

NEW ZEALAND BOTANICAL SOCIETY

NEWSLETTER

NUMBER 152

June 2023



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New subscriptions are always welcome and these, together with back issue orders, should be sent to the Secretary/Treasurer (address above).

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Deadline for next issue

The deadline for the September 2023 issue is 25 August 2023.

Please post contributions to:
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Send email contributions to lara.shepherd@tepapa.govt.nz Files are preferably in MS Word, as a Microsoft Word document. Graphics can be sent as TIF JPG, or BMP files; please do not embed images into documents. Alternatively, photos or line drawings can be posted and will be returned if required. Drawings and photos make an article more readable so please include them if possible.

Cover Illustration

Juncus planifolius by Eleanor Burton.

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NEWS

Regional Botanical Society News

■ Auckland Botanical Society

March meeting and AGM

After the AGM Mike Wilcox showed our members his latest publication (with others), of *Nature in the City*. This explores all aspects of the natural environment of Cornwall Park and One Tree Hill Domain. The book is written with the general public in mind, and is beautifully illustrated with numerous photos. Following that, Geoff Davidson gave us an update on the recent activities of the Native Forest Restoration Trust, and the large areas of regenerating land that the trust is hoping to purchase. For the last 42 years the trust has raised huge sums of money to protect and restore parts of our degraded environment.

March field trip

Thirty-five people attended a two hour guided tour of the Winter Gardens and Nursery at the Auckland Domain, with the Tropical House reopened, including the new Madagascar display.

April meeting

The night's presentations were by our two Lucy Cranwell Grant Students. Firstly, Lauren McKenzie spoke on the genetic diversity, morphology and demography of *Streblus banksii* in the Auckland region. She confirmed what many of us had suspected, that trees with the mid-range of leaf sizes were hybrids with *Streblus heterophyllus*. Then Oscar Yukich Clendon presented his work on reduced fruit production in the fleshy fruited tree, *Beilschmiedia tawa*. His observations suggest that tawa is failing to fruit across parts of its range, impacting kereru populations. Is this the impact of climate change, or possum numbers?

April field trip

A joint field trip with local conservation group Urban Ark to the lava rock forests of Mt Eden, was led by Philip Simpson. First we heard about the work that Urban Ark does in the area, and then we were conducted through several patches of forest, some in public ownership and some in private. There were many very large trees, showing the result of growing on the rich volcanic soil, and kawakawa was the commonest shrub in the understorey. At lunchtime we were enjoying a private garden that displayed many art installations, and Bot Soc created its own installation entitled "Botanists among the clivia". A group of ferns growing on a rock wall resulted in a typical Bot Soc discussion – was it *Pellaea falcata*, or did that entity not exist? Could it be *P. calidrupium*? A firm "No" from those who knew better. Were some of the plants *P. rotundifolia*? And so on.

May meeting

As Auckland is one of the world's weediest cities, Auckland Council has developed a programme called the Low Incidence Pest Plant Project. This project targets plants that are not yet present in high numbers, but are likely to become a problem if left to multiply – a "get in first" policy. Lydia Starr, Biosecurity Advisor for Pest Plants, introduced us to thirty-four species that have so far been identified as fitting into this category, in the hope that we will report them when found. The talk was followed by a lively discussion on the frustration of some members in the lack of action in past reported cases. Lydia assured us that this new body will now take these reports seriously.

May field trip

The summer and autumn of excessive rain caused a rare postponement of the May field trip to the following week, when, to our amazement, not a drop of rain fell until we were driving home. We were led by Ewen Cameron and Sandra Anderson (University of Auckland) around the Leigh University Coastal Reserve, bounded by the marine reserve on one side and the university property on the other. It was pleasing to see the recent digging of drains along the track to keep it in good order. At first we saw a deal of planting done a considerable time ago, which contained many inappropriate species, but once the true bush was reached the coastal species, such as pohutukawa, kohekohe, *Pseudopanax lessonii* (and its hybrid with lancewood), *Coprosma macrocarpa*, tawaroa and *Pteris carsei* were

plentiful. On the return from the lookout we walked along the fence line outside the Mathesons Gully bush to discuss with Sandra the best way to revegetate the kikuyu-clad hills bordering the bush, which contains some tempting kauri forest, which alas, all but the youngest of us lacked the energy to explore.

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■ Wellington Botanical Society

January Summer Camp- the Catlins, Otago

Day 1 Catlins River walk

Amongst the alder / *Alnus glutinosa* covering the river's edge, our first stop was to puzzle over the highly branched galls abundant on silver beech / *Lophozonia menziesii*. Later research revealed their cause—*Cymoptus waltheri*, a native mite that creates the galls as shelter. We spent some time in the scrub discussing the differences between *Coprosma areolata* and *C. rotundifolia* (I find the long black hairs on *C. rotundifolia*'s branchlets a very useful character), and examined a few different moss species that were growing together—*Sciadocladus* sp., *Canalohypopterygium tamariscinum*, *Thuidium sparsum*.

After this we entered the forest proper. The entire canopy comprised a thick cover of silver beech, with the understorey a baffling array of small leaved shrubs including *Coprosma areolata*, *C. colensoi*, *C. dumosa*, *C. linariifolia*, *C. propinqua* and *C. rotundifolia*. We were struck, however, by the preponderance of unpalatable species. Deer had clearly had an impact on the forest composition and hard ferns (family Blechnaceae) and tree ferns (Cyatheaceae, Dicksoniaceae) dominated many areas. Always spectacular, impressive thickets of peretao / *Austroblechnum colensoi* stood out on small waterfalls and in shady seeps by the path overhanging thick carpets of moisture loving bryophytes e.g., *Fissidens rigidulus*, *Thamnobryum pandum*, *Monoclea forsteri*.

Herbaceous growth on accumulated sediment on the rocky riverbanks provided plenty of entertainment, hosting a diverse array of rheophytes including the tiny but fascinating *Glossostigma elatinoides*. The style of this plant's flowers is curled over to cover the anthers, but when disturbed by an insect or a fine twig, retracts to expose the pollen. This is thought to prevent self-fertilisation and promote outcrossing facilitated by visiting insects. Probably the botanical highlight of the trip was the discovery of a potato orchid / *Gastrodia* sp. Debates over the relative lengths of column and labellum, colour and tuberculate-ness ensued and were not resolved for the rest of the day! Upon our return to the camp, consultation with references provided a definitive determination—*G. molloyi*.

Though some were too enraptured by the forest to progress the entire length of the trail, those of us who did were rewarded with abundant pirita / *Peraxilla colensoi* nearing the end of its flowering period. Senescent flowers littered the track, inviting the walker to gaze upward to spot the elusive green bushes emerging from the beech trunks. Seen from a distance, they fizzed a bright red highlight against the deep green of the canopy.

