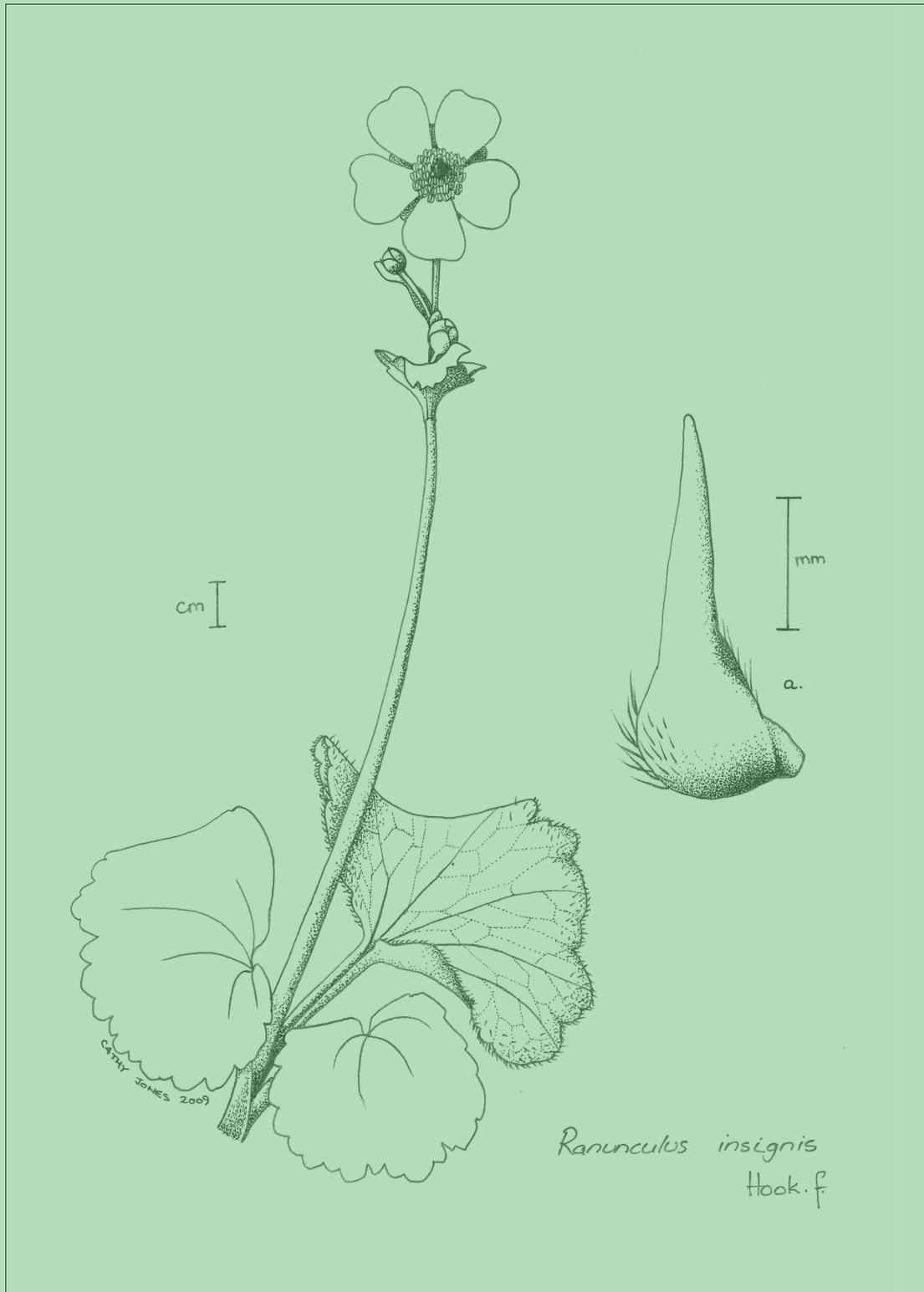


NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 98

December 2009



New Zealand Botanical Society

President: Anthony Wright
Secretary/Treasurer: Ewen Cameron
Committee: Bruce Clarkson, Colin Webb, Carol West

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Subscriptions

The 2010 ordinary and institutional subscriptions are \$25 (reduced to \$18 if paid by the due date on the subscription invoice). The 2009 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 28 February each year for that calendar year. Existing subscribers are sent an invoice with the December Newsletter for the next years subscription which offers a reduction if this is paid by the due date. If you are in arrears with your subscription a reminder notice comes attached to each issue of the Newsletter.

Deadline for next issue

The deadline for the March 2010 issue is 25 February 2010.

Please post contributions to:

Melanie Newfield
17 Homebush Rd
Khandallah
Wellington

Send email contributions to atropa@actrix.co.nz. Files are preferably in MS Word (with the suffix ".doc" but not ".docx"), as an open text document (Open Office document with suffix ".odt") or saved as RTF or ASCII. Graphics can be sent as TIF JPG, or BMP files. Alternatively photos or line drawings can be posted and will be returned if required. Drawings and photos make an article more readable so please include them if possible. Macintosh files cannot be accepted so text should simply be embedded in the email message.

Cover Illustration

Ranunculus insignis Hook.f. drawn by Cathy Jones, from a plant collected in the Wairau Gorge, South Marlborough, on 28 October 2009. a. achene, one week after flowering.

NEW ZEALAND BOTANICAL SOCIETY
N E W S L E T T E R
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NEWS

New Zealand Botanical Society News

■ Committee for 2010

Nominations for positions of President, Secretary/Treasurer and three committee members for the New Zealand Botanical Society closed on 19 November 2009.

The following nominations, equalling the number of positions available, were received and are declared elected: President Anthony Wright, Secretary/Treasurer Ewen Cameron, Committee members Bruce Clarkson, Colin Webb and Carol West.

As already indicated we are pleased to announce that Melanie Newfield has agreed to continue as Editor for 2010.

■ Audrey Eagle receives Allan Mere



Audrey Eagle, the 2009 recipient of the Allan Mere, receiving it from the NZ Botanical Society's President, Anthony Wright, at an Otago Botanical Society monthly meeting in Dunedin. Photo: Mike Thorsen (14 October 2009).

Regional Botanical Society News

■ Auckland Botanical Society

September Meeting

For the Plant of the Month talk, Mei Nee Lee spoke on *Cymbopogon citratus*, the true lemon grass that is used in Asian cooking. She has found that *C. flexuosus* is often sold in error for lemon grass.

Matt Renner's talk, "Liverworts: No longer forgotten flora", stressed that New Zealand is species rich in liverworts. He wondered if this is real, or is it just that our liverwort flora is the most studied in the southern hemisphere? For his PhD Matt studied *Lejeunea tumida* and found it consisted of four species, although the morphological differences are very small.

September Field Trip

On a misty, moist but windless day we walked down the Buck Taylor Track through regenerating forest to the mouth of the Pararaha Valley, where a boardwalk made crossing the swamp comfortable. On the walk along the beach to Karekare some interesting plants seen were *Coprosma acerosa*, *Asplenium obtusatum* subsp. *northlandicum*, *A. appendiculatum* subsp. *maritimum*, *Mentha cunninghamii* and *Lobelia* (=Pratia) "Woodhill".

October Meeting – The Lucy Cranwell Lecture

John Ogden, the Lucy Cranwell lecturer for 2009, has supervised Masters, PhD and Post-doctoral research in the wetlands of Great Barrier Island for nearly 20 years. These studies have uncovered the successional processes occurring in such wetlands. Analysing the sediments, pollen grains and spores trapped in the swamp show the sequence of plant colonisation, and the effects that historical events, such as Maori and then European settlement, have had on the vegetation.

October Field Trip

A 40-strong group visited Pakatoa Island, travelling by DOC's "Hauturu" from Maraetai. Sir Robert Kerridge's tourist complex which opened in 1964 is now defunct. There was one particularly good piece of remnant coastal forest in a gully, with large specimens of puriri, tawapou and taraire, and there was a reasonable tally of native shore plants, including great flowering displays on the cliffs of rengarenga lily (*Arthropodium cirratum*). *Thelymitra longifolia* was in bloom. Weeds were abundant, including rampant *Phoenix canariensis*. The alien Asian kelp *Undaria bipinnatifida* was an unwelcome discovery on the seashore.

Labour Weekend Camp

Thirteen members camped at the Kaingahoa Marae at Rawhiti on the Russell Peninsula. Walks took us to Oke Bay, Ngaioitonga Scenic Reserve in the Russell Forest, Whangamumu whaling station and Whangaruru North Head. Although the vegetation was much modified, some interesting Northland endemics were seen – *Alseuosmia banksii*, *Nestegis apetala*, *Calystegia marginata*, *Hebe ligustrifolia*, *Thelymitra* "rough leaf" and *Fuchsia procumbens*. *Myrsine divaricata*, seldom seen in the north, was found growing on the roadside beside an estuary.

November Meeting

A busy evening included the Plant of the Month, *Calochilus* aff. *herbaceus*, discussed by Maureen Young, and a presentation on behalf of the Weedspotters' Network by Richard Hursthouse. Richard discussed the problems caused by the spread of Queen of the night (*Cestrum nocturnum*).

Jessie Prebble, recipient of the 2009 Lucy Cranwell Grant, spoke on her work on the evolution of *Wahlenbergia* in NZ and Australia. Jessie is building on the morphological work carried out by Judith Petterson, and is testing the taxonomy using molecular markers. She presented some preliminary phylogenetic trees and discussed her results so far.

Alison Wesley rounded off an interesting evening with some photographic highlights from her recent trip to South Africa and Botswana.

November Field Trip

After meeting at the "Ileostylus Intersection", where we checked out the mistletoe, a short trip down Mahurangi West Road took us to "Zealandia", a property with fascinating sculptured installations in the garden. The sculptured effect had extended to the use of native plants in most uncommon and artistic ways. An aluminium walkway led us into a fine patch of kauri/tanekaha forest. Small forest-floor orchids had largely finished flowering, but *Pterostylis agathicola*, *Petalochilus chlorostylus* and *Simpliglottis cornuta* were the exception. Lunch was held a few km away, in an area of mown manuka. Here the promised 4 species of *Thelymitra* that flowered beautifully last November were sulking in the cloudy conditions that have prevailed all month. A postprandial walk in the Albert Dennis Reserve completed the day's outing.

Forthcoming Activities

5 December	End-of-year pot-luck picnic at Tawharanui Regional Park
9-15 January 2010	Camp, Bannockburn, Central Otago
30 Jan – 1 Feb	Camp, Turangi: Mt Pihanga, Kaimanawa Range and Lake Taupo reserves.
20 February	Whangamarino wetland
3 March	AGM, "Flora of Central Otago"

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

President: Mike Wilcox

Secretary: Bec Stanley rebecca.stanley@arc.govt.nz

■ **Rotorua Botanical Society**

Postponed August Field Trip: Matahina

On a fine, cool, winter's day two boats worked clockwise round Lake Matahina with frequent stops ashore or to nudge into banks. Near the dam kanuka and often pines descended to shore with the old main road now overgrown but used by stock above. Here native species were confined to a few ferns and shrubs including mahoe, kanuka, *Doodia australis* and *Morelotia affinis*. In shallower areas wetland plants such as raupo, Canadian pondweed, *Schoenoplectus tabernaemontani*, *Carex secta* and *C. virgata* were common.

Several pockets of largely undisturbed bush occurred, especially around waterfalls. Here, under tawa forest with rimu and kahikatea dominant, was a rich understorey including *Alseuosmia macrophylla*, kawakawa, rangiora, and pigeonwood. A good range of ferns was encountered including the uncommon *Arthropteris tenella*, carpets of *Trichomanes enderlicherianum* and the lovely *Hymenophyllum flexuosum*. In one area, *Sophora tetraphylla* was accompanied by *Pittosporum ralphii* and in another, an especially large, mature *Streblus heterophyllus* was noted. On drier areas, tanekaha and rewarewa were prominent emergents.

