

<i>Samolus repens</i>	#	maakoako
<i>Senecio lautus</i>	+	
<i>Senecio skirrhodon</i> *	#	gravel groundsel
<i>Silene gallica</i> *	#	catchfly
<i>Solanum linnaeanum</i> *	#	apple of Sodom
<i>Sonchus oleraceus</i> *	#	sow thistle
<i>Stellaria media</i> *	#	chickweed
<i>Tetragonia implexicoma</i>		coastal spinach
<i>Trifolium pratense</i> *	#	red clover
<i>Trifolium repens</i> *	#	white clover
<i>Wahlenbergia vernicosa</i>	+	hare bell

#### MONOCOTYLEDONS

<i>Ammophila arenaria</i> *	#PI	marram grass
<i>Astelia banksii</i>	#	wharawhara
<i>Asteila solandri</i>	#	kowharawhara
<i>Austroderia splendens</i>		coastal toetoe
<i>Briza minor</i> *	#	shivery grass
<i>Carex lessonii</i>	+	
<i>Carex</i> "raotest"		

<i>Carex solandri</i>		
<i>Cenchrus clandestinus</i> *	#	kikuyu grass
<i>Collosperrum hastatum</i>		kahakaha/perching lily
<i>Cortaderia jubata</i> *	#	purple pampas grass
<i>Cyperus eragrostis</i> *	#	umbrella sedge
<i>Cyperus ustulatus</i>	+	giant umbrella sedge
<i>Ficinia nodosa</i>		wiwi, knobby club rush
<i>Glyceria declinata</i> *	#	glaucus sweetgrass
<i>Lachnagrostis billardierii</i>	+	wind grass
<i>Landoltilia punctata</i> *	#	purple-backed duckweed
<i>Lemna dispersa</i>	#	duck weed
<i>Microlaena stipoides</i>		field rice grass
<i>Oplismenus hirtellus</i>	+	bush oat grass
<i>Phormium tenax</i>		harakeke/flax
<i>Poa pusilla</i>	#	
<i>Rhopalostylis sapida</i>		nikau
<i>Thelymitra longifolia</i>	+	sun orchid
<i>Zoysia pauciflora</i>		

## Botanical camp at Pokaka, National Park, 26–31 March 2017

Mike Wilcox (compiler)

### Introduction

Taylor Memorial Lodge (Fig. 1) beside the main trunk railway line at Pokaka was the venue for this late summer camp in the central North Island. It was a comfortable and convenient base for our botanical explorations in and around Tongariro National Park where we explored a number of localities not previously visited during the Auckland Botanical Society's 1986, 2006 and 2010 central North Island camps. Our group is shown in Fig. 2.

The sites visited were: Pokaka environs, Ohakune Old Coach Road to Hapawhenua Viaduct, Ohakune Lakes Reserve, Tupapakurua Falls Track (Erua Conservation Area) from Fishers Trail, Mangahua Track, Mangawhero Forest Walk (including Rimu Loop Track), Mangawhero Falls, and Tukino Skifield Road. Our objectives were to get familiar with the plants at these places, and to contribute to an update of the master species list for Tongariro Ecological District being compiled by Mike Wilcox and Nick Singers.

The report by Phillips Turner (1909) on the botany of the Higher Waimarino District more or less includes most of the places we visited, and is still a very useful reference on the plants of this area. Pokaka (Fig. 3) was one of the bases for



**Fig. 1:** Taylor Memorial Lodge, Pokaka, 30 March 2017. All photos by Mike Wilcox unless stated otherwise.

his exploration of the Waimarino bush and for collecting plant specimens, and he is honoured with two endemic central North Island plants, *Alseuosmia turneri* and *Pittosporum turneri*.

Pokaka (altitude 820 m) is located 12 km south of National Park Village and 18 km north of Ohakune in Ruapehu District, Horizons (Manawatu-Wanganui) Region, the central North Island of New Zealand, right beside the main trunk railway line. There used



**Fig. 2:** Group photo, Mangahua Camp Site. From Left: Jenny Andrew, Peter Moosberger, John Staniland, Graeme Jane, Christine Major, Dhahara Ranatunga, Maureen Young, Frances Duff, Brian Cumber, Margi Keys, Gorakh Silvester, Anne Grace, Mike Wilcox, Lisa Clapperton, Geoff Davidson, Jan Butcher, Bev Davidson, Bruce Calvert, John Millett, Richard Hursthouse, Jenni Shanks, Val Tomlinson, Joshua Salter. Not in photo: Trina Smith and Ian McLean. Photo: Peter Moosberger, 28 March.

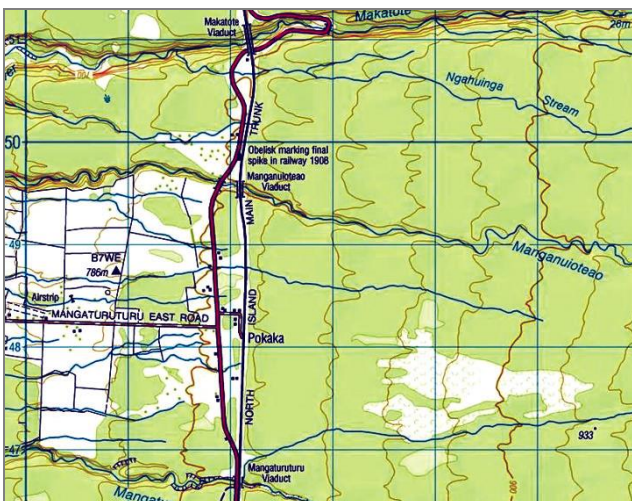
to be a railway station here (Fig. 4) which opened in Feb 1909 and progressively closed from 1965 (Scobie 2010). The railway line and its spectacular viaducts (Fig. 5) add great interest for the visitor to these parts. Taylor Memorial Lodge was constructed in 1978 by joining together three of the old railway houses. There is interesting botany in the remnant privately-owned native bush west of the railway line, and in the Tongariro National Park immediately east of the railway line, where an old bush tram track operated from 1924 to 1926 to bring logs down to a sawmill (Scobie 2010).

