Waikato Botanical Society Newsletter No. 46, 2020

Presidents Report

Hi Everyone,

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Well the year got off to a bit of a wobbly start with a planned trip up the Napier – Taihape Road in January getting cancelled at the last moment due to the accommodation not being up to scratch. This didn't deter a hardy group of botanists who came up with an alternative trip in the area based at Raetihi.

In February Gerard Kelly led a walk up the Mangaonua Stream from his place in Hillcrest. This was an opportunity to visit a part of Hillcrest that I never knew existed.

Then lock down hit. A few of our planned trips and talks got cancelled. For me I spent a lot of time down in the HCC gully; a very short walk from my place. I will never run out of Tradescantia to weed. I usually never see anyone down in the gully but during lock down I had several visitors exploring their local patch.

Our mid winter AGM was very well attended – about 45 people turned up. Thanks again to all those that continue to work behind the scenes to make the Bot Soc what it is.

Linda has got a great bunch of speakers lined up for the rest of the year and the trip programme for the rest of the year is looking good. Details are in this newsletter.

Our recent trip up to the Nikau Walk went well with 15 people attending – but we did get a bit wet at the end.

Kerry

Drosera arcturi and *Kelleria dieffenbachia* from the Ohakune Blythe Track boggy board walk.

Mangaonua Stream – Hamilton City
Spot the native plants!

Elected Committee Members 2020

President: Kerry Jones km8j1s@gmail.com

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Committee members: Catherine Beard, Thomas Emmitt, Monique Hall, Rebecca Yeates, Kerry Jones, Linda Watson, Mike Clearwater, Antoinette van der Weerden, Wyne Johns

A special thanks to our past President and Secretary:

Catherine Beard , who has been our President for the past 18 months and ***Wyne Johns*** who has been our Secretary for many years.

A big thank you for all your hard work and commitment to the Waikato Botanical Society

Endangered Plant Garden

Liz Overdyck, Dell Hood, David Watson and I had a working bee late in January this year (2020). We left the garden in pretty good form after a weed and tidy up. We made sure watering systems were going well and all plants were being watering including the *Dactylanthus taylorii*.

However, it is again in need of another working bee with weeding and mulching required. *Hebe speciosa* is currently in flower and making a good show.

The newer garden needs some more plants to fill areas where plants have died.

At the working bee we talked about labels to name plants that are surviving well. A list of surviving endangered has been compiled

Thanks to Dell and Liz for helping and for Liz's expertise on the cherished *Dactylanthus*.

Keep an eye out for working bee in the near future!

Linda Watson June 2020

Waikato Botanical Society Night Talks

It is very pleasing to have so many botanists attending and enjoying our monthly night talks. We have some great talks organised for the rest of the year. So far this year we have enjoyed the following speakers.

February: **Bev Clarkson**, from Manaaki Whenua-Landcare Research spoke on the Waikato Peatlands.

March: **Kim Parker** from Waikato Regional Council spoke on kauri dieback.

June: After our AGM **Paul Champion** from NIWA spoke on The Freshwater Flora of the Waikato.

A big thankyou to the speakers; below is a write up on each topic.

Peatlands of the Waikato

Bev Clarkson is a plant ecologist, involved in this area since the 1970s, is internationally recognised for her expertise in the field, her first foray being a dissertation on the Moanatuatua bog just south of Hamilton. She leads a government funded programme on the functioning and restoration of wetlands, including peatlands, and is a member of many international and national bodies.

Waikato Plant Communities

Wetland types include fens, bogs, swamps and marshes, with the most common in the Waikato being the raised restiad bog, derived from the Restionaceae family name. This is a Southern Hemisphere family and includes the two main species, the wire rush, *Empodisma robustum* and the giant cane rush, *Sporadanthus ferrugineus*.

The Waikato region was once dominated by these two species, covering several thousand hectares, with peat soils reaching 12-14 m deep

Prior to European arrival and settlement *Empodisma/Sporadanthus* restiad bog ecosystems extended from Kaitaia in Northland to Te Awamutu; now only 4 sites remain, at Kopuatai, Moanatuatua, Torehape, and a small privately owned remnant near Morrinsville.

These sites are internationally unusual, as they are not sphagnum bogs as found in the northern hemisphere. Kopuatai is internationally recognised as a RAMSAR site.

Wetland Types

Functional wetland types include fens, bogs, swamps and marshes, with the classification depending on their water and nutrient source.

Bogs, with the lowest pH of around 4, have water entering from the rain, nowhere else, so has a low nutrient regime and a stable water table.

Fens have rainfall as well as groundwater entering the system, also exhibiting a relatively stable water table, and have a higher pH of around 5. Swamps and marshes have water entering from rainfall, ground water and surface water, so have a highly fluctuating water level and a higher pH of around 7. In the Waikato, bogs, fens, swamps and marshes are all present, but the first three are the most common.

Fens and bogs originate from the impact of the ancestral Waikato River; as the river embedded into its one path it left behind trapped bodies of water. The plant species in these swampy systems developed and adapted to the changing environmental conditions, thus creating the systems we have today. The *Empodisma* species is the main peat forming species in the fen-bog systems and created the perfect environment for the *Sporadanthus* to occur. The oldest bogs in the Waikato were initiated between 15000 and 17000 years ago.

A more experiential method of wetland classification is by suggesting the footwear type most suited to the various systems, with regular Red Band gumboots suited to bogs, fen requiring the longer South Island gumboot, and if you're interested in swamps you'll be investing in some thigh waders.

Species

Bogs: *Utricularia* (bladderworts) and *Drosera* (sundews) species are found widely in fens and bogs, with *Empodisma* and *Sporadanthus* being the keystone species for peat formation. *Empodisma* have cluster roots, which grow up (not down) binding plant material into the roots, as does the *Sporadanthus*, but these are not as well developed as in *Empodisma*. *Sporadanthus* also has anchor roots, which provide the building framework of the peat system

Fens also carry *Gleichenia dicarpa* (tangle fern). Raupo (*Typha orientalis*), *Eleocharis* species and flax (*Phormium tenax*) are present in swamp systems.