Day 2 McLean Falls and Tautuku Beach North end

A korimako serenade at the carpark was an auspicious start, before we were deep in the grey scrub, looking for some of the unusual shrubs found on frost flats. Highlights included one small plant of *Melicytus flexuosus* which, sadly, looked as if the track clearers had trimmed it back; *Pittosporum obcordatum*, also only one plant seen, but a mature one; *Raukaua anomalus* × *R. simplex*, with fruit; *Coprosma wallii* with the red layer under the bark, a single trunk and didymous fruit; and *Neomyrtus pedunculata* in flower.

Suddenly we were in the forest under a low canopy of *Pseudowintera colorata* and *Olearia ilicifolia* with *Coprosma rotundifolia* trees in the sub-canopy. A bit further in the canopy trees were *Fuchsia excorticata*, before it became mostly kāmahī / *Pterophylla racemosa*, and *Griselinia littoralis* with emergent rimu. Very tall whekī-ponga, *Dicksonia fibrosa*, were a feature in places. It was unfortunate to see ungulate browsed epicormic growth on one very large, leaning *G. littoralis*. The forest was rich in filmy ferns, with at least twelve species seen. *Hymenophyllum pulcherrimum* caught the fancy of

some, and we learnt to distinguish *H. rufescens* from *H. flabellatum*, as well as how to identify the two 'hen & chicken' ferns, with *Asplenium gracillimum* preferring drier ground and having scales on the rachis drawn out to a fine point and *A. bulbiferum* preferring damper spots.

At Tautuku Beach some of us dawdled along the beach while others made a beeline for the ocean cliffs, our destination. The cliffs were worth the walk. Notable coastal plants included flowering *Linum monogynum* and *Hebe elliptica*, the ferns *Asplenium obtusatum* and *Blechnum banksii*, and the very blue grass *Poa astonii* with large drooping heads hanging down the cliff faces. A little less obvious from a distance but providing quite the 'wow!' factor close-up was *Carex trifida* with its wide leaves and very big heads. The most exciting botanical moment was the hybrid *Hebe* × *lewisii*. The rock platforms below the cliffs suited other plants, with the highlight being some fine specimens of *Rumex neglectus*. We also saw *Azorella hookeri* and the usual suspects, *Crassula moschata* and *Apium prostratum*.

Day 3 Lake Wilkie and Old Coach Rd

This short walk through mixed rātā-kāmahi forest (and beech absent, in contrast to the Catlins River Walk), turned up some interesting finds. We first walked along a terrace with a variety of tree ferns, shrubs and trees. *Cyathea smithii* with *Dicksonia squarrosa* and *D. fibrosa* were the dominant tree ferns, while ground vegetation was dominated by *Polystichum vestitum*, *Blechnum procerum* and *Leconopteris pustulatus*. Where sufficient light reached the forest floor there were a few herbs such as *Acaena novaezealandiae*, *Hydrocotyle heteromeria* and *Nertera depressa*.

As we descended towards the lake, we spotted a few different orchids. There were many *Corybas trilobus* with leaves still visible, but any seed heads were long gone. There was a lone *Thelymitra pulchella*, identified by its striped, mauve flower and *Caladenia* leaves growing nearby—probably *C. chlorostyla*. We also saw a single *Chiloglottis cornuta* with an elongated seed-head. The boardwalk around the lake allowed us to look at some of the wetland vegetation—*Eleocharis acuta*, *Potamogeton* and what looked at first glance to be a *Myriophyllum*, but in fact was a sphagnum moss, growing in deep water. At this site a sharp-eyed botanist spotted a *Thelymitra cyanea* in full flower, despite the overcast conditions and cool temperature.

Our first mission at the Old Coach Rd was to look at the estuary turf alongside the carpark by the river. This was dominated by *Selliera radicans* in full flower, *Samolus repens*, with a few flowers, *Triglochin striata* (in seed) and *Plantago coronopifolia*. It was interesting to see the *Salicornia quinqueflora* in flower here. Native grasses included *Puccinellia striata*, *Lachnagrostis glabra*, *Poa cita* and the southern toetoe, *Austroderia richardii*. The Possumers Track turns off the Old Coach Rd close to the carpark then loops around through rātā-kāmahi forest with many emergent podocarps - mainly tōtara, rimu, miro and kahikitea. There were many small-leaved shrubs to keep us thinking - *Coprosma rhamnoides*, *C. rubra*, *C. areolata*, *C. colensoi* to name a few. *Coprosma pedicellata* was a special feature in the damp dune hollows.

Being a dune slack area close to the coast, with exposure to the prevailing southerly wind off the sea, the habitat is moist most of the year, and the range of ferns attests to this. We saw ten different filmy ferns - mostly the common ones, but *Hymenophyllum bivalve* and *H. rufescens* are not so often recorded. Because of this cold exposed habitat at the very south of the South Island, some species that we sometimes think of as alpine that can grow here for example *Coprosma colensoi*, *Helichrysum filicaule* and *Hymenophyllum rufescens*. The track emerges onto the beach so there was a beach walk to the Old Coach Road by the river mouth followed by a short walk back along that to complete the loop back to the carpark.

Day 4 Niagara Falls; Curio Bay; Slope Point; Waipapa Beach

Our first stop (of 4!) was at Niagara Falls, where we were met by Jesse Bythell from QEII National Trust. Jesse very generously joined us for the day, providing us with her excellent local knowledge and valuable commentary. We spent 40 minutes at Niagara Falls botanising a small intact remnant of kōwhai / mānau riparian forest along the nationally significant Waikawa River. Here we saw *Fuchsia perscandens*, as well as *F. excorticata* × *perscandens* hybrids. Highlights for the group were the impressive height of many kōwhai, and the view of Niagara Falls.

Our second stop was at Curio Bay. Some decided to take a break from botanising to look in the rock pools and at the petrified forest. A large area of salt marsh turf at the point kept others occupied. Highlights here were *Anisotome lyallii* / Lyall's carrot, and *Myosotis rakiura* / Stewart Island forget-me-not. We saw examples of both plants in flower, although most had developing seed. *Veronica elliptica* was also in flower and easily spotted here.

Next, we stopped at Slope Point for lunch where the unusually calm conditions allowed us to watch native bees coming and going from their burrows while we ate. Then the group dispersed to roam the coastal turfs and botanise along the shoreline. *Limosella lineata* / mudwort was in flower, and BotSoccers examining it were an odd site to other tourists visiting the point. *Puccinellia stricta*, *Leptinella dioica*, *Samolus repens* var. *repens* and *Selliera radicans* were all readily spotted.

