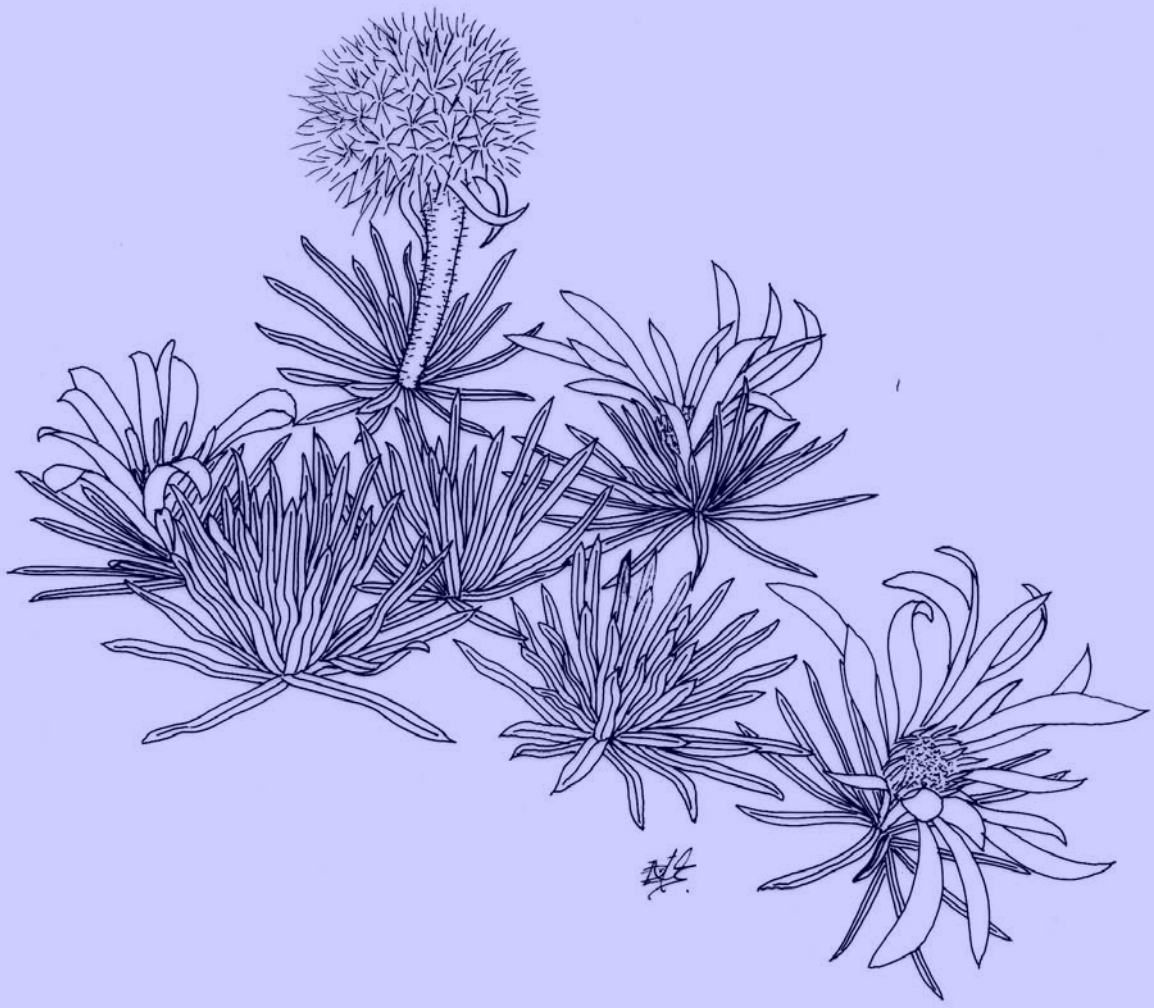
NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 120 June 2015



New Zealand Botanical Society

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Deadline for next issue

The deadline for the September 2015 issue is 25 August 2015.

Please post contributions to:
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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.

Celmisia sessiliflora drawn by Eleanor Burton.

NEW ZEALAND BOTANICAL SOCIETY

N E W S L E T T E R

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NEWS

Regional Botanical Society News

- **Auckland Botanical Society**

March Meeting
The AGM was followed by a talk from Anthony Wright, giving the highlights of the ABS trip to Lord Howe Island in October 2014.

March Field Trip
Woodcocks Kawaka Reserve near Warkworth is a reserve of two halves. The western half is a mixed podocarp/broadleaf forest with emergent rimu and kahikatea, while the eastern half is an amazing area of pole conifers that have grown up after fires c. 150 years ago. The morning was spent exploring the latter area, with the conifers being mainly rimu, but with a few kauri, some tanekaha, and a good sprinkling of the kawaka for which the reserve is named. The rich understorey included plentiful *Mida salicifolia* and *Alseuosmia macrophylla* with *Gahnia xanthocarpa* increasing in density. The orchid flora was not in evidence at this time of the year. After lunch a shorter time was spent in the less exciting western area, where we viewed the swampy hollow that supported pukatea and swamp maire, but chose not to tackle the tangle of supplejack that guarded the fastness. A member of the known kauri snail population was spied, the inhabitant drawn well into its stronghold.

April Meeting
Two instructional talks kept us up-to-date on issues of importance to the northern region of the country. Mahajabeen Padamsee spoke on the investigation that is being undertaken of the mycorrhizae and *Phytophthora agathidicida* associated with kauri root systems. She outlined an infection study of the roots of two year old kauri seedlings.

Janeen Collings spoke on the Auckland Council's threatened plant conservation programme. Species and ecosystems prioritisation programmes are in development. Some examples of work being undertaken were shown.

April Field Trip
This excursion was to the famous “Grotto” at 36 Grotto St, Onehunga, and then to the vegetation along the Coastal Walkway at Te Papapa, beside Mangere Inlet, Manukau Harbour. The crater-like grotto has a wetland in it with *Carex subdola*, *Carex secta* and *Bolboschoenus fluviatilis*. There is much *Ligustrum sinense* on the basaltic sides and rim of the grotto. The Coastal Walkway featured *Coprosma crassifolia* at its type locality, a healthy population of *Geranium solanderi*, and patches of the salt grass *Puccinellia stricta* growing on basaltic outcrops at the back of mangroves.

May Meeting
Following a successful auction of plant books, Graeme Jane treated the audience to a comprehensive account of the botany of Nelson and Marlborough. The diversity of the indigenous flora there, the fascinating geology, and the numerous sites visited by Nelson Bot Soc over its 20 years of existence, all seemed to indicate that this a botanical “hotspot”.

May Field Trip
The 35-ha Wattle Bay Reserve in Lynfield is part of a 5-km stretch of bush and scrub along the northern shore of the Manukau Harbour. There are wattles (*Acacia mearnsii* and *A. decurrens*) there, as well as old pines and eucalypts, and some surprisingly good patches of surviving native bush, mainly of puriri, kohekohe and rewarewa.

FUTURE EVENTS

20 June	Field trip to Chelsea Estate Heritage Park, North Shore.
1 July	Speaker: Robert Hoare, Hunches about munches… A whatmothdunnit of leaf-mines, nibblings and caterpillar signs for the botanical Poirot.
18 July	Plant family workshop and winter lunch, West Lynn Garden function centre.
5 August	Speaker: Mark Horrocks, Environmental change and human impacts.
15 August	Field trip to Rangitoto Island, Shipwreck Bay.

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President: Ewen Cameron **Secretary:** Vijay Soma aucklandbotanicalsociety@gmail.com

- **Rotorua Botanical Society**

April Field Trip: Waikaropa Bush, Waikite Station
We headed to Waikite and up a farm track to a patch of bush perched on a spur above the track. The climb up the steep face to the bush edge gave an opportunity to get an overview of the area. It was mainly tawa forest with the odd emergent rewarewa and rimu and common kamahi and mangaeo in the main canopy. On the margins mahoe, fuchsia and pate fringed grassy clearings. Once within the forest we were met with a jungle of supplejack. The more open patches were often dominated by dense tawa or *Dicksonia squarrosa* and *Cyathea dealbata*. Wetter areas were rich in ferns such as *Blechnum chambersii*, *B. filiforme, Asplenium bulbiferum* and *Pneumatopteris pennigera*. We finally found an easier ridge to the top where *Diplazium australe* was now common and an opportunity was taken to discuss the distinctive frond features of *Cyathea cunninghamii* and *Dicksonia fibrosa*.

At the top of the slope a plateau linked three ridges. Here the forest was obviously much younger with small (often dense) kamahi and abundant tree ferns. The ground cover was often dense water fern or *Hypolepis ambigua*, so we headed to the forest margin where there were good views. We descended to an old an old dam at the head of a steep gully. Here we were rewarded with a few large rimu, hinau and broadleaf, the latter with the first substantial load of epiphytes. These included *Astelia solandri, Collospermum microspermum*, *Earina mucronata* and *Winika cunninghamii*. Across the gully head we were on a dry spur. New plants included the velvety *Lastreopsis velutina,* miro, matai, and lone toro and *Nestegis lanceolata*. *Raukaua edgerleyi* was noted on the steep descent.

May Field Trip: Lake Tarawera Eastern Walkway
After a brief boat trip to Humphries Bay we traversed the track from there to the boat ramp near the Lake Tarawera outlet. Initially the forest was dominated by pohutukawa (and rata-pohutukawa hybrids), tall kamahi with mangeo, rewarewa and the odd very old kanuka, all mostly originating from the Mt Tarawera eruption over 100 years ago. As we progressed towards the outlet the forest became lower and dominated by kanuka with *Olearia furfuracea* and Spanish heath. This canopy lowering and apparently younger vegetation was probably due to slower recolonisation after the eruption because of a greater depth of scoria closer to the mountain.