Threats

- Removing the 'wet' in wetlands…throughout the first half of the 20thCentury drainage and development removed water, by digging channels, lowering the water table and controlling riverways. Area of Moanatuatua dropped from 75000 ha in 1800s to 1250 ha in 1974, and in 2017 sits at 140 ha. A lowered water table impacts negatively on species range and number; vegetation height increased, and 4 species were lost including *Corybas carsei* (swamp helmet orchid), *Lycopodiella lateralis*, *L. serpentina*, *Schizaea fistulosa*, *Utricularia delicatula*, *U. dichotoma*. Small species such as these require a high-water table and an open habitat; habitat change has driven these species out.
- Increased nutrient input, nutrient drift from neighbouring industrial agriculture operations. Prior to 1997 nitrogen levels were not significantly changed at Moanatuatua however after 20 years of monitoring nitrogen has increased. Phosphorus is also higher at Moanatuatua due to blowing in of applied superphosphate in the surrounding landscape.
- Weed presence, not such a problem in fens and bogs, but for swamps such as Whangamarino, grey willow (*Salix cinerea*), royal fern (*Osmunda regalis*) are problematic. Blueberries (*Vaccinium corymbosum*) also an increasing problem with birds spreading the seed from blueberry farms.
- Fire: although the occurrence of fires has reduced the impact of a peat fire is huge. The fire at Moanatuatua in the 1960s (Figure 1) killed the *Sporadanthus* and *Empodisma*, with both species coming back from seed. *Sphagnum* disappeared at that time, and the sedges (*Schoenus brevifolius*) reshoot.
- Mining: Peatlands are mined in New Zealand with 3 mines in Southland and 1 at Torehape where mining to 1m deep is allowed. The northern part of the Torehape site is privately owned by Landcorp; a mining company has a 20-year consent to mine peat, with the condition that the bog vegetation be restored. Trials were carried out where manuka slash and *Sporadanthus* seed were laid over mined areas and within 2 years the manuka had taken off, creating something like the margins of Lake Ngaroto. Whole mine restoration process began with islands of milled peat having 2-3 branches of manuka slash laid on top. Seed blew in from bog species on the westerly edge, and within 6 years

complete cover occurred. Some threatened species also coming back including *Sphagnum cristatum* and *Calochilus robertsonii* (red bearded orchid). The invertebrate *Houdinia flexilissima*, or Fred the Thread was discovered by Corinne Watts, named Houdinia as it had escaped from science for so long!! The larvae are found only in *Sporadanthus* shoots and are abundant at Torehape. Transplants of young *Sporadanthus*, which also contain *Houdinia*, have resulted in three new thriving populations of both species in the Hamilton basin.

Carbon Sinks

Both Moanatuatua and Kopuatai are moderate to strong carbon sinks with 69gm C/m^2 /year at Moanatuatua and 203gm C/m^2/year at Kopuatai. The increased growth brought about by lower water table at Moanatuatua has seen a spread of *Epacris pauciflora* which creates woody growth rather than restiad peat.

Figure 1: Moanatuatua: impact of fire in the 1960s. Note the burnt *Sporadanthus* stems and *Sphagnum* hummocks. Photo: EWE Butcher

C*alochilus robertsonii* red bearded orchid at Kopuatai Bog

Sporadanthus ferrugineus dominated vegetation

Thanks so much for a wonderful talk on the Waikato Wetlands and to Antoinette van der Weerden for the writeup for this newsletter

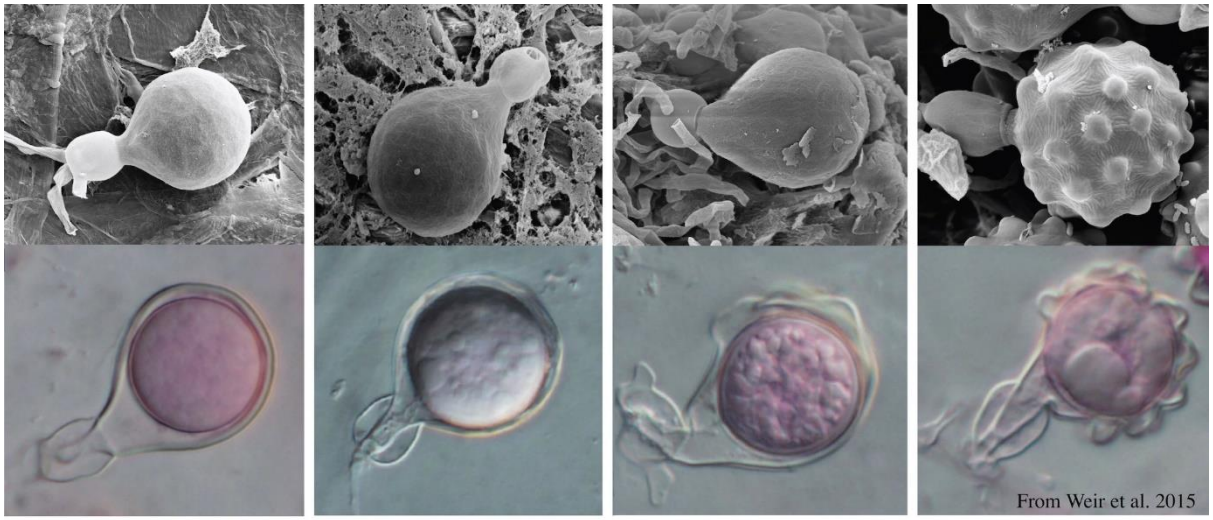
Here is the video clip on peat subsidence in The Netherlands that Bev mentioned. It is very interesting and highly relevant to NZ peat soils.
https://www.youtube.com/watch?v=Z0y1SCzJ3Q8&sns=em

Kauri Dieback

Kim Parker presented an overview of the organism that causes kauri die back, provided an update on where the science is at, gave us the information where the disease is and isn't in the Waikato, and told us what we can do to help protect kauri trees. Here is a summary of her talk.