### **Pokaka environs, 26 March 2017**

**Jan Butcher and Lisa Clapperton**

Our first excursion was along a secret track in Tongariro National Park used by deer stalkers. It starts 100 m south of Taylor Lodge, and is found by crossing the railway line then looking for the small-leaved *Coprosma dumosa*, where there is a plank

across a stream. We followed the track some distance along the old 1924 bush tram track, with its moss-covered rails and sleepers still visible (Fig. 6), and it was a delightful patch of regenerating bush on gently sloping terrain. At first the overhead canopy is manuka (*Leptospermum scoparium*) with wonderfully peeling bark and then progresses to kamahi (*Weinmannia racemosa*) and black beech (*Fuscospora solandri*). Young plants of kahikatea (*Dacrycarpus dacrydioides*), rimu (*Dacrydium cupressinum*), kaikawaka (*Libocedrus bidwillii*), silver pine (*Manoao colensoi*), Hall's totara (*Podocarpus laetus*), miro (*Prumnopitys ferruginea*) and matai (*Prumnopitys taxifolia*) were moderately common in the understorey. Other juvenile trees or shrubs present were haumakaroa (*Raukawa simplex*), rohotu (*Neomyrtus pedunculata*), putaputaweta (*Carpodetus serratus*), weeping matipo (*Myrsine divaricata*), five-finger (*Pseudopanax arboreus*), lancewood (*Pseudopanax crassifolius*), horopito (*Pseudowintera*



**Fig. 3:** Map showing location of Pokaka (from MapToaster TopoNZ V6.0).



**Fig. 4:** Pokaka Railway Station 1924 (National Library).



*colorata*) and its look-alike *Alseuosmia pusilla*, the latter's bright red berries differentiating it from the horopito. *Astelia grandis* was prolific and some plants had masses of orange berries. *Astelia fragrans* was there as well. Other monocots we found were *Libertia micrantha*, *Carex horizontalis*, *C. megalepis*, *C. uncinata* and *C. zotovii*. *Rubus australis* was plentiful on the ground and *R. cissoides* as a scrambler, and there were some small herbs there too – *Nertera depressa* and *Viola filicaulis*. The ground ferns *Blechnum procerum*, *B. penna-marina*, *Histiopteris incisa* (abundant) and *Paesia scaberula* were common, and the montane forest epiphytic *Hymenophyllum pulcherrimum* was a delightful find. Maureen pointed out both *Notogrammitis angustifolia* subsp. *nothofagei* and *N. billardierei*. Three species of clubmoss were noted: *Lycopodium deuterodensum*, *L. scariosum* and *L. volubile*. The track was relatively weed-free but a few bushes of Khasia berry (*Cotoneaster simonsii*) were seen. A male tomtit and a flock of whiteheads came to see what we were up to.

The private bush beside Pokaka Road is notable for the abundance there of mountain cabbage tree (*Cordyline indivisa*). It was logged long ago, but now has dense undergrowth with abundant *Astelia grandis*, and with a canopy dominated by kamahi.

Mike found several naturalised exotic plants at Pokaka not previously recorded from the Tongariro Ecological District, namely Mexican cypress (*Cupressus lusitanica*), Chinese forget-me-not (*Cynoglossum amabile*), red escallonia (*Escallonia rubra*), spearmint (*Mentha spicata*) and spotted spurge (*Euphorbia maculata*). A significant and threatening weed on the margins of Pokaka Road is Chilean flame creeper (*Tropaeolum speciosum*). It was first recorded there in 1994 (NZFRI20871), but has been known from the Ohakune area since 1986 (Beever et al. 1986).

Lower plants, notably lichens, mosses and liverworts abounded in the bush, but we made no record of them. Another lower plant, the green alga *Trentepohlia jolithus*, which has conspicuous reddish pigmentation, was a spectacular sight covering the south-facing side of some abandoned buildings.

### Ohakune Old Coach Road to Hapawhenua Viaduct, 27 March 2017

**Peter Moosberger**

The Ohakune Old Coach Road (Fig. 7) was part of a route used to convey rail passengers by horse-drawn coach between railheads at Ohakune and Horopito from 1906 to 1908. It was also used to carry railway construction materials to several sites. As it needed to be an all-weather route, cobbling using setts was laid, and our party saw lots of evidence of these. It is reputed to be the longest cobblestone road in New Zealand that has not been reworked. The section



Fig. 5: Makatote Viaduct, 25 March.



Fig. 6: Old bush tram track, Pokaka, 26 March. Photo: Lisa Clapperton.

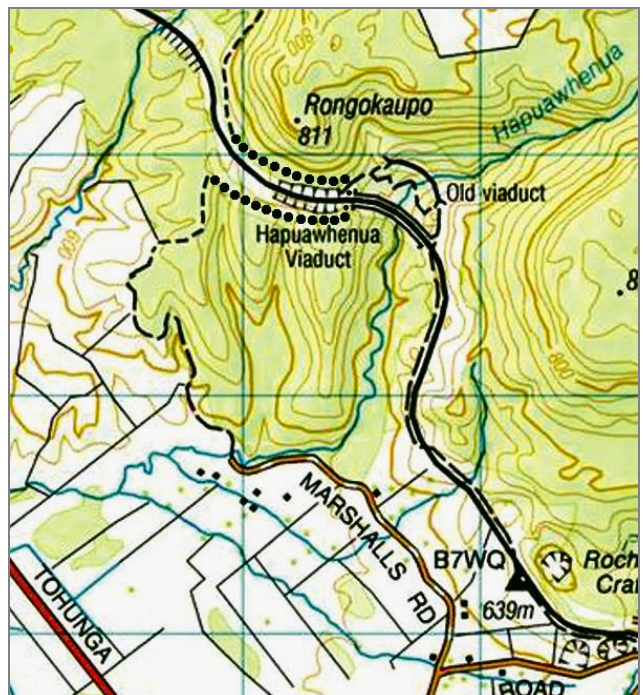


Fig. 7: Map showing location of Ohakune Old Coach Road (dashed line) and the new track (dots) that detours around a section of the Old Coach Road destroyed by realignment of the Main Trunk Line (from MapToaster TopoNZ V6.0, modified by J. Salter).





**Fig. 8:** Restored Hapawhenua Viaduct, 27 March. Photo: Richard Hursthouse.



**Fig. 9:** Old Coach Road, 27 March.



**Fig. 10:** *Astelia solandri*, Old Coach Road, 27 March.

from the Marshalls Road carpark to the restored Hapawhenua Viaduct (completed in 1908) and return (a total distance of 7 km) afforded our party access to lovely native bush, numerous botanical treasures, and interesting railway infrastructure (Fig. 8), including a disused tunnel and the new Hapawhenua Viaduct (completed in 1987). One of our group, *Margi Keys*, was there with Tongariro Natural History Society on 14 Feb 2009, for the official opening of the restored historic Hapawhenua Viaduct.

We began at the Marshalls Road carpark and took the opportunity to note down several exotic plants of interest there. In the gravelly edges we found Jersey cudweed (*Pseudognaphalium luteo-album*), spotted spurge, wireweed (*Polygonum aviculare*), sorrel (*Rumex acetosella*) and spurrey (*Spergularia arvensis*). The fine-leaved Chewing's fescue grass (*Festuca rubra* subsp. *commutata*) was common on verges. Two attractive native grasses – *Chionochloa conspicua* subsp. *cunninghamii* and *C. flavicans* – were prominent, but these must have been planted for landscaping purposes as the latter at least does not belong in this area. A damp creek bank had thickets of Himalayan honeysuckle (*Leycesteria formosa*) and some monkey musk (*Erythranthe guttata*) and buddleja (*Buddleja davidii*), as well as lots of horopito and tree fuchsia, while in the background stood a foretaste of what was to come – a fine stand of podocarps, principally kahikatea and matai. Once on the Old Coach Road itself, Mike dived off to see some forestry trees on the road edge – a fine grove of western red cedar (*Thuja plicata*) with seedlings coming up, a belt of Douglas fir (*Pseudotsuga menziesii*), and an impressive woodlot of the very fast-growing, cold-hardy eucalypt, shining gum (*Eucalyptus nitens*).

