

Report of the Auckland Botanical Society trip to Taranaki on 29 Jan – 1 Feb 2021

Geoff Davidson (Editor)

Participants: Jenny Andrew, Yumiko Baba, Jessica Beever, Maureen Burke, Jan Butcher, Ewen Cameron, Lisa Clapperton, Linda Conning, Bev and Geoff Davidson (Organisers), Gael Donaghy, Mark Fort, Leslie Haines, Richard Hursthouse, Graeme Jane, Sandra Jones, Cameron Kilgour, John Millett, Peter Moosberger, Helen Preston-Jones, Dhahara Ranatunga, Juliet Richmond, Joshua Salter, Jenni Shanks, Zara Skuse, Lydia and Ian Smith, Cheryl Taylor, Val Tomlinson, Alison Wesley and Maureen Young. (Fig. 1).

We were joined by local Taranaki Bot Soccers, Val Smith and Barbara Hammond, on both Saturday and Sunday.

Photographs were taken during the field trip by: Yumiko Baba (YB), Ewen Cameron (EC), Lisa Clapperton (LC), Bev Davidson (BD), Geoff Davidson (GD), Gael Donaghy (GDo), Sandra Jones (SJ), Dhahara Ranatunga (DR), Josh Salter (JS), Jenni Shanks (JSh), Cheryl Taylor (CT). Photographers are acknowledged by their initials at the end of each caption.

Taranaki Outdoor Pursuits & Education Centre (TOPEC)

Jan Butcher & Geoff Davidson

A few chose to stay in motels but the main group stayed at the Taranaki Savings Bank TOPEC lodge

(Fig. 2, location A) which is located on the edge of the Waiwhakaiho River, halfway between its source, Mt Taranaki, and its destination at New Plymouth's coast. Set up for Outdoor Education, the lodge is situated near the "Meeting of the Waters" and Burgess Park. The Meeting of the Waters Scenic Reserve is where the outflow from the Lake Mangamahoe dam rejoins the Waiwhakaiho River.

One walking track passing the Lodge took us to a popular swimming hole, and another track led across a swing bridge for a 20-minute quiet amble through matai (*Prumnopitys taxifolia*), rimu (*Dacrydium cupressinum*) and kahikatea (*Dacrycarpus dacrydioides*) forest. There is an extensive area of dense *Icarus filiformis* (syn. *Blechnum filiforme*) looking gorgeous covering the ground and ascending adjacent tree trunks unto the sun. Not so attractive was an equally large and faster-spreading area of tradescantia (*Tradescantia fluminensis*). Without intervention the *I. filiformis* will disappear under a sea of tradescantia.

An experimental stand of Chinese fir (*Cunninghamia lanceolata*) was planted as a possible timber source by the New Plymouth District Council, but the trees grew too slowly, so the Council abandoned the plan. Together with a block of healthy Japanese cedar (*Cryptomeria japonica*), they



Fig. 1. Group photo at TOPEC. Photo: JS, assisted by Peter Moosberger. Unless otherwise stated all photos taken during the trip.



Figs. 2–4: 2. Locations of places visited by Auckland Botanical Society in 2021. **A:** TOPEC, Hydro Road, off Hwy 3; **B:** North Egmont Visitor centre, top of Egmont Road; **C:** Mahood-Lowe Reserve, Alfred Road, on the national park boundary; **D:** Manganui Gorge and alpine meadows, at top of Pembroke Road; **E:** Lake Mangamahoe, Hwy 3; **F:** Pukekura Park, New Plymouth; **G:** Lake Rotokare, east of Eltham. Map from Heinemann's New Zealand Atlas (1987), modified by Joshua Salter. 3. Stand of Chinese fir (*Cunninghamia lanceolata*) behind dining room at TOPEC; and Japanese cedar (*Cryptomeria japonica*) to left of juvenile kauri. Photo: EC. 4. TOPEC Lounge area. First evening; Geoff & Bev alerting us to what was in store. Photo: JS.

now form a dense backdrop to the Lodge (Fig. 3). We had sole use of all the cabins and the main kitchen/dining areas. (Fig. 4)

We were fortunate enough to have a geologist, Ian Smith, (Figs. 5, 6) with us to explain the cause and effect of all we saw, as everything in the vicinity of Taranaki is affected by the presence of the awesome mountain. Here is his summary of an impromptu talk he gave us:

Taranaki Volcano

**Ian Smith, University of Auckland,
specialist on Mt Taranaki**

Mount Taranaki is an andesite cone volcano; the products of its eruptions have accumulated close to its vent to build an edifice of lava and ash and create a steep-sided mountain, surrounded by a broad ring plain, made up mainly of the deposits of cone collapse events together with reworked material from the cone. This contrasts with caldera volcanoes (e.g. Taupo) where eruptions have been so violent as to distribute eruption products widely, leaving a broad crater surrounded by an apron of debris tens to hundreds of kilometres wide. A third type of volcano produces the cones that develop when multiple small batches of magma are erupted at the surface of the Earth to form a field of small volcanic cones; this type of volcano is exemplified by the small cones of Auckland and Northland.

Taranaki Volcano exists because the Pacific tectonic plate is descending (subducting) beneath the Australian plate and in the process initiating melting of rocks. The melts rise as magma and after eruption crystallize as the rock known as andesite. (Andesite is named from the Andes mountains in South America where the name was first applied to a series of lavas (<https://www.britannica.com/science/andesite>); however, andesite volcanoes typically occur above subduction zones, such as are found all around the Pacific Ocean.

Although in many minds Mt Taranaki is considered to be dormant or even extinct it is in fact better thought of as active. The last documented magmatic eruption was in the 1790s when a dome built in a crater which had formed during a violent eruption in the 1600s. This earlier event, known as the Burrell eruption, produced a wide-spread pumice fall. Since then, there have been collapse events which devastated the western side of the volcano and this explains the very different patterns of vegetation of the western versus the eastern sides of the mountain.



Fig. 5. Geologist Ian Smith on Ngatoro Track. Photo: GD.



