



## **PRESIDENT'S REPORT AUTUMN 2023**

Greetings to all Friends of the Botanic Gardens and I hope you are enjoying this lovely autumnal weather we've been experiencing. Winter will be a rude shock to us when it comes! Meanwhile do take time to come and enjoy the glorious changing leaf colours in the trees throughout the Gardens.

We've had a very busy last few months, particularly around the Mona Vale Edwardian Garden Party, which Jeanette Christensen and her team organised, creating a wonderful event enjoyed by all who attended. There is a more detailed report on this event later in this newsletter. Along with the amount raised from this event and with some funding from the Friends we are contributing \$50,000 towards the restoration of the bathhouse. We presented our submission to the Council on bringing the repair date back from 2029 to 2023/2024 at a Council meeting in late April, and hope with this show of funding assistance that we may meet with success in our goal.

The summer season has been a successful one for the Guides with so many visitors to the Botanic Gardens and Mona Vale who have made the most of the free guided walks, along with locals. There have also been many tour groups who have been taken on guided walks, which has been a challenge for Pat Whitman to coordinate at times, but she has done a great job with this. Thanks, Pat!

We have also improved our signage for the guided tours as most visitors come in from the Rolleston Avenue end of the Gardens and there has been some confusion between our guided walks and the Caterpillar Garden Tours run by Christchurch Attractions. So, a permanent sign is now on a post near the Peacock Fountain to let people know there are free guided walks that leave from the Kiosk.

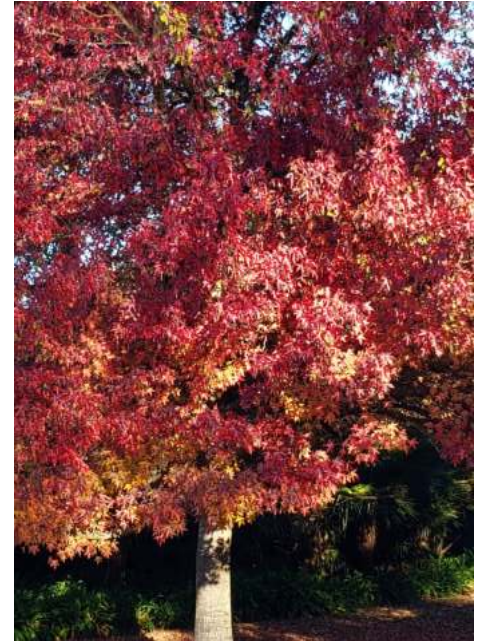
Our free walks have now finished for the season and will recommence in October.

We continue to provide free brochures for visitors to the Gardens including ones on Commemorative Trees in the Gardens, Mona Vale gardens and Rongai Maori Medicinal Plants. These are available in the Kiosk and the Ilex Visitor Information Centre.

The recipient of our Helen Irvine Trainee Scholarship Fund, Breanna Hill, has been successful in getting a job in the Conservatories, so congratulations to Breanna! The remainder of her scholarship funding (6 months) is going to the next trainee who has already started in the Gardens.

We've had some interesting talks in the last few months: including from Zane Lazare, the ranger working in the Red Zone; Colin McKenzie the CEO of New Zealand Natural Fibres, who spoke about hemp being a viable NZ product for use in the building industry; and most recently a talk on growing healthy, vibrant rhododendrons from Lisa Williams, owner of Rhododirect. More exciting topics are lined up for the next few months, so keep an eye on your email Inbox for news on these.

You may have noticed that the cost of the larger plants and natives in our plant stall has gone up recently, from \$5 to \$7. The price increase reflects that these plants take a year of care before being ready for sale. They are still great value and provide all sorts of unusual plants for your garden!



Finally, we say a sad farewell to Jean Gluyas, who died recently. Jean led the Thursday propagating team for many years, and banked the money from the plant stand every week. She was made a life member of the Friends in 2019 to acknowledge her long standing contribution. Our condolences go out to her family. She will be missed.

But as we lose some members, we also continue to gain new members and requests to help with volunteering. It's great to continue this growth, so keep spreading the word about our group who are here to support the ongoing work of the Gardens staff.