The return down the lake was often against cliffs, initially with kamahi down to the shore with *Peperomia urvilliana* and orchids perching on ledges. One large clear spring visited had a good range of submerged plants including *Potamogeton cheesemani* and *P. crispus*. Further down, the cliffs were taller and drier with a few plants such as *Astelia solandri*, *Cheilanthes distans*, *Pomaderris amoena* clinging to ledges. Near the dam and the last stop before the vehicles, coastal species included rengarenga, titoki, rata and pohutukawa

September Field Trip: Tarawera Falls

For Conservation week a large group headed to the falls and lake in drizzly weather. The area is still showing the effects of the 1886 Tarawera eruption. Below the falls pockets of forest survived (no doubt somewhat damaged) but above the falls the scoria is often deep and much of the vegetation is kanuka shrubland. The early part of the track was through quite rich forest with species such as tawa, mangeo, karaka, titoki, akeake with an understorey of mahoe, pigeonwood, kawakawa, broadleaved coprosmas and a good range of ferns. Nearer the falls filmy ferns became particularly prominent and pohutukawa, rata and their hybrids became common. Tree ferns, abundant in the understorey, were laden with filmy ferns such as *Trichomanes venosum* and *H. scabrum*. The steep climb to the top of the falls provided open places for plants such as *Dracophyllum strictum*, *Pimelea longifolia*, *Lastreopsis velutina* and *Blechnum vulcanicum*.

Above the falls, the vegetation rapidly became more open, often with just kanuka over moss, lichens or even bare scoria. Here orchids such as *Petalochilus chlorostyla* or perhaps the pink *P. bartletti* (not yet in flower) were occasionally common and epiphytes such as *Huperzia varia*, *Earina mucronata* and *E. autumnalis* appeared on the ground. Towards the lake the kanuka became taller and we were rewarded with swathes of kidney fern, *Hymenophyllum dilatatum* and *H. scabrum*. At one point the tail enders missed a good group of *Pimelea tomentosa* although they were marked. Finally at the lake they had time to briefly venture into the outlet wetlands, mostly amongst *Baumea tenax*, to see the pesky *Osmunda regalis* before being the last load back to the cars at the track start.

October Field Trip: Wairoa Stream

A select group excitedly headed up the Wairoa Stream under dubious weather conditions. They decided to concentrate on ferns and orchids and were soon pausing to note common ferns such as hounds tongue, bracken and kiokio. The first section of track had recently been re-routed away from the fence on to the stream bank under rewarewa, kohuhu and kamahi. Here a pigeonwood was almost in flower showing masses of buds.

At the descent to the stream near the bridge, *Pterostylis banksii* appeared for the first time and soon became common all along the track. Just over the treacherous bridge was a fine patch of *Lastreopsis microsora* with its creeping stems and distinctive pale green fronds. After crossing the old logging road, last used in the 1990's to remove a stand of radiata pine, the track kept close to the stream through a patch of silver fern and wheki where we saw a first lot of *Tmesipteris lanceolata* with its small, shiny flattened fronds.

As we descended the first rocky piece along the rocky stream bank, patches of *Nematoceras (Corybas) "Kaimai"*, the pale version of *N. rivulare* (of the river), were in good flower in typical habitat. Along the rocky river edge *Anaphalioides trinervis* and *Epilobium nerteroides* were common and in flower. Barer areas had mats of *Schoenus maschalinus* and a wet area, three different sedges (*Carex geminata*, *C. virgata* and *Cyperus ustulatus*). Back in forest, swathes of *P. banksii* lined the track, with *Drymoanthus adversus* on a fallen stem with *Diplodium (Pterostylis) alobulum* and *Nematoceras trilobum* beneath. Along the well formed former tramway in tawa, kamahi and hard beech forest, kauri saplings up to 3 m tall, marked with pegs, had obviously been planted.

Hymenophyllum demissum formed dense mats especially along the rocky banks where the track was close to the stream, along with kidney fern and perched colonies of *Diplodium alobulum* and *Acianthus sinclairii* both of which had finished flowering. Where the vegetation was more open kanuka, we found snowberry and a patch of *Singularybas (Corybas) oblongus* was just coming into flower. We settled for lunch under the largest kahikatea on the track. Not long after lunch, a high bank alongside the track brought *Alseuosmia macrophylla* (in flower), *Brachyglottis kirkii* and a few new filmy ferns including *Hymenophyllum rarum*, *H. revolutum* and a nice patch of *H. flabellatum* (the fan filmy fern). Atop the bank were a few ricker kauri, possibly up to 100 years old and two trees providing the answer to an earlier question of how to distinguish Hall's and lowland totara (by the bark as well as buds). Just below the kauri were numerous *Pterostylis agathicola* in full flower. We scrambled up the bank in search of *Ichthyostoma (Bulbophyllum) pygmaeum* but were soon amid a mass of browsed *Alseuosmia macrophyllum* and a confusion of hinau, rewarewa and tawari seedlings and carpets of kidney fern. With target found we also saw a great lot of *Drymoanthus adversus* with flower buds. A little further on we reached the main ford where an orchid prompted a heated discussion on the differences between *P. banksii* and *P. cardiostigma*. I think Gael won. At this point we turned for home, not desiring wet feet and well satisfied with our finds. On the way home we paused in Katikati for a long black and to go over the list, discussing the finds of the day.

FUTURE EVENTS

5 December	Waiorongomai - Pahiko
7 March	Endeans Bush Paradise valley
10 April	Marawaiwai SR

President: Paul Cashmore pcashmore@doc.govt.nz

Secretary: Sara Crump

■ Wellington Botanical Society

January field trip: Westport–Karamea

Day 1: Locals Jess Reedy, Peter Lusk and Rona Spencer led us up Mt William via Myra's Track from Burnetts Face. In drenching rain, we saw striped sun orchid/*Thelymitra cyanea* beside the track in the shrublands, soon after leaving the road. Later, in wet, moss-laden forest, an easily missed small tree of *Metrosideros parkinsonii* was pointed out to us.

Day 2: Truman Track is a 15-minute walk through rainforest to a headland with stunning views up and down the coastline, and access to a fine gravel beach at low tide. It features rātā descending large mataī, coastal flax, gahnia (*G. rigidia*), and coastal turf on the cliff tops. *Tetragonia implexicoma*, *Adiantum cunninghamii* and *Olearia avicenniifolia* were on the track down to the bay.

The walkway via the weathered limestone stacks of the Pancake Rocks and blowholes is sealed to handle the flow of visitor here. But, despite this, there were botanical highlights among the fruiting nīkau in the forest, and *Euphorbia glauca* and *Craspedia* sp. on the cliffs above the blowholes. Hail showers added an edge to the views from the track along the Pororari river. *Anaphalioides trinervis* covered a log amid the fast flowing river. An infestation of wilding hydrangeas, mostly lacing the ridgetops near Fox River, gave an insight into emerging weed problem.

Day 3: Charming Creek Walkway is 5.5km long, and rises no more than 100 m asl with a gentle gradient following the route of a disused bush railway built for timber extraction. The lower Ngakawau Valley comprises lowland coastal vegetation. The steepest section of the gorge is the only known habitat of the threatened *Celmisia morganii*, many still in flower at the time. The upper section featured regenerating kānuka/mānuka forest with abundant birdlife including bellbirds, tūī, fantails and robins aplenty.

In the afternoon we drove through the broad, new mine road to Stockton that featured a spectacular cutting of blasted rock, and by-passed Millerton Township. We took the Repo Track, ascending from the eastern ridge of the town flat over sandstone barrens with a thin covering of rushes, *Gleichenia dicarpa* and *Epacris pauciflora*, the pathway spattered with red rosettes of *Drosera spathulata*. Higher up, gentler slopes had a covering of flowering mānuka above a dense sward of *Lycopodium laterale*, and glaucous-green mounds of *Oreobolus pectinatus*. Near the ridgeline, a shallow gully held a remnant of mixed beech forest with mature emergent rimu. We paused amidst a low heath of prostrate mānuka, *Gleichenia*, miniature herbs such as *Gonocarpus micranthus*, and scattered fine specimens of *Gahnia xanthocarpa*, harakeke, and shrubby toro, with glimpses of the sea to westward, and expansive views to the cloud-capped Glasgow range to the east. The botanical diversity may have been limited but we gained a strong impression of the landscape of the "North Buller Moorlands".

Day 5: Birchfield Swamp East. DOC ranger, Julie Geritzlehner (who had showed us the treasures of the Charleston coast the previous day) led us through a section of this very special 20 hectare swamp to the east of the main road and railway near Birchfield. Highlights were *Schoenus maschalinus* and *Myriophyllum* spp. in the more open waters, including the rare *M. robustum*, *Viola lyalli* growing in mats of *Eleocharis* and *Isolepis* dotted with *Phormium tenax* and swamp coprosma/*Coprosma tenuicaulis*. Fernbird *Bowdleria punctata vealeae* visited us at very close quarters. The swamp margins had their share of weeds, but the wetter areas were relatively weed-free. We lunched under a sub-adult kahikatea, then drove to Lake Hanlon, en route taking photo of the magnificent flowering rātā on Karamea Bluff. The lake is a wonderful swamp well worth protecting, a great place to cool off, and to botanise.

Day 6: Karamea Estuary, Kongahu Swamp and South Terrace. We enjoyed the early morning experience of botanising the relatively sparse estuarine plants of confluence of kongahu streams and the Southern Karamea estuary. Although adventives have certainly got the upper hand here, among the patches of *Juncus kraussii* and *Samolus repens*, we found *Atriplex prostrata* masquerading as *Tetragonia implexicoma*. Later we saw the real one! The margins of a gorse-covered peninsula had a few natives: *Coprosma propinqua* x *C. robusta*, *Dicksonia squarrosa*. The ornithologists saw red-billed gulls, black-backed gulls, S.I. pied oystercatchers, pied stilts, banded dotterels, godwits, Caspian terns, white-fronted terns, welcome swallows, skylarks, ducks and bellbirds.

At the south edge of the recently drained Kongahu Swamp, Little Wanganui, we botanised a small patch of maturing secondary growth swamp fern-land and swamp forest remnant, which has probably been further dried out by the drainage of the neighbouring 400 Ha. Here, stands of kāmahī are reaching maturity and providing opportunities for kahikatea, rimu, Hall's tōtara and other podocarps. One interesting find was a *Drosera binata* 250 mm tall, hiding in bracken.

On to the South Terrace near the settlement site, marked by a roadside monument describing the origins of the schoolhouse on this original site for Karamea, we botanised second-growth forest. The pākihi land had proved to be unyielding for farming, so had reverted to bush. Trees of interest included: *Phyllocladus alpinus* (with cladodes growing from the tips of cladodes), *Halocarpus biformis*, and *Lagarostrobos colensoi*. We emerged onto a gravel track leading to several hectares in the process of conversion to pasture that, at this stage, resembled exposed stone "desert". The process known as "flipping" had been used to break the underlying iron pan, bringing the subsoil to the surface, mixed with peat. We found 25 indigenous species colonising the solitary old *Metrosideros robusta* left in this pebbly desert!

Days 7-9 were spent in the Fenian and Oparara areas.

June field trip: Owhiro catchment and southern suburbs bush reserves

On a fine, crisp morning twelve members botanised some under-appreciated "vegetation on our doorstep" in the Owhiro and Paekawakawa (Island Bay) catchments. The vegetation we looked at was all relatively recent regeneration following clearance and farming aided by the dedicated efforts of local revegetation groups.

The walk along the Owhiro stream was a good opportunity to discuss the problems facing urban vegetation and catchment management. Then on to the Tawatawa Reserve, an ambitious and well-planned revegetation project guided by Southern Environment Association (SEA). There was a surprisingly diverse flora under the canopy of mainly ngaio and māhoe with a few large kohekohe trees. A brief reconnaissance recorded 80 native as well as over 40 adventive species, some decidedly weedy. At least 16 woody species have been planted by SEA. There are also wetland areas on and behind the former landfill surface.