Fig. 6. Ian Smith discussing the geology of Mt Taranaki with Peter Moosberger and Mark Fort on the Manganui Gorge Track. Warwick Castle looms on RHS. Photo: BD.

Ongoing research has documented a very detailed history of activity from the Taranaki volcanic centre dating back about 120,000 years. Periods of cone building have produced steep edifices that in time became unstable leading to major collapse events. The interesting hummocky topography west of the mountain is testament to these events. On the eastern side of the mountain these events are mantled by thick ash deposits distributed by prevailing westerly winds. In between cone collapse episodes, bursts of magmatic activity lasting hundreds of years have renewed the Taranaki cone.

At present Mt Taranaki is in a time of quiet repose. A very well-planned system of seismometers surrounding the volcano is designed to provide a warning of magma movement beneath the mountain which will lead to the next episode of cone building. Perhaps it will be next year, or perhaps in several decades.

From a botanical point of view, differences in the distribution of plant species can be understood in terms of altitude, prevailing west-to-east weather patterns, and perhaps most importantly that the eastern slopes are dominated by thick ash beds (being usually on the downwind side of the active volcanic vents) whereas the western slopes are defined by the much rockier products of cone collapse events.

Additional notes on vegetation zones

Geoff Davidson

The five zones of vegetation on Mt Taranaki can be discerned from afar with the dark green lowland podocarp forest merging into the kamahi (*Weinmannia racemosa*)/kaikawaka (*Libocedrus bidwillii*) cloud forest. Above that the mid-green alpine shrub land is a distinct band before the more broken yellowish green tussock grassland with herb and moss fields above that. (Fig. 7).

Sat 30 January 2021 (Morning)

– Connett Loop Track, North Egmont

Sandra Jones

A couple of professional botanists (Mossologist Jessica and Botanist-General Ewen)* with two assistants (Cheryl and Sandra) walked the Walk. It was a short distance – 40 minutes return, officially – but we took our time and arrived back at the Visitor Centre (north Egmont, Fig. 2, location B) at about the same time as members of the main party who walked the longer Ngatoro Loop Track. The forested clockwise loop heads steadily down an easy slope, crosses over a stream, and then turns back up to the visitor car park. Thanks to Ewen, the species were thoroughly documented. There were many old kamahi with convoluted trunks, festooned with the hanging moss *Weymouthia mollis* (a feather moss) and other bryophytes, and luxuriant filmy ferns (Fig. 8), which together give this type of cloud forest the evocative name “goblin forest”. Mature specimens of mountain totara (*Podocarpus laetus*) and kapuka (*Griselinia littoralis*) were also common, but the abundance of the unpalatable horopito (*Pseudowintera colorata*) indicates that the area had, at one time at least, been heavily browsed. Surprisingly we did not notice any mature kaikawaka

*Jessica is more correctly a Bryologist working for Manaaki Whenua, Landcare Research; and Ewen is the Curator of Botany at the Auckland Museum.



Fig. 7. Mt Taranaki showing altitudinal vegetation, approaching via Monmouth Road. Photo: GD.

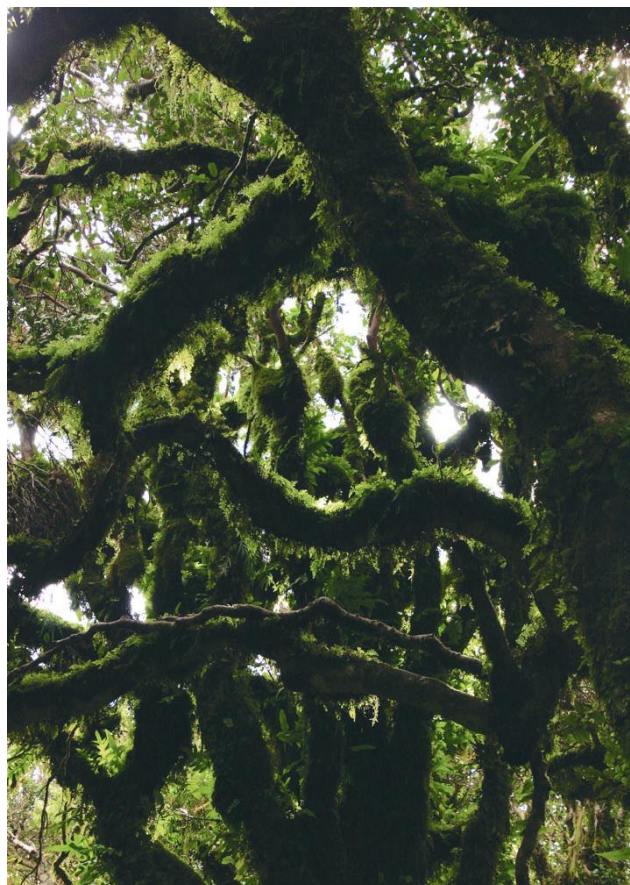
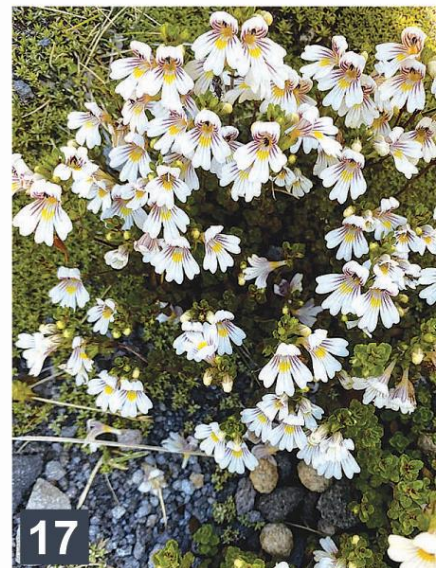


Fig. 8. Filmy ferns and assorted bryophytes on kamahi on Connett Track. Photo: SJ.



Fig. 9. Flowering *Brachyglottis elaeagnifolia* Road to Manganui Gorge Photo: BD.



