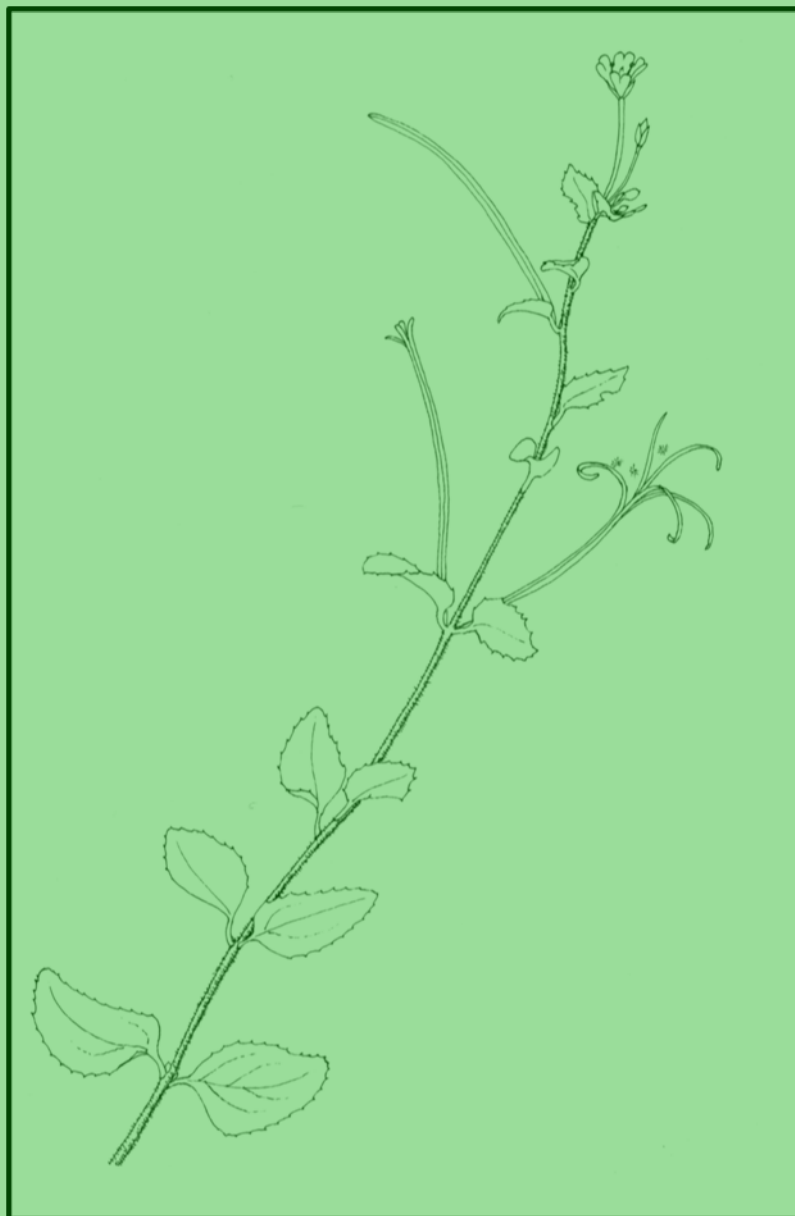


NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 145

September 2021



President:	Anthony Wright
Secretary/Treasurer:	Ewen Cameron
Committee:	Bruce Clarkson, Colin Webb, Carol West
Address:	c/- Canterbury Museum Rolleston Avenue CHRISTCHURCH 8013
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Subscriptions

The 2021 ordinary and institutional subscriptions are \$25 (reduced to \$18 if paid by the due date on the subscription invoice). The 2021 student subscription, available to full-time students, is \$12 (reduced to \$9 if paid by the due date on the subscription invoice).

Back issues of the *Newsletter* are available at \$7.00 each. Since 1986 the Newsletter has appeared quarterly in March, June, September and December.

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

Subscriptions are due by 30 April each year for that calendar year. Existing subscribers are sent an invoice with the March *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 2021 issue is 25 November 2021.

Please post contributions to:
Lara Shepherd
Museum of New Zealand Te Papa Tongarewa
169 Tory St Wellington 6021

Send email contributions to lara.shepherd@tepapa.govt.nz Files are preferably in MS Word, as a Microsoft Word document. 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

Epilobium pubens by Eleanor Burton.

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NEWS

New Zealand Botanical Society News

■ Call for Nominations

Nominations are called for the following positions of Officers and Committee of the New Zealand Botanical Society for 2021:

- President
- Secretary/Treasurer
- 3 Committee Members
- Editor

Nominations for all positions open on 1 September 2021 and close on 20 November 2021.

Nominations shall be made in writing to the Secretary, c/o Canterbury Museum, Rolleston Avenue, Christchurch 8013, and shall be signed by the Proposer, the Second, and by the Nominee to indicate their acceptance of nomination. If necessary, ballot papers for a postal election will be circulated with your December Newsletter.

■ Call for Nominations for Allan Mere Award 2021.

Nominations meeting the following conditions are invited for the award of the Allan Mere for the year 2021. The newsletter editor apologises for the lateness of the call for nominations, which should have been included in the March issue.

Conditions of the Allan Mere Award

1. The Award shall be made annually to a person or persons who have made outstanding contributions to botany in New Zealand, either in a professional or amateur capacity.
2. The Award shall be administered by the New Zealand Botanical Society.
3. Nominations for the Award may be made by regional Botanical Societies, or by individuals, to the Secretary of the New Zealand Botanical Society. Nominations shall be signed by nominator and second, and accompanied by supporting information.
4. Selection of the successful nominee/nominees shall be made by the Committee of the New Zealand Botanical Society, normally within three months of the closing date for nominations.
5. If, in the opinion of the Committee, no suitable nomination is received in any particular year, the Committee may refrain from making an award.
6. The Mere shall be formally presented to the recipient on an appropriate occasion by the President of the New Zealand Botanical Society or his/her nominee, but otherwise shall remain in the custody of, and be displayed by, the Herbarium Keeper of the Allan Herbarium (CHR) at Landcare Research, Lincoln, together with the book recording awards.
7. The recipient shall receive an appropriately inscribed certificate.

Nominations should be forwarded by 30 October 2021 to:

Ewen Cameron, Secretary, New Zealand Botanical Society, c/- Canterbury Museum, Rolleston Avenue, Christchurch 8013.

Regional Botanical Society News

■ Auckland Botanical Society

June Meeting

Maureen Young chose a wetland plant for Plant of the Month, *Sparganium subglobosum*. This monocot only grows in Eastern Australia, two records from Papua/New Guinea, and in New Zealand, mostly in the north. The main speaker was Emma Bodley, Botanical Records and Conservation Specialist at Auckland Botanical Gardens. She outlined her role managing the plant collection database, and undertaking various plant conservation projects, including hand pollination of the rare Bartlett's rata.

June Field Trip

Because of the threat of kauri dieback the formerly muddy and overgrown Cutty Grass Track in the Waitakere Range has been upgraded to a carefully engineered gravel road. Botanising it was a delight, especially as many plants usually found at slightly higher altitudes were present. Learning the features of the filmy ferns that we don't commonly see kept several members busy. Lunch was eaten sitting on the veranda of the Alpine Club bunk house.

July Meeting

This meeting began with our annual book auction, where many a bargain was snapped up. The auction was followed by a talk by Howell Davies, Auckland Council's Senior Advisor on Urban Forests. He spoke of the development of the Urban Ngahere Strategy, looking in detail at the urban tree cover in the Auckland region. It was encouraging to hear his opinion on the many inappropriate plantings that are sometimes undertaken in parks and other public areas.

July Field Trip

With the aim of keeping warm and dry, a lichen workshop was held at Unitech in lieu of a field trip this month. With Dan Blanchon as leader, the workshop began in the morning with the basics of lichen identification, followed after lunch with more advanced work.

August Meeting

Following last month's book auction of donated books, this month's meeting featured a discounted sale of ABS publications, and successfully added many dollars to the Lucy Cranwell Grant fund. Dan Blanchon from Unitech, and Lucy Cranwell Grant student, Marley Ford, followed-up last month's lichen workshop with an update of the latest findings in the world of lichens.

August Field Trip

This outing was postponed due to Covid 19. The rest of the programme is on hold until the lockdown is over.

Auckland Botanical Society PO Box 26391, Epsom, Auckland 1344

President: Ewen Cameron

Secretary: Stephanie Angove-Emery
aucklandbotanicalsociety@gmail.com

■ Rotorua Botanical Society

June Trip - Whakarewarewa wetlands

You drive past this wetland without seeing it as it is hidden behind a barrier of crack willow and bounded by plantation. Just behind the willows there is some open water and a soft mire but for much of its 500 m it is choked with willow. The margins are a mass of blackberry. Over 40 years ago a loop walk circled it but that is only now being reopened by a care group. In the last year they have begun to trap the area and clear it of willow and other weeds. Along the fringes on the loop track banks native shrubs and ferns were beginning to develop. Here *Dicksonia fibrosa* and *D. squarrosa*, five finger, tree fuschia and mahoe dominate with *Coprosma tenuicaulis* on the edges of the mire.

When the surrounding area was originally planted in the 1900s, photos show it was mostly *Carex*

secta but now the area contains numerous weeds. The most notable natives are *Astelia grandis*, which we did not manage to find, and *Austroderia toetoe*, near its northern limit. The end near the open water proved to be the most interesting. Here *Carex secta* and raupo still prevailed along with a good range of sedges including *C. maorica*, *Eleocharis sphacellata*, *Isolepis distigmatosa* and *Macherina tenax*, distinctive with its glumes sticking out. Finally, we found an area on the margin of some manuka containing *Hypericum pusillum*, *Nertera scapanioides* and *Euchiton limosum*.

July Trip - Matata Dunes

We headed west from Matata along a narrow strip between the shore and the railway line. For the first 500 m we traversed the top of the foredune and looked landwards over a dune slack apparently dominated by crack willow. The shoreward margin had been sporadically planted in *Banksia integrifolia*, pohutukawa, Tasmanian ngaio, and flax with Japanese honeysuckle, *Muehlenbeckia australis* and blackberry scrambling over and between the shrubs. The foredune was dominated by spinifex and *Muehlenbeckia complexa*. By lunch we had reached the edge of the eucalypt stand that dominated the reserve from there to Murphy's Camp, another 600 m further on. After lunch we ventured briefly into the stand where rangiora, hangehange and mapou formed a sparse understorey. While a couple of the group disappeared, the reminder retired 200 m down beach until we were enticed into the dune slack by promises of an interesting wetland. We then thrashed back down slack towards the vehicles in crack willow, tree ferns and masses of honey suckle growing on recent rough, dried out slip debris to a "wetland" that turned out to be a now dry old slip outwash.

August Field Trip - Waimangu

Initially we walked down to the boiling lake stopping to note *Ileostylis micrantha* on mahoe, *Lycopodium cernua* and *Psilotum nudum* in the areas of heated ground. We then ascended up to Devil's Cauldron and on to Mt Hazard lookout. From there we briefly explored a "new" crater (2017) but found little of interest before heading off along a well defined deer track on a ridge to a pine plantation at the reserve boundary. Much of the vegetation was heavily browsed by deer (red and samba) and wallabies. Vegetation was mainly tree ferns or kanuka with mahoe and kamahi in the gullies. There were also scattered titoki and pigeonwood. The understorey was very limited, mainly grasses such as *Microlaena stipoides*, scented fern, *Hypolepis ambigua*, *Histiopteris incisa*, and *Pteris tremula*. There was some regeneration of kanuka and wineberry was common.

From there the road lead us often through mahoe or wineberry to near Hoputuroa trig for lunch. At our lunch spot broom was heavily browsed by wallabies. After lunch we descended a gully towards the lake. This was a quite narrow defile, with a scattered fringe of ferns such as *Blechnum chambersii*, *B. colensoi* and the odd *Notogrammitis ciliata*. It became more and more difficult with a series of increasingly tall drops to 2.5 m that required a sidle and slide, then finally a 60 m sheer drop which required a 60 m climb out of the gully to reach the ridge. On the ridge the vegetation was similar to on our earlier ridge track. It was an easy route down as it led to an overgrown road to the valley bottom.

FUTURE EVENTS

September 5 Te Kopia Forest - Hancock Rd
October 3 Matawai CA - Te Wera Rd
November 5-7 Coromandel
December 11 Lake Taupo Trail

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Secretary: Elizabeth Miller (07) 343 5613 rotoruabotanicalsociety@gmail.com

Web Page: www.wildland.co.nz/botanical.htm

■ Whanganui Museum Botanical Group

Our meetings are held every two months on the second Tuesday, alternating with 'Nature Talks' (where the Whanganui Botanical Group has merged with Birding Whanganui and the Whanganui branch of Forest and Bird), which are held on the third Tuesday in even-numbered months. It is intended to continue with monthly botanical field trips to which members of the other two groups are invited.

President: Clive Higgie (06) 342 7857 clive.nicki@xtra.co.nz
Secretary: Margi Keys 0274 481 581 wbotgp@gmail.com

■ Nelson Botanical Society

May and June field trips - cancelled due to weather.

May Meeting & AGM 'Botanical highlights from 30 years as a ranger', talk by Simon Walls

Simon described some of his favourite 'office' and lunch locations during 30 years as a DoC Biodiversity Ranger, based mainly in Takaka. The description of each location included great photographs of the botanical highlights and discoveries, and described some of the practical necessities involved in protecting them. The first 'office' was the upper Clarence and Acheron valleys and included a survey of the dry scree slopes of Mount Giles/Bullen Hill, with their diverse range of scree specialists, scree pea among them. Down on the river flats, a dried-up tarn yielded a great surprise, *Dysphania pusilla*, presumed extinct since 1959. The next location was the Nguroa limestone and Te Hapu mudstone cliffs of the northwest coast. Salt turf plants include: *Leptinella calcareae*, *Myosotis pygmaea*, *Eryngium vesiculosum* and *Carmichaelia juncea*.

The next destination was Mount Burnett with its unique biota. This habitat requires rigorous control of weeds and grazing mammals, to which Simon has devoted hundreds of hours. Farewell Spit, with its contrasts of wet and dry, sandy and salty, fixed and stable habitats, is another long-term office. The variability of life on the Spit is illustrated by *Thyridia repens* which Simon encountered in flower one year, carpeting the bed of a saltpan, having never previously seen it flower. Next stop was the Cobb Valley, home to more species of *Myosotis* than anywhere else in New Zealand. There is also a diverse grass flora, including the Threatened - Nationally Critical *Deyeuxia lacustris*. One of the botanical highlights of Kahurangi is another threatened species, *Pittosporum dallii*.

June Meeting 'Natural history of (some) New Zealand flowers', talk by Phil Garnock-Jones

Phil's main research interest has been New Zealand *Veronica* but he is also interested in flower biology – how they work rather than what they are. Phil's presentation gave us beautifully illustrated examples of the basics of flower biology then told the stories of several examples of New Zealand flowers. There are myriad different flowers but all have the same basic structure: sepals, petals, stamens, and pistil(s).

Corokia cotoneaster: this is a hermaphrodite plant with bisexual flowers. Its small, yellow, open blooms appear to be nothing out of the ordinary. Their colour and open structure are the attraction, making the rewards of nectar and pollen freely accessible. Visitors include flies, beetles, native bees and bumble bees. However, only native bees are effective pollinators. In addition it has the rare characteristic (among New Zealand flowers) of being self-incompatible: this means that a flower can recognise and reject its own pollen on the stigma or pollen tubes in the style. This limits inbreeding. Bees settle on the stigma and use it to rotate their bodies collecting pollen.

Viola filicaulis: This is a much more complex flower, with sexual parts and rewards hidden, and clever mechanisms to control pollinator behaviour. The bisexual flowers are visually attractive, white with a yellow spot and purple veins to lure and guide pollinators (which include hover flies, bristle flies, bugs and small native bees). The nectar reward pools in a hollow spur at the back of the flower, and the pollinator needs specialised knowledge to navigate the challenges to access it. After landing on the flower, it follows the purple guides and makes contact with the stigma, which is held out in front, depositing pollen from the previous flower as it does so. It then pushes into the tube, lifting the style, which has a little hinge at its base, then jiggling the flaps on the anthers, which act as a funnel for a shower of pollen. As it probes deeper for nectar, even more pollen is showered onto it before it backs out and moves onto the next flower.

Beilschmiedia tawa: are hermaphrodite with tiny bisexual flowers that are green and radially symmetrical. Although there is no visual display to attract pollinators, flowers have an open structure so rewards of pollen and nectar are readily accessible, and flowers in the cluster open one at a time so flowering is over an extended period. The identity of pollinators is unclear (possibly thrips?) but the process of receiving and releasing pollen is complex and fascinating.

July Field Trip: Brook Waimārama Sanctuary

We met at Brook Sanctuary Information Centre just before 10.00 am and went up the Koru Track and were soon looking at an early flowering *Pterostylis* aff. *banksii* conveniently situated on the track edge. A few plants had flowered in June (inaturalist.nz/observations/83228555)

while others only had young leaves or were just emerging. From the developing flower buds it looks as though this species will be flowering for two months or longer. We also found plenty of *Pterostylis alobula* and *Acianthus sinclairii* in flower and we wondered if the predator-proof fence is helping these orchids increase in numbers. There were several specimens of *Asplenium* along the bank, which caused some discussion and there are suggestions they are hybrids involving *A. appendiculatum* and *A. hookerianum* or *A. flaccidum* (inaturalist.nz/observations/88362163 & [88362164](http://inaturalist.nz/observations/88362164)).

We dropped down Jacob's Ladder track to the Valley Track and were into a small patch of hard and black beech forest. One mature tree with the leaf shape of hard beech but with very few teeth was identified as the hybrid of these two species, *Nothofagus* x *apiculata*. It was surprising to see some of the five-fingers in flower in winter. Among the weeds along the

track edge, nearer the entrance, we noted *Nemesia floribunda*. This herbaceous weed is increasing rapidly around Nelson, including in the city centre. We added a number of common weeds to the species list but only one native plant, *Carex horizontalis*.



Nemesia floribunda, a weed which is spreading very rapidly around Nelson.