**Jane Cowan-Harris: President of the Friends of the Botanic Gardens**

## A CALL FOR GUIDES

Guided walks in the Christchurch Botanic Gardens have been an important component of the work of the Friends for over 20 years. Trained Guides enjoy taking visitors around the Gardens on their free daily walks from October through until the end of April, highlighting significant and diverse plants and telling their stories, and the story of the Gardens.

In addition, Guides are available to lead group walks as required, charging \$5pp for locals and \$10pp for tourists, thereby raising money for the Friends to support the work of the Gardens.

This season, which ends on April 30<sup>th</sup>, we have been busy with the return of tourists, and we are keen to recruit new Guides to join our team. Do you have a passion for plants, enjoy people and learning, and consider yourself a team player? If this is you, and you think you might be interested in finding out more about becoming a Botanic Gardens Guide, then please contact Guides Coordinator, Susan Lawrence, [susan.l@xtra.co.nz](mailto:susan.l@xtra.co.nz) to find out more

## PLANT STAND NOTICE

The Plant Stand will be closed for a month from Monday 26<sup>th</sup> June to Friday 29<sup>th</sup> July to allow our dedicated propagators to have a short break and allow stock time to establish for the spring flush.

### NOTES FROM THE PLANT STAND

There can be no doubt that Christchurch is a city of gardeners if the popularity of our plant stand is any indication.

Sales from this little stand near the kiosk have continued to boom all year with some months taking more than \$1000 a week. There have also been several very successful "pop-up-sales" when stock allowed. Our total earnings from plant sales since reopening in August last year have been over \$36,000! This is hardly surprising when you frequently hear comments from people who say they always check the stand, as the plants are of such good quality and there's often some little gem to be had.

It has been a challenge sometimes keeping the stand filled from the nursery and thanks must go to those who diligently check and restock almost daily.

The propagating teams have been working very hard all year, through rain, wind and heat waves to keep up with the demand and it's thanks to the dedication and experience of the three teams that we can keep this major source of our funding going so well.

Each team has a different focus, with Tuesday's group focusing on trees and shrubs and NZ natives, Wednesday's group produce wonderful perennials, bulbs and popular annuals and Thursday's group focuses more on perennials, old fashioned garden favourites and treasures. Although there is always some overlap if something special turns up.

A lot of the material is sourced from the Gardens – as both cuttings, seeds, and excess display stock. Our sincere thanks go to the Garden staff for their willingness to help and contribute to our nursery.

A very big thank you to all those volunteers who keep this wonderful tradition going, to support the Gardens, and of course to enjoy each other's company in the fundamental pleasure of growing more plants!

**Carol Halstead: Treasurer for Friends of the Botanic Gardens**





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Right: A tuberous begonia flower, snapped near the Peacock Fountain this autumn.



2023 Marches on and another Friends' newsletter is about to cross the finish line — showcasing once again the high volume of activity quietly bubbling away — people just quietly 'getting on with it'. Good salt of the Earth people, producing fantastic results, growing plants, raising funds, planting trees, researching, educating and guiding. The Friends are doing a great job!

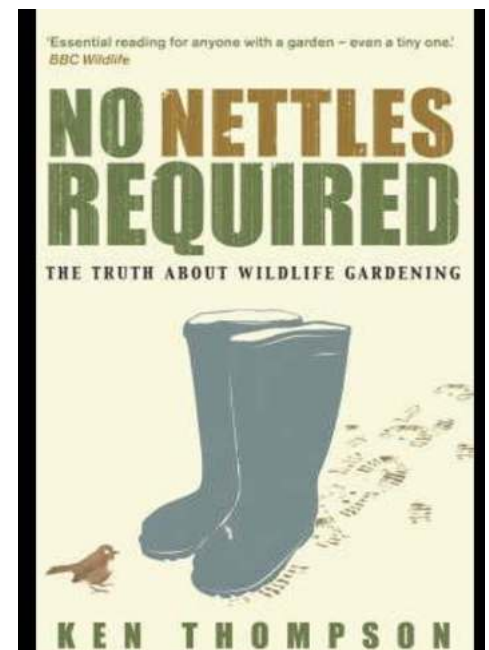
There is a little bit of a paleo theme running through some of the articles this autumn. Enough to cause me to look the word paleo up. According to Wikipedia, it means "older or ancient, especially relating to geological time". Breanna Hill, touches on the work of 'paleoecologists', who study ancient ecological systems, and how they have recently informed conservationists on where best to establish new Kakapo colonies. Alan Morgan in his review of 'The road to Gondwana', tells us about the work of paleobotanists and how their work on *Glossopteris* fossils has helped unravel the mysteries of this past super-continent, and right here in our own Botanic Gardens, Matt Beuzenberg outlines the latest plantings in the section being developed as the Gondwana Collection; educating us about the ancient history of the home we call Earth.