We then moved over the ridge to the Paekawakawa Reserve, on the Island Bay slopes below the City-to-Sea Walkway. This is SEA's most recent initiative, saved from likely residential subdivision in 2008 after an extraordinary community fundraising effort. Under the canopy we found, as expected, a more meagre flora of 37 vascular native species, 19 of them trees or shrubs. In contrast, the adventive flora totalled 55 species, including invasive tree, shrub and vine species. SEA and the community have a major weed-control challenge on their hands here, but have also enabled a great opportunity to rehabilitate native ecosystems near the heart of Island Bay.

July field trip: Otari-Wilton's Bush collections and Landscape development plan

Rewi Elliot, Curator/Manager, led 17 of us around the collections areas, explaining the changes proposed in the draft Landscape Development Plan. We visited the Fernery, Dracophyllum Garden, Wild Garden, North-of-38°S Garden, Rock Garden, Canopy Walkway, Cockayne Lawn, Lookout, and the new Braided River Garden.

The plan will affect how people arrive at and move around Otari, the entrances, interpretation, use of the house, etc. Not included in the draft plan is the content of collections, or extension of the forest area. Recent changes include those to the hierarchy of paths which, when complete, will make it easier for visitors to find their way around the collections. We then adjourned to Te Marae o Tane visitor centre and discussed how to shape BotSoc's submission on the draft Landscape Development Plan (LDP), when it is released for public comment.

September field trip: Otari-Wilton's Bush - Cockayne's plantings in the natural area

We spent a fine, almost windless, day looking at the plantings on the spur above and below the Flax Clearing. To guide us we had relevant extracts from Otari gardeners' diaries on plantings done from 1929 to 1957.

Sharp eyes found a mature kōwhai, *Sophora microphylla*, on what is now called the Circular Walk. This tree may be the remnant of “an elegant avenue of kōwhai” recorded by Andy McKay on 4 July 1933 on what was then called Raoul Path.

Our main objective was to determine the extent of the kauri and beech plantings immediately above the Flax Clearing. We took GPS readings around the perimeter of the early (1929-1933) planting, and that in the adjacent basin planted in 1957. We also recorded the rows of beech (*Nothofagus* spp.) on the west and east sides of what had been pasture. All of these planted trees are now just part of a well-grown forest.

A discovery was a line of very aged akeake/*Dodonaea viscosa*, presumably the remains of the shelter-belt from the time of the original planting. *Halocarpus kirkii* was found on the spur below the Flax Clearing that, in Cockayne’s scheme, was to be a rimu grove commemorating E. Phillips Turner. We did not find rimu, but found several groups of podocarps: *Podocarpus cunninghamii*, *P. totara*, *Libocedrus plumosa*, *Prumnopitys taxifolia*, *Phyllocladus trichomanoides* and some well-grown kauri, *Agathis australis*. We also noted *Metrosideros robusta* growing terrestrially, and *Ackama rosifolia*.

August field trip: Orongorongo Track

Fourteen took advantage of this enjoyable and familiar walk for most of us that still provided some botanical highlights including Spring earina/*Earina mucronata* with stems up to 1.5 m long, kiekie fruit in abundance, a morepork sleeping in a ponga just 3 m from the track, etc.

The various sites along the track, e.g., valley floor forest, nīkau grove, beech forest, and exposed clay ridge, support different plant communities of great interest. Two small orchids tested our identification skills: gnat orchid/*Cyrtostylis rotundifolia*, and trowel-leaved orchid/*Diplodium trullifolium*.

FUTURE EVENTS

5-6th December: Western Wairarapa. Kiriwhakapapa - Mikimiki Track; track to Blue Range Hut; forest beside Ruamahanga River and more. Leaders: Tony Silbery, Sunita Singh 387 9955.

12 December: Field trip 7th Hutt City flowering rātā walk. Leader: Dave Holey 566 3124.

25 January – 3 February 2010: Field trip: Coromandel Peninsula. Based at Kauaeranga Valley Education Centre. Contact: Mick Parsons 972 1142

President: Carol West (04) 387 3396 cwest@doc.govt.nz

Secretary: Barbara Clark (04) 233 8202 bj_clark@xtra.co.nz PO Box 10412 Wellington 6143.

<http://wellingtonbotsoc.wellington.net.nz>

■ Nelson Botanical Society

August Field Trip: Marsden Valley

Seven turned up to explore the bush on the valley floor and up Scout Track. The planted area offered opportunities to distinguish similar species like: *Myrsine australis* vs. *Pittosporum tenuifolium*; *Solanum chenopodioides* vs. *S. nigrum* vs. *S. aviculare*; and *Senecio minimus* vs. *S. glomeratus*. In the regenerating bush were ferns: *Lastreopsis glabella*, *Hypolepis rufobarbata* and *Pyrrosia eleagnifolia*. There were many young titoki and several tawa. The drier valley sides held *Pterostylis alobula* and *Helichrysum lanceolatum*. We continued to climb past *Olearia paniculata*, *Brachyglottis repanda* and *Pseudopanax arboreus* growing under the canopy, which was mostly kanuka. Here were *Metrosideros colensoi* and *M. diffusa*, and prickly and soft mingimingi. A late lunch was taken tucked in the understory, near *Clematis forsteri* and *Chionochloa cheesemanii*.

August Evening Talk: Dr Peter Heenan (Landcare Research, Lincoln) – New insights into the diversity and origins of the Chatham Islands’ flora. Peter presented some of his research on the flora of the Chatham Islands. The current number of taxa is at 770, 53% of which are indigenous. Several species are believed to have been “imported” by Moriori (karaka) and Maori (cabbage tree, kowhai, perhaps pohutukawa and *Coprosma robusta*). New species continue to be discovered using DNA analysis. *Olearia telmatica* was found to be distinct from the Chatham Islands’ endemic tree daisy, *O. traversiorum*, with habitats supporting the split. DNA has also determined the closest relatives of Chatham Island species. Surprisingly, the closest relative of the Chatham Island forget-me-not lives around the Mediterranean! More typically, however, CI species have lowland relatives in New Zealand. Of all the

plants tested, *Coprosma chathamica* was most closely allied with *C. repens* in NZ. Most of the CI flora started diverging from their New Zealand relatives 0.29–2.4 million years ago; some, including *Myosotidium*, started evolving 6 million years ago, refuting geologists' claims that the Chathams were totally submerged 2–4 million years ago. Currently, Peter is using DNA sequencing to revise the genera *Lepidium* and *Cardamine*, with only six or seven of the latter's 30–50 species currently named.

September Field Trip: Petterson QE2 Covenants, Takaka Valley

Milled in the past, a 9-hectare patch on Scott Petterson's farm (in the family since 1896) has been covenanted since c. 1985. It is changing from mainly beech (*Nothofagus solandri* and *N. truncata*) to podocarps – lowland totara, kahikatea and matai. Poisoning keeps possum numbers low. The weeds, mainly sycamore and tradescantia, will be an ongoing challenge. The upper terrace holds some tawa with *Melicope simplex* and *Streblus heterophyllus*, silver fern and other common ferns. Orchids include *Simpliglottis cornuta* and *Pterostylis alobula*. A wetter area contains *Brachyglottis sciadophila* and one plant of *Scutellaria novae-zelandiae*. Four or five *Teucrium parvifolium* were found too, with several healthy young nikau. Four small bush remnants in the nearby farm of Gavin Petterson have been protected since 2002. The understorey regeneration in the largest is quite vigorous but more open. Of particular note are the many *Asplenium polyodon* and a healthy clump of green mistletoe (*Ileostylus micranthus*). Philip Lissaman, the QE2 Nelson-Tasman representative, was available all day to answer questions.

September Evening Talk: Rebecca Bowater – Adaptations of alpine plants

Rebecca's genus-by-genus walk through adaptations of New Zealand's alpine plants began with species of *Epilobium*. Beautiful slides depicted interspecific differences in morphology, distribution and habitat preferences, and this systematic approach was followed for, in turn, *Gentianella*, *Myosotis*, the edelweiss species, *Ranunculus*, *Celmisia*, *Aciphylla*, *Haastia* and *Raoulia*. The talk concluded with mega-herbs from the sub-Antarctic Islands, including *Aciphylla latifolia* and *Bulbinella rossii*.

October Field Trip: Sally Warren's native garden

Spread over 1.5 acres, this hillside Nelson property has a wide selection of well-known and rare native plants, many of them labelled! From South Marlborough were *Olearia coriacea*, *Olearia hectorii*, *Hebe decumbens*, *Carmichaelia muritai*, several species and hybrids of *Pachystegia* and some leafless species – *Muehlenbeckia ephedroides*, *Rubus squarrosus* and *Clematis afoliata*. Marlborough Sounds species included *Meliccytus "obovatus Cook Strait"*, *Microlaena polynoda* and *Streblus banksii*, while northern North Island species included *Toronia toru*, *Hebe perbella* and *Pittosporum pimeleoides*. An unlikely plant in this semi-forest setting was *Celmisia mackauai* from Banks Peninsula. Equally far from home was *Macropiper melchior*, a Three Kings endemic. *Carmichaelia williamsii*, looking very healthy, had been grown from seed. Species of *Pittosporum* abounded, but of particular interest were *P. obcordatum* (nationally threatened and only recently discovered in Nelson) and a tiny *P. anomalum*, with a single perfumed flower.

Labour Weekend Camp: Kaihoka – Westhaven coast

Day 1, from camp to the north end of Westhaven Inlet: Leaving Fergusons' Farm for the coast, we headed south, encountering a great variety of habitats – promontories; steep, south-facing banks with 'vertical turf'; sandy beaches; limestone dolines; dunelands; and wind-shorn shrublands. The maritime turf was dominated in places by sea holly (*Eryngium vesiculosum*) and included *Leptinella calcarea*, a local endemic. The 'vertical turf' had a distinctive array of coastal herbs: *Colobanthus muelleri*, *Chaerophyllum "minutiflorum"*, *Gunnera monoica*, *Nertera depressa*, and *Craspedia "coast"*. Interesting discoveries included *Lepidium desvauxii*, *Plantago masoniae* and *P. raoulii*, *Ranunculus recens* and an oversized *Myosotis pygmaea*. One *Coprosma acerosa* was seen, and its unlikely hybrid with taupata. A hollow near some limestone dolines yielded another hybrid – *Fuchsia excorticata* x *perscandens*. Depressions behind the extensive dunelands supported small ephemeral wetland herbs *Triglochin striatum*, *Lilaeopsis novae-zelandiae*, *Chenopodium prostratum*, and, most notably, *Gunnera arenaria*. We returned via secondary broadleaved species forest rich in climbers and perching plants (e.g. *Metrosideros fulgens*, *M. perforata*, *Earina aestivalis*, *Collospermum hastatum* and *Pyrrhosia eleagnifolia*). Pigeonwood was in full flower.

Day 2, Around the homestead: another day of habitat diversity – estuary edge, bush, beach, wetlands, pasture and pakihi. Under a stand of pine trees was a carpet of *Nematoceras trilobum*. The bush hugging the estuary held *Libocedrus plumosa*, hinau, hard and black beech. Epiphytes included

Asplenium polyodon, *Winika cunninghamii*, *Earina mucronata*, kidney fern and *Ileostylus micranthus* (growing on totara and *Coprosma propinqua*). At Kaihoka Lakes was *Parsonsia heterophylla* and *Acianthus sinclairii*, *Nematoceras trilobus* "pygmy", *Pterostylis banksii* and *Diplodinium alobulum*. *Coprosma areolata*, *Lophomyrtus obcordata* and *Pennantia corymbosa* were among the small-leaved shrubs there. An ephemeral wetland just inland of the beach provided some new tiny plants – *Glossostigma elatinoides* and *Limosella lineata*. At the base of the cliffs was *Melicytus crassifolius* and kanuka, with *Mentha cunninghamii*. Pakihi north of the homestead was home to *Drosera auriculata* and *D. spatulata*, *Thelymitra* sp., *Stegostyla atradenia* and probably *Petalochilus bartlettii*. *Pimelea longifolia* was in flower, as was *Epacris pauciflora*. Tiny *Lindsaea linearis* and a comb fern (*Schizaea fistulosa*) were seen too. Many plants of *Celmisia* "Pupu" had smaller leaves than those we'd seen earlier around the estuary forest margin. The last great find was a single flowering plant of *Pimelea ignota*, doubtless New Zealand's rarest daphne.