Our fourth site for the day was Waipapa Beach. The short walk to the lighthouse took us past *Brachyglottis rotundifolia* / mutton-bird scrub. Closer to the carpark we saw the out-of-region *Brachyglottis greyi*. Once at the lighthouse there was very easy access down to the beach, and it was great to see a swathe of *Gentianella saxosa* near the shoreline. The turf proved to be the most diverse so far—we found *Myosotis brevis* with the occasional flower still present.

Day 5 Nugget Point; Purakaunui Falls; Long Point

At Nugget Point highlights included *Celmisia lindsayi*, *Korthalsella lindsayi*, *Ileostylus micranthus*, *Melicope simplex*, *Fuchsia perscandens*, which was seen in many places once we worked out what it looked like, and *Anisotome lyallii*. Then we went to Purakaunui Falls, a short bush walk to a waterfall. Next to the waterfall was a wall of ferns and mosses. On the way out we found an enormous vine of *Rubus cissoides* agg., which must have been 10 cm diameter. As there was still some afternoon left, some of us went to Long Point. There is a memorial on Long Point Rd. Seeing we were there we walked down to the beach, finding on the way an erosion scar full of interesting plants, *Atriplex buchananii* and *Agrostis muscosa* among them. When we got down to the beach there was a coastal turf of *Agrostis muscosa*, *Crassula moschata* and *Selliera radicans*, and cliff vegetation including *Anisotome lyallii*.

Day 6 Tautuku River margins

Five of us botanised Tautuku River margins further downstream towards the head of the estuary. The route we followed traversed a gradient of vegetation transitions from dry to wet between the main road and the river, starting from the LENZ Reserve forest, through mānuka bog to the riverbanks and estuary. From the road we traversed a narrow band of beech/broadleaved-podocarp forest very similar to we had seen on the track to Tautuku Beach opposite the Lodge. After 10 m or so this changed to broadleaved-podocarp forest with a community of species more tolerant of less free-draining, wetter soils. The edge of this forest type then transitioned into a narrow fringe of mānuka / *Leptospermum scoparium* var. *scoparium*-dominated scrub, which separated the beech forest from the marshy flood plain and river margin. The ground under the mānuka was boggy with sparse shrubby vegetation. It was heavily trampled by deer.

The mānuka scrub then transitioned into the estuary margin marsh habitat of small shrubs: *Myrsine divaricata*, *Coprosma propinqua* and *C. rigida* on the higher ground and occasional mānuka; with a river margin of swamp flax / *Phormium tenax*, *Carex* and *Machaerina* spp. and oioi / *Apodasmia similis*. This vegetation was also heavily browsed and trampled by deer. We recorded several herb species scattered throughout the boggy ground including *Hydrocotyle novae-zeelandiae* var. *novae-zeelandiae*, *H. heteromeria*, *Ranunculus reflexus*, *Plantago raoulii*, *P. triandra* and *P. major*, *Gonocarpus micranthus* subsp. *micranthus*, *Crassula sinclairii* and the exotic *Sagina procumbens*. We also recorded the fern *Blechnum penna-marina*, the exotic grass *Agrostis stolonifera*, the sedge *Carex appressa*, and the rush *Isolepis cernua* var. *cernua*. Nearing the estuary we saw that oioi becomes more dominant, covering large areas. The estuary and river margins are home to fern birds / mātātā which we heard and saw during our visit. Along with the riverside marsh turf communities, the highlight of this area was the unbroken succession of forest and estuary canopy cover; a very uncommon occurrence in New Zealand, making for picturesque scenery which at first glance looks pristine.

The same group of five then visited the Tautuku estuary track. This short track follows the old logging mill road to the historic mill site. It then proceeds across the flat to the scrub edge and the boardwalk to the tidal river's edge and the mud flats. The forest in this area has been heavily logged and modified but is now regenerating with the more mature trees up to 70 years old. The cut-over regenerating

broadleaved-podocarp forest at the track was dominated by kamahi and mānuka. Along the main track to the estuary boardwalk, we were delighted to see several patches of *Gastrodia molloyi* still in full flower. We saw several other orchid species including *Corybas*, *Pterostylis* and *Thelymitra*. Again, the wetter margins of the forest were dominated by a narrow band of mānuka, on the estuary side of which we saw a narrow band of salt marsh ribbonwood / *Plagianthus divaricatus*. Amongst it, *Leptocophylla juniperina* subsp. *juniperina* was fruiting. The mānuka / saltmarsh ribbon wood transitioned abruptly into a monoculture of oioi / *Apodasmia similis* which continued all the way to the river/ mudflat edge. From past visits, the oioi around the boardwalk appears to slowly recede over time, exposing the bare mud; possibly due to either the boardwalk or climate change with the deposition of woody and vegetative debris.

February Fieldtrip Tora KNE and Timbrel Farm, Wairarapa

The Tora Station escarpment remnant is a relic of the tītiki - ngaio forest that once dominated the forests of the Eastern Wairarapa coastline. Less than 3% of this forest type now remains in the region - nearly all of that remaining is highly degraded. One of the more representative relics of this forest type, it has been identified by Greater Wellington Regional Council as a Key Native Ecosystem and receives funding for pest animal and plant control as well as fencing for to exclude stock. It has also been covenanted with the QE2 Trust by the landowners. The vegetation canopy is largely intact. A spring on the lower slopes where the steeper escarpment meets the basal screes is used as water supply by the houses below. Notable in the KNE are the groves of large karaka / *Corynocarpus laevigatus* trees and the presence of large whau / *Entelea arborescens*, an indication the area was used by Māori. We were concerned at the lack of regrowth underneath the canopy of the karaka trees. The underlying rock of the forest is limestone. This was obvious at the site of the strongly flowing spring.

There is more than one Tora Bush on Tora Station. The site we visited is on the coastal escarpment, just south of the river mouth. A highlight for some was the now unusual sight of a paddock dominated by ragwort / *Jacobaea vulgaris*. Once under the canopy at the foot of the escarpment the slopes quickly reached 30-40°. Some of the group climbed to the top of the escarpment at its northeastern end, while others botanised the scree and slopes along the foot of the escarpment. The forest floor was mostly very open on the scree, with a paucity of bryophytes, ferns, saplings and shrubs. Of interest were the remaining mature rewarewa / *Knightsia excelsa*, tītiki / *Alectryon excelsus* subsp. *excelsus* and ngaio / and the diversity of native ferns including *Adiantum cunninghamii*, nine species of *Asplenium*, three species of *Blechnum*, two species of *Cyathea* and *Polystichum*, plus *Hypolepis ambigua*, *Lastreopsis velutina*, *Lecanopteris pustulata* subsp. *pustulata*, *Paesia scaberula*, *Pellaea rotundifolia*, *Pakau pennigera*, *Pteridium esculentum*, *Pteris tremula* and *Pyrrosia eleagnifolia*. Those who climbed to the top of the escarpment at the north-eastern end were rewarded by seeing speargrass / *Aciphylla squarrosa* var. *squarrosa* and flowering puatea / *Craspedia uniflora* var. *grandis*.