The initial foray around the landing contained quite a few adventives not seen later. Much of the forest had abundant tree ferns such as wheki and silver fern. There was often a beautiful carpet of filmy ferns, especially *Hymenophyllum sanguinolentum, H. demissum, H. multifidum* and patches of kidney fern. Both the finely dissected *Asplenium hookerianum* var *colensoi* and coarser var *hookerianaum* were growing together on a ledge. Time was spent sorting out differences between ferns such as *Lasteopsis glabella, L. microsora* and *L. hispidulum*. A small patch of threatened *Pimelea tomentosa* was revealed on one knoll by the track. A quite spectacular assemblage of ferns, including *Blechnum chambersii* cloaking the walls, was seen as we descended to the shore.

FUTURE EVENTS

6 June	Matekerepa Historic Res and Waioeka River Mouth Dunes
5 July	To be advised
4 August	Rotoma Scenic Reserve
12 September	Lake Arapuni

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- **Wellington Botanical Society**

Summer field trip: Nelson Lakes National Park & vicinity (7–13.1.2015)
Lower Porika shrubland

We began our trip by exploring the Porika Stream valley and along Howard Valley Rd, an area with a complex variety of small-leaved shrubs. We saw ten coprosmas, three pittosporums, *Aristotelia fruticosa*, three gaultherias, *Corokia cotoneaster*, *Raukaua simplex*, *Melicytus flexuosus* and three hebes. Most discussed were *Pittosporum anomalum*, *P. divaricatum* and *P. ridgidum*. Our lichenologists found species associated with pastoral and shrubland sites. Others commented on the intertwined diversity of the plant community. We made 20-30 additions to the existing list.

Beebys Knob (1,317 m.)
Beebys Knob was our first experience of the region's alpine flora. At ground level carpet grass (*Chionochloa australis*) and *C. pallens* formed a mosaic with dense patches of *Celmisia sessiliflora*, almost impenetrable by other plants. Delights in flower included gentians, a craspedia, two euphrasias, and a brachyglottis. We found *Montia calycina* and *Raoulia grandiflora* on bare areas fractured by frost-heave or track construction. Shrubs near the bushline included *Halocarpus bidwillii* and a confusion of coprosmas, e.g., *C. fowerakeri*, *C. cheesemanii* and *C. depressa*. We learned again the benefits of binoculars for long-distance botany. Shannel spotted from afar what looked like aciphyllas quite near our vehicles. An old female spike enabled us to identify them as *A. aurea*. With signs of pig-rooting nearby, it was good to see many young plants nearby.

Red Hills
In the beech forest below Red Hill Hut, we saw the sudden change from the well-grown red and silver beech on the greywacke to the stunted mountain beech, mountain cedar and shrubs on the ultramafic substrate. At Red Hills Hut, Shannel worked through the plant list to identify the 24 "mineral favouring" plants, endemic to the ultramafic substrate. Then it was a botanising-paced walk up the ridge behind the hut through tussock and shrubland. Soon we came to the mineral-loving plants. The short tussock, *Chionochloa defracta*, filled spaces between the shrubs, and higher up, formed an almost pure tussock land. We found *Coprosma "rimicola"*, with its banana-shaped leaves, hiding in rock crevices. Shannel introduced us to the thick- leaved *Hebe carnosula*, and left us arguing over the variable shape of the sinus. ("pin hole, long shield, oval, short cathedral", were some of the descriptions bandied about). *Pimelea suteri* was in flower only beyond the first ridgeline and we found several *Carex devia*, with its single upright seed-head, topped by a small male inflorescence. Two colobanthus, *C. "serpentine"* and *C. "Red Hills*" baffled us with the difference between them. We could identify *Astelia "serpentine*", with rather wider leaves than the related *A. graminea*, and with more red colouring. Flowering *Notothlaspi australe, Craspedia* "serpentine", deep-blue-flowered *Thelymitra cyanea*, and tiny *Montia racemosa* caught the photographers' eye. We had started the day with a plant list based on Tony Druce's 1993 list. Reflecting Tony's thorough surveying, the only plants we could add were *Uncinia involuta*, *Myosotis laeta, Thelymitra hatchii* and *Coprosma fowerakeri*.

Parachute Rock Track & beyond
Some went to Parachute Rock and some went beyond, to the St Arnaud Range crest and over the other side to some tarns. In the forest we were stopped in our tracks by a patch of bright yellow slime-mould. It had small projections from the surface, visible through a hand lens. On the descent, four hours later, it was deflated, looking distinctly past its best. A trip down a 'closed' track revealed a wet area in the otherwise dry forest, with masses of flowering *Ourisia macrophylla* subsp. *lactea.* Along the track edge additions to the list included *Adenochilus gracilis*, *Simpliglottis cornuta* and *Viola filicaulis.* After Parachute Rock some of us continued up the steep path to the ridge through the tussock. We saw *Aciphylla monroi*, among the grass, and penwipers (*Notothlaspi australe*) in magnificent flower on a scree slope. On the ridge top we saw the first vegetable sheep of the trip, *Raoulia bryoides.* Down to the tarns *Parahebe cheesemanii* was also seen for the first time. In the damp swards around seepages and the tarn edges were *Montia angustifolia*, *Galium perpusillum* and *Drosera arcturi*, all in flower, an *Abrotenella* and *Ranunculus gracilipes*.

Black Valley – St Arnaud Range Track – Loop Track
South Island toetoe (*Austroderia richardii*) and *Chionochloa conspicua* mark the start of this pleasant walk from Travers-Sabine Lodge along Black Stream to Kerr Bay, Lake Rotoiti. Trackside en route we noted that every planted seedling of *Pittosporum patulum* had been protected by a rabbit-proof enclosure, further evidence of the work that the Friends of the Rotoiti Nature Recovery Project do in addition to maintaining many traps. At Kerr Bay we saw a giant Douglas fir, a weed species that invades indigenous plant communities. An excellent information panel describes DOC's wide-ranging *Battle for our Birds* campaign, here an integral part of the Rotoiti Nature Recovery Project. It involves using 1080 to kill rodents, mustelids and hedgehogs. 2015 is a beech 'mast' year, so using 1080 to kill

pest animals is essential, otherwise predation will drastically reduce beech seed germination, and native fauna populations. On the St Arnaud Range Track, we were impressed by the tall *Libocedrus bidwillii*, compared Hall's tōtara and needle-leaved tōtara, and checked the wrap-around stipules on *Coprosma linariifolia*. The weed *Juncus effusus* infested the sides of track. On this track, and on the Loop Track, we saw four species of beech: black, red, silver and mountain, *Blechnum montanum*, *Cyathea colensoi*, *Raukaua simplex, Lagenophora pinnatifida*, and *Gentianella bellidifolia*.

Rainbow Ski Area
From the carpark at the top of the ski field road small groups scattered to seek their favourite type of terrain. Botanical highlights from those that ventured high in the basin and up on the ridge were *Myosotis traversii* and *Haastia pulvinaris* and *Notothlaspi rosulatum*. Here the lichenologists also found many interesting lichens. The main group meandered across the disturbed land at the bottom of the ski-field, finding tiny *Montia calycina* in flower. We clambered up a rich alpine stream, admiring *Dolichoglottis lyallii*, *Craspedia uniflora*, giant buttercups, *Viola cunninghamii,* the vegetable sheep *Raoulia eximia*, an *Aciphylla* c. 2 cm high with leaves 3 cm long, and other sub-alpine flowering plants, ferns and shrubs. Circling a rocky tarn we saw *Chionohebe pulvinaris*, with tiny leaves and whiskery hairs. The tiny, very hairy *Coprosma atropurpurea*, with a fringe of male flowers, waved its stamens. Across a scree basin we saw *Notothlaspi rosulatum*, *Parahebe cheesemanii* in flower, *Haastia sinclairii*, and the very firm, dense, *Hebe epacridea.*

Upper Wairau Valley
First stop: a heavily grazed outwash fan with patches of *Coprosma propinqua*, shapely *C. tayloriae*, and very grey *Ozothamnus vauvilliersii*. Among the pasture sward that included sheep's burnet (*Sanguisorba minor*), were *C. atropurpurea*, the more hairy *C. petriei*, and *Gaultheria macrostigma*. Herbs included *Acaena novae-zelandiae*, *Chaerophyllum colensoi* and *Anisotome aromatica*.
Second stop: a dry, shaded, bank, with *Aristotelia fruiticosa*, with its rounder leaves perhaps indicating it was a hybrid, and the ferns *Asplenium flabellatum* and *A. richardii*. On the edges of a wetter area nearby were large *Polystichum vestitum*.
Third stop: Past the old Rainbow Homestead, and just beyond Wairau Gorge, is an old riverbed with what appeared to be mainly yarrow and some low, grey, scrub. On second take, it was the unusual *Helichrysum depressum*, with its 'dry stick' appearance. Also scattered about was *Epilobium melanocaulon*, and a hebe with black stems and red leaf edges that we couldn't name. Other notable plants included *Gaultheria depressa* among much large, red-flowered, *Trifolium pratense*.
Fourth stop: Among the rocks we saw *Raoulia subericea* and *R.* hookeri, and a *Prasophyllum colensoi* with *Rytidosperma setifolium*, *Dracophyllum rosmarinifolium* and *Acrothamnus colensoi*. On a rocky outcrop and scree face just above the river, there was a penwiper, *Notothlaspi rosulatum*. Among the rocks were *Hebe brachysiphon*, *H. traversii*, amid *H. parviflora*, *Discaria toumatou*, *Helichrysum coralloides*, *Melicytus alpinus*, *Bulbinella hookeri*, and *Aciphylla aurea*.
Fifth stop: Island Saddle. Up on the scree, we found *Leptinella atrata*, *Stellaria roughii*, *Epilobium pycnostachyum*, and numerous penwipers. At the ridge-top we found *Lignocarpa carnosula,* the woolly *Pimelea sericeovillosa* agg.*, Acaena glabra* and *Anisotome filifolia.*

<u>February fieldtrip: Centennial Reserve, Miramar</u>
In the late Dr Geoff Park's *Inventory of the Surviving Traces of the Primary Forests of Wellington City*, 1999, he stated that kiekie is "a sound indicator of the survival of a primary forest element in the Wellington landscape...". Kiekie (*Freycinetia banksii*) is flourishing in the main valley in Centennial Reserve, at the north end of Darlington Rd. In 2004, after implementing intensive possum control on the entire Miramar Peninsula, Greater Wellington declared it to be possum-free. Maybe one day, the absence of possums, and the continuing control of rodents and mustelids in this 24.9-ha reserve, will enable the kiekie there to produce flowers and fruit.

