



TRILEPIDEA

NEWSLETTER OF THE NEW ZEALAND PLANT CONSERVATION NETWORK

Please send news items or events to events@nzpcn.org.nz

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

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Deadline for next issue: Monday 13 August 2007

Message from the President

Phenology is big business in the U.K. and it attracts thousands of volunteers. I was reminded of this with the passing of the longest night and the shortest day. It is comforting that the days are now starting to get longer and that spring is a few weeks away.

Wishful thinking? Phenology is of course a very ancient art. It is the study of the timings of natural seasonal events. I was particularly attracted to studies in phenology when, as a student, I had read Gilbert White's diary (1766) about the natural history of Selbourne. For me, phenology, particularly the volunteer aspect of phenology, is a fundamental aspect of ecological monitoring and monitoring the state of our environment. Phenological studies can tell us a lot about changes taking place in nature. Every year I try to coax students to keep a natural history diary. Even just a diary of events in the back garden is worthwhile. Simple observations about the first flowering of some native trees would make a valuable contribution to studying our natural environment. I suspect that my efforts would be more successful if the students felt that they were contributing to some kind of national programme.

There does not appear to be a volunteer botanical phenology network in New Zealand—or have I overlooked something? Wouldn't it be exciting if there were such a network of volunteers? I am sure that thousands of people make notes every year about seasonal events in nature. That being the case, all that it would take to establish a phenology network would be to have some kind of infrastructure for receiving and compiling the information. Perhaps we already have that infrastructure or could, quite easily, build it onto the Network website?

Now, I hope that all of this will prompt many of you to send some observations to the Network newsletter. We want articles, observations, reports and announcements from readers. We are keen for all contributions. Please, please send us some material, no matter how small. No, don't say that someone else will do it. Write and tell us what is happening. Send us questions. Let us have your ideas and observations. I look forward very much to hearing from you.

Ian Spellerberg, Lincoln University

Network Annual General Meeting for 2007

The Network AGM will take place on Friday 5 October at Turnbull House, Wellington from 5 p.m. till 8 p.m. The event will start with a meeting to elect the new Network council followed by discussion on issues of interest to members. There will then be food and drink for members. We then intend to hold a public lecture at 6-30pm open to members of other NGO's, government agencies and the public followed by another chance to mingle. Dr Matt McGlone—Science Leader: Biodiversity and Conservation, at Landcare Research will be the guest speaker. The title of his talk will be announced in the next newsletter. We look forward to seeing as many of you as possible at the AGM. Items you would like to have included on the agenda for the AGM should be sent to: info@nzpcn.org.nz

Plant of the Month



Nephrolepis flexuosa at Craters of the Moon.
Photo: John Smith-Dodsworth

Plant of the Month for June is *Nephrolepis flexuosa*, the native ladder fern. This fern is known with certainty from New Zealand, Raoul, Norfolk and Lord Howe Islands, and also Fiji and Rarotonga. It may also be in Australia, Samoa and Sri Lanka and it is probably wide ranging throughout the Indian and Pacific Oceans. It is abundant in coastal forest and scrub on Raoul Island, otherwise in New Zealand confined to the North Island where it is only known from active geothermal fields from about Kawerau south to the Rotorua Lakes District to Lake Taupo, where it reaches a world southern limit at Tokaanu near Turangi.

It is frequently confused with the naturalised and highly aggressive *N. cordifolia*, from which it is easily distinguished by its non-tuberous habit. It is currently listed as Chronically Threatened – Gradual Decline on the New Zealand Threatened plant list and many populations are threatened by the spread of blackberry (*Rubus fruticosus* agg.) and other weeds. At least one population has gone extinct over the last ten years. The Network fact sheet for this species may be found at: http://www.nzpcn.org.nz/vascular_plants/detail.asp?PlantID=799

Surveys of the distribution and density of threatened ferns at geothermal sites in the Waikato region

Sarah Beadel and Chris Bycroft, Wildland Consultants Email: Sarah@wildlands.co.nz



Cyclosorus interruptus.
Photo: John Smith-Dodsworth.