Figs. 10–17: 10. *Weinmannia racemosa* "Goblin Forest on Ngatoro Track. Photo: JSh. 11. *Phlegmariurus varius* on Ngatoro Loop Track. Photo: JS. 12. *Libocedrus bidwillii* on Ngatoro Loop Track. Photo: BD. 13. Mountain cabbage tree or toi (*Cordyline indivisa*) on Ngatoro Track.. Photo: BD. 14. Toi *Cordyline indivisa* leaf pattern, on Ngatoro Track. Photo: GD. 15. *Veronica stricta* var. *egmontiana*. Flowering on Veronica Track. Photo: DR. 16. *Ourisia macrophylla* subsp. *macrophylla*, on Manganui Gorge Track. Photo: BD. 17. *Euphrasia cuneata* on Manganui Gorge Track. Photo: DR.



Fig. 18. The Young 'uns (clockwise: Zara, Yumiko, Cam & Dhahara) venturing higher than others on Veronica Track. Photo: DR.



Fig. 19. *Jovellana repens* on Veronica Track (with the heart-shaped leaves). Photo: DR.

on this track though it is not uncommon in the general area. It was good to see the more southern species like *Leptopteris superba*, *Austroblechnum colensoi* and, frequent along the track margins, fruiting *Viola filicaulis*. Teasing us were locally flowerless *Ourisia macrophylla* and *Aporostylis bifolia*. The former was seen the next day in full flower higher up the mountain in the open. Specimens of the very attractive *Brachyglottis elaeagnifolia* (Fig. 9) were occasionally seen, especially at the top of the track, together with Mt Egmont hebe (*Veronica stricta* var. *egmontiana*) in full flower in the open around the car park. At regular intervals along the track, DoC had placed various examples of trapping devices for display, with information boards describing how and what each device was designed to trap. For example, the Goodnature 24: "Rat & stoat trap. Gas powered self-resetting can kill up to 24 predators before needing to be checked. A lure attracts predators. There are >2000 A24 traps in Taranaki National Park – that's a world record!"

An old leaflet (undated) issued by the Egmont National Park, lists *Dactylanthus taylorii* as occurring on this track. Not unexpectedly we did not see (or smell) any sign of it.

Sat 30 January 2021 (Morning) – Ngatoro Loop Track, North Egmont

Geoff Davidson

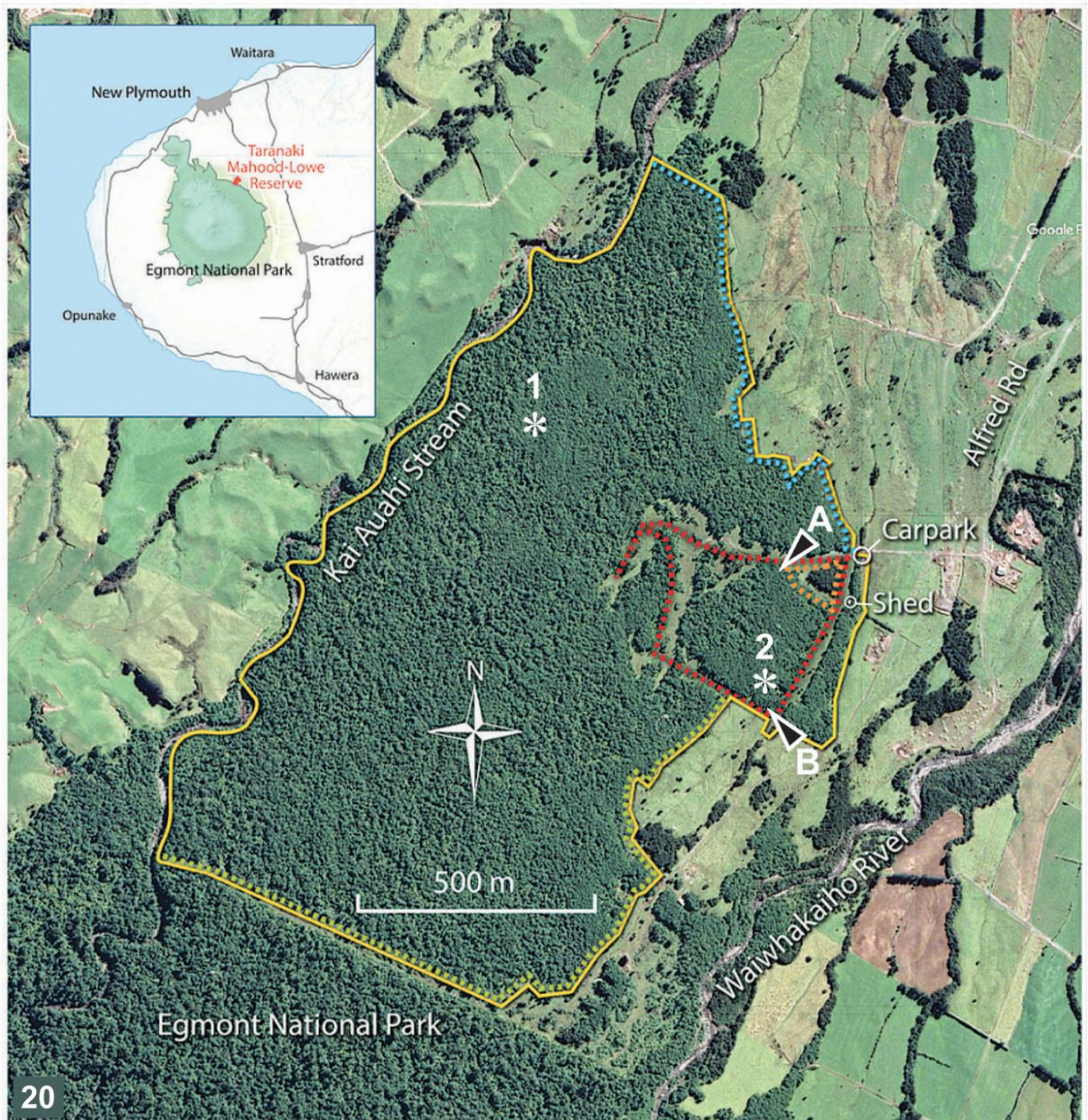
After a slight hitch which necessitated a bit of breaking and entering to retrieve a forgotten item, we arrived at North Egmont Information Centre (Fig. 2, location B) at about 9.30 am to meet up with the two local botanists, Val and Barbara. Most of us chose this slightly longer and steeper 1 hour track. Despite being shepherded by the locals, the group

