have traditionally overlooked insects in favour of invasive vertebrates when assessing the threats of herbivory to indigenous plants. This is despite well documented massive impacts of some invasive insects on wild plants overseas and a large industry built around the impacts of insect pests on crop plants. Of notable concern are northern hemisphere polyphagous aphids, of which at least 120 are now naturalised in New Zealand. New Zealand's 13 indigenous aphids are all basal in the aphid phylogeny and host specific. Most endemic vascular plants species have therefore evolved in the absence of aphid herbivory. Many lowland herbaceous species are now competing with naturalised invasive plants from the northern hemisphere with a long evolutionary association with aphids. I report here on ongoing work looking at the impacts of naturalised aphids on New Zealand *Senecio*. Many indigenous *Senecio* species can routinely be found infested with large colonies of naturalised aphids, in stark contrast to European congeners and confamilials. Aphid infestation can prevent annual reproduction of small endemic species like *Senecio wairauensis*. My surveys of *Senecio wairauensis* in the Craigieburn Forest Park and on Banks Peninsula show a species strongly disadvantaged in competition with European naturalised Asteraceae. Two small populations of *Senecio wairauensis* I have monitored at Hinewai Reserve, Banks Peninsula, are failing to recruit and in 2010 all reproductive individuals were attacked by aphids. While my work on the aphid impacts on *Senecio* is ongoing, the initial results are striking and suggest that the threat of aphids to endemic herbs needs greater attention.

NOTES

Sustainable gardens as biodiversity hotspots

Rhys Taylor (National Coordinator, Sustainable Living Education Programme) with contributions acknowledged from Steve Wratten, Di Lucas and Colin Meurk. E: anneandrhys@clear.net.nz

Households with 'sustainable gardens' exhibit minimal or no use of toxic chemicals, rely on compost in preference to artificial fertilisers, design for water use efficiency, minimise lawns and favour soil and climate-adapted plant associations. Moving to the next step of including NZ endemic species diversity is not difficult, although some competition for space with food crops occurs in such environmentally-aware households, where resilience of the human population is one of their key concerns! Sustainable Living evening classes guide learners along both these directions, alongside energy efficiency, waste minimisation, etc.

Advocating for ecosystem service provision by native plants is a logical response, which to appeals to users of productive organic gardening and permaculture techniques, as well as many gardeners for whom a design aesthetic is predominant. There is value to gardeners in fast-growing, robust, prunable, drought-tolerant shelter, and of flowers/fruits to attract beneficial insects, lizards and birds. This suggests that hedges of mixed native shrubs (such as Corokia, Hebe and *Muehlenbeckia astonii*) can be an excellent urban garden addition, as an alternative to more commonly-used exotic species.

Interesting lawn alternatives, gravel/rockeries and green roofs can be populated with native species, some of which are rarities in the wild.

The talk will be illustrated by pictures of the author's native-hedge sheltered vegetable garden and a green roof, plus urban 'micro-bush restoration' projects in individual and communal backyard spaces within Christchurch. Christchurch City and Lyttelton have the advantage of access to a soil mapping project by Di Lucas and colleagues, showing the current street plan on soil types, with their historic native plant associations.

NOTES

The CPLA, the RMA, and the loss of residual indigenous species habitat in the eastern South Island

Susan Walker, Landcare Research, Dunedin. E: walkers@landcareresearch.co.nz

I will describe links between the loss of threatened plant (and animal) habitat in the South Island, the rapid conversion of pastoral land for intensive agriculture, and the ongoing process of land reform called 'tenure review'. In 1992, the Crown owned about 2.4 million ha of land (9.3% of New Zealand) in about 350 large properties that it leased for grazing in the interior of the South Island. Although an imperfect form of protection, these Crown leases have retained significantly more indigenous vegetation, and hence more residual indigenous species habitat, than private land in the same environments. Since 1992, the ongoing disposal of Crown leases through tenure review has created more formally protected areas in the high country. However, it has also privatised the majority of land under indigenous cover, and land with identified significant inherent values, in the places most vulnerable to land clearance for intensive agricultural use. The places that have not been protected are often the species habitats that actually, and most urgently, need protection. I will use data from the Mackenzie Basin to show how increasing development pressure, weak constraints on vegetation clearance in District Plans, potential 'double dipping' provisions, and ongoing leasehold land privatisation through tenure review, combine to drive removal of residual habitats of threatened indigenous species.

