TRILEPIDEA
Newsletter of the New Zealand Plant Conservation Network
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Council Member guest editorial

Welcome to spring and the September newsletter.

In today's fast moving world it is not easy to keep up with the pace of change. We tend to rely more on what we read and hear, forgetting those personal experiences we have of the New Zealand bush. I recently had a reminder of this when an opportunity to take one of New Zealand's leading lichenologists into the bush arose.

We visited a small area of the Rimutaka Range near Wellington. The general consensus among managers and plant people is that there is little in this forest that is unique in the way of flora, and that the current flora is quite resilient. The bulk of this forest, therefore, ranks low in the priority for conservation and protection from exotic pests, for both plants and animals. What you read and hear of the Rimutaka Range can lead to a perception that this and other well researched and understood larger axial range forest types have less biodiversity importance because they are common and therefore less threatened and needing less management.

My recent trip into the bush, however, was a timely reminder of how little we know of these forests and how much remains to be discovered. Three of us spent six hours in the bush and sampled about eight different sites. Between us, 55 lichen species were observed, more than half of these being later confirmed by the lichenologist to be common. However, the most exciting and surprising aspect for me was the identification of one species previously reported only from North Canterbury, and the collection of six species that are new to New Zealand if not to science. This reinforces how important these forest areas are as a refugia for New Zealand's flora that is still unknown.

It is easy to forget the complexity of these axial range forests and overlook their services to New Zealand. They contain largely intact ecosystems that are resilient, but are the most important refugia for our undiscovered native flora and fauna and deserving of better recognition as such. There is still much to be discovered and we all need to go bush to understand and not forget what a special place we live in.

And speaking of going bush, it is spring, the plants are starting to flower and putting on their spring growth. The NZPCN website has a phenology recording page in which you can enter your observations. Alternatively, you can print off a form and take it with you wherever you go. Later, you can post your observations to the Plant Conservation Network. These will help us understand the processes of flowering and fruiting of plants in New Zealand, at all levels, from the home garden to the national. So, just go bush and enjoy your spring.

Owen Spearpoint
Greater Wellington

PLANT OF THE MONTH – *PIMELEA VILLOSA*

Pimelea villosa. Photo: Jeremy Rolfe.

Plant of the month for September is *Pimelea villosa*. This small shrub is found in coastal sites in the North and South Islands and on Rekohu (Chatham Island) where it is abundant. It is usually confined to sand dunes that are free draining, but occasionally borders streams and, on Rekohu, extends on to free draining sandy peat soils. *Pimelea villosa* is fairly distinctive; its young branchlets are densely covered in short to long, white to yellowish hairs that can reach up to 1.5 m long, sometimes developing adventitious roots if buried in the sand. White or cream coloured flowers appear from spring through to late summer. Plants are easily cultivated in a free draining sandy soil, out in the sunshine where they can catch the breeze. Although common on Rekohu, on the North and South Islands, it is declining throughout its range. Competition with weeds, browsing of seedlings by possum, trampling by stock, and damage by vehicles are the main threats. It is also suspected that a lack of pollinators may be causing a low amount of fruit to set. The network factsheet for *P. villosa* can be found at: www.nzpcn.org.nz/flora_details.asp?ID=193

Project Gold – bringing back kowhai to Otago

As part of its Conservation Week activities, the Department of Conservation in Otago launched Project Gold on September 15. It's all about planting kōwhai trees to ensure a "golden future" for the region. The project aims to fill Otago once again with golden blooms of the kōwhai, attracting, among others, tūī and bellbird/korimako. Kōwhai and native forest have undergone a massive decline and this is the conservancy's way of bringing back some of our treasured trees. The kōwhai is one of Otago's best known and loved indigenous trees and is ingrained in our history and Maori culture. Every Otago person is encouraged to plant one, or two or three—whether in your backyard, farm, local school, park, reserve or track. Kōwhai are not hard to grow and the conservancy is providing planting information and seeds eco-sourced and suited to the planter's area. Community support is vital to the success of Project Gold and it needs many people, organisations and businesses to become involved. Several kōwhai planting events are planned for September in Queenstown, Alexandra, Wanaka and near Dunedin. Otago botanist and Network member, John Barkla, initiated the project.

Panel Discussion at the AGM in November

Coinciding with the AGM on Friday 11 November, there will be a panel discussion. Come hear a discussion on the topic "Biodiversity offsetting is good for New Zealand's plants and animals". The panellists will be Neil Mitchell, Marie Brown and Susan Walker. The venue is Turnbull House, Wellington, 5.30 – 8.00 p.m. Food and drinks will be available.

Kermadec Biodiscovery Expedition 2011 (Part III – The Herald Islets, Napier and Nugent)

Peter de Lange, Department of Conservation (pdelange@doc.govt.nz)

Following our survey of The Meyers, Warren and I landed on Raoul Island several times between 14 and 18 May 2011. However, as we also undertook landings on most of the Herald Islets and Napier and Nugent during this time, it makes more sense to discuss these smaller islands first so that the account of field work on Raoul can be treated.

The Herald Islets (Fig. 1), along with Napier and Nugent form the northernmost part of geopolitical New Zealand. The Herald Islets are centred on the Chanters (comprising North, South and West Chanter) and Dayrell. They are not easy to access because most of the safe landings are on the more exposed northern and eastern sides and the western and southern flanks of the islets are precipitous and well-nigh impossible to access without technical rock climbing equipment. Napier and Nugent sit to the west and slightly further north of the Chanters and are best landed from the western flanks. Collectively, the islands are formed from a basal sequence of submarine basalt lava flows, hyaloclastites and coarse breccia, usually with a mid (or on Napier and Nugent a capping) sequence of coralline limestone and calcrenite and, in places, in situ coral reef. Aside from Napier and Nugent, the other islands are capped by a sequence of scoriaceous tuff and tephra.

Figure 1. The Herald Islets as seen from the summit of Napier Island. The islands that can be seen are (from left to right), Dayrell, North Chanter, South Chanter and West Chanter.

Warren and I made a joint landing on North Chanter on 16 May but, due to high seas, were unable to effect landings on West and South Chanter. On 17 and 18 May I successfully landed on Napier (17 May) and then Nugent and Dayrell (18 May). As with The Meyers, the vegetation of all of these islands had been seriously damaged by Cyclone Bune. The Chanters were especially affected, with much of the vegetation of North Chanter stripped bare of ground cover and, in places, much of the capping scoriaceous tuff and tephra. Only Dayrell seemed to have retained most of its covering vegetation.