stretched out, and time passed as we immersed ourselves in the tree-line vegetation. Dominant were the gnarly kamahi (Fig. 10) trunks covered in epiphytes, and branches dripping with *Phlegmarius varius* (Fig. 11) and *Weymouthia mollis*. This is cloud forest and goblin territory. Dense mounds of mosses, trunks hidden by the multitude of filmy ferns, and lots of running water combined to make a magical setting. All eyes were looking downwards at the many flowering herbs, *Ourisia macrophylla* subsp. *macrophylla*, *Euphrasia cuneata*, *Viola filicaulis* and *Lobelia angulata*. Then, suddenly, there we were confronted by towering, perpendicular, straight trunks with no branches, no epiphytes, clean bark and somewhere overhead an umbrella of darkness indicating that the kaikawaka (Fig. 12) were alive, and the dense gathering of epiphytes and mosses were happily growing away up there, indiscernible to aging eyes. Amongst this contrast of trunks were the mountain cabbage or toi (*Cordyline indivisa*) (Figs. 13, 14). The sun on their leaves accentuated their tropical look, in this decidedly alpine setting. How strange Nature is, distributing her plants in such a seemingly random fashion, yet with great precision and order when you know the reasons why.

Sat 30 January 2021 (Afternoon) – Veronica Loop Track, North Egmont

**Yumiko Baba, Dhahara Ranatunga,
Zara Skuse and Cameron Kilgour**

The four (much the youngest) Bot Soc mountain goats decided to stay in the semi-alpine area for the afternoon and took up the option to walk the scenic Veronica Loop Track. It is one of the three main tracks that start from the Taranaki National Park Visitor Centre (Fig. 2, location B). The walking path is



Figs. 20–22: **20.** Mahood-Lowe Reserve, on northern boundary of Taranaki (Egmont) National Park. Red and orange dotted lines show paths followed by most of us. An intrepid few followed the green dotted line to Kai Auahi Stream (**Fig. 24**). Arrowheads show two places of easy access to the small bush patch enclosed by ditches. Asterisks indicate swamp maire seen at two locations: 1. by Richard Hursthouse; 2. by Joshua Salter (**Fig. 23**). Native Forest Restoration Trust information map modified by Joshua Salter. **21.** Mahood Lowe Reserve bush edge dominated by kamahi. Photo: JS. **22.** Ewen bagged a seat in the sun, Cheryl, Jessica & Sandra want to botanise, Mahood Lowe Reserve. Photo: GD.

set up on a ridgeline that gradually ascends by 160 m to the walk's highest point. There, the route diverts to the multiday Pouakai circuit and loops back down on another ridgeline. The walk is about 3 km long and is meant to take an average of 2 hrs. We hardly came across any other people on the Veronica Loop Track itself on the day.

The loop track starts with a board-walk, flanked by toetoe (*Austroderia toetoe*) and the endemic Mt Egmont hebe being the dominant bush (Fig. 15). It then continued on to a narrow walking path hedged by the hebe in full bloom and a stunning daisy *Brachyglottis elaeagnifolia*, kamahi and kaikawaka and an occasional mountain cabbage tree.

The bog mountain daisies, *Celmisia glandulosa* var. *latifolia* caught our eyes the moment we entered the track. They were beautiful but were scattered enough to make us stop at every encounter – until one of us diverted to a narrow path in search of a place for a short break. The narrow diverting path then expanded into an open grassy patch, which is probably maintained by a lawnmower. There, the daisy was a dominant species in flower in the field. (It was not *Bellis perennis* for a change!) We paid full appreciation to the *celmisia* for a moment and moved on.

As we gradually gained altitude, elegant herbs, such as *Luzuriaga parviflora*, *Ourisia macrophylla* subsp. *macrophylla* (Fig. 16), *Viola filicaulis*, *Luzula* spp., *Lagenophora pumila*, *Leptinella squalida* subsp. *squalida*, *Euphrasia cuneata* (Fig. 17) and some *Hymenophyllum* spp., decorated the shady banks along the path. From time to time we caught sight of mountain cabbage trees dotted in the kaikawaka and kamahi canopy on the other side of the slope.

Just before we reached the tree line the track made a tantalising turn to the descending route. We floated the idea of continuing ascending a little while, but we decided to hurry back down the hill as it was getting close to 5 pm already. About halfway along the down track, we turned around to admire the full view of Mt. Taranaki (Fig. 18). We stopped at a patch of *Jovellana repens* (Fig. 19) at the ephemeral stream crossing for a quick botanical yarn and then rushed back to dinner.

Sat 30 January 2021 (Afternoon) – Mahood-Lowe Reserve, Taranaki

Geoff Davidson

The rest of us descended the mouna, (spelling of mountain for the local dialect), driving from the Egmont Rd via Peters Rd across the Waiwhakaiho River to Alfred Road, then travelling the short distance back towards the mountain to the road's end, and veering right between paddocks towards the bush edge which marks the carpark for the Taranaki Mahood-Lowe Reserve.

From the air, or from high on the herbfields, the Mahood Lowe Reserve can be seen clearly, stretching nearly 2 km beyond the circle of the Taranaki National Park, its dark green forest contrasting with surrounding pasture (Figs. 20 & 2, location C). Recently purchased by the Native Forest Restoration Trust, this property had long been viewed by local authorities as an essential acquisition for its biodiversity values (see Links in references below). The reserve extends northwards from the national park, following the course of a volcanic lahar which deposited a huge amount of rubble and rock across the ring plain around Mt Taranaki (Fig. 20).