NOTES

The role of hedgerows and roadsides in assisting the retention of native plants in extremely modified landscapes

Alex Wearing. E: scamblernz1@gmail.com

Hedgerows are present in many of New Zealand's agricultural landscapes. Roadsides are ubiquitous landscape elements in rural New Zealand. Both hedgerows and roadsides have important ecological, biodiversity, and aesthetic functions. As hedgerows age, or are less managed, they become more ragged and open, gaps appear, and there are increased opportunities for colonization by native plants. Roadsides are variously managed, because of the importance of the roads which they line, and the policies of the agencies responsible for their management. Roadsides can act as refugia for native plants, especially woody and tussock species, and as colonization sites. Both hedgerows and roadsides can be good linear sites for facilitating the retention and increasing the number and distribution of native plants in extremely modified, often 'hostile' landscapes. Examples of the presence, colonization and persistence of native plants in hedgerows and roadsides utility are given for a range of sites in the southern South Island. Removal of hedgerows, especially old, large ones, and the more intensive management of roadsides may affect the long-term retention of some native – especially woody and tussock – plant species in agricultural and rural landscapes. Hedgerows and roadsides are not without problems with respect to native plant conservation, as they are also colonized by myriad introduced species, many of which are significant pests. Most hedgerows that are acting as host and colonization sites are introduced species, which does not sit well with some conservationists.

NOTES

BIOFUNDS—where to from here with funding private land conservation?

Alan White, Department of Conservation, Wellington. E: awhite@doc.govt.nz

Since 2000 \$28.5 million has been invested in biodiversity protection on private land through the Government's Biodiversity Funds. This when combined with landowner and other contributions has made a significant contribution to protecting at risk systems and species. However we continue to lose indigenous biodiversity.

Given this, it is important that we are targeting funding effectively. Past and current systems will be summarised and future approaches on how the Funds might better target funds to at risk systems will be discussed.

NOTES

Oashore Private Reserve

Kate Whyte, Oashore Private Reserve, Canterbury. E: kate.whyte@email.net.nz

Oashore is a significant private ecological restoration initiative on Banks Peninsula. This is a project with long timeframes due to a number of factors including large areas of dense exotic pasture. Because of this, grazing is one of the management tools. Despite the fragmented habitat, in various stages of succession, the flora is rich and varied with many threatened species present.

NOTES

A new classification of NZ woody vegetation based on permanent plot data

Susan K. Wiser¹, Richard Earl², Jenny Hurst³, Elaine Wright²

¹ Landcare Research, ²Department of Conservation, ³ University of Canterbury

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Forests and shrublands make up about a third of New Zealand's landscape, an area much reduced from the time before human settlement. There are a number of national-scale maps of high-level classifications of these ecosystems and in *Vegetation of New Zealand* Peter Wardle named and informally described them in more detail. He recognised, however, that his treatment was insufficiently precise to underpin the mapping or inventory required for conservation decision making. In 2007, the NZ Carbon Monitoring System completed the collection of vegetation data from 1177 permanent plots established on an 8-km² grid across the mapped area of native woody vegetation. This provided the opportunity to quantitatively derive a classification that had the explicit advantage of reflecting the geographic importance of different communities on the landscape. We classified these data using beta-flexible clustering with Sorenson's distance measure to define 24 woody vegetation classes, each comprising 19–105 plots. Because the underlying data are unbiased, we were able to calculate area of each class and ecological indicators that assess the likelihood of class persistence. Because plots are georeferenced, we were able to use four classes of mapped variables (climate, topography, landcover, disturbance) to derive spatial predictions of the occurrence of each class. We used the spatial predictions to produce two types of composite maps: one with discrete boundaries between classes, as are displayed in traditional vegetation maps, and one with fuzzy boundaries to depict ecotones. We demonstrate this process with an example from Stewart Island. Finally, we provide guidelines for those developing regional or national classifications to ensure these efforts can build on, and be integrated with one another.

