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Pinus parviflora
'Bergman' is framed
by *Acer palmatum*
'Chishio Improved'
and spring flowering
groundcovers.

Below, *Pinus parviflora*
'Glauca Nana' grows
alongside *Acer*
palmatum 'Shaina'.



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Cover photo: Hostas and oak-leaf hydrangeas grow alongside *Chamaecyparis nootkatensis* 'Pendula' in Gerald Kral's garden in Rochester, New York. Photo by Anne Brennan.

Visiting the Conifers of New Zealand, Part 2

New Caledonia's botanical treasures treat the tour group as their trip winds down

Photos and text by Daniel Luscombe

In our last issue, we read about the first part of Daniel Luscombe's trip to New Zealand, Northland, and New Caledonia in 2002. With the Araucariaceae Symposium behind him, Daniel is touring New Caledonia with a small group of conference attendees to see these and other conifers in their native settings.

On March 22nd, after our terrifying descent from Mont Do on rain-slicked roads, we went to the nursery of the Forest Service of the South Province. They had experimented with grafting various species of *Araucaria* and *Agathis*, and all of the native species were included in their collection. Two striking *Podocarpus subtropicalis* – one female with cones and one male – from China were among the most memorable trees.

After a brief stop at our hotel, we headed back out for cocktails at the residence of the President of the South Provinces, where I also met the English ambassador.

The next morning we set off for the Rivere Bleue Park. First we observed some reforestation areas of

Agathis and *Araucaria* and a seed orchard of *Agathis ovata* and *A. lanceolata*. The latter displayed amazing blue new growth and developing male and female cones. The staff had also planted an orchard of *A. subulata* (one of the *Araucaria* we didn't see in the wild) from seed collected from trees felled on Mont Dzumac.

We then went out into the park. Abundant scrubby maquis flora (including *Dacrydium araucarioides* as the only noticeable conifer) suddenly changed into tropical forest; the variety of soil types in New Caledonia creates these



The seeds of *Retrophyllum minor* float, so plants are found along riverbanks as shown here.

abrupt transitions. We stopped to see the largest known *Agathis lanceolata*, which was massive but could not compare with the trees in New Zealand. Walkways through the forest were created to protect the trees. A strange palm turned out to be *Campecarpus fulcitus*, one of the stilt palms endemic to New Caledonia.

We were honored by a visit from one of the world's rarest birds, the Cagou, which is the national bird of New Caledonia. At one point there were fewer than 50 in the world.

When a steady rain began to fall, we stopped for lunch inside some thatched huts and wandered down to the river. Here we found *Araucaria bernieri*, *Libocedrus yateensis*, *Podocarpus novae-caledoniae* and the yellow-flowered *Xanthostemon myrtifolium*. From there we hiked up from the river to observe the parasitic plant *Daenikera corallina* alongside a small *Prumnopitys ferruginoides*, some *Dacrydium lycopodioides* and lots of *Nepenthes* sp. Another amazing day left us very tired!

On March 24th, we left at 6.30 AM to visit Col de Yate to see *Agathis ovata*, and the roads were terrifying. (Think of the film "The Italian Job.") The trees are small, stout, flat-headed plants that look very strange. Growing with them were *Dacrydium araucarioides*.

Next we drove down through the "town" of Yate, which was actually no more than a few shacks. At the waterfall Cascade de Wadiana, we could look across the bay at the best wild population of *Araucaria columnaris* on the mainland. We spent a few minutes taking photos before boarding the bus and heading for the Goro Plateau, where we again observed the low and shrubby maquis vege-

tation type. A bizarre population of *Araucaria muelleri* grew out of rocks that were at least 50% iron and no soil. Only a few sizable plants remain but there are seedlings present also; these are all that remain from an ancient "forest," and we noticed *Gymnostoma* sp. and *Dacrydium araucarioides* growing nearby.

At the waterfall Cascade de Wadiana, we could look across the bay at the best wild population of Araucaria columnaris on the mainland.

One of the most upsetting places we visited was the Kwe Basin, our next stop. We observed many *Retrophyllum minor*, the only reophytic conifer. (Its seeds float, so plants grow in or alongside rivers.) Unfortunately, we learned that the whole area is soon to be dammed and flooded, so all of these trees will die.