FUTURE EVENTS

September 19	Fieldtrip to QEII covenant at Okiwi Bay.
October 17	Wairoa weeding
November 21	Fieldtrip to Third House
December 11-12	Camp in the Cobb Valley
December 19	Fieldtrip to Mt Robert

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■ **Canterbury Botanical Society**

July Meeting: What's cooking with kanuka? by Dr Matt McGlone

In 2014 Dr Peter de Lange was awarded his PhD, the culmination of 15 years of study into the variation in *Kunzea* in New Zealand. He tracked down the type specimens in overseas collections and to describe the wide range of variability in the morphology of *Kunzea*, de Lange expanded H Allan's 1961 description of one single tree species (then *Leptospermum ericoides*) with 2 varieties into 10 species - 5 widespread species and 5 confined to small offshore Islands and the Rotorua geothermal area. The problem began when botanists were confused by intermediate characters that did not key out neatly into one or another of the new species descriptions. There were a lot of in between kanuka. Matt took the audience through the concept of a species and criteria for species ranks. He then detailed the fresh genetic analysis of 894 new herbarium specimens. Statistical analyses did not find

strong support for distinct genetic groups in *Kunzea* in New Zealand. This problem of the range of morphological characters not matched by an equal range of genetic markers is not confined to *Kunzea*. The species concept in New Zealand is blurred by rapid specialists in our geologically young and geomorphologically diverse islands. The evening ended with no big reveal, no punchline. We were told to wait for the imminent publication by Heenan et al of a revised prescription of *Kunzea*.

July Field Trip

The Mid-winter Indoor field trip this was a well-attended field trip. The first indoor space was a local retail nursery. We snooped around to spot the next big garden weed, only to be bemused by the prices people will pay for ordinary old weeds - Stonecrop (*Sedum acre*, and *S. album*.) @\$11.99, German ivy (*Delairea odorata*) @\$14.99, and Liquorice Plant (*Helichrysum petiolare*) cultivars @\$7.29, and the awful Pride of Madeira (*Echium candicans*). While admiring the range of cultivars in kapuka/broadleaf one member commented that he collected the first cuttings of the redstemmed Broadleaf from a tree beside the Arthurs Pass dump, now sold as *Griselinia* "Canterbury". The displays of various cultivars of the hardy Australian sterile Asparagaceae Lomandra species rush have displaced NZ sedges. *Carex comans* "frosted curls" is out of fashion. Succulents are definitely in fashion, thanks to the new interest in hardy house plants. The next stop was the Wai-ora landscapes shade houses. Production manager and new BOTSOC president Thomas Ferguson was delighted to show us around his domain. Wai-ora Trust has owned 7 hectares for over 20 years to develop its charitable objectives. All profit from the nursery business is invested in services to help the most vulnerable. Tom is moving all nursery production to eco-sourced seeds by 2022. He stores kanuka seed from all over Canterbury so he can grow kanuka as close to the planting site as possible. To growing podocarps from duff, finding that this promotes mycorrhizal root nodules and faster growth.

August Meeting: Rob Allen: To plant or not in forest restoration by Rob Allen.

Rob Allen trained as a forester and then worked for the New Zealand Forest Service, then Landcare Research on the ecology and management of indigenous forests. Since retiring in 2013, he has become involved with the forest restoration at two locations in the central North Island. One of these involves, as a Trustee, establishing 600 ha of podocarp forest - leading to costs for planting at >\$25,000 per hectare. As a consequence, the Trust is now considering lower costs options. Essentially this becomes a question around when to plant - or when to use or assist successions (at maybe \$4,000 per hectare). This is a question embedded in the writings of Leonard Cockayne 100 years ago. It was acknowledged that the greatest success in creating "new" indigenous forests over the last century comes from natural succession rather than a history of plantings.

August Field Trip

Charteris Bay or Te Wharau. The southern shoreline of Lyttleton Harbour, was once known as a locality with an abundance of the, at risk *Euphorbia glauca*. More recently, Australian moss *Crossidium davidai* was found 'on a damp loess bank a few feet above high water mark, north facing' there. A unique opportunity to visit several sites of botanical interest on private land, finishing off with a stroll through Orton Bradley Park.

FUTURE EVENTS

September meeting	Dryland management, Nick Head
September field trip	Omihi Shrublands
October meeting	Speaker Paul Maurice - In the Steps of the Great Plant Hunters of China.
October Field Trip	Airport drylands. School Road Melicytus.

President: Tom Ferguson: 027 4716563

Secretary: Fay Farrant (03) 337 2622

■ Other Botanical Society Contacts

Waikato Botanical Society

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Hawke's Bay Botanical Group

<https://www.facebook.com/Hawkes-Bay-Botanical-Group-590670161140095/>

Manawatu Botanical Society

Jill Rapson: Massey University. Ph (06) 350 5799 Ext 7963; [G. Rapson@massey.ac.nz](mailto:G.Rapson@massey.ac.nz)

Wellington Botanical Society

President: Jon Terry

Secretary: Kate Jordan wellingtonbotsocsecretary@gmail.com <http://wellingtonbotsoc.org.nz/>

Wakatipu Botanical Group

Chair: Neill Simpson (03) 442 2035

Secretary: Rebecca Teele 027 314 2610

Botanical Society of Otago

Chair: Gretchen Brownstein, BrownsteinG@landcareresearch.co.nz www.bso.org.nz

Secretary: Angela Brandt, P O Box 6214, Dunedin North. bsotago@otago.ac.nz

NOTES AND REPORTS

■ Celebrating 25 years of herbarium volunteering

Ewen Cameron, Auckland Museum, Private Bag 92018, Auckland 1142

In August the Auckland Museum herbarium (AK) staff, research associates and volunteers gathered for a special morning tea to celebrate 25 years of volunteering by Chris Ashton (Figs. 1 & 2). Chris began as a volunteer in March 1996 when the botany department was on the ground level near the southern entrance. The following year the whole department moved up into part of what was once the public Bird Hall, now fitted with new compactors and a mezzanine to accommodate the expanding collections.

For the last 25 years Chris has been mounting and repairing herbarium specimens 1 day / week. She is so talented at this task that we always save the more challenging specimens for her to mount or restore. Chris is also an artist and often her artistic background is evident by the pleasing way that she arranges the plant specimens on the herbarium sheets. She enjoys the challenge of difficult material, and never grumbles about the endless challenges that we put before her. Chris also teaches new volunteers how to mount herbarium specimens, passing on her skills to future workers.

Flowers and a certificate were presented. Ewen

thanked Chris for her dedication over the last quarter century and for the high standard of her work – long may it continue!



Fig. 1. Chris Ashton cutting the cake.
Photo: Dhahara Ranatunga.



Fig. 2. The celebrating botany group (L to R): Yumiko Baba, Mike Wilcox, Janice Butcher, Helen Preston Jones, Jocelyn Day, Chris Ashton, Ewen Cameron, Frances Duff, Jessica Beever, Dhahara Ranatunga, Joshua Salter, John Braggins, Shelley Heiss-Dunlop, Ella Rawcliffe. Photo: Dhahara Ranatunga's camera.

- **Adventive monocotyledons, dicotyledons, conifers, ferns and fern allies in New Zealand, published and additional to those in *Flora of New Zealand Vol. 3* (Edgar and Connor 1980), *Flora of New Zealand Vol. 4* (Webb et al. 1988), *Flora of New Zealand Vol. 5* (2nd edn, 2010)**

CC Ogle, 16 Virginia Heights, Whanganui, New Zealand, robcol.ogle@xtra.co.nz

This database comprises all species listed in five *New Zealand Journal of Botany* (NZJBot) supplements to the adventive plants listed in *Flora of NZ Vol. 4* (Webb et al. 1988), namely Heenan et al. (1998, 1999, 2002, 2004); Webb et al. (1995); Edgar & Connor 2010 (FNZ5). In addition, it includes records in two papers in *Perspectives in Biosecurity*, one (Ogle et al. 2021) with the same scope as the earlier NZJBot papers. The other (Ogle & La Cock 2019) contains for new records of monocots in the Manawatu Ecological Region, of which 36 are new for New Zealand. In the following database, Healy and Edgar (1980) are cited as "FNZ3"; Webb et al. (1988) are cited as "FNZ4"; Edgar & Connor (2010) are cited as "FNZ5", followed by a page number. To save space, the four NZJBot papers are identified simply by the volume number, followed by the page number in which the reference occurs. Monocot taxa in Ogle & La Cock (2019) are listed as **PB4** followed by a page number; those in Ogle et al. (2021) as **PB5**. The eFlora treatment of *Cotoneaster* by Glenny (2014) is abbreviated to **G14**, and of *Salix* by Glenny & Jones (2019) to **GJ19**

The plants are listed firstly in alphabetical order of plant families (regardless of whether the families are dicotyledons, monocotyledons, gymnosperms or pteridophytes) then in alphabetical order of genera within each family. The right-hand column includes notes about some species, including

cross-references to species which appear in more than one of the cited references. In several cases, the family in which certain species were placed in earlier references differs from that used in later references. Both families are included here, with notes. An Excel version, which readers can interrogate or amend data, is available by request to robcol.ogle@xtra.co.nz.

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	Family	Common name	Vol.	Pg.	Notes
<i>Aphelandra sinclairiana</i>	Acanthaceae	orange shrimp plant	PB5	68	
<i>Hygrophila ringens</i> var. <i>ringens</i>	Acanthaceae	willow hygro	PB5	68	
<i>Justicia carnea</i>	Acanthaceae	plume flower	33	154	Also 37: 638
<i>Mackaya bella</i>	Acanthaceae	forest bell bush	33	154	
<i>Odontonema tubaeforme</i> (<i>Thysacanthus tubaeformis</i>)	Acanthaceae	firespike	PB5	69	
<i>Ruellia makoyana</i>	Acanthaceae	monkey plant	PB5	69	
<i>Strobilanthes anisophyllus</i>	Acanthaceae		42	798	Also FNZ4:155; 33:155
<i>Strobilanthes gossypina</i>	Acanthaceae	pewter bush	PB5	69	
<i>Thunbergia alata</i>	Acanthaceae	black-eyed Susan	33	155	
<i>Thunbergia coccinea</i>	Acanthaceae		33	155	
<i>Thunbergia grandiflora</i>	Acanthaceae	Bengal clock vine	PB5	69	

<i>Thysacanthus tubaeformis</i> (see <i>Odontonema tubaeforme</i>)	Acanthaceae	firespike			
<i>Acer buergerianum</i>	Aceraceae	trident maple	46	264	
<i>Acer cappadocicum</i>	Aceraceae	Caucasian maple	40	160	
<i>Acer palmatum</i>	Aceraceae	Japanese maple	37	634	
<i>Actinidia eriantha</i>	Actinidiaceae	kiwifruit	PB5	69	
<i>Lampranthus glaucus</i>	Aizoaceae		40	171	Also FNZ4: 98
<i>Lampranthus multiradiatus</i>	Aizoaceae		46	264	In FNZ4: 97, as <i>L. "purple"</i>
<i>Mesembryanthemum crystallinum</i>	Aizoaceae	ice plant	33	155	
<i>Trianthema portulacastrum</i>	Aizoaceae	giant pig weed	PB5	70	
<i>Alstroemeria ligtu</i>	Alstroemeriaceae	Peruvian lily	PB4	13	
<i>Bomarea multiflora</i>	Alstroemeriaceae	climbing alstroemeria	PB4	10	Also FNZ3:62, as ζ entry
<i>Atriplex halimus</i>	Amaranthaceae	saltbush	37	631	Also FNZ4: 518; listed previously in F. Chenopodiaceae
<i>Chenopodium ambrosioides</i>	Amaranthaceae	Mexican tea	40	171	Also FNZ4: 525; listed previously in F. Chenopodiaceae
<i>Chenopodium foliosum</i>	Amaranthaceae	strawberry sticks	42	803	Listed previously in F. Chenopodiaceae
<i>Iresine herbstii</i>	Amaranthaceae		PB5	70	
<i>Agapanthus praecox</i> subsp. <i>minimus</i>	Amaryllidaceae		PB4	19	
<i>Allium ampeloprasum</i>	Amaryllidaceae	leek	PB4	19	Also FNZ3:48, as ζ entry
<i>Allium cepa</i>	Amaryllidaceae	onion	PB4	20	Also FNZ3:48, as ζ entry
<i>Allium porrum</i>	Amaryllidaceae	leek	PB4	19	Also FNZ3:48, as ζ entry
<i>Haemanthus coccineus</i>	Amaryllidaceae	blood lily	PB4	14	
<i>Nerine bowdenii</i>	Amaryllidaceae	nerine	PB4	14	
<i>Nerine sarniensis</i> var. <i>curvifolia</i> f. <i>fothergillii</i>	Amaryllidaceae	nerine	PB4	14	
<i>Harpephyllum caffrum</i>	Anacardiaceae	kaffir plum	PB5	70	
<i>Schinus terebinthifolius</i>	Anacardiaceae	Christmas berry	33	155	Also see 37: 638; 40: 167
<i>Toxicodendron succedaneum</i>	Anacardiaceae	Japanese wax tree	46	258	In FNZ4: 109, as <i>Rhus succedanea</i>
<i>Anemia phyllitidis</i>	Anemiaceae		PB5	64	
<i>Ammi visnaga</i>	Apiaceae	toothpick plant	PB5	70	
<i>Anethum graveolens</i>	Apiaceae	dill	40	160	Listed erroneously as <i>Anthemis graveolens</i>
<i>Anthemis(!) graveolens</i>	Apiaceae	dill!	40	160	Error for <i>Anethum graveolens</i> (q.v.)
<i>Anthriscus cerefolium</i>	Apiaceae	garden chervil	PB5	70	
<i>Anthriscus sylvestris</i>	Apiaceae	cow parsley	PB5	49	
<i>Apium prostratum</i> subsp. <i>prostratum</i> var. <i>prostratum</i>	Apiaceae	shore celery	40	160	This variety is regarded as exotic (see <i>Apium prostratum</i> in www.nzpcn.org.nz)
<i>Bupleurum rotundifolium</i>	Apiaceae	thorow-wax	PB5	70	
<i>Carum carvi</i>	Apiaceae	caraway	36	158	
<i>Centella asiatica</i>	Apiaceae	gotu kola	46	264	
<i>Cryptotaenia canadensis</i>	Apiaceae	mitsuba	40	161	

<i>Eryngium planum</i>	Apiaceae	blue eryngo	PB5	70	
	Apiaceae		PB5	70	
<i>Oenanthe javanica</i>					
<i>Oenanthe pimpinelloides</i>	Apiaceae	parsley dropwort	40	171	Also FNZ4: 135
<i>Oenanthe sarmentosa</i>	Apiaceae		42	803	
<i>Orlaya grandiflora</i>	Apiaceae		46	264	
<i>Smyrniolus olusatrum</i>	Apiaceae	alexanders	PB5	71	
<i>Alyxia ruscifolia</i> var. <i>ruscifolia</i>	Apocynaceae	prickly alyxia	PB5	71	
<i>Asclepias curassavica</i>	Apocynaceae	blood flower	37	634	
<i>Beaumontia grandiflora</i>	Apocynaceae	Easter lily vine	PB5	71	
<i>Gomphocarpus physocarpus</i>	Apocynaceae	swan plant	33	156	Listed under F. Asclepiadaceae; cf. <i>G. fruticosus</i> in FNZ4:150
<i>Mandevilla laxa</i>	Apocynaceae	Chilean jasmine	40	161	
<i>Ilex opaca</i>	Aquifoliaceae	American holly	PB5	71	
<i>Arisaema taiwanense</i>	Araceae	Taiwan cobra lily	PB4	14	
<i>Arisarum vulgare</i>	Araceae	friar's cowl	PB4	20	
<i>Monstera deliciosa</i>	Araceae	fruit salad plant	PB4	20	
<i>Aralia californica</i>	Araliaceae		42	803	
<i>Hydrocotyle bonariensis</i>	Araliaceae	water pennywort	46	264	Published as <i>H. umbellata</i>
<i>Hydrocotyle bowlesioides</i>	Araliaceae		46	259	
<i>Hydrocotyle leucocephala</i>	Araliaceae	pennywort	40	161	
<i>Hydrocotyle verticillata</i>	Apiaceae	whorled pennywort	40	157	
<i>Schefflera actinophylla</i>	Araliaceae		46	264	
<i>Schefflera arboricola</i>	Araliaceae	miniature umbrella tree	40	161	
<i>Tieghemopanax sambucifolius</i>	Araliaceae		40	161	
<i>Araucaria bidwillii</i>	Araucariaceae	bunya pine	33	153	Also 37: 638; 40: 167
<i>Araucaria cunninghamii</i>	Araucariaceae	hoop pine	PB5	66	
<i>Chamaerops humilis</i>	Arecaceae		PB4	14	
<i>Aristolochia elegans</i>	Aristolochiaceae	elegant Dutchman's pipe	46	265	
<i>Aristolochia sempervirens</i>	Aristolochiaceae		46	265	
<i>Asplenium aethiopicum</i>	Aspleniaceae		42	802	
<i>Asplenium x lucrosum</i>	Aspleniaceae		46	262	
(species)	Asclepiadaceae				See F. Apocynaceae
<i>Albuca bracteata</i>	Asparagaceae	pregnant onion	PB4	20	
<i>Aloe arborescens</i>	Asparagaceae	krantz aloe	PB4	21	
<i>Aloiampelos ciliaris</i>	Asparagaceae	climbing aloe	PB4	21	
<i>Asparagus retrofractus</i>	Asparagaceae	ming asparagus fern	PB4	14	
<i>Chlorophytum comosum</i>	Asparagaceae	spider lily	PB4	21	
<i>Eucomis comosum</i>	Asparagaceae	pineapple lily	PB4	21	
<i>Eucomis zambesiaca</i>	Asparagaceae	pineapple lily	PB4	14	
<i>Eustrephus latifolius</i>	Asparagaceae	wombat vine	PB4	15	
<i>Hyacinthus orientalis</i>	Asparagaceae	hyacinth	PB4	21	
<i>Lachenalia aloides</i>	Asparagaceae	Cape cowslip	PB4	22	
<i>Lachenalia bulbifera</i>	Asparagaceae	red lachenalia	PB4	15	
<i>Nolina longifolia</i>	Asparagaceae	Oaxacan tree	PB4	16	
<i>Ruscus aculeatus</i>	Asparagaceae	butchers broom	PB4	22	
<i>Veltheimia bracteata</i>	Asparagaceae	forest lily	PB4	16	
<i>Yucca gigantea</i>	Asparagaceae	giant yucca	PB4	16	