We pushed through the 'amenity' plantings, tripping over masses of potato vine (*Solanum jasminoides*) and greater bindweed (*Calystegia silvatica*). At the Tasmanian blackwoods, we left the track and crossed the tiny creek, passing luxuriant kiekie sprawling nearby, much of it reaching the canopy. Soon we reached the pre-1911 dam, and the silted-up wetland behind it, which contains a mass of weeds, but also a healthy population of five (planted) carex species, and *Schoenoplectus tabernaemontani* (= *S. validus*). We have yet to find out whether this sedge is naturally-occurring, or planted. Its stout, unbranched culms reach to 2m and are topped by side-mounted inflorescences. Among the 31 native species we added to the draft list of 74 was *Rubus squarrosus*. We added 5

adventive species, including old man's beard and English ivy. Upstream the valley narrows into a small gorge with large tree fuchsia, a big cabbage tree, and a huge *Myrsine australis*.

The reserve contains at least 22 *planted* native species, several not recorded by botanist John Buchanan in 1872, during his survey of the indigenous and adventive vascular plant species of the entire Miramar Peninsula. We feel uneasy about these plantings. A community group, the Miramar Track Project, has planted c. 2000 native plants. We wonder how these plantings will affect the ecological integrity of the reserve in the long-term, when they start to produce viable seed, and disturb the natural process of forest recovery. How will ecologists, botanists, and the managers of the land, deal with this situation? In the 'amenity' planting, contiguous with the reserve, we found several inappropriate non-Wellington native species, e.g., pūriri, which before long will invade this primary forest remnant, through bird action. This kind of unwise juxtaposition, i.e., plants selected for amenity-related reasons being planted on WCC road reserve immediately beside significant indigenous reserves/ecosystems, is all too common, threatening their ecological/botanical integrity. Wellington City's remaining indigenous ecosystems are so few, so small, and so precious, that surely they should be considered as a 'special-needs biodiversity' category, meriting 'special treatment'. We welcome WCC's Restoration Technical Advisor, Anita Benbrook's agreement to request that the Miramar Track Project remove inappropriate species from the reserve.

March fieldtrip: Hawkins Hill area

We began by exploring regenerating vegetation on the east side of the ridge south of the Brooklyn turbine. We alternated between low forest and open scrub, with the 'usual suspects' for Wellington vegetation. However, it was pleasing to see kāmahi and large mānuka. Distinguishing tree ferns was one of the issues that kept us engaged. Amongst the hairy tree ferns, the short, green, stipes of *Dicksonia fibrosa* (whekī-ponga) separated it from *D. squarrosa* (whekī), which has long dark-brown vegetation stipes. In the scaly tree ferns, the thin stipes of *Cyathea cunninghamii* (gully tree fern) separated it from *C. medullaris* (mamaku), but we still had the issue of distinguishing juvenile *C. cunninghamii* and *C. smithii* (kātote). The co-occurring pairs of *Blechnum procerum* and *B. novae-zelandiae*, *Polystichum neozelandicum* and *P. oculatum*, and *Asplenium gracillimum* and *A. hookerianum* also made for useful fern revision. Our list totalled 151 species of native and weedy vascular plants.

Easter fieldtrip: Horowhenua

Forest Lakes Road

We were hosted by Barry O'Connor at his Forest Lakes Rd swampy bush remnant in the lower Waitohu Stream catchment. Barry has recently been asked by the regional council to restrict stock access to the area. No cattle are now on the property, the gully is fenced off, and the fringes of the swamp now boast a laxly sheep-grazed sward of exotic grasses and *Microlaena stipoides*, with many native species, previously listed as uncommon, now emerging within the remnant.

The first call was a lone maire tawake (*Syzygium maire*), amid the swampy ground on the edge of what is now a quite impenetrable understorey beneath a low canopy of tītoki, tawa, pukatea and hīnau with scattered kāmahi around the edges. In the interior, in light gaps, thrived blackberry, bracken and *Muehlenbeckia australis*. A surprise was a lone *Nestegis montana* (dbh 27 cm) to add to Pat Enright's comprehensive list. Previously listed as uncommon were *Carex maorica*, *Machaerina tenax*, big mingimingi and hen and chicken fern. These were now all increasing in number, because Barry has excluded cattle. Around the fringes of the forest were seedlings of tītoki and the ferns *Asplenium hookerianum*, *Blechnum chambersii*, *B. discolor* and *Pellaea rotundifolia*. Unfortunately barberry is now enclosing some areas and, within the swamp, seedlings and mature old man's beard are beginning to take over. There was also the disappointment of karo, *Pittosporum crassifolium* seedlings that have spread from distant hedgerows. These weeds present a real threat when stock is excluded. If the gully were to be retired from all livestock, weed control will take more effort for some years to come. Barry shared with us what a vexed issue this is.

Lake Waitawa

On the edge of Lake Waitawa we entered the c. 2 ha bush. The entrance has a smattering of stinking iris and some of the bush is dominated by large karaka. *Hoheria sexstylosa* is overshadowed by plantings of the out-of-place *Hoheria populnea* on the bush fringes. In the understorey we saw the small-leaved shrubs *Melicope simplex* and *Streblus heterophyllus*. Larger ferns, e.g., *Pteris tremula, Hypolepis distans*, *H. rufobarbata* and *Diplazium australe* are among many others typical of such

disturbed areas. It also has a good canopy of tōtara, extensive rewarewa, the odd rimu and, near the swamp, a large (female) kahikatea with many seedlings beneath it. The swampy area was dominated by wild parsnip, *Pastinaca sativa, Carex geminata* overgrown with field cornbind, *Calystegia silvatica*.

We then moved to the edge of the mānuka-dominated area west of the lake. Here there were swathes of swamp millet *(Isachne globosa*), splendent with its fine seed heads hanging over the water. Further from shore was a tangled understorey of *Gleichenia dicarpa* and much *Blechnum minus*. Out into the open area there was a lone *Olearia virgata*.

Kimberley Scenic Reserve
We explored three vegetation patches: one beside the access road, one behind the toilet block, and a short section of riverbed. The length of the species list reflected the diversity of ecosystems: five pages of indigenous plants and five pages of adventives. Our additions included *Nestegis lanceolata, Carex flagellifera*, *Pittosporum tenuifolium* (planted), and, regrettably, the weed *Selaginella kraussiana*. The highlight was *Mida salicifolia* with its confusion of leaf shapes. Rhys Gardner (1997) reports that it is common north of 38°, but then almost absent until the Wellington region.

Keeling's Farm
We thank farmers Dave and Mike Keeling for allowing us access to their property. The three forest remnants here provided different botanical experiences.
Remnant between the house and the lake - Canopy species—magnificent matai, kahikatea, tawa, northern rātā, karaka and two magnolias. Lower tiers—a variety of small indigenous trees, (e.g., *Streblus heterophyllus*), shrubs, lianes and ferns. Weed infestations included many karaka seedlings and climbing asparagus. Small lakeside finds, e.g., *Glossostigma elatinoides*.
Remnant past the old shearing shed - In better condition botanically. The main canopy species was kahikatea. Kohekohe and nīkau gave some sections a tropical appearance. Many dead *Dicksonia squarrosa* fronds covered much of the forest floor. Nobbly roots on an old kahikatea hinted that the water-table had dropped at least 1 m during its lifetime. Filmy ferns put in a brief appearance: *Hymenophyllum demissum*, *H. flabellatum* and *Polyphlebium* (*Trichomanes*) *venosum.*
Third remnant - Dominated by kohekohe and karaka. We added *Blechnum parrisiae,* formerly *Doodia media*.

Lake Papaitonga
We followed the track starting in forest on a dry terrace, before descending to a boardwalk meandering through an open wetland. Beyond the lookout we traversed coastal forest with extensive nīkau and kohekohe under tawa, pukatea and kahikatea. A second wetland, mostly dark and gloomy under a closed canopy, was relieved by a bright patch of *Elastostema rugosum* near a stream. We added many new adventives to the original list of 64 species, including *Bidens frondosa*, *Cyperus eragrostis*, a *Pseudopanax crassifolius* x *P. lessonii* hybrid, and the fern *Pteris cretica*.

Hokio Beach Dunes
We walked c. 1 km south, along the track where the river once flowed into lagoons. It now flows directly to the sea, leaving a solid band of sedges, rushes and *Typha orientalis* in the old riverbed, and a weedy dune area. North along the beach side of the old river, there was one pleasant surprise - the minute *Limosella lineata.* On the north side of Hokio Stream was *Pimelea villosa* subsp. *arenaria* growing on a dune bank with *Coprosma acerosa* and *Ozothamnus leptophyllus.*

May Fieldtrip: Airways Corporation land & Rangitatau Reserve, Strathmore, Wellington
The approach to the reserve is on Airways Corporation land. We spent considerable time botanising along and near the road on this land, before we reached Rangitatau Reserve. We saw *Asplenium appendiculatum* subsp. *maritimum* hanging over the road cutting and many *Melicytus crassifolius*. This Airways Corporation site is a stronghold of this species, whose Conservation Status is 'Declining'.