And now we got going in earnest along the Old Coach Road (Fig. 9) recording the wayside plants beside the road, and in some substantial patches of native bush. There were numerous small native trees and shrubs typical of secondary forest, notably lacebark (*Hoheria sexstylosa*), rangiora (*Brachyglottis repanda*), shining karamu (*Coprosma lucida*), kanono (*Coprosma grandifolia*), mahoe (*Meliclytus ramiflorus*), narrow-leaved mahoe (*M. lanceolatus*), kaikomako (*Pennantia corymbosa*), broadleaf (*Griselinia littoralis*), horopito (*Pseudowintera colorata*), putaputaweta (*Carpodetus serratus*), five-finger (*Pseudopanax arboreus*), pate (*Schefflera digitata*), koromiko (*Veronica salicifolia*) and the ever-present kamahi (*Weinmannia racemosa*). A few others noted were *Coprosma rhamnoides*, *Coprosma rigida*, *Coriaria arborea*, *Gaultheria antipoda*, and *Pittosporum colensoi*. Tangles of bush lawyer (*Rubus cissoides* and *R. schmidelioides*), clematis (*Clematis foetida*, *C. forsteri*, *C. paniculata*), *Parsonsia* and *Muehlenbeckia australis* were commonly seen, and it was nice to find several



colonies of *Metrosideros colensoi*, as well as the common *M. diffusa*. The bush lily here was *Astelia fragrans*. Soon a forest of tawa (*Beilschmiedia tawa*) came into view, and with it were hinau (*Elaeocarpus dentatus*), white maire (*Nestegis lanceolatus*) and one or two northern rata (*Metrosideros robusta*). The best bush, however, came later, on the walk from the train tunnel down towards the viaducts, for here was some tall forest that had not been logged. It featured huge rimu and miro (*Prumnopitys ferruginea*), with plentiful tawa, and with one giant northern rata, alas, dead. *Astelia solandri* was the commonest epiphyte (Fig. 10).

Ground ferns were generally abundant and often luxuriant, and we noted *Blechnum chambersii* (on shaded banks), *B. colensoi*, *B. discolor*, *B. fluviatile*, *B. novae-zelandiae* (with enormous fronds nearly 2 m long), *Histiopteris incisa*, and *Leptopteris hymenophylloides*. In the tree fern department we found *Cyathea dealbata*, *C. medullaris*, *C. smithii*, *Dicksonia squarrosa* and *D. fibrosa*.

Exotic plants were fairly prominent all along the Old Coach Road, and some of particular interest were blackberry (*Rubus fruticosus*); monkey musk and also musk flower (*Erythranthe moschata*) with its peculiar slimy white hairs on the leaves; Chilean flame creeper; burdock (*Arctium minus*) with huge basal leaves and an elongated flower head with bristly seed heads; madder (*Sherardia arvensis*); yarrow (*Achillea millefolium*), a common wayside plant around Ohakune; the wood rush *Luzula congesta*; ragwort (*Jacobaea vulgaris*); wall lettuce (*Mycelis muralis*), constantly present along bush tracks; and birdsfoot trefoil (*Lotus pedunculatus*), another "everywhere" introduced plant.

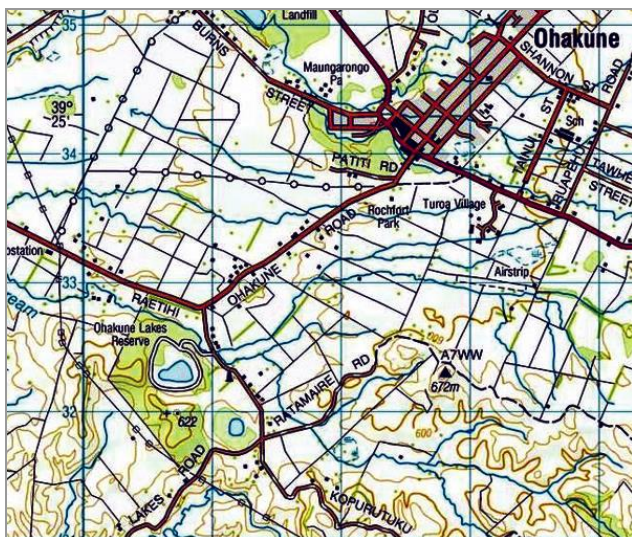
Some of the party walked into the disused tunnel located close to the north end of the restored Hapuawhenua Viaduct. A very few small pockets of

plants precariously hung on the tunnel lining near the portal. The southern end of the tunnel has a large grille across it so it was necessary to retrace our steps back to the track and proceed around a hill. We soon reached the northern end of the new (1987) Hapuawhenua Viaduct, directly under which some of the party were lunching, just as a fast northbound train (comprising three diesel locomotives heading about as many wagons) roared by just a few metres overhead. We continued a short distance to the northern end of the impressively high and curved restored Hapuawhenua Viaduct where others in the party then lunched. A 1430hrs deadline was advised for the return to the carpark to give time for a quick coffee break in Ohakune prior to visiting to Ohakune Lakes Reserve.

### Ohakune Lakes Reserve, Lakes Road, Ohakune, 27 March 2017

**Mike Wilcox**

About 30,000 years ago, well before Mt Ruapehu and the other main volcanoes had formed, there was an eruption of basaltic scoria and surge deposits from a satellite vent (Rochfort Crater) on the northern outskirts of Ohakune. South of Ohakune, the magma also encountered groundwater which flashed to steam resulting in two additional explosion craters that form the two Ohakune lakes (Neall et al. 1999). The Reserve is situated 2.5 km south of Ohakune along the Raetihi Rd, and a short distance along Lakes Road (Fig. 11). At 580 m, it was the lowest elevation site we visited. Bot Soc previously visited there in 1968 (Butler 1968) at which time the Forest & Bird Protection Society took care of the Reserve. We made just a brief visit, circuiting the main lake (Rangataua) by vehicle and stopping near the lake edge for a plant foray, and walking for a short distance along the road (Fig. 12). We first paid attention to lakeside plants, noting stands of raupo (*Typha orientalis*), *Machaerina rubiginosa* (and possibly *M. arthrophylla* as well), and *Machaerina*



**Fig. 11:** Map showing location of Ohakune Lakes Reserve (from MapToaster TopoNZ V6.0).



**Fig. 12:** Ohakune Lakes Reserve, 27 March. Photo: Richard Hursthouse.



**Fig. 13:** Tupapakuraa Track, Erua Forest 28 March.

*teretifolia* in damp ground on the lake margin. Manuka (*Leptospermum scoparium*), flax (*Phormium tenax*) and toetoe (*Austroderia fulvida*) were plentiful, and *Coprosma propinqua* was recorded. Several *Carex* sedges were common, including *Carex demissa*, *C. lessoniana*, and *C. vulpinoidea*. Three introduced species of buttercup were noted: *Ranunculus acris*, *R. flammula*, and *R. repens*.

