Waikato Botanical Society

Newsletter

No. 51

June 2023

President's Report

Kerry Jones President

Elected Committee Members 2023

President:	Kerry Jones	km8j1s@gmail.com
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Newsletter:	Linda Watson, Catherine Beard, Antoinette van der Weerden	
Facebook:	Moari West	

Committee members: Catherine Beard, Antoinette van der Weerden, Wyne Johns, Moari West, Lucy Roberts

TE REO O TE REPO
KEI KONEI TONU AU

THE VOICE OF THE WETLAND
I AM STILL HERE

A few members of the Waikato Botanical Society went to the launch of the book "Life in the Shallows" in July.
The authors are Karen Denyer and Monica Peters who will be known to many of you.

Karen and Monica talk about their book to Kathryn Ryan on National Radio. Link here : https://www.rnz.co.nz/national/programmes/ninetonoon/audio/2018849273/protecting-new-zealand-s-vital-wetlands
The book is published by Massey University Press and is available from the National Wetland Trust website : https://www.wetlandtrust.org.nz/latest-news/.
Proceeds will be used to help continue wetland advocacy and education.
The book showcases work of some of our well known local botanists : Paul Champion and Bev Clarkson.
The book is published by Massey University Press and is available from the National Wetland Trust website : https://www.wetlandtrust.org.nz/latest-news/.
Proceeds will be used to help continue wetland advocacy and education. Kerry Jones

Night Talks July to December

After the success of our 2021 July Night talk we again asked members to give a short presentation on a botanical topic of their choice. The outcome was another fascinating evening with talks from Chris Lusk, Nathan Smith, Katherine Hay, Jeanette Brooker.
A big thankyou to you all. And to Kerry for coordinating this special July meeting.

Australian Flora Nathan Smith

The slideshow touched on the rather eclectic mix of species and higher taxonomic groups that have evolved from the ancient rainforests of the eastern seaboard (e.g., leopardwood *Flindersia maculata,* MacDonnell Ranges cycad *Macrozamia macdonnellii*

amongst many others), the tropics (e.g., desert fig *Ficus platypoda*) and Western Australia (e.g., *Aluta maisonneuvei*). The desert is also dominated by groups supremely adapted to the dry and fire (e.g., mulga *Acacia* spp., beefwood *Grevillea striata*, native cypress-pines *Callitris* spp., spinifex *Triodia* spp. and the saltbushes – Chenopodiaceae), the native herbs and shrubs that appear and flower en-masse immediately after rain (e.g., the emu bushes *Eremophila* spp., the daisies – Asteraceae and hibiscus/mallows – Malvaceae) and plants that grow on other plants given the paucity of available resources (e.g., the mistletoes and quandongs *Santalum* spp).

Bloodwood *Corymbia terminalis*

mulga *Acacia* spp. woodland around the base of Uluru."

Ecuadorian Plants — Jeanette Brooker

Jeanette looked at some of the Ecuadorian plants in the different parts of Ecuador which has a wide diversity of ecosystems . Plants from the Ecuadorian Amazon which is one of the most biodiverse areas in the world include the walking palm which can actually move a short distance over it's life time and the kapok tree which is the largest tree in the Ecuadorian Amazon and can host a impressive array of species which live on or in the tree.

A Namibian Desert Plant *Katherine Hay*

My presentation was about the *Welwitschia mirabilis,* a very strange, dioecious plant which only grows in the Namib desert in western Namibia and Angola, generally within 50 -60km of the coast. I hired a ute and made a special trip around the Welwitschia-Drive after getting the appropriate permit in Swakopmund.

It only ever grows two leathery leaves, and the one in the picture is supposed to be over 1500 years old.The leaves do break or get eaten by animals over the years. Its main source of moisture comes from the fogs which roll in from the coast,and the condensation drips off the leaves down to the ground. It is thought to be fertilized by flying insects, not the Welwitschia bugs which I saw on it. They are on female cones.

Current Research Project *Chris Lusk*

Chris Lusk spoke about his latest research current research

‘ A field test of canopy structure measurements with the CanopyCapture smartphone application.’

Rockslide on Hauhungatahi, Tongariro NP

Even-aged *Nothofagus dombeyi* stand in Chilean Andes, on slip triggered by 1960 earthquake.

An Unexpected Journey

A Talk by Wayne Bennett

Monday August 15

On Monday, August 15 ,Wayne Bennett from Forest Flora talked to us about his thoughts on ecosystems.

He called his talk “An Unexpected Journey " (or lessons on how to grow a forest)

Wayne talked about his own journey of discovery into the working of ecosystems and how to go about recovering them

.

“This unexpected journey has confronted me and changed the way I see the world."
Wayne has had a lifetime of experience and growing native plants of the Waikato. He started collecting seed and propagating plants to regenerate native bush around his new home near Ngaruawahia and now has a thriving plant nursery supplying eco-sourced plants for regeneration projects in the Waikato. He has written and published a book called “The Forest for the Trees” ….a resource for ecological restoration.