<i>Yucca gloriosa</i>	Asparagaceae	Spanish dagger	PB4	22	in FNZ3:65, as ζ entry
<i>Kniphofia caulescens</i>	Asphodelaceae	red-hot poker	PB4	16	
<i>Kniphofia linearifolia</i>	Asphodelaceae	red-hot poker	PB4	22	
<i>Kniphofia rooperi</i>	Asphodelaceae	red-hot poker	PB4	16	
<i>Aetheorhiza bulbosa</i> subsp. <i>bulbosa</i>	Asteraceae	tuberous hawk's-beard	42	803	
<i>Ajania pacifica</i>	Asteraceae	pink ice daisy	PB5	71	Also published under <i>Chrysanthemum</i> & <i>Dendranthemum</i>
<i>Anthemis punctata</i> subsp. <i>cupaniana</i>	Asteraceae	Sicilian chamomile	33	156	
<i>Anthemis tinctoria</i>	Asteraceae	corn chamomile	36	161	Also FNZ4: 158; & 37: 638
<i>Artemisia annua</i>	Asteraceae	sweet wormwood	40	161	
<i>Artemisia dracunculus</i>	Asteraceae	tarragon	33	156	
<i>Artemisia lactiflora</i>	Asteraceae	white mugwort	PB5	71	
<i>Bidens ferulifolia</i>	Asteraceae	Apache beggarticks	PB5	71	
<i>Brachyscome iberidifolia</i>	Asteraceae	Swan River daisy	37	635	
<i>Centaurea montana</i>	Asteraceae	mountain cornflower	37	638	Also FNZ4: 304
<i>Chrysanthemum carinatum</i>	Asteraceae	painted daisy	36	158	
<i>Chrysanthemum paludosum</i>	Asteraceae	snowland	37	635	See <i>Leucanthemum paludosum</i>
<i>Chrysanthemum</i> $\times$ <i>grandiflorum</i>	Asteraceae	garden chrysanthemum	46	265	
<i>Chrysocoma coma-aurea</i>	Asteraceae	golden bitterbush	PB5	72	
<i>Coleostephus multicaulis</i>	Asteraceae	moonlight	PB5	72	
<i>Coreopsis lanceolata</i>	Asteraceae	lanceleaf coreopsis	36	156	In FNZ4: 213 but reidentified as <i>Helianthus salicifolius</i>
<i>Coreopsis verticillata</i>	Asteraceae	threadleaf coreopsis	42	804	
<i>Cosmos sulphureus</i>	Asteraceae	yellow cosmos	36	161	Also FNZ4: 215; 37: 638
<i>Cotula discolor</i>	Asteraceae	beach buttons	PB5	72	
<i>Curio repens</i>	Asteraceae				See <i>Kleinia repens</i>
<i>Cyclachaena xanthiifolia</i>	Asteraceae				See <i>Iva xanthiifolia</i>
<i>Echinacea purpurea</i>	Asteraceae	purple cone flower	PB5	72	
<i>Eclipta prostrata</i>	Asteraceae	false daisy	PB5	73	Anon (2008)
<i>Eleutheranthera ruderalis</i>	Asteraceae		PB5	74	Anon (2008)
<i>Eupatorium cannabinum</i>	Asteraceae	hemp agrimony	37	630	Also FNZ4: 204
<i>Euryops chrysanthemoides</i>	Asteraceae	Paris daisy	PB4	50	Also 37: 635; 40: 167
<i>Euryops pectinatus</i>	Asteraceae	grey-leaved euryops	42	804	
<i>Euryops virgineus</i>	Asteraceae	honey euryops, river resin bush	46	265	
<i>Facelis retusa</i>	Asteraceae	annual trampweed	33	157	
<i>Felicia amelloides</i>	Asteraceae	blue daisy, kingfisher daisy	33	157	Also 37: 638
<i>Felicia fruticosa</i>	Asteraceae	shrub aster	33	157	
<i>Felicia petiolata</i>	Asteraceae		33	157	
<i>Gerbera jamesonii</i>	Asteraceae	gerbera	46	265	
<i>Guizotia abyssinica</i>	Asteraceae	niger	37	635	
<i>Gymnocoronis spilanthoides</i>	Asteraceae	Senegal tea	33	157	Also 37: 639 (cf. <i>Ageratum houstonianum</i> in FNZ4: 206)

<i>Helichrysum argyrophyllum</i>	Asteraceae	golden guinea everlasting	42	804	
<i>Helianthus salicifolius</i>	Asteraceae		36	156	Recorded as <i>Coreopsis lanceolata</i> in FNZ4: 213
<i>Helichrysum petiolare</i>	Asteraceae		33	158	Also 37: 639; 40: 173
<i>Inula orientalis</i>	Asteraceae	Georgian fleabane	42	804	
<i>Iva xanthiifolia</i>	Asteraceae	marsh elder	42	804	Syn. <i>Cyclachaena xanthiifolia</i>
<i>Kleinia repens</i>	Asteraceae	blue chalk-sticks	37	639	Also FNZ4: 270 (as <i>Senecio repens</i>); syn. <i>Curio repens</i>
<i>Kleinia serpens</i> (nomen nudum)	Asteraceae		37	639	Error for <i>Kleinia repens</i> q.v.
<i>Lactuca sativa</i>	Asteraceae	lettuce	40	171	Also FNZ4: 336
<i>Leucanthemum ircutianum</i>	Asteraceae	oxeye daisy	40	161	
<i>Leucanthemum paludosum</i>	Asteraceae	snowland	37	635	Also 40: 167 (also = <i>Chrysanthemum paludosum</i>)
<i>Olearia argophylla</i>	Asteraceae	musk daisy-bush	42	804	
<i>Olearia lirata</i>	Asteraceae	snowy daisy-bush	42	804	
<i>Olearia phlogopappa</i>	Asteraceae	asthma bush	PB5	74	
<i>Picris hieracoides</i>	Asteraceae	oxtongue	37	635	
<i>Rudbeckia fulgida</i>	Asteraceae	black-eyed Susan	46	265	
<i>Rudbeckia hirta</i>	Asteraceae	black-eyed Susan	37	639	Also FNZ4: 225
<i>Santolina chamaecyparissus</i>	Asteraceae	lavender cotton	33	156	
<i>Santolina rosmarinifolia</i> subsp. <i>rosmarinifolia</i>	Asteraceae	green lavender cotton	PB5	74	
<i>Senecio crassiflorus</i>	Asteraceae		40	167	Also FNZ4: 270
<i>Senecio hypoleucus</i>	Asteraceae	silver groundsel	42	804	
<i>Senecio macroglossus</i>	Asteraceae	wax ivy	36	158	
<i>Stevia rebaudiana</i>	Asteraceae	stevia	PB5	74	
<i>Tagetes lemmonii</i>	Asteraceae	Mexican marigold	PB5	75	
<i>Taraxacum hamatum</i>	Asteraceae	dandelion	PB5	75	
<i>Taraxacum lambinonii</i>	Asteraceae		42	798	<i>T. castellanum</i> is synonymous
<i>Taraxacum insigne</i>	Asteraceae	remarkable dandelion	PB5	75	
<i>Tithonia rotundifolia</i>	Asteraceae	Mexican sunflower	37	635	
<i>Ursinia anthemoides</i> subsp. <i>versicolor</i>	Asteraceae	star of the veld	36	158	
<i>Zinnia elegans</i>	Asteraceae	zinnia	PB5	75	
<i>Diplazium esculentum</i>	Athyriaceae	vegetable fern	PB5	64	
<i>Impatiens balsamina</i>	Balsaminaceae	garden balsam	37	639	Also FNZ4: 350
<i>Impatiens niamniamensis</i>	Balsaminaceae	Congo cockatoo	42	804	
<i>Impatiens textorii</i>	Balsaminaceae	touch-me-not	PB5	75	
<i>Impatiens walleriana</i>	Balsaminaceae	water fuchsia, busy Lizzie	33	158	Cf. <i>I. holstii</i> , <i>I. sultanii</i> .
<i>Begonia angularis</i>	Begoniaceae		PB5	76	
<i>Begonia coccinea</i>	Begoniaceae	angel-wing begonia	42	812	Published as <i>B. corallina</i> in 36: 158
<i>Begonia corallina</i>	Begoniaceae	angel-wing begonia	36	158	Now listed as <i>B. coccinea</i>
<i>Begonia foliosa</i> var. <i>miniata</i>	Begoniaceae	fuchsia begonia	PB5	76	
<i>Begonia grandis</i>	Begoniaceae	hardy begonia	46	266	

<i>Begonia luxurians</i>	Begoniaceae	palm-leaf begonia	PB5	76	
<i>Berberis aristata</i>	Berberidaceae	Indian barberry	46	266	
<i>Mahonia bealei</i>	Berberidaceae	leatherleaf mahonia	42	804	
<i>Mahonia lomariifolia</i>	Berberidaceae	holly grape	42	804	
<i>Nandina domestica</i>	Berberidaceae	heavenly bamboo	46	266	
<i>Vancouveria hexandra</i>	Berberidaceae	American barrenwort	PB5	76	
<i>Berberidopsis corallina</i>	Berberidopsidaceae	coral plant	PB5	76	
<i>Alnus rubra</i>	Betulaceae	red alder	PB5	51	Also FNZ4: 359
<i>Campsis xtagliabuana</i>	Bignoniaceae	campsis	33	158	
<i>Catalpa bignonioides</i>	Bignoniaceae	Indian bean tree	33	158	
<i>Jacaranda mimosaefolia</i>	Bignoniaceae	jacaranda	37	635	
<i>Pithecoctenium crucigerum</i>	Bignoniaceae	monkey comb	46	266	
<i>Pyrostegia venusta</i>	Bignoniaceae	flame vine	46	266	
<i>Radermachera pentandra</i>	Bignoniaceae		37	635	
<i>Tecoma stans</i>	Bignoniaceae	yellow elder	42	804	
<i>Blechnum patersonii</i>	Blechnaceae	strap waterfern	46	262	syn. <i>Austroblechnum patersonii</i>
<i>Blechnum punctulatum</i> var. <i>punctulatum</i>	Blechnaceae		46	263	
<i>Echium wildpretii</i>	Boraginaceae	taginaste rojo	40	161	Also FNZ4: 375
<i>Heliotropium arborescens</i>	Boraginaceae	heliotrope	42	805	
<i>Heliotropium amplexicaule</i>	Boraginaceae	blue heliotrope	PB5	76	
<i>Nemophila menziesii</i>	Boraginaceae	baby blue eyes	PB5	76	
<i>Omphalodes nitida</i>	Boraginaceae	navelwort	46	266	
<i>Omphalodes verna</i>	Boraginaceae	blue-eyed mary	46	266	
<i>Phacelia campanularia</i>	Boraginaceae	desert bells	42	805	
<i>Symphytum grandiflorum</i>	Boraginaceae	dwarf comfrey	PB5	77	
<i>Trachystemon orientalis</i>	Boraginaceae	early-flowering borage	42	805	
<i>Aubrieta deltoidea</i>	Brassicaceae	lilac bush, purple rock cress	PB5	77	
<i>Brassica napus</i> var. <i>napobrassica</i>	Brassicaceae	swede	46	267	Also FNZ4: 406 for var. <i>napus</i>
<i>Brassica oleracea</i> var. <i>acephala</i>	Brassicaceae	kale	46	267	Also FNZ4: 407 for var. <i>oleracea</i>
<i>Brassica oleracea</i> var. <i>botrytis</i>	Brassicaceae	cauliflower	PB5	77	
<i>Brassica oleracea</i> var. <i>gemmifera</i>	Brassicaceae	brussel sprouts	46	267	Also FNZ4: 407 for var. <i>oleracea</i>
<i>Brassica oleracea</i> var. <i>gongylodes</i>	Brassicaceae	kohlrabi	46	267	Also FNZ4: 407 for var. <i>oleracea</i>
<i>Brassica oleracea</i> var. <i>orientalis</i>	Brassicaceae	broccoli	42	805	
<i>Brassica oleracea</i> var. <i>palmifolia</i>	Brassicaceae	walking stick cabbage	PB5	77	
<i>Brassica rapa</i> var. <i>chinensis</i>	Brassicaceae	Chinese cabbage, pak choi	33, 46	159, 267	Cf. subsp. <i>campestris</i> . Also see FNZ4: 408
<i>Brassica rapa</i> var. <i>glabra</i>	Brassicaceae	Chinese cabbage	46	267	
<i>Brassica rapa</i> var. <i>oleifera</i>	Brassicaceae	wild turnip	46	267	Called <i>Brassica rapa</i> ssp. <i>sylvestris</i> in FNZ4: 408
<i>Brassica rapa</i> var. <i>rapa</i>	Brassicaceae	turnip	46	267	

<i>Brassica rapa</i> var. <i>rapa</i> × <i>B. rapa</i> var. <i>glabra</i>	Brassicaceae	turnip-rape	46	268	
<i>Eruca vesicaria</i> subsp. <i>sativa</i>	Brassicaceae	rocket	36	161	Also FNZ4: 399; & 40: 167
<i>Heliophila coronopifolia</i>	Brassicaceae	blue eyes	37	635	
<i>Lepidium desvauxii</i>	Brassicaceae	bushy peppergrass	40	171	Maybe indigenous? See FNZ4: 431
<i>Lepidium peregrinum</i>	Brassicaceae		PB5	78	
<i>Lepidium ruderae</i>	Brassicaceae		33	159	
<i>Malcolmia maritima</i>	Brassicaceae	Virginian stock	40	167	Also FNZ4: 399
<i>Raphanus sativus</i> var. <i>longipinnatus</i>	Brassicaceae	daikon radish	46	268	
<i>Sisymbrium irio</i>	Brassicaceae	London rocket	33	159	
<i>Ochagavia carnea</i>	Bromeliaceae	cardoncillo	PB4	16	
<i>Puya chilensis</i>	Bromeliaceae	puya	PB4	16	
<i>Buxus microphylla</i> subsp. <i>sinica</i>	Buxaceae	littleleaf box	42	805	
<i>Sarcococca ruscifolia</i>	Buxaceae	fragrant sweetbox	PB5	78	
<i>Cabomba caroliniana</i>	Cabombaceae	fanwort	PB5	48	
<i>Austrocylindropuntia subulata</i>	Cactaceae	Eve's-pin cactus	PB5	79	
<i>Cylindropuntia fulgida</i> var. <i>mammillata</i>	Cactaceae	jumping cholla	PB5	79	
<i>Opuntia cylindrica</i>	Cactaceae	cane cactus	37	639	Also FNZ4: 453; & 40: 167
<i>Opuntia ficus-indica</i>	Cactaceae	Indian fig, Barbary fig	40	158	
<i>Opuntia robusta</i>	Cactaceae	robust cactus	40	161	
	Caesalpiniaceae	<i>Caesalpinia</i> , <i>Cassia</i> & <i>Senna</i> had been published in F. Mimosaceae in some earlier listings, but all have been returned to Fabaceae for this database			
<i>Chimonanthus praecox</i>	Calycanthaceae	wintersweet	42	805	
<i>Adenophora triphylla</i>	Campanulaceae	Japanese lady bell	46	268	
<i>Campanula rapunculus</i>	Campanulaceae	rampion	33	159	
<i>Campanula versicolor</i>	Campanulaceae		46	275	Listed under F. Lobeliaceae
<i>Legousia speculum-veneris</i>	Campanulaceae	Venus's looking glass	40	162	Also 42: 811
<i>Lobelia ×gerardii</i>	Campanulaceae		33	169	Previously in F. Lobeliaceae
<i>Lobelia giberroa</i>	Campanulaceae	giant lobelia	PB5	79	
<i>Lobelia laxiflora</i> subsp. <i>angustifolia</i>	Campanulaceae	Mexican cardinal flower	PB5	79	
<i>Lobelia pedunculata</i>	Campanulaceae	matted pratia	PB5	52	Also in 33: 170 under F. Lobeliaceae, as <i>Pratia pedunculata</i>
<i>Lobelia siphilitica</i>	Campanulaceae	blue cardinal flower	42	805	Previously in F. Lobeliaceae
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	Campanulaceae	harebell	36	158	
<i>Abelia ×grandiflora</i>	Caprifoliaceae	abelia	33	159	Also 40: 168
<i>Kolkwitzia amabilis</i>	Caprifoliaceae	beauty bush	33	160	
<i>Lonicera hildebrandiana</i>	Caprifoliaceae	Burmese honeysuckle	PB5	79	
<i>Lonicera nitida</i>	Caprifoliaceae	hedge honeysuckle	40	171	Also FNZ4: 468
<i>Viburnum japonicum</i>	Caprifoliaceae	Japanese viburnum	46	268	
<i>Viburnum opulus</i> 'Roseum'	Caprifoliaceae	snowball tree	33	160	Also see 37: 639; FNZ4: 472
<i>Viburnum plicatum</i>	Caprifoliaceae	Japanese snowball	33	160	

<i>Weigela florida</i>	Caprifoliaceae	weigela	33	161	
<i>Argostemma githago</i>	Caryophyllaceae	corn cockle	37	639	Also FNZ4: 476
<i>Gypsophila muralis</i>	Caryophyllaceae	baby's breath	42	805	
<i>Illecebrum verticillatum</i>	Caryophyllaceae	coral necklace	PB5	53	Also FNZ4: 476 as ζ entry
<i>Lychnis viscaria</i>	Caryophyllaceae	sticky catchfly	33	161	
<i>Paronychia brasiliensis</i>	Caryophyllaceae	Brazilian whitlow	40	171	Also FNZ4: 487
<i>Stellaria neglecta</i>	Caryophyllaceae	chickweed	40	162	
<i>Stellaria apetala</i>	Caryophyllaceae	lesser chickweed	PB5	79	Previously known as <i>S. pallida</i>
<i>Allocasuarina verticillata</i>	Casuarinaceae	drooping she-oak	PB5	80	
<i>Euonymus pendulus</i>	Celastraceae	spindle bush	36	159	
<i>Maytenus boarii</i>	Celastraceae	mayten	37	630	Also FNZ4: 512
(species)	Chenopodiaceae				See F. Amaranthaceae
<i>Cistus laurifolius</i>	Cistaceae	laurel-leaf cistus	37	631	Also FNZ4: 535
<i>Cistus psilosepalus</i>	Cistaceae	sage-leaf cistus	40	172	Also FNZ4: 537
<i>Cistus salvifolius</i>	Cistaceae	rock rose	36	161	Also FNZ4: 537
<i>Cleome rutosperma</i>	Cleomaceae	fringed spiderflower	PB5	80	Anon (2008)
<i>Cleome viscosa</i>	Cleomaceae	Asian spiderflower	PB5	81	Anon (2008)
<i>Clethra arborea</i>	Clethraceae	lily-of-the-valley tree	33	161	
(species)	Clusiaceae		33	161	Published under F. Hypericaceae
<i>Hypericum canariense</i>	Clusiaceae	Canary Island St John's wort	42	807	
<i>Hypericum linariifolium</i>	Clusiaceae	toad flax-leaved St John's wort	33	161	
<i>Hypericum olympicum</i>	Clusiaceae	Mt Olympus St John's wort	46	268	
<i>Wurmbea stricta</i>	Colchicaceae		PB4	16	
<i>Tradescantia cerinthoides</i>	Commelinaceae	inch plant	PB4	22	
<i>Convolvulus cneorum</i>	Convolvulaceae	silver bush	40	162	
<i>Convolvulus graminetinus</i>	Convolvulaceae		42	805	
<i>Cuscuta planiflora</i>	Convolvulaceae	alfalfa dodder	33	161	
<i>Evolvulus nummularius</i>	Convolvulaceae	roundleaf bindweed	PB5	81	
<i>Aucuba japonica</i>	Cornaceae	Japanese laurel	40	162	
<i>Corylus avellana</i>	Corylaceae	hazel nut	46	269	
<i>Aeonium × floribundum</i>	Crassulaceae		36	161	Also FNZ4: 563; & 40: 168
<i>Aeonium arboreum</i> var. <i>rubrolineatum</i>	Crassulaceae	tree aeonium	46	269	
<i>Aeonium arboreum</i> var. <i>rubrolineatum</i> × <i>A. undulatum</i>	Crassulaceae		46	269	
<i>Aeonium canariense</i>	Crassulaceae	giant velvet rose aeonium	PB5	81	
<i>Bryophyllum daigremontianum</i>	Crassulaceae	devil's backbone	36	159	
<i>Bryophyllum fedtschenkoi</i>	Crassulaceae	lavendar scallops	46	269	
<i>Bryophyllum 'Houghtonii'</i>	Crassulaceae	coconut plant	33	162	
<i>Crassula alata</i>	Crassulaceae	three-part crassula	PB5	53	Also 42: 805
<i>Crassula arborescens</i>	Crassulaceae	silver dollar plant	46	269	
<i>Crassula bipinnata</i>	Crassulaceae	klipblom	36	159	Also in PB5
<i>Crassula colorata</i> var. <i>acuminata</i>	Crassulaceae	dense stonecrop	42	806	Listed as indigenous in e.g., FNZ4: 577
<i>Crassula dejecta</i>	Crassulaceae	doily crassula	46	269	

