Makara foreshore reserve—a Wellington City Council dune restoration project

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HISTORY OF THE RESERVE

Who would guess that only sixty years ago the site was a two metre-high duneland? The Home Guard bulldozed the dunes in 1942, 'to prevent an invading enemy force from hiding there', says Ted Smith, long-time Makara resident, who used to camp there as a child. Removal of the dunes destroyed the community of indigenous, sand-binding and mat plants, an ecosystem now extremely uncommon in the Wellington region because of widespread coastal development and habitat degradation.

Part of the reserve was occupied by baches until the late 1970s, which explains the presence of some compacted areas and occasional chunks of concrete. Despite these destructive impacts, indigenous plants have gradually re-established themselves on the sandy, stony substrate. This is why although the site is almost totally flat, we consider our work as a form of dune restoration (fig. 1).

Fig. 1. Makara settlement including the foreshore reserve on the sea side of the town.

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REMOVAL OF WEEDS

Since our article in Bulletin No. 48, we have been contracted by Wellington City Council (WCC) to restore the native vegetation in the reserve and monitor its progress. Now six years on, we have just completed our one hundred and sixtieth visit. We spend about three hours per fortnight, bums on high, sand-blasted on windy days, roasted on hot days and feeding sand flies on calm ones. None but a pair of plant enthusiasts would be interested, but we are dedicated to "our" patch and its welfare. Noses to the ground, we become so absorbed in our work that the rest of the world just fades away. We have managed to clear successive infestations of annual weeds as well as the perennial buck's-horn plantain which densely carpeted many square metres, but there is still a huge reservoir of weed seeds in the sandy soil and they germinate within days of rain. Even some of the densest *Raoulia* mats become invaded by tenacious bur medick, allseed and plantain (fig. 2). This spring an explosion of the weed *Crassula decumbens*, Cape crassula, has caused us many extra hours of work because it has invaded a part of the reserve where our latest discovery, the native *Crassula mataikona,* is only just surviving.

Fig. 2. *Raoulia* mats in the Makara foreshore reserve.

Over 2001–2002, Society member Darryl Kee, of Weedworks, under contract to WCC, sprayed the marram with Gallant followed by an application of Roundup. This killed almost all the marram which had been covering about one fifth of the reserve. Last winter, WCC removed the remaining marram and the accumulated rubbish, to make way for our third year of planting.

RESTORATION PLANTING

We have planted eco-sourced pingao and sand tussock (fig. 3) which were propagated and grown on by WCC's Berhampore Nursery. We look forward to the time when seed from *Spinifex sericeus* will also be available for propagating and planting back. The status of regionally and nationally threatened plant species recorded at Makara Foreshore Reserve is shown in Table 1.

Fig. 3. *Austrofestuca littoralis* planted at Makara Foreshore Reserve.

Table 1. Conservation status of threatened plant species in Makara Foreshore Reserve

Name	**Regional Status**[1]	**National Status**[1]
Desmoschoenus spiralis / pingao / golden sand sedge	Gradual Decline	Gradual Decline
Austrofestuca littoralis / hinarepe / sand tussock	Gradual Decline	Gradual Decline
Melicytus crassifolius / thick-leaved mahoe	Gradual Decline	Sparse
Crassula mataikona	Critical	Data Deficient
Raoulia aff. *hookeri* (AK 239529; "Coast")	Gradual Decline	Gradual Decline

1 Status taken from de Lange et al. 2004 and Sawyer 2004

CRASSULA MATAIKONA

This delicate, creeping species with filamentous stems, was first recorded by Dr Aston, at "Happy Valley Beach" (Owhiro Bay) in 1911 (fig. 4). Tony Druce found it at Mataikona in eastern Wairarapa in 1966 and 1970, at Te Kaukau Point in 1967, and in Pahaoa Gorge in 1974. In 2001 we found one patch of it no more than 25 mm across, in the Makara Foreshore Reserve, and sent a sample to Peter de Lange for confirmation of its identity. Because this taxon would not survive in the reserve if it were not kept weeded and under observation, we have since grown on a few tiny, rooted stems at home then planted them back. A typical ephemeral, it dries up in summer and reappears in spring. Its tiny size is a likely reason for it to have been overlooked at other sites.

