| | | |
|---|---|---|
| *Pseudopanax arboreus* | | |
| *Pseudopanax crassifolius* | | |
| *Pseudopanax lessonii* | | |
| *Rhabdothamnus solandri* | | |
| *Rubus fruticosus* * | | |
| *Schefflera digitata* | | |
| *Sophora chathamica* (recorded as *Sophora microphylla* ) | # | |
| *Streblus heterophyllus* | | |
| *Syzygium maire* | | |
| *Syzygium smithii* * | | |
| *Toronia toru* | | |
| *Ulex europaeus* * | | |
| *Vitex lucens* | | |
| *Weinmannia sylvicola* [see NZ Bot Soc Newsletter 129: p.7, 2017] | | |
| **DICOT HERBS (20)** | | |
| *Bellis perennis* * | | |
| *Calystegia sepium* × *C. silvaticum* * (pale pink fls) | | |
| *Calystegia silvatica* subsp. *disjuncta* | | A E Esler, 1979, AK217687 |
| *Centella uniflora* | | |
| *Cuscuta epithymum* * | | |
| *Gamochaeta coarctata* * | | |
| *Haloragis erecta* | | |
| *Hydrocotyle novae-zeelandiae* | | A E Esler, 1983, AK170750 |
| *Lobelia anceps* | | |
| *Lotus pedunculatus* * | | |
| *Mentha* × *piperita* var. *piperita* * | | D J Court, 1975, AK182174 |
| *Nertera dichondrifolia* | | |
| *Nertera depressa* | | |
| *Oenanthe pimpinelloides* * | | |
| *Oxalis purpurea* * | | M L Creamer, 1990, AK278989 |
| *Plantago lanceolata* * | | |
| *Plantago major* * | | |
| *Potentilla indica* * | | |
| *Prunella vulgaris* * | | |
| *Ranunculus repens* * | | |

# South Island trip to NW Westland, 12–19 January 2018

**Ewen K. Cameron (editor)**

**Introduction**

Participants: *Karen and Paul Asquith, Yumiko Baba, Jan Butcher, Ewen Cameron (field trip organiser), Lisa Clapperton, Bev and Geoff Davidson, Gael Donaghy, Anne Fraser, Leslie Haines, Graeme Jane, Sandra Jones, Cameron Kilgour, John Millett, Helen Preston Jones (bookings officer), Dhahara Ranatunga, Juliet Richmond, John and Stella Rowe, Jenni Shanks, Cheryl Taylor, Alison Wesley, Anthony Wright (leader), Maureen Young, and for the weekend, Department of Conservation (DoC) staff based at Hokitika Joy Comrie and Chris Woolmore.*

All photographs were taken during the trip by: Karen Asquith (KA), Yumiko Baba (YB), Ewen Cameron (EC), Bev Davidson (BD), Sandra Jones (SJ), Cam Kilgour (CK), Dhahara Ranatunga (DR), Cheryl Taylor (CT) and Alison Wesley (AW).

Only 14 of the 25 members of the Auckland Botanical Society on the trip arrived in Westport from Christchurch via the hired two 10-seater vans and a 4WD ute. The rest made their own way there from various holiday destinations. Our accommodation for the week was the modern and comfortable University of Canterbury's field station in suburban Westport. Because of the long dry spell, a drought had been declared for the West Coast just before our trip and this was immediately followed by torrential rain with much flooding. The weather forecast for the week was bleak, but little of the forecasted rain eventuated and we ended up with mainly sunny weather and only one wet morning.

This NW Westland trip was the ninth trip in continuation of the two-yearly Auckland Bot Soc trips to the South Island since 2002: Molesworth (Benham, 2002), Lake Ohau, Central Otago (Bodmin 2004), Golden Bay (Wilcox 2006), Kaikoura (Cameron 2008), Central Otago (Young 2010), Arthur's Pass (Preston Jones 2012), Catlins (Young 2014) and Molesworth (Young 2016).

The West Coast has had a history of exploitive industries. In the early years of European settlement gold brought prospectors flocking into the area. After the gold ran out, many of those who remained turned to pastoral farming and forestry, and, in northern Westland, coal mining. During our visit coal was being mined from the Stockton mine at the rate of four coal trains per day (5 days/week), each with c.30 hopper wagons and two DX diesel engines that pulled it to Lyttelton. Before the 2017 elections the former Government was revealed to be looking into reviving coal mining on the West Coast, with parts of the Denniston Plateau under consideration. However, the new Government has stated it is going to strengthen protection for public conservation land

by making it off-limits for new mining. Also in January, DoC announced that it is going to join Forest and Bird's appeal opposing the proposed Te Kuha coalmine project covering 150 ha below Mt Rochfort (Strong 2018). In recent years, tourism has become big business on the coast – at last something sustainable!

Being based at Westport gave us easy access to a wide-range of vegetation types. The high plant diversity of this area is closely tied to its remarkable geology: including sandstone coal measures, granite, and limestone - see the Geological Maps of NZ, 1:250,000 (QMAPS): Nelson map 1998 (includes northern West Coast from just north of Westport); and Greymouth map 2002 (includes all of central West Coast). The less severe glaciation of North Westland, compared to South Westland, has also resulted in a richer biodiversity in the north. There is no beech gap here.

We visited eleven different areas (Figs. 1 & 2) of the 12 potential field trip options for the five full days, ranging from Oparara in the north, to the Charleston / Waitakere (Nile) River area in the south. Only the Fox River Cave walk wasn't attempted because it involved river wading, and the river levels were high during our west coast stay.

**Saturday 13th Jan**
**Charming Creek Walkway**

**Helen Preston Jones**

Located 35 km north east of Westport (Fig. 2), the walkway is accessible from both northern and southern ends. The DoC walkway was established as a collaborative effort by many parties in the early 1980s. Some coal was still being mined in the area up until this time. For details of the history of the area and the development of the walkway, refer to:
http://www.doc.govt.nz/Documents/conservation/historic/charming-creek-tramway.pdf
http://www.doc.govt.nz/Documents/conservation/historic/charming-creek-walkway-inspection.pdf
The latter document provides a particularly good impression of the environment of the tramway, prior to improvement.

The 9.5 km walk follows an old bush tramway which serviced mining and milling through the early 20th century. It follows the Charming Creek and the steeply incised lower Ngakawau Gorge, dropping 109 m along its length at an easy grade. The river has cut a 300 m deep trench through the Stockton coal Plateau and the vegetation in the upper section was quite obviously different from that of the lower section of the walkway, reflecting the geology above and below the plateau. There are a number of old industrial archaeological relics of early 20th century mining and saw milling (Fig. 3) operations reflecting the use and history of the site which are scattered along the length of the tramway. The dense indigenous forest was cleared for the extensive operations needed to work the sites. When work ceased and areas were abandoned, natural regeneration has taken place; some mining continued into the 1980s. Management of the walkway now includes protection of the industrial archaeology of the area, preventing incursion of vegetation into the features and structures, and open grassed areas are maintained around these, but native forest surrounds the walkway.

The weather was excellent. We split into two parties to approach the walk from both ends. Most people started from the northern end at 9 am, the abandoned Charming Creek Mine site, where several members of the party investigated ferns growing inside abandoned "boilers (Fig. 4). The small *Bulbinella modesta*, with soft long lanceolate leaves and lax habit, including the flower spike (≤ 15 cm tall), and *Lobelia ionantha* were found in flower. The latter was looking similar to *L. angulata*, but with single light blue flowers. *Ophioglossum coriaceum* (Fig. 5) was also found by those on hands and knees, along with *Nertera ciliata* (Fig. 6).

Most notable in the northern section was the abundant yellow silver pine (*Lepidothamnus intermedius*), often multi-stemmed at the base, growing with cut-over manuka (*Leptospermum scoparium*), and with abundant *Pittosporum colensoi* and *P. crassicaule*. Time was spent discussing the similarities and differences between the various gymnosperms present, which included *Podocarpus acutifolius, Halocarpus biformus* and *Libocedrus bidwillii*. Also seen in flower along various parts of the track were *Metrosideros fulgens, M. perforata* and southern rata (*M. umbellata*). Northern rata (*Metrosideros robusta*) was also evident, in flower, as it is naturally occurring as far south as Lake Mahinapua, allowing comparison of the habit and leaf shape of the two species of tree rata. Northern rata is generally a taller tree, usually starting epiphytically, with a more rounded leaf having an emarginate tip; southern rata being ground-growing, its more pointed leaf having an acute tip. So a good range of rata flower colour was seen within the forest.

The poor soil of the coal measures provided an almost alpine habitat in parts, where *Gleichenia alpina*, a recently reinstated species, with characteristic orange-brown scales on the underside of the pinnae, and *Lepidothamnus laxifolius* were found. The creek was fast-flowing over a rocky bottom, with overhanging vegetation along the sides and the track followed this for much of the way. *Gahnia rigida* was observed along the riverbank.