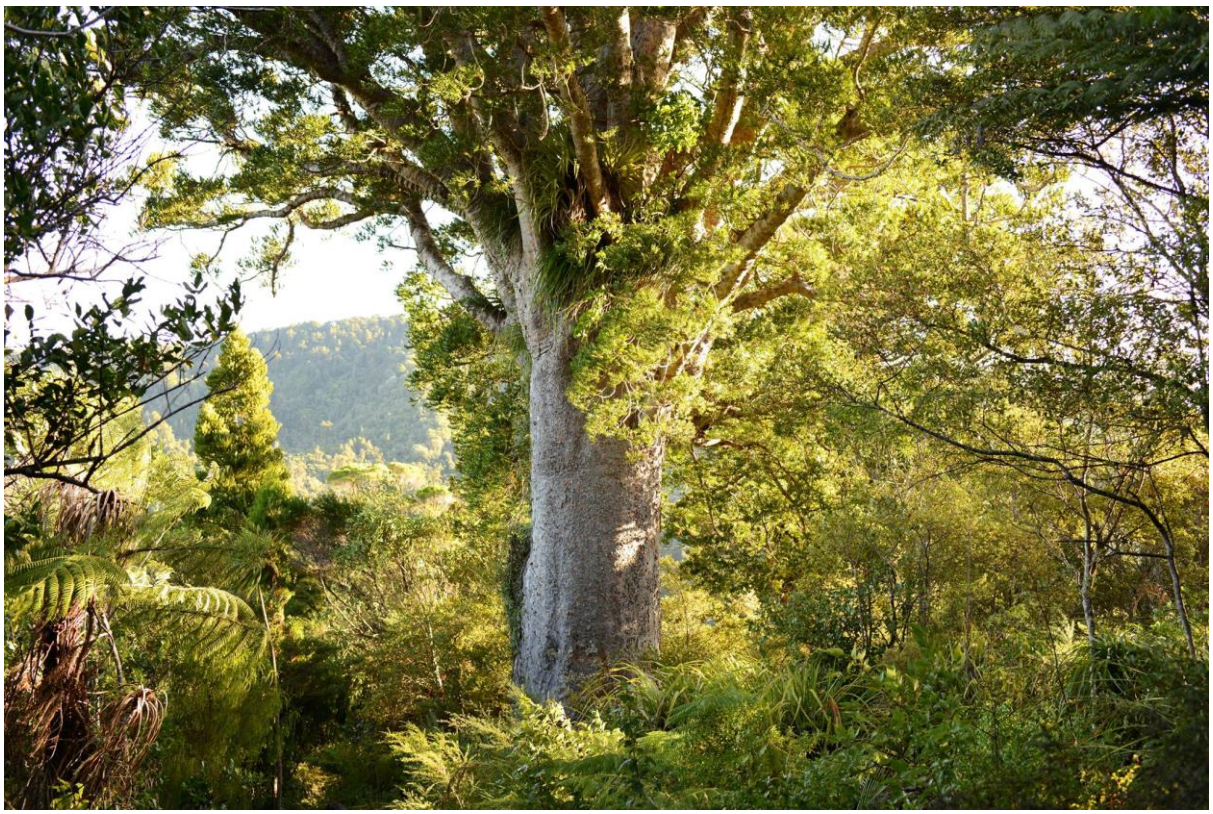
- Kauri are third largest conifer in the world, kauri forests are said to be the most species dense and there are species which are wholly reliant on the existence of kauri.

Kauri are under threat from a microscopic soil-borne organism *Phytophthora agathidicida. Phytophthora* means plant destroyer in Greek. There are a number of *Phytophthora sp.* Most famous it the *Phyt. infestans.* The cause of great irish famine; potato blight.



P. heveae *P. agathidicida* *P. cocois* *P. castaneae*

Kauri have an auto immune reaction to the presence of this organism. Once infected there are no tools to cure a tree. Best management approach is to stop the spread of soil movement.



As members of the botanic society you can help by:

1. Avoiding going to kauri areas off track if you don't need to
2. Stay on track
3. If you are going off track clean between kauri stands (outside of three times the drip canopy line)

Thanks Kim for such a topical and interesting talk and for the follow up and suggestions of how botanists can help.

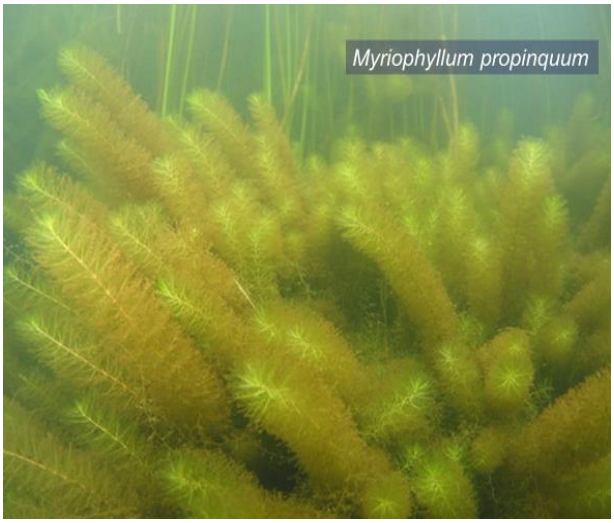
The Freshwater Flora of the Waikato

A 150-year history of change

Paul Champion

Just over 150 years ago, the botanist Thomas Kirk addressed the Royal Society of New Zealand, describing his visit to the lower Waikato River, including the large lakes Whangape, Waikare and Waahi. He outlined a diverse community of submerged vegetation, many of the species undescribed at that time. These included a strange looking buttercup with four purple petals and spoon-shaped leaves and a tiny fern with linear leaves, that otherwise looked like a tiny rush or sedge.