The Network recently contracted Wildland Consultants to undertake surveys of the distribution of six threatened fern taxa typical of geothermal sites in the Waikato region: *Christella* sp. ‘thermal’, *Cyclosorus interruptus*, *Hypolepis dicksonioides*, *Dicranopteris linearis*, *Nephrolepis flexuosa* and *Lycopodiella cernua*. Here is a summary of the findings from that survey.

Ten sites were field surveyed and two new populations of threatened species were found; *Cyclosorus interruptus* at Red Hills, and *Dicranopteris linearis* at Ngatamariki. *Christella* sp. ‘thermal’ is currently known from 12 geothermal sites in the Waikato Region, but records show that it has become extinct at four other locations. This taxon is also known from two other sites in the Bay of Plenty Region. The number of extant populations for each of the other five species at geothermal sites in the Waikato Region are as follows: nine sites (*C. interruptus*), two sites (*Hypolepis dicksonioides*), 19 sites (*D. linearis*), 13 sites (*Nephrolepis flexuosa*), and 30 sites (*Lycopodiella cernua*). The number of presumed extinct populations of these species (from the Waikato Region) are as follows: five sites (*H. dicksonioides*), three sites (*C. interruptus*), three sites (*N. flexuosa*), two sites (*D. linearis*), and two sites (*L. cernua*).

Most of the large populations of *Christella* sp. ‘thermal’ in the Waikato Region appeared to be stable (e.g. Waipapa Stream, Red Hills, Orakeikorako, Waihunuhunu Geothermal Area), although some populations appear to have declined in recent years (e.g. Golden Springs, Otumuheke Stream, and perhaps Waikite). There are also two populations in the Bay of Plenty Region (Waimangu-Rotomahana (the largest population in New Zealand) and Te Rata (a small population)). Several populations in the Waikato are very small and could be vulnerable to extinction (e.g. Waikato River Springs and Hall of Fame Stream). Sites with large populations that are important for the conservation of this species in New Zealand are Waimangu-Rotomahana, Waipapa Stream, Red Hills, Waihunuhunu Geothermal Area, Waikite and Golden Springs.

Several threats to *Christella* sp. ‘thermal’ populations were identified at individual sites. Pest plants (most notably blackberry) are common around some populations, particularly surrounding stream margins (e.g. Waipapa Stream, Waikite, Hall of Fame Stream, Orakeikorako, Akatarewa Stream and Lower Wairakei Stream). Other pest plants are also a threat at some sites; e.g. Japanese honeysuckle (*Lonicera japonica*) and barberry (*Berberis glaucocarpa*) at Waikite and grey willow (*Salix cinerea*) at Waikato River Springs. Monitoring and control of these pest plant species should be considered, and undertaken in a manner that does not compromise the species viability at each site. Management of vegetation cover should be undertaken during summer when frosts are rare, to allow the establishment of cover around each population before winter frosts. One option, which may be appropriate at some sites, is to plant appropriate indigenous tree species in dense blackberry scrub to create a canopy cover - this is likely to reduce the vigour of the blackberry. Several sites (e.g. Waipapa Stream, Waihunuhunu and Akatarewa Stream) are near forestry plantations and these sites are vulnerable to disturbance, particularly during and following harvesting. Harvesting operations can damage individual plants during harvesting, also removal of vegetation cover exposures plants to frost damage. It is important to discuss with contractors/landowners involved with harvesting the significance of the plants, and methods to minimise damage to these populations. At Waikite (particularly those plants on the Landcorp Farm), a large proportion of the population is unfenced and could be damaged by livestock. Monitoring and maintenance of fence lines between farmland and all *Christella* sp. ‘thermal’ populations should be undertaken at regular intervals. Exploitation of geothermal fields for energy production has resulted in the extinction of some populations of *Christella* sp. ‘thermal’ (and other fern species typical of geothermal habitat) by changing the surface distribution of geothermal manifestations at several sites in the Waikato (e.g. for *Christella* sp. ‘thermal’ these include sites around Wairakei, Tauhara and Mokai).

