

NEW ZEALAND BOTANICAL SOCIETY

# NEWSLETTER

NUMBER 85

SEPTEMBER 2006



## New Zealand Botanical Society

President: Anthony Wright  
Secretary/Treasurer: Ewen Cameron  
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### Subscriptions

The 2006 ordinary and institutional subscriptions are \$25 (reduced to \$18 if paid by the due date on the subscription invoice). The 2006 student subscription, available to full-time students, is \$9 (reduced to \$7 if paid by the due date on the subscription invoice).

Back issues of the *Newsletter* are available at \$2.50 each from Number 1 (August 1985) to Number 46 (December 1996), \$3.00 each from Number 47 (March 1997) to Number 50 (December 1997), and \$3.75 each from Number 51 (March 1998) onwards. Since 1986 the *Newsletter* has appeared quarterly in March, June, September and December.

New subscriptions are always welcome and these, together with back issue orders, should be sent to the Secretary/Treasurer (address above).

Subscriptions are due by 28<sup>th</sup> February each year for that calendar year. Existing subscribers are sent an invoice with the December *Newsletter* for the next years subscription which offers a reduction if this is paid by the due date. If you are in arrears with your subscription a reminder notice comes attached to each issue of the *Newsletter*.

### Deadline for next issue

The deadline for the December 2006 issue is 25 November 2006

Please post contributions to: Joy Talbot  
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Send email contributions to [joytalbot@free.net.nz](mailto:joytalbot@free.net.nz) or [talbotj@cpit.ac.nz](mailto:talbotj@cpit.ac.nz). Files are preferably in MS Word (Word XP or earlier) or saved as RTF or ASCII. Graphics can be sent as Corel 5, TIF JPG, or BMP files. Alternatively photos or line drawings can be posted and will be returned if required. Drawings and photos make an article more readable so please include them if possible. Macintosh files cannot be accepted so text should simply be embedded in the email message.

### Cover Illustration

*Brachyscome sinclairii* collected by Cathy Jones and Jan Clayton-Greene from Limestone Hill, Clarence Reserve, South Marlborough, 19 April 2006: a. disc floret, b. achene, c. ray floret.

Drawn by Cathy Jones.

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## NEWS

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### New Zealand Botanical Society News

#### • Allan Mere Award 2006

The NZBS Committee is pleased to announce that this year's award of the Allan Mere is to Peter de Lange of the Department of Conservation, Auckland.

His nomination was strongly supported by letters from botanists and organisations from throughout New Zealand, and even a few from eastern Australia. The main sponsors of the nomination were Ewen Cameron and Colin Ogle - Ewen did not participate in the NZBS Committee's decision.

The selections of comments below are from the letters of support and indicate the admiration for Peter from his peers.

"In his relatively short botanical career, Peter has made enormous contributions to New Zealand's botanical knowledge through his field work and plant collections, a remarkable body of peer-reviewed, published papers and many other papers and reports, his delivery of botanical papers at conferences and workshops, his mentoring of other botanists, especially younger ones, and many contributions in areas of plant conservation. In fact, it is now rather difficult to read something on New Zealand vascular botany where if he's not an author or co-author he is not cited or thanked in the text.

Since 1990 Peter has worked as Threatened Plants Scientist, Science & Research Unit, Department of Conservation with research interests in both the native and naturalised vascular flora. He has lectured in many botanical and conservation courses at universities and other institutions, and has served on many committees, some in official roles.

Peter maintains strong research interests in issues regarding conservation biology, rarity and threat classification systems, New Zealand/South Pacific insular botany, and ultramafic flora speciation (especially that of the North Cape Scientific Reserve). He has strong interests in the interaction between plant biosystematics, ecology and geology. Through his current PhD research he has learned several cytological techniques including how to obtain chromosomes from New Zealand vascular plant tissues, Genomic *In Situ* Hybridism, and also investigated the merits of molecular techniques for conservation biology and biosystematics. We believe that he is now an established authority in such matters."

"I have found Peter's breadth of knowledge of New Zealand plants quite extraordinary. His publication output of an average of 9 peer-reviewed publications per year over the last decade is probably without peer in Australasian botany."

"Our Society also recognizes the extraordinary level of assistance that Peter has given to a variety of budding botanists from a diversity of fields – this, despite his studying for his own PhD!"

"Recognition of such specialist work is extremely important and must help long term in the conservation of our land."

"Peter is undoubtedly a leading figure in NZ taxonomic botany. In recent years, through a succession of well-written published papers ..., he has resolved numerous taxonomic questions regarding the NZ native flora, through formal description of new taxa."

"He is a plant taxonomist with an encyclopaedic knowledge of the native flora as well as being intimately involved in threatened plant conservation."

"I regard Peter as one of a number of mentors who have both greatly assisted me to do my job and helped improve my botanical skills and knowledge."

"I have been impressed by the quantity and quality of his published work and enjoyed working with him on occasions in joint publications. Above all he is an excellent field person and collector with a wide command of the natural sciences and ability to discern something new or different in the field."

"Peter has also made a key contribution towards furthering the conservation of threatened plants in NZ by working closely with a wide range of individuals, many within the DOC, but also some outside, who are involved in the day-to-day management of our native flora. This input has generated considerable enthusiasm for threatened plant management and I believe has been pivotal in raising the profile of the threatened plants of NZ."

"Peter inspires people to ask questions about our plants, encourages them to learn more about plants and most importantly works hard to protect the unique plant life in NZ."

"He possesses not only an amazing depth of knowledge about the plants themselves, but also an appreciation of a much wider breadth of disciplines that are applied to the study of their ecology and taxonomy, including my own area of DNA-based phylogenetics."

"His productivity across a wide range of taxonomic groups, his interest in the conservation of rare plants, his interest in floristics, are almost staggering; where does his energy come from? In a mere 18 years, he has published more high quality papers than many botanists do during their entire working life."

"His name is associated with a very high proportion of the recent biosystematic plant literature. In particular, it is characterised by a broad familiarity with a number of related disciplines such as ecology, biogeography, geology and of course conservation."

Heartiest congratulations Peter! The Allan Mere will be presented to Peter during the Cheeseman Symposium wine and cheese evening to be held at the Auckland Museum, 6-7pm on Tuesday 21 November 2006.

**Anthony Wright**, President, New Zealand Botanical Society

• **Call For Nominations**

Nominations are called for the following positions of Officers and Committee of the New Zealand Botanical Society for 2007:

- President
- Secretary/Treasurer
- 3 Committee Members

Nominations for all positions opened 1 September 2006 and close on 19 November 2006. Nominations shall be made in writing to the Secretary, c/- Canterbury Museum, Rolleston Avenue, Christchurch 8013, and shall be signed by the Proposer, the Seconder, and by the Nominee to indicate their acceptance of nomination. If necessary, ballot papers for a postal election will be circulated with your December *Newsletter*.