The diverse range of freshwater-dependent plants was detailed in the talk, looking at how the unique challenges posed by living in water are overcome by a range of strategies, including waiting for the tide to go out, floating on top or growing underwater. The different depth zones of plant communities were also discussed.



Some 90 years after Kirk's paper in the Proceedings of the Royal Society, New Zealand's first specialist aquatic botanist, Ruth Mason, described the botany of these lakes as monocultures of invasive weeds, with Egeria dominating the vegetation of many of the Waikato's waters. The diverse communities of submerged native plants were gone.

Moving forward to the 1990's, most of the lower Waikato lakes lost their vegetation and have remained in a turbid, planktonic algae dominated state since that time. A combination of invasive plants and fish and eutrophication has led to conditions unfavorable for the re-establishment of submerged aquatic vegetation in the lower Waikato River lakes.

The plants described by Kirk can still be found in the Waikato, either in the clearer waters of the Upper Waikato River and Lake Taupō or in the coastal dune lakes.

Thankyou Paul for a most interesting talk on Freshwater Flora and for the photos and writeup for our newsletter.

The Waikato Botanical Society invite you to attend our **monthly night talks.**

Where: The Link Centre, cnr River Rd and Te Aroha St. Hamilton East

Time: 6pm

When: Third Monday of each month July, August, September, October.

(more information to come on possible November and December meetings)

Monday July 20

Sinead Spedding from Waikato Regional Council talking on Plant Biosecurity Issues

Monday August 17

Monica Peters speaking on Flora of the Canary Islands

Monday September 21

Lucy Roberts from DOC Topic to be announced

Monday October 19

Nathan Smith speaking on Australian Plants

Waikato Botanical Society Trips

PUAITI BUSH SCENIC RESERVE, ATIAMURI FIELD TRIP

March 1, 2020

Led by Paul Cashmore

Puaiti Bush Scenic Reserve is a 54ha DOC administered reserve visible from Te Kopia Rd and not far in a straight line from the much larger and better known Te Kopia Scenic Reserve. Puaiti Bush is surrounded by farmland on all sides with access through the farm race along an unmarked public right of way. Hence the reserve is seldom visited.

The original botanical survey was a brief report and species list by Dave King in 1984 (King 1984). RBS has only visited this reserve once before with Barry Spring Rice on 5 October 1997 soon after he had surveyed the block as part of his work on the Atiamuri Ecological District PNA report. Interestingly, from researching the original Lands and Survey Department file on this block it appears that it was an area of indigenous forest that survived when the surrounding vegetation was cleared around 1959 as it was adjoining the old Puaiti Homestead (now long gone with no

trace). With this background in mind this presented a perfect opportunity for another look at this seldom botanised reserve.

Sunday 8 March 2020 was a nice sunny day attracting 7 botanists, both local and from as far away as Hamilton for this joint Rotorua and Waikato Botanical Society trip We headed up the farm access, parked up and headed into the forest in the north-eastern corner of the reserve heading south in a clockwise direction around the reserve following the boundary fence.

The forest along this section was rewarewa-mangeao forest with a subcanopy dominated by mahoe (*Melicytus ramiflorus*), pate (*Schefflera digitata*), and tree ferns - wheki (*Dicksonia squarrosa*) and ponga (*Cyathea dealbata*). Supplejack (*Ripogonum scandens*) was common in patches. Of note was a relative abundance of good sized healthy tree fuschia (*Fuschia excorticata*) throughout. The understorey was relatively open with wheki, gully fern (*Pneumatopteris pennigera*), hen and chicken fern (*Aplenium bulbiferum*), mahoe and *Lastreopsis microsora* common in the understorey. It wasn't long before we ran into the only area of the reserve where there are significant weed infestations present – namely hops (*Humulus lupulus*), with local patches of Japanese honeysuckle (*Lonicera japonica*) surrounding a large patch of bamboo (*Pseudosasa japonica*). These were probably planted remnants from the original Puaiti homestead which was in the vicinity of here for many years until the late 1950's. Also noted in the understorey on forest edges here were scattered plants of male fern (*Dryopteris filix-mas*). Of note was a moderate sized regenerating rimu (*Dacrydium cupressinum*) and a large old cabbage tree (*Cordyline australis*) on edge of the clearing. No sign of the kiwifruit (*Actinidia chinensis* var. *deliciosa*) plant recorded previously in this area was seen.

Half the party continued south through more rewarewa-mangaeo forest until the SE corner of the reserve was reached. The other half of the party got separated and headed inland. The group that split from the main bulk went up a low ridge to the north. Several ferns were noted that were not seen by the others. These included a small epiphytic *Blechnum vulcanicum, Hymenophyllum revolutum* and *Trichomanes venosum* growing on tree ferns. Just into the bush from the hop patch several species of *Polystichum* were observed and collected for later identification. The highlight for this group was the finding of a rather large tree (some 70cm in diameter) which because of its pale vertically grooved bark was initially thought to be a hinau, however, as there were numerous horizontal grooves in the ridges and lack of hinau leaves around the base of the tree further reconsideration was required. Inspection of the trunk revealed a small epicormic branchlet (well out of reach) with narrow ovate leaves and maire (*Nestegis*) came mind. Several leaves were gathered for identification when the groups got together again, and the conclusion was reached that it was white maire (*Nestegis lanceolata*).

Figure 1: An impressive hops infestation on the eastern boundary of the reserve

Figure 2: Large mahoe dominate the gully near the southern boundary of the reserve.

The other party following the fenceline headed west through more relatively open forest soon reaching a gully dominated by large old mahoe trees in the canopy. Although we were still in drought conditions with the surrounding pasture very dry there was clear evidence that the gully had very recently run with water as a clear flow path could be seen through the mahoe leaves on the ground.