Some thoughts Wayne shared about his journey :

It is hard to say where the journey of discovery started. ‘Though memories have become hazy over time I do remember being enthralled as a pre-schooler with beech forest in Fiord land and the foot hills of the Southern Alps.
I have vague recollections of “rescuing” native seedlings and leaving them to die on a dry no-facing, clay bank at Te Aroha College. In the ‘70s I collected seeds from roadside plantings to grow into a forest if I ever saved enough to buy a piece of land to build a house.
Once we settled in Ngaruawahia, I started digging up seedlings from our recovering bush, trying to identify them from Salmon’s “The native Trees of New Zealand” and planting them under the kanuka to turn it into bush. I didn’t know it but my first foray into ecosourcing.
Eventually I turned my attention to the riverbank. Crawling with Trandescantia, shaded by willows and alders and tangled up in Muehlenbeckia / Pohuehue my first thought was to lay the ground bare.
Then it seemed to me that we needed a template for a forest. I had walked bush tracks plenty of times but realistically I couldn’t tell you which trees, shrubs and other plants should be there, on the Waikato riverbank, let alone how many of each and how far apart they should be.
I remember attending the opening of a natural park with a planting of lowland forest. I was fascinated to see it and keen to talk with the landscape architect who designed it. She told me “you just put together a random selection of lowland forest species.” I was pretty disappointed. Even then I could see that a forest, complex maybe but random, no.
So I persuaded Julia to do a school science fair project, measuring and describing a local kahikatea forest remnant. We used that for a template for our restoration. My first reference ecosystem.
The Hodges kahikatea remnant was or is a long way from pristine forest. The surrounding land has

been cropped for a long time so livestock have been excluded for ages. Seeing this, the owners have started to plant natives from the local garden centre. Not a good idea but a good lesson for me.
Having a template for the restoration, I set about collecting seed and experimenting with propagating plants. I had already had a bit of experience collecting seed and propagating plants but now this was much more systematic. It is pretty important for restoration to grow the ideal plants for the project, rather than choose from what is available. This has become one of the biggest challenges for ecological restoration.
The next step was clearing the ground. I had no idea what was involved. I thought if I sprayed the weeds, the problem would be solved. I sprayed the weeds but I had trouble keeping up with the regrowth. Trandescantia came back and before I knew it I was back to square one. This taught me to be conservative about how much I could manage. Before I start with weed control, I need to be confident to work through to elimination or not start.
Planting was an interesting issue. Friends told me it would be easier to do it on my own but I was determined to involve the community. I got the local supermarket to distribute leaflets, the local paper to announce a planting event and the lions to do a barbeque. I think we got about 60 people along on a dull July day back in 2000. I planted one plant and talked a lot. Planting is fun and a great way to engage the community in restoration.
Following the project as it matured has been fascinating. *Coprosma repens* /Karamu dominated the site from the first.
Karamu fruited copiously after a couple of years, but not long after it began to fail. *Myrsine australis* (Mapou) and *Melicytus ramiflorus* (Mahoe/Whitey wood) expanded into the gaps, the extra shading possibly hastening the demise of the karamu.
There were a few *Kunzea ericoide*s (kanuka) and for a while these were the tallest plants there.
Mahoe started fruiting after about five years. Some plants out in the margins in full sun have fruited spectacularly. Mapou followed sporadically. Mapou can flower at any time of the year and it takes a year for the fruit to mature. Then it might be several years before more flowers appear.
We had a flood in February 2004 which covered the whole site. I was surprised to see that Schefflera digitata (Pate), Carpodetus serratus (putaputaweta) and Fuchsia excorticata (kotukutuku/native fuchsia) all died in the flood. I was surprised because these all grow in wet streamsides. Looking around I have found that yes, they do grow in damp stream sides but not in the flood zone. Some people looked at the planting dominated by karamu which had survived the flooding so well and suggested “We should just plant karamu” Looking at the quick growth of the karamu which has provided an excellent canopy cover unfortunately it has almost died. But underneath there are many seedlings emerging.
After about 12 years Knightia excelsa (rewarewa) and Dacrycarpus dacrydioides (kahikatea) began to peek out above the canopy of kanuka, mahoe and mapou. Piper excelsum (kawakawa)seedlings began to appear all over the ground. Rewarewa and kahikatea began to set seed and rats found the seed. I haven’t found any rewarewa or kahikatea seedlings yet but I am sure the rats didn’t get all of the seed. There are mahoe and mapou seedlings and suckers from the mapou as well.
One of the greatest errors we can make with this sort of thing is to think once the planting has been done the work is over. I am as guilty as anyone. In the intervening years I have let the Trandescantia and the convolvulus get away. I am sure the Trandescantia has contributed to the lack of seedlings so far. The convolvulus has wound around the tops of Cordyline australis(ti kouka /cabbage tree) so the growing tips rotted. These vines have climbed up the kahikatea and bent over the tops.
It is an ill wind that blows no good. During 2020 covid restrictions I had the time to walk through the project and was appalled at how I had let things slip. Wandering dew was knee high and convolvulus was bending over the smaller kahikatea.
I have spent the last summer spraying out these two weeds and have got pretty close to getting on top of them. This winter I am planting a whole lot of species I didn’t know the names of twenty years ago. Shrubs like; *Coprosma rigida, C. rotundifolia, C. propinqua, C. areolata, Melicytus micranthus*

and *Streblus heterophyllus* are specialists in flood zones. Ones I have planted this year are currently completely submerged. Then there are Hedycarya arorea (porokaiwhiri / pigeon wood), *Melicytus ramiflorus* (mahoe/ whitey wood), Laurelia novae-zelandiae (pukatea), Prumnopitys taxifolia (matai) and Coprosma grandifolia (kanono), all growing where they will get occasionally flooded.
I have also tried to include a suite of trees and shrubs which will do well on the steep banks below the road and possibly cope with brief flooding. Trees like rimu, totara, pokaka, titoki, rata, kowhai, mamangi and nikau.
Also, shrubs better suited to the steep banks and typical of the bush in the area. Like white maire,puka (Griselinea) Coprosma rhamnoides, C. lucida, C. spathulata, Alseuosmia quercifolia and mingimingi (Leucopogon) .
With the canopy now approaching eight metres high I can also plant climbers like akatea (Metrosideros perforata), clematis, parsonsia, tataramoa, (lawyer) and Passiflora as well as ferns like ponga, wheki mamaku.
That's 30 additional species) Every one has a unique ecological fit. Most of them are able to replicate on this site and in the vicinity. This is so different to a reveg project where quick growing short-lived species adapted to open spaces are so often the only trees planted.
After 20 years, leaf litter is beginning to build up on the ground. We are getting a few dead karamu, ti kouka and willows on the site which I am hoping will host mosses, eventually carpeting the ground, soaking up rainwater and filtering water as it flows across the ground.
Aldo Leopold calls it "Thinking like a mountain" Richard Dawkins asks us to view life from the perspective of "The Selfish Gene" or even "The Extended Phenotype". Either way I am finding that Ecological restoration is asking me to adopt a new world view.