Steep-cut banks on the side of the track, with overhanging vegetation and a damp shady environment supported a wide variety of ferns

including the uncommon *Trichomanes strictum, Hymenophyllum lyallii* and *Leptopteris superba*. Four other *Hymenophyllum* species (*H. bivalve, H. pluviatile, H. revolutum* and *H. scabrum*) were added to the list in the course of the day. Lunch was eaten at the information shelter at the old Watson's Mill just before the Ngakawau Gorge.

The Ngakawau River (Fig. 7) was spotted from the walkway (Fig. 8) just before it meets the Charming Creek. It was brown and, sadly, with a long line of white foam (pollution from acid mine drainage and coal fines). At this point the track went through a tunnel in the rock (the Mangatini Tunnel) and at the southern end there were stunning views of the Mangatini Falls (Fig. 9) where the Mangatini Stream debouches into the Ngakawau River and together flow c.4 km to the sea. The scenery was spectacular due to the heavy rains over the previous few days, and the two separate rivers were visually divided by colour and the line of foam.

One of the botanical highlights was to see the Ngakawau Gorge daisy (*Celmisia morganii*), an uncommon species, which flowers between December and January, flowering on steep rock faces in the gorge (Fig. 10). Although common here it is only known from the general Ngakawau area.

Downstream of the Mangatini Falls the vegetation changed to a denser cover with an extensive range of broad-leaved species not seen on the other part of the walkway. For example: mahoe (*Melicytus ramiflorus*), wineberry (*Aristotelia serrata*), kawakawa, pate (*Schefflera digitata*), pigeonwood (*Hedycarya arborea*), *Coprosma grandifolia*, as well as the monocot climbers kiekie (*Freycinetia banksia*) and supplejack (*Ripogonum scandens*). They created a deeper green canopy between the Ngakawau confluence and the lower entrance point. Beech trees were part of the mix, including mountain beech (*Fuscospora cliffortioides*), red beech (*F. fusca*) and hard beech (*F. truncata*), of interest to those of us who botanise mainly in the north. This striking vegetation change is related to the geology – we had gone from coal measures to granite. In this section of the track we came across more old workings, and crossed a number of deeply incised side streams, with relics of the old bridging. The walk ended in an open grassed area before meeting the short access road from Ngakawau.

While this track can also be used by cyclists, not many passed us. There are sections of old rail sleepers which would make for a very bumpy ride, and some exposed sections where the tramway is cut into the side of the cliff face, as well as the


**Fig. 1.** Map of Westport and environs visited by Bot Soc 2018. Adapted by Joshua Salter from Topomap50.


**Fig. 2.** Map of areas NE of Westport visited by Bot Soc 2018. Adapted by Joshua Salter from Topomap50.

narrow swing bridge in the northern part. All day was spent at botanical pace on this 2.5-3.0 hr walk. It was well worth the time spent due to the botanical, scenic, and heritage values. In the order of 40 additions were made to the Graeme Jane/Wellington Bot Soc species list. Sandra kindly ferried the drivers back to retrieve the vehicles while most of the party waited in the local Ngakawau Tavern with the unfriendly barman.

**Sunday 14th Jan - Denniston Plateau and Mt Rochfort Leslie Haines & Cam Kilgour**

Our local weekend guides, Joy and Chris, perfectly picked the weather for our trip up to Denniston Plateau (Fig. 1). It was fine, clear and warm which allowed good botanising and great views, especially from the summit of Mt Rochfort, 10 km down to the Buller River and Orowaiti Lagoon surrounding Westport.

Our first stop was the old Denniston Mine after a drive up to the plateau 600 m above sea level, with a very steep drop to the Waimangaroa River. Here we explored the cultural landscape where the interpretation of life there was excellent, with photos depicting it at its peak early in the 20th century. Looking back from the incline, this provided some good comparisons of the bare earth and houses of the mining days with the regeneration since then. For the history and images see: http://www.doc.govt.nz/parks-and-recreation/places-to-go/west-coast/places/denniston-area/

The mining and fire have had an impact on the surrounding vegetation, and the road up to the mine had regenerating forest dominated by kamahi (*Weinmannia racemosa*), manuka and *Pseudopanax colensoi*, with smatterings of southern rata. One of the highlights of the day was the peak flowering of small rata trees (Fig. 11) - the smallest in flower was only c.30 cm tall. We were fortunate that it was a spectacular year for the southern rata flowering.

We made our way south-west up Mt Rochfort by the vehicles as far as we could go, then with 4WD relaying us to the summit at 1040 m. New Zealand pipits were abundant in the area forming small flocks. The view from the summit area over the unique and impressive sandstone pavements of the plateau below us, and beyond was incredible! Apart from the repeater station (building and tower) there was a reasonably intact vegetation of stunted shrubs and herbs amongst rocky outcrops. Conspicuous shrubs were southern rata, *Archeria traversii, Brachyglottis elaeagnifolia, Dracophyllum pubescens /rosmarinifolium*, *Olearia arborescens, O. avicennifolia, Pseudopanax colensoi* and *P. linearis.* Herbs in flower were *Gentianella montana, Luzuriaga parviflora, Forstera mackayi, Leptinella squalida, Pentachondra pumila* and *Thelymitra hatchii* – named after a past member of ABS – and *Lyperanthus antarctica*. The keen 'orchidists' scrambled up the rocks and leaned precariously over to catch a photo of a nice patch of flowering *Lyperanthus antarctica* (Fig. 12). Some explored the roadsides just below the summit, finding *Anisotome flexuosa, A. haastii* and *A. pilifera* and the native grasses *Zotovia colensoi* and *Z. thomsonii*!

Fanning out from here, people explored the pavements and watercourses downslope, some of which contained pools with beds of fine silt and quartz sands in which the remarkable herb *Liparophyllum gunnii* was observed flowering, invoking the usual stellate formation of botanists with hand lenses and cameras. This is our only member of the interesting family Menyanthaceae! Nearby, Anthony found a single small clump of *Exocarpus bidwillii*! An unusual plant in this area was a 2 m-tall apricot-coloured flowering rata found by Geoff, and we also came across some low-lying patches of unusual manuka with frilly petals.

Half-way down between the summit and the Denniston Mine we stopped for lunch and more exploring. One group explored the sandstone pavement vegetation while others wandered off to a pocket of forest with conifers, to distinguish the dark green monopodal pink pine *Halocarpus biformis* from the yellow-green multi-branched *Lepidothamnus intermedius*. The hybrid *L. intermedius* × *L. laxifolius* was also present as were extensive colonies of the sundew *Drosera stenopetala* in the sphagnum under manuka. Here we also found some low-growing *Archeria traversii*, *Thelymitra cyanea* with an open blue flower, and *Drosera spathulata* (Fig. 13).

Further down just above the Denniston Mine we stopped at the Quarry Carpark (Denniston Reservoir) to explore the interesting wetland that has since formed in the lower lying areas. This was a micro-forest of herbs and low statured vegetation like the fern *Gleichenia alpina* with brown-orange scales on the back, the restiad *Empodisma minus*, and the sedges *Lepidosperma australe* and *Carex gaudichaudiana* (go-dee-show-dee-ahna)! This small, greyish-green *Carex* is seemingly abundant on the West Coast in a variety of habitats and we saw it most days, although confusingly it evidently occasionally grows with the taller, but similar (and presumably related) *C. sinclairii* (Shannel Courtney pers. comm.). The shallow areas of this wetland were dominated by extensive colonies of the white and yellow flowering *Euphrasia wettsteiniana* (Fig. 14) with long corolla-tubes. This nationally vulnerable, prostrate herb has flowers with a distinctively long corolla, with the flowers held high above the plant. The seeds sit at the base of the corolla near ground level and are exposed when the corolla tube separates. Other interesting herbs included extensive colonies of *Liparophyllum gunnii* (Fig. 15), the occasional rosulate *Brachyglottis* "Rochfort" the dainty *Celmisia gracilenta* agg., and *Drosera spatulata*. Graeme

**Figs. 3–8: 3.** The restored dispatch log hauler at the Mumm's Timber Mill site, Charming Creek. The Mill operated until 1958. Photo: EC, 13 Jan. **4.** Kiokio (*Blechnum novae-zelandiae*) well-established inside the abandoned fan house of the old Charming Creek coal mine site. The mine closed in 1986. Photo: CT, 13 Jan. **5.** *Ophioglossum coriaceum* a few centimetres tall, amongst mosses and angiosperm seedlings, in the open Charming Creek coal mine site. Photo: AW, 13 Jan. **6.** *Nertera ciliata* with orange fruit, Charming Creek coal mine site. Photo: CK, 13 Jan. **7.** Our first view of the Ngakawau River with a line of foam (pollution) from past mining, just before the Gorge. Photo: EC, 13 Jan. **8.** Charming Creek walkway and Geoff by the Ngakawau Gorge. Photo: BD, 13 Jan.