My interest in North Chanter was to see if the tropical grass *Lepturus repens*, last observed on this island by Bill Sykes in 1984, still survived (see comments by Sykes & West, 1996). *Lepturus repens* is a common grass of tropical Pacific islands, which reaches its world southern limit on North Chanter. Originally, Sykes (1977) had (erroneously as it transpires (see Sykes & West, 1996)) recorded it from most of the Herald Islets (presumably including Napier and Nugent) and also The Meyers. In Sykes & West (1996), it was noted that the species was in fact known in the entire Kermadec Islands group from only the northern end of North Chanter, where it occupied a few square metres or so of rock just above the surge zone. The species is currently accepted in the New Zealand Flora as *Lepturus repens* var. *cinereus* (see Edgar & Connor, 2000; 2010), a variety which, when one considers the dubious basis for its distinction (Fosberg 1955) and the natural plasticity of this species throughout its range, seems to have little to commend its continued recognition, so I prefer to recognise for New Zealand only the one variable species (see comments in de Lange & Rolfe, 2010). In any case, as a widespread tropical species at its apparent southern limit on the Kermadecs where it is known from only a single small population, *Lepturus*, which, by all accounts, is ecologically constrained, has been awarded a conservation status of "Vagrant" (de Lange et al., 2009). My past attempts to get staff of the Department of Conservation to confirm its continued presence on North Chanter

had thus far failed because of the difficulty of landing on North Chanter. Nevertheless, in May 2005, I received rather unexpectedly through the mail an illegally collected live plant gathered by an otherwise unknown yachtsman who apparently knew I was keen for material to complete a genetic study on grasses (see Murray et al., 2005) and had the presence of mind to land and collect me some. As pleased as I was to receive the plant, I had no idea how common it was at that time and whether it still persisted there now. Accordingly, one of my assigned tasks on the Kermadec Biodiscovery Expedition was to land on the North Chanter and assess this grass's abundance. For the first few days of the expedition's time around Raoul, a strong surge had meant that no matter how nice the weather might be, a landing on North Chanter was considered too risky by *Braveheart* skipper Matt Jolly. However, on the afternoon of 16 May, when Matt picked Warren and me up from Boat Cove, Raoul Island, he informed us that, in his opinion, a landing was possible and would we like to try it now? An affirmative reply was immediate.

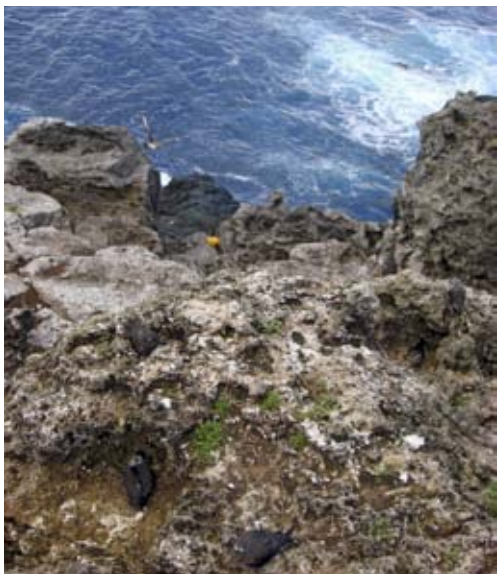

Figure 2. North Chanter view down to the landing used on 16 May 2011 (the yellow dry bag containing an emergency barrel indicates the first "safe" site found above the reach of surge zone). The rock in the foreground is the eroded contact between coralline limestone, calcrenite and basalt lava. Note the dark phase Kermadec petrels (*Pterodroma neglecta*) roosting amongst the limestone and occasional Kermadec ice plant (*Disphyma australe* subsp. *stricticaule*).

So far, all I had seen of North Chanter was the southern and western sides of the island, which looked decidedly evil for landing let alone climbing. Now Matt took us with "Thomas" around to the north-eastern side, where, despite the deceptively easy looking landings, we soon realised that only one landing site was remotely feasible and that this would take a fair amount of determination to get away safely. Being so close to an island that I would be unlikely to ever land on again, I was keen, and so with the usual bouncing about Matt edged us closer into the cliff face for yet another bow landing. Despite the high sea, the usual combination of adrenalin and fear got Warren and I safely up the slippery rocks and into a suitably dry area to jettison the emergency barrel we took with us on each landing (see Fig. 2). Then it was off up the island's cliff faces.

Figure 3. North Chanter showing the main dividing gully between northern and southern summits – note the expanse of Makatea and also the dark red rendzina soil that has developed over the weathered calcrenite, coral limestone and coral reef. Normally most of this area would be vegetated and would be still were it not for the passage of Cyclone Bune.

North Chanter is a long crescent-shaped island with a northern and southern summit. The north-eastern portion of the island is defined by a shelf-like lower basalt portion that soon gives way to steep cliff faces. As we clambered up these, we frequently passed over deep cracks that periodically spewed sea spray and wheezed and coughed eerily, suggesting that, below sea level, the island is dissected by caves. Although initially bluffed, we finally located one promising route (Fig. 3), and it was half way up this that we reached our first unmistakable in situ brain coral and then a little further on a number of perfectly preserved fan and stags horn corals.

Then, quite dramatically, we reached a cliff face composed of the remains of a coral reef (Fig. 4). It took a while to sink in that North Chanter preserved an uplifted coral reef sequence and that this, in places, had been nicely weathered to form a habitat known widely in the tropical Pacific islands as "Makatea". As far as I am aware, no one has previously recorded this ecosystem from the New Zealand Botanical Region and although I was to see better examples on Napier and Dayrell, it was pretty exciting to realise that here was an ecosystem I was more used to seeing on the Cook Islands. Sadly, the impact of Cyclone Bune meant that the vegetation of the Makatea on North Chanter was pretty badly damaged (Fig. 5.). Nevertheless, we soon found patches of *Asplenium northlandicum*, growing on the bright red rendzina soils that had developed in the small sink holes that had eroded down through the tops of brain corals.