Above: ***Photos of the project over the years.***

Wayne said he enjoyed giving the presentation, not only the opportunity to look back at how it all happened but also to reflect on where to go from here. We all enjoyed the talk too and it stimulated a great discussion afterwards.

We thank him for sharing 'his journey', thoughts and ideas.

Night Talk September 19

Coastal Erosion Jim Dahm

Below is a little information from Stacey Hill about sand dunes and Coastcare Waikato. Stacey, from Waikato Regional Council, works with Jim Dahm.

Sand dunes buffer us from storms, our coastlines filter water runoff from the land and our coasts are home to a special mix of native plants and animals that are found nowhere else in the world.

We're so lucky to have so many amazing beaches along the Waikato Coast but sadly, over 75% of the Waikato coastline has been degraded and continues to face numerous pressures like urban development, pest animals, weeds, vehicles and litter.

Coastcare Waikato is a community partnership programme which works to restore coastal areas throughout the Waikato region. This programme involves local communities, iwi and government organisations working together to restore, protect and look after our coasts and all the species that live and grow there.

Thanks to amazing volunteers, together we plant thousands of plants each year and host weeding, planting and beach cleanup events. Please join us in caring for our coasts!

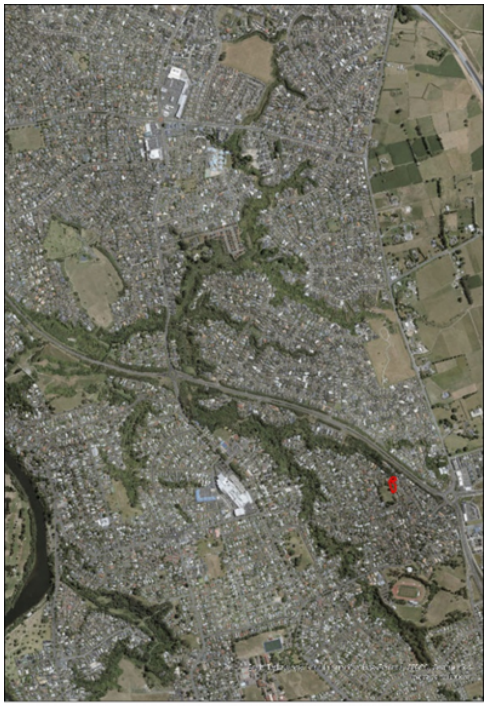
Follow us on facebook (facebook.com/coastcarewaikato) or contact one of our coordinators to learn more about events coming up near you

- East Coast, Andrea Whitehead: andrea.whitehead@tcdc.govt.nz
- West Coast, Stacey Hill: coastcare@waikatoregion.govt.nz

Night Talk October 17

Chedworth Gully Project – Kerry Jones.

The map below shows the fingers of the Chedworth gully system in the south and the Mangaiti Gully system in the north. The road running south east to north west is Wairere Drive. The small bit of red is where I have been doing a gully restoration.



Storm water running off the streets around the east end of Chedworth Ave all ends up in the gully.

I'm not exactly sure when I started working in the gully but my guess is about 5 years ago. When COVID came along I wasn't working so had quite a bit time on my hands and the gully is only 200 metres away from where I live. This is when the project really took off and I spent a lot of time down there. It was also the time that I saw most people in the gully. With nothing better to do people were out exploring places close to home that they had never been before.

The main issue in the gully is *Tradescantia fluminensis.* This weed is synonymous with Hamilton City Gullies. Tradescantia forms a very fast thick growing carpet which prevent any other plants from growing. When I started the very headwaters around the culvert were free of tradescantia and I have been pushing the tradescantia downstream for which I am lucky as most people in Hamilton are pushing tradescantia in 2 directions.

August 2018 – both sides of the stream are heavily infested with tradescantia

April 2020 – tradescantia removed. Sedges planted

Sept 2021 : Sedges grown up, coprosmas coming through, flaxes planted.

Further down stream was a large flat area that occasionally flooded.

Area clear of tradescantia

sedges and cabbage trees planted

April 2020

Same area flooded May 2020.

Piles of (harvested) tradescantia by the stream.

Same area doing really well. Mostly sedges, some cabbage trees and flaxes. Kahikatea and pukatea have also been planted in this area.

A bit further down stream the tradescantia was wall to wall and there were also large clumps of Taro.

This was quite a daunting task

April 2018

But with perseverance the whole place is starting to look really good. August 2021.

Most of the plants have all been grown by seed from me but what I am noticing more and more is that seedlings are starting to popup all over the place including seedlings for plant that aren't even in the gully like wineberry. Kahikatea and mahoe are coming up all over the place. Kawakawa which has only been introduced into the gully about 2 years ago is also starting to popup.

But you really have to keep on top of the tradescantia. I went away to the south island over the summer and I was surprised how quickly the tradescantia came back

October 2021 July 2022

I'm hoping to include the gully as part of a gully crawl trip next year but if you are in the area and would like to have a look then call in and I will show you around.

