



# TRILEPIDEA

NEWSLETTER OF THE NEW ZEALAND PLANT CONSERVATION NETWORK

Please send news items or events to [events@nzpcn.org.nz](mailto:events@nzpcn.org.nz)

Postal address: P.O. Box 16-102, Wellington, New Zealand

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## President's Message

This is our final newsletter for 2010, the Year of Biological Diversity. Unfortunately, biodiversity loss continues both globally and nationally despite conservation efforts, as Ian Spellerberg outlines in his piece in this newsletter. That this national biodiversity loss is occurring may be understood by some New Zealanders, but there is a great deal of information about how to help "turn the tide" that needs to be conveyed. The network provides information about New Zealand's indigenous plants and the conservation actions required for their survival through the website and other resources, but we also need to continue to advocate for threatened species and to promote the benefits of indigenous plant species, for example, the survival of rare scale insects in last month's issue. All of us need to do this and to encourage others to appreciate the plants that are unique to this land.

I hope you get a chance to marvel at the beauty of our native plants during your summer break. Merry Christmas and all the best for 2011.

*Philippa Crisp*

*Greater Wellington Regional Council*

## Successful resolution with Global Invasive Species Database

*Peter J. de Lange, Department of Conservation, ([pdelange@doc.govt.nz](mailto:pdelange@doc.govt.nz))*

In the last issue of *Trilepidea* (No. 84, pp.4–6) I reported on the erroneous listing of the New Zealand endemic *Kunzea ericoides* as a serious weed by the Global Invasive Species Database (<http://www.issg.org/database>). In 2006, I had tried (unsuccessfully) to have *Kunzea ericoides* removed from that database. However, following the recent *Trilepidea* article (*loc. cit.*), I was delighted to receive plenty of positive support for my campaign from several sources including (no less) the Mayor of Christchurch City, Bob Parker. As a result, web site manager, Shyama Pagad, has stated that "We have now noted all of the points that Dr de Lange raised and informed him that we would take the profile off the database till we resolve all the issues." Though it is extremely disappointing that this took five years to achieve, it is a positive result for the New Zealand Flora. As noted previously, *Kunzea ericoides* s.s. was never a serious weed and should never have been confused with the undoubtedly weedy distantly related Australian species. I do, however, remain worried as to how the Global Invasive Species Database will keep the "profile off the database till we resolve all the issues" since the implication of this is that they will at some time place another species profile for this species. Considering that the two most weedy Australian *Kunzea* are as yet unnamed and have nothing to do with *K. ericoides*, one wonders what they will call them. The only species over there that has been studied from a weed perspective, *K. leptospermoides*, is actually a very localised endemic that probably merits a threat listing rather than weed status. I therefore advise those interested parties to periodically check the Global Invasive Species Database to make sure it retains factual content for any of its *Kunzea* entries. Otherwise I'd like to thank all of you who rose to the occasion and decided to support me by voicing their concerns—if only we can now achieve that for all the websites which have cited the Global Invasive Species Database as the basis for their equally erroneous content.

## PLANT OF THE MONTH – *Celmisia lindsayi*



*Celmisia lindsayi*. Photo: John Barkla.

Plant of the month for December is *Celmisia lindsayi* (Lindsay's daisy). *Celmisia lindsayi* shirks the more usual mountainous habitats of its fellow *Celmisia* species, growing instead on usually south-facing, shaded rock stacks, tors and cliff faces on the coast. It is endemic to the South Island from the mouth of the Clutha River to Waikaia.

Described by Cockayne as a 'very fine *Celmisia*', *C. lindsayi* forms a low growing and robust subshrub, forming patches to about two metres diameter. The leaves have dull, mid-green upper surfaces and are covered with dense,

silky white tomentum underneath. The plant has stout stems on which the leaves persist for some time after senescence. The flowers are white with yellow disc florets, appearing from October to March.

It is easily grown from fresh seed and can also be grown by dividing established plants. It grows best in a shaded spot in a moist, free draining soil. It prefers a cooler, breezy spot, without humid summers.