Above the road cutting are numerous *Cotyledon orbiculata*, listed in the National Pest Plant Accord. The next native plants of great interest were several matagouri (*Discaria toumatou*), the only known site in Wellington city, amongst NZ daphne (*Pimelea prostrata*), and a lone *Leucopogon fraseri*. The ascent of the 'sand track' led us through coastal forest, including huge, gnarled, twisted, old taupata trees. We also found planted pōhutukawa, (including a hybrid), *Piper excelsum* subsp. *peltatum*,

makamaka (*Ackama rosifolia*), a Far North endemic, and *Corokia cheesemanii.* During the day, we recorded 73 indigenous species, 19 of which were planted, including some species that do not occur naturally in Cook Strait Ecological District 39.02, and 86 adventive species. We wonder how these plantings will affect the ecological integrity of the reserve in the long-term, when they start to produce viable seed, and disturb the natural process of forest recovery. How will ecologists, botanists and the managers of the land, deal with this situation?

- **Nelson Botanical Society**

January: Rawhiti Cave, Golden Bay

A pack of twelve met at the end of the Dry River road. The track started upstream through barberry scrub then into native forest. The older forest was host to many fern species, including *Loxogramme dictyopteris*, *Microsorum scandens* and *Blechnum filiforme. Sophora longicarinata* was an interesting component of the flora as was *Coprosma crassifolia* which is confined here to these droughty eastern hills. Similar-looking *Anemanthele lessoniana* and *Microlaena polynoda* lined the track. Another curiosity was *Veronica plebeia,* at its only known SI locality. We were all wowed by the enormous gaping mouth of Rawhiti Cave covered in stalactites. The base of the cave supported a few hardy ferns but sadly *Myosotis chaffeyorum* was not to be found this time. Two other rarities were still present - *Rorippa divaricata* and *Teucridium parvifolium* - but unfortunately both reduced in numbers and eaten down to stumps by goats. It was discouraging to see a place with high biological and scenic values being degraded through lack of weed and wild animal control.

Anniversary Weekend Camp: Arthur's Pass 31 January-2 February

Day 1

The Temple Basin track started through a raft of shrub daisies – *Olearia* and *Brachyglottis* species. *Coprosma pseudocuneata* and *C. pseudociliata* were also conspicuous with leafy *C. serrulata, Pseudopanax "ternatus", Phyllocladus alpinus* and *Dracophyllum longifolium. Euphrasia cockayneana* featured with *Lepidothamnus laxifolius, Gleichenia dicarpa, Celmisia glandulosa, Drosera arcturi, D. stenopetala* and *D. spatulata* all studded through cushions of *Donatia novae-zelandiae* and all three NZ species of *Oreobolus.* We were intrigued to see fine-leaved *Gaimardia setacea* and the bog orchid, *Waireia stenopetala* growing amongst these comb sedges. *Dracophyllum kirkii, Hebe subalpina, Celmisia armstrongii, Forstera purpurata, Parahebe lyallii, Ourisia macrocarpa, Blechnum montanum*, *Pterostylis oliveri, Ranunculus lyallii* and *Brachyglottis "crassa"* hung from shady greywacke walls along the track. Within the splash zone of the stream was a lovely display of *Celmisia bellidioides* with *C. verbascifolia* and *Geum uniflorum*. *Dolichoglottis lyallii* and *D. scorzoneroides,* with their hybrid, were also present. On the rocks above the stream beds were drifts of *Leucogenes grandiceps* and copious mats of *Lobelia macrodon. Poa hesperia* was seen by most for the first time. The many shrubs included *Dracophyllum rosmarinifolium, Myrsine nummularia, Coprosma foweraker*i, *C. crenulata, Hebe macrantha* var. *macrantha*, *H. haastii, H. macrocalyx* subsp. *macrocalyx,* and *H. treadwellii.* Herbs included five *Celmisia* species*, Astelia petriei, Aciphylla similis, Senecio wairauensis, Craspedia* "short hairs", *Gentianella bellidifolia,* the snow marguerites and *Epilobium porphyrium* and *E. macropus*.

Day 2.

We headed to the Cheeseman ski area on the Craigieburn Range. Plants among the rocks below the buildings included *Epilobium pycnostachyum, E. porphyrium, E. crassum, E. brunnescens* subsp. *minutiflorum, Senecio dunedinensis, S. glaucophyllus* subsp*. discoideus, Hebe epacridea, Myosotis australis, Acaena glabra, A. saccaticupula, Anisotome flexuosa* and *A. filifolia.* The road above the buildings had patches of *Montia calycina,* with *Stellaria roughii, Notothlaspi rosulatum* and abundant *Lobelia macrodon* on the scree. Shannel pointed out cushion *Kelleria croizatii, Carex lachenalii, Coprosma niphophila*, moss-like *Raoulia subulata* and *Gaultheria nubicola.* A snow bank herbfield–turf revealed a wealth of species including *Chionohebe ciliolata, Poa pusilla, Carex wakatipu*, *Luzula ulophylla, Abrotanella caespitosa,* four *Celmisia* species*, Craspedia lanata, Argyrotegium mackayi, Leptinella pectinata* subsp. *pectinata, Caltha obtusa, Colobanthus apetalus, Myosotis drucei, Ranunculus gracilipes* and *Schizeilema pallidum. Leptinella atrata* grew around the buildings. We continued upward to find *Raoulia mammillaris*, *Haastia recurva* var. *recurva*, *Hebe epacridea, Aciphylla monroi* and *Leonohebe tetrasticha* among the rocks on the ridge. With patches of *Celmisia lyallii* and *C. viscosa* were *Aciphylla aurea, Coprosma niphophila*, *Marsippospermum gracile*,

Chionochloa crassiuscula, Raoulia subulata, R. subsericea, Chionohebe pulvinaris, C. ciliolata, Myrsine nummularia, Gaultheria parvula, Epilobium elegans, Gentianella corymbifera and *Ourisia simpsonii.* Walking up the ridge we came across *Anisotome pilifera, Leonohebe cheesemanii, Schizeilema haastii* var. *cyanopetalum* and *Pachycladon enysii.*

Day 3
Up the Otira Valley Track the small orchid *Waireia stenopetala* was spotted along with large numbers of *Euphrasia cockayneana* and patches of *Lepidothamnus intermedius* x *L. laxifolius*. The low vegetation included *Olearia colensoi*, *O. arborescens*, *Brachyglottis rotundifolia*, *Dracophyllum rosmarinifolium, D. longifolium, Coprosma rugosa*, *C. pseudociliata, Pittosporum rigidum* and at least five species of Ericaceae; *Androstoma empetrifolia*, *Montitega dealbata*, *Pentachondra pumila*, *Leucopogon fraseri* and *Archeria traversii*. A highlight was spotting *Euchiton paludosus*.

February Field Trip: Red Hills
Thirteen of us made our way up to the ultramafic tussock land where we compared *Astelia* aff*. graminea* "Red Hills" with *Astelia* aff*. nervosa* "Stokes". We easily spotted the endemic *Myosotis laeta.* We compared three heaths: *Pentachondra pumila, Androstoma empetrifolia* and *Leucopogon fraseri*. Both Oreobolus *pectinatus* and *O. strictus* were found and several plants of *Exocarpos bidwillii*. Among *Chionochloa defracta* tussocks were *Lycopodium fastigiatum* and *Lycopodium scariosum*. *Ozothamnus vauvilliersii*, *Brachyglottis lagopus*, *Wahlenbergia albomarginata* subsp. *olivina*, *Gentianella stellata*, *Celmisia gracilenta* and *C. spectabilis* were in flower but *Notothlaspi australe* had finished. In the wetland area near the hut, the seed heads of *Carpha alpina* were impressive.

March Field Trip: Otuwhero Wetland
A group of 12 took the opportunity to see the restoration of these drained areas by the Otuwhero Trust. In the saltmarsh we hunted for *Thyridia repens* among the *Samolus,* then spotted *Carex litorosa* nearby. On the margin of the wetland a highlight was *Astelia grandis*. Trees and shrubs on the forest margin included eight species of *Coprosma*, three beech species, *Dracophyllum filifolium*, *Fuchsia excorticata*, *Myrsine salicina*, *Raukaua anomalus*, *Streblus heterophyllus*, *Lophomyrtus obcordata*, *Geniostoma ligustrifolium var. ligustrifolium, Carmichaelia australis* and *Pittosporum divaricatum*. *Tupeia antarctica* found on a previous visit, was re-located near the track.

April Field Trip: Opouri Bridle Track, Duncan Bay, Marlborough Sounds
The first section of regenerating hard beech mixed with podocarps kept us busy. Ferns included: *Tmesipteris elongata, Histiopteris incisa, Lindsaea trichomanoides, Hymenophyllum demissum, H. multifidum*, *Paesia scaberula, Botrychium biforme, Cyathea dealbata*, *Dicksonia squarrosa* and *Cyathea medullaris*. The understorey and tree trunks seemed to be woven together with *Metrosideros perforata*, *M. diffusa* and *M. fulgens*. Adding to the variety were *Schefflera digitata, Laurelia novae-zelandiae, Hedycarya arborea,* numerous *Coprosma, Beilschmiedia tawa, Alectryon excelsus* ssp. *excelsus, Myrsine salicina, Dacrydium cupressinum*, *Prumnopitys taxifolia, Brachyglottis repanda*, *Elaeocarpus dentatus, Aristotelia serrata* and *E. hookerianus.*