Our group decided to follow the gully up as the walking was relatively easy and the botanising looked potentially more interesting than following the fenceline any further. The entire gully was dominated by mahoe-pate forest with pate, wheki and katote (*Cyathea smithii*) in the subcanopy.

Ferns were dominant in the understorey, especially gully fern, hen and chickens fern, nini (*Blechnum chambersii*) and *Lastreopsis microsora*. Several of the party scrambled up the side of the gully into a windfall clearing to confirm the identity of a patch of poroporo (*Solanum aviculare*). After following this gully for some distance the gully forked and we decided it was time to head uphill back to the farm boundary to find a spot for some lunch. We soon reached the fenceline and found a small area in the forest for lunch, only to discover later than we weren't that far away from an active wasp nest!!

With still no sign of the other party we decided after lunch to jump the fence and walk along the western reserve boundary in the paddocks so we could cover a bit more ground. We soon crossed one large gully that ran into the reserve. The forest along this margin was still dominated by rewarewa emergent over younger mangaeo (*Litsea calicaris*) and mahoe canopy. The latter two species dominated the canopy in the gully. We lingered on some large kamahi (*Weinmannia racemosa*) in the paddock noting some *Drymoanthus adversus* present on the trunks. It was also noted a ridge of kamahi dominated forest running eastwards at one point.

Not noting much of significance along the fenceline edge we continued to the top of the hill to finally come across the other half of the party eating their lunch in the paddock. Kind of relieved to have everyone back together we surveyed the remainder of the western boundary of the reserve from our vantage point.

From here we noted two large wilding radiata pine (*Pinus radiata*) within the reserve – one near us and the other out on the far north western boundary of the reserve could be seen in the distance. The northern part of the reserve appeared to be strongly dominated by rewarewa forest throughout although we could see some occasional mangeao and mahoe in the canopy in a few places. We made the decision not to venture further into that area instead following the fenceline to the corner.

There were signs of an old farm track heading off downhill towards the east. It appeared not to have been used for some time as it was a mixture of clearings dominated by rank grassland, blackberry and fern land and areas of indigenous shrubland. Before we jumped back across the fence and into the reserve a large emergent tree towering above the canopy halfway up the ridge in front of us caught our attention. Debate over miro (*Prumnopitys ferruginea*) or perhaps a different podocarp tempted us to bush crash up the slope for a closer look.

Figure 3: View across western boundary of the reserve looking east.

Figure 4: The NW section of reserve dominated by rewarewa forest

The vegetation on this face is much younger than the remainder of the reserve with a low canopy of 5-8m height in many places.

The face is dominated by mangeao-kanono-pigeonwood mahoe forest and scrub. Tree fuschia and tree ferns are common throughout. The subcanopy is comprised of the same species. The understorey is dominated by kanono (*Coprosma grandifolia*) and fern species – gully fern, hen and chicken fern and nini were noted most commonly.

After much searching we finally found the tree – a large old miro. Those compiling the plant species list were justly rewarded with a good range of epiphytes present including puka (*Griselinia lucida*) and the perching orchid *Earina mucronata*. One other large emergent tree was noted in the area which turned out to be a tawa (*Beilschmiedia tawa*).

The group headed downhill into the gully where pate again became more common. We broke out of the forest back into a clearing on the old farm track with mostly rank grass only to discover several of us had walked through a wasp nest. A quick retreat back into the forest allowed a lucky escape for all. We made our way downhill through another clearing with an unhealthy abundance

of wasps until we soon saw the pasture and fenceline on the eastern side of the reserve. The reserve is at its narrowest width here.

Turning in a southerly direction we started heading back along reserve boundary in direction of the cars. Most had seen enough forest and opted to rest and walk along the forest edge on the farmland again. We were soon out of the younger forest and back into the larger more open rewarewa-mangeao forest present throughout most of the remainder of the reserve. A small hardcore group stayed in the forest away from the hot sun and walked parallel with the farm walkers.

For the few who stayed in the forest we were soon surprised to pick up an old farm track/logging road which was wide and easily followable benched along the face heading in the direction we wanted to go. We continued to follow this back to near the cars stopping to admire one very large mangeao tree right beside the track.

The group then reassembled back at the cars satisfied with the days exploration but still leaving further areas of the reserve to be explored in the future.

Of particular note was the absence of any animal sign in the reserve. The understorey was in a relatively healthy condition with palatable species such as kanono, pate and hen and chicken fern in abundance. No browsing or rooting from deer or pigs which are all present in the area was noted. No sign of cattle within the reserve was seen and no significant possum damage was noted which was very pleasing to see. The farm manager did comment to me that trappers had been in the reserve in recent years and removed a large number of possums and there had been some follow up trapping which seemed to have benefited the reserve. The abundance, size and health of tree fuschia in particular was noticeable throughout much of the reserve probably reflecting the low browser numbers.

References

King, D.R. 1984: Botanical survey of Puaiti Scenic Reserve. *Unpublished Report.* D.S.I.R., Rotorua. 5 pp.

Thanks to Paul Cashmore for a great trip and for the write up.