*C. lindsayi* is naturally uncommon. It is closely related to *C. bonplandii*, an alpine species that is regarded by some botanists as the same species as *C. lindsayi*. Some accessible populations have been plundered by plant collectors; it should not be taken from the wild without permission. Most populations are in remote areas or are extremely inaccessible. The Network fact sheet for *Celmisia lindsayi* can be found at: [www.nzpcn.org.nz/flora\\_details.asp?ID=421](http://www.nzpcn.org.nz/flora_details.asp?ID=421)

### Botanic gardens congress papers available

The papers presented at the 4th Global Botanic Gardens Congress are now available on the BGCI website: [Global Botanic Gardens Congress](http://www.bgci.org/global-botanic-gardens-congress)

The Fourth Global Botanic Gardens Congress 'Addressing global change – a new agenda for botanic gardens' was held at the National Botanic Gardens of Ireland near Dublin from 13 to 18 June 2010. The congress was a great success with over 370 delegates attending, representing 53 countries. There were 13 plenary addresses, 27 parallel sessions (of which 12 were organised symposia on special topics), 136 talks and 3 panel discussions. Feedback was provided at the end of every session and was divided into three themes:

- strategies and targets
- conservation action
- engaging with society

A conclusions session on the last day of the congress led to a conclusions presentation.

During the Congress there were calls to establish:

- A Botanic gardens cycad collections consortium (as part of IUCN SSC)
- A European network of botanic gardens working with cryptogams
- An Oceanic Island Plant Network

For more information: [Botanic Gardens Conservation International](http://www.botanicgardensconservationinternational.org)

## Long term programme fighting kauri disease—six government agencies and Māori are working together to try to stop the spread of a disease that affects kauri trees

Lisa Gibbison, Senior Communications Adviser, MAFBNZ ([Lisa.gibbison@maf.govt.nz](mailto:Lisa.gibbison@maf.govt.nz))

This new-to-science disease—kauri dieback (*Phytophthora taxon Agathis* or PTA)—affects only kauri and can kill trees of all ages and sizes. Originally set up as a response to identify and manage the risks to kauri, the Kauri Dieback Management Programme came into being a year ago.

Members of the Network know that kauri is a nationally and regionally significant species that is a Taonga of great significance to Māori and has cultural value for many New Zealanders. Kauri is among the world's tallest trees and once covered much of the upper North Island. Kauri trees are part of New Zealand's history and an essential part of the ecosystem because they are home to many other trees, plants and threatened wildlife.

Kauri dieback is believed to be a soil-borne disease spread mainly through soil and soil water movement and transferred by people, tracked from place to place on shoes, equipment and tyres. Affected trees show yellowing leaves, canopy thinning, dead branches and lesions that bleed resin across the lower part of the trunk. All New Zealanders, and visitors, using kauri areas are asked to always keep to defined tracks, clean footwear and equipment before and after leaving kauri forest areas and stay away from kauri tree roots.



The bleeding resin sign of attack by kauri dieback. Photo: MAFBNZ.



The Pakiri epicentree of infection. Photo: MAFBNZ.

Decisions taken by Cabinet, tangata whenua and regional councils in late 2009 to jointly lead the programme weaved together each agency's various strengths, all of which are needed to protect New Zealand's ancient kauri forests. The six programme partners—the Ministry of Agriculture and Forestry (MAF), the Department of Conservation (DOC) and four councils, Auckland Council, Northland Regional Council, Bay of Plenty Regional Council and Environment Waikato—are working together with Maori on the overall strategy of the programme that is to protect kauri from this disease by containing it to infected sites, reducing its impact within those sites, preventing or slowing its spread across the kauri region and concentrating effort to keep it out of high value sites that are disease free.

Over the first nine months of the programme, the key focus was to learn more about kauri dieback and how to manage it, to put in place protection within forests (e.g., by upgrading tracks and installing cleaning facilities at forest entrances and exits) and to get information out to forest users about the part they play in the success of the programme. Another important focus has been on developing a management plan for the programme and finalising the core team to deliver this.

Looking to the near future, a priority is to initiate a surveillance programme that will help the programme gain an understanding of where this disease is and is not located. The outcome of this surveillance will enable refinement of the programme strategy and target effort or re-evaluate if the disease proves more widespread than is currently known and predicted. As the 'disease status' of key kauri sites is clarified, the best mix of protective measures will be implemented at each site—whether it be signage and interpretation, track hygiene stations, track upgrades, track re-routing or closure and/or animal vector control.