Most of the largest populations of *Cyclosorus interruptus* have appeared stable in recent surveys (e.g. Waihunuhunu Springs, Otumuheke Stream, Waikite Wildlife Management Reserve, and Waiotapu South (population in wetland south of Lake Ngakoro). Other populations cover <0.1 ha and have a small population size (<200 plants), (e.g. Ngatamariki, Orakeikorako, Red Hills, Akatarewa Stream, and Waikite (Landcorp Farm population), and Waipahihi Valley). The populations at two of these sites appear to have declined in recent years (Orakeikorako and Waipahihi Valley). *Cyclosorus interruptus* is also known from five geothermal sites in the Bay of Plenty Region (including Waimangu-Rotomahana and Waitangi Soda Springs Mire are two of the best populations at geothermal sites in New Zealand). This species is also found at non-geothermal sites in coastal areas in the Bay of Plenty (e.g. Matakana Island).

Threats to *Cyclosorus interruptus* populations are similar to those identified for *Christella* sp. ‘thermal’: plantation forestry management (Ngatamariki, Orakeikorako Akatarewa Springs), competition with pest plants (particularly blackberry at Ngatamariki, Waikite - Landcorp farm population, Waihunuhunu Geothermal Area, Akatarewa Stream, and Orakeikorako) and wilding pines (e.g. Ngatamariki), and unfenced sites allowing damage by livestock (Waikite). Generally management options for these threats are similar to those discussed above for *Christella* sp. ‘thermal’.

Hypolepis dicksonioides is probably naturally rare at geothermal sites in the Waikato. It is a naturally short-lived, somewhat ephemeral, opportunistic species, which requires disturbance to create fresh habitats to colonise. It also is known from three geothermal sites in the Bay of Plenty



Hypolepis dicksonioides, Macauley Island.
Photo: John Barkla.

Region. However, all populations at geothermal sites are of botanical interest as they often occur at sites outside its normal altitudinal range. One of the populations (Waikite) is currently fenced to protect plants from grazing animals, but populations are vulnerable to damage by livestock if the fences are damaged. Fences here should be checked regularly and maintained. Both Waikato populations (Otumuheke Stream and Waikite) are vulnerable to competition with pest plants (particularly blackberry).

The most important populations for the conservation of *Nephrolepis flexuosa* in the Waikato are Waihunuhunu Geothermal Area (where it is common along the entire length of the unnamed geothermal stream), Upper Wairakei Stream (Geyser Valley), and Te Kiri O Hine Kai Catchment/Wairoa Hill. Outside of the Waikato, the best population in New Zealand occurs at Waimangu-Rotomahana. In the Bay of Plenty, it is also present at Parimahana and Te Rata (Hot Water Beach). Several populations are small (several clumps only) and could be vulnerable to extinction (e.g. Otumuheke Stream, Maungakakamea (Rainbow Mountain), Maungaongaonga, Te Rautehuia, and Upper Atiamuri).

Threats to *Nephrolepis flexuosa* populations in the Waikato include competition with pest plants (e.g. blackberry at Waihunuhunu Geothermal Area, Otumuheke Stream, and Waikite Valley), and grazing by farm animals at Waikite (particularly those populations on the Landcorp Farm), and management of neighbouring plantation forest (e.g. Waihunuhunu Geothermal Area and Te Kiri O Hine Kai Catchment/Wairoa Hill).



Dicranopteris linearis var. *linearis*, Rainbow Mountain, Maungakamea Scenic Reserve. Photo: Gillian Crowcroft.

The most important populations for the conservation of *Dicranopteris linearis* in the Waikato are Orakeikorako, Red Hills, Te Kopia, and Te Kiri O Hine Kai Catchment/Wairoa Hill. A significant population also occurs in the Bay of Plenty Region at Waimangu-Rotomahana. In the Bay of Plenty Region it is also present at Pukaahu Springs, Parimahana Extension and Parimahana. Populations that are small (several clumps only) and are vulnerable to extinction occur at Ngatamariki (probably a recent coloniser), Ohaaki Steamfield West, Rotokawa North, Maungakakamea, Maungaongaonga, Waiotapu South, Waiotapu North, Te Rautehuia, and Crown Road. The population at Pukaahu Springs in the Bay of Plenty is also very small.

Some *Dicranopteris linearis* populations are threatened by wilding pines and plantation forestry (e.g. Ohaaki Steamfield West, Orakeikorako, Red Hills, Waihunuhunu Geothermal Area, Ngatamariki, Rotokawa North, Te Kopia, and Waiotapu North), while other populations are unfenced and vulnerable to damage by livestock (e.g. Te Rautehuia and Crown Road).

