Heenan, P. B.; Garnock-Jones, P. J. 1999: A new species combination in *Cheesemania* (Brassicaceae) from New Zealand. *New Zealand Journal of Botany 37*: 235–241.
Heenan, P. B.; Mitchell, A. D. 2003: Phylogeny, biogeography, and adaptive radiation of *Pachycladon* (Brassicaceae) in the mountains of South Island, New Zealand. *Journal of Biogeography 30*: 1737–1749.
Heenan, P. B.; Molloy, B. P. J. 2004: Taxonomy and conservation of *Olearia adenocarpa* (Asteraceae), a new species from braided riverbeds in Canterbury, New Zealand. *New Zealand Journal of Botany 42*: 21–36.
Heenan, P. B.; de Lange, P. J.; Wilton, A. D. 2001: *Sophora* (Fabaceae) in New Zealand: taxonomy, distribution, and biogeography. *New Zealand Journal of Botany 39*: 17–53.
Heenan, P. B.; Mitchell, A. D.; de Lange, P. J. 2004: *Arthropodium bifurcatum* (Asparagaceae), a new species from northern New Zealand. *New Zealand Journal of Botany 42*: 233–246.
Heenan, P. B.; Mitchell, A. D.; Koch, M. 2002: Molecular systematics of the New Zealand *Pachycladon* (Brassicaceae) complex: generic circumscription and relationships to Arabidopsis s. l. and Arabis s. l. *New Zealand Journal of Botany 40*: 543–562.
Heenan, P. B.; Smissen, R. D.; Dawson, M. I. 2005: Self-incompatibility in the threatened shrub *Olearia adenocarpa* (Asteraceae). New Zealand Journal of Botany 43: 831–841.
Hooker, J. D. 1864: "Handbook of the New Zealand Flora". Part 1, pp. 1-392. Reeve, London.
Hooker, J. D. 1867: "Handbook of the New Zealand Flora". Part II, pp. 393-798. Reeve, London.
Luo, C.; Bicknell, R. A.; Heenan, P. B. 2003: Embryology of two threatened species of *Pachycladon* (Brassicaceae). *New Zealand Journal of Botany 41*: 171–178.
McBreen, K.; Heenan, P. B. 2006. Phylogenetic relationships of *Pachycladon* (Brassicaceae) species based on three nuclear and two chloroplast DNA markers. *New Zealand Journal of Botany 44:* 377-386.
Mitchell, A. D.; Heenan, P. B. 2000: Systematic relationships of New Zealand endemic Brassicaceae inferred from rDNA sequence data. *Systematic Botany 25*: 98–105.
Mitchell, A. D.; Heenan, P. B. 2002: Genetic variation within the *Pachycladon* (Brassicaceae) complex based on fluorescent AFLP data. *Journal of the Royal Society of New Zealand 32*: 427–443.
Moore, L. B.; Edgar, E. 1970: Flora of New Zealand, Vol. II. Wellington, Government Printer.
Pole, M. 1994: The New Zealand Flora - Entirely Long-Distance Dispersal? *Journal of Biogeography 21*: 625-635.
Webb, C. J.; Sykes, W. R.; Garnock-Jones, P. J. 1988: Flora of New Zealand, Vol. IV. Christchurch, Botany Division, DSIR.

Field trip: Wairoa Dam and the Hunua Falls. 22/04/06

Joshua Salter & Mike Wilcox

Steve and Benjamin McCraith were the leaders for a gaggle of 22 of us on the April field trip to the Hunuas.

Participants: Enid Asquith, Paul Asquith, Robin Asquith, Duncan Benzie, Jan Butcher, Brian Cumber, Frances Duff, Gael Donaghy, Raewyn Faloon, Peter Hutton, Graeme Jane, Mei Nee Lee, Elaine Marshall, Benjamin McCraith (leader 2), Steve McCraith (leader 1), Carol McSweeney, Garry McSweeney, John Millett, Josh Salter (recorder 1), Heather Stone, Alison Wesley, Mike Wilcox (recorder 2), Tony Williams, Maureen Young.

To Wairoa Dam via Suspension Bridge Tk and Cossey-Wairoa Tk, Joshua Salter.

After rendezvousing at Hunua township, we set off at a good clip for the Wairoa Dam. Here we left the vehicles, walking back along Otau Road to the bridge at the start of the track. Although it doesn't appear on my 1978 map (NZMS 260 S12), the suspension bridge looked well weathered (the sign advised a maximum of 3 persons at a time, so we dared not gather in the middle to admire the Wairoa River below). The bridge crosses high enough for a close view of the canopy of a large *Elaeocarpus dentatus* (not in flower or fruit at this time).