Figure 4. North Chanter (looking toward the southern summit) showing the calcrenite, coralline limestone and coral reef cliff sequence that forms the upper third of North Chanter and on which the bulk of the Makatea vegetation has developed. Note that the sparsely vegetated condition is more likely the result of storm damage associated with Cyclone Bune rather than the normal state.

Figure 5. Cyclone-damaged Kermadec ngaio (*Myoporum rapense* subsp. *kermadecense*) shrubland on the approach to main ridge leading to the southern summit of North Chanter. Here the contact between the coralline limestone and the capping scoriaceous tuff and tephra sequences is easily seen by the line of dark red earth.

Kermadec ice plant (*Disphyma australe* subsp. *stricticaule*) was probably the most common vascular plant, followed by *Einadia trigonos* subsp. *trigonos*, and the, by now, ubiquitous purslane (*Portulaca oleracea*), New Zealand spinach (*Tetragonia tetragonioides*) and *Parietaria debilis*. Both nightshades, *Solanum nigrum* and *S. nodiflorum*, sow thistle (*Sonchus oleraceus*), conspicuous erect tufts of *Samolus repens* var. *strictus* and the grasses *Eleusine indica* and *Paspalum dilatatum* were also common and, in a few places, seedlings of mawhai (*Sicyos* aff. *australis*) and *Canavalia rosea* were noted. *Canavalia* is a tropical strandline legume that reaches its world southern limit on the Kermadecs. We had also seen it on The Meyers but there, as on North Chanter, I saw only young plants and seedlings, the adults, it seems, having been wiped out by Cyclone Bune.

As we gingerly progressed through the razor-sharp Makatea, we had to negotiate the usual nesting and/or roosting Kermadec petrels (*Pterodroma neglecta*) and, further up the cliffs, red-tailed tropic birds (*Phaethon rubicunda*), and masked booby (*Sula dactylatra*) adults (Fig. 6) and fledglings.

Figure 6. North Chanter, adult masked booby (*Sula dactylatra*) on southern summit. The birds are roosted amongst heavily weathered scoriaceous tuff (almost reduced to clay) that is covered in thick wefts of green algal growth and terricolous lichens.

Suddenly, and almost as quickly as the fossilised coral reef Makatea had started, it stopped and we were up on the capping dark red scoria tuff moonscape that formed the southern summit of the island (Fig. 5). The devastation wrought by Cyclone Bune was more evident here than on any other island, as we crisscrossed numerous rotting carcases of Kermadec petrels and wedge-tailed shearwaters (*Puffinus pacificus*) encased in hardened mud, and erosion gullies cut deep into the soft scoria tuff. Finally this macabre landscape gave way to the remnants of a Kermadec ngaio (*Myoporum rapense* subsp. *kermadecense*) shrubland. Progress through this shrubland was tricky, not only because of the nesting birds but also because, toward the southern end of the summit, more razor-sharp Makatea was exposed so necessitating extreme care to avoid slicing ourselves open. Associated with the ngaio, were numerous tussocks of *Cyperus insularis*, whose razor-sharp leaves added a further climbing hazard of which we had to be aware.

The northern summit of North Chanter lacked any ngaio and was virtually devoid of *Cyperus*. This part of the island also lacked the outcropping Makatea, being completely composed of scoriaceous tuff and tephra, through which countless shearwater (*Puffinus* spp.), black winged petrels (*Pterodroma nigripennis*) and an unidentified species of land crab had burrowed. The main plants seen here were *Cotula australis*, *Bryum dichotomum* and seedlings of wind grass (*Lachnagrostis littoralis* subsp. *littoralis*). Finally, near the northern end of the island below a series of very nasty Makatea cliffs, I found a tiny pocket of *Lepturus repens*. Evidently, the grass had not fared well from Cyclone Bune's passage either because its extent had been reduced from the square metres noted by Sykes & West (1996) to a few square centimetres at best. Another pleasing discovery was an abundance of *Senecio kermadecensis*, though again only as seedlings. North Chanter also appeared to lack blue billy goat weed (*Ageratum houstonianum*), which is a further boon for the long-term future of *Senecio*. However, considering that weed's abundance on The Meyers, I predict it is only a matter of time before it reaches North Chanter.

By now the sun was rapidly setting, so it was time to clamber down the cliffs and wait for Matt to come and pick us up. By now, the sea had got up as the evening sea breeze increased, so our departure from the island was only just narrowly achieved without the requirement of being tied to a rope and then having to swim for it.

The next day (May 17), Warren departed to try his luck setting out an assortment of invertebrate traps over a period of a few days on Raoul and I set out for Napier Island. Mercifully, the inclement weather we had so far experienced had departed and Napier Island was bathed in glorious sunshine. However, while the sun may have been out, the sea had yet to flatten and Napier was landed on only with considerable difficulty.

Napier is best accessed from the western side where the gradient is slightly less and the rock firmer. After the now routine scramble for seaweed specimens, I had to traverse up a series of deep fissures terminated by small cliffs (Fig. 7). Initially, the rock comprised basalt and basaltic breccia but, by about half way up the island, coralline limestone and in situ fossilized coral began to appear followed by the now familiar Makatea, characterised by the blue-grey, razor-sharp weathered coral. Again, the impact of Cyclone Bune was noted with the majority of trees and shrubs sporting dead branches and only a light covering of

Figure 7. Napier, western slopes showing route to summit ridge. The basal tier of the cliffs are mostly lichen-covered basalt pillow lava, associated hyaloclastites, and basaltic scoria followed by the basal coralline limestone member of the Makatea that has developed on the capping coralline limestone. Note the cyclone battered Kermadec ngaio (Myoporum rapense subsp. kermadecense) sporting dense masses of epicormic regrowth.

epicormic growth toward the branch and trunk bases. At one site, amongst numerous nesting and/or roosting Kermadec petrels, a large mass of flowering *Canavalia rosea* was seen—the only flowering material to be observed on the islands during my field work on this expedition (Fig. 8, 9). Associated with the nesting ground, was a mostly dead grass whose identity was eventually determined to be *Digitaria setigera*. Although treated as naturalised to New Zealand (Edgar & Connor, 2000; 2010), this grass is otherwise regarded as indigenous throughout the Pacific (see comments by Whistler, 1995) so I find it hard to understand why it shouldn't be indigenous to the Kermadec Islands as well. Other common associates of these open areas included Kermadec ice plant, *Einadia trigonos* subsp. *trigonos*, *Cyperus insularis*, *Cotula australis*, allseed (*Polycarpon tetraphyllum*), purslane (*Portulaca oleracea*) and *Samolus repens* var. *strictus*, both species of nightshade and New Zealand spinach.