Previously part of a farm, the area of the reserve was too rough to be broken in, and much of the original forest remains intact, although larger timber trees may have been milled (Figs. 21, 22). The neighbouring owner has a rock crushing business and is progressively transforming the adjoining boulder-strewn pasture into 'level playing fields' which no doubt will be subdivided for lifestyle blocks in the future.

The Trust has an access strip running 5 m outside the eastern fence line allowing easy access to the National Park boundary which encircles Mt Taranaki. The two main rivers on either side of the reserve are: the Kai Auahi on the western boundary, and, a short distance beyond the reserve to the east, the Waiwhakaiho, which was used by Maori to access the source of red ochre higher up the mountain. It was also the course Dieffenbach followed on the first European ascent of Mt Taranaki on 23 December 1839. The track is still negotiable and leads to the DoC visitor centre at North Egmont. (Check with DoC to ensure that the track is passable).



Fig. 23. *Syzygium maire* and *Asplenium flaccidum* Mahood Lowe Reserve. Photo: JS.



Fig. 24. Kai Auahi Stream coffee break at the Mahood-Lowe Reserve. L to R: Jenny, Helen, Richard. Photo: GD.



Fig. 25. *Gastrodia molloyi* in the Mahood Lowe Reserve. Photo: GDo.

The 142 ha reserve ranges in altitude from 365 m in the north to 457 m on its southern boundary with the National Park. It is notable for areas of swamp maire (*Syzygium maire*) (Fig. 23) forest where poor drainage ensures all-year-round moisture. A good example was a cluster of trees visited by the determined Richard Hursthouse and Jenni Shanks who negotiated serious supplejack (*Ripogonum scandens*) and rocky terrain in order to locate the much-touted forest of swamp maire (asterisk No.1, Fig. 20).

Richard reports: "We did locate a wide area of large dense trees with plenty of aerial roots. It was difficult to get a good feel for the extent being right in the middle of this grove. Later in the afternoon we joined Lesley, Mark, Linda, Helen and Geoff, taking the rough track up the eastern side of the reserve to the park boundary. On the way eagle eyes spied more fruiting swamp maire near a rock-harvesting area of the farm (mutter, mutter). At the National Park boundary there is a wide grass strip demarcating the park and reserve, heading west to the beautiful Kai Auahi Stream, where we enjoyed a late afternoon coffee (Fig. 24). It was a good place to appreciate the bush edge with lots of *Cordyline banksii*, mature rimu and kahikatea. Regrettably the family of who domiciled on the river chose not to make an appearance. A well-formed predator control line extends down the right bank to the north enabling a full circumnavigation of the reserve for the fit and adventurous."

One unusual species, first described in 2016 as a terrestrial, saprophytic, leafless, achlorophyllous herb, was found by Gael (Fig. 25). It is named *Gastrodia molloyi* after Dr Brian Molloy (ex Maanaki Whenua, Landcare Research). Gael says: "The species can be distinguished from the other three similar taxa by:

- 1). the warty appearance of the flower, so can't be *G. sesamoides*;
- 2). long column that sticks out the end of the perianth, so can't be *G. cunninghamii*;
- 3). yellow-green colour, so can't be *G. cooperae*".

Sun 31 January 2021

– Upper Stratford Carpark to Manganui Gorge Gael Donaghy

This walk starts as a road from the top carpark at the end of the Pembroke Road (Fig. 2, location D) to where a flying fox cage crosses the gorge, (Fig. 26) and where the track proper starts by passing through an avalanche tunnel. It gives access to the Manganui Gorge (Fig. 27), formed by water eroding through the looser breccia formation on the south side of the gorge, while the north face of hard lava is left intact. The formation could be seen in the large landslide that the tunnel is built through.

There was plenty to see as we wandered up the road through sub-alpine scrub. The vegetation was dominated by several different *Coprosma* spp., *Brachyglottis eleagnifolia*, *Dracophyllum filifolium* and *Veronica stricta* var. *egmontiana*. Roadsides gave open space for herbs. *Senecio rufiglandulosus* was spectacular in places, with its large bright yellow flowerheads, and occasionally contrasted with the white, purple-throated flowers of *Euphrasia cuneata*, our tallest *Euphrasia*.

At the end of the road we entered the tunnel, and emerged on to the steep wall of the gorge. Here the habitat was damper, and more alpine plants were seen. One greenhood orchid, *Pterostylis patens* (Fig. 28), was in late flower, and *Ourisia macrophylla* had a few late flowers. Here there was also the local *Aciphylla*, A. "Volcanic Plateau", and in a crack in the rocks, the little alpine fern, *Notogrammitis crassior*. The local *Celmisia*, *C. major* var. *brevis*, and a nearby *Forstera tenella* (previously *F. bidwillii* var. *densifolia*) were both in flower (Fig. 29).

Some of us had lunch in the gorge, and from time to time were treated to spectacular glimpse of Mt Taranaki as the light cloud swirled around the summit. Although the whole area is exposed, the high humidity from the frequent cloud cover meant that, along the road and the track, the shrubs and rocks were draped with mosses. I was lucky enough to walk with Jessica Beever who helped me identify the following mosses. There were many more in this habitat, but after about 20 species I had reached the limit of working memory.

In the following list, where there is no common name for a moss I have attached a bit of a description.

Acrocladium chlamydophyllum – forming clumps on soil or wood on the ground. Leaves triangular. Branches are cylindrical and curved, and end in a sharp point.

Andreaea sp. – common, small, red moss on exposed rocks in alpine areas.

Bartramia sp. – apple moss. Called this because the capsule is green and round like a Granny Smith apple.

Breutelia sp. – forms mass on ground. Males have bright red antheridia on the end of each stem in spring/summer.

Cladomnion ericoides – usually on branches. Curled over leaf tip with no mid-vein.

Cyatophorum bulbosum – a larger moss that looks a bit like a very small flat fern.

Dendroligotrichum tongariroense – some people might remember this moss as *Dendroligotrichum dendroides*, i.e. the tree-like *Dendroligotrichum*.

