NATIVE BROOMS AT KOWHAI RIDGE

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Kowhai Ridge, our 53 ha forestry/summer grazing block, is located in the foothills of South Canterbury, 25 km by road west north-west of Geraldine, at the junction of Griffiths Stream and Fraser's Stream, which jointly form the south branch of the Hae Hae Te Moana River. It rises from 400 to 700 metres above sea level, and includes about six hectares of medium steep to very steep regenerating river-terrace forest dominated by low hardwoods, with numerous lianes which should become less dominant as the canopy develops.

An adjoining area of similar size is occupied by a shrub association featuring matagouri, korokio, *Melicytus alpinus, Coprosma propinqua*, scattered cabbage trees and lancewoods, and a few smaller shrubs and herbs; an association better known in South Canterbury as "grey scrub". This shrub association, which is strongly characteristic of the South Canterbury foothills flora, is not well represented in the reserve system, and we are seeking a Queen Elizabeth II National Trust covenant over a dry, shrubby knob at the entrance to our block, as well as over the regenerating bush, which is relatively young and as yet contains no timber-sized trees. One of the features of our grey scrub is the remarkable range of colour forms in the *Coprosma propinqua* fruit, which include white, light and dark blue, and bright yellow. Many plants have fruit spotted with varying shades of blue. Another feature is a rare plant that I will get to in a moment.

Flax (lowland, not mountain, flax) and snowgrass communities feature on the upper slopes. Dryland shrub communities occupy the rocky knobs. At this stage of its development the bush canopy is dominated by hoheria, broadleaf, kohuhu, kowhai, lancewood, and putaputaweta. A permanent stream, fed by springs on the hill above, flows at the foot of the bush. The rainfall is relatively high, about 1250 mm a year on average.

We have, fortunately, minimal weed problems. Nodding thistles grow as thickly as the hairs on a cat's back along the main track but are well patronised by the introduced seed weevil. We do not see them as a problem. The few gorse and broom bushes visible on the property were all on or near the track, and have been grubbed out. Briar rose is present in the scrub but there is no indication that it will become a problem. It does not seem to be

competing well with the coprosma and matagouri, although this may change if we have a succession of dry summers. A few bushes of Himalayan honeysuckle (*Leycesteria formosa*), a common shrub weed in these foothills, grow on the hillside but will eventually be overtopped and shaded out by the native hardwoods. Except for grasses and some herbs in the open areas the vegetation is otherwise exclusively indigenous. There are no wilding trees on the property.

Greywacke rock, mostly shattered, with scattered seams of quartz-like material, but with numerous small outcrops of harder rock, is the parent material. The topsoil, even high up the slope, is mostly a black loam of variable depth over gritty clay, and is free draining. Soil fertility appears to be high. Bird species noted on the property include various finches, yellowhammers, grey warblers, tom-tits, silvereyes, fantails, bellbirds, magpies, spur-wing plovers, paradise shelducks, welcome swallows, Californian quail, harrier hawks, pipits, and New Zealand falcons.

The property, which had not been grazed for several years when we bought it, was formerly part of an extensive pastoral grazing run, most parts of which were regularly burnt. This probably accounts for the absence or near absence of some plants, such as kanuka and cassinia. The gorge was subdivided into forestry blocks in the mid-1990s and most of the blocks, including ours, have been partly or wholly planted with exotic conifers which are growing at a great rate. Numerous remnants of second-growth hardwood river-terrace forest, most of them smaller than our one, are scattered throughout the area. Few, perhaps no, old-growth trees remain upstream of the Te Moana scenic reserve at the mouth of the gorge. The reserve contains a scattering of old totara and kahikatea but its conservation value has been diminished by the invasion of introduced woody plants, including Himalayan honeysuckle and English ash. The particular community of low hardwood river-terrace forest seen in the upper gorge, from which beech is absent, appears to be unique to South Canterbury.

The uncommon Canterbury broom, *Notospartium torulosum*, grows at the side of Griffiths Stream opposite our gate and I have collected and sown seed from these plants for enrichment planting within our boundary. A more interesting native broom grows in our creek bed at the foot of our bush. I found it there in March by sheer accident, when I scrambled down to the stream to collect fern specimens for identification. As I bent over to

pluck the fern fronds, I glimpsed what looked like clematis foliage in a mountain wineberry. Closer inspection revealed it to be a *Carmichaelia* which was still carrying a scattering of distinctive, beaked seed-pods. I knew at once what it was, but said nothing to anyone except my wife about it for several weeks, until I had its identity confirmed by a professional botanist. It is *Carmichaelia kirkii*. This was, put simply, a stunning find. Apart from a 1930s herbarium specimen collected on Great Island, in the Rakaia River, there is no other confirmed inland record of this species between North Canterbury and the Benmore Range, in the Mackenzie Country. My discovery fills a gap in what had appeared to be a curiously disjunct distribution (see "*Threatened Plants of New Zealand*", Given and Wilson, DSIR Publishing, Wellington 1989).