<i>Crassula dubia</i>	Crassulaceae	paddle succulent	46	269	A synonym for <i>C. cotyledonis</i> ?
<i>Crassula muscosa</i>	Crassulaceae	watch chain; lizard tail's	46	269	
<i>Crassula natans</i> var. <i>minus</i>	Crassulaceae	floating pygmyweed	PB5	55	
<i>Crassula orbicularis</i>	Crassulaceae	klipblom	46	270	
<i>Crassula ovata</i>	Crassulaceae	jade plant	46	270	
<i>Crassula pubescens</i> subsp. <i>radicans</i>	Crassulaceae		46	270	
<i>Crassula sarmentosa</i>	Crassulaceae		33	162	Also see 37: 639
<i>Sedum cepaea</i>	Crassulaceae	pink sunray	PB5	81	
<i>Crassula schmidtii</i>	Crassulaceae		46	270	
<i>Echeveria amoena</i>	Crassulaceae		46	270	
<i>Echeveria multicaulis</i>	Crassulaceae	copper roses	33	162	Also see 37: 639; FNZ4: 583
<i>Echeveria setosa</i>	Crassulaceae	firecracker plant	33	162	
<i>Graptopetalum paraguayense</i>	Crassulaceae	ghost plant	46	270	
* <i>Graptosedum</i> 'Francesco Baldi'	Crassulaceae		46	270	
* <i>Graptoveria</i> 'Acaulis'	Crassulaceae		46	270	
* <i>Graptoveria</i> 'Titubans'	Crassulaceae		46	271	
<i>Kalanchoe blossfeldiana</i>	Crassulaceae	flaming Katy	46	271	
<i>Kalanchoe manginii</i>	Crassulaceae	beach bells	46	271	
<i>Sedum cepaea</i>	Crassulaceae	pink sunray	PB5	81	
<i>Sedum dasyphyllum</i>	Crassulaceae		40	158	
<i>Sedum forsterianum</i>	Crassulaceae		33	181	Delete from FNZ4 1988
<i>Sedum mexicanum</i>	Crassulaceae	Mexican stonecrop	33	181	
<i>Sedum oreganum</i>	Crassulaceae	Oregan stonecrop	PB5	81	
<i>Sempervivum tectorum</i>	Crassulaceae	hen and chicks	PB5	81	
<i>Umbilicus rupestris</i>	Crassulaceae	navelwort	46	271	
<i>Bryonia cretica</i> subsp. <i>dioica</i>	Cucurbitaceae	white bryony	33	163	
<i>Cucumis myriocarpus</i>	Cucurbitaceae	prickly paddymelon	33	163	
<i>Sechium edule</i>	Cucurbitaceae	choko	33	163	
<i>Aphanopetalum resinosum</i>	Cunoniaceae	gum vine	36	159	
<i>Ceratopetalum gummiferum</i>	Cunoniaceae	Christmas bush	42	806	
<i>Cunonia capensis</i>	Cunoniaceae	butterknife bush	42	806	
<i>Hesperocyparis arizonica</i>	Cupressaceae	Arizona cypress	PB5	66	Also known as <i>Cupressus arizonica</i>
<i>Cupressus lusitanica</i>	Cupressaceae	Mexican cypress	33	153	
<i>Cupressus sempervirens</i>	Cupressaceae	Mediterranean cypress	33	153	Also 40: 170
<i>Juniperus communis</i>	Cupressaceae	common juniper	PB5	66	
<i>Taxodium distichum</i>	Cupressaceae	swamp cypress	PB5	66	
<i>Cyathea cooperi</i>	Cyatheaceae	lacy tree fern	36	157	
<i>Carex morrowii</i>	Cyperaceae	Japanese sedge	PB4	23	
<i>Carex pendula</i>	Cyperaceae	hanging sedge	PB4	11	Also FNZ3:169
<i>Davallia griffithiana</i>	Davalliaceae	white rabbit's foot fern	33	152	Also 42: 811
<i>Davallia mariesii</i>	Davalliaceae	squirrel's foot fern	33	152	
<i>Dennstaedtia davallioides</i>	Dennstaedtiaceae	lacy ground fern	36	158	

<i>Microlepia strigosa</i>	Dennstaedtiaceae	lace fern	42	802	
<i>Sphenomeris chinensis</i>	Dennstaedtiaceae	Chinese creeping fern	42	802	
<i>Hibbertia scandens</i>	Dilleniaceae	snake vine	46	271	
<i>Pterocephalus lasiospermus</i>	Dipsacaceae	shrubby scabious	46	271	
<i>Drosera burmannii</i>	Droseraceae	condominium plant	46	271	
<i>Drosera capensis</i>	Droseraceae	sundew	42	799	
<i>Drosera filiformis</i>	Droseraceae	threadleaf sundew	46	271	
<i>Dionaea muscipula</i>	Droseraceae	Venus flytrap	46	271	
<i>Athyrium otophorum</i>	Dryopteridaceae	eared lady fern	42	802	
<i>Dryopteris carthusiana</i>	Dryopteridaceae	wood fern	46	263	
<i>Dryopteris cycadina</i>	Dryopteridaceae	shaggy wood fern	42	803	
<i>Dryopteris erythrosora</i>	Dryopteridaceae	autumn fern	46	263	
<i>Dryopteris formosana</i>	Dryopteridaceae		PB5	65	
<i>Dryopteris inaequalis</i>	Dryopteridaceae		42	803	
<i>Dryopteris kinkiensis</i>	Dryopteridaceae		46	263	
<i>Dryopteris sieboldii</i>	Dryopteridaceae	Siebold's wood fern	46	263	
<i>Dryopteris stewartii</i>	Dryopteridaceae	Stewart's wood fern	46	263	
<i>Dryopteris wallichiana</i>	Dryopteridaceae	alpine wood fern	PB5	65	
<i>Onoclea sensibilis</i>	Dryopteridaceae	bead fern, sensitive fern	42	803	
<i>Polystichum polyblepharum</i>	Dryopteridaceae	tassel fern	42	803	
<i>Diospyros kaki</i>	Ebenaceae	persimmon	PB5	81	
<i>Diospyros lotus</i>	Ebenaceae	date plum	33	163	
<i>Diospyros virginiana</i>	Ebenaceae	American persimmon	42	806	
<i>Elaeagnus angustifolia</i> var. <i>orientalis</i>	Elaeagnaceae	Russian olive	46	272	
<i>Elaeagnus macrophylla</i>	Elaeagnaceae	Oleaster	46	272	
<i>Elaeocarpus reticularis</i>	Elaeocarpaceae	blueberry ash	42	806	
<i>Ephedra campylopoda</i>	Ephedraceae		PB5	66	
<i>Equisetum fluviatile</i>	Equisetaceae	Horsetail	33	152	
<i>Equisetum hyemale</i>	Equisetaceae	Horsetail	33	152	
<i>Epacris microphylla</i> var. <i>microphylla</i>	Ericaceae	coral heath	PB5	82	
<i>Erica carnea</i>	Ericaceae	winter heath	42	806	
<i>Erica melanthera</i>	Ericaceae		36	159	
<i>Erica sparsa</i>	Ericaceae	pink smoke, ker ker	PB5	82	
<i>Erica tetralix</i>	Ericaceae	cross-leaved heath	46	272	
<i>Leucothoe axillaris</i>	Ericaceae	coastal doghobble	42	806	
<i>Leucothoe fontanesiana</i>	Ericaceae	drooping doghobble	PB5	82	
<i>Pieris japonica</i>	Ericaceae	lily of the valley shrub	46	272	
<i>Rhododendron arboreum</i>	Ericaceae	tree rhododendron	PB5	82	
<i>Rhododendron decorum</i>	Ericaceae	great white rhododendron	42	806	
<i>Rhododendron maddenii</i>	Ericaceae		PB5	82	
<i>Vaccinium corymbosum</i>	Ericaceae	blueberry	37	640	Also FNZ4: 606
<i>Escallonia ×exoniensis</i>	Escalloniaceae	pink princess escallonia	37	636	Also 40: 159
<i>Acalypha wilkesiana</i>	Euphorbiaceae	copper plant	PB5	83	
<i>Aleurites fordii</i>	Euphorbiaceae	tung-oil tree	37	640	Also FNZ4: 623
<i>Drypetes deplanchei</i>	Euphorbiaceae	yellow tulip, grey boxwood	37	636	
<i>Euphorbia amygdaloides</i>	Euphorbiaceae		33	164	

<i>Euphorbia bourgaeana</i>	Euphorbiaceae	tree spurge	PB5	83	
<i>Euphorbia depauperata</i> subsp. <i>pubescens</i>	Euphorbiaceae		33	164	Also see 37: 640
<i>Euphorbia dulcis</i>	Euphorbiaceae	sweet spurge	46	272	
<i>Euphorbia mellifera</i>	Euphorbiaceae	honey spurge	46	272	
<i>Euphorbia milii</i> var. <i>splendens</i>	Euphorbiaceae	crown of thorns	46	272	
<i>Euphorbia myrsinites</i>	Euphorbiaceae	myrtle spurge	PB5	83	
<i>Euphorbia paralias</i>	Euphorbiaceae	sea spurge	PB5	85	
<i>Euphorbia pinea</i>	Euphorbiaceae	pine spurge	PB5	85	
<i>Euphorbia pithyusa</i>	Euphorbiaceae	little fir spurge	46	272	
<i>Euphorbia pulcherrima</i>	Euphorbiaceae	poinsettia	40	162	
<i>Euphorbia schillingii</i>	Euphorbiaceae	Schilling spurge	46	272	
<i>Manihot grahamii</i>	Euphorbiaceae	hardy tapioca	PB5	85	
<i>Acacia</i> spp.	Fabaceae	<i>Acacia</i> , <i>Albizia</i> , <i>Calliandra</i> , etc. had been listed in F. Mimosaceae in some earlier listings, but all have been returned to Fabaceae for this database			
<i>Acacia fimbriata</i>	Fabaceae	fringed wattle	46	275	
<i>Acacia longissima</i>	Fabaceae	long leaf wattle	PB5	86	
<i>Acacia maidenii</i>	Fabaceae	Maiden's wattle	42	806	
<i>Acacia pravissima</i>	Fabaceae	Ovens wattle	40	162	Also: 42: 811
<i>Acacia prominens</i>	Fabaceae	Gosford wattle	46	275	
<i>Acacia retinodes</i>	Fabaceae	swamp wattle	PB5	86	
<i>Acacia riceana</i>	Fabaceae	Rice's wattle	46	275	
<i>Acacia saligna</i>	Fabaceae	willow-leaved wattle	42	807	
<i>Acacia schinoides</i>	Fabaceae	green cedar wattle	46	275	
<i>Acacia sophorae</i>	Fabaceae	sand wattle	37	631	Also FNZ4: 707
<i>Acacia ulicifolia</i>	Fabaceae	juniper wattle, prickly Moses	46	275	
<i>Albizia julibrissin</i>	Fabaceae	silk tree	37	640	Also FNZ4: 702; 40: 159
<i>Arachis hypogaea</i>	Fabaceae	peanut	PB5	86	
<i>Caesalpinia spinosa</i>	Fabaceae	spiny holdback	46	268	
<i>Calliandra brevipes</i>	Fabaceae	pink powder puff	42	807	
<i>Calliandra tweedii</i>	Fabaceae	Mexican flame bush	42	807	
<i>Cassia leptophylla</i>	Fabaceae	gold medallion tree	46	268	
<i>Castanospermum australe</i>	Fabaceae	red cedar	46	273	
<i>Cercis siliquastrum</i>	Fabaceae	Judas tree	36	159	
<i>Crotalaria lunata</i>	Fabaceae	rattlepod	PB5	86	
<i>Dorycnium hirsutum</i>	Fabaceae	canary clover	36	159	
<i>Erythrina caffra</i>	Fabaceae	coral tree, kaffir broom	36	159	
<i>Erythrina crista-galli</i>	Fabaceae	coral tree	33	164	Also see 37: 640
<i>Erythrina falcata</i>	Fabaceae	evergreen coral tree	PB5	86	
<i>Genista tinctoria</i>	Fabaceae	dyer's greenweed	33	164	
<i>Gleditsia triacanthos</i>	Fabaceae	honey locust	36	159	Also: 42: 811
<i>Hippocrepis emerus</i>	Fabaceae	scorpion senna	PB5	87	
<i>Indigofera decora</i>	Fabaceae	Chinese indigo	33	165	
<i>Inga edulis</i>	Fabaceae	ice cream bean	PB5	87	
<i>Lathyrus japonicus</i>	Fabaceae	sea pea	PB5	56	
<i>Lathyrus sphaericus</i>	Fabaceae	wild pea	33	165	
<i>Lessertia frutescens</i>	Fabaceae	cancer bush, sutherlandia	PB5	88	
<i>Leucaena leucocephala</i>	Fabaceae	ipil ipil	PB5	88	
<i>Lotus suaveolens</i>	Fabaceae	hairy birdsfoot trefoil	40	172	Also FNZ4: 658

<i>Ononis repens</i>	Fabaceae	rest-harrow	33	165	
<i>Ornithopus compressus</i>	Fabaceae	yellow serradella	PB5	88	
<i>Piptanthus laburnifolius</i>	Fabaceae	Himalayan pea	40	162	
<i>Podalyria sericea</i>	Fabaceae	satin bush	33	165	Also see 37: 640
<i>Psophocarpus tetragonolobus</i>	Fabaceae	princess pea, winged pea	37	640	Also FNZ4: 656
<i>Pueraria lobata</i>	Fabaceae	kudzu vine, Japanese arrowroot	36	159	
<i>Senna aciphylla</i>	Fabaceae	sprawling cassia	PB5	89	
<i>Senna didymobotrya</i>	Fabaceae	popcorn senna	46	268	
<i>Senna pendula</i>	Fabaceae	easter cassia	42	807	
<i>Sennna xfloribunda</i>	Fabaceae	buttercup bush	40	162	
<i>Sophora cassioides</i>	Fabaceae	Chilean pelu	42	807	
<i>Sophora howinsula</i>	Fabaceae	Lord Howe kowhai	PB5	89	
<i>Styphnolobium japonicum</i>	Fabaceae	Japanese pagoda tree	PB5	89	
<i>Trifolium ambiguum</i>	Fabaceae	Caucasian clover	40	162	
<i>Vicia benghalensis</i>	Fabaceae	purple vetch	PB5	85	
<i>Virgilia oroboides</i>	Fabaceae	Cape virgilia, keurboom	36	159	
<i>Castanea sativa</i>	Fagaceae	sweet chestnut	33	165	
<i>Fagus sylvatica</i>	Fagaceae	common beech	40	162	
<i>Nothofagus antarctica</i>	Fagaceae	Antarctic beech	37	636	
<i>Quercus acutissima</i>	Fagaceae	sawtooth oak	46	273	
<i>Quercus calophylla</i>	Fagaceae		PB5	85	
<i>Quercus palustris</i>	Fagaceae	pin oak	40	162	
<i>Corydalis cheilanthisfolia</i>	Fumariaceae	fernleaf corydalis	46	273	
<i>Corydalis ochroleuca</i>	Fumariaceae	pale or white corydalis	46	273	
<i>Dicentra scandens</i>	Fumariaceae	bleeding heart vine	46	273	
<i>Blackstonia perfoliata</i>	Gentianaceae	yellow wort	40	172	Also FNZ4: 720
<i>Erodium trifolium</i>	Geraniaceae	heronsbill	46	273	
<i>Geranium aequale</i>	Geraniaceae	cranesbill	40	163	
<i>Geranium endressii</i>	Geraniaceae	Endres cranesbill	46	273	
<i>Geranium gardneri</i>	Geraniaceae	rough cranesbill	46	259	Regarded as indigenous in FNZ4: 736, as <i>G. solanderi</i> 'coarse hairs'
<i>Geranium incanum</i>	Geraniaceae	carpet cranesbill	46	273	
<i>Geranium lucidum</i>	Geraniaceae	shining cranesbill	46	274	
<i>Geranium phaeum</i>	Geraniaceae	black widow	36	159	
<i>Geranium procurrans</i> x <i>G. psilostemon</i>	Geraniaceae		PB5	90	
<i>Geranium wallichianum</i>	Geraniaceae	Wallich cranesbill	46	274	
<i>Pelargonium grossularioides</i>	Geraniaceae	coconut storksbill	PB5	90	
<i>Pelargonium panduriforme</i>	Geraniaceae	oakleaf garden geranium	46	274	
<i>Pelargonium radens</i>	Geraniaceae	rasp-leaf pelargonium	46	274	
<i>Ginkgo biloba</i>	Ginkgoaceae	maidenhair tree	46	263	
<i>Gunnera manicata</i>	Gunneraceae	Brazilian giant rhubarb	PB5	90	
<i>Myriophyllum simulans</i>	Haloragaceae		33	166	Also 40: 168. Possibly = <i>M.</i> <i>variifolium</i> & maybe some is indigenous to NZ?