Suspension Bridge Track ascends to the ridge-line west of Otau Road, running north until it meets the long-distance Cossey-Wairoa Track. In this part of the Hunua Ranges, the "reverting scrubland" of 30 years ago (Barton 1972) has given way to low regenerating mixed podocarp forest. After an initially steep gradient, noticed by at least some of us, the track eases to a gentler climb. Elaine Marshall spotted a small seedling of mangeao (*Litsea calicaris*) barely 75 mm tall, and higher up was a maire (*Mida salicifolia*) about 2m tall. Without Mike Wilcox's sign on the path, it would have been easily missed. Indeed, its slender stems and widely spaced dark leaves were hard to see even when I was staring straight at it. The high-gloss surface of the leaves and their irregular arrangement clearly distinguished it from a young *Nestegis*, whose leaves are, reassuringly, always opposite (Gardner 1997). Close to where the ridge levelled off, an elevated platform gave views out across farmland to the west and south, and into the Wairoa Valley to the north-east. Here, emergent rewarewa (*Knightia excelsa*) were the most obvious feature of the regenerating forest (Fig. 1). Further along the ridge was a male *Astelia solandri*, perched at waist height, presenting a lax panicle of maroon flowers for our delectation. Not far from this we saw *Cordyline pumilio* growing close to young trunkless *C. banksii*, the latter distinguishable by the reddish midrib and angled secondary veins in its leaves.

Several heaps of gravel were encountered along the track. Although no weeds were evident on the heaps, a single patch of *Selaginella kraussiana* was seen not far from one of them. Another notable weed was the invasive grass, *Miscanthus nepalensis*, lining a more open section of the track along the ridge. The most worrying weed was Himalayan honeysuckle

(*Leycesteria formosa*), depressingly present almost everywhere.

Fig. 1: View from lookout on Suspension Bridge Track, looking north-east up Wairoa Valley. Photo: Joshua Salter.

After a lunch stop at the track junction, we descended via the Cossey-Wairoa Track, which drops down a steep ridge to the western end of the dam. Not far down, another viewing platform allowed a clear view towards the head of the lake. Ben McCraith and Robin Asquith, the two youngest and most agile of us, demonstrated their indifference to the view by climbing in and out of the platform through the balustrade.

In contrast to the ridge we had ascended, this ridge had numerous kauri (*Agathis australis*), and tanekaha (*Phyllocladus trichomanoides*), with sizeable miro (*Prumnopitys ferruginea*) and Hall's totara (*Podocarpus hallii*) also present. On this side of the Hunua Ranges only a few scattered remnants of kauri-tanekaha forest have survived the destruction of the 19th and 20th centuries (Barton 1972). On the way down we passed through a colony of *Lycopodium deuterodensum* growing under tanekaha 'rickers', and stopped to admire a large miro whose red seeds were clearly visible from some distance, despite competition from the scarlet flowers of a large climbing rata (*Metrosideros fulgens*) occupying much of the canopy. Further down were three rewarewa in a row, each sporting cloaks of *M. fulgens* bearing flowers and fat green capsules, the middle tree further embellished with a large fruiting *Winika cunninghamii*. Beyond this stood two miro side by side on the ridge, each about 40 cm diam, and less than this distance apart.

Too soon we were at the dam. Dominant in the turf patches on the top of the dam were the native *Oxalis exilis*, with tiny yellow flowers, and *Hydrocotyle tripartita*. Mei Nee Lee and Frances Duff were interested in a *Geranium* growing at the base of the parapet. Was it *G. gardneri*? The threat of rain got us all moving again, along the gravel road across the dam. Mike Wilcox noted a prostrate willow-herb, *Epilobium nummulariifolium* in shaded damp gravel at the road edge. Around the bend, a roadside bank supported, among other things, three lycopods, whose different vegetative characters we were able to compare directly: *Lycopodium volubile* (with smaller appressed microphylls along the stem on both upper and lower faces of the flattened shoots), *L. scariosum* (smaller appressed microphylls only on the undersides of the flattened stems) and *Lycopodiella cernua* (awl-shaped microphylls the same all round the stems, resembling the scale leaves of young rimu seedlings).

Once we reached the vehicles it was realized that we had ample time for another short walk. The prospect of seeing *Crassula hunua*, *Oxalis magellanica* and other interesting plants tipped the balance in favour of a quick visit to the Hunua Falls (described below).

Addition to the species list for the Wairoa Valley:

As expected, the vascular flora was much the same as that for the Wairoa Valley Track (now the Wairoa Loop Track), recorded on two previous field trips on 20/9/97 and 15/2/03, both also led by Steve (McCraith 1997 & 2003). No new vascular plant species were seen on this visit.

However, the liverwort, *Lepidolaena taylorii*, was seen on both the Suspension Bridge Track and the Cossey-Wairoa Track. This elegant liverwort (aren't they all?) grows on tree trunks. On the Cossey-Wairoa Track, one colony covered some 60 cm of a 25 cm diam. reclining log. *Lepidolaena taylorii* was not among the 34 liverwort taxa recorded by John Braggins for the Wairoa Loop Track (McCraith 2003), and thus would appear to be the only 2006 addition to the species list for the Wairoa Valley.