Our last stop that day was Port Boise to see the rarest of all of the araucarias, *Araucaria nemorosa*. It grows in two main locations and we visited them both. They closely resemble some of the other araucarias, and it was difficult to identify them positively. We stopped down on the coast for lunch then walked around to the next bay, Gite Kanua, through stands of *Araucaria columnaris*. *A. nemorosa* and *A. columnaris* are thought to hybridize here; this would be a first for the genus, as no other hybrids are known.

The second population is a couple of

miles away on the other side of the mountain and has been quite well documented by a botanist working for the nickel mining company that owns the land. There are 247 trees recorded with GPS coordinates. Just across the main road is one of the rarest palms in the

The rimu is one of the best timber trees in New Zealand and has been extensively cleared

world, *Pritchardiopsis jeanneyi*, that is only found in this location. A proposal to widen the road by 160 feet (50 m) could make the palm extinct. This area is also the only biotype of its kind in New Caledonia. The mine was due to open in 2004, but is estimated to contain 150 years' worth of nickel reserves, so this could be the end for many of the plants in the area. The mining company employs a botanist who works with them to try and save some of the plants, but he is a lone voice for the only company on the whole island that makes any concession to conservation. We all felt a bit despondent as we made our way back to the hotel.

Seed Collecting in New Zealand

By April 2nd, I was back in New Zealand to begin a ten-day seed-collecting expedition for the Bedgebury Pine-tum. I drove from Auckland to Turangi to the Department of Conservation office to meet Nick Singers, who was handling my permit application for the Tongariro National Park. Nick helped with selecting the best locations to collect the conifers that I was looking for and, as he wasn't going to be busy the next day, he decided to accompany me. We arranged to meet in the morning, so I headed off to find accommodation and spent the night in the local backpackers' lodge just up the road.

The next morning, Nick and I set out for my first day collecting. We stopped by the side of Highway 47 to see a couple of mature rimus (*Dacrydium cupressinum*). Unfortunately there was no seed, but the trees were magnificent nonetheless. The rimu is one of the best timber trees in New Zealand and has been extensively cleared in the past, so it was refreshing to see such a mature tree.



Cone of *Araucaria columnaris*

A bit further up the road around Lake Rotopounamu we did find seed of both rimu and *Prumnopitys ferruginea* on the ground. (One of the problems with collecting from big trees is that the seed is usually right at the top of the tree and impossible to reach.)

The lake itself was about 20 minutes further and was very peaceful and quiet first thing in the morning. The forest around the lake was a mix of coniferous and broadleaf plants, and the pH of the soil in this area is between 6.1 and 6.3, which is quite similar to that of Bedgebury. Although there were a lot of conifers, most cones were either non-existent or out of reach. I was only able to collect *Prumnopitys taxifolia* here, and seed from this altitude should produce hardier plants than those collected at lower altitudes or warmer areas further north. Nick was able to show me the rare parasitic wood rose (*Dactylanthus taylorii*), which is susceptible to possum damage. The Department of Conservation's considerable effort to eradicate possums from this area seem to have been paying off, as we found quite a few intact plants.

As we continued down Highway 47, we stopped briefly to photograph a pure stand of *Prumnopitys taxifolia* on the south side of Mt. Kakaramea before reaching a part of the Ketetahi forest that contained *Phyllocladus alpinus* and *Halocarpus bidwillii*. We also saw a lot of Scottish heather that had been introduced to the area at the beginning of the last century, and these flats offered an amazing view of Mt. Ngauruhoe covered in snow.

Nick suggested we take the Taurewa Loop walk to find some other conifer

species. As before, we saw plenty of trees but I only managed to collect seed of one species, *Podocarpus cunninghamii* (syn. *P. hallii*).

The final stop of the day was the Bruce Road running up Mt Ruapehu, an area used in the filming of "Lord of the Rings." The conifers that I sought were not large trees but small shrubs, including the world's smallest conifer, *Lepidothamnus laxifolius*. The temperature on the mountain was only 36 °F (2 °C) and the ground was very boggy, but the experience was worthwhile because this was the only place I could collect *Halo-*

Sure enough, on the right-hand side of the road there was one tree dripping with cones

carpus biformis and *Lepidothamnus laxifolius* during my entire trip.