Dicranoloma menziesii – soft moss that is often epiphytic, with very short stalked capsules that hardly poke out beyond the leaves.

Lembophyllum clandestinum – often forms masses on branches. Leaves are round and over-lapping, and this makes branches look rope-like.



Fig. 26. View from Manganui Gorge Track, with Central Volcanic Plateau in distance. Avalanche tunnel and flying fox on RH bluff. Photo: JS.



Fig. 27. Track into Manganui Gorge beyond avalanche tunnel, looking west. Photo: EC.



Fig. 28. *Pterostylis patens* on Manganui Gorge Track. Photo BD.

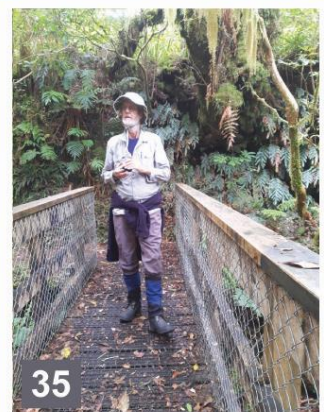


Table 1. Plants seen in the tussock grassland. * = adventive

Species	Notes	Species	Notes
<i>Agrostis dyeri</i>	locally common throughout	<i>Forstera tenella</i>	locally common
<i>Blechnum montanum</i>	locally common trackside	<i>Gentianella grisebachii</i>	common throughout mown ski slope
<i>Carex leporina</i> *	locally common in seepages, potentially problematic weed	<i>Huperzia australiana</i>	scarce on cliffs below the ski field
<i>Celmisia glandulifera</i>	abundant throughout mown ski area	<i>Juncus effusus</i> *	occasional in damp areas
<i>Celmisia major</i> var. <i>brevis</i>	occasional and local	<i>Juncus novae-zelandiae</i>	abundant
<i>Coprosma perpusilla</i> subsp. <i>perpusilla</i>	locally common throughout mown ski fields	<i>Kelleria dieffenbachii</i>	occasional
<i>Coriaria plumosa</i>	common outside mowed areas in remnant montane shrubland/grassland	<i>Lycopodium fastigiatum</i>	common throughout mown ski slope
<i>Coriaria pteridoides</i>	occasional outside mown ski slope area	<i>Muehlenbeckia axillaris</i>	common in mown area
<i>Festuca</i> sp.	occasional	<i>Oreobolus pectinatus</i>	locally common
		<i>Pentachondra pumila</i>	occasional

Leptostomum ? inclinans – pincushion moss.

Polytrichum juniperinum – the moss that commonly grows on bare banks – looks like a plantation of little pine trees.

Ptychomnion aciculare – pipecleaner moss

Racomitrium sp. a common moss on exposed rock or soil. Silvery hair-tip on curly leaf.

Rhacocarpus purpurascens – an untidy-looking moss which grows on wet rocks.

Rhaphidorrhynchium amoenum – on bark or rotten logs. Leaf tips curl down.

Weissia controversa – tiny moss which forms a mat on bark or soil.

Weymouthia mollis – a hanging moss which forms curtains in damp forest, leading to the effect of a “goblin forest”.

Wijkia extenuata – velvety moss, flat on the ground.

Additional notes

Geoff Davidson

As we walked through the tunnel, we looked out a porthole which provides a view across the gorge (Fig. 30 & cover illustration). Ian Smith described the scene: “There are three separate lava flows visible. The one at the back is the Warwick Castle flow and only the top is visible. All three flows belong to a group of relatively thick andesite flows known as the Warwick Castle Group that are thought to have erupted about 7000 years ago”.

The young ‘uns, and a few staunch older ones, scrambled over the rocky bed of the gorge, then proceeded up to the Manganui Ski Lodge. (Figs. 31, 32). On arrival at the lodge they had entered the fourth of the five altitudinal zones of vegetation on the mouna, the red tussock grassland zone (Table 1). From here they could see the occasional snow patch below the summit which is 2518 m, ASL and, lowering their sights, the herbfield and mosslands clinging to the more stable rocks. This zone extends down to about 1,500 m altitude. From there the red tussock grassland zone descends to where they stood at 1,250 m. Looking lower down the mountain they could clearly see the mid-greens of the alpine shrubland zone (Fig. 33) which begins at around 1000 m. The dark green forest growing below the alpine shrub zone can be divided into two broad categories, with the upper 200 m being predominantly cloud or goblin forest. Here kamahi dominates the low canopy, broken by the taller grotesquely twisted heads of *Libocedrus bidwillii*. The lower 800 m blends into Broadleaf Podocarp forest with a predominance of kamahi, *Griselinia littoralis*, and *Fuchsia excorticata*, but increasing numbers of other broadleaf species plus various podocarps. In the past, similar forest would have extended out on to the low country

Figs. 29–37: **29.** *Celmisia major* var. *brevis* on left, and *Forstera tenella* on Manganui Gorge Track. Photo: BD. **30.** Looking north to the three volcanic lava flows seen through tunnel porthole – Manganui Bluff (nearest), Ngarara Bluff (middle) and Warwick Castle (on skyline). Photo: GD. **31.** Alpine pasture and grazing herbivores on the alpine ski meadow. Photo DR. **32.** Zara reclining while botanising – the best way to see the alpine sward. Photo: JS. **33.** Ngarara Bluff, north side of alpine meadow ski field, with leatherwood/koromiko/mountain fivefinger shrubland on its flanks. Photo: JS. **34.** Val Smith, about to leave the Manganui Gorge and enter the tunnel above Stratford Plateau carpark. Photo: EC. **35.** Ewen checking the bridge for goblins, ogres and patupaiarehe but finding only a flourishing colony of *Austroblechnum colensoi*. Photo: GD. **36.** Lake Mangamahoe, south of TOPEC, off Hwy 3. Photo: GD. **37.** Pukekura Park racetrack and Mt Taranaki at sunset. Photo: GD.

that surrounds the mountain, but most of this land has been cleared and converted to pasture.