An unusual feature is the presence of several exotic trees which have freely naturalised, the main ones being sycamore (*Acer pseudoplatanus*), Himalayan strawberry tree (*Cornus capitata*) and laburnum (*Laburnum anagyroides*). We presume that that these species were originally planted and have spread. Other woody exotics noted were elderberry (*Sambucus nigra*), Himalayan honeysuckle (*Leycesteria formosum*), broom (*Cytisus scoparius*), old man's beard (*Clematis vitalba*), tutsan (*Hypericum androsaemum*), manna gum (*Eucalyptus viminalis*), *Cotoneaster glaucophyllus*, *C. simonsii*, blackberry (*Rubus fruticosus*), cut-leaf blackberry (*Rubus laciniatus*), ivy (*Hedera helix*), velvet nightshade (*Solanum chenopodioides*) and great bindweed (*Calystegia silvatica*).

The circuit road passes through some good native bush, with tawa (*Beilschmiedia tawa*) being particularly common. Other native trees and shrubs noted were kahikatea, rimu (*Dacrydium cupressinum*), miro (*Prumnopitys ferruginea*), cabbage tree (*Cordyline australis*), five-finger (*Pseudopanax arboreus*), lancewood (*Pseudopanax crassifolius*), rangiora (*Brachyglottis repanda*), wineberry (*Aristotelia serrata*), hinau (*Elaeocarpus dentatus*), pokaka (*Elaeocarpus hookerianus*), mingimingi (*Leucopogon fasciculatus*), papa kowhai (*Sophora godleyi*), lacebark (*Hoheria sexstylosa*), tree fuchsia (*Fuchsia excorticata*), *Pittosporum colensoi*, kanono (*Coprosma grandifolia*), karamu (*Coprosma robusta*), narrow-leaved mahoe (*Melicytus lanceolatus*) and mahoe (*Melicytus ramiflorus*), and the climbers *Metrosideros diffusa*, *Muehlenbeckia australis* and *Rubus cissoides*. Also



**Fig. 14:** Fishers Trail with *C. indivisa*, 25 March.

known to be there are kaikomako (*Pennantia corymbosa*) and kamahi (*Weinmannia racemosa*).

Ferns found by our group were *Blechnum discolor*, *B. fluviatile*, *B. minus*, *B. novae-zelandiae*, *B. pennamariana*, *Cyathea smithii*, *Microsorium scandens* and *Pteridium esculentum*. *Dicksonia squarrosa* and *Pellaea rotundifolia* also occur there.

### **Tupapakuraa Falls Track (Erua Conservation Area) from Fishers Trail, National Park, 28 March 2017**

**Graeme Jane**

The Tupapakuraa Falls Track has been upgraded and maintained to a high standard by volunteers and is mostly an easy grade ideal for leisurely Bot Soc pace (Fig. 13), as far as the Mt Taranaki Lookout and 500 m or so beyond. We did not have enough time to get to the falls themselves. It starts just 2.5 km along the road (Fisher Trail) from National Park village. The forest here was logged many years ago, but is still very rich in tree and undergrowth species. At the road edge beautiful trees of *Cordyline indivisa* were common (Fig. 14), along with a few silver pine (*Manoao colensoi*) and mountain toatoa (*Phyllocladus alpinus*). The initial section is through tall black maire (*Nestegis cunninghamii*) and white maire (*N. lanceolatus*) forest with many huge trees of black maire in particular and rimu, but also a few large kaikawaka (*Libocedrus bidwillii*) and Hall's totara. *Astelia microsperma* is the common nesting epiphyte here. The path is lined by a dense swathe of ferns including Prince of Wales feather (*Leptopteris superba*), *Blechnum discolor*, *B. procerum*, *B. montanum* (Fig. 15), *B. vulcanicum* and *B. fluviatile*. Above were numerous *Cyathea smithii* and a shrubby understory of *Alseuosmia turneri*, *Coprosma foetidissima*, kamahi, *Melicytus lanceolatus*, and abundant toro (*Myrsine salicina*). Besides ferns and shrubs, the dominant other smaller plant was *Astelia fragrans*. The track was frequently overhung by large leaning stems of broadleaf (*Griselinia littoralis*) densely clothed



in filmy ferns such as *Hymenophyllum flabellatum*, *H. multifidum*, *H. pulcherrimum* and *H. rarum*.

Further on the canopy becomes lower and denser. Here special finds include the lacy *Leptolepia novae-zelandiae* and *Hymenophyllum bivalve* with its flat, serrate-margined fronds. As the ridge becomes narrow the proportion of kamahi increases and the canopy becomes lower. New species here includes *Quintinia serrata* and horopito (*Pseudowintera colorata*). Finally the low forest has become invaded by manuka and is quite open with smaller plants appearing, like the bronze *Carex comans*, cudweeds (especially *Euchiton japonicus* and *E. limosus*), *Nertera depressa* and the ever present selfheal (*Prunella vulgaris*) and wall lettuce (*Mycelis muralis*). As the track begins to descend a narrow spur, tawa becomes more prominent along with totara and miro. Other species becoming common include *Raukaua simplex* and *Pseudowintera axillaris*. At this point we ran out of time and retreated to the vehicles, adding a few things on the way and showing a few treasures to others who had missed them, such as the lace fern (*Leptolepia novae-zelandiae*), and a few plants of *Diplazium australe* and *Rumohra adiantiformis*.

Earlier, Mike had explored further westwards along the Fisher Trail road for about 1 km, noting abundant fuchsia (*Fuchsia excorticata*), kamahi, broadleaf, Hall's totara, rimu, mountain cabbage tree, *Cordyline banksii*, pate (*Schefflera digitata*), putaputaweta (*Carpodetus serratus*) and *Coprosma grandifolia*. The damp road margins had large patches of *Lobelia angulata*, abundant *Blechnum novae-zelandiae* and *Sticherus cunninghamii*, a good deal of *Coprosma dumosa* and *Veronica stricta* (in full flower), and a few *Dracophyllum strictum*.

In November 2013 Peter de Lange (DOC) visited Tupapakurua Falls and made collections and observations on the plants there at an altitude of 676 m. Those he recorded were titoki (*Alectryon*



**Fig. 15:** *Blechnum montanum*, Tupapakurua Track, Erua Forest, 28 March.

*excelsus*), *Anaphalioides bellidioides*, *A. trinervis*, montane karamu (*Coprosma tenuifolia*), *Corybas iridescens*, *Gunnera monoica*, *Jovellana repens*, *Lastreopsis glabella*, *Loxogramme dictyopteris*, mahoe (*Melicytus ramiflorus*), *Metrosideros colensoi*, *Ourisia macrophylla* subsp. *macrophylla*, kawakawa (*Piper excelsum*), *Quintinia serrata*, *Ranunculus reflexus*, *Rhabdothamnus solandri*, and *Senecio minimus*.

