A new *Hebe*?

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Hebe is New Zealand's largest plant genus[2], with 87 indigenous species recognised in the most recent review (Bayly and Kellow, 2006). Two of the New Zealand species, *H. elliptica* and *H. salicifolia*, also occur in the far south of South America. One of these, *H. elliptica*, extends as far as the Falkland Islands, taking the genus into the South Atlantic Ocean. The 88th and only species in the genus not found within the New Zealand botanical region is *H. rapensis*, which is endemic to French Polynesia and is regarded as being more closely related to the Chatham Islands hebes than to the species on the New Zealand mainland. In addition, some New Zealand species that were once classified as hebes occur in the relatively new genera *Heliohebe* (five species restricted to Marlborough and Canterbury) and *Leonohebe* (five species confined to the South Island).

This apparent diversity of hebe species is deceptive. Contrary to a widespread popular belief that hebes are tough, drought-tolerant native plants, most are confined to the regions of higher rainfall and only a small minority grow where mean annual precipitation falls below 1000 mm. In eastern Canterbury this means the few species that occur are effectively confined to gorges and other rocky places near water, or to the foothills at higher altitudes near the main divide where rainfall often rises dramatically through the influence of north-west winds.

With the exception of *Hebe salicifolia*, which is ubiquitous in the South Island, the species most likely to be found in lowland gorges, rocky places, and streamsides in Canterbury north of the Rangitata River catchment is *Hebe traversii*, a familiar plant with narrow leaves and an abundance of white flowers in mid-summer. Banks Peninsula has its own endemic hebe, *H. strictissima*, closely related and similar to *H. traversii*, while south of the Rangitata River catchment the dominant species is *H. rakaiensis*. All three species are either uncommon or absent outside these broad areas of distribution, despite some historic anomalies, including herbarium specimens of *H. rakaiensis* collected as far north as Marlborough, and of *H. traversii* from just south of the Rangitata catchment in the Four Peaks Range, north-west of Geraldine in South Canterbury.

However, as has been demonstrated many times in the past, most recently by the discovery of a previously unrecognised species of *Olearia* right on the outskirts of metropolitan Christchurch (Heenan and Molloy, 2004), statistics may not tell the full story. Plants do not always behave as predicted.

I had a brush with this fact of life in the 1990s when, while poking around looking among the coprosmas for *Clematis marata* at the edge of a small stream in the block of land we had then recently bought in Te Moana Gorge, just beyond the south-western end of the Four Peaks Range, I found instead the supposedly rare *Carmichaelia kirkii*. Subsequent investigations (by others) revealed that this 'rare' broom, which had not previously been recorded between the Rakaia River and the Mackenzie Country lakes, is widespread throughout the remaining areas of relatively undisturbed native vegetation in Te Moana Gorge. Its presence was one of the factors that prompted a Timaru District Council hearing panel to reject a resource-consent application to bulldoze a 600-metre-long swathe for a forestry track through some of the best indigenous vegetation remaining in the gorge.

Probably I should have learned from this, but instead I bowed to conventional wisdom, with the result that some six years elapsed before I took a close look at the supposed '*Hebe traversii*' growing just outside our gate (within the property boundary but outside the fence and thus vulnerable to any passing souvenir hunter). Even then, I was more interested in assessing the horticultural possibilities of its apparent hybrids with *Hebe salicifolia* among the seedlings growing around it (Fig. 1). I realised fairly quickly after giving the plant a more-than-cursory glance that it appeared to be different from the two specimens of typical *Hebe traversii* cultivated in my garden in Hororata (one from Rakaia Gorge, the other from the Mason River in North Canterbury).

A professional botanist to whom I showed non-flowering specimens pronounced the plant to be *Hebe subalpina*. Another botanist identified it as *Hebe rakaiensis*. Later, I sent flowering specimens to Dr Peter Wardle, who forwarded them to Professor Phil Garnock-Jones in Wellington. Professor Garnock-Jones pointed out several details relating to the size, hairiness or otherwise, and shape of the corolla, ovary, and calyx that segregated the specimens from *H. rakaiensis*.

As a mere amateur enthusiast in these matters I am neither qualified nor able to discuss botanical details of this kind. I have no microscope, only a small hand-lens and naked eyes that are not as sharp as they used to be, so I cannot even see some of them. What I can do is

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[2] Editors' note: the use of the name *Hebe* and other closely related genera are under scrutiny, as molecular evidence may support the original inclusion of species under *Veronica*. Phil Garnock-Jones and others have recently published a set of formal combinations under *Veronica* for the Southern Hemisphere hebes in the international journal *Taxon* (May 2007, Vol. 56, No. 2, pp. 571–582).

Fig. 1 One of the many hybrids between the Te Moana Gorge hebe and *Hebe salicifolia*.

Fig. 2 Leaves of *Hebe traversii* (top) from Central (left) and North Canterbury are typically slightly longer, more tapered, and broadest below the middle, compared with those of the Te Moana *Hebe* (bottom), which are slightly shorter, less tapered, and tend to be broadest about the middle.

Fig. 3 The underside of a leaf of *Hebe traversii* (left) has a distinct midrib but the Te Moana Gorge hebe (right) has a groove on the midrib which is clearly visible even to the naked eye.

look at the more obvious features of the inflorescence and the overall appearance of the plant and say that it seems to my admittedly untrained eye to be an entity distinct from all of the species mentioned above.