Table 1 shows a list of what the young ones recorded in the red tussock grassland, maintained as a turf in the ski field area.

On the return, conversation turned to plant names and the botanists they were named after. Of course, with Val Smith (Fig. 34) the author of "*Common Ground*" in the group, we had the right expert to explain who Bidwill was (cf. *Libocedrus bidwillii*), and learnt that he was the first plant collector to send New Zealand alpine plant specimens back to Kew Gardens. In 1839 he tramped from Tauranga to the Volcanic Plateau and climbed Ngauruhoe. We imagined him gazing longingly to the west and seeing Mt Taranaki, so close, but too far for him to reach. Thanks to Val and her research we also learnt that the *Forstera tenella* we walked past had previously been named by Hooker as *Forstera bidwillii*.

Eventually we all returned to the carpark and started homeward. Most made detours to other tracks lower down the mountain, enticed by coffee at the Stratford Mountain House, or they checked out Lake Mangamahoe when they got closer to TOPEC.

The coffee drinkers were lured to walk the 600 m Potaema Track which led to a wetland with views of the mountain. Along the way we relished the banks dripping with the broad fronds of petako (*Austroblechnum colensoi*) (Fig. 35) which clearly enjoyed the damp, low-light conditions; an ideal spot to find patupaiarehe if not goblins.

Those visiting Lake Mangamahoe (Figs. 36 & 2, location E) were met by an eclectic mix of exotic trees, lots of *Pinus radiata* and some patches of native bush. In the early 1920s the New Plymouth District Council purchased land for the construction of a dam and a lake. The purpose of the lake was to act as a water catchment area for the expanding city of New Plymouth. In 1931 the lake was created. This was achieved by forming a dam across the valley and submerging 32 ha. The lake was named after the Mangamahoe Stream which flows into the upper reaches of the lake. Water from both the stream and the nearby Waiwhakaiho River feeds the lake through a 548 m pipe.

In order to protect the steep hillside from eroding, development planting was undertaken and shelterbelts were planted to protect the pine trees growing in what is now the Mangamahoe Forest. The lake itself is also important for the district in terms of power generation, as it supplies the water to the Mangorei Power Station.

Having all got back to TOPEC, then refreshed, redressed and regrouped, we carpooled into the big city and dined at Marbles Buffet, a long running institution in the Devon Hotel. A wide choice of interesting and generous platters matched our hunger after a day of exercise. Then as day closed we made our way to Pukekura Park for the last night of the TSB Festival of Lights (Fig. 2, location F). This 6-week summer spectacular, family-friendly show is extremely popular with both local residents and visitors. The native bush setting with exotic gardens and lakes demonstrates at night how dramatic lighting can turn the darkness into a fascinating and entertaining wonderland for both adults and children. The effect of a blue light under a silver fern (*Cyathea dealbata*) turns a beautiful plant into a surreal spectacle. Who would have thought that a spotlight highlighting perching epiphytes would bring the 'Wow' factor to such a display? Throw in a myriad of colours and sound effects and it kept the botanists circulating past the many and varied exhibits. My favourite? The 3-4 m long fronds of *Ptisana salicina* reflected arching over the lake with multi-coloured lights bouncing on the ripples. No picture could do it justice. However, nothing matched the delicate pink sky behind Mt Taranaki at sunset (Fig. 37).