<i>Liquidamber styraciflua</i>	Hamamelidaceae	liquidamber	37	636	Also 40: 168
<i>Loropetalum chinense</i>	Hamamelidaceae	Chinese fringe-flower	PB5	90	
<i>Aesculus indica</i>	Hippocastanaceae	Indian horse chestnut	33	166	Cf. <i>A. hippocastanum</i> in FNZ4: 756
<i>Deutzia crenata</i>	Hydrangeaceae	deutzia	40	168	See FNZ4: 939, under F. Philadelphaceae
<i>Philadelphus mexicanus</i>	Hydrangeaceae	Mexican mock orange	36	156	Listed under F. Philadelphaceae
<i>Philadelphus ×cymosus</i>	Hydrangeaceae	mock orange	33	173	Cf. <i>P. intactus</i> ; listed under F. Philadelphaceae
<i>Wigandia caracasana</i>	Hydrophyllaceae	Caracas wigandia	40	168	See FNZ4: 758
<i>Crocus tommasinianus</i>	Iridaceae	early crocus	PB4	18	
<i>Diets grandiflora</i>	Iridaceae	fortnight lily, butterfly iris	PB4	17	
<i>Diets iridioides</i>	Iridaceae	fortnight lily, butterfly iris	PB4	23	
<i>Freesia laxa</i>	Iridaceae	red freesia	PB4	11	Also FNZ3: 62, as ζ entry, as <i>Lapeirousia laxa</i>
<i>Gladiolus carneus</i>	Iridaceae	gladiolus	PB4	12	
<i>Hesperantha cucullata</i>	Iridaceae	Bokkeveld evening lily	PB4	17	
<i>Iris innominata</i>	Iridaceae	Pacific iris	PB4	17	
<i>Iris unguicularis</i>	Iridaceae	Algerian iris	PB4	23	
<i>Iris xiphium</i>	Iridaceae	Spanish iris	PB4	17	
<i>Ixia paniculata</i>	Iridaceae		PB4	23	In FNZ3:131, as ζ entry
<i>Libertia chilensis</i>	Iridaceae		PB4	24	
<i>Melasmaerula graminea</i>	Iridaceae	fairy bells	PB4	24	
<i>Moraea huttonii</i>	Iridaceae	butterfly iris	PB4	17	
<i>Moraea polystachya</i>	Iridaceae	peacock iris	PB4	24	
<i>Romulea citrina</i>	Iridaceae		PB4	17	
<i>Sparaxis grandiflora</i>	Iridaceae	large harlequin flower	PB4	17	
<i>Watsonia aletroides</i>	Iridaceae	bugle lily	PB4	24	
<i>Watsonia fourcadei</i>	Iridaceae	mountain watsonia	PB4	18	
<i>Pterocarya ×rehderiana</i>	Juglandaceae	wing nut	37	636	
<i>Juncus</i> sp. (aff. <i>J. pallidus</i> , <i>J. sarophorus</i>)	Juncaceae	rush	PB4	18	
<i>Agastache foeniculum</i>	Lamiaceae	anise hyssop	42	807	
<i>Clerodendrum myricoides</i>	Lamiaceae	blue butterfly bush	42	807	Syn with <i>Rothea myricoides</i> . <i>Clerodendrum</i> is in F. Verbenaceae in FNZ4: 1272.
<i>Colquhounia coccinea</i> var. <i>vestita</i>	Lamiaceae	Himalayan mint shrub	42	807	
<i>Elsholtzia flava</i>	Lamiaceae	yellow Himalayan mint	42	807	
<i>Lamium confertum</i>	Lamiaceae	northern dead-nettle	33	166	Cf. <i>L. amplexicaule</i> , <i>L. hybridum</i> , <i>L. purpureum</i> in FNZ4: 772-773
<i>Lamium maculatum</i>	Lamiaceae	spotted dead nettle	36	161	Also FNZ4: 772; & 40: 168

<i>Lavandula angustifolia</i> subsp. <i>angustifolia</i>	Lamiaceae	English lavender	40	163	
<i>Leonotis nepetifolia</i>	Lamiaceae	lion's ear	33	167	
<i>Leonotis ocymifolia</i>	Lamiaceae	lion's tail	33	167	Also see 37: 640
<i>Leucocephalum canum</i>	Lamiaceae	hairy white-wand	PB5	90	
<i>Ocimum basilicum</i>	Lamiaceae	basil	33	167	
<i>Ocimum gratissimum</i>	Lamiaceae	African basil	PB5	90	
<i>Perilla frutescens</i>	Lamiaceae	perilla	PB5	90	
<i>Phlomis fruticosa</i>	Lamiaceae	Jerusalem sage	33	167	Cf. <i>P. russelliana</i> in FNZ4: 785
<i>Plectranthus argentatus</i>	Lamiaceae	silver plectranthus	46	274	
<i>Plectranthus behrii</i>	Lamiaceae		37	636	See <i>Plectranthus fruticosus</i>
<i>Plectranthus elegans</i>	Lamiaceae	spur flower	PB5	91	
<i>Plectranthus fruticosus</i>	Lamiaceae	forest spur flower	37	636	Syn. <i>P. behrii</i> (in 37: 636)
<i>Plectranthus ornatus</i>	Lamiaceae	dog bane	33	168	
<i>Plectranthus saccatus</i>	Lamiaceae	Stoep jacaranda	40	163	
<i>Prunella laciniata</i>	Lamiaceae	cut-leaved self-heal	36	161	Also FNZ4: 788
<i>Rosmarinus officinalis</i>	Lamiaceae	rosemary	37	636	
<i>Salvia azurea</i>	Lamiaceae	blue sage	33	168	
<i>Salvia confertiflora</i>	Lamiaceae	sabra spike sage	PB5	91	
<i>Salvia farinacea</i>	Lamiaceae	mealy sage	33	168	
<i>Salvia forskaehelei</i>	Lamiaceae	indigo woodland sage	PB5	91	
<i>Salvia glutinosa</i>	Lamiaceae	Jupiters or sticky sage	42	807	
<i>Salvia guaranitica</i>	Lamiaceae	anise sage	33	168	Misspelt as <i>S. guarantica</i> in 33:168
<i>Salvia involucrata</i>	Lamiaceae	rosy-leaf sage	46	274	
<i>Salvia officinalis</i>	Lamiaceae	sage	33	169	
<i>Salvia pseudococcinea</i>	Lamiaceae	blood sage	46	274	
<i>Salvia rutilans</i>	Lamiaceae	pineapple sage	37	636	
<i>Salvia sclarea</i>	Lamiaceae	clary	33	169	
<i>Salvia splendens</i>	Lamiaceae	scarlet sage	PB5	91	
<i>Salvia verticillata</i>	Lamiaceae	lilac sage	42	807	
<i>Satureja spicigera</i>	Lamiaceae	creeping savoury	PB5	92	
<i>Scutellaria indica</i> var. <i>parvifolia</i>	Lamiaceae		PB5	92	
<i>Scutellaria minor</i>	Lamiaceae	skull-cap	40	172	Also FNZ4: 793
<i>Tetradenia riparia</i>	Lamiaceae	misty plume bush	40	163	
<i>Teucrium fruticans</i>	Lamiaceae	silver germander	PB5	92	
<i>Thymus mastichina</i>	Lamiaceae	mastic thyme	PB5	92	
<i>Thymus pulegioides</i>	Lamiaceae	creeping thyme	40	172	Also FNZ4: 798
<i>Westringia rosmariniformis</i>	Lamiaceae	coastal rosemary	36	160	
<i>Cinnamomum camphora</i>	Lauraceae	camphor tree	PB5	56	Also 40: 163; 42: 811
<i>Cinnamomum loureiroi</i>	Lauraceae	Saigon cinnamon	46	274	
<i>Cryptocarya obovata</i>	Lauraceae	white walnut	36	160	
<i>Persea americana</i>	Lauraceae	avocado	33	169	
<i>Pinguicula grandiflora</i>	Lentibulariaceae	butterwort	PB5	92	
<i>Utricularia arenaria</i>	Lentibulariaceae	bladderwort	42	808	
<i>Utricularia geminiscapa</i>	Lentibulariaceae	bladderwort	42	799	
<i>Utricularia sandersonii</i>	Lentibulariaceae	bladderwort	42	807	
<i>Utricularia livida</i>	Lentibulariaceae	bladderwort	42	800	
<i>Cardiocrinum giganteum</i>	Liliaceae	giant Himalayan lily	PB4	24	Also FNZ3: 47, as ζ entry

<i>Lilium ×hollandicum</i>	Liliaceae		PB4	18	
<i>Lilium longiflorum</i>	Liliaceae	Easter lily	PB4	24	
<i>Limnanthes douglasii</i>	Limnanthaceae	fried eggs	37	640	Also FNZ4: 806; 42: 811
<i>Radiola linoides</i>	Linaceae	allseed	PB5	92	
<i>Reinwardtia indica</i>	Linaceae	yellow flax	46	274	
<i>Bonnaya ciliata</i>	Linderniaceae	fringed false pimpernel	PB5	92	Anon (2008)
<i>Torenia crustacea</i>	Linderniaceae	Malaysia false pimpernel	PB5	93	Anon (2008)
(species)	Lobeliaceae		42	805	Species moved to F. Campanulaceae
<i>Cuphea ignea</i>	Lythraceae	cigar flower	40	163	
<i>Heimia salicifolia</i>	Lythraceae	sinicuichi	46	275	
<i>Punica granatum</i>	Lythraceae	pomegranate	33	170	
<i>Rotala rotundifolia</i>	Lythraceae	rotala	PB5	93	
<i>Liriodendron tulipifera</i>	Magnoliaceae	tulip tree	33	170	Vol.33 record planted; see 36:160
<i>Magnolia doltsopa</i>	Magnoliaceae	sweet michelia	42	808	Published as <i>Michelia doltsopa</i> q.v.
<i>Magnolia grandiflora</i>	Magnoliaceae	southern magnolia	42	808	
<i>Magnolia sieboldii</i>	Magnoliaceae	red lantern magnolia	40	163	
<i>Magnolia stellata</i>	Magnoliaceae	star magnolia	42	808	
<i>Magnolia ×soulangeana</i>	Magnoliaceae	saucer magnolia	PB5	93	
<i>Michelia doltsopa</i>	Magnoliaceae	sweet michelia	42	808	Now <i>Magnolia doltsopa</i>
<i>Abutilon indicum</i>	Malvaceae	Indian mallow	PB5	93	
<i>Abutilon megapotamicum</i>	Malvaceae	Big River abutilon, trailing abutilon	36	156	Also see 37: 640
<i>Alcea rosea</i>	Malvaceae	hollyhock	40	172	Also FNZ4: 825
<i>Althaea officinalis</i>	Malvaceae	marsh mallow	PB5	93	
<i>Anisodontia capensis</i>	Malvaceae	African mallow	46	275	Also PB5:93
<i>Brachychiton acerifolius</i>	Malvaceae	flame tree	PB5	93	
<i>Dombeya torrida</i>	Malvaceae		46	275	
<i>Hibiscus mutabilis</i>	Malvaceae	cotton rose	36	160	
<i>Hibiscus syriacus</i>	Malvaceae	rose of Sharon	37	636	Also FNZ4: 825
<i>Hibiscus tridactylites</i>	Malvaceae	bladder ketmia	PB5	94	
<i>Lagunaria patersonia</i> subsp. <i>patersonia</i>	Malvaceae	Norfolk I hibiscus	36	160	Also 40: 169; 42: 800
<i>Lamium maculatum</i>	Malvaceae	spotted dead nettle	42	799	Also FNZ4: 772; & 40: 168
<i>Malope trifida</i>	Malvaceae	mallow-wort	40	163	
<i>Melochia corchorifolia</i>	Malvaceae	chocolate weed	PB5	95	
<i>Modiolastrum lateritium</i>	Malvaceae	trailing mallow	PB5	95	
<i>Heterocentron elegans</i>	Melastomaceae	Spanish shawl	36	162	Also FNZ4: 838
<i>Heterocentron subtripplinervium</i>	Melastomaceae	pearl flower	42	808	
<i>Tibouchina paratropica</i>	Melastomaceae	princess flower	40	163	
<i>Melia azedarach</i>	Meliaceae	bead tree, Persian lilac	36	160	Also see 37: 640
<i>Toona sinensis</i>	Meliaceae	Chinese toon	PB5	95	
<i>Mollugo nudicaulis</i>	Molluginaceae	daisy-leaved chickweed	PB5	95	
<i>Mollugo oppositifolia</i>	Molluginaceae	slender carpetweed	PB5	96	
<i>Broussonetia papyrifera</i>	Moraceae	paper mulberry	46	275	
<i>Fatoua pilosa</i>	Moraceae	mulberryweed	46	276	

<i>Ficus macrophylla</i>	Moraceae	Moreton Bay fig	36	160	
<i>Ficus religiosa</i>	Moraceae	sacred fig	PB5	96	
<i>Muntingia calabura</i>	Muntingiaceae	Jamaica cherry	PB5	96	
<i>Musa sikkimensis</i>	Musaceae	Darjeeling banana	PB4	18	
<i>Eremophila debilis</i>	Myoporaceae	winter apple	33	170	Also named <i>Myoporum debile</i>
<i>Myoporum debile</i>	Myoporaceae	winter apple	33	171	See <i>Eremophila debilis</i>
<i>Ardisia crenata</i>	Myrsinaceae	coral berry	40	163	
<i>Lysimachia monelli</i>	Myrsinaceae	blue pimpernel	PB5		
<i>Acca sellowiana</i>	Myrtaceae	feijoa	46	276	
<i>Agonis flexuosa</i>	Myrtaceae	peppermint tree	PB5	57	Also 40: 164
<i>Agonis juniperina</i> (see Taxandria)	Myrtaceae	juniper myrtle	40	169	Also FNZ4: 849
<i>Angophora costata</i>	Myrtaceae	smooth-barked apple	40	169	Also FNZ4: 850
<i>Astartia fascicularis</i>	Myrtaceae	false baeckea	46	276	
<i>Eucalyptus calophylla</i>	Myrtaceae	marri	37	642	Corrects error of <i>E. ficifolia</i> in 36: 160
<i>Eucalyptus cinerea</i>	Myrtaceae	silver dollar gum	33	171	
<i>Eucalyptus crenulata</i>	Myrtaceae	Buxton gum	PB5	96	
<i>Eucalyptus dendromorpha</i>	Myrtaceae	budawang ash	42	808	
<i>Eucalyptus eugenioides</i>	Myrtaceae	thin-leaved stringybark	33	171	
<i>Eucalyptus fastigata</i>	Myrtaceae	cut-tail	37	632	Also FNZ4: 855
<i>Eucalyptus ficifolia</i>	Myrtaceae	red flowering gum	36	160	Error: see 37: 642; but accepted in 40: 164
<i>Eucalyptus globulus</i> subsp. <i>maidenii</i>	Myrtaceae	Maiden's gum	46	276	
<i>Eucalyptus grandis</i>	Myrtaceae	flooded gum	33	171	
<i>Eucalyptus leucoxylon</i>	Myrtaceae	white ironbark	40	164	
<i>Eucalyptus macarthurii</i>	Myrtaceae	Camden woollybutt	40	169	Also FNZ4: 855
<i>Eucalyptus muelleriana</i>	Myrtaceae	yellow stringybark	40	164	
<i>Eucalyptus nicholii</i>	Myrtaceae	narrow-leaved black peppermint	40	164	
<i>Eucalyptus nitens</i>	Myrtaceae	shining gum	33	171	Also 40: 172
<i>Eucalyptus ovata</i>	Myrtaceae	swamp gum	40	172	Also FNZ4: 860
<i>Eucalyptus punctata</i>	Myrtaceae	grey gum	40	164	
<i>Eucalyptus robusta</i>	Myrtaceae	swamp mahogany	33	172	
<i>Eucalyptus sideroxylon</i>	Myrtaceae	red ironbark	40	164	
<i>Leptospermum minutifolium</i>	Myrtaceae	small-leaved tea- tree	46	276	
<i>Leptospermum morrisonii</i>	Myrtaceae	Morrison's tea-tree	PB5	96	
<i>Leptospermum petersonii</i>	Myrtaceae	lemon-scented tea- tree	42	808	
<i>Leptospermum polygalifolium</i> subsp. <i>polygalifolium</i>	Myrtaceae	tantoon, jellybush	46	276	
<i>Leptospermum spectabile</i>	Myrtaceae	Colo River tea-tree	46	276	
<i>Leptospermum variabile</i>	Myrtaceae		46	276	
<i>Lophostemon confertus</i>	Myrtaceae	brush box	PB5	96	
<i>Luma apiculata</i>	Myrtaceae	Chilean myrtle	42	809	
<i>Melaleuca armillaris</i> subsp. <i>armillaris</i>	Myrtaceae	bracelet honey myrtle	PB5	59	Also 40: 164
<i>Melaleuca citrina</i>	Myrtaceae	crimson bottlebrush	PB5	97	

<i>Melaleuca diosmifolia</i>	Myrtaceae	diosma-leaved honey myrtle	PB5	97	
<i>Melaleuca ericifolia</i>	Myrtaceae	swamp paperbark	46	276	
<i>Melaleuca hypericifolia</i>	Myrtaceae	hillock bush	42	809	
<i>Melaleuca leucadendon</i>	Myrtaceae	long-leafed paperbark	46	276	
<i>Melaleuca styphelioides</i>	Myrtaceae	prickly-leaved paperbark	33	172	Cf. <i>M. hypericifolia</i>
<i>Metrosideros collina</i>	Myrtaceae	Tahitian pohutukawa	46	277	
<i>Syncarpia glomulifera</i>	Myrtaceae	turpentine tree	36	160	
<i>Syzygium floribundum</i>	Myrtaceae	weeping lilly-pilly	40	164	As <i>Waterhousea floribunda</i>
<i>Syzygium jambos</i>	Myrtaceae	rose apple	PB5	98	
<i>Syzygium paniculatum</i>	Myrtaceae	lilly pilly	37	636	
<i>Taxandria juniperina</i>	Myrtaceae	juniper myrtle	40	169	Also FNZ4: 849 (as <i>Agonis juniperina</i>)
<i>Tristaniaopsis laurina</i>	Myrtaceae	watergum	PB5	59	Also 40: 164; 42: 189
<i>Nymphaea capensis</i>	Nymphaeaceae	water lily	40	164	
<i>Ochna serrulata</i>	Ochnaceae	Mickey Mouse bush, carnival bush	37	632	
<i>Fraxinus griffithii</i>	Oleaceae	Himalayan ash	PB5	98	
<i>Fraxinus ornus</i>	Oleaceae	manna ash	33	172	Also see 37: 641
<i>Olea europaea</i> subsp. <i>europaea</i>	Oleaceae	European olive	37	633	
<i>Olea europaea</i> subsp. <i>cuspidata</i>	Oleaceae	African olive	37	642	Called <i>O. europaea</i> ssp. <i>africana</i> in FNZ4: 881
<i>Osmanthus heterophyllus</i>	Oleaceae	holly olive	42	809	
<i>Clarkia unguiculata</i>	Onagraceae	elegant clarkia	37	641	Also FNZ4 884
<i>Epilobium hirsutum</i>	Onagraceae	great willowherb	PB5	61	
<i>Fuchsia denticulata</i>	Onagraceae	toothed fuchsia	42	809	
<i>Fuchsia magellanica</i> × <i>F. lycioides</i>	Onagraceae		46	277	
<i>Fuchsia paniculata</i>	Onagraceae	shrubby fuchsia	36	160	Cult. as <i>F. arborea</i> / <i>F. arborescens</i> ; also 42: 812
<i>Ludwigia hyssopifolia</i>	Onagraceae	linear-leaf water primrose	PB5	98	Anon (2008)
<i>Ludwigia repens</i>	Onagraceae	water primrose	PB5	98	
<i>Oenothera drummondii</i>	Onagraceae	evening primrose	40	164	
<i>Oenothera indecora</i>	Onagraceae		33	172	Cf. <i>O. stricta</i> in FNZ4: 912 (also see <i>O. parviflora</i>)
<i>Oenothera lindheimeri</i>	Onagraceae	gaura	PB5	98	
<i>Oenothera parviflora</i>	Onagraceae	small-flowered evening primrose	33	173	Cf. <i>O. biennis</i> in FNZ4: 910 (also see <i>O. indecora</i>)
<i>Oxalis brasiliensis</i>	Oxalidaceae	Brazilian woodsorrel	46	277	
<i>Oxalis chnoodes</i>	Oxalidaceae		46	260	
<i>Oxalis dillenii</i>	Oxalidaceae	common yellow woodsorrel	46	261	In key to <i>Oxalis</i> in 46; 261; not in FNZ4
<i>Oxalis megalorrhiza</i>	Oxalidaceae	bonsai oxalis	46	277	
<i>Oxalis tetraphylla</i>	Oxalidaceae	lucky clover	46	277	
<i>Oxalis thompsoniae</i>	Oxalidaceae	fluffy-fruit woodsorrel	33	173	Cf. <i>O. corniculata</i> in FNZ4: 917; treated as indigenous in 45:261
<i>Bocconia frutescens</i>	Papaveraceae	plume poppy	PB5	98	plume poppy