Day 3: the northern Kaihoka coastline: First thing, one of the group headed upslope from the homestead and found two very rare orchids: *Linguella puberula* and *Plumatochilos tasmanicum*. Then we headed to the coast through covenanted coastal forest thriving on a pure sand substrate dominated initially by large *Libocedrus plumosa* (a very rare dune species), then by kahikatea and lastly by a huge diversity of other podocarps, including miro, matai, tanekaha, rimu, totara and thin-barked totara. *Hymenophyllum minimum* was discovered on the banks of the track. At the coast was the rare coastal iris *Libertia peregrinans*. Further on, a large area of coastal turf supported *Dichondra brevifolia*, in addition to many of the species seen earlier during the camp.

FUTURE EVENTS

Dec 6: Wairoa Rare plant protection working bee. Leader Shannel Courtney (03) 546 9922
Dec 18–20: Weekend Camp, Canaan Downs. Leader Shannel Courtney (03) 546 9922
Jan 29–1 Feb: Anniversary Weekend Camp, Reefton. Leader Cathy Jones (03) 546 9499
Feb 21: Mt Murchison. Leader David Grinsted (03) 542 4384 or Cathy Jones (03) 546 9499
Mar 21: Maitai Caves. Leader Lawrie Metcalf (03) 540 2295
April 1–5: Easter Camp, Kaikoura. Leader Cathy Jones (03) 546 9499

President: Cathy Jones (03) 546 9499. Flat 1 47A Washington Rd. Email: cjones@doc.govt.nz

Treasurer: Trevor Lewis (03) 547 2812. 22 Coster St. Email: tandjlewis@actrix.co.nz

■ Canterbury Botanical Society

The Society had a good range of field trips and talks throughout the first half of the year. This variety is exemplified in the summaries below which cover most of the second half of 2009.

July Meeting: Pollination and other Research: Jenny Ladley, Dave Kelly, Alastair Robertson and Sandra Anderson, School of Biological Sciences, University of Canterbury

An overview was given of research on the effects of changing mutualisms in the New Zealand, in particular pollination and seed dispersal, carried out by this research group. The majority of the talk described a study on pollination of *Sophora prostrata*, which occurs in isolated populations scattered throughout Canterbury, the centre of its rather restricted distribution nationally. It has large yellow ornithophilous (bird-adapted) flowers; bellbirds and tui, the most likely native birds to visit the flowers, are uncommon in Canterbury and throughout its range reproduction levels are poor. Bumblebees and honeybees robbed the vast majority of flowers studied and natural fruit set was low with just 6.9 to 19.1% of the flowers setting fruit. Anatomical studies suggested that while the plants are self compatible pollen has to be physically deposited on the stigma. Observed low fruit set levels seem to be due to both pollination failure and other factors (the plants are often found growing in rather dry, open, grazed pasture lands). Research results were also presented on the germination of large (above 10 mm diameter) fleshy seeds, such as tawa, miro, karaka, kohekohe and taraire.

July Field Trip: The Fernery, Christchurch Botanic Gardens

The fern house had recently been cleaned out leaving only a few tree ferns and *Marrattia salicina*. New plants, supplied by Fern Factor Nursery, represent some of the hardier species from around the country. Two interesting species were *Anarthropteris lanceolata*, with undivided fronds and large bulging sori on the underside, and *Sticherus flabellatus*, in the South Island found only in NW Nelson and N. Westland, with erect fronds with rachises in 1 or 2 tiers each forking 2- 3 times. Members also

looked at the Native plant demonstration gardens - a dry garden, bush garden and roof-top and patio garden - designed to show the public what can be achieved in the home garden using native plants.

Dean Pendrigh

August meeting:

Colin Meurk presented an illustrated talk on the state of plants and vegetation across the Canterbury region. He started with a rundown (from mountains to sea) of representative plant communities and iconic species and then described the impacts on the natural vegetation patterns since the arrival of people. He concluded by providing examples of approaches to protection and restoration of natural values from local to landscape scales and from semi-wild situations to urban environments. He emphasised how everyone can make a contribution, even in their own backyard, to protecting our unique flora.

August Field Trip: Landcare Research, Lincoln & Prebbleton Nature Park

Katarina Tawiri, who manages the national collection of harakeke (flax segregates), showed us around the recently refurbished collection. We were shown the differences between *Phormium tenax* and *P. cookianum* and challenged to recognise hybrids between them. These occur readily in the experimental garden (although not in the wild). Katarina showed us how the flesh of the leaf is stripped from the fibre using a mussel shell, and how this differs between the segregates. A fine stand of ti trees, *Cordyline australis*, collected from across NZ, awaits a future visit to appreciate their regional characteristics. Prebbleton Nature Park is a restoration project established in and around a shingle pit in use until the mid 1970s and grazed until 2002. To date over 7,000 plants have been planted representing the Canterbury flora. Some of the rarer species are finding a niche as habitats improve.

Bryony Macmillan

September Meeting: Foreign Invaders and their Contribution to the Garden City - Max Visch

Max gave a talk, illustrated with slides, on exotic trees in and around Christchurch and some of the interesting history behind them. Some of the first *Pinus radiata* brought to NZ were imported by J. Acland in 1859 from Veitch's Nursery in England. He also obtained the first 5 specimens of *Sequoiadendron giganteum* in NZ; ones planted at Mt Peel Station and Raincliff Station still stand today. T.W. Adams recognized the timber potential of both *Pinus radiata* and *Cupressus macrocarpa* in his early plantings at Greendale, Canterbury. Adams also grew a wide range of other trees including 400 varieties of apple often with several varieties grafted on one tree. The grounds surrounding Riccarton House, Christchurch contain some very old and large trees including a *Eucalyptus globulus* with a trunk diameter of 2 m, an English elm, *Ulmus procera*, over 40 m tall and a 'Jargonelle' pear tree planted in 1850 which is 26 m tall and still fruiting. In NZ plantings of *Pinus pinaster* became naturalized very quickly in some sandy areas leading to it being described initially as a NZ species and given the name *Pinus novaezelandica*. There are excellent specimens on former sand-dunes in Hagley Park and the Botanic Gardens. Unusual trees included *Salix magnifica* (with broad leaves that could be mistaken for a magnolia) and *Parrotiopsis jacquemontiana* (with flower clusters which are similar to some dogwood flowers).

Gillian Giller

September Field Trip: The Port Hills Visitor Centre Gardens, Victoria Park

The gardens, established by Di Carter, Port Hills Ranger, in 2001 surround the Visitors Centre by the main car park in Victoria Park. They give access to many species, both common and rare, found on the Port Hills. Trees included *Sophora microphylla* in full bloom, five finger (*Pseudopanax arboreus*), *Coprosma lucida* and *Fuchsia excorticata*. On rock outcrops prostrate kowhai (*Sophora prostrata*) was in bud as was the elegant regional endemic Banks Peninsula sunhebe (*Heliohebe lavaudiana*). The native iceplant (*Disphyma australe*) and NZ linen flax (*Linum monogynum*) were in full flower. Both the nationally critical Banks Peninsula forget-me-not (*Myosotis australis* var. *lytteltonensis*) and the nationally endangered Pygmy button daisy (*Leptinella nana*) were seen. The Society was able to identify the locally uncommon bloodwood (*Coprosma wallii*) in the unique and divaricating garden – these and some of the other *Coprosma* species can now be given plant labels for the benefit of future visitors who come to discover Port Hills plants.

Di Carter

October Meeting: Podocarpus hallii Research Project - Alwyn Williams, School of Forestry, University of Canterbury

Alwyn is 2 years into a 3 year research project on *Podocarpus hallii* and the effect of arbuscular mycorrhizas on their growth rate. Being able to maximize the growth rate of plants is especially important for slower growing species like *P.hallii*. There are 2 types of mycorrhiza – ectomycorrhiza

(EM; external to roots with visible fruiting bodies) and endomycorrhiza (internal & underground fruiting bodies); the latter is divided into 5 groups of which the most widespread are the arbuscular mycorrhizas (AM). Mycorrhizas live in close relationships with plant roots, and usually have beneficial effects on that plant's growth. *Nothofagus sp.* roots are only colonized by Ems; *Leptospermum* and *Kunzea* are colonized by both EMs and AMs; nearly all other NZ plants are only colonized by AMs. *Podocarpus hallii* cuttings collected from near Omarama were grown in soil containing AMs from two sites – some soil where *P. hallii* forest was present and some from nearby pasture. (Locally sourced mycorrhizas are best for inoculation purposes; the duff layer contains EM hyphae, but soil needs to be collected to obtain AM hyphae.) Rooted cuttings inoculated with the forest soil grew well while the AMs from the pasture soil had a detrimental effect and cutting grown in a sterile mix resulted in an intermediate growth rate.

Gillian Giller

Report on Banks Peninsula Camp: QEII covenants, South Eastern Bays, 13th - 15th Nov

Friday (freezing southerly & rain then sunny): Fishermans Bay covenant (Richard and Jill Simpson) - rocky shore rising through coastal bush. *Myoporum laetum*, *Melicytus ramiflorus*, *Kunzea ericoides* and *Dodonaea viscosa* vigorously overtopped the gorse in the first part we walked through. *Einadia allanii* and *Tetragonia trygyna* rambled over large areas of the understory. *Korthalsella lindsayi* was spotted on *Coprosma crassifolia* and *Lophomyrtus obcordata*. On the sides of the gully the roots of *Griselinia lucida* with their distinctive furrowed bark grew over the large rocks. We were shown two ferns which are rare on Banks Peninsula, *Arthropteris tenella* and *Anarthropteris lanceolata*. Fur seals were plentiful on the beach. In the afternoon we walked around the extensive garden planted in both natives and exotics, including a large number of hebe species and their cultivars. Later we drove to Otanerito and walked along the Fantail Track on Hinewai to the falls. An understory of regenerating *Melicytus ramiflorus* and *Asplenium gracillimum* flourished under the tall kanuka. An occasional suppressed gorse plant indicated a battle mostly won in this area.

Saturday (hot & sunny): Stony Bay covenant (Mark and Sonia Armstrong) – S facing slope from beach rising through coastal bush, recent covenant. Following recent stock removal there was already a range of shrub and tree seedlings thriving under the kanuka canopy. Hugh Wilson was present to guide us. Of note were *Senecio glaucophyllus* subsp. *basinudus* in full flower on a dry spur, *Brachyglottis sciadophila*, and, in the mist from two waterfalls, *Corybas macranthus* (*Nematoceras macranthum*) and a large patch of *Adiantum cunninghamii* growing on vertical rock. There was a lone tall nikau with many seedlings near by, and lower down a single mamaku. Since fencing, *Microsorium scandens*, very rare on Banks Peninsula, has responded vigorously and now there are some spore bearing fronds. Large vines (approaching 10cm diam) of *Passiflora tetrandra* looped around on the ground. On one part of the track there were some large *Melicope simplex* trees in a dense stand. *Lastreopsis glabella*, *L. velutina* and *L. hispida* were found growing together. Above the waterfalls *Tupeia antarctica* was seen growing on *Myrsine australis*. The track sidled around the hill through the kanuka and then dropped down through a moist gully to sea level where *Blechnum minus* and *B. novae-zelandiae* were identified.