Day 2 – Timbrel Farm. The first stop was the coastal turfs of the Awhea Reserve administered by DOC. This turned out to be an interesting diversion with seals to watch out for while botanising on hands and knees with hand lenses at very small turf species. We kept a keen eye out for *Isolepis basilaris* - conservation status “Nationally Endangered”. The limestone turfs were dominated by tūtae kōau / *Apium prostratum* subsp. *prostratum* var. *filiforme*, māakoako / *Samolus repens* var. *repens*, ureure / *Salicornia quinqueflora*.

Timbrel Farm is in the eastern hills of the Ruamahanga catchment. We walked along the main access farm track at Timbrel Farm past the old homestead and soon observed the beautiful form of a weeping elm. Just past the house on the valley floor was a great example of *Lophomyrtus obcordata* / rōhutu - its bark feeling characteristically cool compared with warm air temperature. A couple of hundred metres past the house the track starts to climb a spur through black beech forest. We spent time botanising the edge of the 4wd track among a good diversity of native flora. *Clematis forsteri*, *Adiantum cunninghamii*, *Euchiton* spp. and *Helichrysum filicaule* were some of the species of interest here. Above the beech forest remnant, we were again in shrubby pasture. We saw *Coprosma rubra* and *C. rigida* along the edge of the track. The track went up a ridge on the right of which we saw a large earth flow. While still covered with vegetation the whole gully could be seen to be rippling and flexing. At the stock pond we saw the aquatic native species *Potamogeton cheesemani* and *Myriophyllum propinquum*. At this point we headed out with abundant *Ozothamnus leptophyllus*. On the terrace above the river we found a farm

track led down to the river. This track was the most interesting botanically, with a very rich flora including a multitude of herbs and ferns.

March fieldtrip – Korokoro Valley, Lower Hutt

A cut bank on one side of the Otonga Loop Track formed excellent moss habitat, with *Hymenodon pilifer*, *Hyphodendron arcuatum*, *Polytrichadelphus magellanicus* and many more. The bush was primarily tawa / *Beilschmiedia tawa*, kohekohe / *Didymocheton spectabilis*, with rewarewa / *Knightia excelsa* and occasional rimu / *Dacrydium cupressinum* emergent. We saw an abundance of palatable species, possibly due to pest control.

Several people botanised the stream above the dam and found some concerning weeds, including beggars' ticks / *Bidens frondosa* and *Lagarosiphon major*. After lunch, we headed down the Korokoro Stream Track. The bank on the right of the track was another smorgasbord of mosses, with a few liverworts and ferns thrown in. Regenerating forest was much younger here and weeds far more prevalent. Across the stream at several points there were large areas of montbretia / *Crocasmia* × *crocosmiiflora* and *Tradescantia fluminensis*. African clubmoss / *Selaginella kraussiana* occurred frequently alongside the track and there were some large plants of Himalayan honeysuckle / *Leycesteria formosa*. Near the bridge at the car park, we also found a young old man's beard / *Clematis vitalba*.

■ Nelson Botanical Society

January Field Trip: Rainbow Skifield

Piled into 4-wheel-drives, we traced our way up the mountain through beech forest, dotted with many scree slopes, waterfalls and cliff faces. We began our walk up an east face along a streamside, where many *Dolichoglottis lyallii* were perched above the trickling water. We were excited to find what we thought was *Festuca matthewsii* ssp. *matthewsii* with its glaucous leaves and inflorescence. Two



Helichrysum parvifolium by Duncan Cunningham.

whipcord hebe species, *Veronica lycopodioides* and *V. hectorii* ssp. *coarctata*, sat near each other and *Helichrysum intermedium* grew nearby. *Pachycladon fastigiatum* was spotted further up, snuggled into a rock nook. We also were lucky to find a lone flowering *Prasophyllum colensoi*. Filling in a gap in the steep rocky terrain grew a tuft of *Hypolepis millefolium*. A sea of snowberries, *Gaultheria depressa* var. *novae-zelandiae*, lay under our feet, offering a delicious snack. As the trail curved upwards dozens of white flowers of *Gentianella montana* ssp. *montana* and *G. bellidifolia* waved in the cool wind. Particularly enchanting were rosettes of *Wahlenbergia albomarginata*. At the start of our post-lunch journey, we were waylaid by *Oreobolus pectinatus*. As we climbed over rocks, we saw among a miniature sea of white-flowering *Phyllachne colensoi* cushions the upright fruiting bodies of *Lycopodium fastigiatum*. The yellow trumpet flowers of *Coprosma perpusilla* ssp. *perpusilla* also broke through this sea. Nearby was a female plant of *C. atropurpurea*, with its stunning wine-red fruit embedded in a cushion of leaves and surrounded by finely furred stigmas. As we came closer to the water's edge, a wonderful species sighted was *Veronica macrantha* var. *brachyphylla* with bright red, toothed, leaf margins. A favourite of this stretch was *Forstera tenella*, with a dainty white flower atop a long stem. Walking the rocks above the tarn, we spotted *Veronica epacridea* and nearby *Celmisia lateralis* and *C. laricifolia*. Next was a cushion of *C. sessiliflora*, with flowers nestled in silver-green leaves. As we made our way around the tarn, we found *Raoulia bryoides* and *R. eximia*. A little further on was *R. grandiflora*, with larger white flowers. The pale-green patches across the rocky slope, were revealed to be cushions of *Haastia pulvinaris* var. *pulvinaris*, in flower.

February Field Trip: Inwood Lookout and North Peak

We split into three groups and the first native to take our eye after breaking into the beech forest was the hybrid wineberry, *Aristotelia fruticosa* x *A. serrata*. Soon after curious little double-lobed leaves, turned out to be *Corybas trilobus*. We then encountered the daisy, *Lagenophora strangulata*, with a lobed leaf and crown of tiny white petals. Nestled on a slope above various gentians and *Helichrysum parvifolium* lay a bed of *Styphelia nesophila*. We could spot many *Aciphylla aurea* with their pronounced seed heads standing high, *Dracophyllum* with their vertical brush-like foliage, and creeping *Coprosma perpusilla*. Setting off again, we found *Coprosma cheesemanii*, *Discaria toumatou*, *Acrothamnus colensoi*, *Celmisia spectabilis*, *Kelleria dieffenbachii*, *Pentachondra pumila* and *Lycopodium scariosum*. Perhaps the most exciting find of the day was *Gastrodia minor*, the locally elusive potato orchid, nestling somewhat awkwardly beneath *Dracophyllum*. As we ventured higher, we came across a favourite: *Raoulia bryoides*. On the way back down, we were shown that there were three species of *Lagenophora*, with *L. pumila* and *L. pinnatifida* also being present among the beeches.