Joy Talbot has indicated that she would really like to step down as Newsletter Editor next year if another candidate can be found. If anyone would like to know more about the position, please contact Joy. Anthony Wright would be pleased to hear of any offers of service or suggestions as to who would make a suitable editor.

**Ewen Cameron**, Secretary/Treasurer NZBS

## Regional Botanical Society News

### • Auckland Botanical Society

#### June Meeting

Following some controversy about the Waitakere City Council planting gorse on roadsides, Chris Firkins put the record straight by outlining the strategy that is used. Gorse is not planted. The road contractors are trained to spot spray instead of blanket spraying, and the flail mowers are raised so that the ground is not scalped, but native plants are given a chance to re-establish.

For the second talk of the evening Rhys Gardner spoke of his work on Niue Island following Cyclone Heta in 2005. The plants there have a largely pan-Pacific distribution, with perhaps only one endemic.

#### June Field Trip

The day's walk took in two patches of bush in Centennial Park, Campbells Bay, North Shore. The first was a weed infested gully, and advice was sought on how to best to restore it to health. By contrast, the main area, consisting of gumland scrub with a stream and wetland area, shows how the efforts of enthusiastic locals can aid the natural regeneration. Three species of *Tmesipteris* were seen on one tree fern, and the fourth species was found nearby. Two gumland species were *Dracophyllum sinclairii* and *Tetraria capillaris*. The park also contains the northernmost population of *Hymenophyllum bivalve*.

#### July Meeting

Leon Perrie's explanation of his reasons for splitting *Polystichum richardii* into 3 species restored the confidence of those of us who have had difficulties with identification of the new species. Fieldwork will tell if this confidence is misplaced! Two problems within *Asplenium* were also clarified – the presence of two entities within *Asplenium gracillimum*, and the reason why the fern sold as *A. bulbiferum* differs from that found in the wild.

#### July Field Trip

Despite the forecast, a fine day ensured that an enjoyable time was had exploring the Islington Bay area, and the coastal track back to the main wharf. The bulbs and succulents that have naturalised from the Islington Bay bach gardens are a feature of the vegetation. *Bryophyllum delagoense*, with orange flowers, was the common plant at the Controlled Mine Base, growing in the cracks between the concrete slabs, and with thousands of plantlets spreading over the concrete. *Brachyglottis kirkii* var. *kirkii*, here growing terrestrially, was in early flower.

#### August Meeting

Tim Martin gave a short presentation on Kaikoura Island, outlining the restoration plans of the Motu Kaikoura Island Trust. Peter Johnston, the main speaker for the evening, visited Campbell Island in 2000 and the Auckland Islands in 2006. He spoke on these islands and their biota and how it relates to New Zealand.

#### August Field Trip

A very pleasant walk led down the La Trobe and Taraire Tracks to Karekare in the Waitakere Ranges. The *Alseuosmia macrophylla* was in early flower. Some special plants to catch the eye included *Asplenium hookerianum*, *Lastreopsis velutina*, *Celmisia major* var. *major*, *Leionema nudum*, *Pimelea longifolia*, *Scandia rosifolia* and *Sophora fulvida*. The two orchids that are "hooked on kauri", *Pterostylis agathicola* and *Diplodidium brumalium*, were flowering.

#### Forthcoming Activities

6 September	Anne Fraser: Orchid – <i>Thelymitra matthewsii</i>
	Tristan Armstrong: The phytogeography of the NZ cabbage tree
16 September	Atiu Creek Regional Park, Okahukura Peninsula, Kaipara Harbour
4 October	Mike Wilcox: Auckland native herbs
	Naomi Lorimer: <i>Epilobium</i>
21–23 October	Labour Weekend camp – Otamatea, North Kaipara
1 November	Darren Crayn: Ericaceae

4 November Rotorua Island  
20 November Lucy Cranwell Lecture: Ewen Cameron: "Thomas Cheeseman"  
20 – 22 November Cheeseman Symposium

**President: Mike Wilcox**

**Secretary: Elaine Marshall** 3jems@ww.co.nz PO Box 26391, Epsom, Auckland 1344

• **Rotorua Botanical Society**

Field trip 11 June: 20m x 20m plotting on Mt Ngongotaha

This was a field trip with a difference, with systematic ID and measurement of vegetation in a defined area replacing the 'purposeful wandering' that usually characterises Botanical Society outings. It also marked a beginning in the long journey to restore the indigenous ecology of Ngongotaha, Rotorua's iconic mountain, lead by the Mt Ngongotaha Bush Restoration Trust.

Eleven souls turned out for the day, possibly the first time a cricket team has been fielded for the job of 20 x 20m forest plotting. Following a quick tutorial, those with a talent for straight lines laid out a series of tapes into a neat 20 x 20m square, and subdivided it further into sixteen 5 x 5m squares.

Chris Ecroyd and John Hobbs took on the understorey plots, counting individuals of species present to the magic height of 1.35m in 24 plots of 50cm radius. Peter Richardson and Grant Milligan took on the supplejack as part of counting individuals of species present of each and every sapling taller than 1.35m but less than 3cm dbh (diameter at breast height). Moving up the tiers, Gael Donaghy, Peter McKellar and Mark Tiedt tagged and measured the diameter of all stems over 3cm dbh. Graeme Jane and Richard Gillies wandered around while compiling a species list, site description and assessing tier composition. Jenny Lux and David O'Connor patrolled the perimeter, taking photos, whacking up permatol to aid re-location, and generally making sure no one tried to make a break for it. By 2:30pm it was all over, the story of a tiny piece of Mt Ngongotaha forest writ large on the data sheets – tawa forest with occasional mahoe, porokaiwhiri (pigeonwood) and katote, a couple of patches more or less occupied by supplejack, plenty of large dead trees around (including northern rata) and an ancient rimu looming overhead.

Acknowledgements are owed to Jenny Lux, who developed the vegetation monitoring plan for Ngongotaha and put it into action on the day; Rebecca Lander from the DOC Rotorua Lakes Area Office gave advice to ensure compatibility with DOC's 20 x 20m methods for the Bay of Plenty, and provided much of the plotting gear.