## Killer plant in tussle with Chatham icon in national contest

The Chatham Island forget-me-not (*Myosotidium hortensium*) has won the national poll to find New Zealand's favourite plant for 2010. In a vote that appeared to be dominated by the potentially deadly tree nettle (*Urtica ferox*), the Chatham Island forget-me-not overtook its nearest rival in the final fortnight and never wavered.



The top three plants in the 2010 national poll for New Zealand's favourite plant. (from left) 1st: Chatham Island forget-me-not (photo: Peter de Lange); 2nd: tree nettle; 3rd: bamboo rush (photos: Jeremy Rolfe).

The Chatham Island forget-me-not is an iconic megaherb, forming patches up to 1 m tall and up to 1.5 m diameter. It is endemic to the Chatham Island archipelago where it grows on wild coastal cliffs, rock outcrops, sandy and rocky beaches just above the strand zone and coastal forest openings. With its large blue-flowered inflorescences, it is revered by gardeners nationwide but is threatened with extinction in the wild.

Supporters of butterfly conservation placed their votes in favour of the tree nettle that is a host plant for the red admiral butterfly. Others suggested that the killer plant was perfect for deterring burglars when planted below windows.

More than 125 plant species were voted for via the website of the New Zealand Plant Conservation Network – a national on-line repository of information about plants. The more traditional New Zealand plant icons missed out again with the silver fern placing 11th and pohutukawa 23rd.

Previous winners of the annual poll have included pohutukawa, Cook's scurvy grass and, in 2009, pingao (the golden sand sedge).

The Top 10 native plants for 2010 were:

1. *Myosotidium hortensium* (Chatham Island forget-me-not, kopakopa, kopukapuka)
2. *Urtica ferox* (ongaonga, tree nettle)
3. *Sporadanthus ferrugineus* (bamboo rush, giant wire rush)
4. *Metrosideros bartlettii* (rata moehau, Bartlett's rata)
5. *Rhabdothamnus solandri* (New Zealand gloxinia, kaikaiatua)
6. *Clianthus maximus* (kakabeak, kowhai ngutu-kaka)
7. *Cordyline australis* (cabbage tree, ti, ti kouka, palm lily)
8. *Muehlenbeckia astonii* (shrubby tororaro, wiggywig, mingimingi)
9. *Dacrydium cupressinum* (rimu, red pine)
10. *Metrosideros robusta* (northern rata)

([view the top 100](#))

For more information and photographs of these plants, see the Network website ([www.nzpcn.org.nz](http://www.nzpcn.org.nz))

## Otamahua/Quail Island restoration planting report 2010

Colin Burrows, Otamahua/Quail Island Restoration Trust

Planting proceeded very efficiently throughout August. Only a few plants destined for some special sites are left (mid October). The weather conditions were generally beneficial, with the drought of January–March giving way in May to heavy precipitation. About 3,400 plants have been put in. Our efforts have been directed at: filling gaps in earlier plantings mainly with kanuka and kohuhu; using the same species to fill some spaces in West Basin, not finished in 2009; placing a considerable variety of only moderately frost-hardy species in small gaps surrounded by well-grown plants to increase diversity (ngaio, lemonwood, broadleaf, houhi, manutu, karamu, green akeake, red mapou, lancewood, five-finger); planting some sizeable patches of manuka grown from seeds collected on Otamahua; and planting small patches of matagouri, also raised from Otamahua seeds. Much of the action was in the Stock Dam Valley basin. In September–October volunteer work parties have: put in the last of the manuka, shifted many silver tussocks from areas where they are being overwhelmed by trees to a new location above “treeline” on the Summit ridge; started a new stand of diverse woodland (with moderately frost-hardy species mentioned above) and also kotukutuku, kaikomako, wineberry, titoki, pokaka, matai in a frost free site—we call it “Fern Nook” as there are seven natural and three planted fern species there.



Kotukutuku, kaikomako, and pokaka: three of the species planted to increase diversity on Quail Island.

Photos: Jeremy Rolfe.

A further effort to increase native plant diversity on the island has been the purchase of small numbers of seven fern species. These are being tucked into favourable sites among earlier plantings as a trial to test their ability to cope with conditions on the island (three species of hard fern, a maidenhair, scented fern and silver tree fern). We are extremely grateful to Jorge Santos and Nicky (Motukarara), our own staff Peter, Tony, Andrew and Bernice, to Ian and Bev MacDonald and to Ian McLennan, as well as a host of volunteers for all their hard work for this project.