Breanna writes about a number of the talks at the Ecological Society Conference last December, one of which was on urban ecology, and the concept of a green corridor. For those who might be interested in a good read on what urban ecology might mean, I can recommend a very good book on the topic — "No Nettles Required", by Ken Thompson, it is British based and so the wild life isn't quite the same aka, we don't have to worry about badgers digging up the lawn! However the concepts written about in the book can be applied to any garden anywhere. One of the surprising revelations from the book, was that biodiversity can often be greater in the suburbs than in the countryside, the reason being that farmland is often given over to monoculture.

Happy reading!

**Annette Burnett:**

**Editor for Friends of the Botanic Gardens Newsletter.**



No Nettles Required: A recommended read for anyone interested in the biodiversity of their own back yard.

## MONA VALE BATHHOUSE GARDEN PARTY 12 MARCH 2023

After a year's planning and preparation, Sunday March 12<sup>th</sup> dawned clear and sunny for our long-awaited Edwardian Garden Party to raise funds for the historic Bathhouse at Mona Vale, languishing in a state of disrepair since the Christchurch earthquakes. A project of the Friends of the Botanic Gardens, it was driven by a desire to see the restoration date brought forward a few years and the Bathhouse restored to its former glory.

Those who attended very much entered into the spirit of the occasion with the majority dressing in Edwardian attire and taking advantage of the activities on offer – croquet on the lawn; boating on the Avon in front of the Homestead; a botanical art sale upstairs; together with musical items presented on the balcony. Prizes were awarded for the most impressive Edwardian dress on the day. A vintage car at the entrance added to the ambience as sparkling wine and canapes were served.

Phil and Chrissy Mauger, mayor and mayoress of Christchurch were in attendance along with the Labour MP for Ilam Sarah Pallet. Speeches highlighted something of the history of the Bathhouse along with the challenge to see it restored before it deteriorated further. Funds raised were supplemented by a sizeable contribution from the Friends of the Botanic Gardens, to a combined total of \$50,000; but equally important was the profile that the occasion raised with interest from many quarters and unexpected donations.

The Friends have presented further submissions to Christchurch City Council to keep the project moving, and they are very grateful for all the support and encouragement that has come their way in the process.

A power point presentation of the occasion can be viewed on the Friends website, [www.friendschchbotanicgardens.org.nz](http://www.friendschchbotanicgardens.org.nz).

**Susan Lawrence**  
**On behalf of the Mona Vale Sub-committee**

Top Photo: Mayor Phil Mauger and his wife Chrissy cutting into the garden party cake.

Middle photo: Friends President Jane, speaking at the party.

Bottom photo: Friends enjoying the Edwardian garden party at the Mona Vale Homestead.





## BOTANIC GARDENS DIRECTOR'S UPDATE

Kia ora and welcome to the autumn newsletter. We have just been hit with a heavy autumn downpour as I am writing these notes. The rain was cold as I cycled to the Gardens this morning. While wet under-foot the Gardens are looking good.

Grant and Richard continue to add plants to the rock garden, the latest extension of the crevice garden is establishing well. I am sorry to say that occasionally we do get some plants stolen there, being small plants we can't really guard against it. Sadly the same happened recently in the Alpine House at 5:00 in the morning. While caught on camera the detail was not sufficient for the police to be able to prosecute. Sadly, there are a few individuals who don't respect the Botanic Gardens collection. We will continue to do our best to add and replace plants in the display areas, so that we can all enjoy seeing and learning from them.