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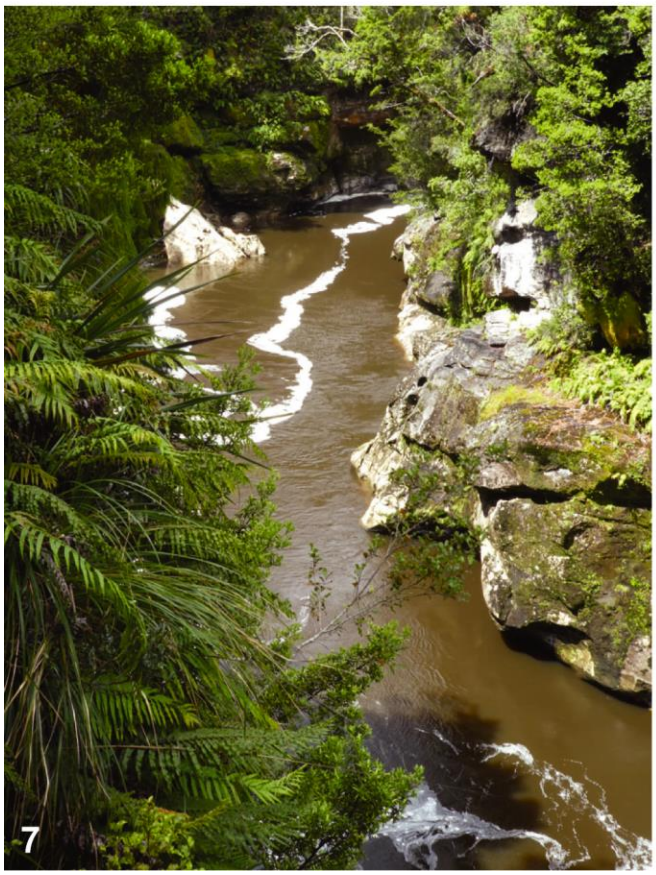
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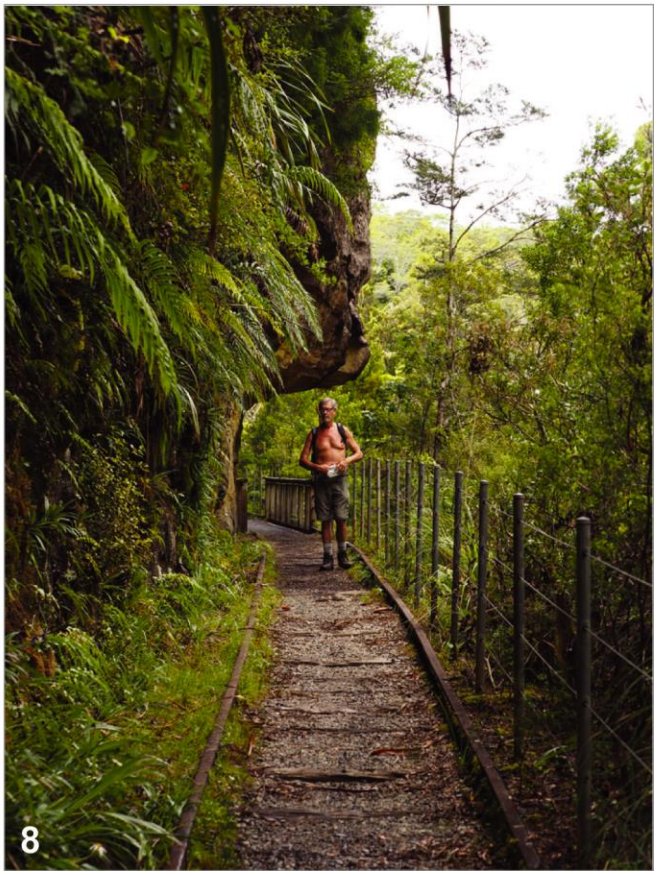
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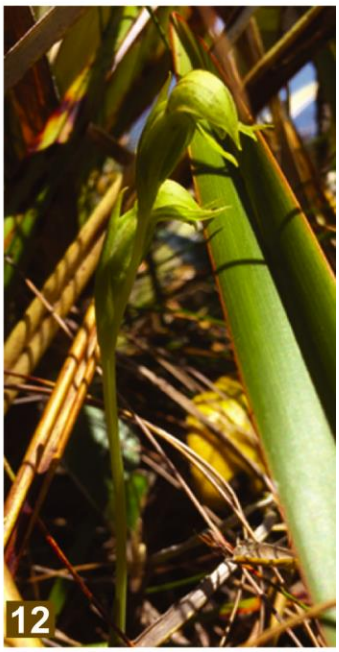
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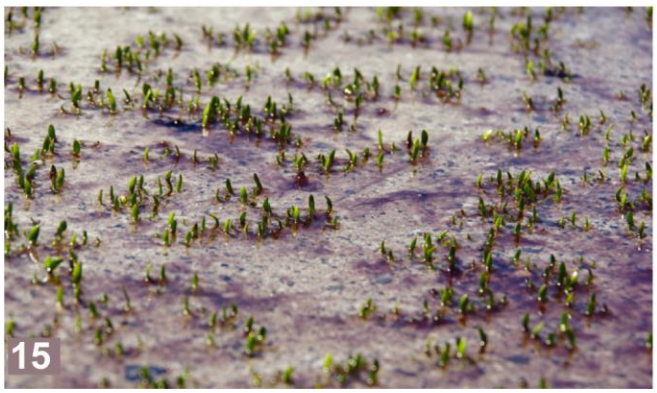
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found a single flowering plant of *Utricularia dichotoma* and others found an interesting individual of the locally common *Actinotus novae-zelandiae* (Fig. 16) that seemingly lacked the peduncle and leaf hairs that are usual for this diminutive member of the carrot family! Here we also saw *Archeria traversii* in flower and fruit. It was disappointing to see how successful the weed *Juncus squarrosus* was, in the bog and extensively along the roadsides! Other problem weeds were the ubiquitous *Juncus bulbosus* and *J. articulatus.* Unfortunately, the drier part of the swamp with its slippery, fine silty layer seems to attract 'hoons' who use it for skids, drifting, doughnuts and figure eights, which may affect part of the *Euphrasia* population? The old wheel ruts where they have driven deeper into the swamp seemed to provide a good conduit for the spread of *J. squarrosus*.

Everywhere the soil was wet and by the time we reached the Reservoir, cloud was covering Mt Rochfort summit. Overall the day gave us a good variety with shrubs and herbs on the rocky outcrops at the summit, sandstone platforms with vegetation including manuka and a variety of small woody plants and herbs, some small forest patches with conifers, which escaped recent fires, and the wetland of ferns and herbs. However, there are still proposals for future mining on the Denniston Plateau.

**Monday 15th Jan**
**Oparara and Lake Hanlon**
**Jan Butcher & Lisa Clapperton**

Driving over the hill from Westport to Karamea, swathes of fallen trees, predominantly beech, were commented on, apparently caused by old storm damage. While crossing the inland saddle *Brachyglottis hectori* in flower was spotted on the steep road edge (Fig. 17). Five milk tankers with trailers were heading the other way – reflecting the amount of dairy farming in the Karamea area.

Oparara Arch Track (Fig. 2)
The Oparara Arch Track was a well formed track described as 1 km / 25minutes walk to an impressive arch; we spent a little longer. The canopy was predominantly beech with miro (*Prumnopitys ferruginea*) and matai (*P. taxifolia*) and an understory containing kapuka (*Griselina littoralis*), wineberry, putaputaweta (*Carpodetus serratus*) and pate. By the carpark, a tree with six *Hymenopyllum* species on it (the prize being the *H. pulcherrium*) was quickly surrounded by enthusiastic folks.

The limestone topography influenced the growth, abundance and lushness of the plants, with the size of the *Gunnera monoica* in particular being noteworthy, as well as the *Asplenium lyallii*. Attention was drawn to the *Coprosma rotundifolia* in fruit, *Nertera villosa* with its hairy stems, and young *Carmichaelia arborea*. The sighting of the *Urtica sykesii* (ex. *U. incisa*) was a remembrance to Bill Sykes, who died earlier in the month. On the side of track, near the protector railings was an *Astelia fragans* in fruit and on the other side of the rails on the river bank was a specimen of *Coprosma linarifolia*. Near the Arch *Blechnum nigrum* was seen as well as *Libertia micrantha*. At the Arch, there were curtains of *Metrosideros colensoi* hanging from the limestone rock face framing the Arch as well as stalagmites and stalactites.

A pair of blue duck (Fig. 18) played in the river, preened themselves and snoozed in the sun while we sat watching as we had our lunch, not fazed at all by us. The robins were very friendly and came close to being stood on, on occasion.

Next was the adjacent Moria Gate Mirror Tarn Track; another "short" walk in the vicinity of the Oparara Arch track. We followed the Oparara River, its rich whiskey-coloured water, caused by the forest tannins, flowing rapidly over the white rocks. A fine specimen of *Dracophyllum elegantissimum* in fruit (Fig. 19) overhung the river, and along the track side *Hebe leiophylla* was flowering, with a swath of *Poa anceps* nearby. Initially we thought the *Dracophyllum* was *D. traversii*, but the narrower leaves with the curly tips separate it from the similar *D. traversii*. We managed to get as far as the lake (Mirror Tarn) which looked black, again coloured by the tannins. There was a nice patch of *Myriophyllum robustum* (Fig. 20) within reach at its edge. A puzzle was presented by a *Coprosma* which was thought to be a *C. tenuicaulis* hybrid.