March Field trip to Lodestone

At the Pokororo Hall we re-arranged ourselves into 4WDs to head up to the Flora Carpark. The forest here was damp and dark, composed mostly of beech, predominantly *Fuscospora fusca* and *Lophozonia menziesii*. Soon we met with a species that wasn't so familiar: *Dracophyllum traversii*. Out on a spur to the north lay *Libocedrus bidwillii*. We merged back onto the main trail, where we were met with a mature *Raukaua simplex*. Near the top lay several beds of *Corybas trilobus*. Also here was another familiar species, *Lagenophora strangulata* and *Oxalis magellanica*. We soon reached the bluff that had mentioned being of particular interest. Here we were in luck, finding the foretold *Brachyscome radicata*. At the elbow of a corner was my favourite find of the day, *Chiloglottis cornuta*. Soon after we came across *Geum cockaynei*, with leaves covered in many soft hairs. We were pleased to see *Styphelia nesophila* and during the awkward descent, we managed to identify an ankle-high *Brachyglottis rotundifolia* exhibiting. Halfway down, the canopy cleared and the trail was flanked with *D. rosmarinifolium*. Another spur appeared to our left, where we spotted *Drosera spatulata*. The favourite find of the day was *Hymenophyllum malingii*.

FUTURE EVENTS

See the website: <https://www.nelsonbotanicalsociety.org/>

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■ Canterbury Botanical Society

December 2022 meeting: In the footsteps of the explorers of the Great Plains of China by Dr Paul Maurice.

This was a much-anticipated talk that had been put off several times mainly due to Covid. We welcomed members of the Alpine Garden Society in our audience. The talk was also on Zoom, though sound volume was too low for most viewers. As most of the power point images were labelled I hope Zoom participants managed to get some understanding of the talk.

Way back before Covid in 2018 Paul went on a commercial botanical tour run by a Turkey based company (viranatura.com), travelling in Yunnan and Sichuan, an area in Southwestern China bordered by Vietnam, Laos and Myanmar in the south, Tibet in the west. The mountains in this region rise to altitudes above 4,000m. In summer the area is warm and wet, while winters are cold and dry due to being a rain shadow behind a high mountain range. The Yunnan protected area is the source of three major rivers, the Salween, the Mekong and the Yangtze that run parallel in this region for over 160 km separated by the high mountain ranges. Due to its diverse geology and hydrology the area hosts rare and important biological diversity in flora and fauna.

During the Opium wars (1839-1842) the British captured many Chinese ports. This helped to open up the interior for trade and exploration. After the Opium Wars came European explorers and missionaries who as a sideline collected the new and interesting plants. Pere Jean-Andre Soulie (1858-1905) a Roman Catholic French missionary, collected over 7,000 species in China and Tibet before being killed by Tibetan Lamas. Pere Armand David, a Jesuit priest, was also in China in the late 1800s he managed to bring over 2000 specimens back to France though very few went into cultivation. About the same time George Forrest arrived in the area via Myanmar and the Mekong he narrowly escaped being killed during the Tibetan uprising. Later in 1913 the British Botanist and explorer Francis Ward came to collect plant species for nurseries and scientific study. The talk included over 200 impressive and plant and scenery photos, no doubt whittled down from a much larger collection. There were some familiar to us such as the *Gaultheria hookeri*, *Rhododendron wardii*, the yellow *Clematis tangutica* and *Ranunculus davidii* and the purple flower, with its long orange crest on the fall, of *Iris collette*.

Less familiar was the blue poppy *Meconopsis forrestii* with its orange stamens, the dark red orchid *Cryptidium lichiangense* with its scoop shaped labellum, or the purple *Pleione bulbocodiode*. The cone shaped *Saussurea medusa* grows in the high alpine subnival belt using its over lapping furry leaves to protect the pollen and retain warmth. On a high step not far from the snow line was a valley filled with the low growing purple flowering *Rhododendron russatum* with its long contrasting orange pistil. At lower altitudes were fields of pink flowering *Primula beesiana*. Too many to mention were the many more well-composed colourful flower photos leaving many of us wondering if the travel company Paul used is still running tours.

February 2023 field trip report; Lyttelton Rock

In lieu of a speaker, a group from the Canterbury Botanical Society went up to Lyttelton Rock in February to enjoy a BYO dinner and botanise the surrounding area. The track initially went through Lyttelton Scenic Reserve, before continuing through Tauhinukorokio/ Mt Pleasant Scenic Reserve. The south facing volcanic rocks were host to a range of plant species, the main attraction being the pygmy button daisy (*Leptinella nana*) a Threatened-Nationally Critical herb which won the NZPCN favourite plant in 2021. The area was popular with rock climbers, who looked on with curious amusement as a good photo was attempted of the flowers. The Banks Peninsula Button Daisy (*L. minor*) was also found in the same area, and the possibility of hybridization between the two species was raised. *Australina pusilla* was also prolific under the rocks. The walk ended at a beautiful rock surrounded by kanuka where we took in the scenery of the Lyttelton Harbour Basin, as the sun began to set. A concerted effort to remove a male fern (*Dryopteris filix-mas*) and a holly (*Ilex aquifolium*) were undertaken on the return trip as we made it back to the carpark before we lost daylight. We are lucky to have this area of rich botanical interest so accessible from Christchurch.

February field trip report: Exploring the Woodstock wetland

When the Muriwai Bioblitz was cancelled BOTSOC took their boots off to a wetland near Woodstock to celebrate World Wetlands day (2nd February). This private wetland is the continuation of the wetland on the adjacent property, subject to resource consent application. Intriguingly, the ecological

assessment described a wetland on this land as “comprised of *Phormium tenax* (swamp flax), *Machaerina juncea* (bare twig-rush) and *Macherina* [sic] *rubiginosa* (soft twig rush)”. *Machaerina juncea* is not known from Canterbury but there have been a few reports of *M. tenax* in wetlands in the Waimakariri District. Would this downstream wetland provide clues to the identity of the rushes in the next-door wetland? The 2-hectare wetland is fed by braids of the Woodstock stream, a tributary of the Eyre River. This is a classic NZ swamp – tall harakeke, stands of pūkiō/*Carex secta*, scattered tī kouka/*Cordyline australis*, extensive rautahi/*Carex geminata*, *C. coriacea*, patches of bog rush/*Schoenus pauciflorus* and willows – *Salix fragilis*, *Salix x reichardtii* and the pretty narrow-leaved willow *Salix schwerinii*. The wetland is edged by mānuka that grades into mountain beech forest on the western hillslope, and plantation pine forestry on the eastern hillslope. A couple of houhi trees (*Hoheria angustifolia*) in the wetland was a reminder that this is a wetland tree outside Banks Peninsula. A single wine sedge *Carex tenuiculmis*, spotted just a few meters into the wetland, was a sign that this had once been a wetter wetland, now compromised by roadworks and deer trails. Apart from a little bittersweet/*Solanum dulcamara* and one sycamore the threat to the future of the wetland is the number of deer, judged by the numerous deer pellets, absence of five-finger and browsed marbleleaf/*Carpodetus serratus*. At lunchtime Jason spied a few stalks of square sedge (*Lepidosperma australe*) in the roadside ditch. Buoyed by this discovery of one uncommon Canterbury rush we went up to northern end of the wetland to look for *Machaerina* species which should be in flower or fruit in February. The habitat looked suitable, but no *Machaerina* rushes were seen.