### **Mangahua Track from Mangahua Campsite, Tongariro National Park, 28 March 2017**

**John Millett**

We assembled at the Mangahua Campsite beside the Mangahua Stream and headed off along the well-maintained track on the lower slopes of Mt Ruapehu, ascending from 890 m gently uphill to 1000 m. This country lies in a valley between Mt Hauhungatahi and Whakapapa Village on Mt Ruapehu. It was dry at first, then open and boggy (with a boardwalk), and then dry again where the slope steepened as the beech forest was re-entered. Species mentioned are in the order we met with them.

At the campsite there was forest of mountain beech (*Fuscospora cliffortioides*), and on the forest edge, tutu (*Coriaria arborea*), manuka (*Leptospermum scoparium*), koromiko (*Veronica stricta*) – nicely in flower, toetoe (*Austroderia fulvida*) and *Pittosporum colensoi*. Lurking along the stream in the shade of manuka were the “whirligig” flattened fern fronds of *Sticherus cunninghamii*, and one frond was bearing a traditional “koru” on the way to forming another layer. Within the forest there were other shrubs such as *Coprosma foetidissima*, *C. pseudocuneata*, *C. tenuifolia*, weeping matipo (*Myrsine divaricata*), *Neomyrtus pedunculata* and *Pseudopanax simplex*.

Once past the campsite the track goes through open country (Fig. 16) with much manuka, and a fair amount of *Dracophyllum filifolium*, flax (*Phormium tenax*) and red tussock (*Chionochloa*



**Fig. 16:** Mangahua Track, looking south towards Ruapehu, 28 March.



*rubra*). A scattering of bog pine (*Halocarpus bidwillii*) and mountain toatoa (*Phyllocladus alpinus*) emerged through the scrub. Alongside the lower section of the track we encountered *Cotoneaster microphylla* covered in red fruit, abundant heather (*Calluna vulgaris*) and bell heather (*Erica cinerea*) – both in full bloom, and clumps of holy grass (*Hierochloa redolens*). A fern bird was spotted 3 m up a tree of mountain toatoa.



**Fig. 17:** *Stackhousia minima* in fruit, Mangahuia Track, 28 March.



**Fig. 18:** *Plantago triandra* rosettes, Mangahuia Campsite, 28 March.

As we progressed further, various small herbs, low shrubs, and monocots then began to appear beside the track, and these included *Acaena anserinifolia*, *Aciphylla squarrosa*, *Celmisia gracilentia*, *Coprosma cheesemani*, *Deyeuxia avenoides*, *D. quadriseta*, *Gaultheria depressa* var. *novaezealandiae*, *Gentianella grisebachii* (in flower), *Gonocarpus aggregatus*, *Gunnera prorepens*, *Lepidosperma australe*, *Microtis unifolia*, *Nertera depressa*, *Oreobolus pectinatus*, *Pimelea prostrata* var. *vulcanica*, *Poa cita*, and three particularly nice finds – a colony of the minute herb *Stackhousia minima* in fruit (Fig. 17), several patches of *Oreostylidium subulatum*, and the tall orchid *Orthoceras novae-zeelandiae* in flower. Exotic plants noticed were *Carex demissa* and *Ornithopus perpusillus*. The ground beside the boardwalk had the typical Ruapehu montane mire community comprising alpine tangle fern (*Gleichenia alpina*) – and we found *G. dicarpa* as well, the sedges *Schoenus pauciflorus* and *Carpha alpina*, the clubmoss *Lycopodiella lateralis*, and plentiful wirerush (*Empodisma minus*). The small red sundew *Drosera spatulata* grew on damp open places by the boardwalk, and some *D. binata* was also recorded. Another insectivorous plant, *Utricularia dichotoma*, was also seen.

We then got into taller mountain beech (*Fuscospora cliffortioides*) forest where the increasing dryness allowed miro (*Prumnopitys ferruginea*) and mountain totara (*Podocarpus laetus*) to benefit from the shelter of the beech. Also to benefit were young pokaka (*Elaeocarpus hookerianus*) with its juvenile to adult change in leaf form, *Pittosporum colensoi*, *Coprosma foetidissima*, broadleaf (*Griselinia littoralis*), *Pseudopanax colensoi*, bush lawyer (*Rubus cissoides*), *Astelia nervosa*, *Dianella nigra*, *Gahnia procera*, and mountain toatoa. My paramour of the whole trip, the huggable mountain cabbage tree (*Cordyline indivisa*), was also much in evidence. Several other notable plants were also found along this section of the track, including a fine patch of the dwarf tree fern *Dicksonia lanata*, the sedges *Isolepis aucklandica* in extensive mats in damp hollows on the track itself and *Carex punicea* (syn. *Uncinia rubra*) beside the track, the mountain violet *Viola cunninghamii*, the grass *Rytidosperma gracile*, and the orchids *Chiloglottis cornuta* and *Pterostylis banksii*. At the point where we turned around, Frances Duff found a divaricating bush of *Aristolelia fruticosa*.

On the way back down we met a deer stalker with a Swedish .3008 rifle and a permit to hunt in the park. "We didn't hear any roaring" we greeted him. He replied "No, stags are too cunning to roar on this bright sunny day, they'll only roar at night!"

Back at the Mangahuia Campsite, numerous exotic plants were noted – common things like *Agrostis capillaris*, *Anthoxanthum odoratum*, *Bellis perennis*,



*Holcus lanatus*, *Juncus tenuis*, *Lotus pedunculatus*, *Plantago major*, *Poa annua*, *Rumex acetosella*, and *Trifolium repens* – but we also found lots of the native *Blechnum penna-marina*, patches of *Hydrocotyle heteromeria*, and a colony of starweed (*Plantago triandra*) (Fig. 18).

### Mangawhero Forest Walk, Tongariro National Park, Ohakune, 29 March 2017

Mike Wilcox

This walk starts at the bottom of the Ohakune Mountain Road (Fig. 19). In typical Bot Soc fashion, this 1½ hour walk took us about 4 hours. It is a beautiful walk through bush more or less all the way (Fig. 20). We started at the bottom of Ohakune Mountain Road at 600 m with the Rimu Loop Walk, where the tall podocarp forest there had never been logged, and progressed gently uphill to 650 m, passing an ancient infilled crater and a limestone bluff, and then descending back down from near the Mangawhero Campsite. Rimu (*Dacrydium cupressinum*), miro (*Prumnopitys ferruginea*), matai (*Prumnopitys taxifolia*) and Hall's totara (*Podocarpus laetus*) were plentiful, with the main associated broadleaved trees being kamahi, black maire, tawa, mahoe, and lacebark (*Hoheria sexstylosa*). Northern rata (*Metrosideros robusta*) is found here, and in addition, black beech, red beech and silver beech occur near the start of the track. The ancient crater had some very large kahikatea.