Kerry

Night Talks February to March 2023

We will endeavor to keep to the program below but do keep an eye on facebook page and emails for changes.

Monday, February 20

Lizzie Sharp and Moari West on their work in their respective fields

Monday, March 20

Wayne Bennett Strategies For Restoring Natural Areas

AGM Monday April 17

Dr Carol West recipient of Allan Mere Award 2022

Monday, May 15

Wetland Movie Kathleen Gallagher

Monday June 19

NZRFT Maurice Rodway Preti Totara Dune Forest near Invercargill

Monday July 17

5-10 minute members talks

January to June Trips for 2023

Compiled by Kerry Jones

Anniversary Weekend 28 – 30 Jan 2023

Rangitoto Station, a 427 ha reserve owned by Native Forest Restoration Trust, north of Pureora.

Organiser: Dell Hood , dhood@xtra.co.nz or 027 521 9260

Would those potentially interested in coming on this weekend please let Dell know before Christmas to assist with planning.

Saturday 25 th February : Lake Areare :Taupiri Scientific Reserve Revisited.

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

Meet : Hillary Park, Chedworth Ave Hamilton @ 9:00am or Driver Road Entrance at 9:30amThis lake can be seen from the Waikato Expressway. We'll go for a walk around the lake on the trapping track. The Lake edge has had extensive restoration planting done in the last 8 years. Grade : Easy (I think)

Saturday 25 March – Mt Tarawera (Combined with Forest and Bird and Waikato Botanical Society)

Leader: Paul Cashmore 07 349 7432 (wk) or 027 2051922 pcashmore@doc.govt.nz

Meet: DOC Ashpit Road campground, Lake Rerewhakaaitu at 9 am.

Saturday , April 22

Graham McBride's QE11 covenant Te Kowhai West Details to be confirmed

Saturday 6 th May : Hamilton Gully Crawl. Kerry Jones

Chedworth Gully, Hukanui School Gully and Mangaiti Gully

Saturday 10 June – Waharoa QEII Covenant Visit (combined with Waikato Botanical Society) Leader: Dell Hood, dhood@xtra.co.nz or 027 521 9260

Thanks to all those who are organising trips for next year and to Kerry Jones for collating them.

An amazing, interesting programme.

Please keep an eye on the Waikato Botanical Society Facebook Page and emails to members for changes and more details about each trip.

Endangered Plant Garden

The Endangered Plant Garden had been a bit neglected and was in need of some T.L.C. After a busy Saturday morning in September weeding, mulching, pruning and coming up with some ideas for planting in areas where needed the area looked significantly better.
Thanks to everyone for their help, expertise and conversation on the morning.
It was great to achieve so much.

Pruning large branches from *Pseudopanax* to let in more light

Trialling Power hand saw and hand secateurs.

Sophora fulvida in bud

Dactylathus tuber has died

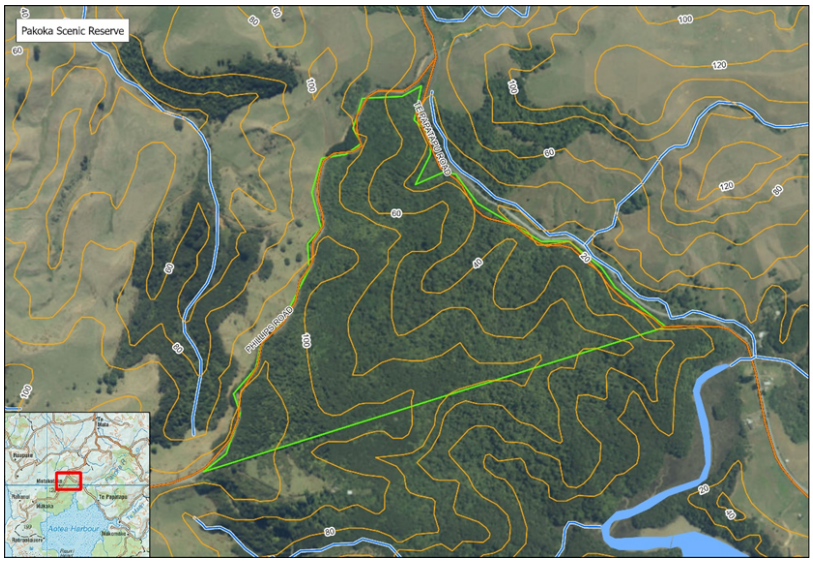
Very dry area needing replanting After planting

A big thankyou to Jan Simmons and Catherine Smith for donating plants from WERT Nursery for this dry area. *Pennantia corymbosa / kaikomako (*seed from Pukemokemoke Reserve*) and Coprosma rhamnoides.*

Botanical Walks

Pakoka Scenic Reserve Trip : 23rd July 2022.

13 of us turned up for the trip to Pakoka Scenic Reserve.



Pakoka Scenic Reserve is on the north side of Aotea Harbour. The size of the reserve is 48 hectares and the altitude range is from 0 metres to about 120 metres.

We parked at Pakoka Landing where the Pakoka streams flows down into the Aotea. This is the same Pakoka Stream that flows through Waireinga / Bridal Veil Scenic Reserve which includes the waterfall.

We crossed the bridge and peered into the wet area adjoining the river.

In this area we saw : Oioi (Apodasmia similis), Raupo (Typha orientalis), Cabbage tree (Cordyline australis), mahoe (Melicytus ramiflorus) flax (Phormium tenax) and Coprosma propinqua.

We wandered along the eastern side of the reserve on Te Papatapu road.

The vegetation was mainly manuka (Leptospermum scoparium) and some rewarewa (Knightia excelsa)

There were numerous weeds growing along the side of the road including black berry, hemlock, pampas and a rather large grape vine!.