<i>Eomecon chionantha</i>	Papaveraceae	snow poppy, dawn poppy	40	164	
<i>Macleaya cordata</i>	Papaveraceae	5-seeded plume poppy	PB5	99	
<i>Passiflora antioquiensis</i>	Passifloraceae	vanilla banana passionfruit	40	169	Also FNZ4 935
<i>Passiflora apetala</i>	Passifloraceae	bat-wing passionflower	PB5	99	
<i>Passiflora foetida</i>	Passifloraceae	stinking passionflower	PB5	99	
<i>Passiflora tarminiana</i>	Passifloraceae	banana passionfruit	42	813	
<i>Passiflora tripartita</i> var. <i>azuayensis</i>	Passifloraceae	banana passionfruit	42	813	
<i>Passiflora tripartita</i> var. <i>mollissima</i>	Passifloraceae	banana passionfruit	42	813	Previously named as <i>P. mollissima</i>
<i>Paulownia elongata</i>	Paulowniaceae	elongate paulownia	PB5	99	
<i>Paulownia fortunei</i>	Paulowniaceae	dragon tree	PB5	99	
(species)	Philadelphaceae				See F. Hydrangeaceae
<i>Mazus reptans</i>	Phrymaceae	creeping mazus	46	277	
<i>Mimulus luteus</i>	Phrymaceae	monkey musk	37	641	Also FNZ4: 1197; was listed in F. Scrophulariaceae
<i>Phyllanthus debilis</i>	Phyllanthaceae	niruri	PB5	100	Anon (2008)
<i>Peperomia griseoargentea</i>	Piperaceae	ivy peperomia	PB5	199	
<i>Abies grandis</i>	Pinaceae	giant fir	33	154	Also see 37: 638
<i>Abies nordmanniana</i>	Pinaceae	Caucasian fir	40	170	Also FNZ4: 47
<i>Abies pinsapo</i>	Pinaceae	Spanish fir	PB5	67	
<i>Cedrus deodar</i>	Pinaceae	Himalayan cedar	46	263	
<i>Larix kaempferi</i>	Pinaceae	Japanese larch	40	160	
<i>Pinus canariensis</i>	Pinaceae	Canary Island pine	40	160	
<i>Pinus elliotii</i> var. <i>elliottii</i>	Pinaceae	slash pine	PB5	67	
<i>Pinus pinea</i>	Pinaceae	stone pine	46	263	Also FNZ4: 57
<i>Tsuga heterophylla</i>	Pinaceae	western hemlock spruce	42	803	
<i>Hymenosporum flavum</i>	Pittosporaceae	Australian frangipani	42	809	
<i>Pittosporum undulatum</i>	Pittosporaceae	sweet pittosporum	40	159	
<i>Callitriche peploides</i> var. <i>peploides</i>	Plantaginaceae		PB5	100	
<i>Chaenorhinum organifolium</i>	Plantaginaceae	dwarf snapdragon	40	170	Also FNZ4: 1178 (species misspelt in both refs); was listed in F. Scrophulariaceae
<i>Limosella curdieana</i>	Plantaginaceae	large mudwort	42	809	Previously regarded as indigenous
<i>Linaria maroccana</i>	Plantaginaceae	Moroccan toadflax	40	172	Also FNZ4: 1193; was listed in F. Scrophulariaceae
<i>Linaria pelisseriana</i>	Plantaginaceae	Pelisser's flax, Jersey toadflax	37	638	Previously listed in F. Scrophulariaceae
<i>Maurandya barclaiana</i>	Plantaginaceae	angel's trumpet, Mexican viper	33	178	Also see 37: 64; was listed in F. Scrophulariaceae
<i>Penstemon cobaea</i> × <i>P. hartwegii</i>	Plantaginaceae	penstemon	37	638	Was in F. Scrophulariaceae

<i>Veronica catenata</i>	Plantaginaceae	pink water speedwell	40	172	Also FNZ4: 1209; was listed in F. Scrophulariaceae
<i>Veronica javanica</i>	Plantaginaceae	Javan speedwell	PB5	62	Also 46:277
<i>Veronica peregrina</i> var. <i>peregrina</i>	Plantaginaceae	neckweed, purslane speedwell	42	809	
<i>Platanus orientalis</i>	Platanaceae	Oriental plane	PB5	100	
<i>Platanus xacerifolia</i>	Platanaceae	London plane	40	169	Also FNZ4: 955; 46: 261
<i>Armeria alliacea</i>	Plumbaginaceae	thrift, sea pink	36	160	Cultivated as <i>A. arenaria</i>
<i>Limonium companyonis</i>	Plumbaginaceae	statice	37	637	
<i>Limonium sinuatum</i>	Plumbaginaceae	statice	42	812	Also see FNZ4: 957
<i>Plumbago auriculata</i>	Plumbaginaceae	cape leadwort	40	165	
<i>Agrostis nebulosa</i>	Poaceae	cloud grass	PB4	25	
<i>Ampelodesmos mauritanicus</i>	Poaceae	stramma, Mauritanian grass	PB4	18	
<i>Chimonobambusa marmorea</i>	Poaceae	marble bamboo	PB4	26	Also FNZ5: 24, as ζ entry
<i>Chusquea galeottiana</i>	Poaceae	Mexican climbing bamboo	PB4	18	
<i>Chusquea gigantea</i>	Poaceae	Guadua bamboo	PB4	19	
<i>Festuca trachyphylla</i>	Poaceae	sheep fescue, hard fescue	PB4	26	
<i>Phragmites karka</i>	Poaceae	reed grass	PB4	13	
<i>Phyllostachys heterocyclus</i>	Poaceae		PB4	19	Also known as <i>Phyllostachys edulis</i>
<i>Zea mays</i>	Poaceae	maize, corn	PB4	26	Also FNZ5: 614, as ζ entry
<i>Afrocarpus falcatus</i>	Podocarpaceae	yellowwood	PB5	67	
<i>Podocarpus elatus</i>	Podocarpaceae	brown pine	PB5	67	
<i>Podocarpus elongatus</i>	Podocarpaceae	Breede R. yellowwood	PB5	67	
<i>Podocarpus macrophyllus</i> var. <i>macrophyllus</i>	Podocarpaceae	Japanese yew pine	PB5	67	
<i>Gilia capitata</i>	Polemoniaceae	Queen Anne's thimbles	40	165	
<i>Antenoron filiforme</i>	Polygonaceae	jumpseed	36	162	Also FNZ4: 966; & 40: 169
<i>Fagopyrum dibotrys</i>	Polygonaceae	perennial buckwheat	33	174	Also called <i>Polygonum cymosum</i> , <i>Fagopyrum cymosum</i>
<i>Reynoutria (Fallopia) multiflora</i>		tuber fleeceflower	PB5	100	(misspelt as 'Reyoutira' in PB5)
<i>Oxyria digyna</i>	Polygonaceae	mountain sorrel	40	165	
<i>Persicaria chinensis</i>	Polygonaceae	Chinese knotweed	PB5	63	
<i>Persicaria odorata</i>	Polygonaceae	Vietnamese mint	46	278	
<i>Polygonum campanulatum</i>	Polygonaceae	lesser knotweed	40	165	
<i>Polygonum molle</i>	Polygonaceae		33	174	Cf. <i>P. polystachyum</i> in FNZ4: 975
<i>Polygonum perfoliatum</i>	Polygonaceae	Asiatic tearthumb	40	165	
<i>Phlebodium aureum</i>	Polypodiaceae	golden polypody	PB5	65	
<i>Niphidium crassifolium</i>	Polypodiaceae	graceful fern	46	263	
<i>Platyterium bifurcatum</i>	Polypodiaceae	staghorn fern	42	803	
<i>Claytonia sibirica</i>	Portulacaceae	pink purslane	42	810	

<i>Portulaca grandiflora</i>	Portulacaceae	moss rose, sun plant	36	162	Also FNZ4: 991
<i>Portulaca pilosa</i> subsp. <i>pilosa</i>	Portulacaceae	pink purslane	PB5	100	
<i>Talinum paniculatum</i>	Portulacaceae	jewels of Opar	33	174	Also 40: 169
<i>Cyclamen persicum</i>	Primulaceae	florist's cyclamen	40	165	
<i>Lysimachia mauritiana</i>	Primulaceae	spoonleaf yellow loosestrife	46	278	
<i>Lysimachia monelli</i>	Primulaceae	blue pimpernel	PB5	101	
<i>Lysimachia vulgaris</i>	Primulaceae	yellow loosestrife	40	172	Also FNZ4: 995
<i>Primula malacoides</i>	Primulaceae	fairy primula	33	174	
<i>Primula prolifera</i>	Primulaceae	candelabra primula	42	810	Previously known as <i>P. helodoxa</i>
<i>Primula vulgaris</i>	Primulaceae	primrose	33	174	
<i>Samolus valerandi</i>	Primulaceae	seaside brookweed	40	165	
<i>Banksia aemula</i>	Proteaceae	banksia	40	165	
<i>Banksia baxteri</i>	Proteaceae	bird's nest banksia	PB5	101	
<i>Banksia ericifolia</i> var. <i>ericifolia</i>	Proteaceae	heath banksia	40	165	
<i>Banksia integrifolia</i>	Proteaceae	coast banksia	33	175	
<i>Banksia prionotes</i>	Proteaceae		PB5	101	
<i>Banksia serrata</i>	Proteaceae	old man banksia	42	810	
<i>Banksia spinulosa</i> var. <i>spinulosa</i>	Proteaceae	hair pin banksia	PB5	101	
<i>Embothrium coccineum</i>	Proteaceae	Chilean fire bush	33	175	Also 40: 169; 42: 801
<i>Grevillea alpina</i> × <i>G. rosmarinifolia</i>	Proteaceae		46	278	
<i>Grevillea aspleniifolia</i>	Proteaceae	fern-leaf grevillea	33	175	Cf. <i>G. robusta</i> in FNZ4: 997
<i>Grevillea juniperina</i>	Proteaceae	juniper leaf grevillea	PB5	102	
<i>Grevillea rosmarinifolia</i>	Proteaceae	rosemary grevillea	PB5	102	
<i>Hakea eriantha</i>	Proteaceae	needle bush	40	165	
<i>Leucadendron argenteum</i>	Proteaceae	silver tree	42	812	Also FNZ4: 996
<i>Lomatia ilicifolia</i>	Proteaceae	holly lomatia	42	810	
<i>Macadamia integrifolia</i>	Proteaceae	smooth-leaved Queensland nut	40	165	
<i>Protea subvestita</i>	Proteaceae	protea	40	165	
<i>Stenocarpus salignus</i>	Proteaceae	scrub beefwood	42	810	
<i>Stenocarpus sinuatus</i>	Proteaceae	firewheel tree	37	637	
<i>Telopea speciosissima</i>	Proteaceae	waratah	46	278	
<i>Cheilanthes lendigera</i>	Pteridaceae		42	803	
<i>Pellaea viridis</i>	Pteridaceae	green cliff-brake	33	152	
<i>Pteris argyrea</i>	Pteridaceae	silver brake fern	46	263	
<i>Pteris dentata</i>	Pteridaceae	toothed brake	37	634	
<i>Pteris pacifica</i>	Pteridaceae	brake	40	160	
<i>Pteris multifida</i>	Pteridaceae	spider brake	PB5	65	
<i>Pteris parkeri</i>	Pteridaceae	silver ribbon fern	PB5	65	
<i>Pteris vittata</i>	Pteridaceae	ladder brake	PB5	47	Also 37: 634
<i>Quillaja saponaria</i>	Quillajaceae	soap bark tree	42	810	
<i>Anemone coronaria</i>	Ranunculaceae	anemone	37	637	
<i>Caltha palustris</i>	Ranunculaceae	marsh marigold	40	165	
<i>Clematis armandii</i>	Ranunculaceae	evergreen clematis	46	278	
<i>Clematis orientalis</i>	Ranunculaceae		33	176	See <i>C. tibetana</i> subsp. <i>vernayi</i>
<i>Clematis tangutica</i>	Ranunculaceae		33	176	See <i>C. tibetana</i> subsp. <i>vernayi</i>

<i>Clematis tibetana</i> subsp. <i>vernayi</i>	Ranunculaceae	Oriental clematis	33	176	Correct name for most earlier NZ records of <i>C. orientalis</i> , <i>C. tangutica</i>
<i>Delphinium staphisagria</i>	Ranunculaceae	lice-bane	PB5	102	
<i>Delphinium</i> cf. <i>elatum</i> hybrid	Ranunculaceae	delphinium	37	637	
<i>Delphinium</i> sp (a)	Ranunculaceae	delphinium	37	637	
<i>Ficaria verna</i> subsp. <i>calthifolia</i>	Ranunculaceae	lesser celandine	33	176	(As <i>Ranunculus ficaria</i>)
<i>Helleborus foetidus</i>	Ranunculaceae		46	278	
<i>Helleborus orientalis</i>	Ranunculaceae	winter rose	42	810	
<i>Ranunculus ficaria</i> subsp. <i>calthifolius</i>	Ranunculaceae	lesser celandine	33	176	Now <i>Ficaria verna</i> q.v.
<i>Thalictrum minus</i>	Ranunculaceae	lesser meadow-rue	40	170	Also FNZ4: 1003
<i>Colletia paradoxa</i>	Rhamnaceae	anchor plant	PB5	103	
<i>Phyllica gnidioides</i>	Rhamnaceae	pink phyllica	46	278	
<i>Phyllica pubescens</i>	Rhamnaceae	flannel flower	PB5	103	
<i>Alchemilla mollis</i>	Rosaceae	lady's mantle	46	278	
<i>Amelanchier lamarckii</i>	Rosaceae	june berry, service berry	36	162	Also FNZ4: 1052; 37: 641
<i>Cotoneaster adpressus</i>	Rosaceae	creeping cotoneaster	40	166	
<i>Cotoneaster bullatus</i>	Rosaceae	hollyberry	G14		ζ record in FNZ4:1070;
<i>Cotoneaster conspicuus</i>	Rosaceae	Tibetan cotoneaster	36	157	
<i>Cotoneaster dammeri</i>	Rosaceae	bearberry cotoneaster	G14		
<i>Cotoneaster divaricatus</i>	Rosaceae	spreading cotoneaster	46	278	
<i>Cotoneaster</i> cf. <i>monopyrenus</i>	Rosaceae		37	637	
<i>Cotoneaster frigidus</i>	Rosaceae		33	176	Cf. <i>C. horizontalis</i>
<i>Cotoneaster hebephyllus</i>	Rosaceae		G14		
<i>Cotoneaster horizontalis</i>	Rosaceae	rockspray cotoneaster	33	176	Also see 36:157; G14; 2021 work shows that NZ plants may be <i>C. hjelmquistii</i>
<i>Cotoneaster integrifolius</i>	Rosaceae	entire-leafed cotoneaster	G14		
<i>Cotoneaster marquandii</i>	Rosaceae		G14		
<i>Cotoneaster perpusillus</i>	Rosaceae	rock cotoneaster	G14		2021 work shows NZ plants may be <i>C. horizontalis</i>
<i>Cotoneaster pannosus</i>	Rosaceae	silverleaf cotoneaster	37	641	Also FNZ4: 1070; 40: 170; 42: 801
<i>Cotoneaster ×suecicus</i>	Rosaceae		G14		
<i>Cotoneaster ×watererii</i>	Rosaceae		42	810	<i>C. frigidus</i> x <i>salicifolius</i> in G14
<i>Filipendula rubra</i>	Rosaceae	meadowsweet	40	166	
<i>Hagenia abyssinica</i>	Rosaceae	African redwood, kosso, kousso	37	637	
<i>Kerria japonica</i>	Rosaceae	Japanese kerria	33	176	
<i>Malus sieboldii</i>	Rosaceae	Toringo crabapple	PB5	103	
<i>Malus ×atrosanguinea</i>	Rosaceae	crab apple	46	279	
<i>Photinia davidsoniae</i>	Rosaceae	choke berry	33	177	
<i>Photinia glabra</i>	Rosaceae	Japanese photinia	33	177	
<i>Photinia serrulata</i>	Rosaceae	Chinese hawthorn	33	177	