Sunday (foggy & cold): Foggy Gully covenant (Darryl and Jenny Pringle; covenanted by John Wilson and Ash Spice who also joined us to give us an idea of the site prior to fencing) remnant of high altitude beech forest, upper altitude 600m. The covenant has an area of mature *Nothofagus fusca*, *Nothofagus solandri* and *Podocarpus hallii* with the balance in gorse with regeneration at various stages. An existing farm track made for fairly easy walking. Young *N. fusca* were filling the gaps in places and there were plenty of *Griselinia littoralis*, *Pseudopanax colensoi* and coprosma seedlings. Planted *Cordyline indivisa* and *Celmisia mackaui* thrived in the climate. *Hymenophyllum flabellatum* and *Blechnum colensoi* were growing by the stream. Further along several clumps of *Korthalsella salicornioides* on kanuka were seen. After lunch we drove over the saddle and down into the top of Flea Bay to the DoC Tutakahikura Reserve. We found *Tmesipteris aff. elongata* (a fork fern endemic to the peninsula) epiphytic on tree fern trunks and a healthy patch of *Rumohra adiantiformis* growing at ground level.

The three days gave us an insight into the wide range of plant associations which occur in the areas either side of Hinewai – from coastal through to montane. The prolific flowering of *Fuchsia excorticata* simply added to the enjoyment.

Gillian Giller

Summer Camp 2010: 15th – 22nd January at the Glen Mary Ski Club, Lake Ohau.

The Glen Mary Ski Club is about halfway between the Ohau village and the Ohau Lodge. It has good kitchen facilities (3 fridges and a deepfreeze), and can accommodate about 20 people in 3 separate bunkrooms. There is space for tents as well. The cost will be \$20.00 per night per person. From this location we will be able to visit a wide range of different habitats. Please contact Gillian Giller ph. 03 313 5315 for bookings or further information.

FUTURE EVENTS

February 5 th	Amber Sciligo – <i>Drosera</i>
February 13 th	Field Trip (to be decided)
March 5 th	Collin Burrows – <i>Pimelea</i>
March 13 th	Field trip to Doctors Hill, Waikari
April 9 th	Geoff Walls – Subantarctic Islands
May 7 th	Show & Tell
May 15 th	Field trip to Orton Bradley

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Wakatipu Botanical Group

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NOTES AND REPORTS

■ The True Identity of *Pimelea haastii* Kirk

Colin Burrows, Research Associate, Biology School, University of Canterbury

Thomas Kirk (*Trans. NZ Inst.* 12, 396 (1880)) published a species name, *Pimelea haastii*. His text noted that the plant was “6-10 inches [15-25 cm] high. Branches few (?), very slender, with silky hairs. Leaves in distant pairs ... ascending, narrow lanceolate, $\frac{3}{4}$ -1 $\frac{1}{4}$ inches [19-32 mm] long, acute, hairy below or nearly glabrous ...”. This plant was supposed to have come from the Canterbury Alps. Its collectors were named as “Prof. von Haast” and “Mr [J B] Armstrong”.

The material that supports the description consists of two specimens. One is from the old Canterbury Museum herbarium, now at the National (Allan) Herbarium - CHR 330609 Source of the Porter (?), Canterbury, South Island, New Zealand, Coll. by *Dr von Haast*, no date. It is a single stem with eight leaves and two involucral bracts (smaller than leaves). The internodes are long and the leaves are opposite pairs, not really decussate. The largest are elliptic 18 x 5.2 mm, pale and sparsely hairy abaxially, glabrous adaxially, mid vein and lateral veins evident, margin down-turned, petiole 1.5 mm, tip acute. The stem is slender with narrow, longitudinal furrows and covered in moderately dense, short, fine, ascendant hair. Flowers (bisexual) are 4.2 mm long with calyx lobes 1.2 x 1 mm. The second specimen is from the Kirk herbarium at the National Museum, Te Papa, WELT SPO 44222 - locality unknown, Mr Armstrong, no date. It consists of one long and two short pieces of stem with more than 20 loose leaves (some damaged by insects) and about 10 loose flowers. The largest leaves are about the same size as those on the CHR specimen.

Cheeseman (1925) accepted the species, but thought it might be a form of *P. virgata* (= *P. tomentosa*). Allan (1961) placed *P. haastii* in his list (p. 298) of incertae sedis.

In 1990 I labelled the WELT specimen as *P. tomentosa* (J. R. Forst and G. Forst) Druce, because I thought it might be an aberrant form of that species. More recently I have suspected the specimens to be Australian because they are dissimilar to all other New Zealand plants and also because no other plants like them have been found in this country.

A search in the Australian *Pimelea* folders at CHR and comparison with the descriptions and illustrations in Rye (1990) confirmed that "*P. haastii*" is, indeed, Australian. CHR 330609 and WELT SPO 44222 are small fragments of a species, *Pimelea drupacea* Labill, *Nov. Holl. Pl. 1: 10* (1805), which is a tall shrub 1-3 m high. It is widespread in Tasmania and also present on King Island in Bass Strait and in one location on the Australian mainland, at Wilson's Promontory, Victoria.

The *P. drupacea* folder at CHR has five 20th C. gatherings by Australian and New Zealand botanists. Those most similar in leaf size to the CHR and WELT fragments are CHR 416674 Eagle Hawk Neck, 17 m, *W. Harris*, *A. Moscal*, *A. Buchanan*, 4 Nov 1983; and CHR 491248 ex Tasmanian Herbarium, Hobart, HO 401534 Mouth of Spero River, Alt 20 m, *A. Moscal* 21 Jan 1984.

Characters of *P. drupacea* (other than its height) that set it apart from any New Zealand *Pimelea* species are that the stems are straight, narrow and divergent; the leaves are distant, opposite pairs (not decussate); as well as terminal inflorescences there are some that are axillary; only two involucral bracts subtend each terminal inflorescence.

How did a mix-up of Australian *Pimelea* material (that came to be regarded as having a New Zealand provenance) occur? An older specimen (with two pieces) in the *P. drupacea* folder at CHR may help to solve this mystery. The sheet, CHR 146089 Mt Wellington [near Hobart] was gathered by G. M. Thomson but there is no date. It was labelled as a *Pomaderris* by Thomson. A person named as N. G. Walsh later wrote *P. [imelea] drupacea* on the sheet, again with no date. Character by character comparisons with information in Rye (1990) show that this identification is correct. Also the stem and leaf characters of the CHR 146089 plant accord very well with CHR 33069 and WELT SPO 44222. Furthermore, the largest leaf sizes of all three are very similar. All may be part of the same gathering.

It is not known how CHR 33069 and WELT SPO 44222, respectively, came into Haast's and Armstrong's hands. Thomson, Haast and Armstrong were all alive when Kirk described *P. haastii* - it is surprising that a mix-up of specimens was not acknowledged at this time. I do not intend to speculate further on the matter. New information may emerge and the situation may have an innocent explanation.

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Cheeseman, T. F. 1925. *Manual of the New Zealand Flora*, 2nd edn., Govt. Printer, Wellington.

Rye, B. L. 1990. *Pimelea*: Thymelaeaceae. *Flora of Australia* 18: 134-211.

■ **Lichen notes 2: Lichens on the move - are they telling us something?**

David Galloway, Landcare Research, Private Bag 1930, Dunedin 9054 gallowayd@xtra.co.nz

Earlier this year I was at Lincoln for a week working on the CHR backlog of unidentified lichens. For the duration of my visit I stayed at the Lincoln Hotel. In 1977, at the start of 4 years of commuting on a regular basis between London and Lincoln, I stayed at the Lincoln Hotel for 5 months. Although the public areas of the hotel have changed quite a bit over the intervening 34 years, the upstairs accommodation has not and it was a bit like returning “home” to be given the room that I had used in 1977. Although the hotel is now known by the name “The Famous Grouse”, upstairs nothing had changed except the colour of the bedroom walls.

However, what is very striking to me is that in those 34 intervening years, the local lichens have certainly changed a lot. Sufficiently so for me to write something on some lichens that seem to be actively extending their range and coverage in urban and rural environments in southern New Zealand at least. The first thing that I noticed on the walk to and from the hotel, was that the yellow-green lichen *Xanthoparmelia scabrosa* was much more obvious on footpaths and road verges than I had remembered it in 1977. Then, the great growth of trees and shrubs in the gardens around what I still tend to call “Botany Division” has now a well-developed lichen flora too [with *Candelaria concolor*, *Lecanora carpinea* and *Xanthoria polycarpa* now common along with *Punctelia subrudecta*, *Ramalina celastri* and *Xanthoria parietina* which were always conspicuous in the 1970s (see Daly 1970)], including also the tanalised timber picnic table and seats that the Herbarium and Plant Biosystematics staff use as a coffee and lunch stop outside the Allan Herbarium entrance door. Indeed, this latter object has an increased lichen cover each time I visit it seems. It is now hard to escape the very obvious fact that lichens in urban and agricultural environments are increasing in both cover and diversity, with the emergence of a number of really “weedy” taxa. Interestingly, several of these “weedy” lichens are amongst the most commonly seen (but seldom registered) living organisms in our parks and gardens and built-up environments, yet they are still very inadequately represented in herbaria. Nearly 40 years ago, Peter Raven exhorted New Zealand botanists and naturalists not to ignore either noting or collecting common species (Raven & Engelhorn 1971), since these taxa are often poorly represented or not represented at all in herbaria. This is sadly true for our lichens, with many extremely common and widespread species virtually unrecorded. Raven’s paper is well worth reading again and its message is very relevant to studies of the New Zealand lichen mycobiota, where considerable efforts expended in looking for either new, rare or otherwise interesting taxa, have blinded us to the existence of rich urban and rural lichen communities comprised of common or familiar species on largely man-made substrata. There are exciting changes going on in these communities and they deserve to be recorded and studied.

In the following notes I mention a few of these common lichen weeds, and hope that they may be studied more widely, collected and commented upon. All of them are discussed in the lichen Flora (Galloway 2007). Lichens are well-known bioindicators of atmospheric and terrestrial pollution and of environmental change (Galloway 2008), so the dramatic increase of several lichens in our urban and agricultural landscapes over the past 30 years is obviously indicative of distinct changes in local and/or regional climates and ecological conditions, so they should be “watched”. A friend of mine, the late Oliver Gilbert was a British ecologist who was fascinated by lichen succession in a variety of habitats often overlooked by lichenologists and botanists in the United Kingdom (see Gilbert 1989, 1990, 2000a, 2000b), and over 3 decades he made British lichenologists aware of the lichen-led changes taking place in British towns and cities. I believe that we are now seeing something similar underway in both urban and agricultural environments in New Zealand. I hope that the following notes will encourage New Zealand botanists (and others) to start looking at the communities of lichens growing around them. Our local lichen literature has almost nothing to say about urban lichens, so there is a wide field of study waiting to be tapped into. Most of the lichens noted below appear to be early colonisers of new surfaces such as recently painted wood or concrete, worked or tanalised wood, brick, roughcast or concrete, glass, metal or asphalt, with a lag period (ecesis) of 1-5 years before noticeable establishment and growth. The only published study to date on urban lichens in New Zealand, is Gavin Dayly’s pioneering paper on lichens and air pollution in the Christchurch-Lincoln area (Daly 1970).

Buellia griseovirens: This lichen, which is characterised by its green-grey to somewhat bluish, spreading soralia was first collected in New Zealand in 1981, from silver birch bark by Prof. Per Magnus Jørgensen, during the IAL field trip to New Zealand. I noted at the time "...It is probable that this overlooked species is more widely distributed on stands of *Betula* throughout New Zealand" (Galloway 1985: 49). It certainly is much more widespread in New Zealand, but not on *Betula*. Rather, it is one of the most commonly occurring lichens on tanalised or worked wood in both urban and rural environments and is often found on the bark of introduced trees, though it also grows on some species of *Coprosma* and on *Discaria*. In recent years it has conspicuously increased its range and cover on tanalised or worked wood surfaces (fence palings, railings, garden furniture, park benches and seats, letterboxes). In the Northern Hemisphere it is a common pioneer species tolerant of moderate pollution (Smith et al. 2009).