Some of the large white poplar on the road side had been chopped down since my previous weed

Survey.

It was great to see a rimu (*Dacrydium cupressinum*) right beside the road and pukatea (*Laurelia novae-zelandiae*) growing up on ridge.

A large patch of bamboo as encountered further up :


And a large rata (*Metrosideros robusta*) was spotted on the other side of the road (not in the Scenic Reserve).

We turned off the main road and headed up Phillips Road where we had lunch on the side of the road. Then we then dived into the bush where we surprised by the number of seedlings. There was a good opportunity to observe the difference between puriri (*Vitex lucens*) and kohekohe (*Dysoxylum spectabile*) seedlings :


Puriri Kohekohe

There were quite a few young nikau (*Rhopalostylis sapida*) in the under the canopy and larger ones heading up for the light.


pukatea seedling

pukatea adult showing buttressed roots

kahikatea seedling

rewarewa seedling

The final highlight as we bashing through back to the road was to find a small patch of the orchid *Acianthus sinclairii*

I recorded a species list but haven't had a chance to write this up yet. We'll publish this at a later date.

Thanks Yanbin for the photo of the larger nikau.

References : Kerry Jones, 2021 : Pakoka Scenic Reserve Weed Survey. Department of Conservation, DOC-6617357.

Robbie Bennett's QE11 Bush Block

Sunday, August 21st Leader: Catherine Beard

Members may recall a talk that Robbie Bennett and Melissa Sinton gave to the Bot anical Society last year about the QEII National Trust. Robbie has worked for the QEII Trust since February 2011.

On Sunday 21st August approx.. 20 members of the Waikato Botanical Society visited Robbie Bennetts QE11 bush covenant south west of Ngaruawahia.

Robbie has been looking after the bush block (including pest control, exclusion of livestock and planting) for 30 years or so, along with another hectare or so that has been retired and planted more recently. There is also a small wetland at the western end.

The main block of bush is around a hectare in size, likely between 130 – 150 years old, and is a nice example of lowland Waikato forest.

Robbie explained about the Waipa Heights Bush remnants, weed control and regeneration.

"There are pockets of quite mature bush scattered over the landscape, almost always on the steeper faces and gullies and now mostly contained within lifestyle blocks. Most of the bigger trees are maybe 150 years old (although there are many much older specimens) so I assume there was clearance for farming around that time and the battle to establish and maintain pasture against the regenerating *scrub* meant pockets, especially in the steeper areas, were able make a recovery. Looking at early aerial photography (via Retrolens) confirms there were certainly times when the regeneration seemed to be winning .... with the help of the gorse! "

The Bennetts bought the property in 1990. Robbie explained how they developed the area.

"Cattle had free rein of the landscape including the established bush and wetland areas. We fenced the bush, all the wet areas and some of the steeper areas and did a fair bit of revegetative planting of the open areas (with only a few pioneering species and not nearly enough next generation species!). There were some areas of grey and crack willow on the edges of the established bush which were surprisingly easy to eliminate by drilling and poisoning.

Blackberry and convolvulus have been controlled around the edges and in the wet areas by regular (and careful) spraying and there were two areas of gorse which I initially attempted to control by hand. It took me several years to figure out that leaving it alone works best. I let it establish into big bushes with lots of space underneath, lopped a few gaps and planted natives amongst them. Lots of natural regen happened as well of course. I lopped the gorse back off them, as needed, for a few years and was amazed how quickly the gorse lost interest and gave up. ... and the seed stopped geminating.

As far as the older bush goes, we have done almost no under planting. I'd like to think the pest control (esp 100 rats pa) has given the seed a better chance and certainly the birds have helped. All the nikau has come from the neighbours place via Air Kereru and the kawakawa has also self introduced. It's certainly a much better understory now than it was 30 years ago!"

It was a great start to the morning when we turned into the drive and noticed a kereru right alongside the car feeding in bush.

We had morning tea on the deck of the Bennett's house alongside the many tui , bellbirds and waxeyes that were feeding from the tui feeder. Being a little higher up than the bush we were able to view where we were going to walk.

Lowland Waikato Forest :View from house

Morning tea on the deck

We were soon walking through the bush, Catherine making up a species list with a group of experts .

The plant in the photo to the left caused an extra look. Catherine explained it was out of its natural range but identified it as *Beilschmiedia tarairi.*

Robbie had experimented with many traps to eliminate possums and rats and it certainly showed with many seedlings germinating on the forest floor.

One old large *Laurelia novae-zealandia* (Pukatea) was still standing with the ground below thick with young plants.

Laurelia novae-zelandiae Mature tree Seedlings

Another special moment was discovering a great example of a living fossil, *Tmesipteris elongata*,an epiphytic hanging fork fern.

Tmesipteris elongata

While Catherine was identifying the Tmesipteris we noticed on the ground some small branches of Rimu and yes they had female cones so on looking up we realised there were some old, fruit producing Rimu Trees.

Another highlight was some great examples of swamp maire.

After lunch, back at Robbie's home, we investigated a more mature block further along the road.

PUKERIMU ECOLOGICAL AREA FIELD TRIP

Paul Cashmore

On 10 April 2022 14 members of Rotorua Botanical Society and Waikato Botanical Society met up at end of Key Rd on southern end of the Mamaku Plateau between Rotorua and Tokoroa. The purpose was to visit a small but significant 113 ha block of virgin podocarp forest remnant on the edge of Pukerimu Stream. This small reserve was set aside in the 1980s along with the nearby and much larger Mokaihaha Ecological Area to the east to preserve some representative examples of the once extensive rimu dominated forests of the Mamaku plateau which at the time were being rapidly clearfelled for radiata pine (Pinus radiata) conversion on a large scale. These two ecological areas were eventually transferred to DOC upon its creation in 1987 for protection in perpetuity.