As we headed back to Turangi, Nick suggested that I might try going to the town of Motuoapa after dropping him off, as I might find a *Dacrycarpus dacrydioides* from which to collect seed. Sure enough, on the right-hand side of the road there was one tree dripping with cones. At day's end, I returned to the backpackers' lodge for the night and arranged to meet John Dawson (from the New Caledonia trip) the following day at Otari Scenic Reserve in Wellington. John is the world's leading authority on Myrtaceae (the myrtle family), one of the best New Zealand botanists, author of many books on New Zealand flora, and Chairman of the Committee at

Otari, so it would be quite an honor to tour the area with him.

On April 4th, I headed down to Wellington on quiet but narrow roads. I arrived at Otari around lunchtime, and the staff provided me with a collecting permit. John met me and gave me an

A wooden platform outside the visitors center leads into a canopy walkway so one can observe the tops of the trees.

overview of the collection. Otari is a satellite garden of Wellington Botanic Garden and only grows plants native to New Zealand. The conifer collection is close to the main entrance and displays most of the native conifer species including the rare *Halocarpus kirkii*. A wooden platform outside the visitors center leads into a canopy walkway so one can observe the tops of the trees. This route leads into a rock garden that is home to smaller plants including *Fuchsia procumbens* (in flower and fruiting), *Lepidothamnus laxifolius*, *Leipothamnus laxifolius* x *intermedius* 'Green Cascade' and *Phyllocladus alpinus*.



Mt. Ngauruhoe

I noted that many plants in these gardens, such as *Pittosporum* and flax, are quite common in British gardens. John and I also toured part of the native bush, the fernery and an area featuring high alpine plants. During this visit to Otari I collected seed of *Libocedrus plumosa*, *Phyllocladus trichomanoides*, *Dacrycarpus dacrydioides* and *Fuchsia procumbens*.

It was getting late, but I had time to make a quick stop at Wellington Botanic Gardens to have a look round. I was fortunate to meet the curator, Tony Williams, who gave me a bit of background on the collection and graciously showed me around the education center.

The next morning, I decided not to collect from around the Wellington area but to go down to the South Island instead. This plan proved to be a bit difficult as the ferries were running four hours late due to bad weather earlier in the week. The earliest I could get a ferry was 12:30 in the afternoon, and the trip would take three hours, so I chose the alternative option of flying. My flight wasn't scheduled to leave for a few hours, so I checked out the National Museum with its exhibits about

the plants of New Zealand.

When I eventually checked in at the airport, I found the plane to be a tiny 10 seater, and the flight was terrifying. We were blown all over the place but managed to get to Picton in one piece. I picked up my rental car and made my way to Nelson and then on to Takaka where I spent the night. I had already been in contact with the Department of Conservation for this area, and they had suggested a place called Knuckle Hill on the northeast corner of the island as a good place to collect conifers.

I awoke the next morning to find rainy weather, but I carried on anyway. The road turned into a dirt track as I got nearer to Knuckle Hill, and the weather remained poor. However, the area was beautiful. I was surrounded by mixed conifer forest disappearing up creeks and over hilltops; the road ran alongside the sea and there wasn't anyone else around. The hike to Knuckle Hill would be a 4-hour walk from there, but I decided that it was too risky to carry on as I didn't know the area at all and no one knew I was there. I did collect seed from one *Dacrycarpus dacrydioides* on the left-hand side of the road on the way back to Nelson.

On the morning of April 7th, I left my room and made my way up to the Nelson Lakes area south of Nelson. This area is covered by mountain beech forest made up mainly of *Nothofagus solandri* (and var. *cliffortioides*) that extended up the side of the mountains but stopped abruptly at a certain altitude. The beech forests don't usually include conifers, so I was a bit disappointed. There was a chance that conifers were growing above the tree line, but it was a

very long walk to find out so I decided to go elsewhere. I had heard that the Buller Gorge was an amazing place to visit with conifers throughout, so I thought I would try my luck there.

The Buller Gorge was a great drive. The scenery was choice but there was nowhere to stop and, again, it was beech forest with no visible conifers. I made my way back to Nelson empty-handed.