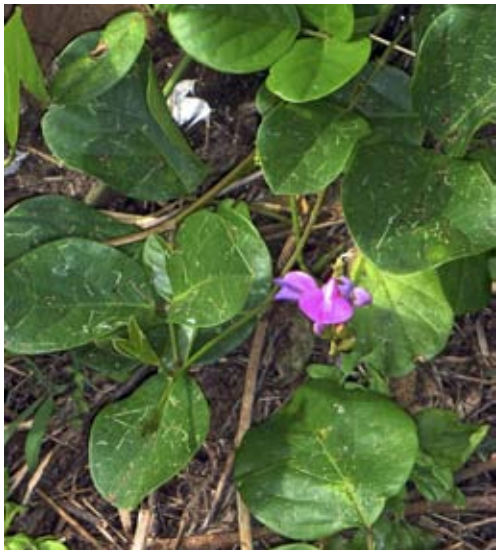

Figure 8 (left). *Canavalia rosea*, Napier Island. This specimen was not only the largest vine of this species seen during our visit to the Kermadecs but also the only one found in flower. Associated with the *Canavalia* is the native *Parietaria debilis*.

Figure 9 (right). Flowering raceme of *Canavalia rosea*, Napier Island. *Canavalia* is a widespread tropical strandline species, which on the Kermadec Islands is confined to the Northern group. Although reported as common on the northern coastline of Raoul, during my limited time on that part of Raoul I saw no plants there, while on The Meyers, Herald Islets, Napier and Nugent it was mostly seen only as recently germinated plants. Aside from the reported Raoul occurrences, *Canavalia* is only ever seen on cliff faces and ridgelines of the other outlying northern islands, always associated with sea bird roosts and nesting grounds. Although the seed is moderately large (15–18 mm long (Webb & Simpson 2001)), I speculate that some of the larger sea-going birds temporarily ingest floating seeds, only to regurgitate these when at rest on land. This behaviour has been documented for kōwhai (Sophora spp.) in New Zealand, and in the Kermadecs it may also account for the otherwise anomalous presence of another strandline species *Ipomoea pescaprae* subsp. *brasiliensis* within the Makatea of Dayrell, as well as on the summit ridge of Curtis Island (see Sykes 1970).

Along the summit ridge under cyclone-battered Kermadec pohutukawa, I found a few small patches of Lepturus *repens*, including a few with inflorescences. Besides being a new record for the islands, these plants were in much better condition than those seen on North Chanter. A further surprising discovery was a single tattered plant of Cook's scurvy grass (*Lepidium oleraceum* s.s), which had also been noted on North Chanter the previous day. This species has not previously been recorded from the Northern Kermadec Islands group. Further, recent investigations into the taxonomy of the members of the *Lepidium oleraceum* clade suggest that most Kermadec plants are an undescribed endemic distinguished, amongst other things, from *L. oleraceum* s.s. by its finely hairy rather than glabrous pedicels. So far, all gatherings of the new species have come from the Southern Kermadec Islands group where *L. oleraceum* s.s. is known only from historic gatherings made on Curtis Island. Napier also had a thriving population of *Senecio kermadecensis*, again found only as seedlings but, like North Chanter, the population was free from blue billy goat weed, which was absent from this island as well. The mosses and liverworts were mostly dominated by *Bryum dichotomum*, *Fissidens linearis* var. *linearis* and *F. leptocladus*.

The eastern side of Napier is delineated by a series of precipitous cliffs that proved impossible to safely explore. Therefore, following a thorough investigation of the summit ridgeline vegetation, and keeping a weather eye on the sea, it seemed best to begin my descent. During this descent, I was delighted to see a solitary greater frigate bird (*Fregatta minor*) flying overhead. This proved to be the only frigate bird seen during the expedition.

The following day (18 May), I set out for Nugent and Dayrell. The sea was surprisingly flat though the leaden skies indicated yet another bout of bad weather was on its way. Nugent looked an intimidating prospect to climb, being little more than an extremely shear-sided narrow pyramid of rock (Fig. 10, 11). Nevertheless, a narrow gut on the north-western side allowed access to the now familiar cyclone-battered summit vegetation where a single Kermadec pohutukawa shrub was found (a new record based on observations in Sykes, 1977), another small patch of *Lepturus repens* was encountered as well as a small amount of *Senecio kermadecensis*, and again (mercifully) no blue billy goat weed. The most exciting find, by far, was a small amount of *Tetragonia implexicoma*, a species that Cheeseman collected (as *T. trigyna*) from Raoul Island in 1887; it has never been seen there or indeed anywhere else in the Kermadecs since (see comments by Sykes, 1977). However, as time was limited and the boat was waiting, I was able to spend only 10 or so minutes exploring the top of Nugent before a hasty (but carefully executed) descent back to the landing was undertaken.

Figure 10 (left). Napier, northern summit looking north to Nugent (little more than a steep sided, pyramidal rock spire). Note the weathered fossil coral reef that forms the capping rock on most of Napier. In the foreground can be seen *Cyperus insularis*, and on the Makatea are sparse Kermadec ice plant (*Disphyma australe* subsp. *stricticaule*), dead Kermadec ngaio (*Myoporum rapense* subsp. *kermadecense*) and *Asplenium northlandicum*. The poor condition of the vegetation reflects its recent battering by Cyclone Bune from which the vegetation was only starting to recover when I visited these islands.
Figure11 (right). Nugent (eastern side) as viewed from the summit of Dayrell. Nugent is the northernmost of the Kermadec Islands, and it is, as described by Bill Sykes (Sykes 1977), little more than a bare rock. Note the epicormic regrowth on the cyclone-battered Kermadec pohutukawa (*Metrosideros kermadecensis*) framing this image.