Today, ironically the radiata pine forest which was planted around the reserve when the native forest was cleared is now itself partly gone, at least along the southern boundary of the reserve. This was quickly converted into productive dairy farmland in very late 1999 with the breaking up of Carter Holt Harvey Forests and the subsequent selling off of large areas of former radiata pine forest on flatter landforms on southern part of the Mamaku plateau for dairy conversion.

So today this reserve is very much land locked with forestry land on its northern boundary and a large dairy farm to the south, from where we accessed the block. The reserve is an arrow shape on the map lying on both sides of the Pukerimu stream which in this section is a deep ignimbrite gorge. The reserve has very different vegetation on both sides of the stream. The smaller part on the northern side has been cleared in the past and is a mixture of regenerating grassland and secondary indigenous scrub and shrubland. The southern side of the stream which is larger is dominated by tall kamahi-(rewarewa) forest along the stream margins and some areas along the southern boundary. The remainder is the more interesting vegetation, being a remnant of virgin podocarp forest and an area of frost flat shrubland which is where we concentrated our botanical survey for the day. It was this forest sequence resulting from pre-European fires that was the reason John Nicholls identified this particular area as an Ecological Area (Nicholls 1978).

We entered the forest in the SW corner into tall kamahi (*Weinmannia racemosa*) dominated forest. Mahoe (*Melicytus ramiflorus*) and putaputaweta (*Carpodetus serratus*) were also common with wheki-ponga (Dicksonia fibrosa) dominant in the subcanopy. Further into the forest we came across a population of dactylanthus (*Dactylanthus taylorii*) which is one of several subpopulations in the reserve. This threatened root parasite that has been

managed for over 25 years in Pukerimu by DOC following on from some of Chris Ecroyd's original dacylanthus research work in the 1980s and early 1990s which occurred at the site. As it was the end of the flowering season we were able to search and find a few remaining flowers to photograph as a treat for those who hadn't seen this unique plant before.

We continued in a NE direction until we ended up amongst large straight rimu (Dacrydium cupressinum) dominated forest with large miro (Prumnopitys ferruginea), matai (Prumnopitys taxifolia) and tanekaha (Phyllocladus trichomanoides) on some open ridges. The understorey was relatively sparse with occasional tree ferns and tawa (Beilschmiedia tawa) in the subcanopy. A good example of the once great forests of the Mamaku plateau.

Our party continued on scrambling across a few small gullies and streams avoiding worst of the supplejack (Ripogonum scandens). Overall the going was fairly easy as the understorey was not dense with the exception of unpalatable tree ferns especially wheki ponga, heruheru (Leptopteris hymenophylloides) and Prince of Wales fern (Leptopteris superba) in damper areas. All this time we were listening to two stags roaring continuously to each other not too far away.

We stopped for lunch on a ridge under a canopy of tall rimu/tawa forest with an open understorey before heading further east into areas of secondary forest with kanuka (Kunzea robusta) and tanekaha (Phyllocladus trichomanoides) dominant. A few toatoa (Phyllocladus toatoa) were noted in one spot also.

From here we traversed more tawa dominated forest before skirting through more secondary forest with kanuka and kohuhu (*Pittosporum tenuifolium*), lancewood *(Pseudopanax crassifolius*) and broadleaf *(Griselinia littoralis*) on edge of Dead Dog Clearing in the eastern corner of the reserve. In this area we noted some epiphytes we hadn't previously seen in reserve including *Pittosporum cornifolium*, and Kirks daisy (Brachylgottis kirkii). We noted a large kanuka with tall, straight trunk, unbranched till in the canopy, that there were discussions about where we eventually found a fallen branchlet of capsules, to confirm the identification. The groundcover in this area is still dominated by dense ferns, mainly heruheru, kiwakiwa (Blechnum fluviatile) and Prince of Wales fern which thrive in these wet conditions.

As we approached the edge of this frost flat ecotone we encountered a range of small leaved shrubs typical of this type of habitat including rohutu (Neomyrtus pedunculatus); Raukaua anomalus; Melicope simplex; a large pokaka (Elaeocarpus hookerianus) and kaikomako (Pennantia corymbosa)– growing in close proximity.

After observing and debating the small leaved shrubs we eventually made our way out into the shrubland proper. The frost flat scrub and shrubland is dominated by manuka (Leptospermum scoparium)- Coprosma taylorae-Spanish heath (Erica lusitanica) scrub with monoao (Dracophyllum subulatum) and koromiko (Hebe stricta) still present. A few wilding Douglas fir (Pseudotsuga menziesii) saplings were still present. These have spread from the neighbouring plantation before it was harvested and turned into a dairy farm.

We inspected some of the small remaining clearings which are not as extensive as they used to be. Here four square sedge (Lepidosperma australe) persists along with Yorkshire fog (Holcus lanatus) and Leucopogon fraseri. Silver

tussock (Poa cita) is now hard to find as clearings have grown over with some Hierochloe redolens still persisting. Under the denser scrub Blechnum penna-marina ssp. alpina is common with some bush rice grass (Microlaena avenacea) on the edges.

We soon broke out onto the dairy farm and followed the fenceline around the southern boundary back to the cars. We noted a few toru (Toronia toru) on a warm face and some larger scattered old radiata pine amongst the native forest which DOC hadn't treated yet. A few more stands of tanekaha were noted along with usual mix of adventives you find on edges including Himalayan honeyscukle (Leycesteria formosa), buddleia (Buddleja davidii) and Spanish heath. When viewed from the farmland on high points it provided some good views north across the reserve across the pole tanekaha and kamahi dominated forest areas back towards the large rimu dominated forest we had walked through earlier towering over it.