Understorey shrubs abounded, and included five finger (*Pseudopanax arboreus*), pate (*Schefflera digitata*), kohuhu (*Pittosporum tenuifolium*), tree fuchsia (*Fuchsia excorticata*), kanono (*Coprosma grandifolia*) resplendent with ripe fruit, shining karamu (*Coprosma lucida*), juvenile pokaka (*Elaeocarpus hookerianus*), kaikomako (*Pennantia corymbosa*), milk tree (*Streblus heterophylla*), *Melicope simplex*, putaputaweta (*Carpodetus serratus*), rangiora (*Brachyglottis repanda*), one or two heketara (*Olearia rani*), wineberry (*Aristotelia serrata*), *Alseuosmia pusilla*, *Alseuosmia turneri* (Fig. 21), horopito (*Pseudowintera colorata*), *Pseudowintera axillaris*, and toro (*Myrsine salicina*). Ongaonga or tree nettle (*Urtica ferox*) was present in the old crater (and noted there by Butler 1968).

The most prominent liane was *Metrosideros colensoi*, with massive multi-stemmed cables (Fig. 22), while *Astelia solandri* was a fairly common perching epiphyte. Three species of epiphytic orchid were recorded: *Dendrobium cunninghamii*, *Earina autumnalis* and *E. mucronata*.

There was a good diversity of tree ferns (*Cyathea dealbata*, *C. smithii*, *Dicksonia fibrosa*, *D. squarrosa*) and ground ferns (e.g. *Asplenium bulbiferum*, *Blechnum colensoi*, *B. discolor*, *B. fluviatile*, *B. novae-zelandiae*, *Leptopteris hymenophylloides*, and *Pneumatopteris pennigera*). Of particular note were

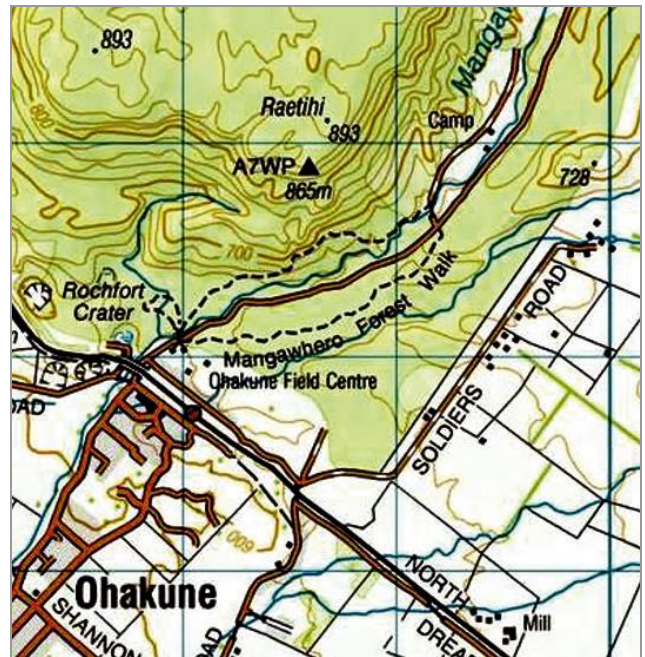


Fig. 19: Map showing location of Mangawhero Forest Walk (from MapToaster TopoNZ V6.0).



Fig. 20: Mangawhero Forest Walk, 29 March.



Fig. 21: *Alseuosmia turneri* (a species described by Rhys Gardner in 1978), Mangawhero Forest Walk, 29 March.





**Fig. 22:** *Metrosideros colensoi*, Mangawhero Forest Walk, 29 March.



**Fig. 23:** *Gahnia procera*, Mangawhero Falls, 29 March.



**Fig. 24:** *Epilobium brunnescens*, Mangawhero Falls, 29 March.

several *Leptolepia novae-zelandiae* and *Botrychium biforme*, sightings of *Diplazium australe* and *Pteris macilentata*, a plant of the introduced fern *Pteris cretica*, and a fine array of epiphytic ferns, including *Microsorium novae-zelandiae*, *Asplenium polyodon* and numerous filmy ferns. The limestone bluff had additional ferns – *Adiantum cunninghamii* and *Blechnum chambersii*, as well as the grass *Poa anceps*.

Herbaceous plants were present in good numbers alongside the track, and we recorded *Australina pusilla*, *Cardamine debilis*, *Hydrocotyle dissecta*, *H. elongata*, *Nertera depressa*, *Stellaria parviflora*, *Ranunculus reflexus*, *Urtica sykesii*, and the terrestrial monocots *Astelia fragrans*, *Carex solandri*, *Carex uncinata*, *C. zotovii*, *Corybas macranthus*, *C. triloba*, *Dianella nigra*, and *Microlaena avenacea*.

**Mangawhero Falls, Tongariro National Park, Ohakune Mountain Road, 29 March 2017  
Mike Wilcox**

This was our briefest visit with about 1 hour or so spent exploring the plant life near the falls. The altitude here is 1320 m, but it is not yet at bush line as a low patchy forest of mountain beech (*Fuscopora cliffortioides*) occurs above and below the falls. Other trees present there are pink pine (*Halocarpus biformis*), mountain toatoa (*Phyllocladus alpinus*), and kaikawaka (*Libocedrus plumosa*). Subalpine shrubs were abundant, with snow totara (*Podocarpus nivalis*), pygmy pine (*Lepidothamnus laxifolius*), manuka (*Leptospermum scoparium*), mountain five-finger (*Pseudopanax colensoi*), *Veronica tetragona*, *Dracophyllum recurvum*, *Gaultheria depressa*, *Brachyglottis bidwillii*, *Coprosma cheesemani*, *Ozothamnus vauvilliersii* and *Coriaria pteridoides* being the main ones we found. Amongst these low shrubs or in open areas between them were some fine patches of *Celmisia incana* and *Celmisia spectabilis*, spectacular tussocks of *Gahnia procera* (Fig. 23), plentiful red tussock (*Chionochoa rubra*), bristle grass (*Rytidosperma setifolium*), star sedge (*Carex echinata*), *Gentianella grisebachii*, *Forstera tenella*, *Euphrasia cuneata*, *Viola cunninghamii* and mountain tangle fern (*Gleichenia alpina*). On the gravelly edge of the Ohakune Mountain Road could be found plentiful *Raoulia albosericea* and the bronze-coloured willow herb *Epilobium brunnescens* (Fig. 24). Wet areas had *Carpha alpina* and *Schoenus pauciflora*.

Close to the road a kaikawaka was found with a colony of silvery grey *Hymenophyllum malingii* growing in a long cleft in the bark, and nearby were a few plants of *Pterostylis humilis*, one bearing a single swelling capsule.