Hunua Falls, Joshua Salter and Mike Wilcox

The Wairoa River follows a major fault line along the western edge of the Hunua Ranges (Barton 1972). At the Hunua Falls (formerly the Wairoa Falls (Gardner 2001)), the river has carved away part of an old volcano which erupted on the fault line. Contrary to Barton (1972) the volcanic plug is basalt, not granite, and the escarpment either side of the falls is composed of the irregular strata of basaltic breccia and tuff sequences typical of other basalt volcanoes of the region (P. de Lange, pers. comm.) (Fig. 2).

We first explored the west side of the plunge pool, stepping cautiously on a wet lumpy terrain of rock alternating with muddy ground, between the giant boulders that lie at the foot of the escarpment. *Adiantum cunninghamii* was abundant on overhanging flanks of the boulders, and assorted bryophytes and filmy ferns covered large areas of other surfaces. One thalloid liverwort, as well as encrusting rock faces, formed extensive colonies on the ground in the drip zone of the boulders. Close to the pool, the

escarpment overhangs a shallow cave, presumably formed by erosion at the edge of a plunge pool much higher than the present-day pool (Fig. 3). Young *Metrosideros diffusa* stems adorned the ceiling, with the more mature pendant stems fringing the overhang. Below this, lush parataniwha (*Elatostema rugosum*) and kiokio (*Blechnum novae-zelandiae*) flanked a rocky seepage zone where *Oxalis magellanica* was growing. The latter, described as "present in abundance" only six years ago (Gardner 2001), appeared to be at risk of being smothered by *Trifolium repens* and watercress (?*Rorippa* sp.). To avoid trampling it, we took turns to look, balancing on the slippery slope below it (Fig. 4). *Apium nodiflorum* and *Ranunculus repens* were abundant on adjacent muddy ground. At the water's edge were patches of *Crassula hunua* and *Hydrocotyle hydrophila*, kept constantly wet by ripples travelling across the pool from the falls. Larger colonies of *H. tripartita* occupied slightly less sodden areas. Also noted were rosettes of young *Cardamine debilis*, prostrate *Epilobium nerteroides* on damp rocks, *E. pubens* on drier banks, *Galium divaricatum*, *Glossostigma elatinoides*, *Isolepis cernua*, *Nertera depressa*, *Oxalis exilis*, *Prunella vulgaris* and *Sagina procumbens.*

Only a handful of BotSoccers were able to find the energy to cross the bridge and explore the eastern side of the falls, while the rest of us (including myself) drifted back to the carpark. For this reason, the following description is by Mike Wilcox: On the eastern side of the falls there was a more extensive area of herbaceous mats growing in the permanent mist zone of the falls. Here we found *Crassula hunua*, *Epilobium nerteroides*, *Hydrocotyle microphylla*, *H. hydrophila*, and in clumps close to the base of falls, *Callitriche petriei*. On this side of the plunge pool, the bush edge is subject to mist from the falls, and here the titoki (*Alectryon excelsus*) trees are draped in a distinctive epiphytic moss, *Papillaria flexicaulis*. Some other noteworthy plants we recorded from the environs of Hunua Falls were *Carex forsteri*, *Carex ochrosaccus*, *Elatostema rugosum*, *Metrosideros carminea* (on a rock face), *Rhabdothamnus solandri*, and the introduced maidenhair fern, *Adiantum raddianum*. Three abundant woody weeds were Mexican daisy (*Erigeron karvinskianus*), Himalayan honeysuckle (*Leycesteria formosa*) and tutsan (*Hypericum androsaemum*).

Fig. 2: Hunua Falls, June 2004. Photo: Mike Wilcox.

Fig. 3: Shallow cave at western side of Hunua Falls. Photo: Joshua Salter.

Fig. 4: Joshua Salter and Enid Asquith looking at *Oxalis magellanica*, while Steve McCraith and Frances Duff wait their turn. Photo: Mike Wilcox.

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References

Barton, I. L. 1972. On the vegetation of the Hunua Ranges, Auckland. *New Zealand Journal of Botany 10*: 8-26.
Gardner, R.O. 1997. *Mida salicifolia*, our native sandalwood. *Auckland Botanical Society Journal 52 (1*): 42-43
Gardner, R.O. 2001. Waterfall floras of the north. *Auckland Botanical Society Journal 56 (1)*: 28-31.
McCraith, S. 1997. Wairoa Valley Field Trip, 20 September 1997. *Auckland Botanical Society Journal 52 (2)*: 72-76
McCraith, S. 2003. Field trip: Wairoa Valley, Hunua Ranges. 15/02/03. *Auckland Botanical Society Journal 58.(1)*: 14-17