In summary, this was a good opportunity for the botanical society to gain an appreciation of what the virgin podocarp forest on the Mamaku plateau looked like and some of the unique threatened plants present within it. Although the understorey is modified by deer browsing in recent decades the reserve received few visitors other than DOC staff and hence has minimal weed issues and recent human impacts. The reserve has future potential with kokako numbers building in the nearby Mokaihaha reserve. This may enable Pukerimu to receive ongoing animal pest control and may one day support kokako again as the population spreads out from Mokaihaha.

While we had a successful trip with a good turnout the day was someone dampened by a post trip COVID-19 mini outbreak with a range of participants contracting COVID on the trip. Thankfully everyone made a full recovery.

References

Nicholls, J.L. 1978a: New Zealand Forest Service ecological area proposals in the Mamaku-Rotorua area. Unpublished report. Forest Research Institute,Rotorua

Figure 1: Tall rimu, matai and miro in canopy with tawa

Figure 2: Lunch on a ridge amongst emergent rimu and tawa canopy

Figure 3: Inspecting the frost flat shrubland of Dead Dog Clearing.

Species List Pukerimu – Mamaku

G. Jane and Rotorua Botanical Society

Author: AP Druce (x) ; P.Cashmore & J Hobbs (1); Rot.Botsoc (2)

Visit Date: 12-10-1978; 2006. 10.4.22

Map: BE36 Grid Ref:
1864325 5767328

2 * Agrostis capillaris browntop
x Alseuosmia macrophylla toropapa; shrubby honeysuckle
2 * Anthoxanthum odoratum sweet vernal
x Aristotelia serrata wineberry; makomako
x Asplenium bulbiferum hen and chickens fern; moku
x Asplenium flaccidum hanging spleenwort;makawe
x Asplenium oblongifolium shining spleenwort
x Asplenium polyodon sickle spleenwort; petako
1 Astelia fragrans bushflax; kakaha
x Astelia microsperma
2 Astelia solandri kowharawhara
x Austroderia fulvida kakaho; toetoe
x Beilschmiedia tawa tawa
2 * Bellardia viscosa tarweed
1 * Betula pendula birch
x Blechnum chambersii nini; lance fern
x Blechnum deltoides
x Blechnum discolor crown fern; piupiu; petipeti
1 Blechnum filiforme Climbing hard fern; thread fern
x Blechnum fluviatile kiwakiwa; kiwikiwi
x Blechnum novae-zelandiae kiokio
x Blechnum penna-marina ssp. alpina alpine blechnum
2 Brachyglottis kirkii var. kirkii Kirks daisy
x Brachyglottis repanda rangiora; bushmans friend
2 * Buddleja davidii summer lilac; buddleia
x Cardamine forsteri
2 Carex banksiana
x Carex breviculmis
x Carex healyi
x Carex horizontalis
2 Carex megalepis
x Carex testacea
x Carex uncinata watu
2 Carex virgata
x Carex zotovii
x Carpodetus serratus putaputaweta; marbleleaf
2 * Cerastium glomeratum annual mouse-eared chickweed
1 * Cirsium arvense Californian thistle
1 * Cirsium vulgare Scotch thistle
x Clematis paniculata clematis; puawhananga
x Coprosma autumnalis raurekau; kanono; mamono
x Coprosma lucida karamu; shining karamu
2 Coprosma propinqua x C. tayloriae
x Coprosma rhamnoides thorny coprosma
x Coprosma robusta karamu
x Coprosma tayloriae
x Cordyline australis cabbage tree; ti-kouka
x Coriaria arborea var. arborea tree tutu
2 * Cortaderia selloana pampas
x Corybas oblongus
2 * Crepis capillaris hawksbeard
2 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

2 * Cytisus scoparius broom
x Dacrycarpus dacrydioides kahikatea, white pine
x Dacrydium cupressinum rimu, red pine
1 Dactylanthus taylorii wood rose
x Dendrobium cunninghamii bamboo orchid
x Deyeuxia avenoides mountain oatgrass
x Dianella nigra blueberry; turutu
x Dichondra repens Mercury Bay weed
x Dicksonia fibrosa wheki-ponga; kuripaka
x Dicksonia squarrosa wheki; harsh tree fern
2 * Digitalis purpurea foxglove
2 Diplazium australe
x Dracophyllum strictum totorwhiti; grass tree
x Dracophyllum subulatum monoao
1 Drosera auriculata
2 * Dryopteris filix-mas male fern
x Earina autumnalis Easter orchid; raupeka
x Earina mucronata spring orchid; peka-a-waka
x Elaeocarpus dentatus var. dentatus hinau
x Elaeocarpus hookerianus pokaka
x Epilobium alsinoides
x Epilobium tenuipes
1 * Erica lusitanica Spanish heath
2 * Erigeron sumatrensis broad-leaved fleabane
2 Fuchsia excorticata fuchsia; kotukutuku
2 Gahnia pauciflora
2 * Gamochaeta coarctata
x Gaultheria antipoda snowberry; tawiniwini
x Gaultheria antipoda x G. paniculata
2 Gaultheria paniculata
x Geniostoma ligustrifolium var. ligustrifolium hangehange; privet
x Geranium brevicaule
1 Geranium microphyllum "mainland" small-leaved crane's bill
x Geranium potentilloides
x Gonocarpus micranthus
x Griselinia littoralis broadleaf; kapuka
2 Griselinia lucida puka
x Hebe stricta var. stricta koromiko
x Hedycarya arborea pigeonwood; porokaiwhiri
x Helichrysum filicaule slender everlasting
x Hierochloe redolens sweet-scented holy grass
x Histiopteris incisa water fern
2 * Holcus lanatus Yorkshire fog
x Hymenophyllum demissum piripiri; irirangi
x Hymenophyllum dilatatum lop-sided filmy fern
x Hymenophyllum flabellatum fan fern
1 Hymenophyllum flexuosum
x Hymenophyllum frankliniae
2 Hymenophyllum nephrophyllum kidney fern; raurenga
x Hymenophyllum rarum wire-stemmed filmy fern
x Hymenophyllum revolutum
x Hymenophyllum sanguinolentum blood-scented filmy fern
x Hymenophyllum scabrum coarse-haired filmy fern
2 * Hypochaeris radicata catsear
x Isolepis reticularis
x Ixerba brexioides tawari
2 * Jacobaea vulgaris ragwort
2 * Juncus tenuis ssp. tenuis track rush
x Knightia excelsa rewarewa; NZ honeysuckle
x Kunzea ericoides kanuka; white teatree
x Lagenophora pumila