PUAITI BUSH SCENIC RESERVE, ATIAMURI
B Spring-Rice 29-11-1994; RBS 8-3-20
Map: BF37 Grid Ref: 1876880 5742950
Note: 1=Seen by King first; 2 = seen by RBS first. X = seen by Spring-Rice and RBS

Gymnosperm trees and shrubs			
x		*Dacrydium cupressinum*	rimu, red pine
x	*	*Pinus radiata*	Monterey pine; radiata
x		*Prumnopitys ferruginea*	miro; brown pine
x		*Prumnopitys taxifolia*	matai; black pine
Monocotyledonous trees and shrubs			
x		*Cordyline australis*	cabbage tree; ti-kouka
x		*Cordyline banksii*	forest cabbage tree; ti ngahere
Dicotyledonous trees and shrubs			
x		*Aristotelia serrata*	wineberry; makomako
x		*Beilschmiedia tawa*	tawa
2	*	*Berberis glaucocarpa*	barberry
x		*Brachyglottis repanda*	rangiora; bushmans friend
x	*	*Buddleja davidii*	summer lilac; buddleia
x		*Carpodetus serratus*	putaputaweta; marbleleaf
x		*Coprosma grandifolia*	raurekau; kanono; mamono
x		*Coprosma lucida*	karamu; shining karamu
x		*Coprosma robusta*	karamu
x		*Coriaria arborea* var. *arborea*	tree tutu
x	*	*Cytisus scoparius*	broom
x		*Elaeocarpus dentatus* var. *dentatus*	hinau
x		*Fuchsia excorticata*	fuchsia; kotukutuku
x		*Gaultheria antipoda*	snowberry; tawiniwini
x		*Geniostoma ligustrifolium* var. *ligustrifolium*	hangehange; privet
x		*Griselinia lucida*	puka
x		*Hebe stricta* var. *stricta*	koromiko
x		*Hedycarya arborea*	pigeonwood; porokaiwhiri

x		*Knightia excelsa*	rewarewa; NZ honeysuckle
2		*Kunzea robusta*	kanuka
x		*Litsea calicaris*	mangeo
x		*Melicytus ramiflorus* ssp.*ramiflorus*	mahoe
x		*Myrsine australis*	red matipo; mapou
x		*Nestegis cunninghamii*	black maire
2		*Nestegis lanceolata*	white maire
x		*Piper excelsum ssp excelsum*	kawakawa; pepper tree
x		*Pittosporum eugenioides*	lemonwood; tarata
x		*Pittosporum colensoi*	black matipo; kohuhu
x		*Pittosporum tenuifolium*	five finger; puhou;
x		*Pseudopanax arboreus*	whauwhaupaku
x		*Pseudopanax crassifolius*	lancewood; horoeka
2		*Raukaua edgerleyi*	raukawa
x		*Schefflera digitata*	pate; patae; kotete
x		*Solanum aviculare* var. *aviculare*	poroporo
x		*Weinmannia racemosa*	kamahi; towai; tawhero

Monocotyledonous lianes

x		*Ripogonum scandens*	supplejack; kareao

Dicotyledonous lianes and related trailing plants

x	*	*Actinidia chinensis* var. *deliciosa*	kiwi fruit; Chinese gooseberry
x		*Clematis paniculata*	clematis; puawhananga
x	*	*Humulus lupulus* var. *lupulus*	hop
x	*	*Lonicera japonica*	Japanese honeysuckle
x		*Metrosideros diffusa*	white climbing rata; akatea
x		*Metrosideros perforata*	aka; small white rata; torotoro
x		*Muehlenbeckia australis*	poheuheu
x		*Parsonsia capsularis* var. *capsularis*	small flowered jasmine; akakior
2		*Parsonsia heterophylla*	maori jasmine; kaihu; kaiwhiria
x		*Passiflora tetrandra*	passionfruit; kohia
x		*Rubus cissoides*	bush lawyer; tataramoa
x	*	*Rubus fruticosus* agg.	Blackberry

Psilopsids, Lycopods & Quillworts

x		*Lycopodium fastigiatum*	mountain clubmoss

Ferns

x		*Adiantum cunninghamii*	maiden hair fern
x		*Asplenium bulbiferum*	Hen and chickens fern
x		*Asplenium flaccidum*	hanging spleenwort; makawe
x		*Asplenium oblongifolium*	shining spleenwort
x		*Asplenium polyodon*	sickle spleenwort; petako
x		*Blechnum chambersii*	nini; lance fern
		Blecnhum deltoides	
x		*Blechnum discolor*	crown fern; piupiu; petipeti
x		*Blechnum filiforme*	Climbing hard fern; thread fern
x		*Blechnum fluviatile*	kiwakiwa; kiwikiwi
x		*Blechnum novae-zelandiae*	kiokio
x		*Cyathea cunninghamii*	slender tree fern; gully tree fern
x		*Cyathea dealbata*	ponga; silver fern
x		*Cyathea medullaris*	mamaku; korau; black tree fern
x		*Cyathea smithii*	soft-leaved tree fern; katote
1		*Dicksonia fibrosa*	wheki-ponga; kuripaka
x		*Dicksonia squarrosa*	wheki; harsh tree fern
x		*Diplazium australe*	
2	*	*Dryopteris filix-mas*	male fern
x		*Histiopteris incisa*	water fern
2		*Hymenophyllum demissum*	piripiri; irirangi
2		*Hymenophyllum dilatatum*	lop-sided filmy fern
2		*Hymenophyllum flabellatum*	fan fern
x		*Hymenophyllum nephrophyllum*	kidney fern; raurenga
2		*Hymenophyllum revolutum*	
x		*Hymenophyllum sanguinolentum*	blood-scented filmy fern
x		*Hypolepis ambigua*	
x		*Lastreopsis glabella*	felted fern
x		*Lastreopsis hispida*	hairy legs
2		*Lastreopsis microsora* ssp. *pentangularis*	
x		*Lastreopsis velutina*	velvet fern
x		*Leptolepia novae-zelandiae*	lacey fern
x		*Leptopteris hymenophylloides*	single crepe fern; heruheru

2		*Loxogramme dictyopteris*	sexy fern
x		*Microsorum pustulatum* ssp. *pustulatum*	Hounds tongue
x		*Microsorum scandens*	mokimoki; fragrant fern
x		*Paesia scaberula*	scented fern; matata; ring fern
x		*Pneumatopteris pennigera*	gully fern; pakau; pakauroharoha
x		*Polystichum neozelandicum ssp. zerophyllum*	
1		*Polystichum vestitum*	prickly shield fern; punui
2		*Polystichum wawranum*	common shield fern; pikopiko
x		*Pteridium esculentum*	bracken; rauaruhe
x		*Pteris macilenta*	sweet fern
x		*Pyrrosia elaegnifolia*	leather-leaf fern
x		*Rumohra adiantiformis*	butcher's fern
2		*Tmesipteris elongata*	
2		*Trichomanes venosum*	veined bristle fern
x	*	*Sonchus oleraceus*	sow thistle; puha; puka
x	*	*Taraxacum officinale*	dandelion