Lycopodiella cernua is present and is relatively common at many geothermal sites throughout the Waikato and Bay of Plenty. *L. cernua* is not threatened at geothermal sites in the Waikato, or in Taupo Volcanic Zone.

Two populations of *Thelypteris confluens* were found during the survey, both at Waikite Stewardship Area. The main direct threat at these sites is the potential spread of grey willow in the wetland. The only other population known to occur in the Waikato is a pre-2000 record at Waihunuhunu Geothermal Area.



Lycopodiella cernua, Coromandel. Photo: John Smith-Dodsworth.

It is suggested that threatened fern populations should be regularly monitored to assess changes due to both natural change and human-induced change. The presence of surface geothermal activity can fluctuate at a particular location and across the landscape over time. Protective buffers around fern populations can help to enhance or maintain the viability of populations to allow for this variability. Small populations could be directly impacted by small-scale changes to the environment (e.g. erosion, vegetation succession, loss of geothermal activity and floods on stream margins). Human-induced disturbance and associated threats include tourism and recreation, rubbish dumping, pest plant competition, domestic livestock damage, plantation forestry, pest mammals, fire, genetic pollution, wetland infilling and drainage, and exploitation of geothermal fields for energy production. Geothermal sites around Wairakei, Ohaaki, Tauhara, Rotokawa, and Mokai have been affected by energy production. Management of threats needs to be carefully considered for each site to minimise damage to each fern population, as each site will have different characteristics (e.g. landform, exposure to frosts, and erosion).

Fact sheets for *Bolboschoenus*, *Ficinia*, *Schoenoplectus* and *Schoenus* completed



Bolboschoenus caldwellii.

Photo: John Smith-Dodsworth.

Machaerina, *Morelotia*, *Tetraria* and *Uncinia* to finish the family. NZPCN is working toward that goal. NZPCN acknowledge Peter J. de Lange, Navdeep Bhatti, Brian Murray and Peter Heenan for their help with finishing these fact sheets.

New Zealand has 18 indigenous cyperaceous genera. At the request of NZPCN members we have been steadily working through the fact sheets for these. Full fact sheets are now available for *Bolboschoenus*, *Cyperus*, *Desmoschoenus*, *Ficinia*, *Fimbristylis*, *Scirpus*, *Schoenoplectus*, and *Schoenus*. In addition fact sheets for all “Threatened” and “At Risk” cyperaceous genera are now available. At the request of NZPCN members we have recently targeted *Bolboschoenus*, *Schoenoplectus* and *Schoenus* to assist members interested in using these species for wetland restoration and also a PhD student studying New Zealand’s *Schoenus*.

Fact sheets still need to be completed for *Baumea*, *Carex*, *Carpha*, *Eleocharis*, *Gahnia*, *Isolepis*, *Lepidosperma*,

Booming China bids to save threatened plants

London, June 21 Reuters

The project, in collaboration with the British-based Botanic Gardens Conservation International, aims to save the 10 percent of the world’s plant species native to China. China appealed on Thursday for international financial backing for a major new plan to save its vast and unique set of wild plants from the ravages of booming economic growth and global warming. The project, in collaboration with the British-based Botanic Gardens Conservation International (BGCI), aims to save the 10 percent of the world’s plant species native to China.

The ultimate aim of the plant conservation plan is to turn nearly 15 million hectares of farmland back to forest - an area larger than England—over the next three years and end logging in the upper reaches of the Yangtze and Yellow Rivers. It also aims to ban potentially polluting developments in key biodiversity areas, crack down on all illegal logging and push money into scientific environmental research.

“The focus of this new strategy is very much plant orientated instead of broader biodiversity, which tends to end up focusing on fauna to the detriment of flora,” said a BGCI spokeswoman.

“The trouble is that this is not a funded plan at this point,” she said, appealing for investors to step forward. BGCI, which is linked with botanic gardens in 120 countries, counts among its key collaborators in the new plan the world renowned Royal Botanic Gardens at Kew in London, the Royal Botanic Garden in Edinburgh and botanic gardens in China.