**FUTURE TRIPS**

2 September Mt Tauhara; Leader: Sarah Beadel ph 07 362 4315 (hm)  
16 September Okareka Mistletoe Restoration Project Host Planting / Weed Control Day  
14 October Lake Rotokawa/Rainbow Mountain; Leader: Chris Bycroft [chris@wildlands.co.nz](mailto:chris@wildlands.co.nz)  
5 November Dickeys Flat-Waitewheta River, Kaimai-Mamaku Forest Park; Leader: Graeme Jane ph 07 570-3123.  
18 November Okareka Mistletoe Restoration Project Weed Control/Plant Releasing Work Day  
Leader: Paul Cashmore 07 348 4421 (hm), 349 7432 (wk)  
3<sup>rd</sup> December Te Waihou Walkway and Wairere Falls  
Combined Christmas trip with Waikato Botanical Society; Leader: Andrea Brandon ph. 07 858 1018 (wk) or [abrandon@doc.govt.nz](mailto:abrandon@doc.govt.nz)

c/- National Forestry Herbarium, Private Bag 3020, Rotorua 3046

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• **Nelson Botanical Society**

May field trip – "Dunloggin" St Arnaud, May 21<sup>st</sup> 2006

The weather was very uncertain, and only 7 of us took the plunge to walk through this privately owned piece of forest. The property is 25 ha, with a large wetland dividing the predominantly beech forest in two. At the entrance there was a carpet of *Gaultheria macrostigma* covered in globose, deep pink

berries. The beeches, red, silver and mountain, sheltered many plants, including *Coprosma foetidissima*, *C. linearifolia*, *C. microcarpa*, *C. propinqua* and *C. tayloriae*, along with a scattering of ferns – *Asplenium flaccidum*, *Blechnum penna-marina*, *Grammitis billardierei* and *Histiopteris incisa*. Walking down the hill towards the wetland, we came across the wire rush *Empodisma minus* trailing over some sphagnum moss. The wetland itself is quite extensive with an exotic *Cyperus* sp. covering a major part of the area. In spite of this several little treasures turned up – *Muehlenbeckia axillaris*, *Lagenifera strangulata*, *L. pinnatifida*, *Viola lyallii*, and *Geranium* aff. *microphyllum*. Species of *Gahnia* were seen, as well as *Juncus edgariae*. Moving across to the other side of the wetland we encountered a much thicker unspoiled beech forest where we came across a grove of kaikawaka (*Libocedrus bidwillii*). Nearby *Halocarpus bidwillii* and *H. biformis* were growing as quite sizeable trees in the lower canopy. New members were interested to see the forest lanternberry, *Luzuriaga parviflora*.

#### May evening meeting: A visit to Alice Springs

Cathy Jones showed us through a landscape very different from our familiar one. Great rocky outcrops, wonderful red and brown colours, and plants able to survive in barren conditions.

#### June field trip: Mistletoe talk and Dovedale Covenant

We combined our covenant visit with a morning of talks sponsored by the Tasman Environmental Trust and QEII National Trust. A large audience including 20 from Botanical Society showed great interest in hearing about covenants, rare plants of the region, and what is being done to retain valuable patches of bush as havens for threatened species. Four species of mistletoe fall into this category. Shannel Courtney described the species, their distribution, and reasons for their decline. Jenny Ladley of Canterbury University then took up the story. She described the research being done to preserve these special plants, and showed us how to "plant" mistletoe seeds. After lunch the group visited Sue Rewcastle and Peter Clausen's covenant where we were able to see scarlet mistletoes (*Peraxilla colensoi*) growing on silver beech.

#### June evening meeting: An update on the genus *Dracophyllum*

Fanie Venter presented an overview of the genus *Dracophyllum* which he has been revising for his PhD at Victoria University. At the end of his informative and entertaining presentation he introduced us to the interactive key he has perfected – an invaluable tool for identification.

#### July field trip: Callaghan's bush, Dodson's Valley, Nelson city

The track from the car park followed a stream course where the best stands of native vegetation had survived past forest clearance. Most of the species were typical secondary broadleaved trees such as mahoe, kaikomako, kawakawa and pigeonwood. A few original trees remained including pukatea, tawa and one large kahikatea. The owners of the land have gone to remarkable lengths to control infestations of old man's beard, banana passion vine, gorse, broom etc; it is great to see the balance towards native dominance being achieved. After lunch we tackled the dry ridge forest where kanuka acted as a nurse crop for broad-leaved species. It was encouraging to also see a few small matai appearing, no doubt brought in by pigeons. Two "finds of the day" – the winter-flowering *Pterostylis alobula* (= *Diplodium alobulum*) and a small population of the hot-rock button fern (*Pellaea calidirupium*).

#### July evening meeting: Weta

Ian Miller's clear and concise scientific information accompanied by many images convinced us that weta are indeed some of the most fascinating characters of the insect world.

#### **FUTURE TRIPS**

October 15<sup>th</sup>                      Esson Valley, Picton. Leader Pamela Sirett 542 3414  
October 20<sup>th</sup> – 23<sup>rd</sup>              Labour Weekend Camp at Schuckards, off French Pass Road. Leader Pamela Sirett 542 3414  
November 19<sup>th</sup>                      Frost flats at Teetotal, St Arnaud. Leader Don Pittham 545 1985  
December 15<sup>th</sup> – 17<sup>th</sup>              Camp in the Leatham Valley, Wairau. Leader Cathy Jones 546 9499

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## • Canterbury Botanical Society

June Meeting: Ian Spellerberg spoke at the AGM about an environmental project called Te Ara Kakariki: Greenway Canterbury, a wildlife network across the plains managed jointly by the Isaac Centre for Nature Conservation, Landcare Research and Environment Canterbury (ECan). The publication of a guide to the use of natives for shelter and hedges in Canterbury has been one initiative so far. This ambitious project will be long term, spanning several generations. More information can be found at the website <http://www.lincoln.ac.nz/story10345.html> (Motivation for this project came in part from a survey Ian conducted of plants found along the roadsides of Canterbury which showed that natives make up less than 1% of the vegetative cover.) Dean Pendrigh

July Meeting: Sue Scheele gave an interesting and informative talk about the Maori uses of New Zealand plants. Early Maori were quick to modify known techniques in the use of food and resources to suit the more temperate climate of New Zealand. *Phormium tenax*, harekeke, is perhaps the most useful plant they found. It is notable for weaving, with cultivars selected for strength, sheen and ease of fibre extraction, but was also used for medicinal purposes (the lower butt was boiled as a purgative, or roasted and used to treat abscesses and ulcers and the gel from the leaf bases was used as a dressing for wounds). And sugar was extracted from the flowers. Leaves of kiekie, *Freycinetia banksii*, *Eleocharis sphacelata* and *Cordyline australis* were also used for weaving, the latter being particularly tough and used for making gators for leg protection against *Aciphylla* and pingao. Dean Pendrigh