(Reproduced with permission from *Quail News*, number 35, December 2010)

### Forum Officer

The Council would like to appoint a Forum Officer whose major function would be to moderate new postings to the Forum on the website and decide whether to allow them. In addition, the officer would be expected to seek ways to improve the usage and design of the system. Any member who is interested in carrying out this job for the Network is asked to contact the President, Philippa Crisp ([Philippa.Crisp@gw.govt.nz](mailto:Philippa.Crisp@gw.govt.nz)).

### CURRENT FORUM THREADS

- How can one get rid of *Selaginella kraussiana* without killing the grass in which it is found?
- Other than in Lower Hutt, does anyone know of a specimen of *Sophora japonica* 'Pendula', a notable tree which seems to be very rare in NZ?

## **Australian Network for Plant Conservation – call for articles**

In *Australasian Plant Conservation* issue 19(4), March–May 2011, we aim to look at plant conservation activities on land owned and/or managed by Aboriginal/Indigenous communities. This includes land that is held under native title, various Land Rights regimes, land in the Indigenous Protected Area (IPA) network and traditional lands that communities are helping to manage.

**Articles on overseas experience with relevance to Australia are also welcome.** Relevant plant conservation activities include native vegetation management to retain habitat value and component plant species; conserving species traditionally used as food or medicinal plants or for cultural purposes; and actions related to the recovery of plant species or ecological communities listed under state and national environmental laws. Articles may focus on any aspect of plant conservation, including planning, partnerships, education and on-ground activities.

We also hope to have overview articles on the recognition and value of traditional knowledge, and we would be interested in articles on good practice in work between Aboriginal and non-Aboriginal people and organisations on conservation issues. Articles should be no longer than 1200 words. Where possible, they should be illustrated with one or two photographs that have been cleared with the appropriate people for publication, and have appropriate captions and photographer credits. Authors of articles submitted to APC bear the main responsibility for ensuring appropriate permissions for the content and use of stories and images. **The deadline for articles is 12 February 2011.** If you would like to submit an article, please contact Rosemary Purdie, Editor, *Australasian Plant Conservation*, by e-mail ([Rosemary.Purdie@environment.gov.au](mailto:Rosemary.Purdie@environment.gov.au)). Contacting her at an early stage of interest or writing is helpful.

## **Ignore diversity at Earth's peril**

*Ian Spellerberg, Lincoln University ([ian.spellerberg@lincoln.ac.nz](mailto:ian.spellerberg@lincoln.ac.nz)) and Jeff McNeely (IUCN)*

Yet another climate change meeting has just finished. In Cancun (Mexico) the UN Climate Change Conference closed on Saturday with some reports suggesting progress but without binding agreements. Once again climate change is headline news. In contrast, that equally if not more important environmental issue of biological diversity receives far less coverage in the media.

Back in October, we recall that for just one day there was fleeting news about the UN Biodiversity Conference in Nagoya, Japan. The media referred briefly to the comment “We are destroying life on Earth”. This alarming claim was made by Achim Steiner (UN Under-Secretary General and Executive Director of the UN Environment Programme). He went on to say “The plants and animals, fungi and microorganisms that produce and clean our air, generate drinking water, hydro-power and irrigation; provide food, shelter and medicines and also bring to many joy and a spiritual dimension to our daily lives need a helping hand—if not for their sakes, but for ours.”

That conference comes in the Year of Biological Diversity. The aim is to help increase a greater understanding and awareness of nature and biodiversity issues. Climate change may be a concern but things are not looking good for nature and biological diversity! For example, an article published earlier this year in *Science* (April 2010) reported that the 188 governments who agreed to achieve “a significant reduction in the rate of biodiversity loss by 2010” are going to fall woefully short of their target. That article was a collaborative effort of leading experts on many aspects of biodiversity. They found that trends in species population size, their risk of extinction, extent of habitat, and the composition of plant and animal communities all show continuing declines. Perhaps worse, levels of resource consumption, the number of invasive alien species, over-exploitation of many species were all found to be worsening.