To start with, the researchers will need to know exactly how many plant species they are dealing with in China. China’s National Environment Protection Agency said in a report in 1997 that the country had one of the richest biodiversities in the world. It said there were more than 30,000 species of higher plants and 6347 species of vertebrates, making up 10 percent and 14 percent respectively of world totals.

“China ranks first in the northern hemisphere in terms of its biodiversity,” the study said.

“Nevertheless, because of China’s long history of exploitation, frequent wars and huge population, the destruction of biodiversity has been great, making its future protection an enormous task,” it said. China is building two coal-fired power stations a week to keep pace with demand in an economy that has posted double-digit growth for four years in a row.

Native orchid field guide published by the Department of Conservation

The Department of Conservation has published a field guide entitled “Wild orchids of the lower North Island”. This was written by Peter de Lange, Jeremy Rolfe, Ian St George and John Sawyer. The book includes information about 72 orchids that occur in the region as well as distribution maps, photographs and valuable keys to help determine which species you have discovered. It is available to Network members for the special price of \$15 (see order form at end of the newsletter). For bulk purchases of 10 copies or more the price is \$13/copy. For more information please contact John Sawyer (jsawyer@doc.govt.nz, T: 04 472 5821)



Ecologist/botanist and biodiversity positions, Christchurch

We seek an ecologist/botanist and a biodiversity coordinator to work with farmers to fill two part- or full-time positions with the NZ Landcare Trust. Based in our Christchurch office (Harewood), these field work roles will cover both Banks Peninsula and Selwyn districts. The positions will deliver our ‘biodiversity on farm’ work programmes, working with the Banks Peninsula Conservation Trust, all levels of government, research organisations and NGOs. Hours of work can be flexible to suit personal needs. Closing date: 17 July. For a job description email bio@landcare.biz

Upcoming Events

If you have important events or news that you would like publicised via this newsletter please email the Network (events@nzpcn.org.nz):

Auckland Botanical Society

Meeting: 2nd August (NB Thursday) Lucy Cranwell Lecture: Ewen Cameron: Thomas Frederick Cheeseman FLS, FZS, FNZ (1845 - 1923).

Field trip: Saturday 21st July, Cascades Kauri Park/Ark in the Park: Leaders, Sandra Jones, John Staniland, Leslie Haines. Contact Maureen (email: youngmaureen@xtra.co.nz) for more details.

Field trip: 18 August, Northern Manukau Coast. Leader: Rhys Gardner

Wellington Botanical Society

Field trip: Saturday 14 July – Te Marua workbee. In partnership with Greater Wellington, BotSoc has been committed since 1989 to do weed control and revegetation in this important matai/totara/maire remnant in Kaitoke Regional Park. Our biennial workbees must continue with planting and weeding, particularly around the plantings, so please come to help with this important work. Bring: gloves, kneeler, weed bag, and your favourite planting and weeding tools e.g. trowel, hand fork, loppers, pruning saw, pinch bar. Maps: R26 Paraparaumu and Upper Hutt street map. Upper Hutt Station carpark at 9 a.m., or Te Marua Bush at 9.30 a.m. 8.05 a.m. train on Hutt line from Wellington Station. Contact: Glennis Sheppard 526 7450, Sue Millar 526 7440.

Meeting: Monday 16 July *Hebe* or *Veronica* – why change back? In 1786 Forster gave koromiko the name of *Veronica salicifolia*. Cheesman's Manual (1925) retains *Veronica* for the group we currently call *Hebe*, although before that some authorities were differentiating NZ hebes from the largely northern hemisphere genus *Veronica*. From 1926 *Hebe* increasingly became the accepted name for the genus. Phil Garnock-Jones, Professor of Plant Science at Victoria University, will explain why it is now proposed to revert to the name *Veronica* for this common group of plants. He has an extensive knowledge of the genus and has published widely on the group. He was closely involved in the recently published "*An Illustrated Guide to New Zealand Hebes*" by Michael Bayly and Alison Kellow. 7.30 pm at Victoria University, Wellington, Lecturer Theatre M101, ground floor Murphy Building, west side of Kelburn Parade. Enter building off Kelburn Parade about 20m below pedestrian overbridge.