### July Field Trip: Riccarton Bush

Riccarton Bush is a tiny remnant of 3000 year old kahikatea flood plain forest near the centre of Christchurch. John Moore, the Riccarton Bush Ranger, described the changes in management practices for the Bush over the years. Early management attempted to create an English woodland, fallen debris being removed and grassy patches mown to create a 'tidy' appearance. Since 1974, when the Bush has been managed to allow natural processes to predominate, natural regeneration has been vigorous and fauna and micro-organisms have thrived. Tracks have been reduced in number and improved and water has been allowed to flow naturally. A nursery propagates plants sourced from the bush for replanting and for sale. A dual purpose irrigation and fire-protection system, with its own bore, has been installed. A predator fence was built in 2004 and bird populations already appear to be responding, with fantails and bellbirds more numerous than previously. However none of the 600 year old kahikatea trees are protected by the Christchurch City Council from building encroachment and vandalism is an ongoing problem. Judy Bugo

August Meeting: Shannel Courtney (DOC recovery group leader for threatened plants) spoke on "Alpine plants of the Nelson and Marlborough (N&M) mountains", accompanied by a slide show of plant portraits, plant communities, and panoramas of the larger environmental setting. Many of the plants are rare, threatened or endangered. For example, the population of *Celmisia macmahonii* on the Mt Stokes massif counts just 771 and *Hebe societatis*, (after the Wellington BotSoc) with its cane like branches, has just 800 individuals restricted to a half hectare on the Owen massif. Well represented were species from the alpine areas of Molesworth Station, now a recreation reserve. Inaccessible except for birds and DOC helicopters is the Garibaldi plateau; thriving on the surrounding bluffs are *Astelia skottsbergia*, *Anemone tenuicaulis*, and *Craspedia "garibaldi"* (primitive traits designate it to be the base type of all N.Z. *Craspedia*). Sixty species of *Myosotis* makes NZ's the largest group in the world, two thirds are represented in N&M including the yellow flowering *M. concinna* from the Mt Owen marbles.

August Field Trip: Addington Bush began 15 years ago as a friendly garden care/share arrangement between neighbours, and has grown to the present Society, with its own nursery, native bush reserve and monthly working bees. At 800 m<sup>2</sup> it is the smallest QEII covenant, although with added bits of back sections it comes to 1500 m<sup>2</sup>. The focus is to increase self-maintenance, part of which comes naturally through vegetation maturation and layering providing increased diversity of habitats, part comes from bird droppings, and part comes from choosing plants that self propagate readily.

## FUTURE EVENTS

September 2	French Farm Covenant, Jan Cook and David Brailsford
October 6	Colin Burrows "Seed Germination"
October 7	Ahuriri Summit Bush with Colin Burrows
November 3	Philip Grove " Botany of Ecan Reserves"

News: Peter Wardle received The Order of Merit, ONZM, in the last series of Honours. He received this very high merit award for services to plant ecology.

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• **Other Botanic Society Contacts**

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**Secretary: Andrea Brandon** [abrandon@doc.govt.nz](mailto:abrandon@doc.govt.nz)

Wanganui Museum Botanical Group

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Manawatu Botanical Society

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Wakatipu Botanical Group

**Chairman: Neill Simpson** (03) 442 2035

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Botanical Society of Otago

More information available on website: <http://www.botany.otago.ac.nz/bsol/>

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## EVENTS

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### Cheeseman Botanical Symposium 2006

Final reminder

A symposium to celebrate the centenary of the first edition of Cheeseman's *Manual of the New Zealand Flora* (1906)

**When:** 20-22 November 2006 (2 days for the conference, 1 day for field trips)

**Where:** Engineering Building, University of Auckland

For a registration form or to obtain the full circular please email Mei Nee Lee: [mnlee@aucklandmuseum.com](mailto:mnlee@aucklandmuseum.com) or phone: 09 306 7070 ext 862

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## NOTES AND REPORTS

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### Notes

- **Why *Kunzea*? Why not *Leptospermum*?**

**Peter J. de Lange**, Terrestrial Conservation Unit, Research, Development and Improvement, Department of Conservation, Private Bag 68908, Newton, Auckland

Judith Petterson (Petterson 2006) raises an interesting problem, viz "I see *Leptospermum scoparium* (manuka) and *Kunzea ericoides* (kanuka) as closely related species in one genus....a genus to be useful, must be based on a readily visible and obvious feature, not one requiring a hand lens or microscope or DNA technology..". It would appear from these comments that she wants to know why *Kunzea ericoides* (A.Rich.) Joy Thoms. is not reinstated in *Leptospermum* J.R.Forst. et G.Forst., or failing that, the exact reason(s) for the move. The answer is provided by Harris (1987) in an excellent, thorough and beautifully written account explaining the generic distinctions of both *Kunzea* and *Leptospermum* and the basis for the taxonomic move. I need not repeat it here. Though I can add that Thompson (1983) did what she did largely to remove anomalies in *Leptospermum*, which she was then revising (see Thompson 1989). She had no interest in *Kunzea* Rchb.

In defence of the decisions reached by Thompson (1983), is the fact that in the tribe *Leptospermeae* DC. in Schtdl., it is very rare indeed to find a single clearly defined character state that will allow you to universally separate out all nine currently accepted genera from that tribe. World Myrtaceae expert Dr Peter Wilson of the Royal Botanic Gardens Herbarium, New South Wales, Australia, has made it very clear already that it is the sum of the characters that makes the genus and the species; and that any revision of the Myrtaceae must include an array of morphological and molecular data sets (Wilson et al. 2005). Without recourse to both methodologies you will merely be continuing the ambiguity that has been going on in attempts to revise the family over the last 243 years.

So what makes *Kunzea* Rchb. *Kunzea*? Reichenbach (1828) based his genus largely on the presence of a capitate stigma, hence the choice of the lectotype species *K. capitata* (Sm.) Heynh for the genus by Toelken (1981). This is admittedly not a great character as it occurs many times over in other myrtaceous genera. Nevertheless we now accept *Kunzea* mainly by characters evident in the stamens, which are aligned in two or more rows, with the filaments characteristically, though rather finely, longitudinally striated, and usually much longer than the petals. A major difference between *Kunzea* and *Leptospermum* is that in *Kunzea* the stamens are inflexed below the stigma, while in *Leptospermum* the stamens are incurved towards the stigma.