The winter bedding is establishing well, I always look forward to the new designs and how they perform, the team do such a wonderful job with it. The riverbank by the Woodland Bridge has been repaired as over the years more and more of it has eroded. We continue to work on our path network, repairing edging and also testing a metal edge in the Central Rose Garden. David has propagated all the irises in the circular bed by the Christ's College Lynch Gate and we are leaving the bed empty for a few months while we ensure that all the weeds have been controlled.

Our apology for the closure of areas linked to the Museum work. As you know, the Museum have started major development work, which means for the next 5 years you won't be able to use the path next to the Museum and around the Robert McDougall Gallery. As the Museum is bordered by the Gardens, on two sides, we need to support them with access. I am sure in due course when the work is completed, we will all enjoy a much better Canterbury Museum.

The Botanic Gardens entrance that is adjacent to the Museum, and the pedestrian crossing at Worcester Boulevard have been relocated to align with the Peacock Fountain and the Arts Centre archway. This allows us to get the gate and posts refurbished and painted before being used in the new entrance, as was signalled in the approved 2017 Botanic Gardens Spatial Plan.

You will notice that we planted a tree to celebrate the Coronation of Their Majesties, King Charles III and Queen Camilla. We chose a golden totara now central in the woodland bridge lawn. (Between the Peace Bell and the river) About 40 Christchurch schools also planted a tree for this occasion.

Heidi is enjoying her new role in the Heritage Rose Garden and Matt Beuzenberg continues to take a lead in looking after the palm area, while Guillaume is away on secondment. Ben in turn is enjoying Heidi's previous role at Mona Vale and we are just finalising the new appointment in Mona Vale for Ben's previous role. Marcella has left us this summer and Breanna was successful in replacing her role in the Conservatories. Breanna was the Helen Irvine and Friends of the Christchurch Botanic Gardens Scholarship trainee, so it is due to your support that we have been able to train her and now give her a permanent role within the Gardens, thank you all so much.

**Wolfgang Bopp**

**Director of the Botanic Gardens**



Above: A Golden totara, chosen to commemorate the Coronation of King Charles III and Queen Camilla



## NEW ADDITIONS TO THE GONDWANA GARDEN

Over the past year we have been adding new specimens to the Gondwana Garden around the Hall Lawn in the northwest corner of the Christchurch Botanic Gardens. The collection is themed around ancient family groups, and their genera located in the Southern Hemisphere. Scattered plantings have been occurring over the past 20 years or so. Notable plants which have been planted include two Wollemi pines (*Wollemia nobilis*) and a range of tree ferns: *Sphaeropteris cooperi* (Syn. *Cyathea cooperi*); *Sphaeropteris excelsa* (syn. *Cyathea brownii*); and *Dicksonia sellowiana*. These plants are now well established and growing well in the collection. We have been planting more specimens recently to improve the collection numbers and diversity.

In the Podocarpaceae family we have planted *Prumnopitys ladei* and *Podocarpus lawrencei*. *Prumnopitys ladei* is only naturally found on the Atherton Tablelands in Queensland, Australia. It should eventually reach an approximate height of ten metres. The foliage of the species is fern-like and is glossy, looking attractive in the rain. Female trees will have a fleshy purple-black fruit, however time will tell as to whether the specimen is male or female. *Podocarpus lawrencei* is also an Australian species however it naturally occurs in the southeast of the country. Also known as mountain plum pine, it grows in alpine areas above the tree-line. It can grow into a small tree however normally will be a spreading low-growing shrub. The plant is very similar to the New Zealand snow totara (*Podocarpus nivalis*).