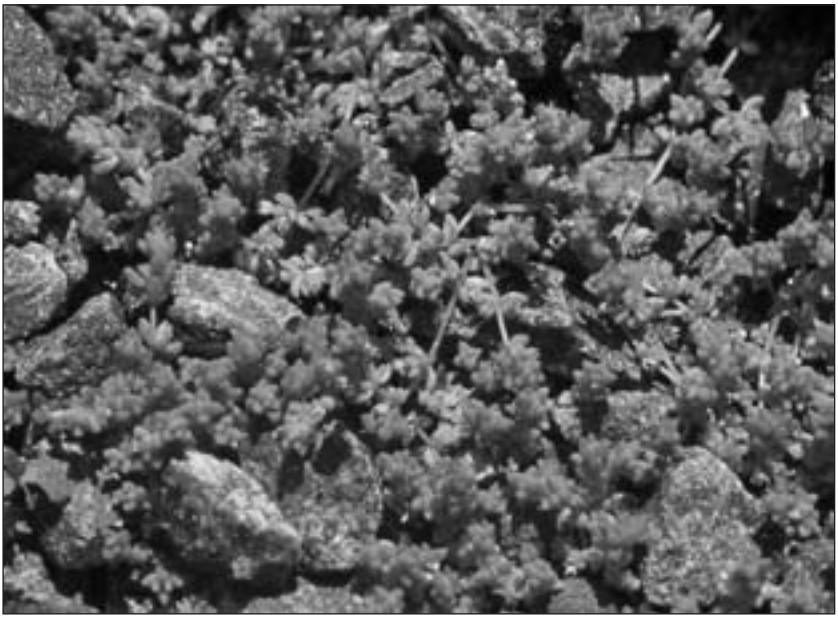

Fig. 4. *Crassula mataikona* found at Makara Foreshore Reserve.

MONITORING

Under Dr Maggy Wassilieff's guidance, on 2 February 2001, twenty-seven Society members monitored six, point-intersect vegetation transects which Maggy had established in March 1995. The size and condition of each mat of *Raoulia* aff. *hookeri* (AK 239529; "Coast") on the transects were recorded. A complete list of indigenous vascular plants recorded at Makara Foreshore Reserve by the authors is provided as an Appendix to this paper.

The results, reported in the April 2001 issue of the Botanical Society

Newsletter indicated that, "... bare ground and leaf litter had increased along three transects. This coincided with a decrease in the presence of marram on the same transects. Such definite trends were not noticed with the two other common species in the reserve: *Raoulia* presence increased on one transect and decreased on two other transects; *Disphyma* presence increased on two transects and decreased on another one. There was a general increase in the condition of the *Raoulia* mats (as defined by the percentage of live material within the mat). No dead mats of *Raoulia* were encountered in 2001 (six were noted in 1995). Over 75% of the mats contained more than 50% live material in 2001, whereas in 1995 only 40% of the mats were as vigorous as this." We look forward to the time when the Society can monitor the point-intersect transects again.

THE FUTURE

Makara Foreshore Reserve is classified as a Recreation Reserve. Because of its local and regional significance, we believe it should be gazetted as a Scenic Reserve under the Reserves Act 1977, and listed in the Wellington City Council's District Plan as a Conservation Site. This would increase the protection of the reserve by upgrading its status. A management plan stipulating a weeding programme and the planting back of appropriate, locally sourced species, is essential to ensure the continued restoration of this specialised ecosystem.

REFERENCES

de Lange, P. J.; Norton, D. A.; Heenan, P. B.; Courtney, S.P.; Molloy, B.P.J.; Ogle, C. C.; Rance, B. D.; Johnson, P. N.; Hitchmough, R. 2004: Threatened and uncommon plants of New Zealand. *New Zealand Journal of Botany 42*: 45–76.

Sawyer, J.W.D. 2004: Plant Conservation Strategy: Wellington Conservancy (excluding Chatham Islands). Department of Conservation, Wellington.

APPENDIX 1: NATURALLY-OCCURRING, INDIGENOUS, VASCULAR PLANTS IN MAKARA FORESHORE RESERVE (WELLINGTON CITY COUNCIL), AS AT 1 MARCH 2004. BOTANICAL NAME, MAORI NAME AND OTHER COMMON NAME ARE PROVIDED IN ORDER.

Dicot shrubs
Coprosma propinqua
Leptospermum scoparium (mānuka, manuka)
* *Melicytus crassifolius* (thick-leaved mahoe)
Olearia solandri (coastal tree daisy)
Ozothamnus leptophyllus (tauhinu, tauhinu)
Pimelea prostrata agg. (pinātoro, NZ daphne)

Grasses
Austrofestuca littoralis (hinarepe, sand tussock)
Spinifex sericeus (kōwhangatara, silvery sand grass)

Sedges
Isolepis nodosa (wī, leafless sedge)
Desmoschoenus spiralis (pīngao, pingao)

Herbaceous plants including scramblers
Apium prostratum (tūtae kōau, sea celery)
Calystegia soldanella (panahi, shore bindweed)
Colobanthus muelleri (colobanthus sp.)
Crassula mataikona (crassula sp.)
Disphyma australe (horokaka, NZ ice plant)
Einadia triandra (poipapa, berry saltbush)
Ranunculus acaulis (shore buttercup)
Raoulia aff. *hookeri* (AK 239529; "Coast") (tutāhuna, mat daisy)
Selliera radicans (remuremu, selliera sp.)
Senecio lautus (shore groundsel)
Tetragonia implexicoma (kōkihi, NZ climbing spinach)

*This plant has since died but cuttings from it have been grown on by Berhampore Nursery (Wellington City Council), for planting back in the reserve.