**Figs. 9–16: 9.** The Mangatini Falls, 25 m tall, disgorging into the Ngakawau River after recent rain. Viewed from the Charming Creek walkway. Photo: EC, 13 Jan. **10.** The Ngakawau Gorge daisy (*Celmisia morganii*), locally common on the walkway rock faces in the Ngakawau Gorge. Photo: AW, 13 Jan. **11.** Scattered shrubs of southern rata were totally covered in spectacular flower on the sandstone pavement of the Denniston Plateau. Photo: CT, 14 Jan. **12.** *Lyperanthus antarctica* on the edge of a bank, Denniston Plateau. Photo: YB, 14 Jan. **13.** A bright red rosette of *Drosera spathulata* amongst the moss, *Campylopus introflexus*, with long silver leaf tips, Denniston Plateau. Photo: CK, 14 Jan. **14.** Extensive colonies of flowering *Euphrasia wettsteiniana* associated with sphagnum in shallow wet areas, outer margin of the Denniston Reservoir. Note the absurdly elongated corolla tubes. Photo: EC, 14 Jan. **15.** Extensive colonies of the tiny rhizomatous alpine marshwort (*Liparophyllum gunnii*, Menyanthaceae) in shallow water by the Denniston Reservoir. Photo: CK, 14 Jan. **16.** *Actinotus novae-zelandiae* (Apiaceae) apparently not developing the usual elongated peduncles, on peaty gravel with bryophytes, margin of the Denniston Reservoir. Photo: CK, 14 Jan.

Lake Hanlon (Fig. 2) (26 km south of Karamea, west side of road, 15 minutes to reach lake)
The lake was formed by the Murchison earthquake and is on the south terrace of the Karamea Bluff. The track had recently been upgraded and mounds of soil were along the edges. On a wet cold vertical forested bank part-way up the track, a wee population of *Lindsaea viridis*, and a few more near the top on the downhill track to the lake, were received with rapture. At the top, which had been cleared, *Gahnia pauciflora, Metrosideros fulgens* were in flower and *Rubus australis* in fruit. The lake itself was fringed with flax (*Phormium tenax*), *Eleocharis spathulata, Gahnia setifolia, Machaerina* ?*rubiginosa,* and *Myriophyllum propinquum*.

**Tuesday 16th January (option 1)**
**Mokihinui River Gorge (Old Ghost Trail/Road)**
**Jenni Shanks**

The 85 km Old Ghost Trail follows an old gold miner's pack trail between Lyell on the Upper Buller River, over the mountains to Seddonville on the Mokihinui River, near the coast north of Westport. We explored a short section of the Seddonville end of the track near the Rough and Tumble Bush Lodge, and made our way on foot from the lodge up into the lower Mokihinui River Gorge (Figs. 2 & 21). The rocky river gorge is very steep and parts of it are unstable due to the effects of the 1929 Murchison and 1968 Inangahua earthquakes. However, the track itself is very good.

Beginning near the lodge, the lush wet forest of rimu (*Dacrydium cupressinum*), kahikatea (*Dacrycarpus dacrydioides*) and kamahi grows on a boulder substrate with plentiful supplejack, ferns and bryophytes. Large specimens of northern rata and miro are also found here with quintinia (*Quintinia serrata*). There is a diversity of ferns, epiphytes and understorey shrubs. This track was the only one we didn't have a species list for – see Appendix 1 for what we recorded.

The track follows the southern bank (True Left) of the Mokihinui River, crossing a series of side tributaries. At the first creek (Welcome Creek) *Blechnum colensoi*, *B. fluviatile* kaikomako (*Pennantia corymbosa*), tree fuchsia (*Fuchsia excorticata*) and *Leptopteris hymenophylloides* were noted on the damp stream banks with other moisture-loving species. A wood pigeon was also seen feasting on the berries of kanono (*Coprosma grandifolia*), and South Island robins were present. "Country Hill" was the lunch stop for some of us where cheeky weka attempted to steal whatever they could from lunch boxes by sneaking up through the undergrowth. From this point the canopy contained a significant component of red beech with tall rimu, hinau (*Elaeocarpus dentatus*), northern rata, Hall's totara (*Podocarpus laetus*) and kamahi.

The next creek to cross is Johnny Cake Creek and then the large and bouldery Rough and Tumble Creek comes in from the northern side (True Right). The first land route from Westport to Karamea followed the Rough and Tumble Creek, passing the gold workings all along the creek. Gold nuggets were found here in crevices amongst the large boulders. A bridge spanned the Mokihinui River here and its remains can still be seen in the river below – a victim of the Murchison earthquake. This point is about 6.5 km along the track, so from here it was time to return along the same track.

Highlights of the walk included some beautiful blue entoloma fungi (*Entoloma hochstetteri*) growing on a kamahi trunk, and the epiphytic orchids *Earina autumnalis* and *Dendrobium cunninghamii*, both in flower. A patch of white-flowering *Wahlenbergia albomarginata* was recorded by Ewen in an open rocky area by the stream, and Maureen noted *Hymenophyllum bivalve*. Some members of our group enjoyed a refreshing swim at the end of the walk, in the river near the lodge. Unfortunately, along the river margin near the lodge the aggressive weed field horsetail (*Equisetum arvense*) was locally common. (Field horsetail weevils were released for the first time in New Zealand as a biocontrol for field horsetail in November 2017 at two sites near Bulls in the Manawatu (Winks et al. 2018).)

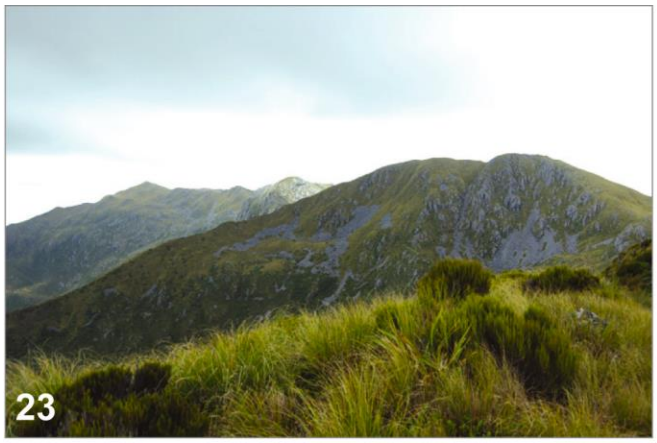
Returning to base we had a quick photograph stop for the nikau, north of Hector (Fig. 22), and another stop at the pink *Pig and Whistle* Hotel on the outskirts of Westport to wet the whistle. It had a great array of pigs behind the bar and a friendly barman.

**Tuesday 16th Jan (option 2)**
**Glasgow Range – Yumiko Baba, Cam Kilgour & Dhahara Ranatunga**

Five intrepid Botsoccers (Anthony, Cam, Dhahara, Geoff, Yumiko) decided to head up the Glasgow Range. Summiting Mt Glasgow had been on our to-do list since Graeme Jane recommended it for its alpine flora. With an ever changing weather forecast and the prospect of heavy rain the following day, we decided to head up that morning.

The Glasgow Range is located about 40 km NE of Westport (Fig. 2). The highest peak is unnamed and reaches 1469 m. Mount Glasgow itself is at the northern end of the range and is 1424 m high, which makes it the third highest of the range. The range receives 5600-6400 mm annual precipitation and its soil is derived from granite


**Figs. 17–22: 17.** *Brachyglottis hectori* flowering, main road near the Karamea Bluff. Photo: EC, 15 Jan. **18.** One of the pair of blue duck (whio), who entertained us at lunchtime on the side of the Oparara River. Photo: KA, 15 Jan. **19.** A large fruiting tree of *Dracophyllum elegantissimum* overhanging the Oparara River. Note the narrow leaves with the curly tips which define the species. Photo: EC, 15 Jan. **20.** *Myriophyllum robustum* locally common on margin of Mirror Tarn. Photo: BD 15 Jan. **21.** Mokihinui River Gorge. Photo: SJ, 16 Jan. **22.** The quintessential view of lonely West Coast nikau that artist Stanley Palmer immortalised. From the main road between Mokihinui and Hector. Photo: EC, 16 Jan.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(Williams 1991), which is exposed in the summit area as outcrops and boulder-fields (Fig. 23).

The Glasgow Range track leads to the highest peak on the range (marked Mt Glasgow Route on the NZ Topo Map: https://www.topomap.co.nz/) and is accessed from Charming Creek Road. After the turn off there is a 3 km '4WD' road to the start of the walking track that was overgrown with gorse (*Ulex europaeus*), and it felt like going through a gorse car wash. We flinched every time we heard the gorse scratch the shiny white rented 4WD ute. Fortunately, we couldn't see any evidence of actual scratches on the ute afterwards. Once we reached the "car park" we saw a sign that said 6 hours to the summit. We thought that might have been a slight exaggeration… it turned out to be pretty accurate.