But this is not for lack of effort by many individuals, organizations and governments. There have been increases in the number of protected areas, greater diversity in the kinds of habitats they include, increase in the area of forests that are being managed sustainably, growing policy responses to invasive alien species, and greater international funding for conserving biodiversity. So what more

can be done? We believe quite a lot can be done by individuals, organizations, business and regional and national governments. It sometimes seems that people are getting the blame for the continuing loss of nature, as leading consumers of natural resources, but people are also the solution

First, spend more time with nature, whether it be in a backyard garden or visits to national parks. New evidence suggests that children who spend too much time indoors, obsessed with their computer games, suffer from an insidious “nature deficit disorder.” Studies reported by Richard Louv (co-founder of the Children and Nature Network) led to him identifying this problem in his 2005 book (*Last child in the woods: saving our children from nature-deficit disorder*). He found that children who spend more time outdoors are better adjusted to do better schoolwork and live happier lives. Adults, too, gain multiple benefits from the many pleasures of enjoying the diversity offered by nature, including the health benefits from outdoor exercise and the psychological benefits that have been shown to come from the great outdoors. The famed Harvard University biologist Edward O. Wilson contends that humans have a natural affinity for nature, which he calls “biophilia.” Finding more ways for people to connect with nature may lead to more of it being conserved.

Second, there needs to be more effective systems for monitoring the state of diversity at many levels of biological, ecological and genetic levels of organisation. This is an extraordinary challenge and is probably the most practical at the species level. The goal is to create a “Barometer of Life” by using perhaps 150,000 species of plants, vertebrates, fish and insects that are being regularly observed by scientists, protected area managers and lay people—such as birdwatchers and gardeners. Here in New Zealand, the Biodiversity Recording Network (an online nature recording system) provides a valuable tool for people to report observations of wildlife<sup>1</sup>. The provision of regular and reliable information will make it harder to ignore what is happening. Involving the public, schools and community groups in these monitoring efforts will help make this a part of local culture based on local expressions of nature.

Third, and this might sound radical for some conservationists, but putting a price tag on nature could help conservation. A major international project, The Economics of Ecosystems and Biodiversity, is well on its way to producing a detailed report on this topic. The project has already included some interesting data. For example, from a 2004 New Zealand report, it is said that Department of Conservation spending and activities (that are dependent on Public Conservation Lands) form a significant part of the West Coast regional economy. Preliminary results claim that total output for all activities was estimated to provide 1,814 jobs (14.7% of total jobs on the West Coast) and spending in the region of about NZ\$221.6 million per year (10.2% of total spending for the region). On the other side of the World, in the US, private spending on wildlife-related recreational activities amounted to US\$122 billion in 2006. Numbers like this illustrate very clearly just how important nature and nature conservation is to our economies. We cannot afford to ignore such valuable assets and we must protect them.

Finally, involve the private sector. Business need not lead to the destruction of nature and can do just the opposite. Many resource-based industries, such as farming, forestry, fishing, and energy, now include biodiversity issues in their corporate planning. The services that ecosystems provide to these industries—such as clean water or genes for developing new varieties—are a form a natural capital that deserves investment and careful management to enable the natural capital to increase. Major retailers in Europe are now insisting that their suppliers use environmentally friendly forms of resource harvesting, often with certification such as that granted by the Forest Stewardship Council. Involving the private sector helps make conservation everyone’s business.

It is a pity that news about the climate change debate continues to obscure what is possibly an even more important environmental issue and that is the continuing loss of the very thing that sustains us – Nature’s diversity.

*(First published in The Press, Christchurch, Tuesday 14 December, 2010)*

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1 The Network’s phenology recording system is another resource of people’s observations.

## UPCOMING EVENTS

If you have important events or news that you would like publicised via this newsletter please e-mail the Network ([events@nzpcn.org.nz](mailto:events@nzpcn.org.nz)):

### Auckland Botanical Society

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**Field trip:** Friday 28 to Monday 31 January 2011 the Auckland Anniversary Weekend Camp at Waikawau Bay, Coromandel Peninsula combined Auckland and Waikato Botanical Society Auckland Anniversary Weekend trip, see below for details.

**Contact:** Maureen Young, e-mail: [youngmaureen@xtra.co.nz](mailto:youngmaureen@xtra.co.nz).

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### Waikato Botanical Society

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**Field trip:** Friday 28 January to Monday 31 January, Auckland Anniversary Weekend Camp to Waikawau Bay, Coromandel Peninsula on NE side. **Accommodation:** Karuna Falls Community Hall, Waikawau Beach Rd and some tent sites. **Arrival time:** 2.00 pm Friday. **Cost:** \$15 per head per night plus food costs.