Candelaria concolor: This golden-yellow, small-squamulose, sorediate lichen is widely distributed on eutrophicated bark of introduced trees in parks, gardens and roadside plantings in urban areas and is commonly seen on *Betula*, *Cotinus*, *Malus*, *Populus*, *Quercus* etc as prominent yellow streaks following water runnels, or forming widespread colonies on trunks. It will also colonise wooden roofing shingles. While it is also known from *Discaria*, rocks and burned stumps in upland areas it is most common in urban habitats.

Candelariella spp.: Three species of the golden-yellow crustose genus *Candelariella* are common and increasing in urban environments. *C. aurella* on concrete paths, kerbing, window ledges and walls; *C. reflexa* on shaded, nutrient-enriched bark of introduced trees on roadsides in moderately to heavily polluted sites, and the widespread *C. vitellina* on walls, bricks, roof tiles, decorticated wood (fenceposts, gates, painted railings, garden furniture, wooden seats etc), asphalt of footpaths and roads and rusted iron railings.

Lecanora carpinea: A pale grey-white crustose lichen with usually dense development of pale grey-white apothecia (that are C+ yellow). It is extremely common and widespread on twigs branches and trunks of lowland, mainly deciduous, introduced trees in parks, gardens, orchards and riverbanks. It is often the dominant crustose lichen on ladders, willows, poplars and fruit trees and is now the most common corticolous species of *Lecanora* in New Zealand (Galloway 2007). It appears to be able to withstand moderate to heavy pollution loads in urban environments. It is a very common pioneer lichen on the smooth bark of deciduous trees and shrubs and one of the earliest colonisers of young twigs. It is likely that this species is a fairly recent introduction to the New Zealand lichen mycobiota. Although its growth and spread has been rapid here, and it is the most common and the most noticeable of urban corticolous lichens, until very recently it was still largely unrepresented in our herbaria.

Lecanora expallens: This is a pale yellow or yellow-green, granular-scurfy crust increasingly found on bark of introduced trees in parks and cemeteries, and on wooden fences, railings, seats and garden furniture in urban environments. It occurs in urban habitats with *Buellia griseovirens*, *Candelariella vitellina*, *Lecanora dispersa*, *Physcia adscendens*, *Ramalina celastri*, *Teloschistes velifer*, *Xanthoparmelia mougeotina* and *Xanthoria candelaria*.

Physcia spp.: Several sorediate species of *Physcia* are common and widespread in New Zealand and have increased, or are increasing their ranges on man-made substrata and introduced trees. *P. caesia* is increasingly seen on asphalt footpaths in southern New Zealand (often with *Placopsis perrugosa* and *Xanthoparmelia scabrosa*), although it is extremely common and with very high cover values on sunny schist surfaces in Central Otago. *P. adscendens* is a quick coloniser on both native and introduced trees and shrubs, but especially common on fruit trees and ornamental trees in gardens and along roadsides, and on both basic (limestone) and acidic (basalt, greywacke, schist) rocks, on concrete, asbestos sheeting, shade cloth, asphalt of footpaths and bitumen of little-used roads, gravestones, iron railings, sawn and treated wood (fenceposts, palings, railings, gates, window frames etc) and on old painted surfaces. One of the most catholic and widespread of lichens. Foliose, sorediate species of *Physcia* on the bark of introduced trees in parks and gardens, even in areas where there is moderate atmospheric pollution, are *P. poncinsii* and *P. undulata*, both of which appear to be on the increase. On a recent visit to my home town of Invercargill I noticed that the lichen *Physcia jackii* has dramatically increased its cover on the bark of mature flowering cherry and Lombardy poplar trees especially, being the dominant species on poplar and developing very large

colonies up to 18 cm in diam. Fifty years ago on the same trees this lichen was much less common. Elsewhere in its range it does not reach such luxurious dimensions

Placopsis perrugosa: This is the most common and widespread species of this species-rich, nitrogen-fixing genus in New Zealand, spreading over rock faces, boulders stones and pebbles, along river and stream banks, glacial moraines and roadside cuttings where native rock is exposed. It will also colonise a number of man-made surface including old rusty iron, and the polished surfaces of gravestones in cemeteries. In southern New Zealand in recent years it has begun to colonise asphalt footpaths and tennis courts in Dunedin and Invercargill (sometimes also with *Placopsis cribellans*) and roofing tiles and cladding. On asphalt it is often associated with the lichens *Candelariella vitellina*, *Lecanora semipallida*, *Physcia caesia*, *Trapelia coarctata*, *Xanthoparmelia scabrosa* and *X. verisidiosa*.

Placynthium nigrum: This characteristic, rosette-shaped, black squamulose to subcrustose species is common on exposed limestone surfaces. It also colonises a range of calcareous building materials such as cement, mortar and concrete, especially on bridge parapets and walls made of limestone and on concrete surfaces in cemeteries. It recently appeared on a concrete birdbath in my garden in Dunedin, and I have noticed colonies starting to appear on concrete paths in Dunedin also.

Protoblastenia rupestris: This lichen is found on calcareous paving stones in many parts of Auckland and seems to be increasing its range on this substratum. It also occurs on concrete in the Northern Cemetery in Dunedin. Elsewhere in New Zealand it is found mainly on limestone outcrops. It is frequent in urban environments in the Northern Hemisphere (Smith et al. 2009), so should be looked for more widely in urban habitats here.

Punctelia spp.: *Punctelia borrieri* (black lower surface) and *P. subrudecta* (pale pinkish brown lower surface) are two sorediate lichens that are good indicators of disturbed and eutrophicated habitats. They are especially common (with *P. subrudecta* being more widespread apparently than *P. borrieri* in New Zealand) on introduced trees in parks, gardens, roadside plantings and on farms, on decorticated wood (fence posts, railings and gates), especially in eutrophicated (high nitrogen) and moderately polluted environments.

Ramboldia laeta: This crustose lichen (formerly known as *Pyrrhospora laeta*) has an inconspicuous thallus but prominent orange-red to cinnabar-red, clustered apothecia that make it instantly recognisable. It is an early coloniser of dead terminal branches of *Leptospermum scoparium* in successional habitats and was recently found on plantings of Alder in Palmer's Quarry, Dunedin, so it appears able to colonise young introduced trees in urban environments. It is a beautiful lichen well worth searching for in urban environments.

Ramalina spp.: The two fertile species that are most common and widespread in New Zealand, *R. celastri* and *R. glaucescens* are weedy taxa that have dramatically extended their range and cover on man-made substrata in both urban and rural environments. *R. celastri* is the most common species in New Zealand (Bannister et al. 2004) being a conspicuous and early-colonising epiphyte of introduced and native trees (especially fruit trees) and shrubs in parks, gardens and roadside plantings and growing also on worked and painted wood, concrete walls and bridges, garden furniture and ornaments, shade-cloth, fence-posts, gates and railings, often forming considerable swards, especially on south-facing surfaces.

Rhizocarpon geographicum: Although most commonly thought of as a widespread alpine lichen, this characteristic species is also occasionally found on coastal rocks, and is also increasingly seen on gravel chippings in bitumen, on walls, bridge capping stones, gravestones, brick walls and roof tiles in lowland urban habitats. On sunny top surfaces of brick walls in Dunedin, *R. geographicum* is sometimes the dominant lichen with specimens up to 6 cm diam. on 50-year old surfaces, together with species of *Aspicilia*, *Buellia* and *Porpidia*.

Sarcogyne regularis: This is a crustose species with an inconspicuous, endolithic thallus, clustered apothecia slightly sunk in pits in the substratum and having a blackish disc that is usually densely grey-blue-pruinose. It is an early coloniser of concrete pavers (often associated with *Caloplaca citrina*), concrete footpaths (where it is often very common and well-developed), mortar and concrete

walls, mostly in lichen-poor communities. It was first discovered in New Zealand by the late Dr James Murray on his concrete path in Dunedin in 1961. Although it occurs naturally on calcareous sandstone and soft weathered limestone, it grows readily on concrete and is a common and increasing lichen in urban environments.

Teloschistes velifer: This is a widespread, orange lichen having hooded apical lobes with soredia developed on the under-surface which facilitate its rapid spread. It occurs on living bark of both native and introduced trees and shrubs, often on dust-impregnated branches, on dead twigs and decorticated wood, rocks, gravestones, concrete posts and fences (it will establish on recently-painted concrete blocks within 12-18 months after painting), and occasionally on old iron railings. It is particularly common on wayside trees, hedges, gates and old fenceposts in rural areas, and on plants trees in parks gardens and roadsides in urban habitats where it is an early coloniser, sometimes forming extensive swards of young thalli. It appears to be able to withstand moderate levels of atmospheric pollution in both urban and industrial areas.

Xanthoparmelia mougeotina: This lichen has narrow, stellate-radiating lobes, and minute isidia on its upper surface. Although widely occurring on both schist and greywacke rocks it will also colonise ceramic insulators on fallen power poles, glass shards and old bottles in upland grasslands. It is now also actively extending its range onto man-made substrata in southern New Zealand being known from asphalt, concrete, tanalised timber (wooden seats, garden furniture railings etc), bricks and roof tiles.

Xanthoparmelia scabrosa: This lichen is characterised by its pale yellow-green colour and the presence of superficial pustular isidia, that are effective agents of its dispersal. It is probably the most aggressive coloniser of man-made substrata in New Zealand (asphalt, concrete, glass (notably greenhouses), metal (of abandoned cars), plastic sheeting, gravestones, wood, roof tiles etc), and certainly in the last 30 years it has noticeably increased in cover on asphalt paths and roads and on margins of airport runways in many parts of New Zealand, and is probably the most common urban lichen that we have in terms of area colonised (see Green & Snelgar 1977; Galloway 1980, 1985, 2007; Green 1997; Bennett & Wright 2004;). It grows rapidly once it has begun to colonise a surface, with Green (1997) recording annual radial growth of 16 mm per year. Indeed, 30-odd years ago the abundant growth of *X. scabrosa* on roads in New Zealand had people complaining that the lichen when wet was hazardous, causing cars to skid (Green & Snelgar 1977). Although it has a well-known chemistry (see Foo & Galloway 1979; Ernst-Russell et al. 1999), *X. scabrosa* is notoriously and inaccurately touted as a "male enhancement product", with a plethora of lurid websites attesting to this lichen as being... "an ancient Chinese secret" and ... "in use for thousands of years by traditional practitioners". Whatever the Viagra-like properties claimed for this lichen, its active spread on asphalt in New Zealand towns and cities over recent years is an established fact (Bennett & Wright 2004). It is the Southern Hemisphere counterpart of *Xanthoparmelia conspersa* which is the dominant macrolichen of disused tarmac runways in Britain (Gilbert 2000a).

Xanthoparmelia verisidiosa: This lichen is greenish brown or olive greenish in colour and has minute superficial isidia which undoubtedly facilitate its spread. It grows on damp asphalt surfaces (footpaths, tennis courts) in southern areas, often together with *X. scabrosa* but it is not nearly as noticeable or as common as *X. scabrosa*.

