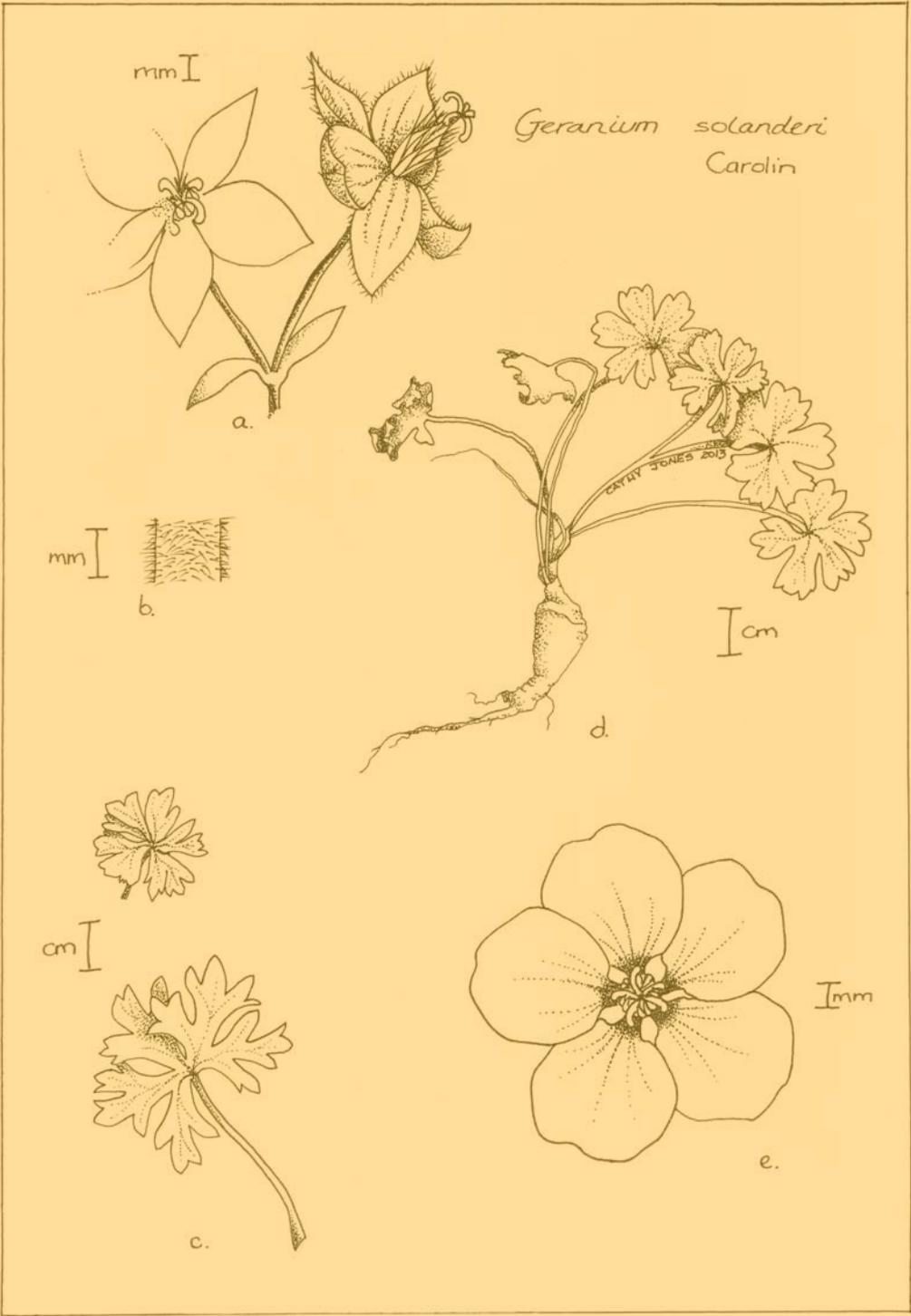


NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 113

September 2013



New Zealand Botanical Society

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Subscriptions

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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 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 2013 issue is 25 November 2013.

Please post contributions to:
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169 Tory St
Wellington 6021

Send email contributions to editor@nzbotanicalsociety.org.nz. Files are preferably in MS Word, as an open text document (Open Office document with suffix ".odt") or saved as RTF or ASCII. Macintosh files can also be accepted. Graphics can be sent as TIF JPG, or BMP files; please do not embed images into documents. 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.

Cover Illustration

Geranium solanderi Carolin drawn by Cathy Jones from a specimen collected on the Nelson Boulder Bank on August 18, 2013. a.immature ovary and calyces on two-flowered cymule, b.petiole hairs, c.stem leaves from mature plant, d.immature plant, e.flower with stigma open and anthers dropped from filaments.

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New Zealand Botanical Society News

■ Allan Mere Award 2013

The NZBS Committee is pleased to announce that the 2013 award of the Allan Mere is to John Braggins, retired Senior Lecturer, University of Auckland (1970s-90s), and Honorary Research Associate of the Auckland War Memorial Museum. John receives the award for his outstanding botanical knowledge, his ability to inspire interest bryology, and his contribution to the New Zealand flora, especially in the poorly known plant group of liverworts.

Peter de Lange and Brian Murray nominated John and the proposal was supported by the Auckland, Nelson and Wellington Botanical Societies, New Zealand Conservation Plant network, and a range of John's research associates, colleagues, former students and friends: Jessica Beever, Dan Blanchon, Paul Cashmore, Alison Downing, John Engel, David Galloway, Rhys Gardner, Matt Renner, Joshua Salter, Rodney Seppelt, Nicholas Singers, and Matt von Konrat. A selection of comments below from the proposers and supporters indicates the breath and special areas that John's botanical contributions cover.

"His widely unrecognised and underappreciated success has been in teaching, mentoring and then releasing *en masse* into the botanical community a new wave of highly skilled, professional biosystematists."

"His work has been the silent motivator behind so many botanical success stories both in New Zealand and overseas. John is still the first port of call in New Zealand for all things hepatic by the world's experts. He has worked closely with all the key people in the world, and won their admiration – perhaps seen best by the naming of a new, monotypic genus of liverwort after John, the ever aptly named *Bragginsella anomala*!"

"John's intimate knowledge of New Zealand plants, including a broad spectrum of angiosperm and cryptogam groups, never ceases to amaze me. This attribute, together with a curious mind, and an exacting nature, sets John apart from most botanists. All of these attributes served John well in his role as teacher, a lecturer, and a mentor for several PhD students, each of whom tackled complicated genera of liverworts (Elizabeth Brown, Matt Renner, Matt von Konrat), a MSc and PhD student researching a complicated genus of lichens and irises (Dan Blanchon), and a PhD student working with ferns (Mark Large) publishing jointly in 1991 a *Spore Atlas of New Zealand ferns & fern allies* (followed later by a joint publication on tree ferns of the world)."

"His field trips were legendary, passing on his huge enthusiasm for his branch of botany and inspiring several young botanists to follow in his footsteps."

"Our ability to understand the intricacies of the Australian hepatic flora would be much poorer without John's considerable help and encouragement over many years."

"The strength and uniqueness in his influence lies in its breadth, in such a way that few other botanists in New Zealand have probably been able to achieve. This includes: reaching students over many generations, a scholar, international capacity building, collections beyond New Zealand, his broad botanical knowledge and broad research interests, his photography, and as one of the leading advocates for bryophytes in New Zealand."

"John has very high standing in the international bryological community and has been outstanding ambassador for New Zealand hosting scores of international scientists."

"I have had memorable days in the field with him, he has helped me innumerable ways in my own studies..., sharing his wide experience and his beautifully taken images. His generosity is legendary. John has contributed to New Zealand botany over the many years and in many different ways, as a teacher, guide, mentor, enthusiastic collaborator, overlooked dogsbody, and a dogged researcher, never looking for self-advancement or any particular glory. His contributions on a wide front are noteworthy."

“Part of his legacy will be the vast holdings in herbaria of the specimens he has collected and/or annotated. To date the AK herbarium (at Auckland Museum, now also incorporating AKU the Auckland University herbarium), where the bulk of his collections are housed, contains 14,959 [72% are liverworts] accessioned plant specimens collected by him (including joint collections) and 13,619 identified by him”

“I feel well qualified to judge John’s contribution to New Zealand botany. It has been, and continues to be, outstanding.”

“Importantly, the impact John has had will last for many generations in different facets, which is the hallmark of an influential biologist.”

John’s significant contribution to the furtherance of the study of hepatics in Australasia, and the broader understanding of the new Zealand hepatic flora, has been highlighted recently in a special tribute to his achievements by Rod Seppelt and others: ‘Excellent, now I can concentrate on the liverworts’ – A testimony to the work of John Braggins. *Australasian Bryological Newsletter* 61: 2–8, 2012.

John is the 15th recipient of the Mere since the NZBS was asked to administer the award in 1999 with the disestablishment of Botany Division DSIR who used to present the Mere to deserving staff members (see *Newsletter* 57).

Congratulations John! We are hopeful that Anthony Wright will be able to present the Allan Mere to John at the monthly Auckland Botanical Society meeting at UNITEC on Wednesday 2 October.

Ewen Cameron, Secretary, New Zealand Botanical Society

Regional Botanical Society News

■ Auckland Botanical Society

June Meeting

Matt Buys, the new curator of Scion's National Forestry Herbarium in Rotorua, took our members on a botanical journey through the Cape Floristic Kingdom of his home country, South Africa. After outlining the natural history of the Fynbos Biome, he spoke on his recently completed taxonomic project on the genus *Lobostemon*, in the Boraginaceae. Time ran out before he could proceed to discuss the genus *Oscularia* in the Aizoaceae, and it was agreed that another lecture was eminently desirable.