The distance between Nugent and Dayrell was surprisingly wide but it allowed for a careful survey of potential landing sites long before we got there. Dayrell looked deceptively easy but the landing proved rather tricky, made much worse by the slippery rocks. Two marine biologists were also landing on this island to collect from the exposed intertidal zone, so this required careful coordination of three people plus gear in a distinctly nasty swell. The skill required in holding still

a boat in such trying conditions is tremendous and I remain deeply in debt to Matt Jolly for his exceptional boating abilities and apparently unflappable demeanour.

Dayrell sits proudly on the sea like a massive layer cake, with a basal wedge of basalt lava, and a central tier of greyish-white coralline limestone and uplifted coral reef, capped with dark red scoria tuff and tephra (Fig. 12). On landing, one had to carefully walk up a gentle slope of very slippery basalt lava then traverse 10–15 metres of vertical coral limestone before popping out on the island's summit slopes. Dayrell was the first island in the group where I elected to use a rope to assist with hauling collecting gear up the cliff faces. Future visitors would be well advised to wear leather gloves, as the Makatea there is extremely sharp and, without gloves, it is almost impossible to avoid lacerating your hands (Fig. 13).

Figure12 (left). Dayrell Island as viewed from the north at the Landing, showing the basic stratigraphy of basalt lava overtopped by calcrenite, associated coralline limestone, and capping fossil coral reef, and then surmounted by scoriaceous tuff and tephra (the area covered by Kermadec pohutukawa (*Metrosideros kermadecensis*) forest. The dull skies indicate that yet another front is due to pass over the islands.
Figure 13 (centre). Makatea, Dayrell Island showing the razor-sharp weathered surface of the fossil coral reef tops. The plants that can be seen in this image are *Asplenium northlandicum* and Kermadec ice plant (*Disphyma australe* subsp. *stricticaule*).
Figure14 (right). Dayrell, Makatea vegetation dominated by Kermadec ice plant (*Disphyma australe* subsp. *stricticaule*), *Cyperus insularis*, purslane (*Portulaca oleracea*), *Asplenium northlandicum*, *Parietaria debilis* with occasional flowering specimens of sea aster (*Aster subulatus*) and seedling wind grass (*Lachnagrostis littoralis* subsp. *littoralis*).

Vegetation was sparse until the tops of the Makatea were reached. Here a cyclone-battered vegetation of mostly *Asplenium northlandicum*, *Coprosma petiolata*, Kermadec ice plant, *Einadia trigonos* subsp. *trigonos*, *Parietaria debilis*, and *Cyperus insularis*, grew in and around the Makatea (Fig. 14). Above this, on the rich red scoria soils, was an area of extensively bird-burrowed ground, littered above with the now ubiquitous nesting and/or roosting Kermadec petrels (Fig. 15).

Figure15. Here can be seen the Kermadec Islands equivalent of what is referred to in Northern New Zealand as "petrel scrub". This shrubland has developed on the weathered scoriaceous tuff and tephra sequences that cap Dayrell. In the foreground within the cyclone-damaged vegetation can be seen numerous re-sprouting Kermadec ngaio (*Myoporum rapense* subsp. *kermadecense*) and *Cyperus insularis*. Common associates of this vegetation include New Zealand spinach (*Tetragonia tetragonioides*), *Solanum nodiflorum* and *Digitaria setigera*. The contact between the scoriaceous tuff and tephra is delineated by the white exposed tops of the fossilised coral reef forming the associated Makatea vegetation.

The vegetation of this area was dominated by *Cyperus insularis*, Kermadec ngaio, *Parietaria debilis*, purslane, *Cotula australis*, New Zealand spinach and numerous seedlings of *Senecio kermadecensis*. Again, blue billy goat weed was absent. Numerous, mostly dead, tufts of *Digitaria setigera* were again present, along with tangles of badly battered *Sicyos* aff. *australis* and, in one place, a small patch of *Ipomoea pescaprae* subsp. *brasiliensis*, the only one to be seen on these outer islands of the Northern Kermadec Islands group. The capping scoria tuff and tephra supported a low forest of Kermadec pohutukawa (Fig. 16); the sparse ground cover in this area was dominated by *Cotula australis* and *Digitaria setigera*. However, in places, a few patches of *Lepturus repens* grew and also a small amount of *Lepidium oleraceum* s.s. Moss-wise, by far the most interesting species seen was one found on the underside of an overhanging Kermadec pohutukawa. Enmeshed through a mat of adventitious pohutukawa roots, this was *Syrrhopodon armatus*, a "tropical moss" that is very common on Raoul Island in the same kind of habitat. *Syrrhopodon* reaches New Zealand too, where it is rather scarce and virtually confined to Northland and the Coromandel Peninsula, though it reaches the Chatham Islands as well, which appears to be its world southern limit. Overall, Dayrell preserved the most intact examples of indigenous vegetation seen on the Herald Islets, because, for some reason, the cyclone damage was less severe on this island.

Figure 16. Interior of Kermadec pohutukawa (*Metrosideros kermadecensis*) forest on the summit of Dayrell. Most of the ground cover is given over to purslane (*Portulaca oleracea*) through which occasional plants of *Digitaria setigera*, *Lepturus repens* and *Senecio kermadecensis* were noted. The outcropping basalt tuff rocks support mostly green alga (possibly a species of *Prasiola*) and occasional tufts of the mosses *Bryum dichotomum* and *Fissidens leptocladus*. In this sparse forest, on some of the Kermadec pohutukawa I also found the tropical moss *Syrrhopodon armatus*.

In summary, the Herald Islets and both Napier and Nugent were immensely interesting, having the only examples of Makatea vegetation that I am aware of in the entire New Zealand Botanical Region. Further, *Lepturus repens* has increased its range from North Chanter (see Sykes & West, 1996) to three more islands (Dayrell, Napier and Nugent), and the first occurrences of *Lepidium oleraceum* s.s. in the Northern Kermadec Islands were made. As with The Meyers, cyclone damage on these islands had been severe though some, notably Dayrell, retained moderately intact vegetation sequences. It is my view that all these islands warrant further critical study, especially by ecologists, because there is a need to describe the Makatea vegetation observed, as this must surely rate as one of the New Zealand Botanical Region's less well known naturally uncommon ecosystems.