Also in the Podocarpaceae family but still under debate is the *Phyllocladus* genus. Some botanists put *Phyllocladus* in its own family, Phyllocladaceae. We have planted *Phyllocladus* 'North Cape' and *Phyllocladus aspleniifolius*. *Phyllocladus* 'North Cape' is an interesting plant, as it is distinct from *P. trichomanoides*. As stated on the New Zealand Plant Conservation Network website (22 April 2023) it is different due to its "shorter stature and spreading growth habit, longer phyllodes, larger fruits and longer fruiting season." It also grows true from seed. This plant is awaiting a formal description from botanists. *Phyllocladus aspleniifolius* is a tree growing up to 20 metres and is from Tasmania, Australia. It grows in diverse forests habitats. Whilst *P. aspleniifolius* is very common and of least concern it is exploited due to its timber. Interestingly, all *Phyllocladus* species have cladodes which functionally replace the leaves and are actually flattened stems which photosynthesise.

We also have planted two members of the Araucariaceae family, *Araucaria cunninghamii* and *Araucaria bidwillii*. Three of the former have been planted and six of the latter. *Araucaria cunninghamii* (hoop pine) is a large tree of New South Wales and Queensland, Australia. It also occurs in New Guinea. It is not uncommon in the wild and is also widely planted for ornamental and commercial purposes. It is an important timber tree in Australia. There is a large mature specimen on the Ilex Lawn near the café. *A. bidwillii* (bunya-bunya pine) is also a large tree restricted to Queensland Australia. The bunya-bunya pine is of huge cultural significance to the indigenous population, it is sacred and its ripe cones contain edible kernels. There is a large one on the Ilex lawn near the Central Rose Garden. We have also been busy increasing the number of ferns in the collection, most notably the tree ferns.

We have moved the tree ferns *Alsophila smithii* and *Alsophila australis* (*Alsophila* being synonymous with *Cyathea*) of Cyatheaceae, and *Dicksonia squarrosa* and *Dicksonia fibrosa* of Dicksoniaceae into the Gondwanan Garden. *Alsophila smithii*, *Dicksonia fibrosa* and *D. squarrosa* are all New Zealand native plants, and fairly common in the bush. *Alsophila australis* is the exception, being an Australian native. It grows along the eastern coast, being particularly abundant in the south-eastern corner of the continent. It is cold hardy and robust.

### SOME GONDWANAN TAXONOMIES

Both Araucariaceae and Podocarpaceae are members of the Gymnosperm clade, a group of seed-bearing plants which predate flowering plants (Angiosperms), another group which predate flowering plants are the ferns (Polypodiopsida). Both of these groups fit into our management plan and theme around 'Gondwanan plants'.

First right photo: *Araucaria cunninghamii* (hoop pine)

Second right photo: *Araucaria bidwillii* (bunya bunya pine)





## THANK YOU TREE TECH!

We have shifted a number of large grade tree ferns into the collection from other sources within the Botanic Gardens.

I would like to thank Tree Tech for their help shifting the larger specimens, without whom it would not have been possible.



If you visit the area today you will notice many renga-renga lilies (*Arthropodium cirratum*) covering the ground. These are currently serving the purpose of a weed suppressant and frost protection for smaller ferns. However the renga-rengas are monocots and are of more recent evolutionary origin, they therefore do not fit the theme of Gondwanan plants. Eventually, all will need to be removed and fortunately there are many groundcover fern options to replant with. We have added *Asplenium oblongifolium*, *Asplenium bulbiferum* and *Austroblechnum penna-marina* in the border to pre-existing clusters of *Lomaria discolor* (syn *Blechnum discolor*) One day this area will be a mass with many ferns.

So in conclusion, progress is being made on this collection. With new additions being added all the time. The result of shifting the tree ferns are spectacular and really transformed this area overnight. The young trees will take longer to mature of course, but it is worth starting them now.

**Matt Beuzenberg:**

**Collection Curator,  
Christchurch Botanic Gardens**



Shifting *Alsophila australis* to the Gondwana Garden via Tree Spade



New: *Dicksonia fibrosa* looking great in its new home in the Gondwana section

## NEW ZEALAND ECOLOGICAL SOCIETY CONFERENCE

Before Christmas I attended a conference at Otago University, hosted by The New Zealand Ecological Society. The themes for 2022 were: Ecology in a Warming World; Predator Free and Beyond; and Working Together. Climate change and predator free themes speak for themselves but Working Together? It is easier said than done and yet it is the basis of Ecology. Ecology is the in between, the interactions, it links 'ologies' together.