Petterson (2006) quite rightly points out that our *K. ericoides* looks nothing like the red-flowered, bird-pollinated *K. pulchella* (Lindl.) A.S.George or *K. muelleri* Benth (the name *K. ericalyx* F.Muell used by Judith Petterson is unlikely; this species is a very rare, pink-flowered endemic of the Barren Ranges in Western Australia, and by her description "starry yellow flowers" and geography (Victoria) I am sure she meant the yellow flowered subalpine to alpine *K. muelleri* of south eastern Australia). However, there are at least 65 species in the genus, and of these *K. ericoides* superficially resembles the tick bushes *Kunzea ambigua* (Sm.) Druce and *K. pelagia* Miq., and is most similar to *K. leptospermoides* Miq., *K. phyllicoides* (Schauer) Druce (= *Leptospermum phyllicoides* (Schauer) Cheel) and *K. peduncularis* F.Muell. of south eastern New South Wales and Victoria. Indeed, in the treatment offered by Thompson (1983) these last three species along with our *Leptospermum ericoides* A.Rich and *L. sinclairii* Kirk were all relegated into synonymy within her broadly circumscribed *K. ericoides*.

My PhD research, which originally set out to investigate the alleged risk posed to the Great Barrier Island endemic *K. sinclairii* (Kirk) W.Harris through hybridism from *K. ericoides* (see de Lange & Norton 2004), has necessarily expanded to encompass a full revision of the *K. ericoides* complex, and as an aside helped provide assistance in a revision of the Australian members of the genus. To date I have found no evidence to suggest that Thompson's generic move was wrong, though I and many others, including the man in charge of the Australian Flora treatment Dr Hellmut Toelken believe that *K. ericoides* requires drastic recircumscription, in that it is a New Zealand endemic (see de Lange & Murray 2004, de Lange et al 2005) which has little morphological similarity to any of the other Australian taxa Thompson (1983) placed within it. Whatever one's view on splitting or lumping, this

decision is clear as from Parsimony and Bayesian analyses using rDNA sequences the members of the New Zealand *K. ericoides* complex are consistently recovered as their own monophyletic group sister to the Australian members of the *K. ericoides sensu* Thompson (1983) complex (de Lange et al. *in prep.*).

As Dr Wilson so sagely observed you need to use a combination of characters and molecular information to form a sensible classification for the family (Wilson et al. 2005). At the genus level this is no different. Thus for *Kunzea* while there are seemingly huge morphological disparities between Western Australian, Eastern Australia, and South Eastern Australian + New Zealand (*K. ericoides* complex) taxa, the genus, with the necessary addition of *Angasomyrtus* Trudgen et Keighery has proved to be resoundingly monophyletic using four cpDNA sequence (O'Brien et al. 2000; P.J. de Lange unpubl. *trnL* sequences) and 2 rDNA sequence regions (de Lange et al. *in prep.*). There is also no evidence from this data set to back up suggestions that *K. ericoides* might be better placed in its own genus (see Harris 1987). Also while the data sets remain unclear as to who is the sister genus it is definitely *Leptospermum* or *Homalospermum* Schauer.

Cytological evidence has not proved very helpful in resolving the generic placement of *Kunzea ericoides* either – the basic number for the family  $x = 11$ , is strictly adhered to by New Zealand and Australian *Kunzea* and *Leptospermum*, though the chromosomes of *Kunzea* are considerably smaller, and for the New Zealand taxa and unnamed entities, there are cryptic but taxonomically useful differences that aid their possible separation (de Lange & Murray 2004). I also found that chromosome painting techniques showed that, in the artificially raised intergeneric hybrids *Kunzea sinclairii* × *Leptospermum scoparium*, and *K. aff. ericoides* (b) × *Leptospermum scoparium* the contributing parental chromosomes were distinguishable. The fact that these two genera can cross with each other is of course interesting, though it should come as no surprise to any student of the New Zealand flora that this can happen. Notable though is that all the crosses I made failed to flower, while the type plant of ×*Kunzspermum hirakimata* W.Harris, a cultivated flowering specimen growing on the grounds of the Landcare Research Lincoln campus, is also quite sterile, as indeed were the three wild plants of it I investigated on Great Barrier Island.

Although I cannot prove it (I suggest it would make a useful study for someone else); Dr Toelken and I both think that the apparent similarities between the flowers of the *K. ericoides* complex and *Leptospermum* (similarities which by the way are really no different to the basic flower structure seen in these other genera of the tribe: *Angasomyrtus*, *Homalospermum* and *Neofabricia* Joy Thomps. or indeed in the sister tribe *Chamelaucieae*) is the result of a gradual shift in pollinator requirements from bird/mammal, through bee/butterfly to beetle and ultimately the generalist pollination vectors seen in New Zealand. Go collecting flowering members of the *K. ericoides* complex in Australia and you will be showered in chafer beetles which frequent the flowers. These are same type of beetles that visit adjoining *Leptospermum* flowers, and are represented in New Zealand by, for example, the aptly named manuka beetle (*Pyronota festiva*).

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*The following two articles were suggested as being of interest to NZ Botanical Society readers, many of whom do not belong to the NZ Plant Conservation Network [Ed]*

Y **Some names changes for New Zealand *Cyathodes* r.br. (Ericaceae)**

**Anon;** from the NZ Plant Conservation Network NZPCN) website ([www.nzpcn.org.nz](http://www.nzpcn.org.nz)) Dec 13, 2005

It would now seem that New Zealand has no *Cyathodes* s.s. left. In fact the genus is apparently endemic to Tasmania. Over the last decade New Zealanders have seen the reinstatement of the endemic, monotypic genus *Androstoma* Hook.f. for the plant treated by Allan (1961) as *Cyathodes empetrifolia* (Hook.f.) Hook.f., removal of *Cyathodes juniperina* (G.Forst.) Druce and Chatham Island endemic *C. robusta* Hook.f. to the new genus *Leptecophylla* C.M.Weiller, and the return of *C. fraseri* (A.Cunn.) Allan, *C. fasciculata* (G.Forst.) Allan and *C. parviflora* (Andrews) Allan to *Leucopogon* R.Br. Only *Cyathodes pumila* Hook.f. remained though many here treat it as conspecific with the Australian *C. dealbata* R.Br. The generic placement of recently named (2003) *Leucopogon xerampelinus* de Lange, Heenan et M.I.Dawson remains unchallenged.

There have been criticisms of *Leptecophylla* and the reinstatement of *Androstoma*. However, Quinn et al (2005), provide unequivocal morphological and molecular evidence to support the recognition of *Androstoma* and *Leptecophylla* as separate monophyletic groups. Furthermore they resolve the status of the New Zealand endemic *Leucopogon colensoi* Hook.f. (also known here as *Cyathodes colensoi* (Hook.f.) Hook.f. and *Leucopogon suaveolens* Hook.f.).

In their paper they place *Leucopogon colensoi* within a new genus *Acrothamnus* C.J.Quinn, as *A. colensoi* (Hook.f.) C.J.Quinn. They treat the New Zealand plant as endemic and distinct from *A. (Leucopogon) suaveolens* (Hook.f.) C.J. Quinn of New Guinea and Borneo. *Acrothamnus* is a small genus of six species found mainly in Australia.