At the northern end the wetland is shorter, with stunted harakeke, pūkiō and manuka, and open swathes of the weedy jointed rush/*Juncus articulatus* and iris-leaved rush/*Juncus ensifolius*. All this close looking at the wetland turned up *Gonocarpus* species, waiorki/*Ranunculus glabrifolius*, and NZ mint/*Mentha cunninghamii* with red margins and not much of a minty smell. Spike sedge/*Eleocharis acuta* was common in the squelchy mountain beech forest there were fine stands of mature pōkākā and young kahikatea seedlings, with an understory of rōhutu and weeping matipo. We were in the zone for *Coprosma pedicellata* but no single miki was conclusive, although short pedicels were present on some fruit. The twelve BOTSOCers finished the day with wet feet and no progress on the mystery of a new *Machaerina* species for Canterbury. Our thanks to the landowners for access, and permission to make an illustrated plant list on iNaturalist. Reference: Appendix 6, Ecological Assessment, Woodstock Quarries Limited 513 Trig Road Woodstock

March meeting: A brief overview of the taxonomy of the New Zealand *Brachyglottis rotundifolia* species complex, and a pilot study into its morphological variation by Robb Eastman-Densem.

Robb is currently a postgraduate student at the University of Canterbury (UC). He has recently completed a pilot study into the *Brachyglottis rotundifolia* group working with Pieter Pelsers. His pilot study asked whether morphological variation could be used to delineate species boundaries within this group. *Brachyglottis* is a member of the Asteraceae (daisy) family and was previously included within *Senecio*. The genus *Brachyglottis* is almost endemic to New Zealand with just one species found in Tasmania (*B. brunonis*). *Brachyglottis* is an excellent example of a group that has undergone a big diversification event in recent time (geologically speaking). Within the New Zealand *Brachyglottis* are five species with discoid flowerheads (i.e., lacking the typical daisy ring of outer petals (= ray florets)) known as the *B. rotundifolia* complex. The species within this complex are: • *B. buchananii* • *B. cockaynei* • *B. elaeagnifolia* • *B. rotundifolia* • *B. rotundifolia* var. *ambigua*. Further complicating this group is a history of different classifications and names for the five species. For example, the current name *B. rotundifolia* has also included G. Simpson and J.S. Thomson's *Senecio bennettii* named in 1942. And prior to *Senecio bennettii* the names *S. eleagnifolius* and *S. reinoldii* have also been used. Pretty confusing stuff, especially when you consider this kind of name changing has happened to all species within the group.

Fortunately, Robb walked us through these name changes with a clearly presented table showing the changing taxonomic concepts within the *B. rotundifolia* group from Kirk's 1899 classification through to the present day. Robb's study focused on morphological features measured off herbarium specimens. Amongst the features he used were leaf length and width, petiole width, hairiness (tomentum), and some floral features. Robb then used a principal component analysis (PCoA, a statistical technique that allows comparison of multiple measurements (in this case morphological features) at once) to look for species groupings based on their similarities. On a PCoA, the closer two points (where each point represents one herbarium specimen) are together the more similar they are, and the further two points

are the more different they are from each other. Robb hoped to see clusters of points that matched the species in the *B. rotundifolia* group. However, the huge range of morphological variation within the *B. rotundifolia* group produced a graph with lots of overlapping points. Perhaps explaining why there have been so many disagreements in the taxonomic identification of these tree daisies. Robb then ran his PCoA again this time labelling the data points by geographic location, to see if morphological features clustered by collection location. This time the analysis showed some more groupings than the previous analysis. Robb concluded this section of his talk by listing the next steps to build from his pilot study. Robb suggested that including more herbarium samples in another morphological study would help. But that this would be best done alongside a genetic study of the group so that the morphological and genetic diversity can be compared.

Robb is continuing to work with plants as he has now started a MSc project on the highly threatened limestone gentian species (comprising of *Gentianella calcis* and *G. astonii*). Robb is working with Pieter Pelser, David Glenny, and Peter Heenan on this project. The *Gentianella* study will look at the population genetics of these limestone gentians and will provide insight into factors like whether the small remnant populations are inbred. Information that will be valuable for the ongoing conservation of these special plants. The evening concluded with a question-and-answer session where Pieter and Robb discussed the use of population genetic studies for conservation, the role of polyploidy in potentially buffering against bottleneck events, and just how few of these studies have been undertaken on New Zealand plants.

March Field trip: Muriwai o Whata/Coopers Lagoon

BOTSOC members were invited to join Te Rūnanga o Ngāi Tahu, Te Taumutu Rūnanga and Environment Canterbury to take part in a Bioblitz at Muriwai o Whata.

FUTURE EVENTS:

Changes to the program are notified on: <http://canterburybotanicalsociety.org.nz/canterbury-botanical-meetingsfield-trips>.

Monday 1st May Meeting: Justin Morgenroth (Associate Professor, School of Forestry, Kura Ngāhere).
Topic: Urban forest cover.

Saturday 6th May. Field Trip: Terrible Gully, Rakaia River, Mount Hutt Conservation Area (weather dependent). The Terrible Gully track follows a paper road for 1 km to the Mount Hutt Conservation Area, where we will botanise shrublands, river gravels and grassland.

Saturday 10th June: AGM 10 am followed by member's botanical Pecha Kucha - 8 to 10 people present 20 slides in 6 minutes on a botanical theme.

Monday 7th August at 7:30 pm. Meeting Callum Nicholls and Kelvin McPherson. Topic: *Haastia* taxonomy.

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■ **Other Botanical Society Contacts**

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Hawke's Bay Botanical Group

<https://www.facebook.com/Hawkes-Bay-Botanical-Group-590670161140095/>

Manawatu Botanical Society

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Whanganui Museum Botanical Group

Our meetings are held every two months on the second Tuesday, alternating with 'Nature Talks' (where the Whanganui Botanical Group has merged with Birding Whanganui and the Whanganui branch of Forest and Bird), which are held on the third Tuesday in even-numbered months. It is intended to continue with monthly botanical field trips to which members of the other two groups are invited.

