SESSION 1: CONSERVATION IN THE CULTURAL LANDSCAPE

Chair: COLIN BURROWS

JOYS AND SORROWS OF NATIVE PLANT RESTORATION PLANTING IN LOWLAND CANTERBURY

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The symposium began with a most entertaining summary by Geoff Henderson of what it took to establish native vegetation in a grassy paddock at Rangiora. Miles Giller spoke with consummate skill and understanding about his role as field officer for the Queen Elizabeth II National Trust and what has been achieved recently in Canterbury through its open space covenant system. The excellent messages conveyed by Geoff and Miles will be inspirational for anyone who wishes to restore or preserve native vegetation in our region.

Some other lessons can be learnt from conservation endeavours with which I have been associated in the last seven years. Port Hills 2000 (chaired by Diane Menzies) was formed to organise and implement activities on the Port Hills as Canterbury celebrated the turn of the millennium. One of its main achievements was to raise funds that were used to purchase land near Dyers Pass, Kennedy's Bush and Cass Peak to add to the chain of public space reserves that now extend almost continuously from Godley Head to Ahuriri Summit Bush, along the Crater Rim.

We also organised improvements in existing reserves – installation of toilets, stiles and signage at several sites, construction of some new tracks, and resurfacing of the Bridle Path. A wheelchair trackway for disabled folk was developed at Mt Vernon and conditions for white-flippered penguins were improved near Taylors Mistake.

Parties of school children, Scouts, service groups, Summit Road Society members and other volunteers were enlisted to plant thousands of trees in some of the reserves between Mt Cavendish and Cass Peak (including the Bridle Path margins), under the guidance of Christchurch City Park Rangers and members of Port Hills 2000. Many trees have survived and are now well-grown. However in some locations there were severe depredations from browsers, especially

rabbits and sheep. One planted area was burnt out by a deliberately lit fire. Nevertheless, in general, our efforts have borne good fruit.

I welcomed the opportunity to participate in ecorestoration on Otamahua/Quail Island by the Trust established for this purpose in 1998. One of its aims is to plant about 30 ha of woodland; another is to make the island a safe haven for many of the native plants, birds, lizards and invertebrates of the western Banks Peninsula region. When the woodland is well-developed introductions of birds such as tui, tomtit and rifleman will be attempted. Insect and lizard introductions will begin quite soon.

The opportunity on the island to completely remove pest mammals makes this a very important locus for ecorestoration. So far our belief is that we are completely rid of rabbits, cats, stoats, ferrets, hedgehogs and rats. Unfortunately, after a poison bait rodent control campaign in the last 12 months, mice have persisted. Apparently the bait stations were too far apart. An intensive effort to control shrub weeds on the island requires removal of all adults of eight species to prevent further seed production. Subsequently we mop up any juveniles that develop from the seeds stored in the soil.

Planting, mainly of the local native shrub and tree species that are tolerant of the dry end of the soil moisture spectrum, has proceeded at a moderate pace since 1998. Some 34,000 plants have been planted over about 12 ha. None of this would have been possible without sterling organisation work, fundraising, and supervisory cooperation by Trust personnel. The huge effort put in by volunteers who come to plant and do other work on the island each year is also a major benefit. The benevolent attitude of the Department of Conservation towards the project has helped enormously. Most of our plant stock comes from the Motukarara Nursery.

There is not space here to list the species we plant (see references) but I will mention some major problems. The greatest difficulties in trying to establish young trees are threefold: drought; frost; competition for water from the existing grass sward. Adequate moisture to allow young plants to establish is a crucial requirement. We try to help them firstly by killing the grass sward with glyphosate herbicide, then by placing a square of carpet around the base of each newly planted tree, to conserve moisture and suppress weed growth. Clearance of herbaceous weeds around the plants is needed for two or three years after planting. During drought we apply water to the trees that have just been planted and this has worked well in most locations. In 2003, during prolonged drought, we lost some well-established young trees in very dry sites. The good growth and vigour of trees in the few small, natural seepage areas demonstrate how very important is the moisture factor.

After losses in July 2000 of many newly-planted and inadequately hardened trees, when ground temperatures fell to about -9°C, we have learnt to leave plants at the nursery until August. When grass minima were even lower, in July 2003, we lost very few of the established young trees from the 2002 planting to frost. We have had to plant concave, flat, or gently-sloping, inversion frost-prone sites on the island's plateau with a few hardy species, among which harakeke (*Phormium tenax*) is very prominent. In due course enough shelter will be provided, we hope, to enable woody species to grow up under the harakeke canopy in these sites.

Wherever suitable ground conditions prevail on Otamahua (bare ground, with a thin litter cover, beneath a light canopy) seedlings of native shrubs, trees and vines are springing up. Most originate from parents that grow naturally on the island, or were planted in the early 1980s. However, some species that we planted in 1998 and 1999 are already contributing to the native seed rain. Clearly, nature will take over the processes of regeneration of woodland, once a proper canopy has formed in the new plantings. Nature is a hard taskmistress, though, and it probably takes more than one human lifetime to benefit from all the lessons she teaches!

The Port Hills and Otamahua/Quail Island projects undoubtedly benefit conservation of indigenous biota in Canterbury in a variety of ways. The educational and recreational resources that they provide will be lasting memorials to our recent efforts.

(**Postscript**. Now (February 2004) one of the worst droughts experienced in Canterbury has ended. We watered for more than two months to keep plants alive. Many *Coprosma robusta* and *Hebe salicifolia* died on some sites, but most others have survived. We can but wonder at the hardiness and resilience of the plants.)

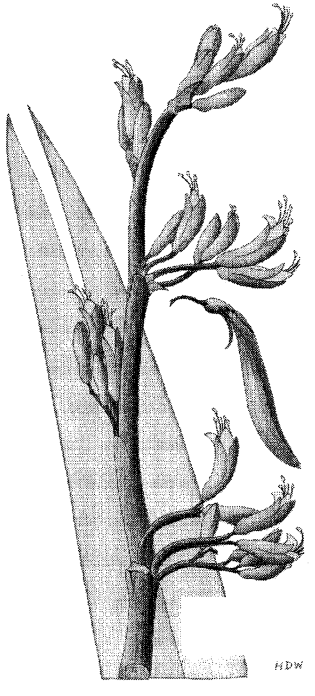
REFERENCES

Burrows, C. J. 2002: The ecological restoration of Otamahua/Quail Island. 5. Progress with shrub weed control. *New Zealand Natural Sciences 27*: 27–39.

Burrows, C. J.; Leckie, A. 2001: The ecological restoration of Otamahua/Quail Island. 4. The indigenous woodland plantings 1998–2001. *New Zealand Natural Sciences 26*: 33–65.

Burrows, C. J.; Watson, J. K. 2000: The ecological restoration of Otamahua/Quail Island. 3. Problem plants and their control. *New Zealand Natural Sciences 25*: 11–32.

Menzies, D.; Burrows, C. J.; Wilson, A.: 1998: Port Hills 2000: A project to celebrate the new millennium by restoring and enhancing vegetation and birdlife on parts of Christchurch's Port Hills. Turning Point 2000, Canterbury – Waitaha. 22pp.



Whaririki (*Phormium cookianum*), and its larger relative harakeke or lowland flax (*P. tenax*), are both versatile plants, widely used in ornamental and restoration planting. (del. Hugh Wilson).