April AGM: A Year of Plant Conservation - Shannel Courtney
Shannel described the year's highlights. March: a trip to the Garibaldi Plateau to census *Craspedia "*Garibaldi" which is confined to the plateau's limestone bluffs. August: monitoring *Lepidium banksii* replanted and intermittently resowed on Noman's Island after becoming extinct there. September: while surveying the delta system of the Wainui River, Shannel discovered a healthy population of *Ileostylus micranthus* on *Plagianthus divaricatus*. Shannel also gave evidence at the Lee Dam hearing on impacts of the proposal on the nationally critical *Scutellaria novae-zelandiae*, *Euchiton polylepis*, scented broom *Carmichaelia odorata* var. "*glabrata*" and *Coprosma brunnea*. October: a trip into forest near Totaranui with Philip Simpson who is writing a book on Abel Tasman National Park and was perplexed about the origin of the place name 'Totaranui'. Totara is very rare in the park. Remarkably, on a ridge above Totaranui they found a huge one. Another highlight of this trip was finding *Molloybas cryptanthus*. December: a visit to western Molesworth to monitor *Pachycladon cheesemanii*. Sadly the numbers have reduced, maybe due to the spread of hieracium. January: survey in eastern Molesworth to document threatened plants and to identify threats started with a helicopter ride onto Mt Giles. The walk down through scree proved very interesting – an unnamed scree oxalis, many plants of *Rachelia glaria*, *Melicytus "*Kaikoura" and lower down, *Montigena novae-zelandiae*. Day 2 was spent around a cut-off meander of the Clarence River with its associated dry terraces and ox-bow wetlands. One wetland had recently dried out exposing a cracked bed of loess,

which was dominated by a small semi-succulent annual herb – which Shannel recognised from herbarium specimens to be *Dysphania pusilla*. Incredibly, this species was considered to be extinct, having been last seen in 1959! More remarkable, within a month of being re-found it has since turned up further down the Clarence River and in the Heron basin - all on the margins of seasonal wetlands. Other rare and threatened species found in these ox-bow wetlands and on the surrounding dry terraces included: *Rorippa palustris, Epilobium hirtigerum, Raoulia monroi, R. beauverdii, Leucopogon nanum, Luzula decipiens, Lobelia perpusilla,* and a first-time record for the northern South Island, the bristle grass *Rytidosperma exiguum.* Two weeks later on another trip into the middle Clarence they confirmed the presence of *Leptinella filiformis* which was also thought to be extinct in the wild but which Jan Clayton-Greene had collected a couple of years ago. Finally, February: unsuccessful survey for nationally critical *Myosotis angustata* on North Twin, Arthur Range, turned up several populations of the rare and unnamed *Senecio* "Burnett".

FUTURE EVENTS

June 21	Kokorua Spit. Leader David Grinsted 03 542 4384
June 22	"Local restoration projects". Speaker Helen Lindsay
July 19	Pukatea Track. Leader Elaine Marshall 021 256 9073
July 20	"Adele Island Planting Programme". Speaker Rebecca Martin, DOC
August 16	Adele Island. Leader Helen Lindsay 03 528 4020
August 17	"Tantalus monkeys and seed dispersal at Ngel Nyaki, Nigeria". Speaker Abby Grassham.

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Treasurer: Uta Purcell 03 545 0280. 60 Marybank Rd, Atawhai, Nelson. mupurcell@xtra.co.nz

- **Botanical Society of Otago**

FUTURE EVENTS

June 6	Lichen, Moss and Liverwort Field trip up Leith Saddle Track. Contact Allison Knight 487 8265, email alli_knight@hotmail.com
July 1	Natural History of the North Andean High Mountains: the Most Diverse Alpine Ecosystems on Earth Robert Hofstede - visitor to Botany Department and Consultant in Tropical Nature Conservation and Environmental Policy.
July 4	Field trip to Bethunes Gully and Mt Cargill. Contact David Lyttle, 454 5470 email djlyttle@ihug.co.nz
August 1	Field trip to Harbour Cone. Contact David Lyttle, 454 5470 email djlyttle@ihug.co.nz or Moira Parker 478 0214, mobile 027 328 4443.
August 19	Botanical "Show and Tell" Evening
September 1	Stevensons Bush Scenic Reserve. Contact John Steel 021 2133 170, email john.steel@otago.ac.nz
September 9	Annual Geoff Baylis Lecture Speaker Professor Steven Higgins.

Chairman: David Lyttle djlyttle@ihug.co.nz www otago.ac.nz/botany/bso/
Secretary: Allison Knight, P O Box 6214, Dunedin North. bso@otago.ac.nz

- **Other Botanical Society Contacts**

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Secretary: Kerry Jones **Website:** http://waikatobotsoc.org.nz

Taranaki Botanical Society
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Manawatu Botanical Society

Jill Rapson: Ecology Group, Institute of Natural Resources, Massey University, Palmerston North. Ph (06) 350 5799 Ext 7963; G. Rapson@massey.ac.nz

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Secretary: Robyn Ogle (06) 347 8547 robcol.ogle@xtra.co.nz

Wellington Botanical Society
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Wakatipu Botanical Group
Chairman: Neill Simpson (03) 442 2035
Secretary: Lyn Clendon (03) 442 3153

Canterbury Botanical Society
President: Jason Butt (03) 355 8869 PO Box 8212, Riccarton, Christchurch 8440
Secretary: Alice Shanks **Website:** www.canterburybotanicalsociety.org.nz

NOTES AND REPORTS

- **David Galloway: his time at Landcare Research and its predecessor organisation DSIR Botany Division**

Ilse Breitwieser and **Peter Johnson,** Landcare Research, for the Commemoration of David Galloway, 29 February 2015

Dear Patricia,

Thank you for inviting me to talk about David's time at Landcare Research and its predecessor organisation DSIR Botany Division.

In 1969 David accepted a position at DSIR Applied Biochemistry Division, but transferred to Botany Division in 1972 where he could work on what interested him most: as we all know - on lichens!

Eric Godley, then Director of Botany Division, facilitated David's secondment to the Natural History Museum in London from 1973 – 1982 where he worked towards the Flora of New Zealand Lichens. This Flora was published in 1985, and already at the 1985 Lincoln lichen workshop that was held to mark this big achievement, a message from David indicated that he was thinking of a second edition of his magnum opus.

When David finally returned to New Zealand in 1996, after having been employed by the Natural History Museum for 22 years, he joined Landcare Research parttime as a Senior Scientist. David was based at his home in Miller's Flat where he could concentrate fully on his research, without getting distracted by bureaucracy, for which he had no time. As part of our plant systematics programme, he worked on the revision of the Lichen Flora. David always kept me well informed about progress; I treasured his regular, well-written, long emails. His second Flora was published in two volumes in 2007, and we made it available online on the day it was launched.

David retired in 2008 but continued working with Landcare Research as a Research Associate. He worked as a Research Associate on corrections, changes, and additions to the Lichen Flora, lichen bibliography, names updates, checklist, and an updated key to the genera, with the aim of us making this information available as part of the eFlora, scheduled for later this year.

However, the Floras were only part of his contributions to science. David specialised, and I am citing now David himself: " in systematic, environmental and ecological problems in Pacific lichenology with particular reference to the lichen mycobiotas of New Zealand, Australia, Chile and Malaysia; and to questions of lichen biodiversity, the role of lichens in high altitude grasslands, in temperate forest

ecosystems, and to lichen biogeography, and history." For example, his CV lists 370 publications and states that he named 5 genera, and about 60 species or new combinations.

He was nationally and internationally highly respected, and this is demonstrated by the prestigious national and international awards he gained. David's contribution was recognised by his election as Fellow of the Royal Society of New Zealand in 1998, his receipt of the Royal Society of New Zealand's Hutton Medal for excellence in plant sciences in 2010, his receipt of the International Association for Lichenology's Acharius Medal for lifetime achievement in lichenology in 2008, and his election as Foreign Member of the Royal Society of Arts and Sciences in Gothenburg, Sweden, in 2011.

A few weeks ago, my colleague Peter Johnson took me to this beautiful church. We stood here, in the empty church, and just talked about David. David – larger than life; big shoes to fill; his many interesting stories; contagious enthusiasm for lichens; a great friend; warmly regarded by his many colleagues; admired for his wisdom and kindness. And then Peter painted this picture:
Picture yourself in London. Meet a man from Invercargill. At the Natural History Museum, find the herbarium, and the place where lichen specimens are stored in cupboards full of labelled envelopes. Discover our man as he starts into a long book, without a computer, but with pen and paper and elegant handwriting. He is part of a symbiosis with mycobionts and phycobionts. The book will be a Flora of New Zealand lichens.

Now move to Lincoln, to the herbarium at DSIR Botany Division. More lichen packets. David has boxes and boxes of them in his office, piled around two microscopes and little bottles of reagents. For months at a stretch he is living upstairs in the old Lincoln pub, an easy flat Canterbury walk to work, Monday to Friday, often early till late; and weekends too.

Meanwhile, Patricia is in London. David writes often, a skilled letter-writer. His letters typically went for several pages, maybe with news of lichen research, usually with some record of travels, recent reading, concerts, and field trips; always with enthusiasm and encouragement; some observations on nature, and the joys of the flowering season.

See David again, through recent decades, reworking his lichen Floras and checklists, at Landcare Research in Dunedin, still surrounded by cartons of lichen interloans from around the world. Still writing long letters across the planet. Not writing home anymore, but phoning regularly instead to check on Patricia and dog Lily. The enduring loves of his life, otherwise, were classical music, literature, and poetry. He bought books, both new and old, and he gifted special and valuable books to others. He shared snippets of all these interests in other ways too: at question time after a lecture, in a corridor meeting, or in the tearoom at work, always in his own lively manner.

Liveliness was part of David's ABC: aplomb, bonhomie, cheerfulness. He talked with everybody, and made many friends: sometime too readily to be able to maintain all the relationships. Because, if any group of people in the world could be classed as the most biodiverse in background and temperament then it would surely be lichenologists. Not every symbiosis has equal partners.

Tidiness and cleanliness may not have been the hallmarks of Doctor Galloway's workplaces, but they certainly shone in his everyday life. See the Fellow of the Linnaean Society in a dark blazer with a colour of triangular kerchief protruding from the breast pocket. Note the city-dweller walking the streets with briefcase, neat socks and tidy walk-shorts. He didn't seem to feel the cold. David walked a great deal, being one of those rare males who was not a motorist: not being, or needing to be, behind the steering wheel. Observe the man doing fieldwork among tors and tussocks, fitting into the ecosystem, not with camouflage gear as such, but with lichen-coloured jacket and cap.