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Secretary: Angela Brandt, c/- Department of Botany, University of Otago, PO Box 56, Dunedin. bsotago@otago.ac.nz

ANNOUNCEMENTS

■ **ABS South Island Field Trip, October 9 – 16th 2023, Banks Peninsula**

Auckland Botanical Society ventures into the South Island every second year, instigated when our ex-President Anthony Wright moved down south. On this year's South Island Trip we will be botanising on Banks Peninsula, based at the YMCA Wainui Heights lodge with exclusive use of a meeting room, dining room and kitchen, with a range of different sized bunkrooms. We will do day sorties from that base.

We have a few spaces free and would love to have interested people from your Botanical Society join us for the week. There will be minivan transport to and from Christchurch Airport if you need it at the start and end of the trip. The vans will be used to take us to a variety of field trip locations. For more information, and/or to put your name down please email: helenprestonjones@gmail.com

■ **Waikato Botanical Society Student Scholarship Call for Applications for 2023**

Applications are invited for the Waikato Botanical Society Student Scholarship. The scholarship is open to any student studying for any degree or diploma with a research component in any tertiary institution in Aotearoa New Zealand.

The scholarship allocation awarded will be up to \$2,000.

Priority will be given to research projects which most align with two key aims of the Waikato Botanical Society. Which are:

- To encourage the study of botany, particularly that of New Zealand and the Waikato Region.
- To encourage the conservation of indigenous flora of New Zealand and the Waikato Region.

Applicants will also be assessed against the following set of criteria:

- Relevance and value in terms of filling gaps in existing New Zealand flora information
- Application, use or recognition of mātauranga Māori
- Ability to implement the research findings for the benefit of flora conservation

- Practical, feasible and achievable research
- Ability of the student

Another key aim of the Waikato Botanical Society is to disseminate knowledge about and encourage interest in the flora of New Zealand. The successful recipient of the grant will be invited to give a presentation to Waikato Botanical Society members on the findings of the research and contribute a summary article for the Botanical Society newsletter. Recipients of the award will be asked to acknowledge the society where possible in research publications such as a thesis.

The grant will be given in instalments as a contribution to expenses associated with the research project, identified in the application form. Closing date for applications: Friday, 30 June at 5 p.m., 2023

A copy of the Application Form and the Rules of the award may be downloaded from the Waikato Botanical Society website.

Contact for enquiries: Waikato Botanical Society Secretary.
Email: secretarybotsocwaikato@gmail.com

NOTES AND REPORTS

■ Flora of New Zealand – ferns and lycophytes

Patrick Brownsey and Leon Perrie, Museum of New Zealand Te Papa Tongarewa

After more than 10 years of research, the final treatment of the *Flora of New Zealand – Ferns and Lycophytes* was published in November 2022. The full *Flora* includes 34 sections, including an introduction, keys to families and genera, and 32 family treatments. These are freely available online as webpages at www.nzflora.info or as a series of pdf publications at www.nzflora.info/publications.html. A checklist of currently accepted names and synonyms for all New Zealand's indigenous and naturalised ferns and lycophytes is published annually and is based on the *Flora of New Zealand – Ferns and Lycophytes*. The 2022 checklist is available at datastore.landcareresearch.co.nz/dataset/checklist-of-the-new-zealand-flora-ferns-and-lycophytes-2022.

The *Flora* treats 32 families, 78 genera, 268 species and 10 subspecies of indigenous and naturalised ferns and lycophytes in New Zealand. For all lower-ranked and many higher-ranked taxa, it provides the currently accepted name and any synonyms based on New Zealand material, vernacular names, description, photos, distribution, biostatus, habitat, cytology, recognition characters, known hybrid combinations, and a brief summary of recent taxonomic and phylogenetic work. Holotypes have been identified, or lectotypes and neotypes designated, for almost all basionyms relating to native taxa. Identification keys to families and genera are provided in an introductory section, and to genera and species within each family treatment.

Descriptions and distribution maps (Figure 1) are provided for every species based on examination and verification of c. 70,000 ferns and lycophyte collections in the main New Zealand herbaria (AK, CHR, and WELT). Collection specimens seen for the *Flora* have been annotated, either on the herbarium sheets themselves or in the relevant institutional database, or both.

The introduction provides an overview of the New Zealand fern flora. It includes historical background to the current *Flora*, and a summary of diversity, endemism, hybridism, cytology, distribution within New Zealand and overseas, ecological preferences, altitudinal range, biostatus, and conservation threat status. There are also details of the number of basionyms that have been described, the categories of primary types, and a list of the principal authors of New Zealand taxa.

It is 60 years since H.H. Allan's *Flora of New Zealand*, Vol. 1, was published in 1961. In that time another two families, 12 genera and 40 species of indigenous ferns and lycophytes have been recognised in New Zealand (Figure 2). In addition, 64 naturalised taxa are now fully documented, a group that was

not treated at all in Allan's *Flora*. The adopted taxonomy is conservative compared to some other authorities, and has attempted to minimise name changes while recognising monophyletic genera.

It is intended that the *Flora of New Zealand – Ferns and Lycophytes* will become a living, online document – each family treatment being updated as new taxa are recognised, significant taxonomic change occurs, or known distributions expand. Second editions of the treatments for Dennstaedtiaceae, Polypodiaceae, and Thelypteridaceae have already been published, and more will follow, providing a constantly evolving *Flora* that reflects current understanding of New Zealand's fern and lycophytes.

Figure 1. Maps from the *Flora of New Zealand – Ferns and Lycophytes* based on verified herbarium specimens. Clockwise from top-left: *Hypolepis ambigua*; *Hymenophyllum australe*; *Cyathea dealbata*; and *Trichomanes strictum*. Maps © Landcare Research CC BY.