<i>Potentilla nepalensis</i>	Rosaceae	Nepal cinquefoil	46	279	
<i>Prunus armeniaca</i>	Rosaceae	apricot	37	641	Also FNZ4: 1091
<i>Prunus dulcis</i>	Rosaceae	almond	46	279	
<i>Prunus spinosa</i>	Rosaceae	blackthorn (fruit is called sloe)	37	637	Cf. FNZ4: 1290
<i>Raphiolepis indica</i>	Rosaceae	Indian hawthorn	46	279	
<i>Rosa laevigata</i>	Rosaceae	Cherokee rose	PB5	103	
<i>Rosa roxburghii</i>	Rosaceae	chestnut rose	33	177	
<i>Rosa tomentosa</i>	Rosaceae	harsh downy-rose	37	641	Also FNZ4 1107
<i>Rubus amplificatus</i>	Rosaceae		36	161	
<i>Rubus caesius</i>	Rosaceae	dew berry	40	170	Also FNZ4 1124
<i>Rubus ellipticus</i> var. <i>obcordatus</i>	Rosaceae	Himalan wineberry	PB5	103	
<i>Rubus pentalobus</i>	Rosaceae	cloudberry	PB5	103	
<i>Rubus ursinus</i>	Rosaceae	boysenberry	PB5	103	Probable error in PB5 - based on hybrid specimens
<i>Sorbus ×latifolia</i>	Rosaceae	Fontainbleau service tree	33	177	Cf. <i>S. aucuparia</i> in FNZ4: 1139
<i>Spiraea billiardii</i>	Rosaceae		40	170	Also FNZ4 1140
<i>Stephanandra tanakae</i>	Rosaceae	Tanaka's stephanandra	42	810	
<i>Stransvaesia davidiana</i>	Rosaceae	Chinese photinia	40	170	Also FNZ4 1053
<i>Alberta magna</i>	Rubiaceae	Natal flame bush	PB5	104	
<i>Asperula orientalis</i>	Rubiaceae	woodruff	40	166	
<i>Luculia grandifolia</i>	Rubiaceae	luculia	PB5	104	
<i>Oldenlandia corymbosa</i>	Rubiaceae	flat-top mille graines	PB5	105	Anon (2008)
<i>Richardia brasiliensis</i>	Rubiaceae	tropical Mexican clover	PB5	105	Anon (2008)
<i>Spermacoce assurgens</i>	Rubiaceae		PB5	105	Anon (2008)
<i>Choisya ternata</i>	Rutaceae	Mexican orange blossom	PB5	106	
<i>Citrus limon</i>	Rutaceae	lemon	33	178	Also 42: 812; FNZ4: 178
<i>Citrus reticulata</i>	Rutaceae	mandarin	46	279	
<i>Coleonema pulchellum</i>	Rutaceae	diosma; breath of heaven	36	161	Also 42: 812. Published as <i>C. pulchrum</i>
<i>Correa alba</i>	Rutaceae	white correa	40	166	
<i>Ptelea trifoliata</i> var. <i>baldwinii</i>	Rutaceae	hop tree	46	279	
<i>Zanthoxylum simulans</i>	Rutaceae	Szechuan pepper, Chinese pepper	42	810	
<i>Dovyalis hebecarpa</i>	Salicaceae	Ceylon gooseberry	40	162	In NZJBot under F. Flacourtiaceae
<i>Oncoba spinosa</i>	Salicaceae	snuff-box tree	46	279	
<i>Salix acutifolia</i>	Salicaceae	sharp-lef willow	GJ19		
<i>Salix atrocinerea</i>	Salicaceae	grey willow	GJ19		<i>S. cinerea</i> var. <i>oleifolia</i>
<i>Salix myricoides</i>	Salicaceae	bayberry willow	GJ19		<i>S. glaucophylloides</i> in FNZ4:1170
<i>Salix pentandra</i>	Salicaceae	bay willow	GJ19		
<i>Salix ×fragilis</i>	Salicaceae	crack willow	GJ19		<i>S. alba</i> × <i>S. euxina</i>
<i>Salix ×pendulina</i> f. <i>salamonii</i>	Salicaceae	weeping willow (in NZ)	GJ19		<i>S. alba</i> var. <i>vitellina</i> ; <i>S. ×chrysocoma</i> in FNZ4
<i>Salix ×pontederana</i>	Salicaceae		42	810	
<i>Salix ×smithiana</i>	Salicaceae	silky-leafed osier	GJ19		

<i>Acer rubrum</i>	Sapindaceae	red maple	PB5	106	
<i>Cardiospermum grandiflorum</i>	Sapindaceae	heartseed	40	166	
<i>Litchi chinensis</i>	Sapindaceae		46	280	
<i>Sarracenia alata</i>	Sarraceniaceae	pitcher plant	42	811	
<i>Sarracenia flava</i>	Sarraceniaceae	yellow huntsman's horn	37	637	Also 42: 812
<i>Sarracenia leucophylla</i>	Sarraceniaceae	spotted pitcher	46	280	
<i>Sarracenia purpurea</i> var. <i>venosa</i>	Sarraceniaceae	pitcher plant	42	811	
<i>Houttuynia cordata</i>	Saururaceae	chameleon houttuynia	46	280	
<i>Saururus cernuus</i>	Saururaceae	lizard's tail	46	280	
<i>Astilbe rivularis</i>	Saxifragaceae	river astilbe	PB5	106	
<i>Bergenia crassifolia</i>	Saxifragaceae	Siberian tea	PB5	106	
<i>Francoa sonchifolia</i>	Saxifragaceae	bridal wreath	46	280	
<i>Heuchera sanguinea</i>	Saxifragaceae	coral bells	37	637	
<i>Saxifraga exarata</i>	Saxifragaceae		46	280	
<i>Saxifraga stolonifera</i>	Saxifragaceae	mother of thousands	36	157	Cf. <i>S. sarmentosa</i>
<i>Saxifraga xurbium</i>	Saxifragaceae	London pride	46	280	
<i>Tellima grandiflora</i>	Saxifragaceae	fringe cup	46	280	
<i>Illicium anisatum</i>	Schisandraceae	Japanese star anise	PB5	106	
<i>Schisandra sphenanthera</i>	Schisandraceae	southern magnolia vine	46	280	
(species)	Scrophulariaceae	Species listed in F. Scrophulariaceae in the past but which do not appear in this family in this database, are listed here under F. Plantaginaceae, F. Phrymaceae, F. Stilbaceae			
<i>Alonsoa meridionalis</i>	Scrophulariaceae		42	811	Also known as <i>A. warscewiczii</i>
<i>Chaenostoma cordatum</i>	Scrophulariaceae		PB5	106	Also called <i>Sutera</i> & <i>Bacopa</i>
<i>Nemesia foetens</i>	Scrophulariaceae		PB5	107	
<i>Nemesia fruticans</i>	Scrophulariaceae	nemesia	PB5	107	
<i>Nemesia strumosa</i>	Scrophulariaceae	garden nemesia	33	178	Cf. <i>N. floribunda</i> in FNZ4: 1198
<i>Scoparia dulcis</i>	Scrophulariaceae	licorice weed	PB5	107	
<i>Scrophularia grandiflora</i>	Scrophulariaceae	figwort	PB5	107	
<i>Verbascum chaixii</i>	Scrophulariaceae	nettle-leaved mullein	PB5	107	
<i>Verbascum phlomoides</i>	Scrophulariaceae	orange mullein	42	811	
<i>Selaginella martensii</i>	Selaginellaceae	Marten's spike moss	37	642	Also FNZ4: 5; & 40:166
<i>Brugmansia xinsignis</i>	Solanaceae		46	280	
<i>Brunfelsia pauciflora</i>	Solanaceae	morning-noon-&-night	33	179	
<i>Capsicum annum</i>	Solanaceae	chilli pepper	36	161	Also 42: 812
<i>Capsicum pubescens</i>		rocoto	PB5	107	
<i>Cestrum xcultum</i>	Solanaceae		36	161	
<i>Lochroma australe</i>	Solanaceae		42	811	
<i>Lochroma gesnerioides</i>	Solanaceae		46	281	
<i>Lochroma grandiflorum</i>	Solanaceae		33	179	
<i>Nicotiana langsdorffii</i>	Solanaceae	Langsdorff's tobacco	42	811	
<i>Nicotiana xsanderae</i>	Solanaceae	flowering tobacco	40	170	Also FNZ4: 1230
<i>Nierembergia hippomanica</i>	Solanaceae	cup flower	PB5	108	
<i>Nierembergia repens</i>	Solanaceae	white cup; cup flower	33	179	Also 40: 170

<i>Physalis angulata</i>		cutleaf groundcherry	PB5	108	
<i>Schizanthus pinnatus</i>	Solanaceae	poor man's orchid	33	179	
<i>Solandra maxima</i>	Solanaceae	cup of gold, golden chalice	40	166	
<i>Solanum chacoense</i>	Solanaceae	wild potato	46	281	
<i>Solanum furcatum</i>	Solanaceae	South American black nightshade	42	802	Also FNZ4: 1242
<i>Solanum insanum</i>	Solanaceae	wild brinjal	PB5	108	
<i>Solanum maturecalvans</i>	Solanaceae		PB5	108	
<i>Solanum melongena</i>	Solanaceae	egg plant	40	166	
<i>Solanum muricatum</i>	Solanaceae	pepino	33	180	
<i>Solanum torvum</i>	Solanaceae	devil's fig	33	180	
<i>Solanum wendlandii</i>	Solanaceae	giant potato creeper	PB5	108	
<i>Vestia foetida</i>	Solanaceae	huevil	33	180	Cf. <i>V. lycioides</i> of NZ authors
<i>Staphylea emodi</i>	Staphyleaceae	bladdernut	46	281	
<i>Halleria lucida</i>	Stilbaceae	African honeysuckle	37	637	Previously listed in F. Scrophulariaceae
<i>Myricaria germanica</i>	Tamaricaceae	false tamarisk	37	633	Included in <i>Tamarix chinensis</i> in FNZ4: 1255
<i>Tamarix chinensis</i>	Tamaricaceae	tamarisk	37	634	Part of this in FNZ4: 1255 was <i>Myricaria germanica</i>
<i>Cunninghamia lanceolata</i>	Taxodiaceae	Chinese fir	33	154	
<i>Camellia grijsii</i>	Theaceae		46	281	
<i>Camellia forrestii</i>	Theaceae		46	281	
<i>Camellia japonica</i>	Theaceae	camellia	33	180	Also 40: 170
<i>Camellia reticulata</i>	Theaceae	Yunnan camellia	PB5	108	
<i>Camellia sasanqua</i>	Theaceae	camellia	PB5	108	
<i>Camellia taliensis</i>	Theaceae	gordonia	PB5	109	Long-known as <i>Gordonia yunnanensis</i>
<i>Polyspora axillaris</i>	Theaceae	fried egg plant	PB5	109	
<i>Pseudophegopteris aurita</i>	Thelypteridaceae		PB5	66	
<i>Daphne bholua</i>	Thymelaeaceae		46	281	
<i>Daphne oleoides</i>	Thymelaeaceae	olive-leaved daphne	37	638	
<i>Gnidia squarrosa</i>	Thymelaeaceae	yellow daphne	PB5	109	
<i>Celtis australis</i>	Ulmaceae	Mediterranean hackberry	36	157	
<i>Ulmus glabra</i>	Ulmaceae	wych elm, scotch elm	36	161	
<i>Debregeasia longifolia</i>	Urticaceae	orange wild rhea	PB5	109	
<i>Pilea nummulariifolia</i>	Urticaceae	creeping Charlie	46	281	
<i>Centranthus macrosiphon</i>	Valerianaceae	pretty Betsy	46	281	
<i>Callicarpa rubella</i>	Verbenaceae	beauty berry	40	166	
<i>Verbena tenuisecta</i>	Verbenaceae	verbena	40	166	
<i>Melicytus dentatus</i>	Violaceae	tree violet	46	282	
<i>Viola betonicifolia</i>	Violaceae	arrowhead violet	PB5	110	
<i>Viola sieboldii</i>	Violaceae		46	282	
<i>Viscum album</i>	Viscaceae	mistletoe	33	181	
<i>Parthenocissus tricuspidata</i>	Vitaceae	Boston ivy	37	641	Also FNZ4: 1286

BIOGRAPHY / BIBLIOGRAPHY

■ P. H. Metcalfe (1852–1913), doctor and plant collector on Norfolk Island

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Introduction

Forty years ago on Norfolk Island I went with local naturalist Owen Evans to look at what he said was "the remains of Dr Metcalfe's garden". Here, in the Castaway Hotel property in the central part of the island, I collected from several old *Erythrina caffra* trees and a small-leaved lilly-pilly, *Syzygium luehmannii* (unique on the island, I think).

Metcalfe grew native plants too, ferns especially, and made collections of them, but he published nothing and might have been completely forgotten as a plantsman except for a few mentions in turn-of-the-century plant-lists (Maiden 1904; Laing 1915). But today's conservation-minded islanders do remember him, for his improvement of the horticultural scene with *Pontederia crassipes*, the notorious water hyacinth. For some reason Maiden (1904: 763) did not think this was "likely to become a nuisance" but Coyne (2011: 158) writes that it can still be found on the island in open areas of fresh water and "is a particular problem on Kingston Common" (Note 1).

Metcalfe is better remembered as the island's long-serving (and only) doctor of his time. His dedication has been written about in a history of Norfolk's healthcare (Duke et al. 1994), a book that has provided most of the present article's biographical content.

Biography

Born in 1852 into a family of clergymen and doctors at Brockdish in England's Norfolk-Suffolk region, Peter Herbert Metcalfe obtained his medical degree and then, apparently at the suggestion of Bishop [J. R.?] Selwyn, made a visit to Norfolk Island "for the good of his health" (Duke et al. 1994: 40). He left England in 1876 and, after some short time travelling about, arrived on the island (Anon. 1898).

He was appointed Government Medical Officer there in 1879 and was to hold this position for 33 years. As well as caring for the islanders and its visitors he also looked after the pupils of the Melanesian Mission, supplementing the work here of less-qualified Mission attendants, among whom was the indefatigable Elizabeth Colenso (Swaby 1956; Note 2).

In Dec 1883 Metcalfe married Janet Ann Nobbs, a ceremony described at some (and sometimes facetious) length in a New Zealand *Herald* article (Anon. 1883). Probably a good proportion of the island attended, the bride being a granddaughter of patriarch George Hunn Nobbs (1799–1874), missionary on Pitcairn Island and chief promoter of the move to Norfolk in 1856. The Metcalfes were granted land on Taylor's Road in Burnt Pine and made a house and garden here. They called their property Waveney, after the river on which Metcalfe's village of Brockdish lies. Their youngest daughter Kathleen lived at Waveney until 1993.

Probably because of New South Wales Government regulations Dr Metcalfe was, after three decades of service, required to quit his position, and he did so in 1912 despite petitions otherwise from the islanders. Then, together with his wife and Kathleen, he went to Fanning Island in the Line Islands (now part of Kiribati) to relieve a colleague. He died there in 1913. His body was returned to Norfolk Island for burial in Kingston Cemetery. His life is commemorated by a plaque in All Saints Church at Kingston.

Collecting activities

In his earlier years on Norfolk Island Metcalfe collected plants, insects and fish (Riley 1885; Waite 1909) and perhaps bird eggs too (Montgomery 1893: v). With respect to plants he was a typical late-Victorian amateur in being particularly keen on ferns. He and his wife grew native ferns and exhibited them in the local shows (Anon. 1883), and Laing (1914: 9) mentions "The late Dr Metcalf [*sic*], whose knowledge of the ferns of Norfolk was unique".

In the number and range of his specimens Metcalfe is not one of Norfolk's more significant collectors

(see Note 3 for the location, etc. of his material), and Green (1994) does not mention him by name in his short account of plant-collecting there. His collections, though, provide an opportunity for a substantial quibble. That is, the *Flora of Australia* series, to which Green (1994) belongs, nowhere explains how its 'Specimens Cited' are selected, and in particular, why the date is seldom in these citations, which usually contain just herbarium, locality and collector. Perhaps New Zealanders appreciate more than Australians that, especially with respect to island floras, a first collection date is essential in judging whether a plant might be a native or an introduction.

Green (1994) cites *Metcalf* specimens of three ferns: *Cheilanthes sieberi* ("coll. 1905", NSW); *Lunathyrium japonicum* (no date; CHR, K), and *Macrothelypteris torresiana* (no date, K). The former has never been found again on Norfolk, so the date is valuable to have, but it would have been even more valuable for the two others, as they are likely first records of rather weedy (non-native?) plants. Green seems not to have examined WELT's Norfolk Island *Metcalf* collections. Among these are three that might also be first records: *Christella dentata*, *Diplazium australe*, and *Vittaria elongata*, with that of the latter being considerably the earliest of those cited by Green. There is also a WELT *Metcalf* specimen of *Trifolium campestre*—if WELT SP061631 is correctly identified, a century would be added onto Green's single cited specimen.

Note 1 Kingston Common is one of the places where Norfolk's beautifully healthy free range cattle graze (mainly on kikuyu grass), and although water hyacinth would be edible to these animals its oxalate crystals are said to cause irritation of the mouth. The plant also grows at the island's Watermill Dam (*Lepschi* 7026, coll. 2014, CANB).

Note 2 "Dr. Metcalfe came in looking very ill from a bad attack of rheumatic gout, as he wanted something to bind up the leg of Phoebus Christian. The horse on which she was riding home from church kicked up at the horse behind her and tumbled her off, breaking her thigh. As she is stout and elderly and fell on the downward side of a slope she was considerably bruised" (Swaby 1956 [Elizabeth Colenso diaries]: entry for Sept 7 1892).

Thus the daily life endured by the islanders of the time, and shared by their doctor. These diaries are vivid and fact-filled but it has taken the digital age to bring them to a wider audience—in their Introduction we read that "Mrs. Swabey then had the idea of having some copies printed, so I sent a copy to Mr. A.W. Reed, Wellington, of Messrs. A.H. & A.W. Reed. His opinion coincided with mine, that the work held very little of interest for outsiders and was only of some interest to relatives, my final observation being that but few of them would trouble to read it."

Note 3 At K there are 94 *Metcalf* specimens, received 1884 (Vegter 1976: 531). At NSW (database accessed April '21) there are only 5 collections, with an *Usnea* lichen attributed without date to a "J. B. Metcalfe", indicating that Dr Metcalfe's second son James Beverley Metcalfe (1888–1918 [he died a doubly decorated WW I hero]) had begun to make collections himself. There is also the mention (Maiden 1905: 725) of a collection of "*Scirpus maritimus*" (presumably *Bolboschoenus fluviatilis*) that Metcalfe told Maiden had been originally collected by "his son", and "named by the late Prof. Kirk of Wellington". I have not located this specimen.

At WELT (database accessed April '21) there are 57 collections (nearly all as "Dr Peter Metcalfe"). Mostly ferns, they also include *Trifolium campestre*, *Dichondra repens* and a putative *Passiflora aurantia*. At CHR there are only two *Metcalf* collections currently databased. Both are of *Oxalis exilis* and are annotated as having been received from CANTY (Museum of Canterbury) in May 1975. But the mention by Green (1994: 600) of a CHR *Metcalf* specimen of *Lunathyrium japonicum* suggests there might be more to be processed here.

Correspondence between "P. Herbert Metcalfe" and Kew is referred to in a digital document created by the National Library of Australia (1970–71).