Acknowledgements

I am indebted to *Braveheart* skipper Matt Jolly for his exceptional boating skills that enabled safe landings on the majority of the Herald Islets, and Napier and Nugent during rather "trying" sea conditions. The company in the field of Warren Chinn on North Chanter, and assistance of Mark McGrouther, Stephen Urlich and Richard Robinson with landings on Dayrell, Napier and Nugent needs mention, because, without their help, exploration of these islands would have been impossible.

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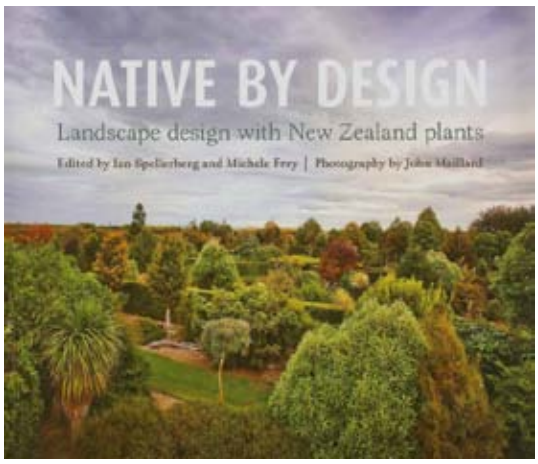
Top landscape architects inspire with use of New Zealand native plants

Twenty of New Zealand's top landscape architects and designers offer their wisdom and expertise on how to get the best out of New Zealand's native plants in the newly released book, *Native by Design*. Published by Canterbury University Press (CUP), *Native by Design*: *Landscape design with New Zealand plants*, is the latest offering from editors Professor Ian Spellerberg, Lincoln University, and Napier-based environmental and planning consultant Michele Frey, who also put together the popular *Living with Natives: New Zealanders talk about their love of native plants* (CUP, 2008).



Native by Design features a series of personal narratives from leading landscape architects and designers, showcasing some of New Zealand's most beautiful outdoor environments. In the book's foreword, former Governor General, Sir Anand Satyanand, said *Native by Design* "beautifully extols the virtues of New Zealand's native flora" with designs that "show New Zealand vegetation at its best and in a variety of settings, from commercial and industrial frontages to public and private parks and urban and rural gardens".

The uniqueness and beauty of each location has been captured in this lavishly illustrated book through the stunning photography of Christchurch-based photographer John Maillard, whose work also illustrated *Living with Natives*. Among the designers and architects who share their vision and passion for working with native New Zealand plants, as well as their expert advice, are award-winning garden designer Xanthe White, and landscape architects Dennis Scott and Alan Titchener.

Professor Spellerberg and Ms Frey said the aim of the book was to raise the profile of New Zealand's native plants, as well as encourage people to make a place for native flora in their gardens. They believe the book will offer inspiration to not only home gardeners but professional landscape architects and gardeners as well. It is the third in a series of books on New Zealand's native plants published by CUP that began with *Going Native* (CUP, 2004, 2009), written by Professor Spellerberg and botanist the late David Given.

Native by Design was published with the support of Resene Paints Limited, The Isaac Conservation and Wildlife Trust, Interface Carpets (NZ), Kiwi Flora Plant Nursery and Opus International Consultants Ltd. It was launched on 1 September at Resene ColorShop Tower Junction in Christchurch. All royalties from the sale of the book will go to native plant projects around the country.

Native by Design: Landscape design with New Zealand plants by Ian Spellerberg and Michele Frey, photography by John Maillard, published by Canterbury University Press, September 2011, RRP NZ$45, 288pp, ISBN 978-1-877257-95-7.

Otari-Wilton's Bush wins orchid prizes

Otari-Wilton's Bush staff won two top prizes at the Capital City Orchid Show on Saturday 10 September. The two species of native spider orchids *(Nematoceras* spp.) that staff entered won blue ribbons for the Best Terrestrial Orchid and Best Micro Orchid. These two orchids were donated to Otari by well-known Wellington native plant lover Arnold Dench who died in August 2010, leaving his large collection of plants to Otari.

Finn Michalak, Collection Curator at Otari, who takes care of the nursery where these two orchids are currently housed, said "It was a great chance to get these orchids out in the public eye; lots of people are surprised that there are orchids native to New Zealand and how many we have".

New Zealand has over 160 species of orchid that are found in a wide range of habitats from the coast through to the alpine zone. They occur both terrestrially (on the ground) and epiphytically (growing on other plants). Unfortunately loss of habitat for farming and housing means that some native orchids are endangered. You can help by not being tempted to dig them up; terrestrial orchid species are difficult to grow in cultivation; don't pick the flowers; and report sightings of any rare species to the Department of Conservation.

Find out more about New Zealand orchids at www.nativeorchids.co.nz and www.nzpcn.org.nz

New book on New Zealand's trees launched

The substantial, 576-page *New Zealand's Native Trees* by botanist John Dawson and photographer Rob Lucas was launched by the Minister of Conservation, Hon. Kate Wilkinson, at Unity Books, Wellington, on Thursday 15 September. The Craig Potton publication took seven years of research to complete. After introductions by Dylan Sherwood, Unity's new assistant manager, Jane Connor of Craig Potton Publishing, spoke parentally of the time and dedication necessary to produce a work of such high quality. The Hon. Kate Wilkinson, Minister of Conservation then officially launched the book, noting the well timed release in the middle of National Conservation Week. Author John Dawson expressed gratitude to those who assisted with the work, and reiterated the book's dedication "to our grandchildren". The new book covers more than 320 species, subspecies and varieties of native trees, from the massive kauri and the ubiquitous cabbage tree to rare and endangered species found only on offshore islands.

From the left, Dylan Sherwood, Jane Connor, Hon. Kate Wilkinson and Dr John Dawson.

Plant conservation awards 2011

The New Zealand Plant Conservation Network is now accepting nominations for the 2011 awards (see attached nomination form). The purpose of these awards is to acknowledge outstanding contributions to native plant conservation. The award categories are:

- Individual involved in plant conservation
- Plant nursery involved in plant conservation
- School plant conservation project
- Community plant conservation project
- Local authority protecting native plant life
- Young Plant Conservationist of the Year (under 18 years at 30 June 2011)

If you know of someone or a group that has made an outstanding contribution, please send in your nomination. More information about the awards scheme and nomination forms are available on the Network website (www.nzpcn.org.nz). You can make multiple nominations under different categories. Anyone is eligible to make nominations, not just Network members. If you know of someone or a group that has made an outstanding contribution, please send in your nomination. Nominations close on **Tuesday 25 October 2011**. The awards will be presented at the Network Annual General Meeting to be held on Friday 11 November 2011 in Wellington.