June Field Trip

On a cool, grey day an expedition involving car pooling and locked gates got us to the base of the Kohukohunui Track, which leads to the highest point in the Hunua Range (688 m). After passing through tawa forest with much pukatea (*Laurelia novae-zelandiae*), we finally came to the cooler climate species for which this peak is known. These included horopito (*Pseudowintera colorata*), *Libertia micrantha*, *Collospermum microspermum*, hutu (*Ascarina lucida*) and much *Quintinia serrata*. No sign was seen of either *Cordyline indivisa* or the kokako for which the peak is famous. It was interesting to see pukatea and hutu in reasonably close proximity, as it allowed members to practise their ID skills.

July Meeting

Dr George Perry, Associate Professor at the School of Biological Sciences, spoke on the legacies of prehistoric fire in New Zealand's forest landscape. Palaeological research has shown that not as many early fires in New Zealand were caused by lightning as is often thought, as lightning activity is low here on a worldwide scale. Dramatic changes in fire activity took place with the arrival of Maori. Although the greatest number of Maori lived in the north, the most drastic changes to the vegetation occurred in the dry east and south of the South Island. The correlation between flammability and vegetation age is exacerbated by invasive mammals and associated pollination and dispersal failure.

The message he left with the audience was: "If you want to prevent fires in seral communities, get rid of rats".

July Field Trip

A keen group of 29 Bot Soc members checked out the plants in Dingle Dell Reserve, St Heliers. It is an island of bush in suburbia, and covers 9 ha. A fine grove of kohekohe is a prominent feature, and some pleasant surprises were seeing the ferns *Christella dentata* and king fern (*Ptisana salicina*) flourishing along some of the creeks. The area became a city reserve in 1904. Various groups, including the erstwhile Auckland Tree Society, planted native trees throughout the scrubby slopes, with kauri, kahikatea, rimu and nikau doing well. A Bioblitz was held in Dingle Dell in 2004, and our visit was an opportunity to update the species lists for fungi, lichens, bryophytes and higher plants.

August Meeting

Paul Champion, Principal Scientist with NIWA, spoke of the internationally significant Northland dune lakes and their outstanding biota. Each year Northland Regional Council and NIWA scientists check some of these lakes to map the impact of any invasive species present. Paul focussed on the range of aquatic plants found in the lakes, but also discussed management options to prevent any further degradation.

August Field Trip

The consolidated sand dunes of South Kaipara Heads are home to many botanical delights. Unfortunately the predations of feral deer are endangering many of these special plants. The canopy is kanuka, with little regeneration, and the understorey consists of non-palatable plants, including *Coprosma crassifolia* and *Corokia cotoneaster*. The morning was spent mainly checking for the tiny herbs that had escaped grazing. What is the species name of that prostrate *Pimelea*? A wetter afternoon on the eastern side of the Waionui Inlet revealed a small treasure house of species, such as *Lobelia* aff. *angulata*, *Mazus novae-zelandiae* subsp. *impolitus*, *Cyclosorus interruptus* and the native mint, *Mentha cunninghamii*.

Forthcoming Activities

4 September "Where land plants meet the sea". Ewen Cameron
21 September "Seaforth", Hatfields Beach
2 October "Intriguing interactions: Fungi/plants/insects and other mycophagists". Teresa Lebel
11-15 October Spring Camp at Ahipara
19 October Matheson's Bush, Mangawhai
6 November Lucy Cranwell Lecture: "Botanising in the Miocene". Jennifer Bannister
16 November Comans Track, Waitakere

Auckland Botanical Society, PO Box 26391, Epsom, Auckland 1344

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Secretary: Kristy Hall

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■ Rotorua Botanical Society

July Field Trip: Waiotahi Spit/Titohanga wetland

A good-sized group assembled at Waiotahi, including a full turnout of locals. After a brief survey of the coastal forest near the car park we headed into the estuary and sloshed our way through the mud up the inside of spit to the tip. Initially the shore was fringed with manuka, five finger and mahoe but most of the vegetation on land comprised *Muehlenbeckia complexa*, and adventives such as tree lupin, blackberry and grasses. The shore was fringed with ribbonwood, and further out the salt marsh contained a broad band of *Apodasmia similis* and *Juncus kraussii*. The original list excluded the salt marsh and tidal fringe, so many plants were added. A highlight was *Austrostipa stipoides*, a typical strand plant in the north, but here at its southernmost site until it is found again in Nelson.

About halfway along the spit, the shore became quite sandy, often flanked by tall, bare dunes. At one point a buried midden plus hangi stones could be seen in section. Here, in the shade, there were quite a few ferns including *Pyrrhosia elaeagnifolia*, *Adiantum cunninghamii*, *Asplenium oblongifolium* and *A. polyodon*. At the tip we climbed the headland through pohutukawa forest with *Pseudopanax lessonii*, kawakawa, boxthorn, *Earina muconata* and *Poa anceps* sprawling down the banks. The ground cover included several sedges but they were difficult to determine with certainty

because of the age of the heads. On the return, we travelled down the middle of spit to its base, past scattered patches of akeake and recent rehabilitation plantings. In the pohutukawa forest near the road, plants of interest included *Centella uniflora*, *Gahnia setifolia* and *Moralotia affinis*.

After a brief roadside stop at a recently-revealed pohutukawa stump on a 30 000 year old peaty soil profile, we continued to a Tirohanga wetland. The owner, who accompanied us, intends to restore it. Raupo sward, which dominated the wetland core, had many trampled paths. A band of grey willow fringed the more remote part. The more accessible seaward margin was severely trampled but there were areas of *Ranunculus sceleratus* and *Eleocharis gracilis*. On return to the car park we recorded *Eleusine tristachya*, probably a recent invader from Gisborne, where it is abundant in the city.

August Field Trip: Galatea Foothills Track

In dubious weather, we set out from the Horomanga Stream for the Mangamate Stream some 8 km further south. Most of the track was under kanuka 10-15 m tall and probably 60+ years old, with mahoe, five-finger, *Cyathea dealbata* and mamaku quite common. Odd clearings were grassy and often blackberry or *Muehlenbeckia* filled (both *M. australis* and *M. complexa*). At both ends of the track, the taller forest was well developed and reasonably diverse; kawakawa and privet were especially abundant. Titoki and *Sophora tetraptera* occurred sporadically at the northern end. Podocarps were virtually absent with just a few totara at the southern end.

Unusual species of particular abundance were *Diplazium australe* and *Pellaea rotundifolia* and one dry face held much *Helichrysum lanceolatum*, a tempting place to seek *Teucrium parvifolium* but a recent shower dampened out interest. Filmy ferns were few with *Hymenophyllum scabrum* being the most common on the ground and *H. sanguinolentum* epiphytic. At one point we found a broad swathe of *Acianthus sinclairii* and few patches of *Diplodinium alobulum* and *D. trullifolium*. The orchid highlight was a huge *Drymoanthus adversus* with 14 very long leaves and two spikes with advanced flowers buds. The lovely soft *Lastreopsis velutina* was also found at one point. About two thirds of the way to the Mangamate stream, the party split with one group heading onto the pasture margin in a vain search for *M. ephedroides*, now swamped with broom and long grass inside the fence, or perhaps grazed out of existence outside.

FUTURE EVENTS

14 September Kaingaroa frost flats - Rangataiki bog pine forest
4-6 October East Cape revisited #7
9 November Lake Arapuni or Lake Maraetai
16 November Mystery Pterostylis hunt
30 November Hauhungatahi (combined with Waikato BS)

President: Paul Cashmore (07) 348 4421 pcashmore@doc.govt.nz

Secretary: Elizabeth Miller (07) 343 5013 **Web Page:** www.wildland.co.nz/botanical.htm

■ Taranaki Botany Group

Taranaki Botany Group Trip programme Sept - Nov 2013

We would be delighted to welcome any visiting botanists, so please get in touch if you want to join us. Leaders are the co-convenors of the group, contact details at the end.

FUTURE EVENTS

15 September Mimi Estuary KNE & Mimi Scientific Reserve. The Estuary is a recent addition to the Regional Council's KNEs. We hope to find a variety of specialised native flora. 'Regionally Distinctive' species include natural populations of saltmarsh ribbonwood (*Plagianthus divaricatus*), coastal tree daisy (*Olearia solandri*) and *Hebe stricta* var. *macroura*. We will also look for *Brachyglottis turneri* in the Scientific Reserve, although we will probably be too early for flowering.
27 October Tom and Don's Bush, Okato. North Taranaki Forest & Bird Reserve would like an updated species list for their reserve.
17 November Orchids – location TBC.

Contacts: Barbara Hammonds 06 7597077; Email: barbara_h@xtra.co.nz
Janica Amooore 06 7520830. Email: waiongona@clear.co.nz

■ Wanganui Museum Botanical Group

FUTURE EVENTS

- 3 September Talk on *Aeonium* by Rudolf Schulz.
29 September Fieldtrip - *Eucalyptus* in Wanganui. Leader Colin Ogle.
1 October Talk on European motorcycle excursion by Clive and Nicki Higgle.
2 November Fieldtrip – Bushy Park. Leader: Esther Williams.
5 November Talk on plant encounters in South Africa by Colin and Robyn Ogle.
1 December Fieldtrip - Whenuakura Estuary and coast. Leader: Mick Parsons.

President: Clive Higgle (06) 342 7857 clive.nicki@xtra.co.nz

Secretary: Robyn Ogle (06) 3478547 22 Forres St, Wanganui. robcol.ogle@xtra.co.nz

■ Wellington Botanical Society

New Year's Field Trip - Arthur's Pass National Park

Day 1: Arthur's Pass Walking Track: Chris Stewart (DOC) led us up the track from the village to the newly restored Jack's Hut. Within this high-altitude forest we saw *Pseudopanax linearis*, *P. colensoi* var. *ternatus*, and numerous other species not found in the North Island. Along O'Malley's Track we saw *Peraxilla tetrapetala*, *Hoheria glabrata*, *Lagenifera pumila* and *Rubus schmidelioides*, under mountain beech and mānuka.