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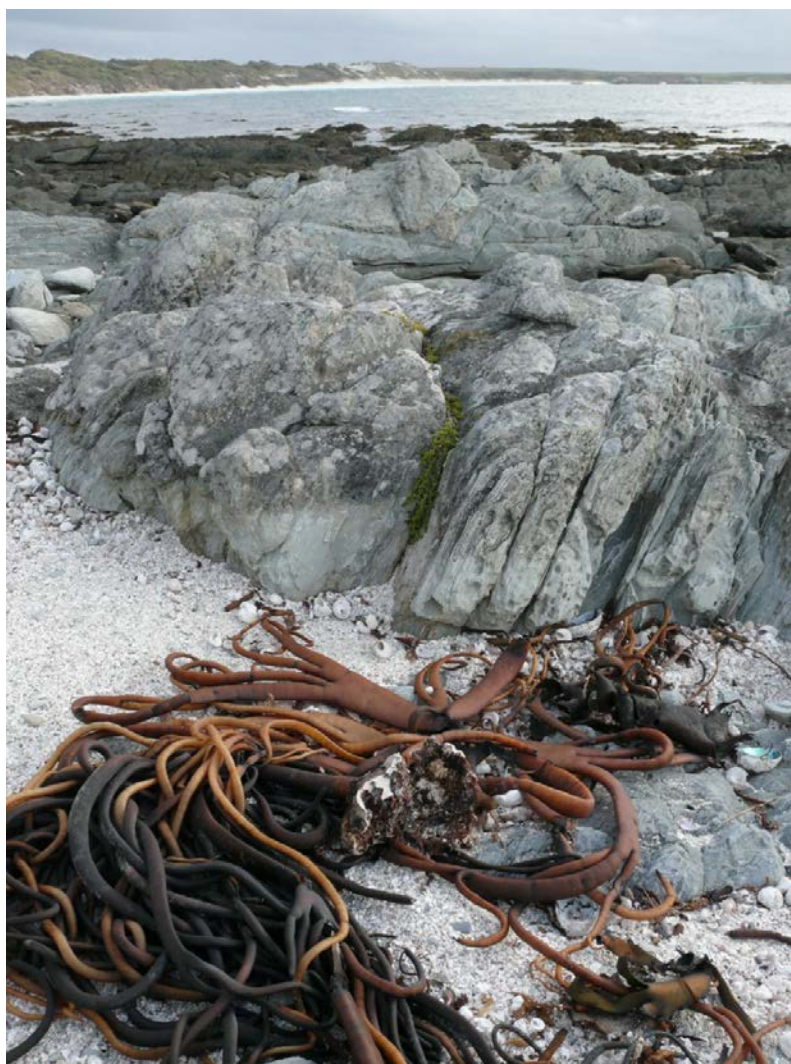
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■ Biographical Sketch – Cameron Harald Hay (1949-)

Val Smith, valdsmit@xtra.co.nz

Cameron Hay was born at Lyttelton, New Zealand, on 30 November 1949. His father Tom Hay had served in the merchant navy during and after World War Two, was an ardent conservationist. In the 1950s he purchased a property at Corsair Bay and began converting the pine plantation to native bush. Concurrently with his community work and day job at Lyttelton port, he built the house in which he and his wife Joan (née Mackie) lived for 63 years and raised their children Cameron and Brenda. Cameron was educated at West Lyttelton School (now defunct) and at Cashmere High School, and his father, who was also chairman of the Canterbury branch of the Royal Forest and Bird Society for ten years, sparked his interest in things botanical. One of Cameron's early memories is manning a booth at the Christchurch Industrial Fair (next to the Edmonds Baking Powder stand) exhorting people to sign a petition to prevent the planned raising of lakes Manapouri and Te Anau. His dad also



Pyrophyllon cameroni

organised field trips for the Forest and Bird members and somehow coerced various botanists at DSIR, Lincoln, to 'volunteer' to join them (sometimes for several days) to identify plants. As Cameron went also, he met people like Ruth Mason, Margaret Bulfen, Lucy Moore, Eric Godley and others, as well as botanists David Lloyd, Collin Burrows and others from the University of Canterbury. On one memorable railcar trip to Oaro when Cameron had just started high school, Lucy Moore introduced him to seaweeds and told him firmly that they needed to be studied! He obliged, going on to the University of Canterbury and graduating PhD (zoology) in 1977 with his thesis on the biology of *Durvillaea antarctica* and *D. willana* in New Zealand. Lucy was one of his examiners.

The zoology department introduced him to the marine flora of the Kaikoura Peninsula and arranged his stay of three months (1969–70) on the Snares (with three others) to monitor the return of Buller's albatross to a nesting colony. He also mapped in such detail the vegetation of the island for an international conservation programme that it was eventually published. He has been charting the progress of the invasive Asian kelp *Undaria pinnatifida* since discovering it at Oriental Bay in 1987. However, his main interest over the years has been the algal biogeography of the large brown seaweeds, especially those of New Zealand's subantarctic islands, but also of Gough and Tristan de Cunha in the south Atlantic, Marion Island in the southern Indian Ocean, and Tasmania. Working for more than two decades with Murray Parsons and Nancy Adams, he helped to write regional algal floras (or lists) and described a few new species himself: *Macrocystis laevis* from Marion Island, *Durvillaea chathamensis* (from his PhD study), *Lessonia adamsiae* from the Snares, *Lessonia tholiformis* from the Chathams and recently (2020) *Durvillaea fenestrata*, endemic to Antipodes Island. Hundreds (perhaps thousands) of his herbarium specimens are deposited in the National Museum (Te Papa).

His 40-year employment record includes a three-year contract as marine botanist at the University of Cape Town (1979–82), over a decade with the New Zealand Oceanographic Institute (NZOI), four years each with Science and Research Division of DOC and Cawthron (Nelson), and director, marine studies programme, University of the South Pacific: Honiara and Suva (1999–2004). His interest in large brown seaweeds continued after his official retirement, and he still dabbles. In August 2019 he published a paper on *Durvillaea willana* in New Zealand and how earthquake uplift may influence its distribution. It also acknowledges the help of his wife Jane Turnbull, "who organises our coastal expeditions", and his son Erik, "who drew the maps". Cameron Hay is now documenting the geographic limits of various seaweeds in New Zealand because he believes that southern species will retreat southward with global warming. The algal name *Pyrophyllon cameroni* honours him.

Pyrophyllon cameroni

Two species are known in the New Zealand endemic seaweed genus *Pyrophyllon*, both epiphytes on large brown algae. *Pyrophyllon cameroni*, originally described by Wendy Nelson as a species of *Porphyra*, is epiphytic only on *Lessonia tholiformis*, a species endemic to the Chatham Islands. Rosy red to rich dark pink in colour, the plants are round to kidney-shaped with deeply folded edges, up to 16 cm wide and 22 cm high; the blades, one cell layer thick and soft in texture, start to disintegrate when out of the water. Attachment is by a holdfast of rhizoidal cells that penetrate the stipes of the host.

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Nelson, WA. 2013. New Zealand seaweeds: an illustrated guide p. 128. Wellington, Te Papa.

PUBLICATIONS

■ Publications Received

Auckland Botanical Society Journal 76(1) June 2021 Fieldtrip reports for Cornwall Park and One Tree Hill Domain, Hamilton's Landing, Taranaki and Arthur Leigh Tichener Memorial Covenant, articles on

flora of Pine Valley Forest, Dairy Flat, plant recolonisation following fire, flora of Noises Islands, flowers of *Pelargonium inodorum* and flora of Niue.

Canterbury Botanical Society Newsletter 2021 June 2021 Upcoming meetings, meeting reports on Tejon Ranch, California and lichens and bryophytes of Banks Peninsula, trip reports on City Nature Challenge trip and Mount Ararat Rata Reserve.

Canterbury Botanical Society Newsletter 2021 July 2021 Upcoming meetings and trips, talk report on wetland plants of North Carolina and Bledisloe Cup winner Geoff Henderson.

Canterbury Botanical Society Newsletter 2021 August 2021 Upcoming meetings and trips, meeting report on kanuka taxonomy, trip report on local plant nurseries.

Nelson Botanical Society Quarterly Newsletter Winter 2021 AGM summary, President's report, talk reports on 30 years as a ranger, New Zealand flowers, trip report for Brook Waimārama Sanctuary, articles on orchid observations, *Dracophyllum* changes, *Myosotis brockei* subsp. *dysis* and identifying native beeches.

Nelson Botanical Society Newsletter July 2021 Upcoming trip and talks.

Waikato Botanical Society June 2021 President's report, upcoming talks and trips, endangered plant garden update, planting project at St Joan's Hospital, talk reports on plant-pollinator interactions, New Zealand orchids, restoring Robert Findlay Reserve, trip reports for Mokau, Nikau Caves, Kakepuku Mountain, species lists.

Wellington Botanical Society Bulletin June 2021 Obituaries – Rodney Lewington and Ian Atkinson, Lisbon's mystery tōtara, diatoms from Zealandia and Wellington Botanic Garden Bioblitzes, biennial flowering of cabbage trees in Lower Hutt, *Ascarina lucida* in the Akatarawa forest, bryophyte flora of Zealandia, *ex situ* conservation of *Dactylanthus taylorii* and to plant or not to plant.

■ Book review – New Zealand's native trees

Revised edition

By John Dawson and Rob Lucas
Published by Potton & Burton, October 2019
Hardback, 688 pages, 310 × 229 mm
\$NZ130.00
ISBN 978-0-947503-98-7

Reviewed by Murray Dawson

Peter Arthur AHRIH, founder of the former Touchwood Books, and Dr Peter Heenan, a botanist at Manaaki Whenua – Landcare Research, each provided insightful reviews of the first edition of this outstanding book¹. Their reviews included much praise that is equally applicable to this new edition.

Peter Arthur wrote comments such as: "After 25 years of selling new and second-hand books about trees from around the world I cannot praise it more", "this book is a must have for anyone interested in trees", "the perfect book for identification, and learning about the botany, ecology and habitats of our various native trees, from the



¹ *New Zealand Garden Journal*, 2011, Vol. 14, No. 2, pp. 21–23; reviews available at www.rnzih.org.nz/RNZIH_Journal/Pages_18-32_from_2011_Vol14_No2.pdf.

massive kauri, the third largest tree in the world, the showy pōhutukawa and rātā, and cabbage tree to rare and endangered species found only on our offshore islands.”

Peter Heenan commented: “This book is a valuable addition to the library of anyone interested in our native trees, whether they are a gardener, student, amateur botanist, or with a stronger scientific background”, “very readable, highly informative and beautifully illustrated, and contains an absolute wealth of information on the native trees of New Zealand.”

These positive comments proved to be justified as the first edition went on to win the New Zealand Post Book of the Year and Illustrated Non-Fiction awards for 2012.

Sadly, the lead author, Prof John Dawson passed away 11th March 2019, and fittingly, the revised edition is dedicated to John’s memory. Potton & Burton rightly note that although John Dawson published several books, this book is perhaps his greatest legacy.

So, what’s new in this revised edition? Placed alongside each other, the revised edition is noticeably thicker – 112 additional pages to be exact. The number of images has also increased; from 2,300 in the first edition to a whopping 3,200 in the revised edition. The new images were taken by author-photographer Rob Lucas to increase the coverage of species that were under-represented in the first edition. Additional text incorporates botanical revisions that describe or reclassify new taxa (species, subspecies, and varieties) in the eight years since the book was first published in 2011.

Publishers’ notes (page 9) provide a useful comparison of the changes of botanical names between editions (due to taxonomic updates), recently described species, and new taxa added to the revised edition. These changes include new species of *Kunzea* (kānuka), recognition of indigenous *Piper* (instead of *Macropiper*), and segregation of *Nothofagus* (New Zealand beech trees) to *Fuscospora* and *Lophozonia*.

The first edition of this book received wide acclaim, and the revised edition is even better. Needless to say, it is a highly recommended addition to your bookshelf.

NEW ZEALAND’S NATIVE TREES REVISED EDITION

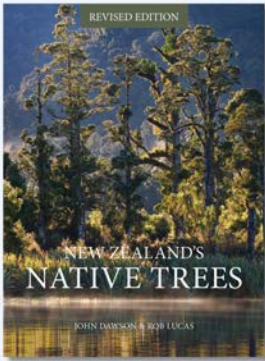
John Dawson & Rob Lucas

\$130.00

310 x 229 mm, 688 pp,
full colour throughout,
hardback with jacket

ISBN: 978 0 947503 98 7

Published: October 2019



**A complete revision of the best-selling, award-winning landmark book
on New Zealand’s native trees.**

New Zealand’s Native Trees is a landmark book, the kind that is published only once in a generation. Winner of New Zealand Book of the Year in 2012, this book celebrates our unique and magnificent native forests, and describes and generously illustrates more than 320 species, subspecies and varieties. This edition has been completely brought up-to-date with a significant number of botanical revisions, as many new species have been described or reclassified in the years since the book was first published in 2011.

Invaluable as an identification guide, a reference, a resource for landscapers and gardeners, and an inspiration for a new generation of New Zealanders, this is an essential book for every home, school and library.

Author Information

DR JOHN DAWSON, 1928–2019, was Associate Professor of Botany at Victoria University. He has published a number of books, but this book is arguably his greatest legacy.

ROB LUCAS lectured at the Open Polytechnic in Lower Hutt until his retirement and has been photographing native plants for many years.





ANNOUNCEMENTS

■ **35th John Child's Bryophyte and Lichen Workshop - Rotorua**

Organisers: Shirley Kerr shirley@kaimaibush.co.nz ph: 027 463 5353
Anne Redpath annepathred@gmail.com ph: 07 315 7763

Where: The venue is Tui Ridge Park which is situated at 260 Anderson Rd, which is off Oturoa Road in the Hamurana area. <https://www.tuiridgepark.co.nz/>

When: Monday 8th November to Saturday 13th November 2021.
Monday afternoon is arrival and setting up, the workshop starting that evening.
Packing up will begin late Friday 12th Nov with departure during the morning Sat 13th Nov.

Who: The workshop is open to anyone interested in bryophytes, lichens and/or epiphytes from novice amateurs to professional botanists. The aims are to gain and share knowledge of, and to encourage an interest in, the mosses, liverworts, hornworts, lichens and epiphytes of New Zealand. Regular attendees are very friendly and willing to help beginners.

Accommodation: Standard cabins. There are 5 standard cabins with a total of 56 beds. Two cabins have two bedrooms, two have three bedrooms and one has four. There is a fully equipped kitchen in each cabin. Each bedroom contains 4 single beds and an ensuite. **You will need to bring your own bedding including a pillow.** You can hire a linen pack for \$10 for the duration of the workshop. This includes 2 towels, two sheets, a pillow and case and 2 blankets/duvet. The cabin rooms are \$90 per night. This cost is shared between the number of people in a room. Camping is available – tents/caravans/campervans – at \$10 pp pn for unpowered and \$14 pp pn for powered sites, with ablution blocks nearby. For those who wish to make their own accommodation arrangements, there are plenty of options available in the area - motels, air bnbs etc. Please note that Tui Ridge Park is an alcohol, smoke and profanity free site.

Meals: Dinners will be catered for by Tui Ridge and we will self-cater for our breakfasts and lunches as per usual.

Clothing and footwear: Be prepared for all weather conditions. The usual list of field gear also applies – warm clothing, waterproof clothing, day pack, lunchbox, water bottle, etc. Some of the tracks may entail stream crossings.

Getting there: There is an airport at Rotorua. Intercity buses stop in Rotorua. We can arrange to pick up anyone arriving by bus and plane. The usual car rental companies have pick-ups available at the airport. Those coming from within New Zealand may organize car pooling arrangements which will also be useful for travel to and from the various field work sites from our base at Tui Ridge.

Costs: Dinner will be \$20 per meal, Breakfast/lunches approx. \$10-\$15/day. For those riding in other vehicles, a mileage charge will apply, and for those who bring their own car and offer transport to others while at the workshop, a subsidy will be offered. The workshop expenses should be well within the range of previous workshops ie. \$300-\$350.

Estimate of likely numbers:

To help with planning, please select one or more from the list of options below and email shirley@kaimaibush.co.nz your response to the selected option(s) by **Friday 1st October 2021** (select or indicate one of the either/or options in each case)

Name(s):

A Intention to attend (or not as the case may be)

Either Yes I can confirm that I will be coming to the workshop.

or I regret that I am not now able to attend

B Accommodation

Either I/we will stay at the Tui Ridge Park for the nights of : 8th Nov, 9th Nov, 10th Nov, 11th Nov, 12th Nov. Indicate which: Cabins or Camping. If staying in cabins, please indicate if you require a "linen

pack"

Or: I /we will make our own accommodation arrangements.

C Meal arrangements

Evening meals at Tui Ridge

Either: I/we wish to have evening meals provided on 8th Nov, 9th Nov, 10th Nov, 11th Nov, 12th Nov

Or : I/we will make our/my own arrangements for evening meals.

Breakfast (self-serve – cereal, fruit, toast)

Either: I/we wish to have breakfast at the Tui Ridge 9th Nov, 10th Nov, 11th Nov, 12th Nov.

Or: I/we will make our own arrangements for breakfast.

Picnic lunch (ingredients provided)

Either: I/we wish to make a lunch at Tui Ridge, 9th Nov, 10th Nov, 11th Nov, 12th Nov, 13th Nov (departure day).

Or: I will make my own arrangements for lunch on Sat 13th Nov (day of departure).

Please indicate any special dietary requirements (vegetarian, gluten intolerance, other allergies).

D Transport arrangements

I/we will make my/our own way to the workshop, arriving at approx. -----pm.

I/we could provide a lift for (no.) other/s from (locality) to Tui Ridge and/or returning from Tui Ridge

I/we will have room for (no.) extra people on field trips. Those providing transport to others during the Workshop will be reimbursed.

I/we would like to have transport on field trips during the workshop. You will be charged a fee based on km travelled.

E Microscopes

Either I will be bringing my own microscope (dissecting/compound – please indicate which)
or, I would like to have access to a microscope

F. Oral contributions at the Workshop

I would like to give a 15 minute (approx.) evening talk on bryophytes/lichens

Title:

I have, or will, enter my talk for the Tom Moss Student Award. Let me know if you need details of Tom Moss Award

G. First Aid

I have/don't have a current first aid certificate and can provide first aid if needed during the workshop

H. Payment of Deposit

Please pay the sum of \$150 deposit to confirm registration by **Friday 1st October**.

(Note: People coming from Australia or another overseas country do not need to pay a deposit now. The deposit can be paid at the workshop as part of overall cost)

Options for payment of Deposit

Payment: by internet banking to the **John Child Bryophyte Workshop, A/c # 02-0820-0607617-000**
Please make absolutely sure that you include your name in the Reference section of the internet banking form so I will know who has paid!

If the workshop is cancelled after you have paid, your deposit will definitely be refunded.