Meeting: Monday 20 August 1. Annual General Meeting 2. AP Druce Memorial Lecture: Vascular flora and some fauna of small northern NZ islands. Ewen Cameron, Curator of Botany, Auckland Museum. From the Three Kings to the Bay of Plenty, exploring and documenting the flora of small northern islands and islets has been an enjoyable pastime. Unusual natives or new weeds all help to indicate the wider picture: the status of both the native and naturalised flora. Islands with large seabird populations and no rats make interesting comparisons to those without seabirds and with rats. A range of different islands and their biota will be presented, including a range of "island species". 7.30 pm at Victoria University, Wellington, Lecturer Theatre M101, ground floor Murphy Building, west side of Kelburn Parade. Enter building off Kelburn Parade about 20m below pedestrian overbridge.

Canterbury Botanical Society

Meeting: Friday 3 August: Gemma Bradford, Biosecurity officer (plants) with environment Canterbury. Plant Pests of Canterbury

Field trip: Saturday 4 August: Landcare Research Herbarium field trip. Lead by Ines Schonberger

Botanical Society of Otago

Meeting: Out of the Ashes. Wednesday 18 July 2007 (start: 5.20 p.m). A talk by Robert Scott, Grounds Officer, University of Otago. Out of the Ashes covers the rediscovery of a *Lachenalia* species in the Cape Province of South Africa some 35 years after its original discovery as a new species quite by chance by a kiwi horticulturalist during a working holiday in the Republic. The vastness and the brilliance of the South African flora, as well as some other historic discoveries, will be included in the talk. At the Zoology Benham Building, 346 Great King Street, behind the Zoology car park by the Captain Cook Hotel. Use the main entrance of the Benham Building to get in and go to the Benham Seminar Room, Rm. 215, 2nd floor. Please be prompt as we have to hold the door open. Contact [Kevin Gould](#), phone: (03) 479 9061.

Field trip: Trip to Colinswood Bush. Saturday 21 July, 2007. Start: 1.10 p.m. Near Macandrew Bay, a small native bush remnant at an important stage of restoration. Many weeds still exist, but the

larger exotic trees (sycamore and hawthorn) have finally been removed and the existing and planted indigenous species are beginning to dominate and form a protective canopy. Help with updating the native plant list and with removing some of the weeds will be much appreciated. Leader Nigel McPherson. Meet at the Botany Dept Car Park at 1.10 p.m., or 1.30 p.m. at Howard St. (first street off Portobello Rd. after Glenfalloch), in front of the farm gate between numbers 22 and 24. There is parking on the grass. If on the day there is any doubt about weather conditions please telephone Nigel, 476 1109. Rain date Sun 22, 1.10 pm etc as above. Contact [Nigel McPherson](#), phone: (03) 476 1109.

Field trip: Field trip to Sandymount. Saturday 4 August, 2007. Start: 8.30 a.m. Sandymount is quite a botanically diverse and unusual site. Plants of interest include *Olearia fragrantissima*, *Carmichaelia virgata*, *Helichrysum intermedium*, *Corybas* orchids, *Myosotis pygmaea* var. *pygmaea* and *Melicytus alpinus*. Wear sturdy walking boots, be prepared for all weather, and bring lunch/snacks. Leave Botany Dept car park 8.30 am or meet at the trip leader at the Sandymount car park at 9:00 am. Leader David Lyttle. Contact [David Lyttle](#), phone: (03) 454 5470.

Meeting: Wednesday 10 October, 2007. The Hellaby Indigenous Grasslands Trust – 6th Annual Geoff Baylis Lecture. Start time: 5.10 p.m. Professor Alan Mark will present the 6th Annual Geoff Baylis Lecture with a talk entitled The Hellaby Indigenous Grasslands Trust: Its contribution to the understanding of, and changing attitudes towards, our indigenous grasslands. Geoff Baylis was a Board member since the inception of the Hellaby Trust in 1959 and was Chairman for many years. Professor Mark has also been involved in many different ways since the Trust's inception. The Trust has supported approximately 360 projects over the years. **NOTE SPECIAL VENUE:** Auditorium, University of Otago, College of Education, Union Street East. **Contact:** [Kevin Gould](#), phone: (03) 479 9061.



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