

Volcanic flora of Cornwall Park and One Tree Hill Domain: 26 September 2020

Ben Goodwin, Mike Wilcox, Shelley Heiss-Dunlop

The ABS previously visited Cornwall Park in 1995, concentrating on the planted exotic and native trees (Grace 1995). A team of 38 turned up for the 2020 field trip, this time the focus being on the plants found growing on volcanic sites on Maungakiekie/One Tree Hill. Those attending were: *Jordi Alcala, Jenny Andrew, Steph Angove-Emery, Sel Arbuckle, Jessica Beever, Paul Bell-Baker, Maureen Burke, Ewen Cameron, Neil Davies, Frances Duff, Beth Gibbs, Bill Goldstone* (Entomological Society), *Ben Goodwin* (co-leader), *Leslie Haines, Shelley-Heiss Dunlop* (co-leader), *Sandy Huang, Peter Hutton, Wendy John, Helen Preston Jones, Miriam Ludbrook, Christine Major, John Millett, Peter Moosberger, Sharon Osman, Juliet Richmond, Olivia Rooke-Devoy, Joshua Salter, Ashley Schmidt, Jørgen Schmidt, Peter Scott, John Staniland, Adrienne Stanton, Samantha Sutherland, Valerie Tomlinson, Alison Wesley, Mike Wilcox* (co-leader), *David Wilson, Maureen Young* (Fig. 1).

Volcanic environment for plants

Maungakiekie is one of Auckland's basaltic cones and was formed by eruption ~60,000 year ago (Hayward 2019). The principal volcanic habitats for plants there are basaltic lava flows surfacing through open grassland, forested lava blocks (rock forests), scoria and tuff beds, and artificial basaltic rock structures (rock walls and gateways, and monuments). Our visit concentrated on the native flora. Burns et al. (2013) included Maungakiekie in their ecological study of Auckland's volcanic cones vegetation.

The Grotto

This feature is a fenced-off lava flow outcrop that was partly quarried and originally planted in 1938, but became overgrown with tree privet (*Ligustrum lucidum*) and blackberry (*Rubus fruticosus*), together with some māhoe (*Melicytus ramiflorus*) (Wright 2018). It is located in Cornwall Park between Kenneth Myers Drive and Grand Drive and since 1996 has progressively been restored into a thriving karaka (*Corynocarpus laevigatus*) rock forest with kawakawa (*Piper excelsum*) in the understorey, and interplanted with native trees, shrubs, climbers, sedges, grasses, and numerous ferns in a fernery, and is the most botanically diverse site in the park. About half the area was originally grassland. One corner has several tall, old Monterey pines (*Pinus radiata*). It was established by staff of the Cornwall Park nursery dating back c. 20 years. Karaka dominates the main canopy, and there are thriving specimens of taraire (*Beilschmiedia tarairi*), ribbonwood (*Plagianthus regius*), nikau (*Rhopalostylis sapida*) – the robust Chatham Islands form, kānuka (*Kunzea robusta*), karo (*Pittosporum crassifolium*), and houpara (*Pseudopanax lessonii*). There are several northern islands endemics present: *Alectryon excelsus* subsp. *grandis*, *Elingamita johnsonii*, *Pennantia baylisiana*, *Piper excelsum* subsp. *peltatum* and *Tecomanthe speciosa*. The shade-tolerant hebe *Veronica diosmifolia* was in flower, as was *Alseuosmia quercifolia*, karaka and karo. Also present are *Corokia buddleioides*, *Corokia cotoneaster*, *Corokia ×cheesemanii*, *Metrosideros*



Fig. 1. Group photo, Bot Soc trip, in front of a large *Solanum aviculare*, in the fenced enclosure north of the Archery Club. Photo: Shelley Heiss-Dunlop, 26 Sep 2020.



Fig. 2. Enclosure above archery area. Photo: Mike Wilcox, 26 Sept 2020.

bartlettii, *Carmichaelia australis*, *Brachyglottis greyi* and a hybrid *Brachyglottis* (*B. greyi* × *B. repanda*).

A fernery of native and exotic species has been developed, those we recorded being *Adiantum cunninghamii*, *A. hispidulum*, *Arachniodes aristata*, *Asplenium aethiopicum*, *A. bulbiferum*, *A. decurrens*, *A. flabellifolium*, *A. flaccidum* subsp. *flaccidum*, *A. flaccidum* subsp. *haurakiense*, *A. ×lucrosum*, *A. oblongifolium*, *Blechnum discolor*, *B. fluviatile*, *B. gibbum*, *B. minus*, *B. novae-zelandiae*, *B. pennamarina*, *B. parriseae*, *B. zeelandicum*, *Cyathea dealbata*, *Davallia fejeensis*, *Dicksonia fibrosa*, *D. squarrosa*, *Histiopteris incisa*, *Nephrolepis cordifolia*, *Paesia scaberula*, *Parapolystichum microsorum* subsp. *pentangulare*, *Pellaea falcata*, *P. rotundifolia*, *Polystichum vestitum*, *Pteris tremula*, *Ptisana salicina*, *Pyrrosia elaeagnifolia*, *Zealandia pustulata* (*Microsorium pustulatum*).