Day 2: Arthur's Pass Wilderness Lodge and Broad Stream: The lodge and farm are an eco-tourism venture established in 1996, 16 km east of Arthur's Pass township. Half of the farm has been fenced and retired from grazing, after being in pasture for 150 years. Introduced pests and weeds have been controlled, and rare plants established. In the braided bed of Broad Stream we noted *Epilobium melanocaulon*, *Helichrysum depressum*, *Elymus solandrii*, *Geranium sessiliflorum*, *Discaria toumatou*, *Coriaria sarmentosa*, *C. plumosa* and *Vittadinia australis* in flower. Mistletoes seen included flowering *Peraxilla tetrapetala* and *Alepis flavida*. Among the plants we saw on the McKay Moa forest walk were *Aristolelia fruticosa*, *Pittosporum divaricatum*, *Coprosma spathulata*, *Clematis forsteri*, *H. dimorphum* (a climbing daisy), *Muehlenbeckia axillaris*, *H. intermedium*, in flower and the invasive *Dryopteris filix-mas*.

McCaskill Scenic Reserve, Castle Hill: This was the first reserve in Aotearoa/NZ created to protect a single species - *Ranunculus paucifolius* (Castle Hill buttercup). In 1948, this 6.2-ha area amongst the limestone outcrops was declared a reserve. The ranunculus grows amongst the outcrops, in a hollow of limestone sand and debris, originally scattered amongst hard tussock, *Festuca novae-zelandiae*, which is now being replanted. There were many low-growing plants of Castle Hill forget-me-not (*Myosotis colensoi*), about 20 cm across and setting seed. In the slight shade provided by the huge boulders grew *Clematis forsteri* var. *australis*, *Carmichaelia australis*, *Coprosma petrei*, *Aristolelia fruticosa* and some ferns, e.g. *Anogramma leptophylla*, *Asplenium lyallii* and *Cheilanthes sieberi*. In the open we saw *Pimelea prostrata*, some with trunks 15 mm in diameter, and *Senecio lautus* var. *lautus* (S. "Titahi Bay").

It was salutary to note that because volunteers are used to weed around the *Ranunculus paucifolius*, and can only identify their target plant, many of the other rare native treasures are pulled out in ignorance. With DOC planning to do much more of its work using volunteers, the situation will only be repeated nationwide.

Day 3: Bealey Spur track: We entered patches of mountain beech and second-growth forest with wonderful clumps of scarlet mistletoe (*Peraxilla tetrapetala*), often at eye level. Orchids were prominent, including *Gastrodia cunninghamii*, *Pterostylis* sp., *Thelymitra* sp., *Prasophyllum colensoi*, *Nematoceras trilobum*, *Stegostyla lyallii* and *Aporostylis bifolia*.

Most of the 25 who braved the weather reached the small hut on the edge of a beech patch. A strong wind made the return trip across the open tussock and wetland areas uncomfortable until we reached the forest lower down. Highlights of this trip were the orchids, mistletoes, and the interesting wetland plants including bladderwort (*Utricularia dichtoma*), comb sedges (*Oreobolus pectinatus* and

O. strictus), *Gleichenia dicarpa*, *Empodisma minus*, *Drosera arcturi*, *Lepidothamnus laxifolius*, *Mazus radicans*, *Gonocarpus micranthus*, *Microseris scapigera*, and *Celmisia alpina* agg. In the tussockland we found *Hebe canterburiensis*, *H. odora*, *H. subalpina*, *H. pauciramosa*, *Dracophyllum kirkii*, *D. rosmarinifolium*, *Coprosma cheesemaniae*, *Pimelea oreophylla* var. *oreophylla*, and a hybrid daisy *Celmisia discolor* x *C. doretzii*. We looked at the several forms of *Raukaua simplex*. We puzzled over the various coprosmas before deciding that *Coprosma propinqua*, *C. dumosa*, *C. microcarpa*, *C. linariifolia* and *C. pseudocuneata* were all present.

Day 4: Devil's Punchbowl Falls: The day was a pluvial paradise, with over 400 mm of rain turning the Bealey River into a boulder-rolling, angry torrent. The foot-bridge over the river juddered as five bold souls, hermetically sealed in winter woollies and wet-weather gear, crossed it en route to an unforgettable spectacle—the falls rendered almost invisible by the gale of spray forced forth from the foot of the falls by the massive volume of water roaring out of the steep catchment.

Day 5: Craigieburn Forest Park – weed clearance: A kererū appeared on the veranda of the Outdoor Centre holding a miro twig in its beak - it had stopped raining. We headed east to Craigieburn Forest Park and spent the morning pulling out roadside wildling Douglas firs. Douglas fir planted on the Craigieburn Range is spreading out over Castle Hill Basin. The seedlings of this species germinate anywhere; in bogs, in shade under beech, and in the tussock grassland. It grows rapidly and overtops the native vegetation replacing it entirely.

Day 6: Temple Basin Ski-field: Along the side of the 4WD road, *Coprosma serrulata* and *Olearia arborescens* (common tree daisy) were flowering, and the pink male cones on *Podocarpus nivalis* (snow tōtara) were obvious. Amongst shrubs and tussock grasses, the delicate flowers of *Stegostylia lyallii* (orchids) stood out. Where the terrain steepened, the gravel road changed to a narrow, winding track up to the ski field huts. Here were the first plants of *Ranunculus lyallii* (Mount Cook lilies), in full blossom. Fields of white celmisia (mountain daisy) flowers e.g. *Celmisia sessiliflora*, *C. armstrongii*, *C. laricifolia*, *C. verbacifolia*, *C. vereteii*, sometimes dotted with pale yellow flowers of hybrid *Dolichoglottis scorzoneroideis* x *C. lyallii* spread along the banks of the many creeks. We walked through a swamp where *Donatia novae-zelandiae* was flowering, and *Coprosma perpusilla* was in berry. Also abundant were *Drosera arcturi* (sundew) and *Astelia linearis*. Climbing the scree and dry creeks on the eastern slopes of the true left branch, we saw *Leucogenes grandiceps* (South Island edelweiss), *Viola cunninghamii* (mountain violet) and *Leptinella pyrethrifolia* (button daisy). Below the ridge top, a field of big boulders hosted little plant life, with the exception of *Hebe macrocalyx* var. *macrocalyx* and *Haastia sinclairii* tucked between rocks.

Day 7: Cockayne Nature Walk: The Cockayne Nature Walk is in an area of old West Coast podocarp forest, with large kāmahi, tōtara, rimu, fuchsia, drippy lichens on the trees, and cushioning moss on the track. We had yet another discussion about *Blechnum montanum*, *B. procerum*, and *B. vulcanicum*, and basal pinnae reduced / not reduced, swept back / cut off straight. We enjoyed seeing larger numbers of *B. nigrum* than we see around Wellington; and the *Leptopteris superba* were indeed superb.

We noticed that the *Coprosma foetidissima* seemed to have a different leaf form to our North Island one. NZPCN says 'Lamina membranaceous to subcoriaceous, obovate to oblong to broadly ovate, obtuse, apiculate to mucronulate, 30-50 × 14-20 mm', so that would seem to cover a bit of variation. We puzzled over some heavily browsed tips on the carmichaelia by the track, especially as the griselinia and patē had not been touched. Someone spotted a 4 m tall pōkaka (*Elaeocarpus hookerianus*), still in its juvenile form, and showing no signs yet of maturing. And we admired a giant *Polystichum vestitum*, the size of a small car.

Otira Valley: The Otira Valley was a pleasant contrast of open, sunny, semi- to sub-alpine vegetation. We saw *Celmisia armstrongii* (orange-brown midrib on upper leaf surface), *C. lyallii* (strongly striated on the underside of the leaf), a flowering *Waireia stenopetala*, and the tiny but bright yellow *Euphrasia cockayneana*, named for Leonard Cockayne.

After a couple of hours we got to the bridge, which spanned two house-sized rocks - the only possible bridge position for kilometres. Above here more alpine plants were seen, including a large-headed leptinella in flower, *Melicytus alpinus* and *Ranunculus lyallii*.

Day 8: Margaret Tarn/Bealey Chasm Dobson Walk.

Day 9: Broken River Craieburn.

February Field Trip: Wainuiomata River – west branch

Led by Chris Hopkins, a group of 16 entered the valley at the heart of this climax forest. Here emergent podocarps, rimu, kahikatea, miro and mataī, and northern rātā, heavily laden with epiphytes, form a distinct upper tier. Canopy species include tawa, hīnau, rewarewa, pukatea, black and white maire and kāmahi. Plants of the sub-canopy include putaputawētā, kanono, a shade form of *Coprosma rubra*, broadleaf, māhoe, whēkī-ponga and soft tree fern, on whose trunks we found several *Raukaua edgerleyi*, and the strap fern *Notogrammitis pseudociliata*. Ground-cover species included *Australina pusilla*, pennywort (*Hydrocotyle elongata*), scrub nettle (*Urtica incisa*), and *Uncinia distans*. A patch of waoriki (*Ranunculus amphitrichus*) on the track appeared to have come from a small wetland to the east, which contained duck weed *Lemna minor*, kānuka, rohutu and swamp maire. On an undercut, shady, river bank, we found the bristle fern *Abrodictyum elongatum*.