CURRENT FORUM THREAD

- What flowering times, locations and pollination observations does anyone have for *Ixerba brexioides* (tawari)?
- Can anyone shed light on which species the *Pittosporum* sold as *Pittosporum* 'Stephens Island' conforms most closely to?

Lucy Cranwell student grant for botanical research: call for applications for 2012

Applications are invited for the Lucy Cranwell Grant of $2,000 from the Auckland Botanical Society to assist a student studying for the degree of PhD, MSc or BSc(Hons) in any tertiary institution in New Zealand whose thesis project deals with some aspect of New Zealand's flora and vegetation. Priority will be given to projects relevant to the northern half of the North Island. The research project to be supported will be chosen on the basis of appropriateness to the objects of the Society, namely to encourage the study of botany, and to stimulate public interest in the plant life of New Zealand and its preservation, conservation and cultivation. The grant will be administered by the student's supervisor as a contribution to expenses associated with the project.

Closing date for applications: 5.00 p.m. Wednesday 26 October 2011.

A copy of the application form and the rules of the award may be downloaded from the Auckland Botanical Society website: https://sites.google.com/site/aucklandbotanicalsociety/

Contact for enquiries:

Kristy Hall, Secretary
Auckland Botanical Society
E-mail: aucklandbotanicalsociety@gmail.com

Natural History of Rangitoto Island

The Auckland Botanical Society publication "Natural History of Rangitoto Island" is available for purchase by Network members for the special price of $25 (including p&p). This 192-page book is in full colour and covers the flowering plants, conifers, ferns, bryophytes, lichens, fungi and seaweeds—as well as the ecology, geology and animal life. It can be ordered by sending your order and cheque to:

Auckland Botanical Society,
P.O. Box 26391, Epsom,
Auckland 1344.

Te Papa MSc Scholarship in Molecular Systematics at Victoria University

The Museum of New Zealand Te Papa Tongarewa and Victoria University of Wellington are offering a Master of Science (MSc) scholarship in the field of molecular systematics at Victoria University of Wellington. The student stipend is $10,000 over two years. Potential projects for 2012–2013 include: analysing the population genetics of lancewood (*Pseudopanax crassifolius*) to locate its glacial refugia; unravelling a species complex in the New Zealand forget-me-nots (*Myosotis*); or another group to be determined. Applications close 1 November 2011. For more details, contact Leon Perrie (leonp@tepapa.govt.nz). Please see the following link for application details: www.fis.org.nz/BreakOut/vuw/schols.phtml?detail+600535

Weed procedures on-line

The three Weed Standard Operating Procedures that make up the Department of Conservation's Weed Quality Management system are now available on the internet. These Standard Operating Procedures cover weed surveillance, planning weed work and reporting and reviewing weed programmes. You can access them through: www.doc.govt.nz/publications/science-and-technical/doc-procedures-and-sops/weeds/

This information can be used by communities, iwi, non-governmental agencies, and partner organisations to help manage weed work. Animal Pest SOPs are also available through: www.doc.govt.nz/publications/science-and-technical/doc-procedures-and-sops/managing-animal-pests/

This work is part of DOC's commitment to sharing its knowledge and information with others, and to enable more people to participate in conservation.

UPCOMING EVENTS

If you have important events or news that you would like publicised via this newsletter please e-mail the Network (events@nzpcn.org.nz):

Conservation Biology Conference 2011

Change of venue and dates: as a result of the 22 February earthquake that damaged much of Christchurch, including the Convention Centre, the ICCB conference 2011 has had to be shifted to Auckland with a consequential change of dates. The conference will now be held 5–9 December 2011 at the Sky City Auckland Convention Centre.	**Information:** www.conbio.org/2011. We will update it regularly with the latest information on the venue, accommodations, conference trips, social events, and more.

26th John Child Bryophyte and Lichen Workshop

Workshop: Thursday 1 December – Tuesday 6 December, 2011. **Venue:** Matawai; 70 km north of Gisborne on State Highway 2. Registrations are still being taken from all who are interested in bryophytes and/or lichens. Accommodation available.	**Contact:** Anne Redpath, e-mail: wairataforestfarm@farmside.co.nz or Leon Perrie, e-mail: leonp@tepapa.govt.nz

Symposium on Phenology

Symposium: Tuesday 6 December, as part of the 19th International Congress of Biometeorology, there will be a symposium on phenology at the University of Auckland. The symposium will feature an array of international speakers.	**Further details and programme:** www.icb2011.com/icb2011/index.cfm?p=welcome **Contact:** Dr Bruce Burns e-mail: b.burns@auckland.ac.nz

Auckland Botanical Society

Meeting: Wednesday 5 October at 7.30 p.m. the Lucy Cranwell Lecture by Sir Alan Mark titled 'The ecology, conservation and sustainable management of the South Island high country'. **Venue:** Auckland Museum.	**Contact:** Maureen Young, e-mail: youngmaureen@xtra.co.nz.
Field trip: Saturday 8 October to Torbay Heights Reserve and Awaruku Bush, Torbay.	**Contact:** Maureen Young, e-mail: youngmaureen@xtra.co.nz
Labour Weekend Camp: Friday 22 October to Monday 24 October at Motu Kaikoura, Great Barrier Island.	**Contact:** Maureen Young, e-mail: youngmaureen@xtra.co.nz
Meeting: Wednesday 2 November at 7.30 p.m. a talk by David Glenny titled 'A demonstration of the online key to *Coprosma*'. **Venue:** Unitec School of Health Sciences, Gate 4, Building 115. Room 2005.	**Contact:** Maureen Young, e-mail: youngmaureen@xtra.co.nz

Kaipatiki Project

Nursery Bites Workshops: Tuesday 18 October 9.00 a.m. to 12.00 noon for 'Seed collection, storage, sowing and eco-sourcing'; Tuesday 25 October 9.00 a.m. to 12.00 noon for 'New plants from cuttings'. Learn how to grow and care for New Zealand plants. **Venue:** Kaipatiki Project Environment Centre, 17 Lauderdale Road, Birkdale, North Shore, Auckland.	**More info:** www.kaipatiki.org.nz

Waikato Botanical Society

Meeting: Monday 10 October at 5.30 p.m. at talk by Dr Nod Kay, SCION, titled 'How insects have influenced the way New Zealand plants have evolved' Dr Nod Kay SCION. **Venue:** Environment Centre, Level One, 25 Ward St, Hamilton.	**Contact:** Cynthia Roberts, e-mail: croberts@doc.govt.nz; ph: 07 858 1034 (day), ph: 07 849 4935 (evening).