Apart from its being a rare species, *C. kirkii* is an interesting one, in that it is the world's only climbing broom. To date we have found five adult specimens at Kowhai Ridge, all growing among divaricating shrubs in the creekbed. *C. kirkii* is very inconspicuous when not in flower and there are probably other specimens in the impenetrable scrub along the creek-edge. Unlike most of the other known populations of *C. kirkii*, it is regenerating. I found seedlings in several places beside the creek and just inside the bush margin. DoC's Geraldine staff, as might be expected, have taken a keen interest in the discovery, and say they hope to make a more extensive survey throughout the Te Moana Gorge next summer for more populations of *C. kirkii*. My feeling is that they will find numerous plants. The discovery, for me, has a sensation of déjà vu.

The nearby presence of *Notospartium torulosum* is a reminder that back in 1983 I was taken into the Malvern Hills by two botanists to be shown what were then considered to be some of a mere handful of surviving plants of that species. Subsequently, I wrote an article about the efforts to conserve the plant by five local farmers whose boundaries came together in the critical area. Within a few years, *Notospartium torulosum* had been found at a number of foothills sites as far south as the headwaters of the Tengawai River. It was no longer rare, merely uncommon. This did not in any way diminish the value of the plant or the efforts of the farmers. It merely meant that the future of the species was more secure. Because of the publicity, more people knew about it and were able to recognise it.

This echoes the rediscovery by Peter Wardle of *Hebe armstrongii* in the Waimakariri

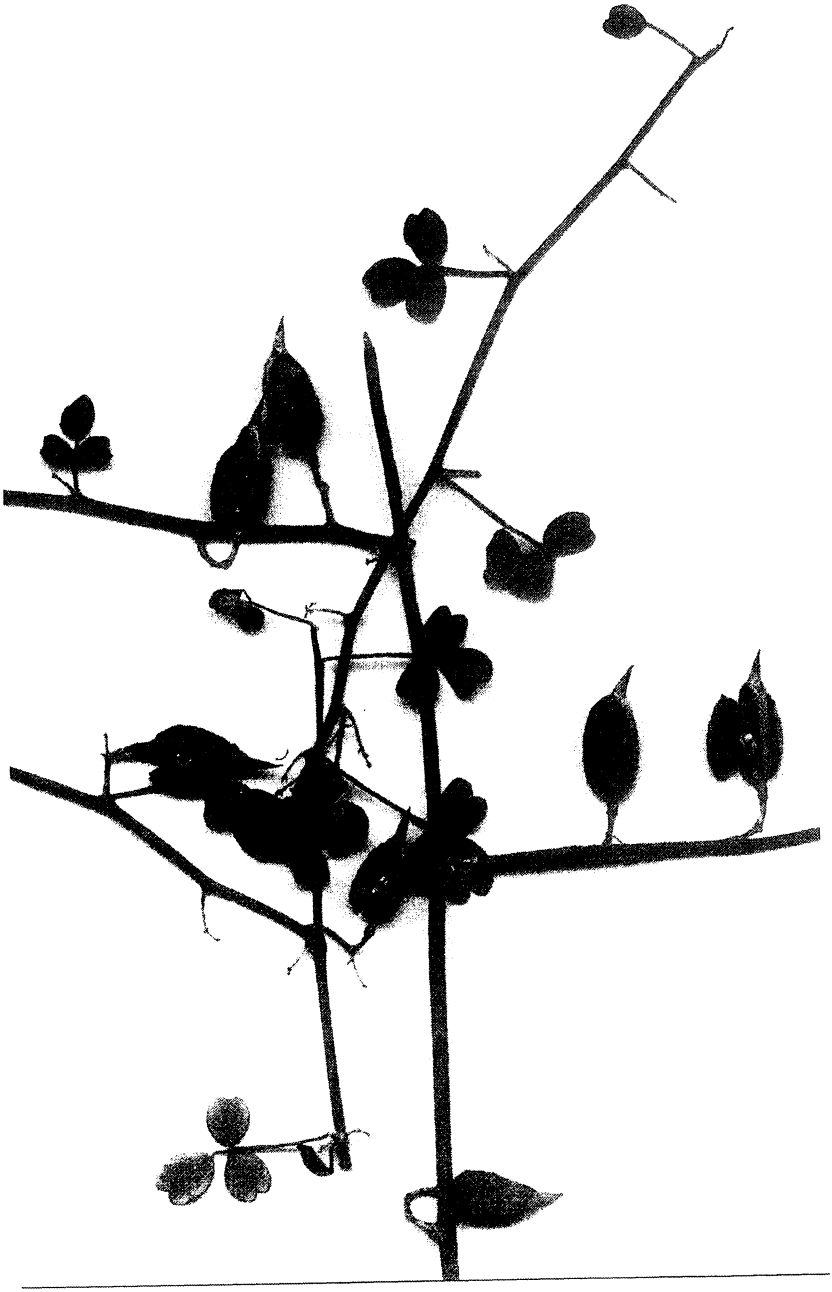

Fig. 1. Climbing broom, *Carmichaelia kirkii*.