March Field Trip: Cannon Point Walkway, Upper Hutt

In ideal conditions, we spent about five hours botanising in regenerating forest, from the Bridge Road, Birchville, end of the track, to the historic, decommissioned, Birchville Dam, and back. We listed about ninety species of native plants including four tree ferns: mamaku, ponga, whēkī and whēkī-ponga, plus an emergent rimu, a northern rātā, and some young kahikatea. We were particularly impressed at a *Huperzia varia* hanging clubmoss, dangling from its host tree, directly over the track. We listed over thirty weed species, e.g. barberry, broom, Himalaya honeysuckle, blackberry, gorse, old man's beard, montbretia, and hedge stachys.

Easter Field Trip: Rangitikei and Foxton areas, Manawatu

Day 1: Ephemeral dune wetlands at Foxton and Himatangi. Round Bush: Jill Rapson suggested a quick look at the dunes and wetlands behind Foxton Surf Club. Half an hour soon became two hours as we started learning the treasures and the weeds. Jill raised our awareness of the dynamic inter-relationships between coastal processes, dune processes, and the impacts of farming and forestry along the Manawatu coast. Standing up, we could see *Coprosma acerosa*, the hairy *Pimelea arenaria* (even the petals are hairy), and the Manawatu endemic *Selliera rotundifolia*. We had to kneel, with eyes close to the ground, to see *Lilaeopsis novae-zelandiae*, *Ranunculus acaulis* and *Triglochin striatum*.

Next was Omarupapako (Round Bush) Scenic Reserve, a 50-ha remnant of coastal swamp forest 4 km north of Foxton Beach. It is a kahikatea/pukatea forest, with flax, raupō and cabbage trees in more open areas. The final site for the day was a dry ephemeral wetland on private land. Viv McGlynn (Manawatu) produced a young katipō when she picked up her fourth piece of driftwood. Jill promised and delivered more botanical treasures, all tiny, including *Eleocharis neozelandica*, *Gunnera dentata*, *Isolepis cernua*, *I. basilaris* and *Myriophyllum votschii*.

Day 2: Lake Koiata: Lake Kotiati was lined with raupō, willows, poplars, cabbage tree, *Coprosma propinqua* agg., one mamaku, much bracken, many exotics, and extensive pasture grasses. We admired *Potentilla anserinoides*, *Limosella* sp. in flower, and yes, we found the newly learnt *Isolepis basilaris* here also, beneath some beggars' ticks, willow weeds, forget-me-nots and many others. Also here was the endemic *Hydrocotyle sulcata* and the exotic water fern, *Azolla pinnata*, a new record of invasion.

Day 3: Tangimoana foreshore & Tawhirihoe Scientific Reserve: On the south bank of the Rangitikei River we saw the rare *Carex litorosa*. Falling into the high tide along the estuary's exposed edges are scattered plants of shore cotula, *Leptinella dioica*. Despite attempts at eradication, the huge grass *Phragmites australis* was re-growing here - it is a serious weed throughout the estuary. Volunteers were trying hard to control it, but sprays that affect aquatic life cannot be used, so this job is very difficult.

Tawhirihoe Scientific Reserve was set up to protect one of the best remaining ephemeral wetlands in the Manawatu. It is now in decline. Oioi, other rushes, *Austroderia toetoe* and cabbage trees are part of the natural progression filling in the wetlands, plus weeds, e.g. pampas and tree lupin. No new wetlands have developed naturally since the land was reserved. An artificial wetland, dug out and

fenced off, has not been as well colonised by wetland plants as hoped. However, *Selliera rotundifolia* had established and we also saw an adult and seedling of the Nationally Critical *Pimelea actea*. The more common *P. villosa* is also scattered through the reserve.

May Field Trip: Taita Scientific Reserve, Lower Hutt

Paul Blaschke, who had worked in the reserve in the late 1980s—early 1990s, gave us insights into the history of the reserve. We descended through the shrublands to the track built by Tony Druce and others, and continued to the end of the cleared track, then dropped steeply to near the floor of the gully. Here were mature hard beech, kiekie, *CollospERMUM*, filmy ferns, etc. We botanised both banks of the creek bed, finding a sapling swamp maire, wheki and supplejack. The mature forest community here was in marked contrast to the shrublands above, with their infestation of Spanish heath and pine trees. We found the delicate ferns, *Lindsaea trichomanoides* and *L. linearis*, and the greenhood orchid, *Diplodium alobulum*, in flower.

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■ Nelson Botanical Society

Easter Camp at Collingwood

Day 1: Mt Burnett: Mount Burnett is home to plant species that are found nowhere else but it is also the site of our only commercial dolomite mine. We sighted plants that make Mount Burnett special: the unmistakable large-leaved *Brachyglottis hectorii*, *B. laxifolia*, a northern South Island endemic and *Hebe albicans* subsp. “Burnett” which is stouter and more erect than subsp. *albicans*. On the second summit to the north we located yet another unnamed local, *Gingidia* “Burnett”. Descending we traversed a divide between dolomite-marble rocks and coal measures. This change in geology produced a most dramatic transformation in the vegetation. Kanuka on the dolomite strata was abruptly replaced by manuka on the coal measures and *Prumnopitys ferruginea* and *Podocarpus cunninghamii* were replaced by a mixture of other conifers. Mount Burnett gave us the chance to compare *Pseudopanax colensoi* var. *ternatus* and the limestone/marble/dolomite-favouring *P. macintyreii*.

Day 2: Farewell Spit & Old Man Range: From the carpark we made for the eastern beach, heading to some usually-wet sloughs between the dunes. On the way, we passed *Calystegia soldanella*, *Coprosma repens*, *Tetragonia tetragonioides* and *T. implexicoma*. We turned inland and entered a beautiful barren landscape of wind-sculpted dunes of schist sand with pingao on one dune. The drought meant that there was no standing water in the pan, but we did see patches of *Carex pumila*; lime-green *Centipeda aotearoana*, the delicate *Myriophyllum propinquum*, *Potamogeton cheesemanii*, *Gratiola sexdentata* and the easily missed *Lilaeopsis ruthiana*. Taller plants included stunningly orange specimens of *Apodasmia similis*, *Coprosma propinqua* (a variety special to this area with very shiny, broad leaves) and *Kunzea* “sand”. We encountered succulent plants of *Chenopodium ambiguum*, tiny *Limosella lineata* and *Myriophyllum votschii*. We carried on south and then east to the carpark.

We then headed up the track from the Wharariki Road to the Pillar Point lighthouse. This was a stark landscape of conglomerate outcrops, bony ridges and swathes of heathland. The main species was the sedge *Lepidosperma filiforme*. Gorse and Spanish heath had made inroads into this stunted heath vegetation, along with prostrate manuka, *Epacris pauciflora*, *Leucopogon fraseri*, *L. fasciculatus* and the local, *Dracophyllum trimorphum*. We took an open ridge, which ran parallel to the track and came across *Corunastylis pumila*, *Gonocarpus incanus*, an unusual form of *Anisotome aromatica* and the ferns *Lindsaea linearis* and *Schizaea fistulosa*. The Old Man Range supports one of the most distinctive communities in the northern South Island, resembling Northland's gumlands.

Day 3: Aorere Goldfields: We set off for the start of the Aorere Goldfields track about 9 km from Collingwood. After an easy walk we came to an area of pakihi known as Druggan's Flat where plants on the track edges included *Schizaea fistulosa*, *S. bifida*, *Gahnia xanthocarpa*, *G. setifolia*, *Drosera spatulata*, *D. binata*, *Gonocarpus micranthus*, *Asplenium appendiculatum* subsp. *appendiculatum* and *Epacris pauciflora*, with its bright-white flowers. Further on we found *Gahnia rigida*, identifiable by its erect seed-heads, the pakihi fern *Lindsaea linearis*, the orchid *Corunastylis pumila*, *Raoulia*

glabra, *Gonocarpus incanus* and *Celmisia* 'Pupu'. Lush podocarp-broadleaf forest indicated a change in the substrate to limestone overlying schist. Along the track edges there were patches of *Dawsonia superba*, *Lycopodiella lateralis*, *L. cernua*, and *Huperzia varia*. We made a detour along the shore of Druggan's Dam created in the late 1870s, then to the caves and back to the cars.

April Meeting: Plants of Arthurs Pass

Don Pittham gave us a presentation with superb photographs he, Cathy Jones and Kay Jackson had taken of the flora of the Arthurs Pass area, mostly on recent Botanical Society trips. Don's commentary was most entertaining and of special interest were photos of *Montigena novae-zelandiae* and *Archeria traversii* in flower. Don worked out that *Montigena* puts up its new leaves, flowers and sets seed between early December and mid-January but he had to visit the site many times before he was able to catch it in flower. We noted that *Archeria traversii* from the Bealey Valley had pale green flowers quite different to our local trees from Mt Arthur with their red/pink flowers.

May Field Trip: Archer Track

Fifteen of us set off for a day walking the Archer Track at Penzance, Tennyson Inlet in the Sounds. Cathy came up with a number of filmy ferns; *Hymenophyllum multifidum*, *H. flabellatum*, *H. demissum*, *H. revolutum* and *H. bivalve*. Two varieties of *Trichomanes* were a delight, *Polyphlebium (Trichomanes) venosum* and the attractive kidney fern, *Cardiomanes reniforme*. The track proved very interesting for ferns in general with a great selection of *Blechnum species*. These included *B. filiforme*, *B. novae-zelandiae*, *B. discolor*, *B. fluviatile*, *B. chambersii* and *B. procerum*.

May Meeting: Filmy Ferns of the Nelson region

Shannel Courtney set up a wonderful workshop for us. He explained that New Zealand has 33 species of native filmy ferns of which 20 are endemic. He laid out steps for a key he had devised and defined the terms used. The separation of material based on whether the lamina margins are toothed or smooth represented the first step in the key. From then on, we worked our way methodically through the key, observing the characters on the herbarium specimens and attempted to identify the fresh samples.