In November 2000, Gail Parr of University of Waikato made herbarium collections of many of these species from this area, together with



*Androstoma empetrifolia*, *Coprosma pseudocuneata*, *Dracophyllum filifolium*, *Gonocarpus micranthus*, *Leptecophylla juniperina*, *Lycopodium scariosum* and *Raukaua simplex* subsp. *simplex*. A specimen she collected there as *Lophomyrtus obcordata*, turned out to be a Chilean plant, *Luma apiculata* (Myrtaceae), but we could not find it.

We were somewhat surprised to see several exotic plants at this altitude, and recorded from the road margins *Agrostis capillaris*, *Buddleja davidii*, *Linum catharticum*, *Mentha pulegium*, *Sagina procumbens* and *Salix cinerea*.

### **Tukino Skifield Road, Mt Ruapehu, Tongariro National Park, 30 March 2017**

**Bruce Calvert**

On this, the last day of our camp, numbers had dwindled to just 14 of us: *Anne Grace*, *Brian Cumber*, *Bruce Calvert*, *Dhahara Ranatunga*, *Gorakh Silvester*, *Graeme Jane*, *Ian McLean*, *Jan Butcher*, *Jenny Andrew*, *John Staniland*, *Mike Wilcox*, *Peter Moosberger*, *Trina Smith*, and *Val Tomlinson*.

If you travel north along New Zealand's State Highway 1, and pass over the thousand-metre-high central plateau, your gaze will surely turn to Mt Ruapehu 15 km to the west. Soon you will sense the foreground, a large, flat and empty region, by local standards, which impresses for its inhospitable look: unsuitable for farming and used only for army training, forestry, and as part of the conservation estate. The west wind can blow here hard enough for tramping parties to stay in a hut all day, and if tenting or bivvying, the water in your billy can freeze overnight.

Val Tomlinson said it evoked the same feelings as did the Klondike in the Yukon Territory, NW Canada, where she used to live. This is the Rangipo Desert (Cox 1997), which has as much rain as distant farmland, but has a soil with little organic matter, and consists of ash, pumice and scoria. The flat region is only 5 km wide here, while behind it lie 5 km of foothills and then the Whangaehu and Mangatoetoeuui Glaciers.



**Fig. 25:** Tukino Road, 30 March.

The Tukino Rd runs west to Ruapehu, and the ABS group travelled it, gaining height from 1070 to 1220m, to a marked car parking area (the 'Base Camp' for 2WD vehicles) where the road started to climb sharply up the foothills (Fig. 25). A species list was made by walking for perhaps 200 m, near the Tukino Rd, gaining only some 30 m in altitude. Here there are many clumps of vegetation a few metres in length and a metre or so high, as well as larger clumps up to as much as 1 km long and 0.3 km wide. In addition, there are plants that establish themselves alone on the gravel. Here the open ground is covered in pieces of gravel no more than a centimetre or two long, with occasional stones 5 cm diameter. This was near the upper limit of larger patches of vegetation; plants petered out above where the species list was taken. Below this, any one km square on the map would be covered by something between 0 and 50 percent vegetation.

A large number of streams cut these slopes, worthy of being marked on the 1:50,000 map with only one or two hundred metres between them. Near us they seemed even closer. Usually they had sloping banks that could just be walked on, with a thin layer of pebbles on a compacted ash base, supporting little vegetation (Fig. 26).

The vegetation fits loosely into the scheme of alpine zones; it forms part of the Alpine Shrubs zone, but includes aspects of Tussock Herbfield (Dawson 1988). The very first and lowest elevation species at 1070 m were *Ozothamnus vauvilliersii*, *Acaena novae-zelandiae*, *Coriaria pteridoides*, and some introduced plants – catsear and Scotch thistle. The last plants to be noted before going back downhill at about 1250 m a.s.l. were *Coprosma pseudocuneata*, *Lachnagrostis lyallii* and *Veronica tetragona*.

While waiting for our last car to arrive, Mike made a brief foray close to junction of the Desert Rd and Tukino Skifield Road. Plants recorded there were the grasses *Anthosachne solandri*, *Holcus lanatus*, *Poa cita* and *Poa colensoi*, the introduced herbs *Hypochaeris radicata* and *Pilosella officinarum*, and



**Fig. 26:** Tukino Rd, gravelfields, 30 March.



the shrubs or mat plants, *Muehlenbeckia axillaris*, *Ozothamnus vauvilliersii*, *Raoulia albosericea*, and *Veronica venustula*.

On reaching base camp, we concentrated our attention first on a low tongue of subalpine scrub to the north of the road, where a fine array plants was accessible. Four conifers – snow totara (*Podocarpus nivalis*), pygmy pine (*Lepidothamnus laxifolius*), bog pine (*Halocarpus bidwillii*) and mountain toatoa (*Phyllocladus alpinus*) – were common, and other larger shrubs present were *Olearia nummulariifolia*, *Dracophyllum filifolium*, *Dracophyllum recurvum*, *Pseudowintera colorata*, *Coprosma cheesemaniae*, *Coprosma pseudocuneata*, *Pseudopanax colensoi* and *Veronica venustula*. The *Olearia* was particularly abundant, with several large, gnarled trees appearing to be of considerable age (Fig. 27). Low mat-like shrubs were *Anaphalioides alpina*, *Gaultheria depressa* var. *novaezealandiae*, *Coriaria pteridoides*, *Epacris alpina*, *Raoulia albosericea*, *Pimelea microphylla* and *Myrsine nummularia*. Numerous herbs thrived in the shelter of the shrubs, common ones being *Anisotome aromatica*, *Celmisia spectabilis*, *Euphrasia revoluta*, and *Geranium brevicaule*, and the grasses *Deyeuxia avenoides*, *Hierochloe recurvata* and *Lachnagrostis lyallii* were also there. The main pteridophytes there were *Blechnum penna-marina* and *Lycopodium scariosum*.

Out on the open, sandy and gravelly slopes, the vegetation was very much sparser, in keeping with the hostile unstable environment. Small islands or hummocks of *Raoulia albosericea* with bristle grass (*Rytidosperma setifolia*) was a common pairing (but often with Scotch thistle *Cirsium vulgare* present), interspersed with a sparse scattering of low scree plants such as *Pimelea microphylla*, *Veronica*

*spathulata* and *Montia campylostigma* in an otherwise bare landscape. There was excitement in finding some drifts of a small green plant on eroding slopes – it turned out to be the moss *Polytrichadelphus magellanicus* (Jessica Beever, pers. comm.). A bit further up the road brought us to a rockfield, where the black mountain moss *Andreaea* reigned supreme, covering the tops of large rocks, and small stones as well. The whipcord hebe, *Veronica tetragona*, was fairly common in this habitat.

Our last foray was well back down the road on flat country, which could best be described as *Racomitrium lanuginosum* mossfield (Fig. 28). It was more stable vegetation, dominated by this woolly moss covering boulders. Growing with the moss (and seemingly smothered by it) were patches of the dwarf broom *Carmichaelia nana*, and colonies of *Leucopogon fraseri*.