Rotorua Botanical Society:

Field trip: Friday 30 September to Saturday 1 October – (Sunday 2 October optional) to East Cape (revisit number 5). **Meet:** the car park, Rotorua, at 7.30 a.m. or Opotiki DOC Office (cnr Elliot & St John Street) at 9.15 a.m. For those coming from a distance there is the option of going to Tim's bach on the Friday night. **Grade:** medium. **Cost:** $20 donation for accommodation for those staying Saturday night.	**Leader:** Tim Senior, ph: 0800 368 288 ext 6010 or 07 315 7371, e-mail: tim.senior@envbop.govt.nz

Wanganui Museum Botanical Group

Meeting: Tuesday 4 October at 7.30 p.m. a talk by Dr Jill Rapson of Massey University. **Venue:** Museum's Davis lecture theatre.	**Contacts:** Robyn and Colin Ogle, ph: 06 347 8547, e-mail: robcol.ogle@xtra.co.nz
Field trip: Sunday 2 October to Moana Roa, Rangitikei River, north side of river mouth. **Meet:** Police Station at 8.30 am.	**Leader:** Graeme La Cock. **Contacts:** Robyn and Colin Ogle, ph: 06 347 8547, e-mail: robcol.ogle@xtra.co.nz

Wellington Botanical Society

Field trip: Saturday 1 October. 1. Woodburn Reserve, Takapu Valley 2. Caribbean Dr Reserve. Botanise a remnant escarpment kohekohe and tawa forest. Site is steep but has a level track running through the middle of the reserve. **Meet:** 9 a.m. cnr Takapu Rd/Woodburn drive in a public car park. On motorway take Tawa off-ramp and turn right under motorway to Takapu Rd to carpark. After lunch botanise second-growth forest in Caribbean Drive Reserve, off Jamaica Dr, Grenada North.	**Leader:** Richard Herbert 232 6828.
Evening meeting: Monday 17 October. Taranaki – Surf to Summit. **Speaker:** Val Smith, New Plymouth. The dormant volcano of Mt Taranaki on the western coast of North Island is revered by Māori and European alike, and gives local people their sense of identity. Val will discuss events that have influenced the vegetation of Taranaki, and people who have contributed to our knowledge and appreciation of the Taranaki flora. An illustration of present-day altitudinal zonation of vegetation types, with a selection of species and habitat, will be a taste of what may be seen on the forthcoming summer field trip.	**Venue:** lecture theatre MYLT101, ground floor Murphy Building, west side of Kelburn Parade. Enter building off Kelburn Parade about 20 m below pedestrian overbridge.

Nelson Botanical Society

Field trip: Sunday 16 October to 'Inches', Wairoa, for threatened plant weeding. **Meet:** Selwyn Place between the gum tree and Church steps at 8.00 a.m.	**Leader:** Shannel Courtney, ph: 03 546 9922.
Labour Weekend Camp: Fri 21 – Mon 24 October, Rakautara Lodge, Kaikoura Coast. **Cost:** approx. $22 / person / night.	**Leader:** Cathy Jones, ph: 03 546 9499.

Canterbury Botanical Society

Meeting: Friday 7 October, 7.30 p.m. Talk by Alan Fife of Landcare Research on bryophytes. **Venue:** room A5, Canterbury University.	**Contacts:** Miles and Gillian Giller, ph: 03 313 5315.
Field trip: Saturday 15 October to Cheviot Domain. **Meet:** at the Belfast Tavern car park, at 8.30 a.m. for car-pooling to go to Trevor Blogg's house, 17 Seddon Street, by 10.00 a.m. or directly to the Cheviot Domain at 10:30 a.m.	**Contact:** Gillian Giller, ph: 03 313 5315.

Botanical Society of Otago

Meeting: Thursday 6 October 2–3 p.m. a talk by Philip Dunn, Ribbonwood Nursery, titled 'Garden design and plants to attract native birds'. **Venue:** Orokonui Ecosanctuary. **Cost:** $5.	**Contact:** Orokonui Ecosanctuary, ph: 03 482 1755.
Meeting: Friday 7 October, 12 noon a talk by T.J. Irvin titled 'Green Ways to Eradicate Invasive Weeds'. **Venue:** Botanic Garden Centre.	**Contact:** Dunedin Botanic Garden, ph: 03 477 4000.
Meeting: Wednesday 12 October at 5.30 p.m. three talks by the winners of the Botany Postgraduate Research Colloquium. **Venue:** Benham Seminar Room, Rm. 215, 2nd floor, Zoology Benham Building, 346 Great King Street, behind the Zoology car park by the Captain Cook Hotel. Use main entrance of the Benham Building. Please be prompt as we have to hold the door open.	**Contact:** Allison Knight, ph: 03 487 8265.

Native by Design

Landscape design with New Zealand plants

Edited by Ian Spellerberg & Michele Frey

Photography by John Maillard

In this lavishly illustrated book, 20 of New Zealand's top landscape architects and designers offer their wisdom and advice on landscaping with native plants.

These personal narratives showcase some of our country's most beautiful out-door environments, from private gardens to public recreation land, urban and industrial spaces.

The book's editors, Ian Spellerberg and Michele Frey, and photographer John Maillard were behind the 2008 publication *Living with Natives: New Zealanders talk about their love of native plants.* Once again, John's stunning photos capture the splendour and uniqueness of each location, from Kaeo in the Far North to Queenstown in the south.

Contributors include Dennis Scott, Alan Titchener, Xanthe White and many other landscape architects and garden designers whose creative lives are spent transforming featureless blocks of land into spaces that beautifully evoke New Zealand's special character.

Let their passion and experience help guide you in creating a native outdoor haven in your own back yard.

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