Daisy-like herbs

x	*	*Achillea millefolium*	yarrow
2	*	*Cirsium vulgare*	Scotch thistle
2	*	*Crepis capillaris*	hawkesbeard
2	*	*Erechtites hieraciifolius*	american fireweed
2	*	*Erigeron sumatrensis*	broad-leaved fleabane
2	*	*Gamochaeta coarctata*	
x	*	*Hypochaeris radicata*	catsear
x	*	*Jacobaea vulgaris*	ragwort
2	*	*Lactuca serriola*	prickly lettuce
2	*	*Lapsana communis*	nipplewort
x		*Senecio bipinnatisectus*	Australian fireweed
2	*	*Sonchus arvensis*	perennial sow thistle
x	*	*Sonchus oleraceus*	sow thistle; puha; puka
x	*	*Taraxacum officinale*	dandelion

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Dicotyledonous herbs other than Daisies

2		*Acaena anserinifolia*	bidibid
x	*	*Acaena novae-zelandiae*	red bidibid; piripiri
x	*	*Bellardia viscosa*	tarweed
x		*Cardamine debilis*	
x	*	*Cerastium glomeratum*	annual mouse-eared chickweed

2	*	*Conium maculatum*	hemlock
x	*	*Digitalis purpurea*	foxglove
2		*Epilobium insulare*	
x	*	*Euphorbia peplus*	milkweed
x	*	*Galium aparine*	cleavers
x	*	*Geranium robertianum*	herb Robert
2		*Geranium solanderi*	
2		*Hydrocotyle heteromeria*	wax weed
x	*	*Lotus pedunculatus*	lotus major
2	*	*Lysimachia arvensis* ssp. *arvensis var. arvensis*	scarlet pimpernel
x	*	*Mentha piperita* var. *piperita*	peppermint; bergamot mint
2		*Parietaria debilis*	
2		*Persicaria decipiens*	
2	*	*Persicaria maculosa*	
x	*	*Plantago australis*	swamp plantain
x	*	*Plantago lanceolata*	ribwort; narrow-leaved plantain
x	*	*Plantago major*	broad-leaved plantain
x	*	*Prunella vulgaris*	selfheal
x		*Ranunculus reflexus*	maruru; hairy buttercup
2	*	*Ranunculus repens*	creeping buttercup
2	*	*Rumex acetosella*	sheep' sorrel
2	*	*Rumex obtusifolius*	broad-leaved dock
2	*	*Sherardia arvensis*	field madder
2	*	*Sisymbrium officinale*	hedge mustard
x	*	*Solanum nigrum*	black nightshade
x	*	*Stellaria media ssp. media*	chickweed
x	*	*Trifolium pratense*	red clover
x	*	*Trifolium repens*	white clover
x		*Urtica sykesii*	stinging nettle
x	*	*Verbascum thapsus*	woolly mullein

Mangaonua Gully Ramble

Led by Kerry Jones and Gerard Kelly 22nd February,2020

Our host for the day was Gerard Kelly. He had permission from several landowners to take us for a walk through the Mangaonua Gully in Hillcrest. This was part of Hamilton that I didn't even know existed.

Left: Gerard pointing out the plants in this part of the gully : makomako / wineberry (*Aristotelia serrata*), pukatea (*Laurelia novae-zelandiae*), swamp astelia (*Astelia grandis)*, cabbage tree (*Cordyline banksii*), pate (*Schefflera digitata*) and mapau (*Myrsine australis*).

Above*: Fuchsia procumbens* growing in the gully Spot the baby kahikatea.

Right: Paul and Leigh dwarfed by a large *Gahnia xanthocarpa* in the gully.

Some parts of the Mangaonua stream were quite weedy, but there are other parts of the gully system where some restoration has been done and there is some existing native vegetation : cabbage tree, carexes, kahikatea (*Dacrycarpus dacrydioides*), raupo (*Typhus orientalis*) and wheki (*Dicksonia squarrosa*)

We came out on Matangi Road and then crossed SH 26 to meet up with George and some of his team who were running the Silverdale Gully restoration. The entrance is off Silverdale Road near SH26. This part of the gully is open to the public.

Part of the Silverdale Restoration Project. Plantings of flax (*Phormium tenax*) and carex

This looks like dense bush in the back of beyond but we are actually in part of the Silverdale Gully

Left: The track into the Silverdale Gully.
Right: Large kahikatea at the back of the school.
Gerard led us along the track and George told us about the achievements of the restoration group.
The track petered out but we kept going up to the head of the gully where Gerard showed us several large kahikatea.
In the end we came out at the back of the Silverdale School where the trip ended. Thanks, Gerard, for showing us a rarely visited part of Hamilton and thanks to Kerry for the write up.

Nikau Walk

Led by Kerry Jones 20 June 2020

This was the first Waikato Botanical Society Trip since lockdown and it was good to see 15 people turn up.

The trip up the true right of the Kaniwhaniwha Stream was through a restoration planting that had been done between 15 and 20 years ago. I normally bike this section on my way up to the campsite so it was a change to take things a bit slower and have a look around. The main species were manuka (*Leptospermum scoparium*), cabbage tree (*Cordyline banksii*), ribbonwood (*Plagianthus regius*) and flax (*Phormium tenax*). We did spot some pigeon wood (*Hedycarya arborea*) and kohekohe (*Dysoxylum spectabile*) also which probably weren't planted and have been established naturally.

DOC had been doing some weed control on the selaginella and there were only a few small patches on the way up.