As well as accepting *Androstoma*, Quinn et al. (2005) recognise a further species from Australia, *A. verticillata* (Hook.f.) C.J.Quinn. Previously this species had been placed within *Pentachondra* R.Br., *Trochocarpa* R.Br., *Styphelia* Sm. and *Leucopogon*. *Androstoma* had been a New Zealand endemic, monotypic genus.

The situation for *Cyathodes pumila* remains unresolved, though it is not a *Cyathodes* (M. Heslewood pers. comm.). Whether it is the same as *C. dealbata* has not been decided. Similarly *Leucopogon fraseri* A.Cunn. and *L. nanum* M.I.Dawson et Heenan do not belong in *Leucopogon* but as yet a suitable placement for them in another genus has yet to be found (D. Crayn pers. comm.).

**Reference**

Quinn, C.J.; Brown, E.A.; Heslewood, M.M.; Crayn, D.M. 2005: Generic concepts in Styphelieae (Ericaceae): the *Cyathodes* group. *Australian Systematic Botany* 18: 439-454.

• **Old Genus Revived For *Potamogeton pectinatus***

**Anon;** from the NZ Plant Conservation Network NZPCN) website ([www.nzpcn.org.nz](http://www.nzpcn.org.nz)) Oct 8, 2005

The cosmopolitan Fennel-leaved pondweed (*Potamogeton pectinatus* L.), is an uncommon waterweed in New Zealand wetlands. In 1912 the German botanist Börner placed it and other allied species into a segregate genus *Stuckenia* Börner, as *S. pectinata* (L.) Börner. However, Börner's genus was overlooked until 1997, when it was reinstated by Czechoslovakian botanist Josef Holub. Although *Stuckenia* seems to have been widely adopted worldwide, the genus has not been used in New Zealand before, so NZPCN provide a summary of its defining characters.

As currently circumscribed the Potamogetonaceae comprises three genera, *Potamogeton* L., monotypic *Groenlandica* J.Gray, and *Stuckenia* Börner. Börner erected *Stuckenia* to accommodate those species of *Potamogeton* with long stipular sheaths, tubular leaves with air channels bordering

the midrib, flexuous peduncles, hydrophilous pollination and a hexaploid chromosome number ( $x = 13$ ,  $2n = 78$  ( $6x$ )). In *Stuckenia* the stipules are fused (adnate) to the basal part of the leaf and form a sheath with a distinct ligule, they are adnate for at least 2/3 of their length. Similar sheaths, though present in *Potamogeton* s.s are scarce, only two species *P. robbinsii* Oakes and *P. serrulatus* Regel et Maack are known to consistently possess this character, and even then the stipules are adnate for only  $\frac{1}{2}$  their length. The emergent and submerged leaves of *Stuckenia* are always sessile, while in *Potamogeton* they are petiolate. A further difference is that the submerged leaves of *Stuckenia* differ consistently from those of *Potamogeton* and *Groenlandica*, in that they are characteristically grooved and channelled, turgid and opaque. In these latter genera they are without grooves or channels, usually translucent and flat. The emergent peduncles of *Stuckenia* are long, slender, flaccid, wiry (flexuose), while the inflorescences are usually interrupted; those of *Potamogeton* are normally compact. Aside from the hydrophilous pollination mechanism (anemophilous in *Potamogeton*), the pollen grain morphology of *Stuckenia* is also very distinct from both *Potamogeton* and *Groenlandica*. Chromosome counts for *Stuckenia* are  $2n = 78$ , except in *S. pectinata* where an aneuploid series has been reported, though in New Zealand this species, based on one recent unpublished count (P. J. de Lange pers. comm.) has  $2n = 78$ . In *Potamogeton* the usual chromosome number is  $2n = 26 \times 13$ , ( $2x$ ) or  $2n = 52$  ( $4x$ ), though again New Zealand samples of *P. cheesemanii* have been reported with  $2n = 28$ . Aside from these differences further support for *Stuckenia* can be seen in the pattern of hybridisation within the family; there are no intergeneric hybrids known between *Potamogeton* and *Stuckenia*. *Stuckenia* based on molecular and cladistic data is a sound monophyletic group distinct from *Potamogeton* and *Groenlandica*.

In New Zealand we have the one indigenous species, *S. pectinata* which, aside from its filiform leaves and interrupted inflorescences is also distinguished from the other New Zealand *Potamogeton* by its tuberous condition. *S. pectinata* while uncommon throughout much of New Zealand, can at times be abundant and almost troublesome as an aquatic weed. Recent field surveys by NIWA suggest that its current threat assessment of "Chronically Threatened/Gradual Decline" is unwarranted and that it fits "At Risk/Sparse" better (P.D. Champion pers. comm.).

#### Acknowledgements

NZPCN thank Peter de Lange for the provision of his unpublished New Zealand count for *Stuckenia pectinata* and Paul Champion for comments on the conservation status of the species.

#### Further Reading

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## BIOGRAPHY/BIBLIOGRAPHY

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### Biographical Notes (63) : Ellen Minna Heine (Bleakly) 1907–1989

E.J. Godley, Research Associate, Landcare Research, P.O. Box 69, Lincoln.

Although Ellen Heine's botanical career was short and her publications only 3 in number (1 popular) she made important contributions in 2 quite different fields: the anatomy and classification of the brown seaweed *Xiphophora* of our coasts (1) and the possible relationship between the insect fauna of New Zealand and the characteristics of our native flowers (2). Her roots lay in the German (Lutheran) settlement concentrated in the Moutere Valley in Nelson where her paternal grandfather had been the pastor (3) and she is the second New Zealand botanist descended from these settlers, the first being Frederick Neve (1871–1945) author of the highly successful textbook of elementary botany, first published in 1916 (4).