June Evening Meeting: Jane Connor – Publishing a botanical book

Jane Connor is a publisher who has worked recently at Craig Potton Publishing (CPP). Jane began with the 1985 'Field Guide to Alpine Plants' by John Salmon; her first publishing job, 30 years ago. Then she showed us 'Above the Treeline' by Alan Mark, her latest publishing job. She detailed the difference in publishing of 1985 and today. In 1985 the manuscript was typed on a typewriter and arrived at the publisher's with a boxful of slides and instructions on "this is how it will be", then it was sent to the proof-reader, then the paster and finally to the printer. By comparison, in publishing *Above the Treeline* in 2012, the work was all electronic with digital photographs submitted by 70 photographers. The prepared work was shared between the author and publisher on the screen of the computer on Skype and 'thrashed out' before going to print. The proofs were done at CPP on a special photocopier and then the images up-loaded to Hong Kong.

July Field Trip: Brook Waimarama Sanctuary – Koru Track

Twelve of us met at the Brook Sanctuary to scrutinize the Koru Track for plants to add to the species list for this area. Finds included *Pseudowintera axillaris*, *Nertera villosa* and *Urtica ferox*, *Lastreopsis velutina*, *Asplenium flabellifolium*, *Raukaua anomalus*, *Cordyline banksii*, *Dianella nigra* and *Helichrysum lanceolatum*. We traversed streams at Ferny Flat and Corkscrew Crossing and found the newly formed track well-constructed with its stone supporting walls. We returned via Jacobs Ladder and Koru Track.

July Evening Meeting 'Notable Trees', Brad Cadwallader

Brad, a consulting arborist, introduced us to 'The NZ Tree Register' and the 'NZ Notable Trees Trust' (NZNTT). He set the scene by relating the history of our 'fantastic trees' in the literature, starting with Cook and Banks in 1769. The measurement and documentation of our great trees began in the 1940s (Dr H.H. Allan), and then Burstall's detailed reports (1970–74). In 1978, the Royal New Zealand Institute of Horticulture established the Notable Trees Scheme, to encourage councils to protect their trees but this activity faded and it wasn't until 2008 that the NZNTT was revived and the on-line, database form of the register was launched in 2009. Tree records are now centralised and the information freely available (www.notabletrees.org.nz). You can search for notable trees by species, genus, locality or specific tree and you can add information about trees in your area.

FUTURE EVENTS

- September 15 Lakehead Track, Lake Rotoiti, Nelson Lakes National Park: Beryce Vincenzi 03 5284549
- September 16 Evening workshop on Orchid key (at Seniornet): Chris Ecroyd 03 5447038 & Trevor Lewis
- October 20 Wairoa Valley, Inches' Threatened Plant Weeding: Shannel Courtney 03 5469922
- Oct 25-28 Labour Weekend Camp: Schuckards', Taipare Bay: Shannel Courtney
- Nov 26-28 Whites Bay Camp, Marlborough (NB midweek): Cathy Jones 03 5469499
- December 15 Herring Stream Rd, Upchurch QE II, Motueka Valley: Kay Jackson 03 5477264

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■ Canterbury Botanical Society

May fieldtrip report: the Kimberley Delaney Bush, Akaroa

Richard Kimberley and Jane Delaney purchased land above Akaroa six years ago and placed a QEII Trust covenant over 15 hectares of montane forest with a core of old red beech, mountain beech, matai and mountain totara trees. Richard traps stoats, possums and rats as his contribution to keeping pests from escaping into the Wildside bays. On the red beech track the number of seedlings and saplings of pate (*Schefflera digitaria*), mountain five-finger (*Pseudopanax colensoi*), broadleaf (*Griselinia littoralis*), makomako (*Aristotelia serrata*), and mahoe (*Meliclytus ramiflorus*) attest to the lack of browsing pressure (although there was a debate over a deposit which some said was produced by Jane's dog and others a certain sign of pigs – to be resolved by posting on the specialist www.naturewatch.org.nz What Poo Is That? website).

At the first stream we identified the exotic reed sweet grass *Glyceria maxima* using the photos of its distinctive ligule using the new *Common Grasses, Sedges and Rushes of New Zealand* (Champion, James, Popay and Ford, 2012).

Alaistair Macdonald our hebe man, reacquainted himself with koromiko (*Hebe salicifolia*), the Banks Peninsula hebe (*Hebe strictissima*), and later in the day the Banks Peninsula sun hebe *Heliohebe lauvadiana* on rock outcrops. Graham Ure was made responsible for the removal of the occasional male fern, an invasive European fern and the subject of his MSc. studies.

We added a number of ground hugging plants to the covenant species list: the button daisy *Leptinella squalida* subsp. *mediana*, *Dichondra repens*, *Schizelema trifolliotatum*, *Senecio wairauensis*, *Senecio glomeratus* and harebell (*Wahlenbergia gracilis*); and the grasses *Microlaena stipoides*, *Rytidosperma gracile*, plume grass (*Dichelachne crinita*), karetu (*Hierochloa redolens*), plus the tussocky hooked sedge *Uncinia clavata*.

Lunch was on a rock outcrop with a wizened old kanuka on its farthest point, which supported a few clusters of the pygmy mistletoe *Korthalsella salicornioides*, which is quite uncommon on the Peninsula. Miles Giller has a remarkable eye for this cryptic plant and he found more growing on a more accessible kanuka right below and right on the track.

By now it was a beautiful clear day on a dying southerly. Above us was the high point Berard. Richard had recently taken a tramping club up there and knew how to navigate through the gorse so we all scrambled up to admire a tiny patch of the montane heath *Pentachondra pumila*, one of a 2-3 sites on the peninsula, and the aniseed-smelling Peninsula endemic *Gingidia ensyisii* var. *peninsulare*. Here we could see how close Richard's land was to Stony Bay peak where the July 2011 Hinewai fire started, and was blown eastward where the grey valley slopes to the east mark its reach.

We congratulated Richard on the huge amount of work he has put in to remove roadside strip of pine trees, his weed control, and his systematic pest trapping. This forest could not be in better hands.

June AGM Report: 2012/2013 AGM Speaker: Brian Patrick (Wildlands, Christchurch Office)

Butterflies of the South Pacific: a Botanical and Entomological Journey

Sub-titled "Butterflies as Botanists" Brian started his fast and fact-filled round-up of butterflies in the South Pacific by placing this butterfly fauna into a global context:

- There are 20,000 species of butterflies worldwide
- New Guinea is a hotspot of diversity with 1000 species, some spectacular
- Most South Pacific states have representatives from all 5 of the butterfly super-families
- Overall the South Pacific has moderate diversity of butterfly species with 120 species/144 sub-species of which 53%/70% are endemic.
- The South Pacific is a hot-spot for Admirals with 4 endemic species
- Reporting on endemism in the South Pacific is complicated by the political rather than biogeographic boundaries of the island states, and the work yet to be done on potential endemic sub-species
- Australia is species-poor with only 400 species, 85% located north of Cairns
- NZ has a "disharmonic" fauna with representatives from only 2 of the 5 super-families
- NZ is unusual in having 100% endemic butterfly species (excluding the 15 vagrant and introduced butterfly species), a feature only shared with the islands of Hawai'i and Madagascar

Brian then recounted a family road-trip through the Pacific Islands where he made the discovery of new species and sub-species seem as simple as looking out the car-window and waving butterfly nets around. In Fiji the Patrick family caught the second-only record of the beautiful Fijian Eggfly (also known as a Blue Moon), and deduced that an endemic ringlet species was in fact two species, one each on the two main islands.

The story of the large Samoan swallowtail illustrated the extinction pathway from a catastrophic loss of local knowledge. This iconic butterfly, reproduced on Western Samoan stamps, was last sighted in Western Samoa in 1989. On a quick side-trip to American Samoa (to celebrate Hamish's 20th) this species was common and soon realised that its demise in Western Samoa was due to the disappearance of its citrus family host plant, possibly from cultivation and a habit of continual clearance of undergrowth. The American Samoa National Park Service have since planted more of the citrus host into the forests to boost the swallowtail butterfly and Brian hopes that Western Samoa will follow suite so that eventually it can be reintroduced.

Further family trips to document the Pacific Island butterfly fauna were funded by the World Bank to Niue, Tonga, and the Cook Islands. In Tonga he targeted the almond tree *Terminalia catappa*, a known host plant, and turned up another 4 species. Ever scanning for butterflies even on his wedding day in Hawai'i he was out looking.

Brian describes the NZ butterfly fauna as "dynamic" due to the wholesale transformation of the NZ lowland landscape, which has enabled several of the 15 vagrant and introduced species to get a toe-hold (the meeting was not as convinced as Brian that the Cabbage white and the recently arrived Great White have a place in NZ, especially in the NZ home garden). Older books list 23 NZ species but Brian has documented 55 endemic species so far.

The diversity in the Coppers makes NZ the Copper capital of the world, with 26 Lycaenid species recorded in NZ. Their host plants are the *Muehlenbeckia* species, although Brian noted that they were clever enough not to chance their future with the rare shrub *Muehlenbeckia astonii*, and he is yet to find any butterflies using the scattered remnants of tororaro on Kaitorete spit.

All the South Island Coppers are yet to be named with distinct entities in the Craigieburn-Mt Hutt mountains, dryland Canterbury Plains, and Eastern Otago waiting for a taxonomic treatment. Brian and his son Hamish showed that what was thought to be one species of black butterfly was in fact 5 species, feeding on small *Poa* plants in their South Island mountain scree habitat.

The range of the Forest ringlet, the only NZ butterfly that flies through a canopy rather than dwelling on the margins, is decreasing so that it is rarely encountered below 600m in its habitat north of the Lewis Pass, possibly due to parasitism by a introduced vespid wasp living at the lower altitude. Their host plants are species of cutty grass *Gahnia*.