There were some original tall pukatea (*Laurelia novae-zelandiae*) and kahikatea (*Dacrycarpus dacrydioides*) on the stream side further up towards the camp site.

One of the pukatea was dead and had a large puka (*Griselinia lucida*) growing in it

Yanbin and Linda with cameras in action.

As a group we spread out and with several alternative tracks we all got separated for a bit.

The campsite is only 40 minutes from the road. The Nikau Walk is a 40 minute loop walk from the campsite which is metalled all the way but be aware that bikers can also use the track. Walkers go anticlockwise, bikers clockwise.

Once you are over the bridge it doesn't take long to get amongst the nikau (*Rhopalostylis sapida*) that the track is named after.

There were lots of seedlings to see in the under growth.

Nikau

parataniwha (*Elatostema rugosa*),
kahikatea (*Dacrycarpus dacrydioides*),
rewarewa (*Knightia excelsa*)
ramarama (*Lophomyrtus bullata*).

The main tall trees along the track were pukatea, tawa (*Beilschmiedia tawa*), kahikatea, and rewarewa.

We stopped several times to look at the fungi on display.

Wood ear fungus
(*Auricilaria cornea*)

Yellow waxgill

Icicle Fungus

There were several patches of king fern (*Ptisana salicina*) along the edge of the track by the stream.

King fern

Climbing clubmoss (*Lycopodium volubile*)

One part of the track comes out in a small clearing of bracken (*Pteridium esculentum*), ring fern (*Paesia scaberula*) and climbing clubmoss (*Lycopodium volubile*). In one corner Himalayan honeysuckle was growing (*Leycesteria Formosa*).

Just as the loop track ended we saw the climbing rata (*Metrosideros fulgens*) in flower.

Bracken and ring fern

Metrosideros fulgens

We caught up with the rest of the group at the picnic table at the campsite and had lunch. Some people had to get away early and they were the lucky ones. The rest of us dawdled back out to the road end after a leisurely lunch and got soaking wet by the time we got back to the cars as the rain had really set in.

Thanks for another interesting trip and the photography and writeup, Kerry.

Further trips for the Rest of the Year 2020

Please also keep an eye on Waikato Botanical Facebook page, website, and emails

Sunday 5 July – Jim Barnett Reserve, Waotu (Combined with Rotorua Botanical Society)

Leader: Kerry Jones. 07 855 9700 / 027 747 0733 / km8j1s@gmail.com

Sunday 2 August – Glovers Farm, Waiohotu Rd, Fitzgerald Glade, Western Mamakus (combined with Rotorua Botanical Society)

Leader : Jacqui Bond ph 021 1259 273, E-mail supajac@yahoo.com
Meet: The carpark Rotorua 8:15am or corner of Waiohotu Rd and SH 5 at 9am
Grade : Medium
We will explore the bush surrounding the Glover farm. This will include parts of the Kaimai-Mamaku Forest Park and the Selwyn Scenic Reserve. Highlights will be historic sites, old tracks, water falls and old tawa forests. An historical clearing in the middle of old forest gives climbing rata an opportunity to go wild!!

Sunday 6 September –Dickeys Flat, Kaimai-Mamaku Forest Park (Combined with Rotorua Botanical Society)
Leader : Graeme Jane & Gael Donaghy 07 5703123 gtjane@kinect.co.nz
Meet : 9:30am TBC
Grade : Moderate
Several options are available and the best will be determined on the day. The longest could take us to the summit of Karangahake, the shortest an easy stroll down river into the Gorge. The area has a long mining history with many tracks, some now long abandoned, so the forest is quite modified, ranging from kanuka forest and treefernland to kamahi forest or more or less mature kauri with the possibility of kauri orchids and lowland species such as puriri.

31 October –1 November Whitianga Weekend (Combined with Rotorua Botanical Society)

We will be based in Whitianga for the weekend. Please arrange your own accommodation.

Day 1 : Saturday 31st October : 309 Kauris to 309 summit calling in at Egans park to see the mistletoe and possible wander up McIssacs Creek.
Meet : Whitianga I-Site (Corner of Albert Street and Blacksmith) at 9:15 AM.
Or at the 309 Road Kauri Walk Entrance at 10:00
Grade : Medium
Bring: Usual day walk gear.

Day 2 : Sunday 1st November : Tapu - Coroglen Road to Waiwawa River.
Meet : Whitianga I-Site (Corner of Albert Street and Blacksmith) at 9:00 AM.
Or Coroglen Pub at 9:30AM
Grade : Medium
Bring: Usual day walk gear + togs if you wish to swim in the river.
There is a great waterhole at the lunch spot.

November : to be announced

Sunday 6 December – McLaren Falls Park - Bits and pieces (with Rotorua Botanical Society)

Leaders: Graeme Jane & Gael Donaghy 07 5703123 gtjane@kinect.co.nz.
Meet : The carpark Rotorua at 8.30am or McLaren Falls at 9:30am
Grade : Easy to moderate. All routes well formed or across pasture with steeper bits stepped. Four forest remnants, each with a different flavour. The first is a small area of forest containing swamp maire (easy); the second a gully walk through remnant lowland podocarp forest (easy to moderate); the third another gully walk through some beech forest to a site containing marehau (moderate); and forthly (sic) a lakeside walk with some wetlands (easy). All or some of these may be attempted. And for those otherwise inclined an extensive exotic arboretum scattered throughout with trees often labelled.
Bring bathing togs - an excellent site for a picnic. Lots of other walks.

If you have an idea for a botanical trip please get in touch with Thomas Emmitt

Waikato Botanical Society Bryophyte Workshop

11 October 2020

After the successful ferns workshop last year the Waikato Botanical Society are holding a Bryophytes workshop on 11 October led by Thomas Emmitt. Keep an eye out for further information through the following ways:

- waikatobotsoc.org.nz
- Waikato Botanical Society facebook page
- emails to members