The fenced enclosure north of the Archery Club (eastern horse-shoe crater)

This site is an old scoria quarry pit (Fig. 2). Karaka, pūriri (*Vitex lucens*) and pōhutukawa (*Metrosideros excelsa*) are the dominant big trees. There also are some small kohekohe (*Dysoxylum spectabile*), a sparse understorey of coastal karamū (*Coprosma macrocarpa* subsp. *minor*) and kawakawa, and a thicket of olive trees (*Olea europea*), probably self-sown. The largest of the karaka trees are old and moribund and may be descendants of cultivated groves associated with early Maori habitation. This site has some native ferns: *Adiantum hispidulum*, *Asplenium oblongifolium*, *Pellaea rotundifolia*, *Pteris tremula*, and *Pyrrosia elaeagnifolia*. A vigorous vine of *Calystegia* grows along the margin of the enclosure. It resembles *C. tuguriorum*, but appears larger in proportions, and may be a hybrid. Several poroporo (*Solanum aviculare*) grow on the margins – a significant occurrence of this now rather rare shrub (Fig. 1).



Fig. 3. Bot Soc on rock outcrop. Photo: Mike Wilcox, 26 Sep 2020.

Rock outcrop on grassy slope of One Tree Hill

There are several rock outcrops in grassland in Cornwall Park and One Tree Hill Domain, the main one our group visited (Fig. 3) lying south of the afore-mentioned forest enclosure. The grass here is not currently grazed. A few native plants were found nestling at the base of the rocks, the commonest being bidibidi (*Acaena novae-zelandiae*), *Dichondra repens*, and the ferns *Asplenium flabellifolium* and *Blechnum parriseae*. A prominent thallose liverwort was *Reboulia hemisphaerica*, and there were patches of the hornwort *Anthoceros laminiferus*.

The rock forest fenced enclosure west of the Archery Club

This is a dense planted forest on a steep lava-strewn slope and the most “natural-looking” tree cover in the Cornwall Park/One Tree Hill Domain parkland (Fig. 4). There are some old concrete ruins in the enclosure, which, together with the angular nature of the rock outcrops, suggest that the site may have been quarried in the 19th century. The dominant big trees are karaka, pūriri, pōhutukawa and tōtara. Smaller trees and shrubs are karo, kawakawa,



Fig. 4. Karaka grove, One Tree Hill Domain. Photo: Mike Wilcox, 14 Oct 2011.

coastal karamū, and one poroporo. Karaka is regenerating in dense thickets on the southern edge. A large exotic tree there is green ash (*Fraxinus pennsylvanica*). Jerusalem cherry (*Solanum pseudocapsicum*) is an exotic which favours such shady habitats (being brought by birds). Native ferns we found here were *Asplenium oblongifolium*, *A. flaccidum*, *A. flabellifolium*, *Blechnum parriseae*, *Pellaea rotundifolia*, *Pteris tremula* and *Zealandia pustulata* – all previously recorded by Anthony Wright (Wright 2018). The large rocks in the shade of the forest had a conspicuous green bryophyte coating, the main species being the mosses *Thuidiopsis sparsa* and *Camptochaete pulvinata*.

Rock outcrop on southern side of One Tree Hill

The purpose of visiting this outcrop was to see if we could locate the colony of the fern *Arthropteris tenella*, first discovered there by H.B. Matthews in 1919 and re-discovered by Anthony Wright (Wright 2016). We were glad to see it still thriving in this rocky habitat, protected by a cover of the native grass *Microlaena stipoides*. Paul Bell-Butler pointed out two species of fruticose lichens on the rocks, *Cladia gorgonea* and *C. blanchonii*, and there were further plants here of the hornwort *Anthoceros laminiferus*.

Western horseshoe crater

Next on our excursion was a wander up the southern edge of the prominent horseshoe crater on the western side of One Tree Hill. Along the southern

rim of this crater runs an exposure of volcanic tuff originating 28,500 years ago (Haywood 2015) from Te Tātua-a-Riukiuta (Three Kings volcano). At one time the reddish scoria was quarried here. This ash caps much of the gentler slopes of Maungakiekie cone and its lava fields. Pohuehue (*Muehlenbeckia complexa*) and small ponga (*Cyathea dealbata*) grow along this tuff exposure, and the grass *Microlaena stipoides* is common below it, on lightly shaded sloping ground. One small tree of akepiro (*Olearia furfuracea*) grows along a vertical scoria cutting of an old quarry pit. Two grasses in flower beside the path on the steeper slopes were ratstail (*Sporobolus africanus*) and red-leg grass (*Bothriochloa macra*).

One Tree Hill Summit

Our visit ended at the summit of One Tree Hill. We noted the plantings there of pōhutukawa and tōtara ceremonially established on 11 June 2016 to replace the lone Monterey pine cut down on 26 October 2000 (Tan 2016; Barton 2018). Pōhutukawa is the clear winner with all six trees planted developing into well-grown trees, but there is only one tōtara left out of the three planted. The protective ground cover of kiekie (*Freycinetia banksii*) has thrived. In mid-2020, the encircling shelter of *Olearia lineata* 'Dartonii' was removed. Paul Bell-Butler showed us an interesting urban calcicole crustose lichen growing on stonework mortar – *Protoblastenia rupestris* – mentioned by Galloway (2009) as being found on calcareous paving stones in many parts of Auckland.

References

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Field Trip to Hamilton's Landing, Hamilton Road, Mahurangi Harbour, 21 November 2020

Maureen Young & Ewen K. Cameron

Introduction: After retiring to his family property from his leadership role at the Department of Scientific and Industrial Research (Director General

of the DSIR, 1953–1971), Dr W.M. Hamilton gifted a 2.72 ha narrow bank of forest on the terrace edge facing the Mahurangi Harbour, to the Lands & Survey