A couple of the most thought-provoking symposiums I sat in on were Palaeoecology of Aotearoa and Urban Ecology.

### Paleoecology

Paleoecologists research the ecology of the past; studying ancient soils and rocks, fossil plants, pollen and seeds, and the environment at the time they were living. This gives us a glimpse into prehuman history of climates, including temperature, wind & ocean currents and helps us shape what we see today and possibly in the future. For example, a 2018 study (1) made it possible to map suitable habitat for releasing kakapo into remnant forest today. Flora fossils that were discovered told us what kakapo were feeding on, where and at what altitude they preferred to roam.

### Urban Ecology

The Urban Ecology studies had been centred in Auckland and Dunedin but had a huge relevance to Christchurch's layout and greenspace resources. An Otago University student created a 'Garden Star' point system, much like the 'Home Star' rating for the environmental performance of houses. At this stage it is a research project and not released to the public, but, in it, a garden can be ranked on elements of quality, sustainability, greenspace connectivity and pest control. We have the perfect opportunity for greening the greyscape of our city, no matter how small your garden is. Small garden patches can become suburban green corridors, connecting our own Botanic Gardens to Banks Peninsula and our surrounding wetlands. Some of our local Lincoln based biodiversity promoters write about this, for example: Doody et al, "Residential gardens consequently have the potential to play a major role in the conservation of urban biodiversity, especially for species suited to the functions and size of gardens". (2)

### Sinclair Wetlands

On the last day of the conference I was privileged to visit the Sinclair Wetlands, which are internationally renowned and located south-west of Dunedin. The visit was organised by Travis Ingham, a professor at Otago University. Access was by canoe and, having little canoeing experience under my belt, I was thankful to be paired with Travis who was a regular to the site. Travis took the small group of us to meet with Tumai Cassidy who, I could tell, has a true passion for this place. Tumai showed us the latest boardwalk he was helping to build. Building, track maintenance, planting and maintaining are all mammoth tasks here.

Mahinga Kai values are the most important driver to reinstate the Sinclair Wetlands. Native plantings replenish both soil and water quality. The end goal of the restoration is to one day achieve the same populations of Patiki (Flounder), Kōkopu (Fish species), Inanga (Whitebait) and Tuna (Longfin & Shortfin Eel) as before the land was drained. Tumai told us a story of baskets as big as your head full of Kahikatea berries once collected here.

While some pockets of planting have covered up the tales of the past, the view from above is a little more obvious. Early settlers drained a large part of the area for farmland, the linear parcels remain today but eventually will be flooded as the water returns. The draining ceased in 1960 with Sinclair deciding in 1984 to gift the land to Ducks Unlimited New Zealand Limited, who are a wetland and waterfowl conservation group. However, in 1986 the Queen Elizabeth II National Trust took ownership and in 1998 the wetlands were returned to Ngāi Tahu as part of the Ngāi Tahu Claim Settlement Act.



Photos are of the Sinclair Wetlands:

Right: Group paddle & walk around Sinclair Wetlands, led by Travis Ingham (Far right)

Tumai is 3rd from the left, (above Breanna).





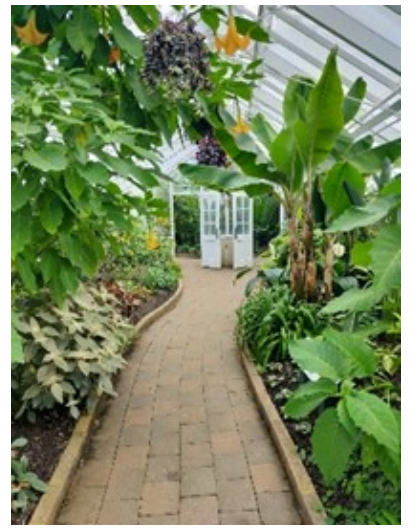
## Dunedin Botanic Gardens

I couldn't miss a quick visit to the Dunedin Botanic Gardens. The rose garden was getting a lot of attention and the lawns were freshly mowed. I found the conservatory which was tucked away and it immediately became a favourite feature.