Basin in the 1970s. Until Dr Wardle spotted a single specimen in flower in the Bog Pine reserve at Castle Hill, this species had been known for nearly half a century only as a cultivated plant. For a time, it enjoyed special status as a species with a total known population of one. Later, in the Esk Valley, Mt White Station, close to, but not in the recent Cox River addition to Arthur's Pass National Park, a thriving population with numerous individuals was found. The species is still rare, but not quite so much on the brink of extinction as was thought.

What these discoveries tell us is not only that species can be more resilient than is generally believed, and that current strategies on rare-plant conservation, and planning strategies based on perceived conservation values, may be mistargeted. We may be looking for things in the wrong way, or in the wrong places, and in both cases we are substantially underestimating the capability of natural systems for survival. Our land, for example, was regularly burnt and grazed in the past. If *Carmichaelia kirkii* has survived there it is likely to be elsewhere.

Other interesting plants at Kowhai Ridge include no fewer than six species of *Blechnum* fern along the creek, two more native brooms (*Carmichaelia australis* in both its thin-stemmed suckering and heavy-stemmed non-suckering forms, and the coral broom, *Corallospartium crassicaule*), and big plants of the scrambling fuchsia, *Fuchsia perscandens*, high on the hillside. *Fuchsia excorticata* growing along the creek, incidentally, made a fine show of autumn leaf colour this year. Hybrids between the two fuchsias are also present in the creekbeds. Two isolated kowhai trees, one perhaps c. 200 years old, grow high on the hillside and are a significant local landmark. These will be included in our covenant if it is approved by the trust.

Species observed at Kowhai Ridge (preliminary; introduced species not recorded):

Acaena anserinifolia
A. caesiiglauca
A. inermis
A. novae-zelandiae
A. profundae-incisa
Aciphylla aurea golden spaniard
A. colensoi var. *maxima* giant spaniard
A. subflabellata lowland spaniard
Aristotelia fruticosa mountain wineberry
Arthropodium candidum
Asplenium flabellifolium necklace fern
A. terrestre

Astelia fragrans bush lily
Blechnum chambersii
B. fluviatile creek fern
B. minus
B. penna-marina
B. procerum
B. sp. mountain kiokio
Calystegia tuguriorum
Carex coriacea
C. dissita
C. secta var. *tenuiculmis*
C. virgata
Carmichaelia australis NZ broom
C. kirkii climbing broom
Carpodetus serratus putaputaweta
Celmisia gracilenta
C. gracilenta x *spectabilis*
C. spectabilis var. *magnifica* cotton daisy
Cheilanthes humilis rock fern
Chionochloa conspicua bush tussock
C. rigida snowgrass
Clematis marata
Coprosma crassifolia
C. linariifolia
C. propinqua
C. rhamnoides
C. rigida
C. rugosa
Corallospartium crassicaule coral broom
Cordyline australis cabbage tree
Coriaria sarmentosa tutu
Corokia cotoneaster korokio
Cortaderia richardii toe toe
Discaria toumatou matagouri
Elymus rectisetus
Epilobium billardieranum ssp. *cinereum*
Fuchsia excorticata tree fuchsia
F. perscandens scrambling fuchsia
F. excorticata x *F. perscandens*
Gaultheria antipoda
Geranium microphyllum
Griselinia littoralis broadleaf
Haloragis erecta
Hebe salicifolia
H. traversii
Helichrysum aggregatum
H. bellidioides
H. filicaule
Hoheria lyallii mountain lacebark
Hydrocotyle sp. (*novae zelandiae?*)
Hypericum japonicum
Leucopogon fraseri
L. suaveolens
Melicytus alpinus porcupine plant
Muehlenbeckia australis
M. complexa
M. axillaris
M. australis x *M. complexa*
Olearia avicennifolia
Paesia scaberula hard fern
Parsonsia capsularis
Pellaea rotundifolia button fern
Pimelea oreophila
Pittosporum tenuifolium kohuhu
Poa cita silver tussock
P. colensoi
Polystichum richardii sheild fern
P. vestitum
Pseudopanax arboreum five-finger
P. crassifolium lancewood
Pteridium esculentum bracken fern
Rubus schmidelioides var. *subpauperatus*
Scleranthus uniflorus
Sophora microphylla kowhai
Vittadinia australis
Wahlenbergia albomarginata harebell
W. gracilis