David's stout calf muscles and broad chest were part of his robust build. In the mountains he trod carefully, and his uphill progress was steady rather than rapid. One of his climbing mates, the late Dallas Knox, himself a master of humour, once said that whereas David could be a slow member of the party, he was indispensable for his wonderful yarns and renditions through wet days and nights in huts and tents. David had no trouble in talking. He could spin detailed and accurate historical and biographical narratives. If you knew something about lichens he might treat you to a verbal

monograph. If he recommended you read some book, and you showed too much interest, he could end up voicing most of the content there and then. He could tell jokes in the accents of many ethnicities. Beneath the eloquent exterior lay an inner library of songs and verse.

Let us go for a few stormy days to the Olivine mountains. Join us in a snowcave, where banter helped to overcome boredom and discomfort. One of the climbers, a dark-bearded man, reads out bawdy quotes from Rabelais' *Gargantuan and Pantagruel*. When putting his book away, tidily, as you do in a damp crowded snowcave, our man is dismayed to discover a mess of biscuit crumbs lodged in the grooves of his lilo.

"Don't fuss about it", says John Holloway, fellow climber and flatmate, "You're just an old woman sometimes, Dave."

And Peter Smith chimes in, "Eat the bloody crumbs Galloway, they are food we didn't all carry into the mountains for you to just lie on." This was the same Smith who interrupted a biochemistry lecture with the coarsely corrective comment, "Bullshit Galloway". (This was an anecdote that David told against himself at Pete's funeral).

David was fond of fine food. "Fine" being nice cheeses and chocolates and liqueurs. Not the dog biscuits that Smith took on one climbing trip, even though they would "put a gloss on your coat". (The younger Galloway already had a good head of shiny black hair).

On lichen field trips with David, whether through Otago, Canterbury, Taranaki, or Wellington, David always knew where the best small bakeries were, and likewise the specialist ice-cream shops.

While David had a definite taste for the fineries of life, and a certain fussiness, including that for minor ailments, he otherwise accepted major setbacks without complaint. Like the injuries to his left hand tendons that put an end to his 'cello playing. Or the tiredness that led to his getting a heart pacemaker.

Just like the biogeography of his lichens, Doctor Galloway was a mixture of endemic and rare, cosmopolitan and coastal, urban (and urbane), subtropical and alpine.

Now,
having made his final crossing,
of the Main Divide,
surely David will never be,
far over the other side.

Perhaps a parallel could be drawn between our Global Galloway and Nelson Mandela, whose person was said to combine "the perfect English gentleman and the tribal chieftain". David combined ebullient gentleness with being a southern hemisphere chief of lichenology.

Mortality, inevitably,
leaves some things undone;
but David has shared, and left with us
the heights and dreams he won.

- **Hall's Arboretum: the Life and Times of John William Hall, Pharmacist, Botanist, Pioneer NZ Conservationist**

David Wilton (D.R.Wilton@massey.ac.nz) and **Carol Fielding (**carolannetim@yahoo.co.nz)

(This paper is adapted from an article in the Coromandel Heritage Trust Treasury Journal (2013) at http://www.thetreasury.org.nz/JournalIndex.htm)

John William Hall was born in Peatling Magna, Leicestershire, UK on 26th January 1830. He was educated in his profession as a pharmacist in England, by the common means of that time - paying a

premium (£95) to secure an apprenticeship (Frost 2004). He emigrated to New Zealand, arriving in Auckland in the ship "Egmont" in 1858. He engaged in farming at Mangere until the opening of the Thames goldfields in 1867, shortly after which he established his pharmacy in that town, trading under the name "J.W. Hall Chemist". Hall lived the rest of his life in Thames and died there on 24th May 1915 (Frost 2004, Unknown author 1902).

Figure 1 John William Hall in later life

It was for his love of amateur botany and work as a pioneer conservationist that he was best known, however, rather than his pharmacist profession. In Thames, he established one of the first botanical arboretums in New Zealand, had a species named after him (*Podocarpus hallii* - Hall's Totara) and was an early advocate of biological conservation: unusual in colonial times, when the national focus was very much on exploiting resources for economic gain. The 1913 NZ Royal Commision on Forestry visited his arboretum and measured several trees; and he thus played a contributory role in the definition of New Zealand forestry policy and a strategy that spanned most of the 20th century.

On arrival in New Zealand, he apparently tried farming (as did many immigrants): the Daily Southern Cross of 7 Feb 1860 published a Jury List which showed *Hall, John William, Mungari* [Mangere], *farmer*. Hall married Mary Pack, a fellow-migrant, from Woolsthorpe, England. The marriage took place at St Paul's Church, Symonds St, Auckland, on 21st January 1860. The officiating minister, who signed the register "GA N. Zealand", was almost certainly Bishop George Augustus Selwyn, Bishop of NZ 1842-1868; a prominent New Zealand historical figure of the 1850s and 60s. (http://www.teara.govt.nz/en/biographies/1s5/1)

According to his obituary in the Pharmacy Journal (quoted in Frost 2004), Hall served in the home defence militia during the NZ Wars of the early 1860s. In 1860, Hall obtained a grant of Maori land at Mangatawhiri:

> "All that Parcel of Land, in the Province of Auckland in our Colony of New Zealand, containing by admeasurement One hundred and sixty Acres more or less, situated in the Parish of Mangatawhiri in the County of Eden and being Allotment No. Sixty five. Bounded ... on the South by the Waikato River ..." (Turton 1860)

An enclosure to the document showed the acquisition of another two blocks in the same area: 66 (225 acres) and 69 (59 acres). These allotments are unlikely to have been as a result of Hall's military service, as the 1860 gazettal date would have preceded the Waikato campaign. In 1862, he sold the three allotments to the Crown.

The purpose of these land transactions is not readily apparent, and may have been pure land speculation, as was fairly common at that stage of the colony's history. Another possibility is that Hall sold the land to the Crown as part of preparations for the British invasion of the Waikato, as the Pokeno - Waikato River - Mangatawhiri Stream area was the scene of these activities. One of the blocks owned by Hall and Bassett was immediately to the west of what was to become Bluff Stockade, the original terminus of the Great South Road, and an important position for the defence of the Waikato River and the Pokeno logistics complex.

Supporting the hypothesis of general land speculation, the Daily Southern Cross of 23rd June 1862 advertised for sale properties also owned by Hall and Bassett in Flat Bush (now part of Manurewa), Papakura, Whangarei and Onehunga. It is not apparent why Hall and Bassett appeared to part ways (at least financially) but the Daily Southern Cross of 26th May 1862 also advertised the sale of all stock and implements from the Mangere property.

While farming in partnership in Mangere, Hall and Bassett became prominent members of the NZ Agricultural Society and the Auckland Acclimatisation Society. There are several references in

Papers Past about their contributions to meetings, including presenting talks on experimental horticulture; for example:

> NEW ZEALAND AGRICULTURAL SOCIETY.
> New Zealand Herald, Volume III, Issue 925, 31 October 1866, Page 5
> CULTURE OF THE POTATO. Mr. Bassett was then called upon to read a paper on the cultivation of the potato. ...
> Mr John Hall said he was making several experiments, and would be glad to give the results of those experiments to the society on a future occasion.
> ACCLIMATIZATION SOCIETY.
> New Zealand Herald, Volume IV, Issue 1191, 9 September 1867, Page 3
> Mr. Bassett said several partridges had been noticed in the neighbourhood of Mangarei [Mangere]. Mr. Hall offered to present the Society with a collection of New Zealand plants for the garden in the Domain, which were thankfully accepted.

These references indicate Hall was interested, and participating, in experimental botany before he arrived in Thames.

It is not clear how Hall maintained a livelihood after 1862, but when the Thames goldfield was proclaimed open on 1st August 1867, he decided to revert to his original profession of pharmacist, and moved to Thames to open a shop there. According to Frost (2004): "Hall formed a partnership with a mechanic named Thomas Spencer; a man of means who knew little about pharmacy". They opened a business named Spencer and Co, Chemist, on 21st December 1867, in premises situated in Willoughby St. Various other premises and business partnerships followed - see Frost (2004) for details. It should be noted that a key function of a pharmacy situated on a goldfield was to provide assay services for the various mines and prospectors, and Hall's pharmacy fulfilled this function; at least while the field was still profitable (i.e. until about 1875).

John and Mary Hall had five children: three sons and two daughters. Hall had close ties with another prominent Thames man - James Adams. Adams was appointed as the first principal of Thames High School in 1880, and was also a keen amateur biologist (Adams 1954). These ties were reflected in the fact that Adams' son, Ernest Feltus, married Hannah, elder daughter of John and Mary Hall, in 1892. They had three children, before Hannah died in 1912 aged 45. Ernest (widely known as "E.F." Adams, who became a prominent mining engineer and, later, Thames Borough Engineer) then married Hannah's younger sister Ellen (who had also lost her original spouse at a young age) in 1914.

It was, however, his interests in botany and conservation for which John Hall was to become best known. According to Frost (2004):

> "All chemists were required to have a knowledge of botany, and sometimes developed a personal interest in the subject resulting in a study of plants and trees in their area. John Hall began to note the rate of deforestation in the Thames area, especially the large-scale removal of the Kauri and the general removal of trees for farming purposes [mining was another catalyst for large-scale destruction of vegetation]. He began to collect seeds of plants, trees and ferns to send overseas to collections in England ..."

What was likely to have commenced as a professional interest in plants for medicinal purposes expanded into a life-long passion; especially in a new country with a vast range of botanical specimens, quite unlike those he would have been used to in the UK. Just when, or over what period, this interest developed is not documented, but the arrival of James Adams in Thames, to take up the position of Headmaster of Thames High School in 1880, appears to have had at least some influence on Hall. Adams was Headmaster of the Church of England Grammar School in Auckland during the period 1872-80. During this time, he (Adams) established a close connection with Thomas F. Cheeseman, noted NZ botanist and curator of the Auckland Museum.