We did not get into the sandy country (Te Onetapu) in the heart of the Rangipo Desert. Smale (2012), Smith (2014) and La Cock (2016) provide further information on this forsaken place, and its vegetation. Another name has come into use for this area – the Rangipo Dunefield. It is the only place in New Zealand with volcanic sand dunes, and is an internationally significant ecosystem covering 3000 ha. The first part of the Tukino Road goes through it but the bulk of the sandy dunefield lies further south on Army land. Singers and Rogers (2014) have classified this desert vegetation as Type BR3: Bristle tussock, *Raoulia*, *Muehlenbeckia* gravel/sandfield under the broad category of vegetation subject to frequent geomorphic disturbance, emphasising that in New Zealand it is unique to Mt Ruapehu on the Whangaehu River lahar fan.



**Fig. 27:** *Olearia nummulariifolia*, with Dhahara Rangatunga, Tukino Road, 30 March.



**Fig. 28:** *Racomitrium* mossfield, Tukino Road, 30 March.





**Fig. 29:** Rimu forest, Makatote Viaduct, 31 March.

## Post-scripts

**Mike Wilcox**

### Post-script 1: Large-flowered butterwort (*Pinguicula grandiflora*), Horopito, 30 April 2017

Graeme Jane reported on the discovery of this European insectivorous plant near Horopito (Jane 2016). Discussions with DOC staff at Ohakune confirmed that the colony was still present, and we duly visited the site in a small wetland at Arch Culvert on SH4 between Horopito and Pokaka. It was somewhat underwhelming as DOC had sprayed it, and only a few small seedlings were present.

### Post-script 2: Plants at Makatote Viaduct

As one approaches this impressive viaduct from the north, via a large hairpin-bend in SH 4, there comes into view a magnificent rimu forest on the steepish slopes above the road (Fig. 29). Then on the vertical, seeping banks beside the road there is a spectacular expanse of the sedge *Machaerina sinclairii* (with *Austroderia fulvida* and *Blechnum novae-zelandiae*). The seeps also have abundant *Ourisia macrophylla* subsp. *macrophylla*.

### Post-script 3: a population of the exotic fern *Dryopteris affinis*, Rotoaira Forest, 31 March 2017

I decided to return to Auckland via Turangi, and took the opportunity to stop off at a few places along the main highway past Taurewa, and near Lake Rotoaira. At one place, on the road margin of a mature pine plantation, I spotted a large, unusual fern on the edge of the forest. There were several of them, and it turned out to be the European fern *Dryopteris affinis* (Fig. 30). This sighting added another new plant to the vascular plant catalogue in preparation for the Tongariro Ecological District.

**Post-script 4: New plant records for Tongariro Ecological District** (based on the plant catalogue in preparation by M. Wilcox and N. Singers, version 24 April 2017) - compiled by Mike Wilcox and Graeme Jane

#### Ferns

- Dryopteris affinis*: Rotoaira Forest
- Pteris cretica*: Mangawhero Forest Walk (Rimu Loop)
- Pteris macilenta*: Mangawhero Forest Walk (Rimu Loop)

#### Conifers

- Cupressus lusitanica*: Pokaka
- Thuja plicata*: Old Coach Road

#### Monocots

- Bromus catharticus* var. *catharticus*: Raurimu, Old Coach Road
- Carex imbecilla*: Tupapakurua Falls Track
- Cortaderia selloana* subsp. *selloana*: Rotoaira Forest
- Gastrodia sesamoides*: Tukino Road – 1 old collection in AK, locality may be doubtful
- Luzula congesta*: Old Coach Road
- Panicum dichotomiflorum*: Tohunga Road (Ohakune)
- Paspalum dilatatum*: Raurimu, Ohakune Lakes Reserve
- Poa annua*: widespread

#### Dicots

- Brassica napus* subsp. *oleifera*: Old Coach Road
- Calystegia silvatica*: Raurimu and Ohakune, widespread
- Cardamine hirsuta*: Old Coach Road
- Cynoglossum amabile*: Pokaka
- Erythranthe moschata*: Old Coach Road
- Euchiton japonicus*: Old Coach Road, Mangawhero Forest Walk
- Euphorbia maculata*: Pokaka, Marshalls Road
- Galium aparine*: Old Coach Road, Ohakune Lakes Reserve
- Geranium molle*: Mangawhero Falls
- Lactuca serriola*: Tukino Road
- Lophomyrtus obcordata*: Mangawhero Forest Walk (Rimu Loop)
- Matricaria discoidea*: Fisher Trail
- Mentha arvensis*: Old Coach Road
- Mentha pulegium*: Mangawhero Falls
- Mentha spicata*: Pokaka
- Myosotis arvensis*: Raurimu
- Polycarpon tetraphyllum*: Pokaka
- Rumex obtusifolius*: Raurimu, Mangawhero Falls
- Senecio glomeratus*: Ohakune Lakes Reserve
- Sherardia arvensis*: Old Coach Road
- Solanum chenopodioides*: Ohakune Lakes Reserve
- Sophora godleyi*: Ohakune Lakes Reserve
- Trifolium dubium*: Old Coach Road, Ohakune Lakes Reserve
- Vicia sativa*: Fisher Trail, Marshalls Road

## Acknowledgements

Thanks go to Shona Edgerley and Dean Fountain for attending to our needs at Taylor



Memorial Lodge and to Ross Edgerley for showing Mike the way in to the old bush tram track at Pokaka [sorry we could not find *Raukaua edgerleyi*, named after Shona and Ross's great great grandfather, John Edgerley (1814-1849), a pioneering nurseryman in Auckland]; to Jenni Shanks for her great work in organising the provisions and cooking duties; to Graeme Jane for his expert and diligent attention to the daily species lists; to Jessica Beever for identifying a moss at Tukino; and to all our group members for their plant observations, and duties at the Lodge.



**Fig. 30:** *Dryopteris affinis*, Rotoaira Forest, 31 March.

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## Discovery of *Myosotis pansa* subsp. *pansa* on Puponga Point, Cornwallis

Oscar Grant



**Fig. 1.** *Myosotis pansa* subsp. *pansa*, Sep 2016. All photos by the author.

Puponga Point is a prominent feature of the Manukau Harbour, pointing like a long finger across the water. While there are no formal tracks along the coastal fringe, exploration of this area is fairly easy around low tide from Cornwallis Wharf. Although it is predominantly covered in pines (*Pinus* sp.), significant strips of native vegetation still occur around the coast and on the outer reaches of the peninsula. Weed issues are of high concern, with boneseed (*Chrysanthemoides monilifera* subsp. *monilifera*), pampas (*Cortaderia* sp.) and gorse (*Ulex europaeus*) being abundant in many places. Climbing asparagus (*Asparagus scandens*) is also invading some of the native remnants from the interior of the peninsula where it has smothered the understory. However, despite the weed issues, patches of the native vegetation remain in good condition, and contain a variety of interesting species.