Xanthoria spp.: *Xanthoria candelaria* (sorediate), *X. parietina* and *X. polycarpa* are all colourful, orange-yellow or yellowish lichens that are often common and conspicuous on man-made substrata. *X. candelaria* is an epiphyte of introduced trees in parks, gardens and street plantings where it appears to withstand moderate to high pollution levels. It is probable that this species is introduced in New Zealand. *X. parietina* is a common epiphyte of both introduced and native trees and shrubs. It also occurs on rocks (maritime and inland, acidic and basic), wooden gates, railings and fences, concrete (posts, walls, kerbing, paths), glass, plastic shade cloth, bone, painted wood. Metal and concrete, gravestones and abandoned vehicles. It commonly occurs spreading over gravel chippings and bitumen on roadsides in country areas, where its distribution may be encouraged by ammoniacal enrichment from sheep urine derived from frequent passage of sheep trucks and other farm vehicles. It is generally more common on introduced trees and shrubs and hedges in urban and rural environments than it is on native vegetation in unmodified environments. *X. polycarpa* occurs on twigs and trunks of introduced trees, being most commonly found in parks, gardens, roadside plantings and hedges, and painted wooden surfaces such as exposed rafters and pergolas. In a garden settings it

will colonise young trees of *Betula pendula* within 4-5 years of planting and it is an early coloniser of bark wounds from pruned branches. Specimens are always small (and thus commonly overlooked) and tend to develop on rather young, smooth surfaces, being lost as the bark ages and furrows. It appears likely that it is an introduced species in New Zealand.

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BIOGRAPHY / BIBLIOGRAPHY

■ Biographical Notes (74) John Davies Gilbert Enys (1837–1912) and Eva Carlisle Richards (c. 1879–1961)

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The two subjects of this note are not brought together because of any blood relation, but because both had close associations with the Castle Hill Station in inland Canterbury. This lies in the Castle Hill Basin (a.k.a. the Trelissick Basin or Broken River Basin) on the main road from Christchurch to Arthur's Pass and the West Coast, and is so named because of its striking outcrops of tertiary limestone.

J.D.G. Enys

John Enys was born at Enys Place, near Falmouth, Cornwall, on 11 October 1837 and was educated at Harrow. A born collector, he published on "Falmouth Algae" in a Cornish scientific journal at age 14 (1,2,3). On 16 April, 1861, he sailed from Gravesend for New Zealand on the *Chrysolite* accompanied by his cousin, J.B. Acland, who was returning from a visit to England. On 24 July they sighted the Snares, and on 27 July reached Lyttelton (2,3,4).

John first worked for C.G. Tripp at Mount Peel Station, but when his younger brother Charles arrived in 1863 they bought the Orari Gorge Station in partnership with E. Curry, from Tripp who was returning to England. However, when Tripp soon came back he bought back the run from them, and in 1864 they bought the Castle Hill Station (in brief partnership with Curry) from the Porters. Here they built their home "Trelissick" and for the next 24 years lived and worked together with periodic visits back home. Neither married (2,3,4).

L.G.D. Acland, in his *Early Canterbury Runs* (5) wrote of John Enys: "His interests were in decided contrast to those of his brother. Some of his letters in the Canterbury Museum make clear that they were, in order of importance, ferns, moths and butterflies, cats, human beings, sheep."

Enys's large collection of ferns contained one outstanding gathering. This was *Botrychium lunaria*, the moonwort, hitherto unknown in NZ. Enys wrote: "on 15th November 1882, I was engaged laying out the line of a wire fence across a piece of ground of a peaty nature, resting on a stiff clay, about 2000 feet above the sea [on the south-east slope of Mount Torlesse], when I detected the first specimen of this well-known fern. After a close search, I failed in finding a second, indeed a first specimen had only just shown up. About a week later I found a number more showing up in the same neighbourhood; a month or so later not one remained. This may be partly owing to the dry season." (6)

This discovery while fencing reminds me of George Stevenson's account of his discovery of the New Zealand tree broom. "I first saw *Chordospartium stevensonii* – a nameless tree at that time – in December, 1904, when my neighbour and a fencing contractor and I were following the surveyed line for the boundary fence on the sheep run I had just taken up in the Clarence Valley."(7)

Enys also made a collection of New Zealand butterflies and made it available to A.G. Butler of the British Museum (Natural History). In 1876 Butler wrote *List of the butterflies now known to inhabit New Zealand, with descriptions of a new genus, and a new species [Chrysophanus enysii], in the collection of John D. Enys Esq. (Ent. mon. Mag.)*; and in 1880 appeared *Catalogue of the butterflies of New Zealand* – by A.G. Butler; with short preface by John D. Enys (Editor) Chch G. Tombs & Co. (8).

As for "human beings" Enys hosted many New Zealand and overseas scientists, either just up from Christchurch or en route to the West Coast. These he noted in his diary which has been edited by Mrs Eva Richards for her book *Castle Hill* (4). As this book is not easily available I have taken the liberty of extracting the following entries of interest to botanists. (I have not included entries concerning visits from E.R. Chudleigh of the Chatham Is., Enys's great friend – both were Cornishmen – which Mrs Richards has transferred from Chudleigh's diary.)

1865 (5 Oct.): "to Grasmere with Dr Haast" (who was on his way to the West Coast)

1867 (23 Jan.): "Sir G. Grey arrived by coach". (He had been in Christchurch to unveil the Godley statue and open the museum.)

1867 (8 Apr.): "left Wellington for England" [returned Jan. 1868]

1869 (1 Jan.): "Fereday" [R.W. Fereday, butterfly expert]

1871 (18 Jan.): "Dr Haast came"

1872 (16 Dec.): "Sumner cave with Hector"

1872 (20 Dec.): "Castle Hill with Hector by coach"

1872 (21 Dec.): "Parapet Rock and Broken River"

1872 (23 Dec.): "Parapet Rock, Coleridge Gully and Redfern"

1873 (17 Mar.): "Dr Haast and Mrs came up"

1873 (22 Mar.): "Mrs collecting fish teeth"

1874 (6 Feb.): "Dr Bergen" [sic] [Sven Berggren, Swedish botanist, who spent 18 months in New Zealand]

1875 (16 Feb.): "Baron A. von Hugel came and with him Filhol." [the former an ethnologist the latter visiting NZ after Campbell Is, where he was naturalist and geologist to the French Transit of Venus Expedition, 1874]

1876 (15 Jan.): "With Kirk on Castle Hill" [this was Thomas Kirk not his son, Thomas Henry Kirk, as stated in (4)].

1876 (18 Jan.): "With Kirk to Broken River"

1876 (19 Jan.): "With Kirk to Murderers Creek"

1876 (30 Jan.): "Evening service Craigieburn. Returned with Kirk."

1876 (20 Mar.): "Left for England"

1877 (8 Dec.): "Returned to Castle Hill"

1879 (4 Mar.): "Neaves (Algidus) with Haast and Reishek [sic] plant collecting".

1879 (8 Mar.): "Whitcombe Pass. Caught new butterfly"

1879 (15 Apr.): "Fetched down vegetable sheep for Kew"

1880 (18 Jan.): "With Cheeseman of Auckland up the back range"

1881 (24 Mar.): "By train to Springfield. Drove Miss North to Castle Hill"

1881 (9 Apr.): "Drove Miss North to Otira accommodation house"

1881 (11 Apr.): "Home."

1881 (16 Apr.): "Left for Christchurch"

1881 (18 Apr.): "Wellington"

1881 (27 Apr.): "Saw Miss North off per *Hawea*"

1881 (4 Dec.): "With Benham round bush" [director of the Otago Museum]

1882 (8 Feb.): "Drove Adams to Bealey" [probably T.W. Adams farm forester of Greendale, Canterbury]

1883 (11 Jan.): "With Kirk top of Coleridge Pass and Surveyors Gully saddle"

1883 (22 Jan.): "Bealey glaciers with Kirk"

1884 (26 Dec.): "Haasts came up"

1885 (?): "Walked to top of Castle Hill with Haast. Saw a hare."

1885 (2 Mar.): "Drove Kirk to Cass"

1886 (3 Jan.): "Packed off vegetable sheep for London, Kew"

1886 (17 Jan.): "Hutton up"

1886 (1 Feb.): "Rode with G.M. Thomson" [Dunedin naturalist].

Professor Wall states that: "Every summer for many years, T.F. Cheeseman spent weeks as a guest of Mr Enys", but this is probably an exaggeration.

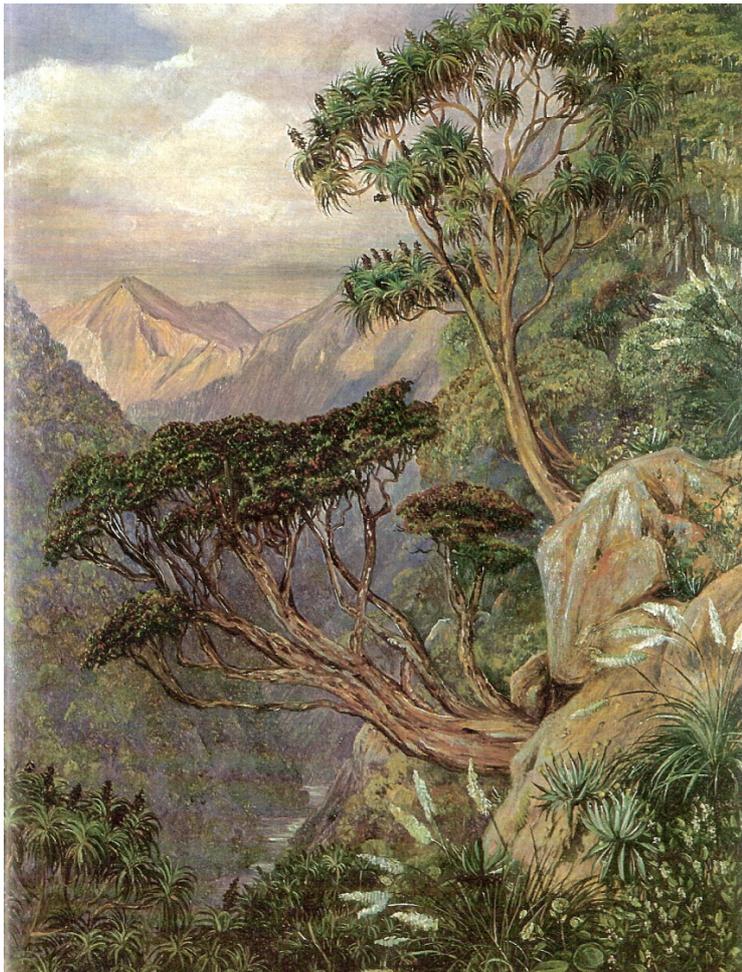
The "Miss North" of Enys's diary was his cousin, Marianne North, the botanical artist. In 1881 she visited New Zealand during a trip round the world in which she painted characteristic plants and scenes in each country. Her very interesting journal and examples of her work are published in *A Vision of Eden* (9). Miss North arrived at Bluff from Hobart, and after visiting Queenstown and Dunedin she headed north, glad to get further from cold (she suffered from rheumatism). Arriving at Christchurch on 23 March "half dead and starved" she was cheered by a "well-regulated and extra-English hotel and the sight of her hosts ("Judge I and his wife"). "They knew everybody and everything and drove me to the club to enquire for my cousin, John Enys, who came up just at that moment, swinging a pot of apricot jam in his hand, which he was going to take back as a treat for me, to celebrate my visit to his station. He took me four hours of rail westward the next morning. He had hired a horse and buggy, which met us at the end of the railway, and we drove over the dreary burnt-up hills to his house, which was called Castle Rock, after a pile of strange old rocks near; they looked like the remains of some fortified place. His own quarters were on the edge of a black beech forest which gave a more cosy look to the spot but they were a hard, cruel sort of trees, the very tallest not more than 40 feet high with leaves as small as the box under which no green thing like to live; their branches feathering to the ground like cedars of Lebanon. John corresponded with all the scientific people of those parts and got into the wildest excitement over a new weed or moth."

On 9th March, Enys drove Miss North to Otira for a couple of days, and she painted the striking view reproduced here.

In 1888, Charles Enys became seriously ill, and was nursed in Christchurch by Mrs Izard before he left for England, where he soon died.