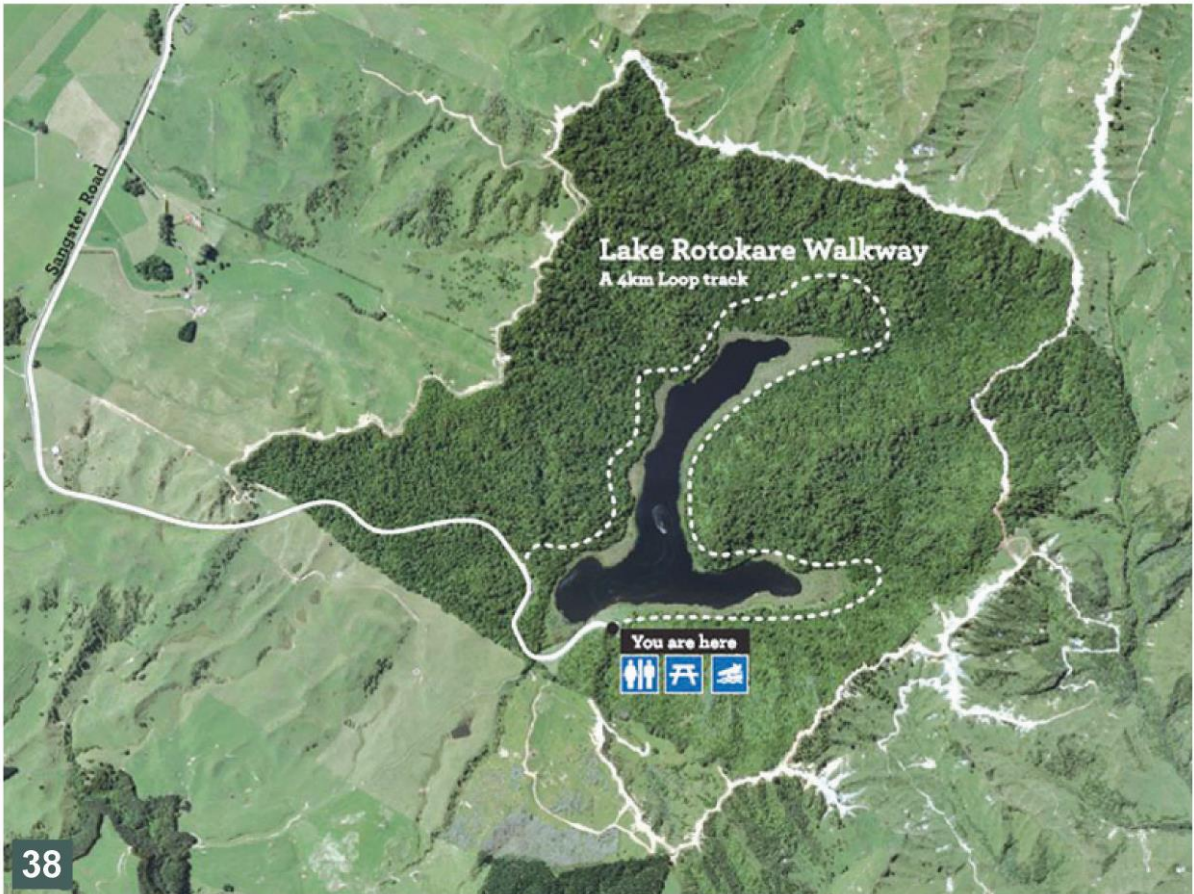
1st February 2021 – Lake Rotokare

Lisa Clapperton

Participants: Ewen & Cheryl, Geoff & Bev, Linda & Mark, Jan and Lisa.

We travelled in convoy to Lake Rotokare c.15 km SE of Eltham (Fig. 2, location G), with two car loads pausing in Stratford to watch Romeo and Juliette's soliloquy from their tower on the main street at 10 am. Such perfect timing and a car park! A beautiful day spent meandering at a leisurely pace around the lake, enjoying the peace, observing plants, and listening to bird song. The lake walkway comprises 4 km of track that surrounds the 17 ha lake, a treasure of diverse lowland forest situated within the intensely farmed Taranaki ring plain (Figs. 38, 39). There are

Figs. 38–42: 38. Map of Lake Rotokare Reserve, east of Eltham. Photo: LC. 39. Rotokare wetland & bush with a predator-free fence around the perimeter. Photo: LC. 40. Pontoon on Lake Rotokare, Cheryl, Lisa, Linda, Mark. Photo: BD. 41. Robins were common in Rotokare forest. Photo: CT. 42. Auntie Anne, nonchalant nonagenarian, at home in the King Country, 2 Feb 21. Photo: BD.



many seats and a pontoon to stop at along the lake walkway, and enjoy the abundant bird life, the forest and wetland (Fig. 40).

Then bizarrely there was the jet ski, a jarring note in all this peace and tranquillity.

The walkway makes its way gently through lowland forest and edges a lovely wetland with a diverse range of species: kahikatea and pukatea (*Laurelia novae zealandia*), with a number of maire tawake scattered through the wetland forest. A delightful fragrance wafted down from the canopy which was puzzling but was possibly the *Muehlenbeckia australis* which was observed in full flower elsewhere on the track.

Birds of Rotokare

Cheryl Taylor

Rotokare sanctuary was alive with birdsong. Tieke (N.I. saddleback) were the most common and could easily be seen rustling around in the undergrowth as blackbirds usually do. Also common were friendly toutouwai (N.I. robin), (Fig. 41). Other natives seen were miromiro (tomtit), a good sighting of a matatā (fernbird), kawau (black shag), pīwakawaka (fantail), tui, kererū (NZ pigeon), riroriro (grey warbler), hihi (stitchbird), popokatea (whitehead). Exotic birds noted were magpies, ducks (mallard?), blackbirds and chaffinches. Signage indicated that koekoeā (long-tailed cuckoo) adults had departed. It is wonderful to see what a difference predator control

makes, and it was a pity the noisy jetskis were not also controlled!

Trip Finale

Geoff Davidson

Many attendees left on Monday 1 February to return home. Others explored Taranaki and beyond. Several visited Anne Fraser at Ongarue N.E. of Tauramanui. Bev and I spent a night with her, and she hospitably took us to see her botanical mysteries. See Ewen's article in this issue (p. 27). Here we share her secret for a long and healthy life: relax even when gardening (Fig. 42).

Acknowledgements

I wish to thank the staff at TOPEC who responded to every request and were most helpful. Val Smith and Barbara Hammond provided local knowledge and guidance – thankyou, both. We were very grateful for having a well-researched species list for the Mahood-Lowe reserve. Our thanks to Barbara Hammond, Mick Parsons, and Tony Green for their 10/03/2019 species list. Also thanks to all those who assisted in every way, from car-pooling allowing the carless to attend, to sweeping out the facilities at the end, and everything in between. Thanks to Josh & Mei Nee who corrected errors in this article – any remaining are my own entirely. Additional thanks to Joshua Salter for preparing the maps Figs. 2 and 20. In particular I want to thank Bev for all her organising, without which the camp would not have happened.

References

Smith Val 2015: *Common Ground*, Wordsmith 80 Mill Rd, New Plymouth 4310. 106p.

Mahood Lowe Reserve links:

<https://www.nftrt.org.nz/reserves/taranaki-mahood-lowere-reserve/>

<https://www.trc.govt.nz/assets/Documents/Research-reviews/KNES/kne2.pdf>

For a 'GNS Science' video explaining the mountain's geology in more detail see: <https://www.youtube.com/watch?v=ehK0oPgWYjA>

Mosses of Mahood-Lowe Reserve, Taranaki

Jessica E. Beever

Mosses were recorded in two distinct habitats in the Reserve (Fig. 1; also see Fig. 20, in Davidson 2021, p. 16 this issue): firstly, in the forest at a spot where entry was feasible (arrowhead A, Fig. 20, p. 16), due to a break in both the surrounding blackberry (*Rubus fruticosus* agg.) and a deep ditch; secondly, in the open on the broad farm vehicle tracks with associated large boulders, rank pasture and a farm shed (Fig. 2).

The forest was dominated by kamahi (*Weinmannia racemosa*) with occasional emergent kahikatea (*Dacrycarpus dacrydioides*), and a subcanopy/shrub layer of fuchsia (*Fuchsia excorticata*), toro (*Myrsine salicina*), pigeonwood (*Hedycarya arborea*), mahoe (*Melicotus ramiflorus*), wheki (*Dicksonia squarrosa*), *Coprosma autumnalis*, and *C. tenuicaulis*, with thickets of *Ripogonum scandens*. Ground cover was sparse.