NOTES

Biodiversity on farmland: It IS worth the bother

Professor Steve Wratten, Faculty of Agriculture & Life Sciences, Lincoln University.

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New Zealand's highly endemic biodiversity has traditionally been conserved in areas away from the lowlands, such as offshore islands and high-elevation forests. In agricultural and other highly-modified lowland habitats, native plant biodiversity now occupies less than 1% of the land area and usually has little role to play in farming. There are pockets of conserved native bush but, ironically, the largest area of native forest in lowland Canterbury is Riccarton Bush in Christchurch. The recognition of the value of native biodiversity in working landscapes is advancing rapidly, however, driven partly by an increasing awareness of ecosystem services (ES) or nature's services and how native plants and animals can provide these. The work of Costanza *et al.* 1997 and Daily 1997 has assumed increasing relevance as the realisation increases that with accelerating biodiversity loss, vital ES are also lost. This presentation illustrates the value of lowland biodiversity in New Zealand by reviewing recent work in which multiple or "stacked" ES have been quantified, enhanced and given an economic value in vineyards and other agricultural sectors. These ES range from pest biological control, education to ecotourism and are best illustrated in the form of "biodiversity trails" in vineyards in the Waipara valley, North Canterbury.

NOTES

NZPCN Annual General Meeting

The AGM of the NZ Plant Conservation Network will be held on Friday 8 October 2010. It will follow the first day of the Network conference (from 5 - 6pm) and will be held at the Canterbury Horticultural Society Rooms (57 Riccarton Avenue, Christchurch).

If you have items to put on the agenda or issues you wish to discuss please email them to the Network: info@nzpcn.org.nz.

Draft Agenda

Minutes of AGM 2009

Matters arising

President's report

Treasurer's report

Change to annual subscription fees

As per clause 6.1 of the NZPCN constitution, it is proposed that the membership fees for the 2010/2011 financial year be increased as follows:

- *General member - change from \$35 to \$40*
- *Student/Unwaged member - change from \$10 to \$15*
- *NGO - change from \$50 to \$60*
- *Corporate (6 people on mailing list) - change from \$200 to \$250*
- *Corporate (25 people on mailing list) - no change*

Election of Council member

General business

Close 6.00 pm

Conference attendees

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NEW ZEALAND PLANT CONSERVATION NETWORK

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PHENOLOGY RECORDING SHEET

This form is to help record details of your field observations. Fill out this form for any phenological records you make then report your findings at www.nzpcn.org.nz



What plant species did you observe?

Check your species ID by using the species pages on the Network website (www.nzpcn.org.nz).

Common name _____

Scientific name _____



Where was it?

Locate the site where the observation was made. Note that when on-line you can use the Google mapping system to locate the exact location for your observation including latitude and longitude.

Place name _____

Region _____

Comments on location: _____



When did you see it?

The phenological events or phenophases that can be recorded are:

First flowering, First Fruiting, Flowering, Fruiting and Dieback.

PHENOPHASE	DAY	MONTH	YEAR
_____	occurred on _____	/ _____	/ _____
_____	occurred on _____	/ _____	/ _____
_____	occurred on _____	/ _____	/ _____
_____	occurred on _____	/ _____	/ _____
_____	occurred on _____	/ _____	/ _____
_____	occurred on _____	/ _____	/ _____



Additional comments: _____

Log your observations online at www.nzpcn.org.nz