Which is a great lead into an exciting announcement, that you will now find me permanently in our conservatories. I am looking forward to increasing my plant knowledge and display skills with some of our more unusual tropical flora.

- 1) Lentini, P et al. *Biological Conservation* vol 217 pp 157-165 "Introducing fossil records to inform reintroduction of the kakapo as a refugee species"
- 2) Doody, B et al. *Biodiversity and Conservation* 19 (2010), pp 1385-1400 "Urban Realities: the contribution of residential gardens to the conservation of urban forest remnants"

**Breanna Hill**  
**Conservatories Officer**



## ARTICLES

### **FORGOTTEN' NATIVE TREES OF CHRISTCHURCH**

#### ***RHOPALOSTYLIS SAPIDA.***

#### **NIKAU.**

Suggesting that nikau is a forgotten tree is interesting, as it is well known on the West Coast of the South Island from Wanganui Bluff north, and less well known on the east coast of the South Island. Wanganui Bluff and Motunau in North Canterbury are approximately the same latitude. Therefore, it is interesting to note that the southernmost place nikau have been recorded growing naturally is Banks Peninsula.

The aptly named Nikau Palm Gully is east of Akaroa adjacent to the Dan Rogers Marine Reserve. It was privately owned but, by agreement with DOC, it was made a Scenic Reserve. Later, additional land was protected to make the area larger.

A check on INaturalist shows several records of nikau at Nikau Palm Valley and a few at Long Bay and individuals at other sites in the wider area and in Akaroa. Two records are of it growing in Christchurch near the Port Hills. It is offered for sale in Christchurch, so it is safe to assume there are more around the city.

There are no records (that I have located), indicating it may have grown naturally in Christchurch around the sheltered valleys of the Port Hills. Cheeseman (1925) states "it is localised and grows not far from the coast and can be "localised" rather than widespread".

How it originally got to this single valley on Banks Peninsula we may never know. Kereru are known to eat the fruit and are quite capable of spreading the seed considerable distances (flights of up to 60km have been recorded), which may answer the question why other sightings nearby have been made. With the reintroduction of Kereru onto Banks Peninsula we may see more distribution in the future.

Knowing this perhaps there is an argument that plants grown from seed from Nikau Palm Valley could be used more widely in various locations around Christchurch. Far better that than people planting Nikau grown from



Nikau growing in bush. Wharariki Beach walk near Cape Farewell.



Nikau fruit.



Nikau flowers

North Island seed.

It would be a long-term project, growing from seed, planting out and waiting for them, as they grow slowly, to reach a reasonable size to be seen and make an impact in our landscape.

Nikau is the world's southernmost naturally growing palm which is an exciting claim to fame. It prefers to grow in the understory where it is protected from the weather and frost until it gets tougher and can tolerate harder conditions.

It grows on a single stem with the long leaves having a large sheathing at the base forming a distinctive and attractive bulbous base to the crown. It has been described as looking like a large feather duster.

The lovely floral inflorescence forms at the base of the leaves, enclosed in two large spathes up to 60cm long which break off when the inflorescence is ready to flower. Masses of male and female flowers, ranging from pink to lilac, are crowded onto the branched stems. These are followed by oblong red fruit enclosing a pale coloured seed.

Such plantings would be quite special for Christchurch.

**Alan Jolliffe**



## BOOK REVIEW

### **THE ROAD TO GONDWANA**

**BILL MORRIS**

#### **In Search of the lost Supercontinent**

Just when I thought we had the whole story of Gondwana from the flurry of recent publications, another has appeared taking a new stance — from long before Gondwana.

The title sums it up and it starts from around 750 million years ago (mya) with the one only land mass called Rodinia surrounded by a sea called Mirovia. Oxygen levels were very low supporting only very primitive life, mostly single celled bacteria.