The extensive botanical exploits of James Adams are well outlined by Nancy Adams (1972) and his son Ernest (1954 (reprinted 1994)). What is important, regarding the Hall story, is his apparent influence on a Thames chemist with a developing interest in botany. The influence, and the ties that developed between the two families are evidenced by the inter-marriages that later occurred: "It gave

him [Adams] great pleasure when his eldest son, E. F. Adams, married the daughter of his friend, J. W. Hall, an early resident of the Thames ..." (Adams 1972).

The relationship between Adams and Cheeseman eventually led to a relationship between Cheeseman and Hall. This is evidenced by the extensive correspondence which developed between the latter two men - the earliest-known example of which was in 1887. The latest known letter between the two was written in 1913, two years before Hall's death.

One of Hall's key initiatives, and the one for which he will probably be best remembered, is the establishment of an arboretum between what is now Mountsea Road and Brunton Cresent, in the foothills to the south east of Thames. This has been restored by the local Forest and Bird chapter, and with interpretation and publicity by the local Council, it is now an important tourist attraction.

The title the paper Hall presented to the Auckland Institute (Hall 1901) implies that this work commenced in 1873. However, the early phase of the venture is not documented further (copies of his diaries now held commence in 1890). Despite this gap in the literature, the innovative and pioneering nature of the work is well documented in later references:

> **"Early advocates of native plants**
> Between 1850 and 1900, [NZ] public gardens were dominated by exotic plants such as oaks, elms and roses. The first major collection of living native plants was started in the 1870s by John Armstrong, in the Christchurch Botanic Gardens. William Hall started a native arboretum (a collection of living trees) at Thames in Coromandel around the same time. The pioneer ecologist Leonard Cockayne championed the use of native plants in gardens and in 1924 wrote a popular guide to growing them. Later he was involved in setting up the Ōtari Open-Air Native Plant Museum at Wilton, Wellington."
> (http://www.teara.govt.nz/en/horticultural-use-of-native-plants/1)

Figure 2 Hall's Arboretum, 2015, showing the mix of exotic and native trees

Hall's arboretum contains an interesting mix of exotic and native trees, indicating he probably had no strong preferences for one type over the other. Examples of exotics in the reserve include Norfolk pine, eucalypts, English oak and macrocarpa. Examples of natives include kauri, totara, kahikatea, puriri and miro.

Hall also corresponded with like-minded individuals in the UK (Godley 1991). Carolyn Melling recalls (2002):

> "His letters describe a friendship with Captain Dorien Smith from Tresco Abbey in Scilly Islands, Cornwall, UK. Early NZ natives grow in this garden which would undoubtedly have come from Hall and some of the exotics in Hall's Reserve would have come from Tresco. My first introduction to Hall's Reserve was a conducted tour by DOC (Department of Conservation). They wanted the public opinion on what to do with the exotics in the reserve, possibly removing them. This was the time we discovered the letters. So timely! Imagine if Tresco Abbey thought the removal of 100 year old NZ natives was a good idea!"

Another achievement for which Hall has become well-known was his discovery of a variety of totara, which was subsequently named *Podocarpus hallii* (Hall's Totara). This name was first publicised by Thomas Kirk, in his seminal work *The Forest Flora of New Zealand* (Kirk 1889). However, modern botanical literature lists an alternative name - *Podocarpus cunninghamii* - for Hall's totara. The reason that there are alternative names is that, apparently, the same species was named by different botanists at around the same time - Colenso (in 1884) and Kirk (in 1889). Dawson and Lucas (2011) infer that *P. cunninghamii* is now the preferred name.

Figure 3 Hall's totara (left) and common totara samples, taken from Hall's Arboretum, c.2013. The difference in leaf sizes is apparent.

Hall's self-taught expertise in botany was recognised, and resulted in an invitation to present a paper to the Auckland Institute (a forerunner to the Royal Society of NZ). In this, he summarised the rationale for, and success of, his experimental work (Hall 1901):

> "It is much to be regretted that a well-organized arboretum for indigenous trees and shrubs has not been established in each of the great centres of population. The extensive, and frequently wanton, destruction of the native bush has been going on at such a pace that it will soon be difficult, if not impossible, to get sight of some of the rarer species. And, unfortunately, the planting of our beautiful New Zealand trees has not generally been adopted, perhaps from the mistaken idea that they are difficult of culture. Partly to disprove this, but principally because I had a great liking for the occupation, I some thirty years ago, began a plantation on a piece of land at Parawai, Thames.
>
> ...
>
> One object in making these plantations was to induce the visits of our rapidly disappearing native birds. The frequent visits of the riro-riro, the piwakawaka, and the kotare, with occasional incursions of the ruru, the tui, and the pipiwharauroa, and still more rare appearance of the kaka, kukupa, kohoperoa, weka, and miromiro, have amply repaid my

expectations. In conclusion, let me express a hope that these few cursory remarks may induce others to attempt the cultivation of our indigenous flora."

An item of particular interest is that Hall reported he had been able to propagate native trees by means of cuttings, as well as the usual method of germinating seeds:

> "It may not be generally known that the puriri and totara; and doubtless many others, can be grown from cuttings. Surrounding part of my plantation is a well- established totara fence grown exclusively from cuttings." (Hall 1901).

Yet another notable feature of Hall's life is his role as a pioneer conservationist: in a colony and at a time when exploiting resources to gain economic advantage was considered to be of paramount importance. In fact, that was the fundamental reason for European nations to seek remote colonies in the 18th and 19th centuries - to harvest resources for the Industrial Age, which was then well under way. For an individual to advocate restraint, and protection of endangered species, was somewhat akin to heresy. However, that didn't seem to bother Hall. His Letters to the Editor of the Thames Star were numerous, and covered many subjects relating to conservation:

> Thames Star, Volume XLIV, Issue 10531, 2 May 1907, Page 2
> CORRESPONDENCE.
> TO SPORTSMEN
> (To the Editor.)
>
> Sir,— -A week or two ago in remarking on the increase of ducks, and the probability of good sport in the coming season, you mentioned in the next paragraph that bitterns also were increasing. Lest this should lead to the misconception that bitterns may be shot will you please draw attention to the fact that they are included in the list of protected birds.—I am etc.,
> JNO. W. HALL.
>
> P.S.—From a long list published last year, I select those interesting to sportsmen, and which are absolutely protected: Avocet, bitterns, blue duck, white herons, blue herons, crested grebe, dotterel, knot, oyster catcher, plover, stilt plover, rail, sand piper, snipe, turnstone.

It wasn't all plain sailing, however. He did have occasional setbacks and problems:

> Thames Star, Volume XLVII, Issue 14613, 1 September 1913, Page 1
> NOTICE Whereas some thoughtless or dishonest persons are in the habit of removing young trees, plants, seedlings, ferns and flowers from my plantations at Parawai, notice is hereby given that all perpetrators of such depredations will henceforth be prosecuted. JNO. W. HALL.

The last noteworthy aspect of Hall's work took place less than two years before his death. In 1913, the NZ Government created a Royal Commission on Forestry (RCF), which was charged with charting a forestry policy and long term strategy. Since the arrival of European settlers forestry was based on exploitative colonial practices, which were concerned purely with harvesting resources for the parent industrial economy. According to Salmond (1997 pp. 237-8):

> "In the economy of European colonialism, gold and silver headed the list of desirable 'goods' to be acquired by imperial expansion. Then came the materials required in warfare - saltpetre for gunpowder, and the timber and flax required for the hulls and riggings of naval vessels, and as sails and fabric for uniforms."

By 1913, it was apparent that native forests were rapidly being exhausted, and prompt action was required to ensure the new nation didn't run out of timber. As part of its deliberations, a small sub-set of Commission members visited Hall's Arboretum:

> "On the 9th April your Commission again divided, Messrs. Clarke, Lethbridge, and Murdoch proceeding to Tauranga, via Oropi, and the next day to Hamilton, via Waihi; while Messrs. Haszard (Chairman), Adams [not James Adams of Thames, mentioned previously as a colleague of Hall], and Dr. Cockayne went to Thames, where, in company with Mr. J. W. Hall, they inspected an interesting mixed plantation of exotic and indigenous trees planted by that

> gentleman forty years ago. This plantation is of special interest since an account of the rate of growth of the trees has been published in the Transactions of the New Zealand Institute, Vol. 34, p. 386." (Unknown author 1913)

Fifteen of Hall's trees were measured by the Commission, a mix of exotic and native. Results were included in Appendix D to the Commission's report, along with measurements made in other locations. A remark made alongside the measurements from Hall's Arboretum indicates the importance of these results:

> "These trees planted by Mr Hall serve perhaps as no others in New Zealand to illustrate the rate of growth of some exotic trees in comparison with our own native forest trees" (Unknown author 1913 Appendix D p.2)

In April 2015, nearing the 100th anniversary of John Hall's death, the authors re-measured nine of the thirteen tree species which had been measured in 1913. It was difficult to ascertain exactly which trees were measured 102 years ago, but the largest specimens remaining were chosen. (It was assumed that the RCF would have measured the largest specimens on offer, as they were trying to determine which trees would grow fastest in what conditions. However, they did measure two kauri and two common totara of significantly different dimensions, which indicates they were probably trying to establish a range of sizes for probably the two most likely contenders for natives to be cultivated.)

Detailed results are held by the authors, and will be passed to interested botanists and foresters. A summary of the 2015 results, compared with the 1913 measurements, is charted at Appendix A. It is apparent that specimens planted over 140 years ago are still growing strongly, although the kauri (*Agathis australis*) measured in 2015 appears to be damaged or dying at the crown.