x Lepidosperma australe four square
1 Leptecophylla juniperina ssp. juniperina
x Leptopteris hymenophylloides single crepe fern; heruheru
x Leptopteris hymenophylloides x L. superba
x Leptopteris superba Prince of Wales feather
x Leptospermum scoparium var. scoparium manuka; red teatree
2 * Leucanthemum vulgare oxeye daisy
x Leucopogon fasciculatus mingimingi; kaikaitau
x Leucopogon fraseri patotara
1 * Leycesteria formosa himalayan honeysuckle
x Lindsaea trichomanoides
2 Lobelia angulata panakenake
x Loxogramme dictyopteris sexy fern
2 Luzula decipiens
1 Lycopodium deuterodensum puakarimu
x Lycopodium fastigiatum mountain clubmoss
x Lycopodium volubile waewae-koukou; climbing clubmoss
x Melicope simplex poataniwha
1 Melicytus lanceolatus var. lancelolatus narrow-leaved mahoe;mahoe-wao
x Melicytus ramiflorus ssp.ramiflorus mahoe
1 Metrosideros colensoi
x Metrosideros diffusa white climbing rata; akatea
x Microlaena avenacea bush rice grass; oat grass
2 Microlaena stipoides forest rice grass
x Microsorum pustulatum ssp. pustulatum hounds tongue; kowaowao
2 Microsorum scandens mokimoki; fragrant fern
x Microtis unifolia onion orchid
2 Muehlenbeckia australis poheuhue
1 * Mycelis muralis wall lettuce
x Myrsine australis red matipo; mapou
x Myrsine salicina toro
x Neomyrtus pedunculata rohutu
x Nestegis lanceolata white maire
x Notogrammitis billardierei common strap fern
x Notogrammitis heterophylla
x Oxalis exilis yellow oxalis; creeping oxalis
2 Paesia scaberula scented fern; matata; ring fern
2 Parsonsia capsularis var. capsularis small flowered jasmine; akakiore
x Pellaea rotundifolia tarawera; button fern
x Pennantia corymbosa kaikomako
2 Phlegmariurus billardiereanum
x Phlegmariurus varius hanging clubmoss; iwituna
Phyllocladus toatoa
Phyllocladus trichomanoides toatoa
1 * Pinus contorta var. contorta lodgepole pine; contorta pine
1 * Pinus pinaster ssp. pinaster maritime pine
1 * Pinus radiata Monterey pine; radiata
1 Pittosporum colensoi
x Pittosporum tenuifolium black matipo; kohuhu
x Pneumatopteris pennigera gully fern; pakau; pakauroharoha
x Poa cita silver tussock
x Podocarpus laetus Hall's totara; thin bark totara
x Podocarpus totara var. totara totara
1 Polystichum vestitum prickly shield fern; punui
1 Polystichum wawranum common shield fern;pikopiko
1 * Populus yunnanensis Yunnan poplar
x Prumnopitys ferruginea miro; brown pine
x Prumnopitys taxifolia matai; black pine
2 * Prunella vulgaris selfheal
x Pseudopanax arboreus five finger; puhou; whaupaku
x Pseudopanax crassifolius lancewood; horoeka

1 * Pseudotsuga menziesii var menzesii Douglas fir
x Pseudowintera axillaris horopito
x Pseudowintera colorata pepperwood; mountain horopito
x Pteridium esculentum bracken; rauaruhe
x Pyrrosia elaegnifolia leather-leaf fern
x Ranunculus reflexus maruru; hairy buttercup
x Raukaua anomalus whauwhaupaku
2 Raukaua edgerleyi raukawa
x Ripogonum scandens supplejack; kareao
x Rubus australis bush lawyer
x Rubus cissoides bush lawyer; tataramoa
2 Rubus schmidelioides var. schmidelioides bush lawyer; tataramoa
x Rumohra adiantiformis butcher's fern
x Rytidosperma gracile forest fairy grass
x Schefflera digitata pate; patae; kotete
2 Senecio bipinnatisectus Australian fireweed
1 Solanum americanum small-flowered nightshade
1 Solanum aviculare var. aviculare poroporo
2 * Sonchus oleraceus sow thistle; puha; puka
2 Streblus heterophyllus turepo; milk tree
x Thelymitra longifolia white sun orchid
x Tmesipteris elongata
1 Tmesipteris tannensis chain fern; fork fern
1 Toronia toru toru
x Trichomanes venosum veined bristle fern
2 * Trifolium pratense red clover
2 * Trifolium repens white clover
x Urtica sykesii stinging nettle
x Weinmannia racemosa kamahi; towai; tawhero

A big thankyou to all the contributors of the newsletter. The next newsletter will be published in June 2023.
Meri Kirihimete me te Hape Nu la !