In 1891, John's elder brother died in England, and John had to sell Castle Hill and return home. Before he left, he stayed for a month with the Izards in Christchurch with his last remaining cat to get it used to its new home. He died in Leeds on 7 November 1912.

John Enys's services to the infant province included: "J.P. with the pleasing duty of holding inquests on the many deaths in the district through which passed most of the traffic to the goldfields of the West Coast; member of the road board, County Council and till abolished, the Provincial Council; Chairman of the museum committee; member of the University Senate and of many other societies concerned with the good of the district." (4)



View of the Otira Gorge, New Zealand. By Marianne North, John Enys' cousin, in April, 1881. From "A Vision of Eden".

Eponymy

Mt Enys (Craigieburn Range)

- 1877 *Ligusticum* : "Limestone rocks, Broken River, Canterbury. J.D. Enys and T. Kirk" (T. Kirk)
1880 *Ranunculus* : "Trelissick, Canterbury, 2–3000 feet – J.D. Enys" (T. Kirk)
1884 *Carmichaelia* : "Terraces of the Porter River, Waimakariri. J.D. Enys and T. Kirk" (T. Kirk)
1895 *Agropyron* : "Slopes of Mount Torlesse and Broken River; J.D. Enys! (1877): Bealey Gorge; T. Kirk: 2,500 ft – 4,000 ft Southern Alps; N.T. Carrington! (1881)". "I am greatly pleased to attach the name of its original discoverer to this distinct species, if only to acknowledge the great service he has rendered to botanical science by investigating the flora of the Broken River Basin and other places in the Southern Alps" (T. Kirk).
1899 *Cardamine*: "Canterbury: Broken River Basin, *Cheeseman*. Otago: Mount Ida Range, *Petrie*" (Cheeseman).
1923 *Carex*: "Craigieburn Ra. Nth Canterbury Alps, area 600 ft: Arnold Wall! Mr J.D. Enys to whose memory this species is dedicated, for a number of years occupied as a sheep-run the country where this plant occurs. He took a great interest in the botany of the district, and supplied to the late Mr T. Kirk and others valuable specimens of rare and little-known plants." (D. Petrie).
1945 *Enysiella* : subgenus of *Carmichaelia* (G. Simpson).

E.C. Richards

Eva Richards was born Eva Izard in Christchurch c.1879 (when she died on 12 June, 1961, her age was given as 82 (10). Her father, William Izard (1853–1939), the son of an Anglican clergyman, took his MA and LLB at Trinity College, Cambridge, and was called to the Bar in 1875. He came to Canterbury in 1876 and took an office in Hereford St. in partnership with H.H. Loughman. He lectured in law at Canterbury University College from 1883 to 1902 (11).

Izard's keen interest in skating and fishing led to a close friendship with John Enys of Castle Hill and could mean that young Eva had an early introduction to the high country. She would certainly have known John and Charles Enys when each stayed with her parents before returning to England.

Miss Izard is not mentioned in Hight & Candy's list of Canterbury College students.

Enys's friend, C.R. Chudleigh of the Chatham Islands, was also a friend of Izard – perhaps also a client? – and this friendship opened up the Chathams to Eva, who wrote: "I was at Wharekauri [Chatham Is.] at intervals from 1896 to 1907, my visits generally lasting from two to six months;" and explained that: "My father had told me my special duty was to keep Mr Chudleigh company and not let him brood over his quarrel with the Maori about the ownership of what he considered was part of his land, nor worry about the decline of the population in France. To fulfill these instructions I was out with Mr Chudleigh all day long walking over the home paddocks or riding over the clears, the local name for inland sand dunes covered with scrub, rushes, grass and bracken, or working in the gardens." I have taken these passages from Mrs Richards' very interesting introductory essay to her edition of E.R. Chudleigh's Chatham Island diary.

Eva Izard married Reginald Thomas Richards of Christchurch in about 1909. She was 30 at the time (10). I do not know Eva's husband's occupation when they were married, but in 1920 he began building a cottage for his father-in-law on a section at Castle Hill given to Izard by Enys. Previous to this, Eva states he had been living "in hateful idleness in town". During this time Eva and her young family of 2 girls and a boy often lived on the job (4).

After working at Castle Hill Richards "returned to the country life he loved" (4). Whether this was directly to the Round Top Station near Windwhistle and Rakaia Gorge where they farmed for much of their later life, I do not know.

During her time at the Chathams and Castle Hill, and in any spare time as a mother and farmer's wife, Eva studied the native plants around her. She wrote: "For a long time my hobby has been seed collecting and the place where and the time when they were obtained noted down" (12). But she also wrote books, as the following list shows.

1. Undated: *Native seeds of New Zealand* by Mrs R.T. Richards. Wyatt & Wilson, Christchurch. I have not seen this. There is apparently only one copy in New Zealand libraries and that is at the Alexander Turnbull Library. At 24 pages with illustrations it is probably a list of the seeds that Mrs Richards has for sale or exchange.

2. 1947: *Our New Zealand trees and flowers* by E.C. Richards. Simpson & Williams, Christchurch. Mrs Richards wrote that this book "was taken chiefly from Cheeseman's "Manual of the NZ Flora" and from Kirk's "Students' Flora" and "Forest Flora". The hints on how to grow native plants are from Dr Cockayne's "The cultivation of NZ plants". The months in which seeds ripen is almost the only addition of my own and applies mostly to seed grown in Canterbury." Mrs Richards divided this 297-page book into trees, shrubs, climbers, and flowers. It ran to three editions.

3. 1949: *Our New Zealand trees and flowers* by E.C. Richards (2nd edition). Simpson & Williams, Christchurch.

4. 1950: *Diary of E.R. Chudleigh, 1862–1921: Chatham Islands*. Ed. E.C. Richards, printed by Simpson & Williams Ltd., Christchurch. A facsimile edn was published by Cadsonbury Publications in 2003.

5. 1951: *Castle Hill* compiled by E.C. Richards. Printed by Simpson & Williams, Christchurch. It contains articles on *The Flora of the Trelissick Basin* by Prof. Arnold Wall and *Ranunculus paucifolius* by W.B. Brockie.

6. 1952: *The Chatham Islands: their plants, birds and people* by E.C. Richards. Printed by Simpson & Williams, Christchurch. Includes accounts of plants, birds, history & people.

7. 1956: *Our New Zealand trees and flowers* by E.C. Richards (3rd edn.)

During her retirement at Sumner Mrs Richards wrote the entry for John Enys in the Encyclopedia of New Zealand (1966) but she did not live to see it published. She died on 12 June, 1961, *aet.* 82, at Sunnyside Hospital, from 5 Hamilton Ave., Fendalton, and was cremated at Bromley (10).

Eponymy

Mt Izard (Craigieburn Range) (William)

Acknowledgments

I am indebted to the Canterbury Museum for information about William Izard from the Macdonald list of Canterbury Biographies; also to Denise O'Brien and Ted Doonerwind of Landcare Research Library, Lincoln, for literature searches, and Mrs Wendy Weller (Christchurch) for her typing.

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PUBLICATIONS

■ First definitive list of Bay of Plenty vascular flora published

A group of Rotorua Botanical Society botanists have recently published a checklist of indigenous and naturalised vascular plant taxa currently known to be present in the Bay of Plenty, or to have been present in the past, being the culmination of more than five years of research (Beadel *et al.* 2009).

For the purposes of this project, the extent of the Bay of Plenty was defined as including the following ecological districts: Te Aroha, Mayor Island, Motiti, White Island, Tauranga, Otanewainuku, Rotorua Lakes, Te Teko, Taneatua, Opotiki, Kaingaroa, Whirinaki, Ikawhenua, Waimana, Waioeka, and Motu. A map of the ecological district boundaries is provided in the report. Nomenclature of taxa generally

follows names in the New Zealand Plant Conservation network (NZPCN) website, as at November 2008.

The checklist was compiled largely from written material (published and unpublished) up to 2006 and herbarium vouchers (reference with the acronym for the herbarium in which the specimen is lodged) up to 2008. In addition, references to selected publications and reports post-2006 and personal observations of some of the authors have been included. Sources for all records have been identified.

The checklist has been produced as a printed version and also as a more comprehensive electronic version. These two versions are identical in terms of the species records for each ecological district. The electronic version, however, also includes herbarium voucher numbers where these exist and some additional references to written records of species occurrences, for reasons of space, these additional voucher records and references were not included in the printed version.

The checklist is intended to be a working document, to inspire field botanists to discover and record more of the natural diversity of the flora of the Bay of Plenty.

Publication was sponsored by Wildland Consultants Ltd, Department of Conservation, Natural Talent Design, and Environment Bay of Plenty.

Some of the key findings follow:

- The total number of vascular plant species recorded in the Bay of Plenty is 2,053, comprising 1,036 native and 1,017 exotic naturalised species, with only marginally more native plant species than exotic species in the Region. The number of exotic species will continue to increase over time as more exotic weed species escape from cultivation and establish in the wild so that in the near future exotic species will surpass native plant species in terms of numbers.
- Highest diversity of plant species (both native and exotic): Rotorua Lakes Ecological District: 1,310 species. This reflects the diversity of habitats present - freshwater lakes, rivers, forest and recently-formed volcanic landscapes (see Table 1).
- Lowest diversity of plant species in total (both native and exotic): these are all islands, namely Motiti Ecological District (which includes Karewa Island off Matakana Island and nearby Motunau (Plate Island)), White Island Ecological District (which includes Rurima Island and Moutohora (Whale Island)), and Tuhua (Mayor Island). This low diversity is a combination of the small size of these areas relative to the much larger ecological districts on the mainland, coupled with fewer native and exotic species able to colonise them due to distances from the mainland.
- Highest diversity of native plant species: Motu Ecological District - 621 species, reflecting the range of habitats present, from the coast to the mountain tops of the Raukumara Ranges.
- Highest diversity of exotic plant species: Rotorua Lakes Ecological District - 714 species, followed by Tauranga Ecological District - 525. For Tauranga and Rotorua it reflects the large number of exotic species that have become naturalised (wild) from these large urban centres. This number is likely to continue expanding, particularly for Tauranga City, as urban areas continue to expand.
- Highest ratio of native to exotic plant species - Te Aroha Ecological District - 79% of the total flora is native species. Whirinaki Ecological District is close behind on 78%.
- Four ecological districts have more naturalised exotic plant species than native species: Motiti, Tauranga, Te Teko, and Rotorua. In the case of Motiti and Te Teko, this reflects the high degree of modification for agriculture, with few areas of indigenous vegetation remaining. For Tauranga and Rotorua it reflects the large number of exotic species that have naturalised (wild) from garden escapes.

Copies of the report can be obtained from the Rotorua Botanical Society for \$25 plus postage and packaging (see order form below). Refer to the website <http://www.wildlands.co.nz/botanical.htm> or contact Sarah Crump 07 3497412 scrump@doc.govt.nz.

For further information contact
Sarah Beadel sarah@wildlands.co.nz 021 924 476

Reference

Beadel S.M., Ecroyd C., de Lange P., Cashmore P., Shaw W., and Crump S. 2009: Checklist of indigenous and naturalised vascular plants in the Bay of Plenty. *Rotorua Botanical Society Special Issue No. 2*. 99 pp.

■ Publications Received

Auckland Botanical Society Journal. Volume 64 (1), June 2009. ISSN 0113-4132, 102 pp.

The New Zealand Native Orchid Journal no. 114 November 2009 ISSN 1177-4401, 28 pp.

Wellington Botanical Society September Newsletter, September 2009. ISSN 1171-9982, 18 pp.

Manawatu Botanical Society Newsletter no. 41. August 2009, 13 pp.



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■ Forms

CHECKLIST OF INDIGENOUS AND NATURALISED VASCULAR PLANTS IN THE BAY OF PLENTY*

Sarah Beadel, Chris Ecroyd, Peter de Lange, Paul Cashmore,
William Shaw, Sarah Crump.

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