The main point of the re-measuring exercise, aside from memorialising John Hall at the centenary of his death, was to remind readers that a living arboretum of botanical specimens is an important part of the body of knowledge of that academic discipline. Specimen collections are also an important repository of knowledge in other scientific disciplines; particularly those of a practical nature, such as medicine, engineering and geology. Hall's Arboretum has remained substantially intact for over 140 years: forty years after its creation, it contributed to the definition of NZ forestry policy and strategy, which led to the creation of the NZ Forest Service in 1919. Properly protected and managed, it has the potential to continue to be a comparative reference site for NZ native and exotic botanical specimens for perhaps another century, or even centuries, to come.

John William Hall passed away on 24th May 1915. The NZ Herald (Volume LII, Issue 15926, 25 May 1915, Page 8) published the following obituary:

OLD THAMES RESIDENT.

Thames. Monday. A very old and respected resident of Thames passed away this morning in the person of Mr. John William Hall, chemist, at the advanced age of 85 years. Mr. Hall was a native of Leicestershire. He came to New Zealand by the ship Egmont, arriving in Auckland in 1857. He and his cousin, the late Mr. [Captain (Royal Cavalry Volunteers) William Thomas] Bassett made a tour of the North by cutter inspecting land, and finally purchased a farm at Mangere, in partnership with the late Colonel Lyon. He served with the militia for home defence during the Maori War. He came to Thames at the opening of the goldfields. As he had served his apprenticeship with a London chemist he was able to make a start at Thames in that business. He entered into partnership with the late Mr. Thomas Spencer. Mr. Hall continued in business to the day of his death. At various times he has distributed parcels of seeds of native trees, particularly pohutukawa, all over the world. His native tree plantation near Thames, is well known to all botanists. Mr. Hall was a veritable encyclopaedia on all matters relating to New Zealand plants and ferns.

John Hall was a noted amateur botanist, pioneer conservationist, pharmacist and family man. His environment was a challenging one, being an early settler in a gold mining community at a time when conservation of natural resources was an almost unheard-of concept. The final sentence of his epitaph seems fitting for John William Hall:
Whatsoever thy hand findeth to do
Do it with all thy might

Figure 4. John and Mary Hall's grave in Shortland Cemetery, Thames. It is probable that John planted the exotic trees after the death of Mary in 1898.

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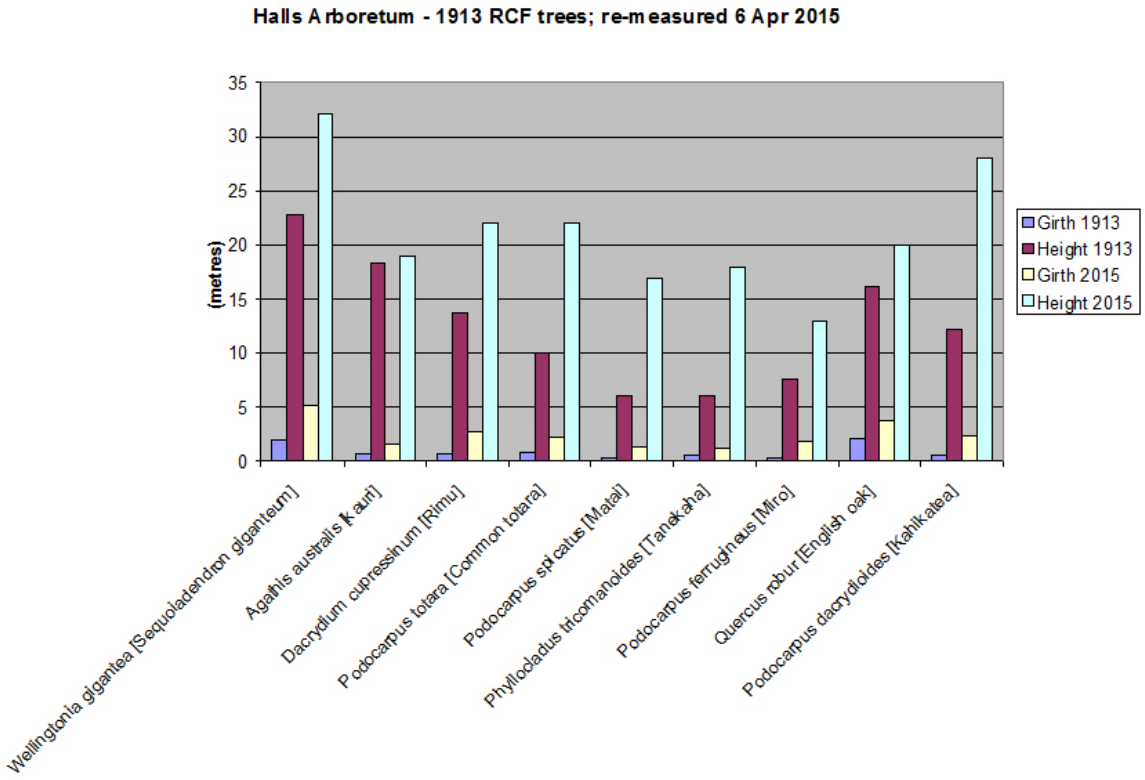
Appendix A



BIOGRAPHY / BIBLIOGRAPHY

- **Biographical Sketch – Andrew Davidson Beddie (1881-1962)**

Val Smith, 80 Mill Road, New Plymouth 4310.

Andrew Davidson Beddie was born in 1881 in Kintore, Aberdeenshire, Scotland. His father James Beddie (1840-1914), a granite quarry worker, was born in New Deer, Aberdeenshire, and his mother Isabella Davidson (1850-1913) was a labourer's daughter from Kinneff and Catterline, Kincardineshire. Andrew was the youngest of their five children, and like his older brother James, probably attended Kintore public school. Both his paternal grandfather James Beddie and great-grandfather John had been blacksmiths.

On 6 January 1908 at the Temperance Hotel in the village of Kemnay, Aberdeenshire, Andrew Beddie, then a 27 year-old stonecutter, married 21 year-old Elsie Coutts, a servant. After living for a short time with his parents at Clovenstone, Kintore, the young stonemason followed other family members who had emigrated, and by 1911 had built up a business in Petone, New Zealand. He shared botanical and horticultural interests with the nearby Percy family (of Percy Reserve), and his home at 174 Hutt Road was flanked on one side by his stoneyard, and on the other by a walled garden crammed with native plants. Andrew and Elsie Beddie are thought to have had two daughters and two sons. Elsie died in 1933, aged 46, and was buried in the old Taita cemetery.

In 1928 Andrew Beddie met Dr Leonard Cockayne and was soon collecting for him and the Otari Open Air Native Plant Museum. This led to his botanical explorations of Mt Matthews, the highest peak in the Rimutaka Range, during his holidays for the next six years, and publication of his paper about them in the *Journal of the New Zealand Institute of Horticulture* (1938). His account of a North

Cape botanical survey made in May 1944 with Ross Michie, Norman Potts and Cam Finlayson, was published in 1945.

A skilled propagator, Beddie collected cuttings wherever he went. He also studied natural root-grafts, produced wool dyes from indigenous species, and arranged exhibitions of native plants. For his work on the vegetation of the southern part of the Tararua Range and his contribution of rare and semi-rare species to botanists, parks and gardens, he was awarded the Loder Cup in 1948.

He was an avid member of the Tararua Tramping Club's botanical circle, which in 1939 formed the nucleus of the Wellington Botanical Society. His "waggon" (a small truck) was always available for transporting both members and visiting botanists, and was invaluable during the society's early years. He served as a council member for a total of six years, and contributed generously to the society's bulletin. His enthusiasm and participation in meetings and outings continued almost until his death, age 81, on 15 February 1962.

Andrew Beddie is remembered for his kindly and cheerful nature, and for his dedication to the study of New Zealand plants that was almost as much part of him as his Aberdeen accent. His contribution to New Zealand botany is recognised in the Cook Strait tussock, *Chionochloa beddiei,* described and named after him by his fellow tramper and botanical friend, Victor Zotov, in 1963.

Chionochloa beddiei

Chionochloa beddiei

From the Greek *chion* 'snow', and *chloa* 'grass', referring to the common name of snow grass, *Chionochloa* is a predominantly New Zealand genus, ranging from large tussock grasses to smaller tufted and sward-forming or creeping grasses. Twenty-two species occur in a wide range of habitats from Northland to the subantarctic islands, and one species is confined to Australia. *Chionochloa beddiei* is a small tussock, up to 60 cm tall, with rather widely spreading leaves, which are 30–60 cm long, about 4 mm wide and slightly channelled. The lower half of the leaf is stiff while the upper part becomes quite flowing. Flowering stems grow to about 75 cm long; the flower plumes are fairly dense and congested. Sometimes known as the Cook Strait tussock, it occurs in a small area of the southern North Island coast from Palliser Bay to the southern Wairarapa, growing on coastal cliffs and bluffs. Plants on the hills above Okiwi Bay in the Marlborough Sounds previously regarded as *Chionochloa beddiei* are now thought to be of hybrid origin.

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PUBLICATIONS

- **Publications Received**

Wellington Botanical Society Newsletter May 2015 Upcoming meetings and fieldtrips, publications received, submissions made, research awards, plant conservation news, trip reports.

Canterbury Botanical Society April 2015 Upcoming meetings and fieldtrips, talk on conservation of meadow plants in Sweden, trip report for Whitecliffs restoration.

Canterbury Botanical Society May 2015 Upcoming meetings and fieldtrips, talk on *Gastrodia* pollination, trip report for Mt Torlesse station.

Canterbury Botanical Society June 2015 Upcoming meetings and fieldtrips, talk on weedy male ferns, trip report for Oxford forest remnants.

The New Zealand Native Orchid Journal May 2015 *Corysanthes orbiculata*, pollination by thrips, why plant names change, *Pterostylis irsoniana*, fungus gnats, *Adenochilus gracilis* alba.

Botanical Society of Otago Newsletter 75 May 2015 Upcoming meetings and fieldtrips, Bastow Wilson appreciation, Rock and Pillar Range discoveries, trip reports including West Dome, Bungtown and Lake Mahinerangi, and Tahakopa River Mouth.