The walk started with flanking beech, mostly silver beech (*Lophozonia menziesii*), with kamahi and putaputaweta forests. About 10 minutes into our climb we came across a population of about six individuals of Parkinson's rata (*Metrosideros parkinsonii*). We started counting the individuals until we realised that we were walking through an apparent stronghold for this species and lost count. We went across Chasm Stream and the path gently ascended along beech forest with associated species changing from kamahi and putaputaweta to tawheowheo (*Quintinia serrta*), southern rata and pokaka (*Elaeocarpus hookerianus*) at the mid altitude around 700-800 m (Fig. 24). Above 800 m we started to see *Dracophyllum traversii* where the canopy became slightly stunted.

The track went out into shrubland dominated by *Dracophyllum oliveri* and *Astelia* sp., where we admired *Stylidium subulatum* and *Gentianella spenceri*. The track led to a mountain bog with raised islands formed by *Empodisma minus*, where *Donatia novae-zealandiae* (Fig. 25) formed cushions, and *Gentianella spenceri* (Fig. 26), *Thelymitra*, *Pentachondra pumila*, *Herpolirion nova-zealandiae*, *Drosera arcturi*, *Celmisia alpina* and *Rytidosperma nigricans* were scattered amongst the cushions. From here the route briefly went through *Dracophyllum traversii* and southern rata-dominated forest once again and then out to an exposed tussock field where we started spotting *Aciphylla hookeri* and *Celmisia armstrongii, C. dallii,* and *C. monroi* in between the tussocks. On an exposed spur ridge was a delicate silvery daisy, *Raoulia grandiflora*, and *Poa lindsayi*. Climbing up through a boulder-field and amongst outcrops, we finally made it to one of the lower peaks of the ranges at around 1349 m (Fig. 27). The highest point on the range was still a small distance away but we admired the views of the Glasgow Range from this point as we needed to make it back to base before midnight. We stopped for the view of extensive flowering rata below, before heading back down, while Cam proceeded farther to the next spur. When Cam finally caught up with us at the mountain bog patch he told us that he saw a pair of kea (Fig. 28) ripping and eating the stems of *Celmisia discolor* a short distance from him. As he talked a kea appeared from nowhere and flew above us calling in a mischievous manner. We returned to the car around 7:30 pm.

During the day we came across a range of birds. South Island robin, rifleman, kea and bellbird were commonly seen along the track. Bellbirds became more abundant amongst the concerted flowering rata in the mountain forest. Tomtit, silvereye, grey warbler, kakariki, tui and weka were occasionally seen. Four kea were seen at different localities and therefore it is possible they were the same pair. Morepork and kereru were seen once. Kakariki, long tailed cuckoo and blackbird were only heard. We came across flocks of riflemen on several occasions, which were wonderful avian moments for everyone, except for Anthony – he managed to miss all the rifleman-spotting opportunities and even doubted their existence in the range.

**Wednesday 17th Jan (am)**
**Charleston Coast**

**Ewen Cameron**

The day's plan was to look at the vegetation of the Charleston coast and then to go a few kilometres inland to the Nile River Walk for the afternoon (Fig. 1). We woke up to light rain. It was a short drive (26 km) south to Charleston – which was founded as a goldmining town after a major gold rush in 1867. It is now a small adventure tourist village noted for its extensive limestone caving experiences up the adjacent Nile River valley. It was hard to imagine that at its peak Charleston supported some 12,000 people and over 80 hotels.

Constant Bay, on Charleston's coast was established as a port in 1866 – ships up to 40 tonnes

**Figs. 23–28: 23.** Looking north towards Mt Glasgow (furthest horizon), Glasgow Ra., from c.1300 m. Photo: CK, 16 Jan. **24.** A much-deserved lunch break, lower Glasgow Ra., c. 800 m, amongst kamahi, southern rata, Parkinson's rata and tawheowheo. Photo: CK, 16 Jan. **25.** Hard cushions of *Donatia novae-zealandiae* in a bog, 980 m Glasgow Ra. Photo: DR, 16 Jan. **26.** *Gentianella spenceri*, with attractive purple-pink striped petal veins, was locally common in a bog, 980 m Glasgow Ra. Photo: DR, 16 Jan. **27.** Reaching a highpoint in the shrubland /tussock above the tree-line, looking west down the route traversed, with Yumiko, Anthony and Geoff. Glasgow Ra. Photo: DR, 16 Jan. **28.** One of a pair of kea keeping an eye on Cam above the tree line, Glasgow Range. Photo: CK, 16 Jan.

could handle its narrow and dangerous entrance, although some were wrecked. Larger ships were serviced by surf boats. Coloured flags hoisted on Flagstaff Hill indicated whether it was safe or not to enter the bay. Over 200 vessels used the port in its first seven months, but by 1870 the gold rush had subsided, and by 1879 the port was closed. Because of the rough sea running during our visit it wasn't hard to imagine how precarious these landings would have been.

We quickly spread out along the coast, firstly making our way to Joyce Bay, the more northern of the two adjacent bays. It was a dark sandy beach with boulders at the back and a thicket of tall flax fringing the boulders. There were patches of coastal turf , 1–3 m across, dominated by *Triglochin striata* with *Lilaeopsis novae-zelandiae, Lobelia anceps, Selliera radicans, Leptinella squalida, Eleocharis acuta, Apium prostratum,* and *Muehlenbeckia complexa*. The exotics: *Agrostis stolonifera*, *Sagina procumbens* and scarlet pimpernel (*Lysimachia arvensis* s.s.) were also present. Amongst the flax were *Cyperus ustulatus, Carex flagellifera*, and a robust form of *Coprosma rhamnoides* that we suspected was a hybrid with *C. repens*. We had a map from DoC pointing out some localities of threatened plants in this general area, including *Lepidium flexicaule*. After some searching we managed to locate three plants of *L. flexicaule* at one of the known sites. Small shrubs of *Hebe elliptica* were present on a rocky coastal slope. Cam found some surprising species in the coastal turf, including *Brachyglottis bellidioides* var. *crassa* and *Craspedia* "Charleston" (Fig. 29).

Locally common in the damp grassy areas back from the beach was a South African broad-leaved, rhizomatous rush, *Juncus lomatophyllus*, with flat leaves 6–15 mm across. It was first collected in New Zealand just north of here by Arthur Healy in 1953 and it appears still to be confined to the west coast.

The light rain was getting heavier, but we decided to now walk south from the carpark along the coastal walkway. We climbed up to a low shrubby plateau; the vegetation here was dominated by flax, wheki (*Dicksonia squarrosa*), *Coprosma grandifolia*, toro (*Myrsine salicina*) and occasional hutu (*Ascarina lucida*). A large 8 m-long patch of the fern, *Hypolepis distans*, along the trackside was admired. The trackside ditches were full of interesting native herbs frequently mixed in with the sphagnum moss, and included: *Lobelia angulata, L. ionantha, Centella uniflora, Hypericum pusillum, Gonocarpus micranthus*, *Nertera depressa* and *Plantago triandra.*

Leaving the low plateau to drop down to Doctor Bay, the woody vegetation in this more sheltered position increased in size and diversity with tree fuchsia, mahoe and wineberry all present. The first of our group to this little bay disturbed a fur seal, which took to the water. Under the canopy there was a patch of the exotic shrub *Solanum chenopodioides*. It was now raining heavily so most turned around near this point. Returning via the coastal loop there was a large low patch of *Pimelea carnosa* on the coastal rocks along with oioi (*Apodasmia similis*), *Zoysia minima* and some clumps of the ubiquitous west coast drain weed, montbretia (*Crocosmia* ×*crocosmiiflora*).

The decision to return to base for lunch and to dry out met no resistance. A single botanical stop was made in the rain on the way back just north of the [Big] Totara Bridge to collect a voucher specimen from the large wild patch of tiger lilies (*Lilium lancifolium*) on the roadside (Fig. 30) – this double-flower form is more vigorous than the single form (Barbara Parris pers. comm.).