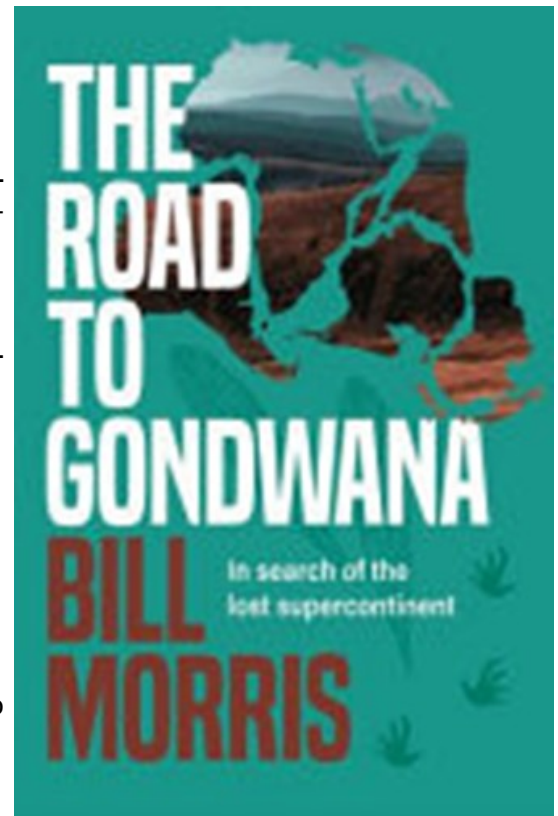
Bill Morris is a writer, documentary film maker, and musician based in Port Chalmers — in short a professional communicator with a passion for the natural world. His writing and film making was for the Natural History New Zealand unit and the BBC. His scientific background is evident in the thoroughness of his research.

The book is mostly in chapters of large chunks of time (aeons or epochs) starting some 750 mya which is already well along the geochronological scale. The breakup of Rodinia led to a period of roaming land masses like slow moving bumper boats temporarily coalescing into two (maybe more) — Gondwana in the south and Laurasia to the north. The story of the breakup of Gondwana into its descendant continents — Africa, South America, Antarctica, India, Zealandia etc. is well known and mind boggling. While our understanding has been unfolding for a couple of centuries it wasn't until the mid 1950s that the process of continental drift and its driver, plate tectonics, was proven.

One of the signatures of Gondwana is the presence of Glossopteris fossils. Glossopteris is a genus of plants and trees that bridge the gap between ferns and gymnosperms (conifers), previously called 'seed ferns' (producing seeds, not spores) but more recently referred to as a 'primitive gymnosperm'. Clever folk called Paleobotanists have managed to identify around 100 species from the prolific fossil beds in all of the Gondwana remnants including Antarctica. Captain Scott on his fatal journey from the South Pole was dragging 16kg of rock samples including Glossopteris fossils (which are now in the British museum).

The author in his research travels, geologist's hammer in hand, successfully found Glossopteris fossils in Africa, India, Argentina, The Falkland Islands, Australia and the Takatimu Mountains in Southland New Zealand, i.e., all the Gondwanan remnants except Antarctica, having taken Scott's find for granted

The importance of the Glossopteris forests on the evolution of the earth is profound. The CO<sub>2</sub> levels were very high at that time which encouraged rampant plant growth, which over time locked up vast amounts of carbon. This released the oxygen molecule which enabled the development of our animal kingdom — dinosaurs and the like.





The Glossopteris forests suffered a slow but total mass extinction about 260 mya, thought to be the result of 'climate change' — the climate became dryer. The deposits (sequestered Carbon) form the bulk of our oil, gas and coal deposits which we are burning to reverse the process.

The final chapter, the epilogue, looks forward 265 million years, projecting the result of tectonic movement over that time span. The earth will be a very different place with the Atlantic Ocean and the Mediterranean disappearing and land masses merging. Our lifetime is a mere blink in the geochronological timescale.

While the book is packed with information it is an easy read with lots of narratives. It has 20 pages of references, a 10-page glossary and a complete index. It is a book to own and to refer back to.

**Alan Morgan**



Top photo: A Glossopteris fossil, one of Captain Scott's from Antarctica

Left photo: Alan Morgan's own Australian Glossopteris fossil from Hettie's Rock Shop.



## FRIENDS CONTACTS

### **Committee**

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