The next morning, April 8th, I visited to the DoC office across the road to get some insider knowledge to help me locate some specific conifer species. There I met Simon Moore who was

I was surrounded by mixed conifer forest disappearing up creeks and over hilltops; the road ran alongside the sea and there wasn't anyone else around

leaving for St Arnaud and suggested I follow him so he could point me in the right direction. When we arrived there, he directed me up the St Arnaud track that led to the top of the same beech-covered mountain I had seen the previous day! However, he assured me I would find conifers above the tree line, so off I went.

Very soon, I came across *Podocarpus acutifolius* (the needle-leaved podocarp) and observed two distinct growth habits: one a low spreading shrub and the other an upright shrub that appeared to be a cross between *P. acutifolius* and *P. cunninghamii*). There wasn't much seed but I managed to collect

some from both types.

The track zigzagged its way up through the forest, which was fine at first but became tiresome as there was no variation at all and I couldn't see through the trees how much farther I had to go. I bumped into a woman who was also going up, which provided me with some company. Gradually the trees began to get smaller and the canopy less dense, as the *Nothofagus solandri* gave way to *N. solandri* var. *cliffortioides*. We had an amazing view over the Nelson Lakes and could see that we were nearly out of the forest.

Abruptly, the forest ended and we emerged into the alpine area. The first plant in front of me was a *Phyllocladus alpinus* covered in seed, which was a relief. Having come this far, I continued walking to the peak, passing massive clumps of *Podocarpus nivalis* (moun-

tain totara) and more *Phyllocladus alpinus* covered in seed.

It was very cold on the mountaintop, yet it was a wonderful view and very quiet. I walked back down to the Parachute Rocks at an altitude of 4900 feet (1500 m) where the conifers were growing and collected the seeds I had come for.

It was getting on in the day and I still wanted to collect more *Podocarpus acutifolius*, so I rushed back to the trail. In my haste I took a wrong turn and ended up on the wrong trail. There were no more *P. acutifolius* but I did see a very interesting *Phyllocladus* with large phylloclades (flattened branches that function as leaves). Several plants grew up to 50 feet (15m) high and didn't match the descriptions of the three other *Phyllocladus* from New Zealand, so I took a piece to show the botanist at Nelson the

next day. He knew of the plants and said they were an as-yet-unnamed species that has previously been combined with *P. alpinus* but has been shown to be different in both appearance and chemical composition.

On the day following my trek through the mountain beech forest, I also found additional *Phyllocladus trichomanoides* trees near Nelson based on directions from Simon at the Department of Conservation. I also collected *Podocarpus totara* and *Dacrycarpus dacrydioides* seed and observed a massive stand of *Pinus patula* before I had to catch a flight from Nelson back to Auckland later in the afternoon.



Agathis macrophylla at the Auckland Botanic Gardens

On the final day of my trip, I had arranged to visit Auckland Botanic Gardens with Graham Platt and meet up with Steve Benham (Botanical Records Conservation Officer) who gave us a tour of the grounds. The garden is relatively new and is planted in geographic groupings but also includes an area of native bush. Highlights were a stand of *Agathis macrophylla*, cones on *Widdringtonia nodiflora* and the proteas in full flower. I had permission to collect seed from the conifers in the collection, and I left with seed from *Metrosideros excelsa*, *Dacrycarpus dacrydioides*,

Widdringtonia nodiflora, and *Prumnopitys taxifolia*.

The very last stop of my trip was to Waikumate Cemetery in Glen Eden where I hoped to get seed from the rare *Halocarpus kirkii*. Continuing what seemed to be a theme of the trip, no seed could be found on the tree.

However, my trip to New Zealand and the surrounding areas was an overall success and very enjoyable. Please visit the Bedgebury Pinetum as we add some of these conifer species to our collection! ▲

About the author: Daniel Luscombe is the assistant curator at Bedgebury National Pinetum in Kent, England, as well as a founding member and current secretary of the British Conifer Society. Because of his interest in species conifers and their conservation, he has traveled to New Zealand, New Caledonia, South Africa, Australia, Spain and Tasmania looking at species in the wild, especially those that have potential as garden conifers in the UK.



"The intricate detail of creative design – That's why I love the conifers."

Edward Remsrola



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