Ellen Minna Heine

Ellen was born in Wellington on 20 August, 1907, the fourth daughter and youngest child of the 5 children born to Augustus Heine and his wife Clara Lucy Minna (born Wolff). Within a week of Ellen's birth her mother died of measles, and on 20 January 1909, Augustus married Clara's cousin Lucy Amelie Wolff (5). Augustus taught at Wellington College from 1882 to 1922 and was First Assistant from 1892. In 1902 and 1912 he was Acting-Headmaster while J.P. Firth took sabbatical leave (3, 6). After Ellen's parents retired to Ngatitama, Nelson, in 1922 she boarded at Wellington Girls' High School and spent holidays with relatives on farms near Upper Moutere or in Canterbury (5). She entered Victoria University College in 1925 and graduated MSc with Honours in Botany in 1929 with a thesis entitled "Notes on the leaf structure of the NZ *Astelias*."(7)

Miss Heine's subsequent career can be outlined as follows:

- 1930: Appointed botanical assistant, Dominion Museum, Wellington; the Annual Report stated: "The work of mounting the Petrie herbarium is proceeding. Some local collecting by the botanical assistant was done on the Tararua Mountains. Research work on the microscopic structure of New Zealand timbers is being carried out"; the Director, W.R.B. Oliver wrote in his paper on New Zealand epiphytes (8): "Recently Miss E.M. Heine of the Dominion Museum staff has investigated the nature of the leaf of *Astelia solandri* and has proved that the absorbing organs are the bases of hairs, also that the outer cellulose layer of the "cuticle" as above described is composed of coalesced hairs. The absorbing organs therefore function in conducting water from the outer cellulose layer to the mesophyll". Granted £15 by the New Zealand Institute for research in the pollination of New Zealand plants (9).
- 1931: No mention in the Museum's Annual Report.
- 1932: On 16 March reported to the New Zealand Institute (9) that "she had undertaken two expeditions to Mount Holdsworth and one to the Waihao Gorge to enable her to study the pollination of the plants in their natural surroundings. Besides these two expeditions she has visited Kapiti, Mount Hector, and Mount Monganui [*sic*] at her own expense with the idea of comparing the results with those obtained at Wilton's Bush and other local bush areas. During the year 119 species of plants included in 35 genera have been examined, and the frequency and efficiency of the different species of insects visiting have been noted, and several hundreds of insects collected and examined to determine the quantity and kinds of pollen found on them. The whole of the grant has been expended." The Museum's Annual Report stated "from Mount Hector, in the Tararuas, a good series of specimens of the North Island "vegetable sheep" was obtained. An important donation is the herbarium built up by Dr L. Cockayne CMG, FRS during his many botanical explorations. The labels are being carefully looked over by Dr Cockayne before the specimens are transferred to the Museum". Her seaweed paper was published.
- 1933: On 7 April reported to the New Zealand Institute that "since her last report she had been accumulating more data, and she is now only waiting for a further identification of insects by the Museum Entomologist [Miss E.A. Plank] before she can publish a full account of the results" (10); "the transference to the museum of Dr Cockayne's botanical collections was completed during the year" (*Ann. Rept. Dom. Mus.*).
- 1934: Gave talks on "Broadcasts to Schools" on "Peculiar Plants" (11); made a collecting expedition to the Garvie Mountains, Central Otago (*Ann. Rept. Dom. Mus.*)
- 1935: Appointed assistant to Mr C.E. Foweraker, Lecturer, Biology Dept., Canterbury College, Christchurch; read a paper to the Canterbury Philosophical Institute on 2 October entitled "Observations on the Pollination of New Zealand Flowering Plants".
- 1936: Wrote a popular article for "The City Beautiful" on "The Native Vegetation at Cass, mid-Canterbury" (12); on 7 November left for a brief trip to England (5).
- 1937: Arrived back 1 March (5); pollination paper issued separately in Sept.
- 1938: On 12 October married Maurice Cameron Bleakly (5).
- 1939: Left Auckland with husband 24 August on *RMS Rangitoto*, she to become exchange lecturer in botany at Westfield Women's College, London, and he to study for a doctorate in zoology at Oxford (5); war broke out on 3 Sept.; arrived London 2 October; Westfield evacuated to Oxford (5).
- 1941: First child, Gillian Sara, born at Oxford in January (5).
- 1942: Second child, Christopher John, born Bushey Hospital, Hertfordshire, in December (5).
- 1946: In March to Brisbane, where Maurice Bleakly had been appointed a lecturer in the University of Queensland (5).

In Brisbane Helen was an active member of the Lyceum Club, the Staff Wives Club, and the Royal Queensland Art Society. She attended art classes, painted in both oils and water-colours, and exhibited in 1960s' Art Society exhibitions; and she gardened. On at least 3 occasions she revisited New Zealand: with the family in 1947, visiting relatives in Wellington, Nelson, and Christchurch; in 1966 with her husband, on their way back from sabbatical leave in Europe; and in February, 1978. She died in Brisbane on 27 July, 1989 and her husband soon afterwards. The ashes of both are at Buderim Lawn Cemetery (5).

Miss Heine's aim in her 1937 paper was "to get a general view of the relationship between plants and insects in New Zealand rather than to examine a few exceptional cases of flowers with peculiar pollinating contrivances". As a result she assembled a most valuable list of insect visitors to the flowers of many native plants (see also above); in addition she proposed that the absence of long-tongued bees in our indigenous fauna and the predominance of short-tongued bees and flies as pollinators has led to the lack of red, blue and purple flowers in our flora, and the predominance of whites, yellows and greens. She also suggested "the adaptation of New Zealand flowers to pollination by short-tongued bees and flies has led to a predominance of short tubes and exposed pollen and pistil, which in its turn results in reversion to unisexual flowers to avoid self-pollination".

More recent work has suggested that many of the characteristics of our New Zealand flowers have evolved in other places and at other times, and that our insect fauna is simply taking pollen and nectar from whatever source it can. Despite this, Miss Heine's work remains an important milestone in the history of flower biology in New Zealand providing a set of concepts which New Zealand flower biologists could discuss and develop during the renaissance of the subject after World War II.

#### Acknowledgments

I am very grateful to Dr Elizabeth Flint (Christchurch) for putting me in touch with Mrs Gillian Alfredson (Queensland), Ellen Heine's daughter, who kindly gave me much information about her mother's life. I am also grateful to Ms Tanja Webster (Landcare Research, Lincoln), Elizabeth Jensen and Sue Molloy (Christchurch) for help with references; and Mrs Wendy Weller for help with typing.

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## PUBLICATIONS

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### Book Review

- **An Illustrated Guide to New Zealand Hebes**

By Michael Bayly and Alison Kellow, with contributions from Phil Garnock-Jones, Peter de Lange and Ken Markham. Edited by Patrick Brownsey; photography by Bill Malcolm. Te Papa Press, 2006, 388 pages. \$99.99

**Reviewed by Hugh Wilson**, Hinewai Reserve, R D 3, Akaroa 7583

At least as defined in this book, *Hebe* is New Zealand's largest genus of flowering plants, easily exceeding other species-rich genera such as *Coprosma*, *Epilobium*, *Dracophyllum*, *Celmisia*, *Myosotis* and *Olearia*. It is arguably the most well-known too, both nationally and internationally. So far as I know the British-based Hebe Society is the only organisation devoted wholly to a single New Zealand genus. In the wild, species of *Hebe* occur in almost every conceivable habitat, ranging from

the coast to the upper altitudinal limit of vascular plants. The majority are shrubs, but they vary in form from mat-like subshrubs to trees. Species, hybrids and cultivars are all prized as garden ornamentals throughout the temperate world.