**Wednesday 17th Jan (pm)**
**Cape Foulwind**

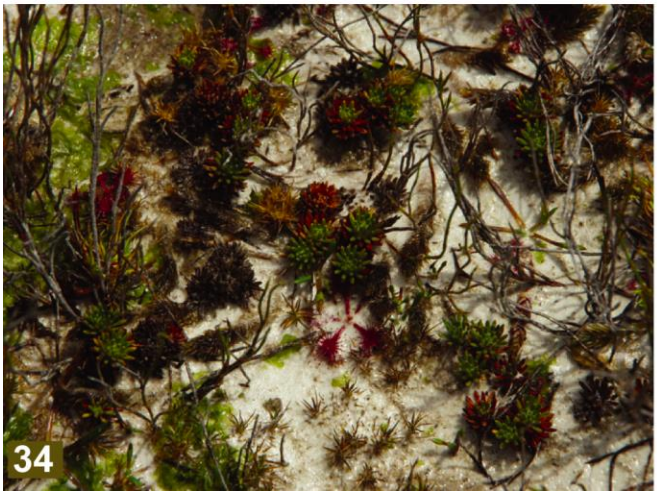
**John Millett**

After lunch at our quarters, Ewen said, "Who's for Cape Foulwind?" So off we headed for Tauranga Bay (Fig. 1), to walk around the wonderful coastal trail to the rocky headland that Captain Cook in 1770, after the *Endeavour* was blown offshore from this windy promontory, gave the descriptive name of a "place of foul winds". The strong nor' west wind had whipped up huge seas that crashed on to the rocks, although Tauranga Bay was partially in the lee of the point, as were its inhabitants, mainly red billed gulls and white fronted terns, indiscriminately cadging fish from each other. Above the far south end of the beach was an odd-looking building emerging through the murk – not a derelict woolshed, but a 5-star restaurant, where we dined the following evening.

The vegetation was largely flax, with an occasional *Pittosporum colensoi* in full fruit, then in a gully several shrubs of a *Fuchsia* named for the same missionary. *Fuchsia colensoi* is the name that was originally given to this entity, but it is now known to be a hybrid between *Fuchsia excorticata* and *F. perscandens* (*F.* ×*colensoi*) and often shows features of both parents. Mahoe was enhanced by brilliant purple fruit, and peeping from between the flax bushes were thick-leaved plants well-adapted to the harsh conditions; much *Hebe elliptica, Asplenium obtusatum* and *Blechnum blechnoides*. This latter fern was at first consigned by us to *B. durum*, but on checking the fern book the identification was changed. There was wonderful coastal turf here at a convenient height (Fig. 31), which included *Plantago raoulii* (Fig. 32) and *P. triandra*, *Leptinella squalida*, and a tiny one that had us stumped for a while, but proved to be *Colobanthus muelleri* (Fig. 33). Even smaller and unresolved at the site was what appeared to be tiny, bright red "flowers", which







**Figs. 29–35: 29.** *Brachyglottis bellidioides* var. *crassa* and *Craspedia* "Charleston", in the coastal turf at Charleston. Photo: CK, 17 Jan. **30.** A wild double form of tiger lily forming a patch 40 m long on the side of SH 6 just north of Charleston. Photo: EC, 17 Jan. **31.** Examining the rich coastal turf flora, Cape Foulwind. Photo: EC, 17 Jan. **32.** *Plantago raoulii* in the turf, Cape Foulwind. Photo: CK, 17 Jan. **33.** Tiny plants of *Colobanthus muelleri* in the turf, amongst other herbs, Cape Foulwind. Photo: BD, 17 Jan. **34**. Small bog plants including species of *Donatia, Oreobolus, Centrolepis, Lirarophyllum, Drosera* and *Celmisia dubia,* "German Terrace". Photo: CK, 18 Jan. **35.** Spread out botanising the Pakihi bogs on "German Terrace". Photo: CK, 18 Jan.

proved to be bright red *Crassula* leaves at the end of bare stalks – "probably *Crassula helmsii"* (Shannel Courtney pers. comm., from an image).

Information panels told us that a small steep-sided island (Wall I.) near the Cape, in the teeth of a gale, still managed to maintain enough shallow soil and vegetation to harbour burrowing petrels and breeding terns and prions. A small colony of NZ fur seals was hauled up on the rocks below us among crashing waves, yet raising pups with much clamour. Could they have chosen a more remote and exposed mainland home to escape the ravages of man? They were probably better protected down there among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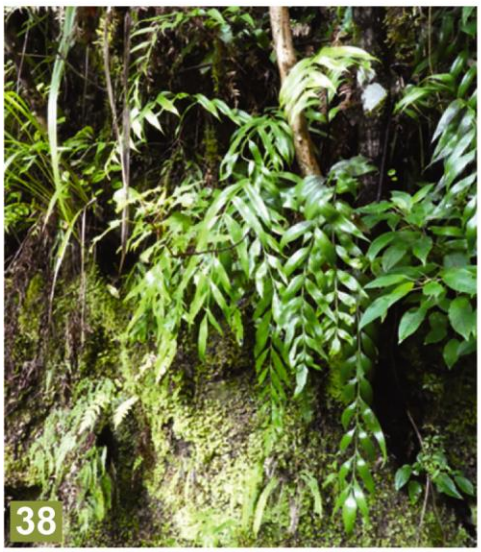
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the shelves and deep-penetrating fissures carved by the west coast seas than was apparent when viewed from above.

A few of the party returned to Tauranga Bay to collect the vehicles, while the rest carried on to Cape Foulwind – one of our elder Bot Soc members, Pam Dale, claims a proudly-cited notoriety for having been dux of Cape Foulwind Primary School during the Depression Years. The Cape Foulwind Reserve is fenced from stock all the way to the stumpy little cast steel, unmanned, lighthouse (c. 3 km) to protect the nocturnal little blue penguins; no dogs are allowed. Behind the lighthouse car park is a broad, semi-sheltered bay, Carters Beach, much used by the pioneers for swimming, and a notice board showed photos of them in large numbers, clad in the beach fashions of the day. The vehicles were found to be ready for our return to base and hardly a drop of rain had fallen, in contrast to our wet morning.

**Thursday 18th Jan (option 1)**
**"German Terrace"**

**Yumiko Baba & Dhahara Ranatunga**

We visited one of the terrace clusters located c.4.5 km south east of Westport, at the foot of the SW part of the Papahaua Range which includes Mt Rochfort at the northern end. Since 1959, when Land Information New Zealand started recognising the terrace clusters as "Open Pakihi" in their map, our terrace of interest has never borne a name in the subsequently published maps (see Mapspast: http://www.mapspast.org.nz/). Prior to the trip Shannel Courtney suggested this locality to Ewen as a good place for Bot Soc to visit, and called it German Terrace. However, because German Terrace has been used for the nearby location of another terrace in the maps since 1999 (NZMS260, LINZ) we call our terrace "German Terrace" in this text to avoid confusion. Our "German Terrace" (Fig. 1) is located at 41° 45′ 74.6 – 41° 45′ 71.3′ S, 171° 40′ 86.5″ – 171° 40′ 89.3″ E, and German Terrace is located at 41° 45′ 74.0″S, 171° 40′ 90.5″E.

The assembly of botanists (Anthony, Cam, Dhahara, Geoff, Yumiko: aka "team Glasgow") set out to walk to the "German Terrace" at 10:00 am. The terrace is accessed from the Nine Mile Road. The walking track is situated about 3.2 km from the Nine Mile Road turnoff and goes through beech forest (both silver and hard) with associated species including *Weinmannia racemosa*, *Carpodetus serratus*, *Myrsine salicina*, *Pseudopanax linearis, Fuchsia excorticata*, *Dacrycarpus dacrydioides*, *Metrosideros fulgens*, *Freycinetia banksia* and understory herbs and ferns. As we emerged from the forest we arrived at the Pakihi scrub, which was described as Group 3 by Williams (1990), characterised as floristically simple with "Gleichenia dicarpa-Baumea teretifolia-fern with *Empodisma minus*, *Leptospermum scoparium*, *Gahnia rigida*, few bryophytes, and a lot of bare soil". The highest point of the terrace is 138 m. The prostrate form of manuka was abundant on the edge of the bare soil where a wet bog had formed, as well as amongst *Empodisma* adjacent to the bog. The prostrate manuka appeared to be a distinct entity from the stunted form of manuka which was also present. We intend to investigate the taxonomic status of the prostrate form. *Donatia nova-zealandiae*, *Rytidosperma gracile, Carpha alpina*, stunted *Dracophyllum palustre*, *Epacris paucifolia*, *Astelia linearis* var. *novae-zealandia, Celmisia dubia* and *Actinotus novae-zelandiae* were present at some patches, slightly higher and drier than the wet boggy area, formed by silty sand resulting from glacial outwash (Williams 1990). In the wet bog *Euphrasia* ?*disperma, Lycopodium ramulosum, Liparophyllum gunnii, Drosera spatulata, D. binata, Centrolepis ciliata, Oreobolus pectinatus* were common (Figs. 34, 35).

A list of vascular plants of the terrace Pakihi, generated from Williams et al (1986) and from what we saw, is appended (Appendix 2). By the end of the day the total number of plants we recorded from the terrace was 26 spp. We returned to the ute at 4:00 pm to be ready for the big traditional Bot Soc night out.

**Thursday 18th Jan (option 2, am)**
**Waitakere (Nile) River Walk**

**Gael Donaghy**

The Waitakere (Nile) River (Fig. 1) and its tributaries have cut dramatic bluffs through limestone (Fig. 36); the flats have been logged and the bush tramway now sports a little train that takes tourists up to the caves area. The walking track wanders on and off the tramway (Fig. 37).