It differs from *H. rakaiensis* in having a corolla tube at least twice as long as the calyx, and from the *H. traversii* plants growing in my garden by having slightly longer and narrower calyx lobes. The stems have no bifarious hairs, which, according to the description in Allan's Flora (1961), are a feature of *H. rakaiensis*. The leaves are shorter and slightly wider than those of *H. traversii* and are olive green, readily distinguished from the lighter green leaves of *H. traversii* when the two are grown side by side. The leaves of the Te Moana hebe are less tapered and typically widest about the middle, compared with those of *H. traversii*, which are broadest below the middle (Fig. 2).

The feature by which, to my amateur eye, the Te Moana Gorge hebe is most readily distinguished from other hebes that grow in Canterbury is a distinct and clearly defined groove along the midrib on the underside of the leaf. Other species including *H. traversii* have a distinct midrib, but none of them has a similar groove (Fig. 3). Most of the apparent hybrids with *H. salicifolia* that I have examined on the Hae Hae Te Moana South Branch and its feeder streams also feature this groove.

The Te Moana Gorge hebe is conspicuous when flowering in early January. It appears to be largely confined to a narrow corridor in rocky places and bluffs alongside or near the South Branch of the Hae Hae Te Moana River and its two main tributaries, Griffiths Stream and Fraser Stream, above 200 m altitude and below 500 m, but because almost all of the plants grow on private land it is difficult to determine the extent of its distribution.

All the wild plants I have examined are of similar appearance, and all have the characteristic groove on the underside of the leaf. Specimens vary from 1 m to 2 m in height and are attractive, well-furnished shrubs. The unopened flower-buds have a pinkish cast that enhance their appeal. Apart from *H. salicifolia*, with which it hybridises, it appears to be the only hebe growing in Te Moana Gorge. I suspect it is probably confined to the Te Moana South Branch catchment, is more-or-less intermediate between *H. traversii* and *H. rakaiensis*, possibly arising in the distant past as a result of spontaneous hybridisation between these two[3], and has become 'fixed'. If all this is found to be so, the plant, with its restricted habitat threatened by forestry development, should be classified as rare and endangered and conserved accordingly.

This should not be difficult. The Te Moana Gorge hebe roots readily from cuttings taken in either summer or autumn. Its natural habitat has a relatively dry climate, with a 10-year average annual rainfall of 867 mm, hot afternoons in summer, frequent mists and fog in autumn, and heavy frosts and occasional snow in winter. Consequently, it is hardy, ornamental, and easily grown in gardens with minimal summer irrigation.

Unfortunately, when most of the land in Te Moana Gorge was subdivided in the 1990s into forestry blocks of mostly between 20 and 50 hectares, the district authorities allowed the subdivision to proceed with no provision for reserves to protect the existing indigenous vegetation and other natural values. The planting of exotic species within areas of significant natural vegetation, or within 20 metres of the river or reserved areas, is forbidden under the current Timaru district plan, but unfortunately the prohibition does not appear to be effectively policed and is not retrospective. Once the botanical status of the hebe is established, it would be good if either the Timaru District Council or the Department of Conservation could be prompted to provide some effective long-term protection for this interesting and possibly rare shrub. Earlier this year (2007) we sold the Te Moana property, so we now have no personal involvement in the future of the hebe in the wild. However, the QEII Trust covenant that we secured over part of the property (including the area where the hebe grows) remains in place. In addition I expect a selection of cutting-raised specimens to continue to grow in my garden for the foreseeable future.

Specimens of the Te Moana hebe (herbarium accession number CHR 585761) and of a presumed hybrid with *H. salicifolia* (CHR 585760) have been deposited at the Allan Herbarium, Landcare Research, Lincoln.

[3] Editors' note: confirmatory chromosome counts would be helpful to establish this suggested parentage. If these plants are the result of hybridisation between *Hebe traversii* ($2n = 40$) and *H. rakaiensis* ($2n = 80$), then this entity may have an intermediate chromosome number (of $2n = 60$).

References

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Hebe experts Phil Garnock-Jones and Mike Bayly agree with Derrick that more detailed work is required to resolve the status, if any, of the Te Moana hebe. This includes critical botanical examination of characters (e.g., distributions of hairs on leaves and flower parts, chromosomes, leaf chemistry, DNA) and extensive comparisons to other collections. The plants in question are probably covered within the circumscription of *H. traversii* in *An Illustrated Guide to New Zealand Hebes*, wherein the two southernmost distribution records for *H. traversii* are based on herbarium specimens from the headwaters of the Hae Hae Te Moana River (CHR 51466, CHR 51467). Presumably, those specimens are similar in morphology to the plants discussed in this article.

Mike Bayly is co-author of the above-mentioned *An Illustrated Guide to New Zealand Hebes* (reviewed in the *New Zealand Garden Journal*, Dec 2006, Vol. 9, No. 2, pp. 27–29). Bayly and Kellow's book is a tremendous achievement and the summary of many years of careful research. However, even this seminal work should not be considered the final word, as there are sure to be further discoveries made in this fascinating group of plants.