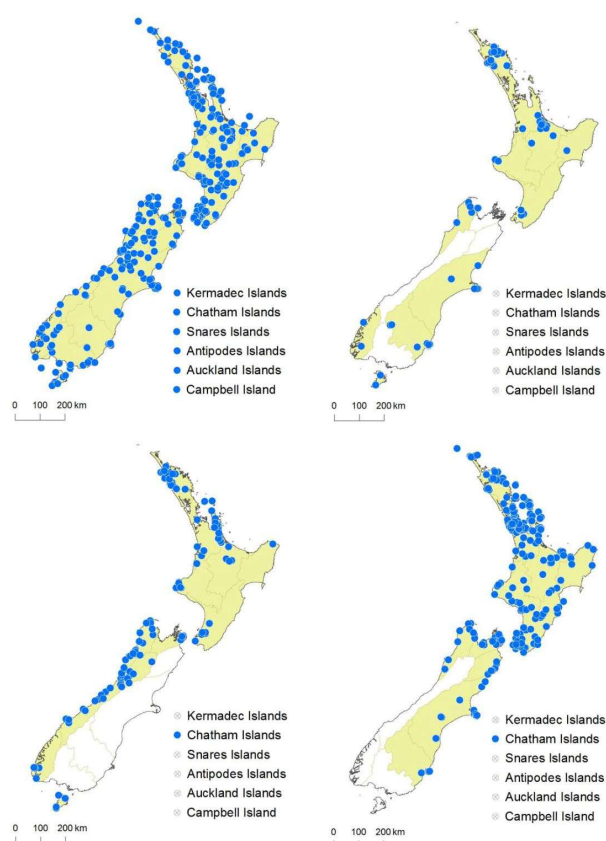


Figure 2. Fern species newly described during the production of the *Flora of New Zealand – Ferns and Lycophytes*. From left: *Asplenium lepidotum*; *Gleichenia inclusisora*; *Hymenophyllum pluviatile*. Photos by Leon Perrie.

We acknowledge the staff from Manaaki Whenua who have produced the treatments and led the broader *Flora of New Zealand* programme; colleagues around the country who have contributed specimens and new data; and the peer reviewers of our work.

BIOGRAPHY / BIBLIOGRAPHY

■ Biographical Sketch – Paul Michael Kirk (1952 –)

Val Smith, valdsmit@xtra.co.nz

Paul Michael Kirk was born on 27 August 1952 in Bradford, Yorkshire, England, into a Mormon family. His parents William and Irene Kirk, both Yorkshire-born, had four children. His father's brother and his mother's sister married and had four children also. All were lovers of nature, and Paul recalls his maternal grandmother, on family walks in the local woodland, warning against eating the mushrooms or toadstools they spotted, because they were poisonous. In later life he realised it was untrue, but at the time it seemed sensible advice.



Bondarzewia kirkii

He attended Lilycroft Primary School and Belle Vue Grammar School (motto: *Non-sibi sed mundo* = Not for oneself but for the world), and was an avid stamp and coin collector. He enjoyed almost all science subjects, but had only a passing interest in history, which was the only exam he failed at school. (All the class failed, so clearly it was the teacher's fault!).

After studying microbiology at the University of London (Chelsea College on the Kings Road) for a BSc degree, he focussed on mycology/taxonomy in the final year. The three-year course was interrupted by an optional year working for ICI (Imperial Chemical Industries) on resistance to fungicides in plant pathogenic fungi – a career in plant pathology was his back-up plan! In 1974 Paul married Catherine Mary (née Hall), and they were to have two children, Jonathan Paul and Joanna Louise. When Paul left university he vowed never to go teaching, claiming insufficient patience, but soon realised that his desire



Two excited mycologists with *Bondarzewia kirkii* – the late David Medway (left) and David Orlovich (right).

to travel went hand in hand with at least informal teaching or tutoring. To date he has visited 52 mainly Commonwealth countries (multiple times) in Southeast Asia and East Africa, and (unfortunately) clocked up 1.3 million air miles. On 4 January 1977 he started work for CABI (Centre for Agriculture and Biosciences International), assuming it would be his one and only job, but he spent just over two years at the Mycology Section, Royal Botanic Gardens Kew, before he retired and became an Honorary Research Associate.

Meanwhile Jerry Cooper was hired by Paul at the International Mycological Institute (IMI) in London, giving him the opportunity to escape his previous careers in physics and software development to work with mycologists and indulge his real passion. They have similar interests in fungi and databases and worked on many projects over the years. The opportunities Paul gave him eventually led to Cooper's current role as a professional mycologist at Manaaki Whenua/Landcare Research, Lincoln. And when Paul visited his friend in New Zealand several years ago, he found and brought back from Hinewai Reserve on Banks Peninsula the specimen used as the holotype for *Bondarzewia kirkii* - hence the tribute to him in the species name.

REFERENCES

Cooper, JA 2020. pers. comm.

Cooper, JA; Leonard, PL. *Bondarzewia kirkii*: <https://www.iucnredlist.org> (accessed 30 April 2020).

Kirk, P JM 2020. pers. comm.

Bondarzewia kirkii

Bondarzewia is a widely distributed genus of fungi described by Rolf Singer in 1940 to honour the Russian mycologist Appollinaris Semenovich Bondarzew (1877-1968). For many years the two New Zealand species were misidentified as species known in the Northern Hemisphere. One already had a long-forgotten name (*B. propria*) and in 2019 *B. kirkii* was described as a new species. A New Zealand endemic, it occurs in beech (*Nothofagaceae*) forests, usually at the base of living trees, from January to March (earlier than most macro-fungi) and has also been found associated with kohekohe and pūriri. A specimen photographed mid-March 2020 in Pukekura Park, New Plymouth, retained its distinctive colour and form for several weeks before collapsing.

PUBLICATIONS

■ **Publications Received**

New Zealand Native Orchid Journal May 2023 No 169 *Bulbophyllum pygmaeum* in Fiordland, *Petalochilus*, *Corybas* 'Remutaka', range extension for *Corybas obscurus*, *Gastrodia molloyi* pollination, Wairarapa *Microtis*, *Thelymitra tholiformis*, *Townsonia deflexa*, the secret life of orchid seed germination, South Island orchid odyssey.

Auckland Botanical Society Newssheet April 2023 Upcoming trips and talks, *Nature in the City* book launch.

Auckland Botanical Society Newssheet May 2023 Upcoming trips and talks, Lucy Cranwell grant winners, City Nature Challenge on iNaturalist, disappearing *Ileostylus micranthus*, trip report for Rock Forest.

Nelson Botanical Society newsletter Autumn 2023, trip report for Rainbow skifield, Inwood Lookout and North Peak, and Lodestone, *Coprosma perpusilla* and *C. niphophila*, Loder Cup presentation, *Wolffia* and *Zostera*, Dun Mountain Trail biodiversity project.

Botanical Society of Otago newsletter March 2023 No 98 upcoming trips and talks, tribute to Audrey Eagle, botanising from a boat, why do botanic gardens exist, coccolithophores, lichens for forest health monitoring, an amalgamation of cryptogams.

Wellington Botanical Society newsletter April 2023 upcoming trips and talks, available grants and awards, Percy Scenic Reserve news, new QEII covenants, dwarf mistletoe propagation, trip reports for Catlins summer camp, Tora KNE and Timbrel farm, Korokoro valley.

Waikato Botanical Society newsletter June 2023 talk reports on two PhD research projects, ecological restoration, and inlands, uplands and coastal fringes, trip report on Lake Areare: Taupiri Scientific Reserve, Endangered Plant Garden update, mistletoe planting at Pirongia, upcoming trips and talks.