**Figs. 36–40: 36.** Limestone bluffs, like the bow of a giant ship, at the confluence of the Waitakere (Nile) and Awakari Rivers. Photo: EC, 18 Jan. **37.** The bush tramway taking tourists up to the caves. Waitakere (Nile) River track Photo: EC, 18 Jan. **38.** Described in 2016, *Asplenium lepidotum* on a limestone bank of the Waitakere (Nile) River track; endemic to the NW part of the South Island. Photo: EC, 18 Jan. **39.** Our big evening out began in the local Westport band rotunda with Anthony's traditional G&Ts followed by a small concert of talented soloists organised by Helen. Photo: CT, 18 Jan. **40.** The group photo before we departed from the University of Canterbury's field station at Westport. Photo: BD, 19 Jan.

At the parking area we looked at large silver beech trees covered with epiphytes overhanging the river – we could identify 20 vascular plant species on one tree, including three orchids - *Dendrobium cunninghamii, Earina mucronata* and *E. autumnalis.*

We had a good look at the ferns as we travelled up the river – with twelve (out of a total of 22 of this genus in NZ) *Hymenophyllum* species identified. It was good to see *H. pluviatile*, described in 2013. It looks similar to *H. flexuosum*, but the plants here were very big, 20-30 cm, including the stipe, and were epiphytic on trees, instead of rocks. The wing on the stipe is not as wavy as *H. flexuosum*. It is only found in high rainfall areas on the west coast of the North and South Islands. *Hymenophyllum rufescens* with curly white hairs on the fronds was a locally common epiphyte. On a limestone bank a little further on was the recently described *Asplenium lepidotum* (Fig. 38), allied to *A. oblongifolium* and *A. obtusatum,* but the abundant scales on the upper pinnae surface readily separates it.

We were thrilled to find a couple of patches of the lowland *Mazus novaezeelandiae* with its tiny flowers. These were in scrub close to the riverbank. *Jovellana repens* was also here, with one flower to tempt photographers. One big patch of *Myosotis forsteri* was growing and flowering happily in bare sand under a limestone bluff.

Once we crossed the Nile, we climbed many steps to the opening of a large cave. Here we found the thin-leaved limestone specialist, *Pseudopanax macintyrei*, hanging over the cave entrance. The leaf is like a *Raukaua simplex* adult leaf, but has two sessile leaflets, with the middle leaflet having a longer petiolule.

**Thursday 18th Jan (option 2, pm)**
**Buller River Estuarine Walkway**

**Ewen Cameron**

On returning to the Waitakere (Nile) River car park area several people went over to look at the mistletoe*, Ileostylis macranthus,* that Maureen had earlier spotted growing on *Coprosma propinqua* bushes by the toilet and bush tramway in the car park clearing. It had green fruit, and plants were abundant in this area for over 100 m.

After some discussion we departed from the car park by 2.30 pm and headed for the newish Buller River estuarine walkway in Westport (Fig. 1). Just after crossing the [Big] Totara River bridge we stopped again for the showy tiger lilies, this time to photograph them without the rain (Fig. 30).

At the north end of Westport there is a raised boardwalk over the estuary – around Auckland such an estuary would be full of mangroves (*Avicennia marina*). Rushes, sedges and oioi were all frequent. Two weeds took my attention: creeping Jenny (*Lysimachia nummularia*) creeping through the oioi and *Schoenoplectus pungens*; and a small patch of gold-flowering montbretia (*Crocosmia* ?*aurea*), adjacent to the normal, and abundant West Coast orange-flowering form (*C.* ×*crocosmiiflora*). Between the two colour forms there was also a single apricot-flowering plant. Further on others saw a large patch of *Earina autumalis* flowering on a rock wall.

We returned early to our accommodation to smarten up for our big evening out. It began in the local Westport band rotunda (Fig. 39), Anthony organised the traditional G&T's and Helen organised a small concert of talented soloists to entertain us (John M, John R, Bev, Jenni, Juliet and ending with Helen herself) with song, sketches and poems. We had the usual toasts, to the Queen, absent friends, and a special toast for Enid Asquith who passed away last year. Then off to the beachfront Bay House Restaurant and Cafe, in Tauranga Bay where we watched hardy surfers riding the stormy waves in fading light out the window while we wined and dined.

The next morning, just before we all departed, we gathered for a group photo (Fig. 40).

**Birds observed in North Westland during the ABS trip – January 2018**

**Paul Asquith**

As well as satisfying the appetite for all things 'flora', the week on the West Coast provided good opportunities for both botanists and botanist/birders to observe a wide range of bird species in some delightful and varied habitats. Over the week a total of 55 species of birds were recorded (see Appendix 3), mainly land- or estuarine-based but a few seabirds too. For the 'North Islanders' almost every day could be described as "Robins in Abundance" because on some walks especially the Charming Creek Walkway top end there were pairs of very tame robins every 100 m or so just loitering around to greet us. Good numbers of tomtits, fernbirds and bellbirds were also around, many feeding young.

Arguably the avian highlight of the week was the opportunity to watch a pair of blue ducks (whio) (Fig. 18) who besported themselves in a pool just below the Oparara Arch. Almost everybody got to see them and got as close as 10 m. They were not at all concerned about the presence of humans and the many cameras and smart phones being used. Other birds of interest included kea (Fig. 28) and riflemen on the Glasgow Range, a pair of long tailed cuckoos, redpolls and lots of NZ pipits on the Denniston Plateau and brown creepers on a couple of days including in the Nile River valley. Fernbirds were seen and heard on most days in good numbers. Somewhat unexpectedly there were no confirmed sightings of NZ falcon and pleasingly there was no

evidence of any presence of mynas and only one magpie on the entire trip. Some areas indicated very obvious signs of predator management which was good to see.

**Acknowledgements**

My many thanks: to all the contributors to this write up and for the photographs provided; to Anthony Wright for organising the menus, food, books, microscopes and G&Ts; to Helen Preston Jones for coordinating all the human logistics of Westport arrivals and departures, and our Health & Safety plan; to all the vehicle drivers; to Graeme Jane for providing all the species lists; to Dhahara Ranatunga for crunching the finances; to Joshua Salter for the map figures; to Joy Comrie and Chris Woolmore for local knowledge; to Shannel Courtney for botanical information and identification of some of the images; to DoC for a collecting permit; and to all the party for their good company throughout.

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**Appendix 1: Mokihinui River species list** from the Rough and Tumble Lodge to opposite the Rough and Tumble Creek (compiled during the field trip by Maureen Young with additions from Ewen Cameron and Jenni Shanks). * = wild exotic species

**Fungi**

*Entoloma hochstetteri*

**Mosses**

*Dawsonia superba*

**Lycopods**

*Lycopodiella cernua*
*Lycopodium volubile*
*Phlegmariurus varius*

**Ferns**

*Asplenium bulbiferum*
*Asplenium flaccidum*
*Asplenium polyodon*
*Blechnum chambersii*
*Blechnum colensoi*
*Blechnum discolor*
*Blechnum fluviatile*
*Blechnum membranaceum*
*Blechnum montanum*
*Blechnum novae-zelandiae*
*Blechnum procerum*
*Blechnum vulcanicum*
*Cyathea medullaris*
*Cyathea smithii*
*Dicksonia squarrosa*
*Equisetum arvense* *
*Histiopteris incisa*
*Hymenophyllum bivalve*
*Hymenophyllum demissum*
*Hymenophyllum dilatatum*
*Hymenophyllum flabellatum*
*Hymenophyllum flexuosum*
*Hymenophyllum frankliniae*
*Hymenophyllum mutifidum*
*Hymenophyllum nephrophyllum*
*Hymenophyllum rarum*
*Hymenophyllum revolutum*
*Hymenophyllum sanguinolentum*
*Hypolepis distans*
*Hypolepis rufobarbata*
*Lastreopsis glabella*
*Lastreopsis hispida*
*Leptopteris hymenophylloides*
*Lindsaea trichomanoides*
*Microsorum pustulatum*
*Microsorum scandens*
*Notogrammitis angustifolia*
*Notogrammitis billardierei*
*Notogrammitis ciliata*
*Notogrammitis heterophylla*
*Paesia scaberula*
*Pneumatopteris pennigera*
*Pteridium esculentum*
*Pyrrosia eleagnifolia*
*Rumohra adiantiformis*
*Sticherus cunninghamii*
*Tmespteris elongata*
*Trichomanes elongatum*
*Trichomanes venosum*

**Conifers**

*Dacrycarpus dacrydioides*
*Dacrydium cupressinum*
*Podocarpus laetus*
*Prumnopitys ferrugineus*

**Monocots**

*Aira caryophyllea* *
*Anthoxanthum odoratum* *
*Arthropodium candidum*
*Astelia fragrans*
*Astelia hastata*
*Astelia solandri*
*Austroderia richardii*
*Caladenia* sp.
*Carex banksiana*
*Carex dissita*