So what can we botanist do for butterflies? Brian's answer was to firstly do your best to retain butterfly habitat, and secondly, to increase the cover and range of their host plants.

1. Protect forest patches, shrublands, and more urgently, save what is left of the dryland vegetation on lowland Canterbury
2. Plant pohuehue *Muehlenbeckia* species for coppers – *M. australis*, *M. complex* and *M. axillaris*
3. Plant dwarf brooms and introduced clovers for the Southern Blues
4. Plant nettles for Admirals – *Urtica urens*, *U. dioica* and *U. incisa* for yellow admirals and onga onga (*Urtica ferox*) for red admirals
5. Plant swan plants (*Gomphocarpus fruticosus*) for monarchs
6. Leave a few brassica plants in your garden for white butterflies
7. Plant local tree daisies for nectar for all insects – *Olearia adenocarpa*, *O. arborescens*, *O. paniculata*, *O. avicennifolia*, *Olearia odorata*, *O. virgata*, *O. bullata*, *O. hectori*, *O. fimbriata*, *O. fragrantissima*

Butterflies are a visible indicator of good habitat for less obvious insects. There are 120 insects that solely rely on pohuehue *Muehlenbeckia* species for their life-cycle, as well as estimated 120 who intermittently use pohuehue.

Brian is an entertaining and inspiring speaker on many topics entomological but he outdoes himself when talking on butterflies. He convinced us that not only are butterflies accurate botanists but Brian himself is a skilled and observant botanist too. We admired the way Brian weaves his family into his work and were not surprised to hear that his son Hamish co-authored "Butterflies of the South Pacific", Otago University Press 2012, illustrated with 330 superb photographs of butterflies.

July Field Trip: What Botanists Grow in their Gardens

We left Christchurch in rain and low cloud to the surprise of a sunny and clear day in Darfield. A dozen BOTSOCers met outside Alastair and Fleur Macdonalds' garden, and as anticipated Alastair had more hebes than most garden centres, and he handed out a copy of his Field Guide to South Island Hebes as we entered the gate. The small-leaved leonohebes and the whipcord hebes needed a magnifying glass to appreciate their tiny leaf characters and we carefully examined the differences between *Leonohebe tetrasticha*, *L. ciliolata*, *L. tumida*, *H. lycopodioides*, *Hebe hectorii* subsp. *coarctata* and *H. ochracea* (also known by its cultivated name as James Stirling) and *H. armstrongii*. *Hebe townsonii* from the Buller area turns out to have gland spots on the leaves. Good old *H. speciosa*, *H. subalpina*, and *H. odora* also have a place in their garden. Alastair also specialises in alpine plants, grown in his own recipe of coarse potting mix in a collection of old concrete laundry tubs, including *Leptinella atrata*, *L. dendyi*, *Anisotome haastii*, *Ranunculus enysii*, *R. crithmifolius* and *Carmichaelia monroi*. We were all impressed by the number of *Aciphylla* species that he has managed to keep alive, helped by the dry climate of Darfield: *A. scott-thompsonii*, *A. dobsonii*, and *A. kirkii* from the Old Man Range.

Hugh then led a car-convoy to the garden of his son Alex who has a potted 25 year-old vegetable sheep *Raoulia eximia*. Once again the dry climate of Darfield is an advantage. Difficult to grow, it was started from a single stem and the secret is a weekly slosh of water.

Margaret and George Ridgen's garden is extensive. Established many decades ago in a bare paddock on stony Lismore soils around a new house the first trees were a line of Deodar cedar (*Cedrus deodara*) for protection from the NW winds. Initially planted as an attractive conventional garden of cherry trees and perennials two decade ago Margaret started on a divaricating shrubbery well before they had become a fashionable texture plant – here we compared the leaves and form of *Coprosma virescens*, *C. crassifolia*, *C. rubra*, *C. rhamnoides*, *C. rugosa*, *C. rotundifolia*, *C. intertexta*, *Muehlenbeckia astonii*, and *Corokia cotoneaster* (including one that is naturally procumbent).

Sometime later George started on a forest. Using lacebarks, red and mountain beech for the forest structure, George has managed to grow kahikatea to fruiting, matai and totara to 8 m, and even a rimu. His *Libocedrus bidwillii* and *L. plumosa* are a credible 5 metres high [which allowed us to test Miles' old BOTSOC gem "A goes with B, and O with P". Sure enough, we could differentiate trees with Alternate leaf branchlets (= *L. bidwillii*) and Opposite branchlets (= *L. plumosa*)]. The sub-canopy is dominated by mahoe, lancewoods, and five-finger. We deduced

that George likes the mahoe family *Melicactus* from the presence of *M. chathamicus*, *M. alpinus*, *M. crassifolius*, *M. lanceolatus*, *M. obovatus*, *M. ramiflorus* and a few we were not sure of (probably involving hybrids). George also collects native brooms: *Carmichaelia torulosum*, *C. kirkii* (brown and green forms), *C. arborea*, *C. glabrescens*, *C. odorata* and *C. stevensonii*. And he rather likes Pittosporums: *P. eugenioides*, *P. tenuifolium*, *P. obcordatum*, *P. patulum*, *P. anomalum*, *P. dallii*, including a specimen of the most uncommon *P. turneri* from the Ruahine Ranges. George, like Alastair, has a lovely collection of healthy spaniards (*Aciphylla* species). We thank Alastair, Alex, Margaret and George for opening their gardens up to scrutiny and inspiring us to be more adventurous with our own plant choices.

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■ Botanical Society of Otago

Upcoming trips and talks

Wednesday 4th September 6.00pm Castle 1, University of Otago (drinks and nibbles starting from 5.15 pm in the concourse) Baylis Lecture, Speaker Peter Heenan, Plant systematics research and its relevance to understanding the origins and evolution of the New Zealand flora.

Saturday 7th September 8.30 am Field trip to Trotters Gorge, Palmerston

This is part of a large conservation area about 80 kilometres north of Dunedin off Horse Range Road. This is a beautiful spot with impressive rock formations carved out of sandstone and conglomerate by several small streams which merge with Trotters Creek. The car park has yielded an interesting mix of exotics and is in turn surrounded by regenerating native bush and at its westerly end two tracks lead off into quite different vegetation types. Interesting plants to be found are *Teucrium parviflorum*, *Pimelea pseudolyallii*, the locally endemic *Celmisia hookeri*, *Notogrammitis ciliata* and an unnamed *Corybas* orchid. Contact John Steel on 021 2133 170.

Saturday 5th October 10am Visit to the Johnson's Garden and Styles Creek Bush, Broad Bay

A visit to the garden of Peter and Pru Johnson. Peter says, "This will be springtime, or at least one of its interesting months. My 2005 record of flowering times, done fortnightly, indicates that in early October we have had 180 different things in flower. Don't expect them all to be natives!" The second part of the trip is to Styles Creek Bush, a QEII National Trust covenant on the property of Frank and Annie Pepers. Contact Robyn Bridges, phone: (03) 472 7330, email: robyn.bridges@otago.ac.nz

Wednesday 16th October 5.20 pm Talks by Botany Department Colloquium speakers

Talks from Botany Department Colloquium winners showcasing some of the latest research by our most capable young botanists.

2/3rd November 9 am Weekend trip to Long Point

A weekend trip to this stunning Coastal peninsula in southern Catlins. As well as the stunning coastal scenery, penguins, seals and sealions, there are interesting plant communities including coastal turfs with rare plants, coastal shrublands and forest remnants. For more information visit: <http://yellow-eyedpenguin.org.nz/our-work/habitats/long-point/> Contact Robyn Bridges, phone: (03) 472 7330, email: robyn.bridges@otago.ac.nz

Wednesday 20th November 5.20 pm Variation in pollinators' view of flowers and plants, a talk by Dr John Conran, Associate Head, School of Earth and Environmental Sciences, Adelaide.

Humans often assume that what we see is seen by others. This is not true and needs to be taken into account when thinking about plant pollination by insects and birds. Because of the variation of perceived light waves and ultra violet light, different species have different views of the world. For example a bee's view of green foliage would be a 'real bad acid trip' for humans. Dr Conran will discuss the implications of this variation in relation to pollination in the NZ flora.

Wednesday 4th December 6.30 pm End of year dinner

At Harvest Court Cafe, details to be confirmed at a later stage.

Saturday 7th December Field trip to Kakanui Peak

Kakanui Peak at 1528 m is one of the highest points in the Kakanui Range which runs in a north-westerly direction inland from Palmerston. We will travel to the top of the Pigroot and climb up to the summit of the peak. Vegetation is mainly snow tussock grassland but there will possibly be a few surprises as the area has not been extensively botanised in recent years. For an overview of this area see: http://www.recreationaccess.org.nz/files/rec_plan1_03_kakanui.pdf

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Wakatipu Botanical Group

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NOTES AND REPORTS

■ **New *Lepidium* revision available**

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A revision of the New Zealand endemic *Lepidium oleraceum* and allied species has just been published in the overseas, open access journal *PhytoKeys* by de Lange et al. (2013). In that paper sixteen species are recognised, 10 of these are new. The new species are segregated on the basis of morphological characters supported by molecular data obtained from three DNA markers (two rDNA and one cpDNA). One species, *L. castellanum* **sp. nov.**, is endemic to the Kermadec Islands where it is sympatric with *L. oleraceum*. The North Island of New Zealand supports four species, with two of them, *L. amissum* **sp. nov.** and *L. obtusatum*, now extinct. The South Island supports six species, that, aside from *L. banksii*, *L. flexicaule* and *L. oleraceum*, are all confined to the south-eastern half of the island (*L. aegrum* **sp. nov.**, *L. crassum* **sp. nov.** and *L. juvenicum* **sp. nov.**). One of these, *L. juvenicum* **sp. nov.**, extends to Stewart Island. The Chatham Islands support six species (*L. flexicaule*, *L. oblitum* **sp. nov.**, *L. oleraceum*, *L. oligodontum* **sp. nov.**, *L. panniforme* **sp. nov.**, and *L. rekohuense* **sp. nov.**), one of which, *L. oligodontum* **sp. nov.**, extends to the Antipodes Islands group. The remote, subantarctic Bounty Islands group supports one endemic, *L. seditiosum* **sp. nov.**, which is the only vascular plant to be recorded from there. *Lepidium limenophylax* **sp. nov.** is known from islands off the south-western side of Stewart Island/Rakiura, The Snares and Auckland islands. *Lepidium naufragorum*, although not related to *L. oleraceum* and its allies, is also treated because populations with entire leaves are now known. Typifications are undertaken for *L. banksii*, *L. oleraceum*, *L. oleraceum* var. *acutidentatum*, var. *frondosum* and var. *serrulatum*. The paper can be downloaded using the following link:

<http://www.pensoft.net/journals/phytokeys/article/4375/abstract/new-lepidium-brassicaceae-from-new-zealand>, doi: 10.3897/phytokeys.24.4375.