**Leader:** Wayne Todd, Moehou Environment Group. **Coordinator:** Jan Butcher, ph: 09 236 9722, mobile 027 2413701, e-mail: [jjbutcher@ps.gen.nz](mailto:jjbutcher@ps.gen.nz) (please book by 20 January).

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**Field trip:** Saturday 29 to Monday 31 January to Whenuakura Plains (Whanganui River), Southern Pureora Forest Park (combined Waikato and Rotorua Botanical Society, Auckland Anniversary Weekend Trip).

**See below for details**

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### Rotorua Botanical Society

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**Field trip:** Saturday 29 to Monday 31 January to Whenuakura Plains (Whanganui River), Southern Pureora Forest Park (combined Waikato and Rotorua Botanical Society Anniversary Weekend Trip). **Grade:** easy – medium. Bring your own lunch & breakfast, drinking water and something for a pot luck dinner on Saturday and Sunday nights. **Accommodation:** tenting or sleeping in the back of the car. **Meet:** 11.00 a.m. Saturday 29 January at the car park at the start of the Waihaha Track on Western Bays Road.

**Leader:** Thomas Emmitt (WBS), ph: 07 878 1080 (wk), 07 878 4737 (hm), e-mail: [temmitt@doc.govt.nz](mailto:temmitt@doc.govt.nz) (please book by 22 January 2011).

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### Wellington Botanical Society

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**Field Camp:** Wednesday 29 December – Friday 7 January 2011 the summer camp in Northern Fiordland jointly with Botanical Society of Otago. **Accommodation:** indoors and camping at Boyds Creek Lodge, c. 40 km NE along SH94 from Te Anau.

**Contact:** Mick Parsons, ph: 04 972 1142, e-mail: [mtparsons@paradise.net.nz](mailto:mtparsons@paradise.net.nz).

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### Nelson Botanical Society

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**Field trip:** Sunday 16 January to Dean Walker's property, Rainey River. **Meet:** 8.00 am at Selwyn St between the large gum tree and the church steps.

**Leader:** Sally Warren, ph: 03 546 6637.

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**Field trip:** Friday 28 to Monday 31 January, Nelson Anniversary Weekend Camp to Cobb Valley. Please indicate to the leader if you wish to attend this camp.

**Leader:** Shannel Courtney, e-mail: [scourtney@doc.govt.nz](mailto:scourtney@doc.govt.nz).

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## Canterbury Botanical Society

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**Field trip:** Tuesday 4 to Tuesday 11 January the Summer Camp 2011 at the Cobb Valley. Places still available.

**Contact:** Margaret Geerkens,  
ph: 03 352 7922, either e-mail:  
[geerkensmr@xtra.co.nz](mailto:geerkensmr@xtra.co.nz)

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## University of Canterbury summer course: Practical Taxonomy for Field Biologists BIOL 305

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**Training:** This is an intensive, short summer course designed to meet the need for training in the collection, preparation, and identification of botanical specimens. Venue: Mountain Biological Field Station at Cass, Canterbury. **Dates:** Thursday 27 January to Friday 4 February 2011.

**Information:** [www.biol.canterbury.ac.nz/biol305](http://www.biol.canterbury.ac.nz/biol305) or contact Dr Pieter Pelsler, ph: 03 364 2987 ext 45605, e-mail: [pieter.pelsler@canterbury.ac.nz](mailto:pieter.pelsler@canterbury.ac.nz).

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## Botanical Society of Otago

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**Field trip:** Wednesday 29 December to Friday 7 January in Northern Fordland jointly with the Wellington Botanical Society. See the Wellington Bot Soc website ([www.wellingtonbotsoc.org.nz](http://www.wellingtonbotsoc.org.nz)) or contact Mick Parsons: e-mail: [mtparsons@paradise.net.nz](mailto:mtparsons@paradise.net.nz), ph: 04 972 1142.

**Local contact:** [Allison Knight](mailto:Allison.Knight@otago.ac.nz), ph: 03 479 7577.

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**Field trip:** Saturday 22 January to McPhee's Rock, Rock and Pillar Range. **Meet:** at the Botany Department car park at 9.00 a.m.

**Contact:** [Bill Wilson](mailto:Bill.Wilson@otago.ac.nz),  
ph: 03 477 2282.

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