*Carex geminata*
*Carex megalepis*
*Carex solandri*
*Carex uncinata*
*Carex virgata*
*Cordyline banksii*
*Corybas* sp.
*Crocosmia × crocosmiiflora* *
*Cyperus congestus* *
*Cyperus eragrostis* *
*Cyperus ustulatus*
*Dendrobium cunninghamii*
*Dianella nigra*
*Earina autumnalis*
*Earina mucronata*
*Eragrostis brownii* *
*Freycinetia banksii*
*Gahnia pauciflora*
*Holcus lanatus* *
*Isolepis prolifera*
*Isolepis reticularis*
*Juncus effusus* *
*Juncus planifolius*
*Juncus tenuis* *
*Lolium arundinaceum* *
*Luzula picta* var. *picta*
*Microlaena avenacea*
*Microlaena stipoides*
*Paspalum dilatatum* *
*Phormium cookianum*
*Rhopalostylis sapida*
*Ripogonum scandens*
*Rytidosperma gracile*
*Schoenus maschalinus*

**Dicot trees, shrubs and climbers**

*Aristotelia serrata*
*Carpodetus serratus*
*Coprosma × cunninghamii*
*Coprosma foetidissima*
*Coprosma grandifolia*
*Coprosma lucida*
*Coprosma propinqua* var. *propinqua*
*Coprosma rotundifolia*
*Coprosma tenuicaulis*
*Coriaria arborea* var. *arborea*
*Cytisus scoparius* *
*Dracophyllum longifolium*
*Elaeocarpus dentatus*
*Fuchsia excorticata*
*Fuscospora fusca*
*Fuscospora truncata*
*Griselinia littoralis*
*Griselinia lucida*
*Hebe salicifolia*
*Hedycarya arborea*
*Leucopogon fasciculatus*
*Lophozonia menziesii*
*Melicytus ramiflorus*
*Metrosideros diffusa*
*Metrosideros fulgens*
*Metrosideros perforata*
*Metrosideros robusta*
*Muehlenbeckia australis*
*Myrsine salicina*
*Neomyrtus pedunculata*
*Olearia rani* var. *colorata*
*Pennantia corymbosa*
*Pittosporum colensoi*
*Pittosporum eugenioides*
*Pseudopanax crassifolius*
*Pseudowintera axillaris*
*Quintinia serrata*
*Rubus australis*
*Rubus cissoides*
*Schefflera digitata*
*Ulex europaeus* *
*Weinmannia racemosa*

**Dicot herbs**

*Acaena anserinifolia*
*Anaphalioides trinervis*
*Cardamine* sp.
*Centaurium erythraea* *
*Centella uniflora*
*Digitalis purpurea* *
*Epilobium nerteroides*
*Epilobium rotundifolium*
*Euchiton japonicus*
*Gunnera monoica*
*Hydrocotyle elongata*
*Hydrocotyle heteromeria*
*Lobelia angulata*
*Lotus pedunculatus* *
*Mycelis muralis* *
*Nertera depressas*
*Plantago australis* *
*Plantago lanceolata* *
*Plantago major* *
*Prunella vulgaris* *
*Ranunculus repens* *
*Rumex obtusifolius* *
*Trifolium repens* *
*Wahlenbergia albomarginata*

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**Appendix 2: Vascular plant species list for "German Terrace"** from Williams et al. (1986) and Bot Soc (compiled during the field trip by the five participants – see above).
* = wild exotic species ✓ = also recorded by Bot Soc in Jan 2018

| **Williams et al. 1986** | **Bot Soc 2018** |
|---|---|
| **Ferns** | |
| *Blechnum novae-zelandiae* | |
| *Gleichenia dicarpa* | ✓ |
| *Gleichenia microphylla* | |
| *Lycopodium diffusum* | ✓ |
| *Ophioglossum coriaceum* | |
| *Paesia scaberula* | |
| *Pteridium esculentum* | |
| *Schizaea fistulosa* | |
| *Schizaea bifida* | ✓ |
| *Tmesipteris elongata* | |
| **Monocots** | |
| *Astelia linearis* | ✓ |
| *Bulbinella modesta* | |
| *Calochilus paludosus* | |
| *Carpha alpina* | ✓ |
| *Centrolepis ciliata* | ✓ |
| *Dianella nigra* | |
| *Empodisma minus* | ✓ |
| *Gahnia rigida* | ✓ |
| *Gaimardia setacea* | ✓ |
| *Herpolirion novae-zelandiae* | ✓ |
| *Isolepis distigmatosa* | |
| *Juncus canadensis* * | |
| *Juncus planifolius* | |
| *Lepidosperma australe* | |
| *Luzula congesta* | |
| *Machaerina teretifolia* | ✓ |
| *Microtis unifolia* | |
| *Oreobolus pectinatus* | ✓ |
| *Oreobolus strictus* | ✓ |
| *Prasophyllum colensoi* | |
| *Pterostylis graminea* | |
| *Schoenus maschalinus* | |
| *Rytidosperma gracile* | ✓ |
| *Tetraria capillaris* | ✓ |
| *Thelymitra pauciflora* | ? (no fls) |
| *Thelymitra pulchella* | |

| Dicot trees and shrubs | |
|---|---|
| *Dracophyllum palustre* | ✓ |
| *Epacris pauciflora* | ✓ |
| *Gaultheria antipoda* | |
| *Kunzea ericoides* agg. | |
| *Leptospermum scoparium* | ✓ |
| *Ulex europaeus* * | ✓ |

| Dicot herbs | |
|---|---|
| *Actinotus novae-zealandiae* | ✓ |
| *Celmisia alpina* | ✓ |
| *Celmisia* "Taurua" | ✓ |
| *Centella uniflora* | |
| *Donatia novae-zelandiae* | ✓ |
| *Drosera binata* | ✓ |
| *Drosera spatulata* | ✓ |
| *Euphrasia disperma* | ✓ |
| *Gentianella townsonii* | |
| *Gonocarpus micranthus* | ✓ |
| *Hypochaeris radicata* * | |
| *Leontodon taraxacoides* [*L. saxatilis*] * | |
| *Liparophyllum gunnii* | ✓ |
| *Lobelia anceps* | |
| *Lobelia angulata* | |
| *Nertera depressa* | |
| *Utricularia dichotoma* | |

**Appendix 3: Species List – Birds.** Observed or heard during the Auckland Botanical Society visit to the Westport area in January 2018, compiled by Paul Asquith.

| | | | |
|---|---|---|---|
| Australian gannet | blue duck | NZ pigeon/kereru | NZ fantail |
| black shag | grey teal | long tailed cuckoo | rifleman |
| pied shag | brown teal | shining cuckoo | magpie |
| little shag | mallard/hybrid | kingfisher | blackbird |
| spotted shag | weka | welcome swallow | song thrush |
| black backed gull | SI pied oystercatcher | tui | starling |
| red billed gull | variable oystercatcher | bellbird | skylark |
| Caspian tern | spur winged plover | NZ pipit | yellowhammer |
| white fronted tern | pied stilt | fernbird | chaffinch |
| Royal spoonbill | Australasian harrier | NZ robin | greenfinch |
| black swan | morepork | brown creeper | house sparrow |
| Canada goose | kea | tomtit | goldfinch |
| feral goose | eastern rosella | silvereye | |
| paradise shelduck | parakeet (yellow crowned?) | grey warbler | |

# Vegetation and threatened plants of Hauturu Little Barrier Island

**Ian Atkinson and Bec Stanley**

The vegetation of Hauturu changes enormously from place to place, a consequence of altitudinal, topographic and geological differences that control the island's climate and soils. Another major factor influencing the vegetation is disturbance, both natural processes such as landsliding and human-induced changes, particularly fires. This article is based on the mapping and description of the island's vegetation published by Hamilton and Atkinson (1961) but incorporates soil information from Wright (1961) and results from further field work by the authors between 1998 and 2004.

1. Paspalum–Microlaena grassland

Grassland covers a relatively small part of the Te Maraeroa alluvial flat which lies behind the boulder banks that converge at Te Titoki Point. It once supported forest. *Paspalum dilatatum* is characteristic but many other grasses are present. The grassland is associated with silty and gravelly clay loams that formerly carried forest that was cleared and the land cultivated by Maori for kumara (*Ipomoea batatas*) and other crops. Parts of the flat near the ranger's house and the bunkhouse, as well as the main tracks crossing the flat, are mown regularly.

2. Cyperus–Carex sedgeland

The more poorly drained parts of Te Maraeroa flat, which also once supported forest, now carries a community dominated by *Cyperus ustulatus* and *Carex virgata*. Much of Te Maraeroa was grazed by sheep and cattle during the first 60 years of the 20th century although none remain. A variety of herbaceous weeds are present but most are unlikely to become problems in other parts of the island.

3. Coastal forest and scrub

Coastal forest and scrub are associated with sea cliffs and valley mouths on the island, a zone in which wind-carried salt and wave splash have direct effects on plants. In the northern half of the island, the hard rocks forming the cliffs along this coast are largely devoid of plant cover. Sea cliffs of the more