Reference

de Lange PJ, Heenan PB, Houlston GJ, Rolfe JR, Mitchell AD (2013) New *Lepidium* (Brassicaceae) from New Zealand. *PhytoKeys* 24: 1–147. doi: 10.3897/phytokeys.24.4375

■ ***Dicksonia fibrosa* - naturalised in the Auckland area**

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A cursory glance at the New Zealand Virtual Herbarium (<http://www.virtualherbarium.org.nz/>) would suggest that *Dicksonia fibrosa* (whēkī-ponga, kuripākā) has a distribution in the North Island from Kaipara Harbour southwards, with an outlying population near the Bay of Islands, and a scattered distribution in the South Island, principally around the north and east coasts. It also occurs on the Chatham Islands. However, a simple dot map belies what is probably a more complex distributional history for this tree fern.

Cheeseman (1925) recorded *D. fibrosa* “from Tauranga and the Middle Waikato southwards” and Allan (1961) stated that it occurred “from 37° 30’ southwards”. Examination of herbarium material in Auckland Museum (AK), Landcare Research (CHR) and Te Papa (WELT) confirms that there are no 19th century collections of this species north of Raglan, and that all collections north of 37° 30’S have been collected since 1969 (Fig.1). In fact, in the last 30 years there has been an abundance of collections of *D. fibrosa* from the Kaipara, Rodney and Waitakere Districts, and from Auckland City, Rangitoto Island and Coromandel Peninsula. It is hard to believe that an astute collector like Thomas Cheeseman could have overlooked such a distinctive and prominent species in all of these localities right on his doorstep, so how do we account for the sudden increase in collections in recent times?

Gardner (1982) was the first to suggest that some populations of whēkī-ponga might be naturalised in the Auckland region. He found a single fertile adult plant on the edge of bush near Waiatarua in the Waitakere Ranges (AK 153005), but thought that it might have originated there from a spore which had blown from the planted colony at the ARA Ranger’s house on Mountain Road. Cameron & de Lange (2006) went further, suggesting that the species “appears to be colonising parts of the Auckland region”, citing recent collections from Rangitoto Island (AK 253983), Woodhill Forest (AK 218751), Great Barrier Island (AK 255519) and Ponui Island (AK 294043). In all these localities there were only one to four plants present, suggesting recent colonisation. Indeed, of about 25 different collections now in AK and WELT from the wider Auckland region, most are from very small populations of one or two plants, and only one comprises more than 20 individuals.

Cameron & de Lange (2006) cited three relatively early collections in AK of presumed cultivated plants from the Auckland Domain (1957, AK 48803), Le Roy’s Bush on the North Shore (1975, AK 182290) and the ARA Ranger’s property in the Waitakere Ranges (1981, AK 153747), and suggested that these cultivated specimens might be the source of more recent discoveries. Certainly *D. fibrosa* has been cultivated in Auckland in recent years, and it seems likely that some of the populations now recorded have been derived from garden grown specimens. An escape from cultivation also seems to be the likely explanation for the 1986 record of *D. fibrosa* from Manginangina Scenic Reserve in Puketū Forest (WELT P018474), over 200 km north of the nearest known wild population in the Kaipara Hills, but only about 12 km from gardens in Kerikeri.

The weedy potential of *D. fibrosa* has been recorded in Hawai’i where it is occasionally cultivated. In one locality on the main island, about 12 individuals have been reported “naturalised locally from several cultivated plants” (Lorence & Flynn 2006). There can be little doubt about the origin of the naturalised plants in this case, and the situation is indicative of what is probably happening in the Auckland region.

If some plants in the Auckland region are naturalised, there must be uncertainty about where precisely the northernmost natural limit for *D. fibrosa* lies in New Zealand. Clearly 19th century collections by Cheeseman from the Waitetuna Valley, Raglan (AK 51021) and the Mamaku Plateau (AK 137906), and by Ball from Pongakawa (AK 259570) indicate an upper limit at about 37° 45’S, well south of the Auckland region. However, a collection from the Hunua Ranges at Kuripaka Saddle, Upper Wairoa Road in 1969 (AK 207924) is difficult to dismiss as naturalised – even the name is suggestive of the plant being native in this locality! There are four other collections from the Hunua Ranges collected between 1971 and 1986, including one made by Gardner (1982) in the gorge of the Wairoa River south of Clevedon (AK 153002). He found several adult plants and one

juvenile in scrub on the river margin, and believed that the population was native to the area, a view supported by more recent findings in the Hunua Ranges.

Gardner (1982) also reported collecting *D. fibrosa* at 730 m on the eastern slopes of Mt Moehau, near the limit of the rimu/kauri forest (AK 151946) where it was common. At 36° 32'S he claimed this to be the northernmost native record for the species. Since then the plant has also been collected near Tairua (WELT P012104) and in the Kauaeranga Valley on the Coromandel Peninsula. At Tairua over 100 plants were growing on alluvial river flats under kahikatea, matai and rimu in what seems to have been relatively undisturbed forest, but at Booms Flat, Kauaeranga River a single 4m tall plant was present in forest (AK165418). The species therefore appears to be scattered through the Peninsula, but the Moehau and Tairua populations indicate that it is almost certainly native in the area.

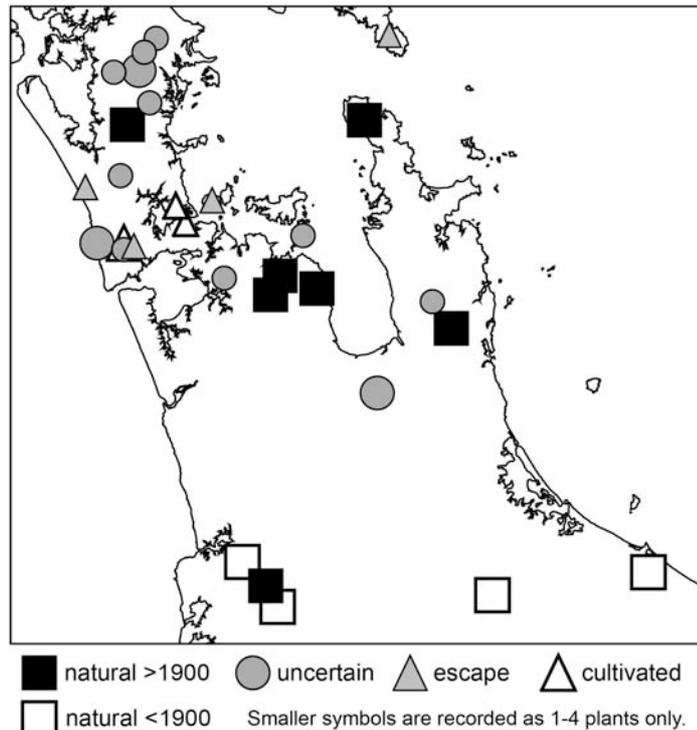


Figure 1. Collections of *Dicksonia fibrosa* from the Auckland region in AK and WELT.

A third and rather more surprising site where Gardner (1982) considered *D. fibrosa* to be native was at Makarau, southern Kaipara Harbour. Here a population of about 20 plants was found growing in a small piece of virgin podocarp forest on a damp and cool floodplain (AK 151025). At 36° 34'S, this is just south of the Moehau record. Five other collections originate from north of this locality: in the Hoteo watershed of the Kaipara Hills (AK 172951), north of Dome Forest, Warkworth (AK 229373), in the upper reaches of the Waiwhiu Stream (WELT P026015), near the Kaipara Flats airfield (WELT P026014), and from the Puhoi River (AK 299786-92). The airfield record involves five plants, but the others are of single plants, and their claim to be native is less secure. There is also a single plant record further south near Waimauku (AK 277549).

It seems clear that *D. fibrosa* does extend naturally to around 36° 30'S in both the Kaipara district and on the Coromandel Peninsula, significantly further north than either Cheeseman or Allan indicated. However, populations that can be confidently regarded as native are very scattered, and confined to Mt Moehau and Tairua on the Coromandel Peninsula, Makarau in the Kaipara district, and in the Hunua Ranges – areas which could easily have escaped the attention of the 19th century Auckland botanists. The status of the single plant populations is much more equivocal. They are surely recent colonisations, but whether they originate from natural populations or from cultivated plants is unclear. Nevertheless we suggest that the preponderance of such records in and around Auckland City, and the fact that 19th century botanists never collected them, indicates a recent and fairly rapid establishment of naturalised plants from cultivated sources. The number of these records is now masking the fact that *D. fibrosa* reaches its northernmost limit at around 36° 30'S and is naturally very uncommon north of a line from Raglan to East Cape.