Wide interest in the genus is underlined this year by the appearance of two substantial books on *Hebe* written by New Zealanders. One, by Laurie Metcalf, is horticultural in focus, as are two more or less recent British publications (Chalk 1988 and Hutchins 1997). The book by Michael Bayly and Alison Kellow is a major botanical treatise, but presented in an attractive and beautifully illustrated way that will surely, as the authors hoped, appeal to a wide range of users.

The last complete taxonomic revision of *Hebe*, by Moore and Ashwin, was published in Volume I of the Flora of New Zealand (Allan 1961). Their treatment recognised 79 species of *Hebe*, plus 17 in the closely related genera *ParaHebe* (11) and *Pygmea* (6). Since 1961, new discoveries and reassessments of *Hebe* and its close relatives have been published in numerous scientific papers. Modern techniques of DNA analysis, unavailable to Moore and Ashwin, have helped reassess the delineation of some species, raised tricky questions of generic limits and names, and thrown up for major reappraisal our understanding of the Scrophulariaceae and related families. Bayly and Kellow accept that the DNA evidence places *Hebe* and its relatives in a redefined Plantaginaceae. This is sure to raise eyebrows in the uninitiated.

Eyebrows may also tilt at the placement of a handful of species, previously assigned to *Hebe*, into the genus *Leonohebe*. Michael Heads erected *Leonohebe* in 1987 and transferred into it from *Hebe* a substantial number of species – around 25 if we follow the species definitions of the present volume. Bayly and Kellow recognise *Leonohebe* as a distinct genus but include within it only five species – four very closely related (in my opinion possibly conspecific) "semi-whipcords" (*H. ciliolata* and its kin), and another which looks distinctly different (*H. cupressoides*). The authors base this decision on a phylogenetic tree derived from analyses of DNA sequences (page 14). The cladogram does indeed pose tricky questions on how best to classify and name *Hebe* and its close relations currently placed in *Heliohebe*, *Parahebe*, *Chionohebe*, *Derwintia* and *Veronica*.

Unfortunately, one glaring weakness in this book for me is the lack of any convincing explanation and definition of *Leonohebe*. A close perusal of the generic descriptions of *Hebe* and *Leonohebe* fails to provide any way of discriminating between the two genera outside of a sophisticated biochemistry lab. Nor is any key provided to help elucidate how the two genera differ.

To be fair, the difficulties of classifying the *Hebe* complex are freely discussed, and the authors are far from dogmatic about their decisions. But I think the recognition of *Leonohebe* is premature. There are more ways than one of achieving monophyletic genera, and evolutionary relationship is not (alas) the sole criterion of a useful classification. One possible solution to the challenge of finding an appropriate generic arrangement for Australasian members of the *Veronica* complex is to call them all *Hebe*. Another possible solution is to place them all in *Veronica* – which is how Australasian species were originally treated. Work is underway now (so Bayly and Kellow inform us) to provide names in *Veronica* for all the Australasian taxa. Both solutions are problematical, and it is far from clear which of these or another solution might eventually prevail. One hopes at least that whatever is proposed will enable both species and genera to be distinguishable in the field.

Of course there are validly published names in *Hebe* for all the taxa treated here under *Leonohebe*; you and I are perfectly at liberty to call them *Hebe* or *Leonohebe* as we judge fit.

I have another cavil. Granted that the authors explicitly hope that the book will serve the needs of a wide range of users, I think they should have included the plants currently called *Heliohebe*. *Heliohebe* are subshrubs, like many *Hebe* s.s. Some *Parahebe* are almost shrublike too and thus might also demand inclusion. Even so leaving *Parahebe* aside but taking in *Heliohebe* would have nicely embraced all the truly shrubby plants long thought of as *Hebe*. Furthermore, the phylogenetic tree on page 14 suggests that *Heliohebe* is more closely related to *Hebe* s.s. than *Hebe* is to *Leonohebe*. A detailed account of *Heliohebe* was provided by Garnock-Jones (1993) and his taxonomic judgements are well based. Almost all the species recognised in Bayly and Kellow's book were similarly described and named before its publication (several by them). (Only one species, *Hebe flavida*, is newly described and named in this book, and its distinction from *H. ligustrifolia* is not

clearcut.) I would have liked to see Garnock-Jones' five *Heliohebe* species described and illustrated in this book as beautifully as the 93 species of *Hebe* (and *Leonohebe*) that are.

As they themselves make abundantly clear, Bayly and Kellow have certainly not had the last word on *Hebe*. Equally certainly, their book is a magnificent compilation of what we now know about this marvellous group of plants. It is a splendid springboard for further research. (I now find myself itching to take another close look in the field in Mount Cook National Park, at the range of forms there within "Connatae", all of which Bayly and Kellow regard as falling within their concept of *Hebe epacridea*. I have a suspicion that the highest altitude plants of upper alpine and nival stable rock crannies, while clearly not *H. haastii* or *H. macrocalyx* as I once thought, might be an un-named taxon distinct from *H. epacridea* s.s. That entity certainly occurs in Mount Cook National Park on montane to alpine rock debris and rubble, including surface moraine. )

The book covers the evolution, biology, classification, identification, naming, conservation, biochemistry and biogeography of *Hebe* in satisfying detail. Invited authors have contributed additional introductory chapters on morphology and reproductive biology (Phil Garnock-Jones), flavonoid biochemistry (Ken Markham) and conservation (Peter de Lange). In the taxonomic treatment (the bulk of the book), each species is given a double-page spread; precise and helpful text is matched with a full page of unfailingly excellent photography (by Bill Malcolm). The distribution maps, in vivid relief, are wonderful. You may search in vain, as I did, for a key to the two genera, but the keys to the informal groupings and, within these groupings, to species, are generally straightforward and useful.

If you want a portrayal of cultivars, this is not your book; take a look at Lawrie Metcalf's publication. If your main need is an identification manual to *Hebe* (minus *Heliohebe*) you will not be disappointed. If you want a detailed, information-packed, up-to-date, beautifully presented account of New Zealand's most species-rich genus of flowering plants, I think you will be delighted.

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#### Journals Received

New Zealand Native Orchid Group Journal No. 100 – Aug 06; 59 pp  
Edited by Ian St George [ISSN 1170-4543]

Original papers in this issue are: *Angela Abernethy* – Classifying preferred terrestrial orchid light environments; *Graeme Jane* – When is a species not a species?; *Gordon Sylvester* – The genesis of our group; *Bruce Irwin* – To split or lump? that is the question.

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**ISSN 0112-6865**