Acknowledgements

We thank Maureen Young for supplementing existing collections.

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■ **Cabbage tree (*Cordyline australis*) dieback in Ireland**

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Introduction: Sudden Decline in New Zealand

In 1987 large numbers of cabbage trees (*Cordyline australis*) in New Zealand were observed to be dying in the North Island and northern South Island (Rees-George et al. 1990, Beever 1990). Scientists concluded that this widespread dieback was consistent with the hypothesis that death was caused by a biotic agent entering through a leafy tuft of the branch system which usually lead to almost total defoliation of affected trees within 2-12 months, they suggested that a phytoplasma (mycoplasma-like organism or MLO) was the likely cause and termed it Sudden Decline (Beever et al. 1996). The link of the disease with a causal agent, a phytoplasma "*Candidatus Phytoplasma australiense*" was later shown by Andersen et al. (2001). Recently the phytoplasma transmission agent in New Zealand has finally been resolved (Winks et al. 2013).

In the late 1980s and early 1990s there were reports typical of Sudden Decline symptoms in cabbage trees in Tasmania and eastern Australia, but most trees were unaffected (Beever et al. 1996). There have been some reports of cabbage tree Sudden Decline in the United Kingdom, and a sample from Cornwall was tested, which was positive for a closely related phytoplasma (Mark Andersen pers. comm., Aug 2013). Sudden Decline is still not known with certainty from outside New Zealand (Mark Andersen pers. comm., Aug 2013).

Observations in Ireland

In May 2011 while on holiday in Ireland where cultivated cabbage trees are common I noticed many of the adult plants were dead, appearing as leafless standing skeletons. These dead plants were most pronounced in upper mid-west Ireland, in Counties Mayo, Galway and Clare (northern and southern Ireland were not visited). One dead cabbage tree was the main feature tree of the historical walled garden at Kylemore Abbey (Fig. 1). There were two other adult cabbage trees in the same garden – one was showing some initial signs of dieback. From casual observations it appeared that most of the adult cabbage trees in Counties Mayo, Galway and Clare were dead (Fig. 2), although the younger plants looked unaffected. This contrasted with the cabbage trees on Ireland's mid-eastern coast in County Wicklow where most of the adults appeared healthy. However, just to the north of there in the Dublin area many adult plants were also



Figure 1. Dead standing adult cabbage tree in the centre of the walled garden at Kylemore Abbey, Co. Galway, Ireland. Photo: EC, 26 May 2011.

observed to be dead-standing.

A trip the following year to County Donegal and coastal Northern Ireland during May 2012 resulted in seeing more standing skeletons of cabbage trees. But here there were also healthy adult cabbage trees in roughly equal numbers. As before the juveniles appeared to be unaffected.

From casual observations something dramatic has recently happened to cabbage trees in parts of Ireland, but the cause (pathogen) would have to be searched for and identified. If someone were to research the

cause they should consider investigating phytoplasma first, using the Andersen et al. (2001) paper as a guide – the similarities are striking, and some examination of underlying tissue would give an indication as to how similar (Mark Andersen pers. comm., Aug 2013).



Figure 2. A row of dead adult cabbage trees at Roundstone, coastal fishing village in Co. Galway, Ireland. Photo: EC, 27 May 2011.

Acknowledgements

I thank Mark Andersen and Chris Winks for comments and current references.

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■ Update from Te Papa’s WELT herbarium

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15068 botanical collections were added to Te Papa’s database in the 2012-2013 financial year. Of these, 8980 were donations/exchanges, 866 field collections by staff, and the remainder backlog databasing. Of the donations, by far the biggest was the continuing incorporation of the WELTU herbarium, with 8359 collections added this year. Other donors of more than 50 collections were: AsureQuality, University of North Carolina, Peter Beveridge, Eleanor Burton, and Auckland Museum. Of all additions to the database, 343 were algae, 6 lichens, 275 liverworts, 230 mosses, 2870 ferns, and 11344 seed plants.

WELT now holds approximately 280000 collections in total, of which 222216 are registered and

171892 are databased.

There were 15 outgoing loans sent (703 specimens, 7 institutions), 17 outgoing loans returned (504, 6), 4 incoming loans received (28, 3), and 17 incoming loans returned (768, 9).

There were 235 enquiries (160 professional, 75 public), 24 tours (with 270 people), and 43 visitors. Botanical contributions to exhibitions were made for *Tai timu, tai pari, Tainui: Journey of a people* and the Matariki exhibition on hue.

Research programmes continued on ferns, *Myosotis*, *Nematoceras*, seaweeds, and *Pseudopanax*, while a major new project was initiated to produce eFlora treatments for *Veronica*. Staff co-authored 15 peer-reviewed and 3 popular publications, gave or co-authored 18 conference and community presentations, and added 38 posts to Te Papa's blog: <http://blog.tepapa.govt.nz/category/plants/>

WELT's full annual report is available on request.

BIOGRAPHY / BIBLIOGRAPHY

■ Biographical Sketch – Tupaia (?1725-1770)

Val Smith, 80 Mill Road, New Plymouth 4310.

Tupaia was born in about 1725 to a high-ranking family in Ra'iatea, the second largest island in French Polynesia, and the centre of Polynesian civilisation. By birth a member of the peripatetic *arioi* ("high priests") of the god 'Oro, he travelled extensively to other islands and also played an important role in local affairs of state. About 1760, after losing his father and his ancestral lands to invaders from neighbouring Bora Bora, he fled to Tahiti where he became adviser and lover to so-called 'queen' Parea. Within a few years he was one of the most powerful men in the land.

He first met Europeans in June 1767 when Samuel Wallis on HMS *Dolphin* reached Tahiti and stayed five weeks; a year later Tupaia's kinsman Ahutoru sailed to Europe with Bougainville's French expedition. In April 1769, when the *Endeavour* anchored in Matavai Bay, Tupaia made himself known. As interested in the science and technology of the Europeans as they were in the culture of the indigenous people, he spent considerable time with Captain Cook and his scientists. He befriended naturalist Joseph Banks and showed the visitors the island's sacred places, and with artist Sydney Parkinson, sketched the *arioi* dancers. Of his own volition, encouraged by Banks and sanctioned by Cook, Tupaia, in his mid-forties, and his 12 year-old nephew and acolyte Taiata, joined the *Endeavour*. They sailed from Tahiti on 13 July 1769.

Tupaia's navigational and interpreting skills were soon in demand. He drew Cook a chart of all the Pacific islands he had visited or knew about, predicted weather and pointed out directional stars. At the same time he had lessons in English from astronomer Charles Green and helped Banks

compile an account of Tahitian life. His status and knowledge of Polynesian protocol facilitated communication with the islanders and his empathy with the Maori language and culture made him a valuable interpreter and ambassador in New Zealand. Cook noted in his journal that 'Tupaia always accompanies us in every excursion we make and proves of infinite service.' However, on board



Tupeia antarctica

Endeavour his proud, haughty and sometimes obstinate demeanour made him less than popular with the crew.

There was little communication with the Australian Aborigines – their culture and language was completely alien to Tupaia, and the natives were mistrustful of the newcomers. During the long weeks at sea as they sailed northward, Tupaia developed signs of scurvy – the ship's food disagreed with him, he refused to take the antiscorbutic 'medicine' supplied to those on board, and he had little opportunity to collect his own shellfish or greens. Eventually the *Endeavour* arrived at the picturesque but pestilential port of Batavia (now Jakarta), where Taiata was among the first of many to succumb to what was probably malaria. On 20 December 1770, distraught with grief and weakened by scurvy, Tupaia also died. Both were buried on the island of Eadem.

Tupaia's name endures as a Maori family name. Although his original map has been lost, copies have survived. Recent research has shown that several sketches previously attributed to Banks were actually made by Tupaia. He is remembered also in a mistletoe, *Tupeia antarctica*, first collected by Banks and Solander in Queen Charlotte Sound on 15 January 1770. Described by Chamisso and Schlechtendal in 1828, the new genus was dedicated to Tupaia.

Tupeia antarctica (taapia, pirita, green or white mistletoe)

Loranthaceae

Mistletoes are plants that have green leaves for photosynthesis, but attach to a host tree from which they extract water and nutrients through specially adapted roots. All but one of New Zealand's eight native mistletoe species are endemic. *Tupeia antarctica* ("of southern polar regions) grows mostly in eastern shrublands of both islands, on a range of native or introduced host plants. It may reach up to 1 metre in diameter, a mass of opposite, somewhat variable, drooping leaves. Small (2-5 mm long), fragrant, insect-pollinated greenish-yellow flowers appear in spring. The fruit, white with purple markings, must have the flesh removed and the seed dispersed by birds onto a host branch for seed germination and development into a new plant.

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PUBLICATIONS

■ Publications Received

Wellington Botanical Society Newsletter June 2013 Upcoming trips and meetings, submissions made, awards available, *Tecomathe speciosa*, Percy Scenic Reserve and Otari-Wilton's Bush reports.

Canterbury Botanical Society July 2013 Upcoming meetings and trips, AGM report: Butterflies of the South Pacific by Brian Patrick.

Canterbury Botanical Society August 2013 Upcoming meetings and trips, meeting report: spring wildflowers of SW Western Australia, trip report: botanists' gardens, upcoming Nina Valley EcoBlitz.

Botanical Society of Otago 69, June 2013 Upcoming meetings and trips, honorary doctorate to Audrey Eagle, *Uncinia perplexa*, meeting and trip reports including algae at Brighton beach, John Child bryophyte and lichen workshop, Tunnel Beach turf, fungal foray.

The New Zealand Native Orchid Journal 129, August 2013 *Pterostylis montana*, William Hartree reserve, Lake Ohia, *Chiloglottis* "Waiuku" and *C. "green calli"*, *Caladenia minor*.

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